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1.665 assert-plus 1.0.0
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1.666 jsprim 1.4.2
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1.667 go.opentelemetry.io/otel/exporters/otlp/otlptrace 1.0.1
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1.696 go.uber.org/atomi 1.7.0

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1.707 go.opentelemetry.io/otel/exporters/otlp/otlptrace/otlptracegrpc 1.0.1
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* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/DefaultFileRegion.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/socket/nio/NioServerSocketChannel.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/oio/package-info.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/DefaultChannelConfig.java
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* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/PendingWriteQueue.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/embedded/EmbeddedChannelId.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/AbstractEventLoop.java
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* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/WriteBufferWaterMark.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/group/VoidChannelGroupFuture.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/PreferHeapByteBufAllocator.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/SelectStrategy.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/DefaultSelectStrategyFactory.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/ChannelOutboundInvoker.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/bootstrap/AbstractBootstrapConfig.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/socket/DuplexChannel.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/ChannelInboundInvoker.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/SelectStrategyFactory.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/bootstrap/ServerBootstrapConfig.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/DefaultSelectStrategy.java

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* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/MaxBytesRecvByteBufAllocator.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/pool/ChannelPoolMap.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/pool/ChannelPool.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/pool/ChannelHealthChecker.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/DefaultMaxMessagesRecvByteBufAllocator.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/pool/ChannelPoolHandler.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/DefaultMaxBytesRecvByteBufAllocator.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/pool/package-info.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/MaxMessagesRecvByteBufAllocator.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/pool/FixedChannelPool.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/pool/AbstractChannelPoolMap.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/pool/AbstractChannelPoolHandler.java
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*/
/**
* Handles an I/O event or intercepts an I/O operation, and forwards it to its next handler in
* its {@link ChannelPipeline}.
*
* <h3>Sub-types</h3>
* <p>
* {@link ChannelHandler} itself does not provide many methods, but you usually have to implement one of its subtypes:
*
* {@link ChannelInboundHandler} to handle inbound I/O events, and
* {@link ChannelOutboundHandler} to handle outbound I/O operations.
*
* </p>
* <p>
* Alternatively, the following adapter classes are provided for your convenience:
*
* {@link ChannelInboundHandlerAdapter} to handle inbound I/O events,
* {@link ChannelOutboundHandlerAdapter} to handle outbound I/O operations, and
* {@link ChannelDuplexHandler} to handle both inbound and outbound events
*
* </p>
* <p>
* For more information, please refer to the documentation of each subtype.
* </p>
*
* <h3>The context object</h3>
* <p>
* A {@link ChannelHandler} is provided with a {@link ChannelHandlerContext}
* object. A {@link ChannelHandler} is supposed to interact with the
* {@link ChannelPipeline} it belongs to via a context object. Using the
* context object, the {@link ChannelHandler} can pass events upstream or
* downstream, modify the pipeline dynamically, or store the information
* (using {@link AttributeKey}s) which is specific to the handler.
*

```
* <h3>State management</h3>
*
* A {@link ChannelHandler} often needs to store some stateful information.
* The simplest and recommended approach is to use member variables:
* <pre>
* public interface Message {
*     // your methods here
* }
*
* public class DataServerHandler extends {@link SimpleChannelInboundHandler}&lt;Message&gt; {
*
*     <b>private boolean loggedIn;</b>
*
*     {@code @Override}
*     public void channelRead0({@link ChannelHandlerContext} ctx, Message message) {
*         if (message instanceof LoginMessage) {
*             authenticate((LoginMessage) message);
*             <b>loggedIn = true;</b>
*         } else (message instanceof GetDataMessage) {
*             if (<b>loggedIn</b>) {
*                 ctx.writeAndFlush(fetchSecret((GetDataMessage) message));
*             } else {
*                 fail();
*             }
*         }
*     }
*     ...
* }
* </pre>
* Because the handler instance has a state variable which is dedicated to
* one connection, you have to create a new handler instance for each new
* channel to avoid a race condition where a unauthenticated client can get
* the confidential information:
* <pre>
* // Create a new handler instance per channel.
* // See {@link ChannelInitializer#initChannel(Channel)}.
* public class DataServerInitializer extends {@link ChannelInitializer}&lt;{@link Channel}&gt; {
*     {@code @Override}
*     public void initChannel({@link Channel} channel) {
*         channel.pipeline().addLast("handler", <b>new DataServerHandler()</b>);
*     }
* }
*
* </pre>
*
* <h4>Using {@link AttributeKey}s</h4>
*
* Although it's recommended to use member variables to store the state of a
```

```
* handler, for some reason you might not want to create many handler instances.
* In such a case, you can use {@link AttributeKey}s which is provided by
* {@link ChannelHandlerContext}:
* <pre>
* public interface Message {
*     // your methods here
* }
*
* {@code @Sharable}
* public class DataServerHandler extends {@link SimpleChannelInboundHandler}&lt;Message&gt; {
*     private final {@link AttributeKey}&lt;{@link Boolean}&gt; auth =
*           {@link AttributeKey#valueOf(String) AttributeKey.valueOf("auth")};
*
*     {@code @Override}
*     public void channelRead({@link ChannelHandlerContext} ctx, Message message) {
*         {@link Attribute}&lt;{@link Boolean}&gt; attr = ctx.attr(auth);
*         if (message instanceof LoginMessage) {
*             authenticate((LoginMessage) o);
*             <b>attr.set(true)</b>;
*         } else (message instanceof GetDataMessage) {
*             if (<b>Boolean.TRUE.equals(attr.get())</b>) {
*                 ctx.writeAndFlush(fetchSecret((GetDataMessage) o));
*             } else {
*                 fail();
*             }
*         }
*     }
*     ...
* }
* </pre>
* Now that the state of the handler is attached to the {@link ChannelHandlerContext}, you can add the
* same handler instance to different pipelines:
* <pre>
* public class DataServerInitializer extends {@link ChannelInitializer}&lt;{@link Channel}&gt; {
*
*     private static final DataServerHandler <b>SHARED</b> = new DataServerHandler();
*
*     {@code @Override}
*     public void initChannel({@link Channel} channel) {
*         channel.pipeline().addLast("handler", <b>SHARED</b>);
*     }
* }
* </pre>
*
*
* <h4>The {@code @Sharable} annotation</h4>
* <p>
* In the example above which used an {@link AttributeKey},
```

* you might have noticed the {@code @Sharable} annotation.
* <p>
* If a {@link ChannelHandler} is annotated with the {@code @Sharable}
* annotation, it means you can create an instance of the handler just once and
* add it to one or more {@link ChannelPipeline}s multiple times without
* a race condition.
* <p>
* If this annotation is not specified, you have to create a new handler
* instance every time you add it to a pipeline because it has unshared state
* such as member variables.
* <p>
* This annotation is provided for documentation purpose, just like
* the JCIP annotations.
*
* <h3>Additional resources worth reading</h3>
* <p>
* Please refer to the {@link ChannelHandler}, and
* {@link ChannelPipeline} to find out more about inbound and outbound operations,
* what fundamental differences they have, how they flow in a pipeline, and how to handle
* the operation in your application.
*/

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* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/ExtendedClosedChannelException.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/ChannelHandlerMask.java
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* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/AbstractEventLoopGroup.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/AddressedEnvelope.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/group/ChannelGroup.java
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* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/ChannelProgressivePromise.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/ChannelHandlerAdapter.java
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* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/DefaultMessageSizeEstimator.java
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* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/group/ChannelMatcher.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/DefaultChannelId.java
* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/socket/oio/OioServerSocketChannelConfig.java
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* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/ChannelOutboundBuffer.java
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* /opt/cola/permits/1350828746_1656063997.4516613/0/netty-transport-4-1-78-final-sources-1-jar/io/netty/channel/group/ChannelGroupException.java
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1.13 pyyaml 5.4

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1.14 color-support 1.1.3

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1.16 libnpmpublish 6.0.4

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1.17 fast-deep-equal 3.1.3

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1.18 ignore-walk 5.0.1

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1.19 stringcase 1.2.0

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1.20 get-stream 6.0.1

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1.21 gettext 0.21-r2

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@page
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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.
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6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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changes were used in the work (which must be distributed under
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b) Use a suitable shared library mechanism for linking with the
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will operate properly with a modified version of the library, if
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interface-compatible with the version that the work was made with.

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than the cost of performing this distribution.

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1.22 rw 1.3.3

1.22.1 Available under license :

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1.23 libnpmorg 4.0.3

1.23.1 Available under license :

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1.24 tiny-relative-date 1.3.0

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1.25 picocolors 1.0.0

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1.26 llvm13-libs 13.0.1-r2

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```
; NOTE: Assertions have been autogenerated by utils/update_llc_test_checks.py
; RUN: llc < %s -mtriple=aarch64-- | FileCheck %s

; A shuffle mask with all undef elements is always legal.

define <4 x i32> @PR41535(<2 x i32> %p1, <2 x i32> %p2) {
; CHECK-LABEL: PR41535:
; CHECK:       // %bb.0:
; CHECK-NEXT:    ext v0.8b, v0.8b, v1.8b, #4
; CHECK-NEXT:    mov v0.d[1], v0.d[0]
; CHECK-NEXT:    ret
 %cat1 = shufflevector <2 x i32> %p1, <2 x i32> undef, <4 x i32> <i32 undef, i32 1, i32 undef, i32 undef>
 %cat2 = shufflevector <2 x i32> %p2, <2 x i32> undef, <4 x i32> <i32 0, i32 undef, i32 undef, i32 undef>
 %r = shufflevector <4 x i32> %cat1, <4 x i32> %cat2, <4 x i32> <i32 undef, i32 undef, i32 1, i32 4>
 ret <4 x i32> %r
}
; RUN: opt -mtriple=aarch64-linux-gnu -mattr=+sve -scalarize-masked-mem-intrin -S < %s | FileCheck %s

; Testing that masked scatters operating on scalable vectors that are
; packed in SVE registers are not scalarized.

; CHECK-LABEL: @masked_scatter_nxv4i32(
; CHECK: call void @llvm.masked.scatter.nxv4i32
define void @masked_scatter_nxv4i32(<vscale x 4 x i32> %data, <vscale x 4 x i32*> %ptrs, <vscale x 4 x i1>
%masks) {
 call void @llvm.masked.scatter.nxv4i32(<vscale x 4 x i32> %data, <vscale x 4 x i32*> %ptrs, i32 0, <vscale x 4 x
i1> %masks)
 ret void
}

; Testing that masked scatters operating on scalable vectors of FP
; data that is packed in SVE registers are not scalarized.

; CHECK-LABEL: @masked_scatter_nxv2f64(
; CHECK: call void @llvm.masked.scatter.nxv2f64
define void @masked_scatter_nxv2f64(<vscale x 2 x double> %data, <vscale x 2 x double*> %ptrs, <vscale x 2 x
```

```
i1> %masks) {
 call void @llvm.masked.scatter.nxv2f64(<vscale x 2 x double> %data, <vscale x 2 x double*> %ptrs, i32 0,
<vscale x 2 x i1> %masks)
 ret void
}

; Testing that masked scatters operating on scalable vectors of FP
; data that is unpacked in SVE registers are not scalarized.

; CHECK-LABEL: @masked_scatter_nxv2f16(
; CHECK: call void @llvm.masked.scatter.nxv2f16
define void @masked_scatter_nxv2f16(<vscale x 2 x half> %data, <vscale x 2 x half*> %ptrs, <vscale x 2 x i1>
%masks) {
 call void @llvm.masked.scatter.nxv2f16(<vscale x 2 x half> %data, <vscale x 2 x half*> %ptrs, i32 0, <vscale x 2
x i1> %masks)
 ret void
}

; Testing that masked scatters operating on 64-bit fixed vectors are
; scalarized because NEON doesn't have support for masked scatter
; instructions.

; CHECK-LABEL: @masked_scatter_v2f32(
; CHECK-NOT: @llvm.masked.scatter.v2f32(
define void @masked_scatter_v2f32(<2 x float> %data, <2 x float*> %ptrs, <2 x i1> %masks) {
 call void @llvm.masked.scatter.v2f32(<2 x float> %data, <2 x float*> %ptrs, i32 0, <2 x i1> %masks)
 ret void
}

; Testing that masked scatters operating on 128-bit fixed vectors are
; scalarized because NEON doesn't have support for masked scatter
; instructions and because we are not targeting fixed width SVE.

; CHECK-LABEL: @masked_scatter_v4i32(
; CHECK-NOT: @llvm.masked.scatter.v4i32(
define void @masked_scatter_v4i32(<4 x i32> %data, <4 x i32*> %ptrs, <4 x i1> %masks) {
 call void @llvm.masked.scatter.v4i32(<4 x i32> %data, <4 x i32*> %ptrs, i32 0, <4 x i1> %masks)
 ret void
}

declare void @llvm.masked.scatter.nxv4i32(<vscale x 4 x i32> %data, <vscale x 4 x i32*> %ptrs, i32 %align,
<vscale x 4 x i1> %masks)
declare void @llvm.masked.scatter.nxv2f64(<vscale x 2 x double> %data, <vscale x 2 x double*> %ptrs, i32
%align, <vscale x 2 x i1> %masks)
declare void @llvm.masked.scatter.nxv2f16(<vscale x 2 x half> %data, <vscale x 2 x half*> %ptrs, i32 %align,
<vscale x 2 x i1> %masks)
declare void @llvm.masked.scatter.v2f32(<2 x float> %data, <2 x float*> %ptrs, i32 %align, <2 x i1> %masks)
declare void @llvm.masked.scatter.v4i32(<4 x i32> %data, <4 x i32*> %ptrs, i32 %align, <4 x i1> %masks)
```

```
; RUN: llc < %s -mtriple=s390x-linux-gnu -mcpu=zEC12 -verify-machineinstrs | FileCheck %s
;
; Test that early if conversion produces LOCR with operands of the right
; register classes.

define void @autogen_SD4739(i8*) {
; CHECK-NOT: Expected a GR32Bit register, but got a GRX32Bit register
BB:
 %L34 = load i8, i8* %0
 %Cmp56 = icmp sgt i8 undef, %L34
 br label %CF246

CF246:                                    ; preds = %CF246, %BB
 %Sl163 = select i1 %Cmp56, i8 %L34, i8 undef
 br i1 undef, label %CF246, label %CF248

CF248:                                    ; preds = %CF248, %CF246
 store i8 %Sl163, i8* %0
 br label %CF248
}
; NOTE: Assertions have been autogenerated by utils/update_llc_test_checks.py
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mcpu=skylake-avx512 -mattr=prefer-256-bit | FileCheck %s
--check-prefixes=CHECK,CHECK-AVX512
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mcpu=skylake-avx512 -mattr=prefer-256-bit,avx512vbmi |
FileCheck %s --check-prefixes=CHECK,CHECK-VBMI
; Make sure CPUs default to prefer-256-bit. avx512vnni isn't interesting as it just adds an isel peephole for
vpmaddwd+vpaddd
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mcpu=skylake-avx512 | FileCheck %s --check-
prefixes=CHECK,CHECK-AVX512
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=cascadelake | FileCheck %s --
check-prefixes=CHECK,CHECK-AVX512
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=cooperlake | FileCheck %s --
check-prefixes=CHECK,CHECK-AVX512
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mcpu=cannonlake | FileCheck %s --check-
prefixes=CHECK,CHECK-VBMI
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=icelake-client | FileCheck %s --
check-prefixes=CHECK,CHECK-VBMI
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=icelake-server | FileCheck %s --
check-prefixes=CHECK,CHECK-VBMI
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=tigerlake | FileCheck %s --check-
prefixes=CHECK,CHECK-VBMI

; This file primarily contains tests for specific places in X86ISelLowering.cpp that needed be made aware of the
legalizer not allowing 512-bit vectors due to prefer-256-bit even though AVX512 is enabled.

define dso_local void @add256(<16 x i32>* %a, <16 x i32>* %b, <16 x i32>* %c) "min-legal-vector-
width"="256" {
; CHECK-LABEL: add256:
```

```
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vpaddd 32(%rsi), %ymm1, %ymm1
; CHECK-NEXT:    vpaddd (%rsi), %ymm0, %ymm0
; CHECK-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %d = load <16 x i32>, <16 x i32>* %a
 %e = load <16 x i32>, <16 x i32>* %b
 %f = add <16 x i32> %d, %e
 store <16 x i32> %f, <16 x i32>* %c
 ret void
}

define dso_local void @add512(<16 x i32>* %a, <16 x i32>* %b, <16 x i32>* %c) "min-legal-vector-
width"="512" {
; CHECK-LABEL: add512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa64 (%rdi), %zmm0
; CHECK-NEXT:    vpaddd (%rsi), %zmm0, %zmm0
; CHECK-NEXT:    vmovdqa64 %zmm0, (%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %d = load <16 x i32>, <16 x i32>* %a
 %e = load <16 x i32>, <16 x i32>* %b
 %f = add <16 x i32> %d, %e
 store <16 x i32> %f, <16 x i32>* %c
 ret void
}

define dso_local void @avg_v64i8_256(<64 x i8>* %a, <64 x i8>* %b) "min-legal-vector-width"="256" {
; CHECK-LABEL: avg_v64i8_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm1
; CHECK-NEXT:    vpavgb (%rdi), %ymm0, %ymm0
; CHECK-NEXT:    vpavgb 32(%rdi), %ymm1, %ymm1
; CHECK-NEXT:    vmovdqu %ymm1, (%rax)
; CHECK-NEXT:    vmovdqu %ymm0, (%rax)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %1 = load <64 x i8>, <64 x i8>* %a
 %2 = load <64 x i8>, <64 x i8>* %b
 %3 = zext <64 x i8> %1 to <64 x i32>
 %4 = zext <64 x i8> %2 to <64 x i32>
 %5 = add nuw nsw <64 x i32> %3, <i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1,
```

```
i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32
1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1,
i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1>
 %6 = add nuw nsw <64 x i32> %5, %4
 %7 = lshr <64 x i32> %6, <i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1,
i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32
1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1,
i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1>
 %8 = trunc <64 x i32> %7 to <64 x i8>
 store <64 x i8> %8, <64 x i8>* undef, align 4
 ret void
}


define dso_local void @avg_v64i8_512(<64 x i8>* %a, <64 x i8>* %b) "min-legal-vector-width"="512" {
; CHECK-LABEL: avg_v64i8_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa64 (%rsi), %zmm0
; CHECK-NEXT:    vpavgb (%rdi), %zmm0, %zmm0
; CHECK-NEXT:    vmovdqu64 %zmm0, (%rax)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %1 = load <64 x i8>, <64 x i8>* %a
 %2 = load <64 x i8>, <64 x i8>* %b
 %3 = zext <64 x i8> %1 to <64 x i32>
 %4 = zext <64 x i8> %2 to <64 x i32>
 %5 = add nuw nsw <64 x i32> %3, <i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1,
i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32
1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1,
i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1>
 %6 = add nuw nsw <64 x i32> %5, %4
 %7 = lshr <64 x i32> %6, <i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1,
i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32
1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1,
i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1>
 %8 = trunc <64 x i32> %7 to <64 x i8>
 store <64 x i8> %8, <64 x i8>* undef, align 4
 ret void
}

define dso_local void @pmaddwd_32_256(<32 x i16>* %APtr, <32 x i16>* %BPtr, <16 x i32>* %CPtr) "min-
legal-vector-width"="256" {
; CHECK-LABEL: pmaddwd_32_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vpmaddwd 32(%rsi), %ymm1, %ymm1
; CHECK-NEXT:    vpmaddwd (%rsi), %ymm0, %ymm0
```

```
; CHECK-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
  %A = load <32 x i16>, <32 x i16>* %APtr
  %B = load <32 x i16>, <32 x i16>* %BPtr
  %a = sext <32 x i16> %A to <32 x i32>
  %b = sext <32 x i16> %B to <32 x i32>
  %m = mul nsw <32 x i32> %a, %b
  %odd = shufflevector <32 x i32> %m, <32 x i32> undef, <16 x i32> <i32 0, i32 2, i32 4, i32 6, i32 8, i32 10, i32
12, i32 14, i32 16, i32 18, i32 20, i32 22, i32 24, i32 26, i32 28, i32 30>
  %even = shufflevector <32 x i32> %m, <32 x i32> undef, <16 x i32> <i32 1, i32 3, i32 5, i32 7, i32 9, i32 11, i32
13, i32 15, i32 17, i32 19, i32 21, i32 23, i32 25, i32 27, i32 29, i32 31>
  %ret = add <16 x i32> %odd, %even
  store <16 x i32> %ret, <16 x i32>* %CPtr
  ret void
}

define dso_local void @pmaddwd_32_512(<32 x i16>* %APtr, <32 x i16>* %BPtr, <16 x i32>* %CPtr) "min-
legal-vector-width"="512" {
; CHECK-LABEL: pmaddwd_32_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa64 (%rdi), %zmm0
; CHECK-NEXT:    vpmaddwd (%rsi), %zmm0, %zmm0
; CHECK-NEXT:    vmovdqa64 %zmm0, (%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
  %A = load <32 x i16>, <32 x i16>* %APtr
  %B = load <32 x i16>, <32 x i16>* %BPtr
  %a = sext <32 x i16> %A to <32 x i32>
  %b = sext <32 x i16> %B to <32 x i32>
  %m = mul nsw <32 x i32> %a, %b
  %odd = shufflevector <32 x i32> %m, <32 x i32> undef, <16 x i32> <i32 0, i32 2, i32 4, i32 6, i32 8, i32 10, i32
12, i32 14, i32 16, i32 18, i32 20, i32 22, i32 24, i32 26, i32 28, i32 30>
  %even = shufflevector <32 x i32> %m, <32 x i32> undef, <16 x i32> <i32 1, i32 3, i32 5, i32 7, i32 9, i32 11, i32
13, i32 15, i32 17, i32 19, i32 21, i32 23, i32 25, i32 27, i32 29, i32 31>
  %ret = add <16 x i32> %odd, %even
  store <16 x i32> %ret, <16 x i32>* %CPtr
  ret void
}

define dso_local void @psubus_64i8_max_256(<64 x i8>* %xptr, <64 x i8>* %yptr, <64 x i8>* %zptr) "min-legal-
vector-width"="256" {
; CHECK-LABEL: psubus_64i8_max_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vpsubusb 32(%rsi), %ymm1, %ymm1
```

```
; CHECK-NEXT:    vpsubusb (%rsi), %ymm0, %ymm0
; CHECK-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <64 x i8>, <64 x i8>* %xptr
 %y = load <64 x i8>, <64 x i8>* %yptr
 %cmp = icmp ult <64 x i8> %x, %y
 %max = select <64 x i1> %cmp, <64 x i8> %y, <64 x i8> %x
 %res = sub <64 x i8> %max, %y
 store <64 x i8> %res, <64 x i8>* %zptr
 ret void
}

define dso_local void @psubus_64i8_max_512(<64 x i8>* %xptr, <64 x i8>* %yptr, <64 x i8>* %zptr) "min-legal-
vector-width"="512" {
; CHECK-LABEL: psubus_64i8_max_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa64 (%rdi), %zmm0
; CHECK-NEXT:    vpsubusb (%rsi), %zmm0, %zmm0
; CHECK-NEXT:    vmovdqa64 %zmm0, (%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <64 x i8>, <64 x i8>* %xptr
 %y = load <64 x i8>, <64 x i8>* %yptr
 %cmp = icmp ult <64 x i8> %x, %y
 %max = select <64 x i1> %cmp, <64 x i8> %y, <64 x i8> %x
 %res = sub <64 x i8> %max, %y
 store <64 x i8> %res, <64 x i8>* %zptr
 ret void
}

define dso_local i32 @_Z9test_charPcS_i_256(i8* nocapture readonly, i8* nocapture readonly, i32) "min-legal-
vector-width"="256" {
; CHECK-LABEL: _Z9test_charPcS_i_256:
; CHECK:       # %bb.0: # %entry
; CHECK-NEXT:    movl %edx, %eax
; CHECK-NEXT:    vpxor %xmm0, %xmm0, %xmm0
; CHECK-NEXT:    xorl %ecx, %ecx
; CHECK-NEXT:    vpxor %xmm1, %xmm1, %xmm1
; CHECK-NEXT:    vpxor %xmm2, %xmm2, %xmm2
; CHECK-NEXT:    .p2align 4, 0x90
; CHECK-NEXT:  .LBB8_1: # %vector.body
; CHECK-NEXT:    # =>This Inner Loop Header: Depth=1
; CHECK-NEXT:    vpmovsxbw 16(%rdi,%rcx), %ymm3
; CHECK-NEXT:    vpmovsxbw (%rdi,%rcx), %ymm4
; CHECK-NEXT:    vpmovsxbw 16(%rsi,%rcx), %ymm5
; CHECK-NEXT:    vpmaddwd %ymm3, %ymm5, %ymm3
```

```
; CHECK-NEXT:    vpaddd %ymm2, %ymm3, %ymm2
; CHECK-NEXT:    vpmovsxbw (%rsi,%rcx), %ymm3
; CHECK-NEXT:    vpmaddwd %ymm4, %ymm3, %ymm3
; CHECK-NEXT:    vpaddd %ymm1, %ymm3, %ymm1
; CHECK-NEXT:    addq $32, %rcx
; CHECK-NEXT:    cmpq %rcx, %rax
; CHECK-NEXT:    jne .LBB8_1
; CHECK-NEXT:  # %bb.2: # %middle.block
; CHECK-NEXT:    vpaddd %ymm0, %ymm1, %ymm1
; CHECK-NEXT:    vpaddd %ymm0, %ymm2, %ymm0
; CHECK-NEXT:    vpaddd %ymm0, %ymm1, %ymm0
; CHECK-NEXT:    vextracti128 $1, %ymm0, %xmm1
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[2,3,2,3]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[1,1,1,1]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vmovd %xmm0, %eax
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
entry:
 %3 = zext i32 %2 to i64
 br label %vector.body

vector.body:
 %index = phi i64 [ %index.next, %vector.body ], [ 0, %entry ]
 %vec.phi = phi <32 x i32> [ %11, %vector.body ], [ zeroinitializer, %entry ]
 %4 = getelementptr inbounds i8, i8* %0, i64 %index
 %5 = bitcast i8* %4 to <32 x i8>*
 %wide.load = load <32 x i8>, <32 x i8>* %5, align 1
 %6 = sext <32 x i8> %wide.load to <32 x i32>
 %7 = getelementptr inbounds i8, i8* %1, i64 %index
 %8 = bitcast i8* %7 to <32 x i8>*
 %wide.load14 = load <32 x i8>, <32 x i8>* %8, align 1
 %9 = sext <32 x i8> %wide.load14 to <32 x i32>
 %10 = mul nsw <32 x i32> %9, %6
 %11 = add nsw <32 x i32> %10, %vec.phi
 %index.next = add i64 %index, 32
 %12 = icmp eq i64 %index.next, %3
 br i1 %12, label %middle.block, label %vector.body

middle.block:
 %rdx.shuf1 = shufflevector <32 x i32> %11, <32 x i32> undef, <32 x i32> <i32 16, i32 17, i32 18, i32 19, i32 20,
i32 21, i32 22, i32 23, i32 24, i32 25, i32 26, i32 27, i32 28, i32 29, i32 30, i32 31, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef>
 %bin.rdx1 = add <32 x i32> %11, %rdx.shuf1
 %rdx.shuf = shufflevector <32 x i32> %bin.rdx1, <32 x i32> undef, <32 x i32> <i32 8, i32 9, i32 10, i32 11, i32
```

```
12, i32 13, i32 14, i32 15, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx = add <32 x i32> %bin.rdx1, %rdx.shuf
 %rdx.shuf15 = shufflevector <32 x i32> %bin.rdx, <32 x i32> undef, <32 x i32> <i32 4, i32 5, i32 6, i32 7, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx32 = add <32 x i32> %bin.rdx, %rdx.shuf15
 %rdx.shuf17 = shufflevector <32 x i32> %bin.rdx32, <32 x i32> undef, <32 x i32> <i32 2, i32 3, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx18 = add <32 x i32> %bin.rdx32, %rdx.shuf17
 %rdx.shuf19 = shufflevector <32 x i32> %bin.rdx18, <32 x i32> undef, <32 x i32> <i32 1, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx20 = add <32 x i32> %bin.rdx18, %rdx.shuf19
 %13 = extractelement <32 x i32> %bin.rdx20, i32 0
 ret i32 %13
}

define dso_local i32 @_Z9test_charPcS_i_512(i8* nocapture readonly, i8* nocapture readonly, i32) "min-legal-vector-width"="512" {
; CHECK-LABEL: _Z9test_charPcS_i_512:
; CHECK:       # %bb.0: # %entry
; CHECK-NEXT:    movl %edx, %eax
; CHECK-NEXT:    vpxor %xmm0, %xmm0, %xmm0
; CHECK-NEXT:    xorl %ecx, %ecx
; CHECK-NEXT:    vpxor %xmm1, %xmm1, %xmm1
; CHECK-NEXT:    .p2align 4, 0x90
; CHECK-NEXT:  .LBB9_1: # %vector.body
; CHECK-NEXT:    # =>This Inner Loop Header: Depth=1
; CHECK-NEXT:    vpmovsxbw (%rdi,%rcx), %zmm2
; CHECK-NEXT:    vpmovsxbw (%rsi,%rcx), %zmm3
; CHECK-NEXT:    vpmaddwd %zmm2, %zmm3, %zmm2
; CHECK-NEXT:    vpaddd %zmm1, %zmm2, %zmm1
; CHECK-NEXT:    addq $32, %rcx
; CHECK-NEXT:    cmpq %rcx, %rax
; CHECK-NEXT:    jne .LBB9_1
; CHECK-NEXT:  # %bb.2: # %middle.block
; CHECK-NEXT:    vpaddd %zmm0, %zmm1, %zmm0
; CHECK-NEXT:    vextracti64x4 $1, %zmm0, %ymm1
; CHECK-NEXT:    vpaddd %zmm1, %zmm0, %zmm0
; CHECK-NEXT:    vextracti128 $1, %ymm0, %xmm1
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[2,3,2,3]
```

```
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[1,1,1,1]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vmovd %xmm0, %eax
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
entry:
 %3 = zext i32 %2 to i64
 br label %vector.body

vector.body:
 %index = phi i64 [ %index.next, %vector.body ], [ 0, %entry ]
 %vec.phi = phi <32 x i32> [ %11, %vector.body ], [ zeroinitializer, %entry ]
 %4 = getelementptr inbounds i8, i8* %0, i64 %index
 %5 = bitcast i8* %4 to <32 x i8>*
 %wide.load = load <32 x i8>, <32 x i8>* %5, align 1
 %6 = sext <32 x i8> %wide.load to <32 x i32>
 %7 = getelementptr inbounds i8, i8* %1, i64 %index
 %8 = bitcast i8* %7 to <32 x i8>*
 %wide.load14 = load <32 x i8>, <32 x i8>* %8, align 1
 %9 = sext <32 x i8> %wide.load14 to <32 x i32>
 %10 = mul nsw <32 x i32> %9, %6
 %11 = add nsw <32 x i32> %10, %vec.phi
 %index.next = add i64 %index, 32
 %12 = icmp eq i64 %index.next, %3
 br i1 %12, label %middle.block, label %vector.body

middle.block:
 %rdx.shuf1 = shufflevector <32 x i32> %11, <32 x i32> undef, <32 x i32> <i32 16, i32 17, i32 18, i32 19, i32 20,
i32 21, i32 22, i32 23, i32 24, i32 25, i32 26, i32 27, i32 28, i32 29, i32 30, i32 31, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef>
 %bin.rdx1 = add <32 x i32> %11, %rdx.shuf1
 %rdx.shuf = shufflevector <32 x i32> %bin.rdx1, <32 x i32> undef, <32 x i32> <i32 8, i32 9, i32 10, i32 11, i32
12, i32 13, i32 14, i32 15, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx = add <32 x i32> %bin.rdx1, %rdx.shuf
 %rdx.shuf15 = shufflevector <32 x i32> %bin.rdx, <32 x i32> undef, <32 x i32> <i32 4, i32 5, i32 6, i32 7, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx32 = add <32 x i32> %bin.rdx, %rdx.shuf15
 %rdx.shuf17 = shufflevector <32 x i32> %bin.rdx32, <32 x i32> undef, <32 x i32> <i32 2, i32 3, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx18 = add <32 x i32> %bin.rdx32, %rdx.shuf17
```

```
 %rdx.shuf19 = shufflevector <32 x i32> %bin.rdx18, <32 x i32> undef, <32 x i32> <i32 1, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx20 = add <32 x i32> %bin.rdx18, %rdx.shuf19
 %13 = extractelement <32 x i32> %bin.rdx20, i32 0
 ret i32 %13
}

@a = dso_local global [1024 x i8] zeroinitializer, align 16
@b = dso_local global [1024 x i8] zeroinitializer, align 16

define dso_local i32 @sad_16i8_256() "min-legal-vector-width"="256" {
; CHECK-LABEL: sad_16i8_256:
; CHECK:       # %bb.0: # %entry
; CHECK-NEXT:    vpxor %xmm0, %xmm0, %xmm0
; CHECK-NEXT:    movq $-1024, %rax # imm = 0xFC00
; CHECK-NEXT:    vpxor %xmm1, %xmm1, %xmm1
; CHECK-NEXT:    .p2align 4, 0x90
; CHECK-NEXT:  .LBB10_1: # %vector.body
; CHECK-NEXT:    # =>This Inner Loop Header: Depth=1
; CHECK-NEXT:    vmovdqu a+1024(%rax), %xmm2
; CHECK-NEXT:    vpsadbw b+1024(%rax), %xmm2, %xmm2
; CHECK-NEXT:    vpaddd %ymm1, %ymm2, %ymm1
; CHECK-NEXT:    addq $4, %rax
; CHECK-NEXT:    jne .LBB10_1
; CHECK-NEXT:  # %bb.2: # %middle.block
; CHECK-NEXT:    vpaddd %ymm0, %ymm1, %ymm0
; CHECK-NEXT:    vextracti128 $1, %ymm0, %xmm1
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[2,3,2,3]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[1,1,1,1]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vmovd %xmm0, %eax
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
entry:
 br label %vector.body

vector.body:
 %index = phi i64 [ 0, %entry ], [ %index.next, %vector.body ]
 %vec.phi = phi <16 x i32> [ zeroinitializer, %entry ], [ %10, %vector.body ]
 %0 = getelementptr inbounds [1024 x i8], [1024 x i8]* @a, i64 0, i64 %index
 %1 = bitcast i8* %0 to <16 x i8>*
 %wide.load = load <16 x i8>, <16 x i8>* %1, align 4
 %2 = zext <16 x i8> %wide.load to <16 x i32>
 %3 = getelementptr inbounds [1024 x i8], [1024 x i8]* @b, i64 0, i64 %index
```

```
 %4 = bitcast i8* %3 to <16 x i8>*
 %wide.load1 = load <16 x i8>, <16 x i8>* %4, align 4
 %5 = zext <16 x i8> %wide.load1 to <16 x i32>
 %6 = sub nsw <16 x i32> %2, %5
 %7 = icmp sgt <16 x i32> %6, <i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -
1, i32 -1, i32 -1, i32 -1, i32 -1>
 %8 = sub nsw <16 x i32> zeroinitializer, %6
 %9 = select <16 x i1> %7, <16 x i32> %6, <16 x i32> %8
 %10 = add nsw <16 x i32> %9, %vec.phi
 %index.next = add i64 %index, 4
 %11 = icmp eq i64 %index.next, 1024
 br i1 %11, label %middle.block, label %vector.body

middle.block:
 %rdx.shuf = shufflevector <16 x i32> %10, <16 x i32> undef, <16 x i32> <i32 8, i32 9, i32 10, i32 11, i32 12, i32
13, i32 14, i32 15, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx = add <16 x i32> %10, %rdx.shuf
 %rdx.shuf2 = shufflevector <16 x i32> %bin.rdx, <16 x i32> undef, <16 x i32> <i32 4, i32 5, i32 6, i32 7, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef>
 %bin.rdx2 = add <16 x i32> %bin.rdx, %rdx.shuf2
 %rdx.shuf3 = shufflevector <16 x i32> %bin.rdx2, <16 x i32> undef, <16 x i32> <i32 2, i32 3, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef>
 %bin.rdx3 = add <16 x i32> %bin.rdx2, %rdx.shuf3
 %rdx.shuf4 = shufflevector <16 x i32> %bin.rdx3, <16 x i32> undef, <16 x i32> <i32 1, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef>
 %bin.rdx4 = add <16 x i32> %bin.rdx3, %rdx.shuf4
 %12 = extractelement <16 x i32> %bin.rdx4, i32 0
 ret i32 %12
}

define dso_local i32 @sad_16i8_512() "min-legal-vector-width"="512" {
; CHECK-LABEL: sad_16i8_512:
; CHECK:       # %bb.0: # %entry
; CHECK-NEXT:    vpxor %xmm0, %xmm0, %xmm0
; CHECK-NEXT:    movq $-1024, %rax # imm = 0xFC00
; CHECK-NEXT:    .p2align 4, 0x90
; CHECK-NEXT:  .LBB11_1: # %vector.body
; CHECK-NEXT:    # =>This Inner Loop Header: Depth=1
; CHECK-NEXT:    vmovdqu a+1024(%rax), %xmm1
; CHECK-NEXT:    vpsadbw b+1024(%rax), %xmm1, %xmm1
; CHECK-NEXT:    vpaddd %zmm0, %zmm1, %zmm0
; CHECK-NEXT:    addq $4, %rax
; CHECK-NEXT:    jne .LBB11_1
; CHECK-NEXT:  # %bb.2: # %middle.block
; CHECK-NEXT:    vextracti64x4 $1, %zmm0, %ymm1
```

```
; CHECK-NEXT:    vpaddd %zmm1, %zmm0, %zmm0
; CHECK-NEXT:    vextracti128 $1, %ymm0, %xmm1
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[2,3,2,3]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[1,1,1,1]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vmovd %xmm0, %eax
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
entry:
 br label %vector.body

vector.body:
 %index = phi i64 [ 0, %entry ], [ %index.next, %vector.body ]
 %vec.phi = phi <16 x i32> [ zeroinitializer, %entry ], [ %10, %vector.body ]
 %0 = getelementptr inbounds [1024 x i8], [1024 x i8]* @a, i64 0, i64 %index
 %1 = bitcast i8* %0 to <16 x i8>*
 %wide.load = load <16 x i8>, <16 x i8>* %1, align 4
 %2 = zext <16 x i8> %wide.load to <16 x i32>
 %3 = getelementptr inbounds [1024 x i8], [1024 x i8]* @b, i64 0, i64 %index
 %4 = bitcast i8* %3 to <16 x i8>*
 %wide.load1 = load <16 x i8>, <16 x i8>* %4, align 4
 %5 = zext <16 x i8> %wide.load1 to <16 x i32>
 %6 = sub nsw <16 x i32> %2, %5
 %7 = icmp sgt <16 x i32> %6, <i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -
1, i32 -1, i32 -1, i32 -1, i32 -1>
 %8 = sub nsw <16 x i32> zeroinitializer, %6
 %9 = select <16 x i1> %7, <16 x i32> %6, <16 x i32> %8
 %10 = add nsw <16 x i32> %9, %vec.phi
 %index.next = add i64 %index, 4
 %11 = icmp eq i64 %index.next, 1024
 br i1 %11, label %middle.block, label %vector.body

middle.block:
 %rdx.shuf = shufflevector <16 x i32> %10, <16 x i32> undef, <16 x i32> <i32 8, i32 9, i32 10, i32 11, i32 12, i32
13, i32 14, i32 15, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx = add <16 x i32> %10, %rdx.shuf
 %rdx.shuf2 = shufflevector <16 x i32> %bin.rdx, <16 x i32> undef, <16 x i32> <i32 4, i32 5, i32 6, i32 7, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef>
 %bin.rdx2 = add <16 x i32> %bin.rdx, %rdx.shuf2
 %rdx.shuf3 = shufflevector <16 x i32> %bin.rdx2, <16 x i32> undef, <16 x i32> <i32 2, i32 3, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef>
 %bin.rdx3 = add <16 x i32> %bin.rdx2, %rdx.shuf3
 %rdx.shuf4 = shufflevector <16 x i32> %bin.rdx3, <16 x i32> undef, <16 x i32> <i32 1, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
```

```
i32 undef, i32 undef>
 %bin.rdx4 = add <16 x i32> %bin.rdx3, %rdx.shuf4
 %12 = extractelement <16 x i32> %bin.rdx4, i32 0
 ret i32 %12
}

define dso_local void @sbto16f32_256(<16 x i16> %a, <16 x float>* %res) "min-legal-vector-width"="256" {
; CHECK-LABEL: sbto16f32_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    kshiftrw $8, %k0, %k1
; CHECK-NEXT:    vpmovm2d %k1, %ymm0
; CHECK-NEXT:    vcvtdq2ps %ymm0, %ymm0
; CHECK-NEXT:    vpmovm2d %k0, %ymm1
; CHECK-NEXT:    vcvtdq2ps %ymm1, %ymm1
; CHECK-NEXT:    vmovaps %ymm1, (%rdi)
; CHECK-NEXT:    vmovaps %ymm0, 32(%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = sitofp <16 x i1> %mask to <16 x float>
 store <16 x float> %1, <16 x float>* %res
 ret void
}

define dso_local void @sbto16f32_512(<16 x i16> %a, <16 x float>* %res) "min-legal-vector-width"="512" {
; CHECK-LABEL: sbto16f32_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    vpmovm2d %k0, %zmm0
; CHECK-NEXT:    vcvtdq2ps %zmm0, %zmm0
; CHECK-NEXT:    vmovaps %zmm0, (%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = sitofp <16 x i1> %mask to <16 x float>
 store <16 x float> %1, <16 x float>* %res
 ret void
}

define dso_local void @sbto16f64_256(<16 x i16> %a, <16 x double>* %res)  "min-legal-vector-width"="256" {
; CHECK-LABEL: sbto16f64_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    kshiftrw $8, %k0, %k1
; CHECK-NEXT:    vpmovm2d %k1, %ymm0
; CHECK-NEXT:    vcvtdq2pd %xmm0, %ymm1
; CHECK-NEXT:    vextracti128 $1, %ymm0, %xmm0
```

```
; CHECK-NEXT:    vcvtdq2pd %xmm0, %ymm0
; CHECK-NEXT:    vpmovm2d %k0, %ymm2
; CHECK-NEXT:    vcvtdq2pd %xmm2, %ymm3
; CHECK-NEXT:    vextracti128 $1, %ymm2, %xmm2
; CHECK-NEXT:    vcvtdq2pd %xmm2, %ymm2
; CHECK-NEXT:    vmovaps %ymm2, 32(%rdi)
; CHECK-NEXT:    vmovaps %ymm3, (%rdi)
; CHECK-NEXT:    vmovaps %ymm0, 96(%rdi)
; CHECK-NEXT:    vmovaps %ymm1, 64(%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = sitofp <16 x i1> %mask to <16 x double>
 store <16 x double> %1, <16 x double>* %res
 ret void
}

define dso_local void @sbto16f64_512(<16 x i16> %a, <16 x double>* %res)  "min-legal-vector-width"="512" {
; CHECK-LABEL: sbto16f64_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    vpmovm2d %k0, %zmm0
; CHECK-NEXT:    vcvtdq2pd %ymm0, %zmm1
; CHECK-NEXT:    vextracti64x4 $1, %zmm0, %ymm0
; CHECK-NEXT:    vcvtdq2pd %ymm0, %zmm0
; CHECK-NEXT:    vmovaps %zmm0, 64(%rdi)
; CHECK-NEXT:    vmovaps %zmm1, (%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = sitofp <16 x i1> %mask to <16 x double>
 store <16 x double> %1, <16 x double>* %res
 ret void
}

define dso_local void @ubto16f32_256(<16 x i16> %a, <16 x float>* %res) "min-legal-vector-width"="256" {
; CHECK-LABEL: ubto16f32_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    kshiftrw $8, %k0, %k1
; CHECK-NEXT:    vpmovm2d %k1, %ymm0
; CHECK-NEXT:    vpsrld $31, %ymm0, %ymm0
; CHECK-NEXT:    vcvtdq2ps %ymm0, %ymm0
; CHECK-NEXT:    vpmovm2d %k0, %ymm1
; CHECK-NEXT:    vpsrld $31, %ymm1, %ymm1
; CHECK-NEXT:    vcvtdq2ps %ymm1, %ymm1
; CHECK-NEXT:    vmovaps %ymm1, (%rdi)
; CHECK-NEXT:    vmovaps %ymm0, 32(%rdi)
```

```
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = uitofp <16 x i1> %mask to <16 x float>
 store <16 x float> %1, <16 x float>* %res
 ret void
}

define dso_local void @ubto16f32_512(<16 x i16> %a, <16 x float>* %res) "min-legal-vector-width"="512" {
; CHECK-LABEL: ubto16f32_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    vpmovm2d %k0, %zmm0
; CHECK-NEXT:    vpsrld $31, %zmm0, %zmm0
; CHECK-NEXT:    vcvtdq2ps %zmm0, %zmm0
; CHECK-NEXT:    vmovaps %zmm0, (%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = uitofp <16 x i1> %mask to <16 x float>
 store <16 x float> %1, <16 x float>* %res
 ret void
}

define dso_local void @ubto16f64_256(<16 x i16> %a, <16 x double>* %res) "min-legal-vector-width"="256" {
; CHECK-LABEL: ubto16f64_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    kshiftrw $8, %k0, %k1
; CHECK-NEXT:    vpmovm2d %k1, %ymm0
; CHECK-NEXT:    vpsrld $31, %ymm0, %ymm0
; CHECK-NEXT:    vcvtdq2pd %xmm0, %ymm1
; CHECK-NEXT:    vextracti128 $1, %ymm0, %xmm0
; CHECK-NEXT:    vcvtdq2pd %xmm0, %ymm0
; CHECK-NEXT:    vpmovm2d %k0, %ymm2
; CHECK-NEXT:    vpsrld $31, %ymm2, %ymm2
; CHECK-NEXT:    vcvtdq2pd %xmm2, %ymm3
; CHECK-NEXT:    vextracti128 $1, %ymm2, %xmm2
; CHECK-NEXT:    vcvtdq2pd %xmm2, %ymm2
; CHECK-NEXT:    vmovaps %ymm2, 32(%rdi)
; CHECK-NEXT:    vmovaps %ymm3, (%rdi)
; CHECK-NEXT:    vmovaps %ymm0, 96(%rdi)
; CHECK-NEXT:    vmovaps %ymm1, 64(%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = uitofp <16 x i1> %mask to <16 x double>
 store <16 x double> %1, <16 x double>* %res
```

```
 ret void
}

define dso_local void @ubto16f64_512(<16 x i16> %a, <16 x double>* %res) "min-legal-vector-width"="512" {
; CHECK-LABEL: ubto16f64_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    vpmovm2d %k0, %zmm0
; CHECK-NEXT:    vpsrld $31, %zmm0, %zmm0
; CHECK-NEXT:    vcvtdq2pd %ymm0, %zmm1
; CHECK-NEXT:    vextracti64x4 $1, %zmm0, %ymm0
; CHECK-NEXT:    vcvtdq2pd %ymm0, %zmm0
; CHECK-NEXT:    vmovaps %zmm0, 64(%rdi)
; CHECK-NEXT:    vmovaps %zmm1, (%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = uitofp <16 x i1> %mask to <16 x double>
 store <16 x double> %1, <16 x double>* %res
 ret void
}

define <16 x i16> @test_16f32toub_256(<16 x float>* %ptr, <16 x i16> %passthru) "min-legal-vector-
width"="256" {
; CHECK-LABEL: test_16f32toub_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vcvttps2dq (%rdi), %ymm1
; CHECK-NEXT:    vpslld $31, %ymm1, %ymm1
; CHECK-NEXT:    vpmovd2m %ymm1, %k0
; CHECK-NEXT:    vcvttps2dq 32(%rdi), %ymm1
; CHECK-NEXT:    vpslld $31, %ymm1, %ymm1
; CHECK-NEXT:    vpmovd2m %ymm1, %k1
; CHECK-NEXT:    kunpckbw %k0, %k1, %k1
; CHECK-NEXT:    vmovdqu16 %ymm0, %ymm0 {%k1} {z}
; CHECK-NEXT:    retq
 %a = load <16 x float>, <16 x float>* %ptr
 %mask = fptoui <16 x float> %a to <16 x i1>
 %select = select <16 x i1> %mask, <16 x i16> %passthru, <16 x i16> zeroinitializer
 ret <16 x i16> %select
}

define <16 x i16> @test_16f32toub_512(<16 x float>* %ptr, <16 x i16> %passthru) "min-legal-vector-
width"="512" {
; CHECK-LABEL: test_16f32toub_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vcvttps2dq (%rdi), %zmm1
; CHECK-NEXT:    vpslld $31, %zmm1, %zmm1
; CHECK-NEXT:    vpmovd2m %zmm1, %k1
```

```
; CHECK-NEXT:    vmovdqu16 %ymm0, %ymm0 {%k1} {z}
; CHECK-NEXT:    retq
 %a = load <16 x float>, <16 x float>* %ptr
 %mask = fptoui <16 x float> %a to <16 x i1>
 %select = select <16 x i1> %mask, <16 x i16> %passthru, <16 x i16> zeroinitializer
 ret <16 x i16> %select
}

define <16 x i16> @test_16f32tosb_256(<16 x float>* %ptr, <16 x i16> %passthru) "min-legal-vector-
width"="256" {
; CHECK-LABEL: test_16f32tosb_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vcvttps2dq (%rdi), %ymm1
; CHECK-NEXT:    vpmovd2m %ymm1, %k0
; CHECK-NEXT:    vcvttps2dq 32(%rdi), %ymm1
; CHECK-NEXT:    vpmovd2m %ymm1, %k1
; CHECK-NEXT:    kunpckbw %k0, %k1, %k1
; CHECK-NEXT:    vmovdqu16 %ymm0, %ymm0 {%k1} {z}
; CHECK-NEXT:    retq
 %a = load <16 x float>, <16 x float>* %ptr
 %mask = fptosi <16 x float> %a to <16 x i1>
 %select = select <16 x i1> %mask, <16 x i16> %passthru, <16 x i16> zeroinitializer
 ret <16 x i16> %select
}

define <16 x i16> @test_16f32tosb_512(<16 x float>* %ptr, <16 x i16> %passthru) "min-legal-vector-
width"="512" {
; CHECK-LABEL: test_16f32tosb_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vcvttps2dq (%rdi), %zmm1
; CHECK-NEXT:    vpmovd2m %zmm1, %k1
; CHECK-NEXT:    vmovdqu16 %ymm0, %ymm0 {%k1} {z}
; CHECK-NEXT:    retq
 %a = load <16 x float>, <16 x float>* %ptr
 %mask = fptosi <16 x float> %a to <16 x i1>
 %select = select <16 x i1> %mask, <16 x i16> %passthru, <16 x i16> zeroinitializer
 ret <16 x i16> %select
}

define dso_local void @mul256(<64 x i8>* %a, <64 x i8>* %b, <64 x i8>* %c) "min-legal-vector-width"="256" {
; CHECK-AVX512-LABEL: mul256:
; CHECK-AVX512:       # %bb.0:
; CHECK-AVX512-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-AVX512-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-AVX512-NEXT:    vmovdqa (%rsi), %ymm2
; CHECK-AVX512-NEXT:    vmovdqa 32(%rsi), %ymm3
; CHECK-AVX512-NEXT:    vpunpckhbw {{.*#+}} ymm4 =
ymm3[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
```

```
; CHECK-AVX512-NEXT:    vpunpckhbw {{.*#+}} ymm5 =
ymm1[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-AVX512-NEXT:    vpmullw %ymm4, %ymm5, %ymm4
; CHECK-AVX512-NEXT:    vmovdqa {{.*#+}} ymm5 =
[255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255]
; CHECK-AVX512-NEXT:    vpand %ymm5, %ymm4, %ymm4
; CHECK-AVX512-NEXT:    vpunpcklbw {{.*#+}} ymm3 =
ymm3[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-AVX512-NEXT:    vpunpcklbw {{.*#+}} ymm1 =
ymm1[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-AVX512-NEXT:    vpmullw %ymm3, %ymm1, %ymm1
; CHECK-AVX512-NEXT:    vpand %ymm5, %ymm1, %ymm1
; CHECK-AVX512-NEXT:    vpackuswb %ymm4, %ymm1, %ymm1
; CHECK-AVX512-NEXT:    vpunpckhbw {{.*#+}} ymm3 =
ymm2[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-AVX512-NEXT:    vpunpckhbw {{.*#+}} ymm4 =
ymm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-AVX512-NEXT:    vpmullw %ymm3, %ymm4, %ymm3
; CHECK-AVX512-NEXT:    vpand %ymm5, %ymm3, %ymm3
; CHECK-AVX512-NEXT:    vpunpcklbw {{.*#+}} ymm2 =
ymm2[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-AVX512-NEXT:    vpunpcklbw {{.*#+}} ymm0 =
ymm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-AVX512-NEXT:    vpmullw %ymm2, %ymm0, %ymm0
; CHECK-AVX512-NEXT:    vpand %ymm5, %ymm0, %ymm0
; CHECK-AVX512-NEXT:    vpackuswb %ymm3, %ymm0, %ymm0
; CHECK-AVX512-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-AVX512-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-AVX512-NEXT:    vzeroupper
; CHECK-AVX512-NEXT:    retq
;
; CHECK-VBMI-LABEL: mul256:
; CHECK-VBMI:       # %bb.0:
; CHECK-VBMI-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-VBMI-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-VBMI-NEXT:    vmovdqa (%rsi), %ymm2
; CHECK-VBMI-NEXT:    vmovdqa 32(%rsi), %ymm3
; CHECK-VBMI-NEXT:    vpunpckhbw {{.*#+}} ymm4 =
ymm3[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-VBMI-NEXT:    vpunpckhbw {{.*#+}} ymm5 =
ymm1[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-VBMI-NEXT:    vpmullw %ymm4, %ymm5, %ymm4
; CHECK-VBMI-NEXT:    vpunpcklbw {{.*#+}} ymm3 =
ymm3[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-VBMI-NEXT:    vpunpcklbw {{.*#+}} ymm1 =
ymm1[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-VBMI-NEXT:    vpmullw %ymm3, %ymm1, %ymm1
; CHECK-VBMI-NEXT:    vmovdqa {{.*#+}} ymm3 =
```

```
[0,2,4,6,8,10,12,14,32,34,36,38,40,42,44,46,16,18,20,22,24,26,28,30,48,50,52,54,56,58,60,62]
; CHECK-VBMI-NEXT:    vpermt2b %ymm4, %ymm3, %ymm1
; CHECK-VBMI-NEXT:    vpunpckhbw {{.*#+}} ymm4 =
ymm2[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-VBMI-NEXT:    vpunpckhbw {{.*#+}} ymm5 =
ymm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-VBMI-NEXT:    vpmullw %ymm4, %ymm5, %ymm4
; CHECK-VBMI-NEXT:    vpunpcklbw {{.*#+}} ymm2 =
ymm2[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-VBMI-NEXT:    vpunpcklbw {{.*#+}} ymm0 =
ymm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-VBMI-NEXT:    vpmullw %ymm2, %ymm0, %ymm0
; CHECK-VBMI-NEXT:    vpermt2b %ymm4, %ymm3, %ymm0
; CHECK-VBMI-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-VBMI-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-VBMI-NEXT:    vzeroupper
; CHECK-VBMI-NEXT:    retq
 %d = load <64 x i8>, <64 x i8>* %a
 %e = load <64 x i8>, <64 x i8>* %b
 %f = mul <64 x i8> %d, %e
 store <64 x i8> %f, <64 x i8>* %c
 ret void
}

define dso_local void @mul512(<64 x i8>* %a, <64 x i8>* %b, <64 x i8>* %c) "min-legal-vector-width"="512" {
; CHECK-AVX512-LABEL: mul512:
; CHECK-AVX512:       # %bb.0:
; CHECK-AVX512-NEXT:    vmovdqa64 (%rdi), %zmm0
; CHECK-AVX512-NEXT:    vmovdqa64 (%rsi), %zmm1
; CHECK-AVX512-NEXT:    vpunpckhbw {{.*#+}} zmm2 =
zmm1[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31,40,40,41,41,4
2,42,43,43,44,44,45,45,46,46,47,47,56,56,57,57,58,58,59,59,60,60,61,61,62,62,63,63]
; CHECK-AVX512-NEXT:    vpunpckhbw {{.*#+}} zmm3 =
zmm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31,40,40,41,41,4
2,42,43,43,44,44,45,45,46,46,47,47,56,56,57,57,58,58,59,59,60,60,61,61,62,62,63,63]
; CHECK-AVX512-NEXT:    vpmullw %zmm2, %zmm3, %zmm2
; CHECK-AVX512-NEXT:    vmovdqa64 {{.*#+}} zmm3 =
[255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,2
55,255,255,255,255,255]
; CHECK-AVX512-NEXT:    vpandq %zmm3, %zmm2, %zmm2
; CHECK-AVX512-NEXT:    vpunpcklbw {{.*#+}} zmm1 =
zmm1[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23,32,32,33,33,34,34,35,35,36,3
6,37,37,38,38,39,39,48,48,49,49,50,50,51,51,52,52,53,53,54,54,55,55]
; CHECK-AVX512-NEXT:    vpunpcklbw {{.*#+}} zmm0 =
zmm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23,32,32,33,33,34,34,35,35,36,3
6,37,37,38,38,39,39,48,48,49,49,50,50,51,51,52,52,53,53,54,54,55,55]
; CHECK-AVX512-NEXT:    vpmullw %zmm1, %zmm0, %zmm0
; CHECK-AVX512-NEXT:    vpandq %zmm3, %zmm0, %zmm0
```

```
; CHECK-AVX512-NEXT:    vpackuswb %zmm2, %zmm0, %zmm0
; CHECK-AVX512-NEXT:    vmovdqa64 %zmm0, (%rdx)
; CHECK-AVX512-NEXT:    vzeroupper
; CHECK-AVX512-NEXT:    retq
;
; CHECK-VBMI-LABEL: mul512:
; CHECK-VBMI:       # %bb.0:
; CHECK-VBMI-NEXT:    vmovdqa64 (%rdi), %zmm0
; CHECK-VBMI-NEXT:    vmovdqa64 (%rsi), %zmm1
; CHECK-VBMI-NEXT:    vpunpckhbw {{.*#+}} zmm2 =
zmm1[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31,40,40,41,41,4
2,42,43,43,44,44,45,45,46,46,47,47,56,56,57,57,58,58,59,59,60,60,61,61,62,62,63,63]
; CHECK-VBMI-NEXT:    vpunpckhbw {{.*#+}} zmm3 =
zmm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31,40,40,41,41,4
2,42,43,43,44,44,45,45,46,46,47,47,56,56,57,57,58,58,59,59,60,60,61,61,62,62,63,63]
; CHECK-VBMI-NEXT:    vpmullw %zmm2, %zmm3, %zmm2
; CHECK-VBMI-NEXT:    vpunpcklbw {{.*#+}} zmm1 =
zmm1[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23,32,32,33,33,34,34,35,35,36,3
6,37,37,38,38,39,39,48,48,49,49,50,50,51,51,52,52,53,53,54,54,55,55]
; CHECK-VBMI-NEXT:    vpunpcklbw {{.*#+}} zmm0 =
zmm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23,32,32,33,33,34,34,35,35,36,3
6,37,37,38,38,39,39,48,48,49,49,50,50,51,51,52,52,53,53,54,54,55,55]
; CHECK-VBMI-NEXT:    vpmullw %zmm1, %zmm0, %zmm0
; CHECK-VBMI-NEXT:    vmovdqa64 {{.*#+}} zmm1 =
[0,2,4,6,8,10,12,14,64,66,68,70,72,74,76,78,16,18,20,22,24,26,28,30,80,82,84,86,88,90,92,94,32,34,36,38,40,42,44,
46,96,98,100,102,104,106,108,110,48,50,52,54,56,58,60,62,112,114,116,118,120,122,124,126]
; CHECK-VBMI-NEXT:    vpermi2b %zmm2, %zmm0, %zmm1
; CHECK-VBMI-NEXT:    vmovdqa64 %zmm1, (%rdx)
; CHECK-VBMI-NEXT:    vzeroupper
; CHECK-VBMI-NEXT:    retq
 %d = load <64 x i8>, <64 x i8>* %a
 %e = load <64 x i8>, <64 x i8>* %b
 %f = mul <64 x i8> %d, %e
 store <64 x i8> %f, <64 x i8>* %c
 ret void
}

; This threw an assertion at one point.
define <4 x i32> @mload_v4i32(<4 x i32> %trigger, <4 x i32>* %addr, <4 x i32> %dst) "min-legal-vector-
width"="256" {
; CHECK-LABEL: mload_v4i32:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vptestnmd %xmm0, %xmm0, %k1
; CHECK-NEXT:    vpblendmd (%rdi), %xmm1, %xmm0 {%k1}
; CHECK-NEXT:    retq
 %mask = icmp eq <4 x i32> %trigger, zeroinitializer
 %res = call <4 x i32> @llvm.masked.load.v4i32.p0v4i32(<4 x i32>* %addr, i32 4, <4 x i1> %mask, <4 x i32>
%dst)
```

```
 ret <4 x i32> %res
}
declare <4 x i32> @llvm.masked.load.v4i32.p0v4i32(<4 x i32>*, i32, <4 x i1>, <4 x i32>)

define <16 x i32> @trunc_v16i64_v16i32(<16 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i64_v16i32:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vmovdqa 64(%rdi), %ymm2
; CHECK-NEXT:    vmovdqa 96(%rdi), %ymm3
; CHECK-NEXT:    vpmovqd %ymm0, %xmm0
; CHECK-NEXT:    vpmovqd %ymm1, %xmm1
; CHECK-NEXT:    vinserti128 $1, %xmm1, %ymm0, %ymm0
; CHECK-NEXT:    vpmovqd %ymm2, %xmm1
; CHECK-NEXT:    vpmovqd %ymm3, %xmm2
; CHECK-NEXT:    vinserti128 $1, %xmm2, %ymm1, %ymm1
; CHECK-NEXT:    retq
 %a = load <16 x i64>, <16 x i64>* %x
 %b = trunc <16 x i64> %a to <16 x i32>
 ret <16 x i32> %b
}

define <16 x i8> @trunc_v16i64_v16i8(<16 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i64_v16i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vmovdqa 64(%rdi), %ymm2
; CHECK-NEXT:    vmovdqa 96(%rdi), %ymm3
; CHECK-NEXT:    vpmovqb %ymm3, %xmm3
; CHECK-NEXT:    vpmovqb %ymm2, %xmm2
; CHECK-NEXT:    vpunpckldq {{.*#+}} xmm2 = xmm2[0],xmm3[0],xmm2[1],xmm3[1]
; CHECK-NEXT:    vpmovqb %ymm1, %xmm1
; CHECK-NEXT:    vpmovqb %ymm0, %xmm0
; CHECK-NEXT:    vpunpckldq {{.*#+}} xmm0 = xmm0[0],xmm1[0],xmm0[1],xmm1[1]
; CHECK-NEXT:    vpunpcklqdq {{.*#+}} xmm0 = xmm0[0],xmm2[0]
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = load <16 x i64>, <16 x i64>* %x
 %b = trunc <16 x i64> %a to <16 x i8>
 ret <16 x i8> %b
}

define <16 x i8> @trunc_v16i32_v16i8(<16 x i32>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i32_v16i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
```

```
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vpmovdb %ymm1, %xmm1
; CHECK-NEXT:    vpmovdb %ymm0, %xmm0
; CHECK-NEXT:    vpunpcklqdq {{.*#+}} xmm0 = xmm0[0],xmm1[0]
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = load <16 x i32>, <16 x i32>* %x
 %b = trunc <16 x i32> %a to <16 x i8>
 ret <16 x i8> %b
}

define <8 x i8> @trunc_v8i64_v8i8(<8 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v8i64_v8i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vpmovqb %ymm1, %xmm1
; CHECK-NEXT:    vpmovqb %ymm0, %xmm0
; CHECK-NEXT:    vpunpckldq {{.*#+}} xmm0 = xmm0[0],xmm1[0],xmm0[1],xmm1[1]
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = load <8 x i64>, <8 x i64>* %x
 %b = trunc <8 x i64> %a to <8 x i8>
 ret <8 x i8> %b
}

define <8 x i16> @trunc_v8i64_v8i16(<8 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v8i64_v8i16:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vpmovqw %ymm1, %xmm1
; CHECK-NEXT:    vpmovqw %ymm0, %xmm0
; CHECK-NEXT:    vpunpcklqdq {{.*#+}} xmm0 = xmm0[0],xmm1[0]
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = load <8 x i64>, <8 x i64>* %x
 %b = trunc <8 x i64> %a to <8 x i16>
 ret <8 x i16> %b
}

define <8 x i32> @trunc_v8i64_v8i32_zeroes(<8 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v8i64_v8i32_zeroes:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpsrlq $48, 32(%rdi), %ymm0
; CHECK-NEXT:    vpsrlq $48, (%rdi), %ymm1
; CHECK-NEXT:    vpackusdw %ymm0, %ymm1, %ymm0
; CHECK-NEXT:    vpermq {{.*#+}} ymm0 = ymm0[0,2,1,3]
```

```
; CHECK-NEXT:    retq
 %a = load <8 x i64>, <8 x i64>* %x
 %b = lshr <8 x i64> %a, <i64 48, i64 48, i64 48, i64 48, i64 48, i64 48, i64 48, i64 48>
 %c = trunc <8 x i64> %b to <8 x i32>
 ret <8 x i32> %c
}

define <16 x i16> @trunc_v16i32_v16i16_zeroes(<16 x i32>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i32_v16i16_zeroes:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm1
; CHECK-NEXT:    vmovdqa {{.*#+}} ymm0 = [1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31]
; CHECK-NEXT:    vpermi2w 32(%rdi), %ymm1, %ymm0
; CHECK-NEXT:    retq
 %a = load <16 x i32>, <16 x i32>* %x
 %b = lshr <16 x i32> %a, <i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32
16, i32 16, i32 16, i32 16, i32 16>
 %c = trunc <16 x i32> %b to <16 x i16>
 ret <16 x i16> %c
}

define <32 x i8> @trunc_v32i16_v32i8_zeroes(<32 x i16>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-AVX512-LABEL: trunc_v32i16_v32i8_zeroes:
; CHECK-AVX512:       # %bb.0:
; CHECK-AVX512-NEXT:    vpsrlw $8, 32(%rdi), %ymm0
; CHECK-AVX512-NEXT:    vpsrlw $8, (%rdi), %ymm1
; CHECK-AVX512-NEXT:    vpackuswb %ymm0, %ymm1, %ymm0
; CHECK-AVX512-NEXT:    vpermq {{.*#+}} ymm0 = ymm0[0,2,1,3]
; CHECK-AVX512-NEXT:    retq
;
; CHECK-VBMI-LABEL: trunc_v32i16_v32i8_zeroes:
; CHECK-VBMI:       # %bb.0:
; CHECK-VBMI-NEXT:    vmovdqa (%rdi), %ymm1
; CHECK-VBMI-NEXT:    vmovdqa {{.*#+}} ymm0 =
[1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63]
; CHECK-VBMI-NEXT:    vpermi2b 32(%rdi), %ymm1, %ymm0
; CHECK-VBMI-NEXT:    retq
 %a = load <32 x i16>, <32 x i16>* %x
 %b = lshr <32 x i16> %a, <i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8,
i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8>
 %c = trunc <32 x i16> %b to <32 x i8>
 ret <32 x i8> %c
}

define <8 x i32> @trunc_v8i64_v8i32_sign(<8 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v8i64_v8i32_sign:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpsraq $48, 32(%rdi), %ymm0
```

```
; CHECK-NEXT:    vpsraq $48, (%rdi), %ymm1
; CHECK-NEXT:    vpmovqd %ymm1, %xmm1
; CHECK-NEXT:    vpmovqd %ymm0, %xmm0
; CHECK-NEXT:    vinserti128 $1, %xmm0, %ymm1, %ymm0
; CHECK-NEXT:    retq
 %a = load <8 x i64>, <8 x i64>* %x
 %b = ashr <8 x i64> %a, <i64 48, i64 48, i64 48, i64 48, i64 48, i64 48, i64 48, i64 48>
 %c = trunc <8 x i64> %b to <8 x i32>
 ret <8 x i32> %c
}

define <16 x i16> @trunc_v16i32_v16i16_sign(<16 x i32>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i32_v16i16_sign:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm1
; CHECK-NEXT:    vmovdqa {{.*#+}} ymm0 = [1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31]
; CHECK-NEXT:    vpermi2w 32(%rdi), %ymm1, %ymm0
; CHECK-NEXT:    retq
 %a = load <16 x i32>, <16 x i32>* %x
 %b = ashr <16 x i32> %a, <i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32
16, i32 16, i32 16, i32 16, i32 16>
 %c = trunc <16 x i32> %b to <16 x i16>
 ret <16 x i16> %c
}

define <32 x i8> @trunc_v32i16_v32i8_sign(<32 x i16>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-AVX512-LABEL: trunc_v32i16_v32i8_sign:
; CHECK-AVX512:       # %bb.0:
; CHECK-AVX512-NEXT:    vpsrlw $8, 32(%rdi), %ymm0
; CHECK-AVX512-NEXT:    vpsrlw $8, (%rdi), %ymm1
; CHECK-AVX512-NEXT:    vpackuswb %ymm0, %ymm1, %ymm0
; CHECK-AVX512-NEXT:    vpermq {{.*#+}} ymm0 = ymm0[0,2,1,3]
; CHECK-AVX512-NEXT:    retq
;
; CHECK-VBMI-LABEL: trunc_v32i16_v32i8_sign:
; CHECK-VBMI:       # %bb.0:
; CHECK-VBMI-NEXT:    vmovdqa (%rdi), %ymm1
; CHECK-VBMI-NEXT:    vmovdqa {{.*#+}} ymm0 =
[1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63]
; CHECK-VBMI-NEXT:    vpermi2b 32(%rdi), %ymm1, %ymm0
; CHECK-VBMI-NEXT:    retq
 %a = load <32 x i16>, <32 x i16>* %x
 %b = ashr <32 x i16> %a, <i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8,
i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8>
 %c = trunc <32 x i16> %b to <32 x i8>
 ret <32 x i8> %c
}
```

```
define dso_local void @zext_v16i8_v16i64(<16 x i8> %x, <16 x i64>* %y) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: zext_v16i8_v16i64:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovzxbw {{.*#+}} ymm1 = xmm0[0],zero,xmm0[1],zero,xmm0[2],zero,xmm0[3],zero,xmm0[4],zero,xmm0[5],zero,xmm0[6],zero,xmm0[7],zero,xmm0[8],zero,xmm0[9],zero,xmm0[10],zero,xmm0[11],zero,xmm0[12],zero,xmm0[13],zero,xmm0[14],zero,xmm0[15],zero
; CHECK-NEXT:    vpshufd {{.*#+}} xmm2 = xmm1[2,3,2,3]
; CHECK-NEXT:    vpmovzxwq {{.*#+}} ymm2 = xmm2[0],zero,zero,zero,xmm2[1],zero,zero,zero,xmm2[2],zero,zero,zero,xmm2[3],zero,zero,zero
; CHECK-NEXT:    vextracti128 $1, %ymm1, %xmm1
; CHECK-NEXT:    vpshufd {{.*#+}} xmm3 = xmm1[2,3,2,3]
; CHECK-NEXT:    vpmovzxwq {{.*#+}} ymm3 = xmm3[0],zero,zero,zero,xmm3[1],zero,zero,zero,xmm3[2],zero,zero,zero,xmm3[3],zero,zero,zero
; CHECK-NEXT:    vpmovzxwq {{.*#+}} ymm1 = xmm1[0],zero,zero,zero,xmm1[1],zero,zero,zero,xmm1[2],zero,zero,zero,xmm1[3],zero,zero,zero
; CHECK-NEXT:    vpmovzxbq {{.*#+}} ymm0 = xmm0[0],zero,zero,zero,zero,zero,zero,zero,xmm0[1],zero,zero,zero,zero,zero,zero,zero,xmm0[2],zero,zero,zero,zero,zero,zero,zero,xmm0[3],zero,zero,zero,zero,zero,zero,zero
; CHECK-NEXT:    vmovdqa %ymm0, (%rdi)
; CHECK-NEXT:    vmovdqa %ymm1, 64(%rdi)
; CHECK-NEXT:    vmovdqa %ymm3, 96(%rdi)
; CHECK-NEXT:    vmovdqa %ymm2, 32(%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = zext <16 x i8> %x to <16 x i64>
 store <16 x i64> %a, <16 x i64>* %y
 ret void
}

define dso_local void @sext_v16i8_v16i64(<16 x i8> %x, <16 x i64>* %y) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: sext_v16i8_v16i64:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovsxbw %xmm0, %ymm1
; CHECK-NEXT:    vpshufd {{.*#+}} xmm2 = xmm1[2,3,2,3]
; CHECK-NEXT:    vpmovsxwq %xmm2, %ymm2
; CHECK-NEXT:    vextracti128 $1, %ymm1, %xmm1
; CHECK-NEXT:    vpshufd {{.*#+}} xmm3 = xmm1[2,3,2,3]
; CHECK-NEXT:    vpmovsxwq %xmm3, %ymm3
; CHECK-NEXT:    vpmovsxwq %xmm1, %ymm1
; CHECK-NEXT:    vpmovsxbq %xmm0, %ymm0
; CHECK-NEXT:    vmovdqa %ymm0, (%rdi)
; CHECK-NEXT:    vmovdqa %ymm1, 64(%rdi)
; CHECK-NEXT:    vmovdqa %ymm3, 96(%rdi)
; CHECK-NEXT:    vmovdqa %ymm2, 32(%rdi)
; CHECK-NEXT:    vzeroupper
```

```
; CHECK-NEXT:    retq
 %a = sext <16 x i8> %x to <16 x i64>
 store <16 x i64> %a, <16 x i64>* %y
 ret void
}

define dso_local void @vselect_split_v8i16_setcc(<8 x i16> %s, <8 x i16> %t, <8 x i64>* %p, <8 x i64>* %q, <8
x i64>* %r) "min-legal-vector-width"="256" {
; CHECK-LABEL: vselect_split_v8i16_setcc:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm2
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm3
; CHECK-NEXT:    vpcmpeqw %xmm1, %xmm0, %k1
; CHECK-NEXT:    kshiftrb $4, %k1, %k2
; CHECK-NEXT:    vmovdqa64 32(%rdi), %ymm3 {%k2}
; CHECK-NEXT:    vmovdqa64 (%rdi), %ymm2 {%k1}
; CHECK-NEXT:    vmovdqa %ymm2, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm3, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <8 x i64>, <8 x i64>* %p
 %y = load <8 x i64>, <8 x i64>* %q
 %a = icmp eq <8 x i16> %s, %t
 %b = select <8 x i1> %a, <8 x i64> %x, <8 x i64> %y
 store <8 x i64> %b, <8 x i64>* %r
 ret void
}

define dso_local void @vselect_split_v8i32_setcc(<8 x i32> %s, <8 x i32> %t, <8 x i64>* %p, <8 x i64>* %q, <8
x i64>* %r) "min-legal-vector-width"="256" {
; CHECK-LABEL: vselect_split_v8i32_setcc:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm2
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm3
; CHECK-NEXT:    vpcmpeqd %ymm1, %ymm0, %k1
; CHECK-NEXT:    kshiftrb $4, %k1, %k2
; CHECK-NEXT:    vmovdqa64 32(%rdi), %ymm3 {%k2}
; CHECK-NEXT:    vmovdqa64 (%rdi), %ymm2 {%k1}
; CHECK-NEXT:    vmovdqa %ymm2, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm3, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <8 x i64>, <8 x i64>* %p
 %y = load <8 x i64>, <8 x i64>* %q
 %a = icmp eq <8 x i32> %s, %t
 %b = select <8 x i1> %a, <8 x i64> %x, <8 x i64> %y
 store <8 x i64> %b, <8 x i64>* %r
 ret void
```

```
}

define dso_local void @vselect_split_v16i8_setcc(<16 x i8> %s, <16 x i8> %t, <16 x i32>* %p, <16 x i32>* %q,
<16 x i32>* %r) "min-legal-vector-width"="256" {
; CHECK-LABEL: vselect_split_v16i8_setcc:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm2
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm3
; CHECK-NEXT:    vpcmpeqb %xmm1, %xmm0, %k1
; CHECK-NEXT:    kshiftrw $8, %k1, %k2
; CHECK-NEXT:    vmovdqa32 32(%rdi), %ymm3 {%k2}
; CHECK-NEXT:    vmovdqa32 (%rdi), %ymm2 {%k1}
; CHECK-NEXT:    vmovdqa %ymm2, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm3, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <16 x i32>, <16 x i32>* %p
 %y = load <16 x i32>, <16 x i32>* %q
 %a = icmp eq <16 x i8> %s, %t
 %b = select <16 x i1> %a, <16 x i32> %x, <16 x i32> %y
 store <16 x i32> %b, <16 x i32>* %r
 ret void
}

define dso_local void @vselect_split_v16i16_setcc(<16 x i16> %s, <16 x i16> %t, <16 x i32>* %p, <16 x i32>*
%q, <16 x i32>* %r) "min-legal-vector-width"="256" {
; CHECK-LABEL: vselect_split_v16i16_setcc:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm2
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm3
; CHECK-NEXT:    vpcmpeqw %ymm1, %ymm0, %k1
; CHECK-NEXT:    kshiftrw $8, %k1, %k2
; CHECK-NEXT:    vmovdqa32 32(%rdi), %ymm3 {%k2}
; CHECK-NEXT:    vmovdqa32 (%rdi), %ymm2 {%k1}
; CHECK-NEXT:    vmovdqa %ymm2, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm3, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <16 x i32>, <16 x i32>* %p
 %y = load <16 x i32>, <16 x i32>* %q
 %a = icmp eq <16 x i16> %s, %t
 %b = select <16 x i1> %a, <16 x i32> %x, <16 x i32> %y
 store <16 x i32> %b, <16 x i32>* %r
 ret void
}

define <16 x i8> @trunc_packus_v16i32_v16i8(<16 x i32>* %p) "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_packus_v16i32_v16i8:
```

```
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vpackusdw 32(%rdi), %ymm0, %ymm0
; CHECK-NEXT:    vpermq {{.*#+}} ymm0 = ymm0[0,2,1,3]
; CHECK-NEXT:    vpmovuswb %ymm0, %xmm0
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = load <16 x i32>, <16 x i32>* %p
 %b = icmp slt <16 x i32> %a, <i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255>
 %c = select <16 x i1> %b, <16 x i32> %a, <16 x i32> <i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255>
 %d = icmp sgt <16 x i32> %c, zeroinitializer
 %e = select <16 x i1> %d, <16 x i32> %c, <16 x i32> zeroinitializer
 %f = trunc <16 x i32> %e to <16 x i8>
 ret <16 x i8> %f
}

define dso_local void @trunc_packus_v16i32_v16i8_store(<16 x i32>* %p, <16 x i8>* %q) "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_packus_v16i32_v16i8_store:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vpackusdw 32(%rdi), %ymm0, %ymm0
; CHECK-NEXT:    vpermq {{.*#+}} ymm0 = ymm0[0,2,1,3]
; CHECK-NEXT:    vpmovuswb %ymm0, (%rsi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = load <16 x i32>, <16 x i32>* %p
 %b = icmp slt <16 x i32> %a, <i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255>
 %c = select <16 x i1> %b, <16 x i32> %a, <16 x i32> <i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255>
 %d = icmp sgt <16 x i32> %c, zeroinitializer
 %e = select <16 x i1> %d, <16 x i32> %c, <16 x i32> zeroinitializer
 %f = trunc <16 x i32> %e to <16 x i8>
 store <16 x i8> %f, <16 x i8>* %q
 ret void
}

define <64 x i1> @v64i1_argument_return(<64 x i1> %x) "min-legal-vector-width"="256" {
; CHECK-LABEL: v64i1_argument_return:
; CHECK:       # %bb.0:
; CHECK-NEXT:    retq
 ret <64 x i1> %x
}

define dso_local void @v64i1_shuffle(<64 x i8>* %x, <64 x i8>* %y) "min-legal-vector-width"="256" {
```

```
; CHECK-LABEL: v64i1_shuffle:
; CHECK:       # %bb.0: # %entry
; CHECK-NEXT:    vmovdqa (%rdi), %ymm1
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm0
; CHECK-NEXT:    vptestnmb %ymm1, %ymm1, %k0
; CHECK-NEXT:    kshiftrd $1, %k0, %k1
; CHECK-NEXT:    movq $-3, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftlq $63, %k0, %k2
; CHECK-NEXT:    kshiftrq $62, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-5, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $3, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $61, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-9, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $2, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $60, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-17, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $5, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $59, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-33, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $4, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $58, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-65, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $7, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $57, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-129, %rax
```

```
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $6, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $56, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-257, %rax # imm = 0xFEFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $9, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $55, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-513, %rax # imm = 0xFDFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $8, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $54, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-1025, %rax # imm = 0xFBFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $11, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $53, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-2049, %rax # imm = 0xF7FF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $10, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $52, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-4097, %rax # imm = 0xEFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $13, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $51, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-8193, %rax # imm = 0xDFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $12, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $50, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
```

```
; CHECK-NEXT:    movq $-16385, %rax # imm = 0xBFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $15, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $49, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-32769, %rax # imm = 0xFFFF7FFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $14, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $48, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-65537, %rax # imm = 0xFFFEFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $17, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $47, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-131073, %rax # imm = 0xFFFDFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $16, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $46, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-262145, %rax # imm = 0xFFFBFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $19, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $45, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-524289, %rax # imm = 0xFFF7FFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $18, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $44, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-1048577, %rax # imm = 0xFFEFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $21, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $43, %k2, %k2
```

```
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-2097153, %rax # imm = 0xFFDFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $20, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $42, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-4194305, %rax # imm = 0xFFBFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $23, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $41, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-8388609, %rax # imm = 0xFF7FFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $22, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $40, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-16777217, %rax # imm = 0xFEFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $25, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $39, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-33554433, %rax # imm = 0xFDFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $24, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $38, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-67108865, %rax # imm = 0xFBFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $27, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $37, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-134217729, %rax # imm = 0xF7FFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $26, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
```

```
; CHECK-NEXT:    kshiftrq $36, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-268435457, %rax # imm = 0xEFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $29, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $35, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-536870913, %rax # imm = 0xDFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $28, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $34, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-1073741825, %rax # imm = 0xBFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $31, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $33, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movabsq $-2147483649, %rax # imm = 0xFFFFFFFF7FFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k2
; CHECK-NEXT:    vptestnmb %ymm0, %ymm0, %k1
; CHECK-NEXT:    kshiftrd $30, %k0, %k0
; CHECK-NEXT:    kshiftlq $63, %k0, %k0
; CHECK-NEXT:    kshiftrq $32, %k0, %k0
; CHECK-NEXT:    korq %k0, %k2, %k0
; CHECK-NEXT:    movabsq $-4294967297, %rax # imm = 0xFFFFFFFEFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $1, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $31, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-8589934593, %rax # imm = 0xFFFFFFFDFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftlq $63, %k1, %k2
; CHECK-NEXT:    kshiftrq $30, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-17179869185, %rax # imm = 0xFFFFFFFBFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $3, %k1, %k2
```

```
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $29, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-34359738369, %rax # imm = 0xFFFFFFF7FFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $2, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $28, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-68719476737, %rax # imm = 0xFFFFFFEFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $5, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $27, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-137438953473, %rax # imm = 0xFFFFFFDFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $4, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $26, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-274877906945, %rax # imm = 0xFFFFFFBFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $7, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $25, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-549755813889, %rax # imm = 0xFFFFFF7FFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $6, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $24, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-1099511627777, %rax # imm = 0xFFFFFEFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $9, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $23, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-2199023255553, %rax # imm = 0xFFFFFDFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
```

```
; CHECK-NEXT:    kshiftrd $8, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $22, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-4398046511105, %rax # imm = 0xFFFFFBFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $11, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $21, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-8796093022209, %rax # imm = 0xFFFFF7FFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $10, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $20, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-17592186044417, %rax # imm = 0xFFFFEFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $13, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $19, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-35184372088833, %rax # imm = 0xFFFFDFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $12, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $18, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-70368744177665, %rax # imm = 0xFFFFBFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $15, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $17, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-140737488355329, %rax # imm = 0xFFFF7FFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $14, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $16, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-281474976710657, %rax # imm = 0xFFFEFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
```

```
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $17, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $15, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-562949953421313, %rax # imm = 0xFFFDFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $16, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $14, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-1125899906842625, %rax # imm = 0xFFFBFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $19, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $13, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-2251799813685249, %rax # imm = 0xFFF7FFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $18, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $12, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-4503599627370497, %rax # imm = 0xFFEFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $21, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $11, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-9007199254740993, %rax # imm = 0xFFDFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $20, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $10, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-18014398509481985, %rax # imm = 0xFFBFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $23, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $9, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-36028797018963969, %rax # imm = 0xFF7FFFFFFFFFFFFF
```

```
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $22, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $8, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-72057594037927937, %rax # imm = 0xFEFFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $25, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $7, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-144115188075855873, %rax # imm = 0xFDFFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $24, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $6, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-288230376151711745, %rax # imm = 0xFBFFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $27, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $5, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-576460752303423489, %rax # imm = 0xF7FFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $26, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $4, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-1152921504606846977, %rax # imm = 0xEFFFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $29, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $3, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-2305843009213693953, %rax # imm = 0xDFFFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $28, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $2, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
```

```
; CHECK-NEXT:    movabsq $-4611686018427387905, %rax # imm = 0xBFFFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $31, %k1, %k2
; CHECK-NEXT:    kshiftlq $62, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $30, %k1, %k1
; CHECK-NEXT:    kshiftlq $1, %k0, %k0
; CHECK-NEXT:    kshiftrq $1, %k0, %k0
; CHECK-NEXT:    kshiftlq $63, %k1, %k1
; CHECK-NEXT:    korq %k1, %k0, %k1
; CHECK-NEXT:    vmovdqu8 %ymm1, (%rsi) {%k1}
; CHECK-NEXT:    kshiftrq $32, %k1, %k1
; CHECK-NEXT:    vmovdqu8 %ymm0, 32(%rsi) {%k1}
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
entry:
 %a = load <64 x i8>, <64 x i8>* %x
 %b = icmp eq <64 x i8> %a, zeroinitializer
 %shuf = shufflevector <64 x i1> %b, <64 x i1> undef, <64 x i32> <i32 1, i32 0, i32 3, i32 2, i32 5, i32 4, i32 7, i32 6, i32 9, i32 8, i32 11, i32 10, i32 13, i32 12, i32 15, i32 14, i32 17, i32 16, i32 19, i32 18, i32 21, i32 20, i32 23, i32 22, i32 25, i32 24, i32 27, i32 26, i32 29, i32 28, i32 31, i32 30, i32 33, i32 32, i32 35, i32 34, i32 37, i32 36, i32 39, i32 38, i32 41, i32 40, i32 43, i32 42, i32 45, i32 44, i32 47, i32 46, i32 49, i32 48, i32 51, i32 50, i32 53, i32 52, i32 55, i32 54, i32 57, i32 56, i32 59, i32 58, i32 61, i32 60, i32 63, i32 62>
 call void @llvm.masked.store.v64i8.p0v64i8(<64 x i8> %a, <64 x i8>* %y, i32 1, <64 x i1> %shuf)
 ret void
}
declare void @llvm.masked.store.v64i8.p0v64i8(<64 x i8>, <64 x i8>*, i32, <64 x i1>)

@mem64_dst = dso_local global i64 0, align 8
@mem64_src = dso_local global i64 0, align 8
define dso_local i32 @v64i1_inline_asm() "min-legal-vector-width"="256" {
; CHECK-LABEL: v64i1_inline_asm:
; CHECK:       # %bb.0:
; CHECK-NEXT:    kmovq mem64_src(%rip), %k0
; CHECK-NEXT:    #APP
; CHECK-NEXT:    #NO_APP
; CHECK-NEXT:    kmovq %k0, mem64_dst(%rip)
; CHECK-NEXT:    movl -{{[0-9]+}}(%rsp), %eax
; CHECK-NEXT:    retq
 %1 = alloca i32, align 4
 %2 = load i64, i64* @mem64_src, align 8
 %3 = call i64 asm "", "=k,k,~{dirflag},~{fpsr},~{flags}"(i64 %2)
 store i64 %3, i64* @mem64_dst, align 8
 %4 = load i32, i32* %1, align 4
 ret i32 %4
}
```

```
define dso_local void @cmp_v8i64_sext(<8 x i64>* %xptr, <8 x i64>* %yptr, <8 x i64>* %zptr) "min-legal-vector-width"="256" {
; CHECK-LABEL: cmp_v8i64_sext:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm1
; CHECK-NEXT:    vpcmpgtq 32(%rdi), %ymm1, %ymm1
; CHECK-NEXT:    vpcmpgtq (%rdi), %ymm0, %ymm0
; CHECK-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <8 x i64>, <8 x i64>* %xptr
 %y = load <8 x i64>, <8 x i64>* %yptr
 %cmp = icmp slt <8 x i64> %x, %y
 %ext = sext <8 x i1> %cmp to <8 x i64>
 store <8 x i64> %ext, <8 x i64>* %zptr
 ret void
}

define dso_local void @cmp_v8i64_zext(<8 x i64>* %xptr, <8 x i64>* %yptr, <8 x i64>* %zptr) "min-legal-vector-width"="256" {
; CHECK-LABEL: cmp_v8i64_zext:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm1
; CHECK-NEXT:    vpcmpgtq 32(%rdi), %ymm1, %ymm1
; CHECK-NEXT:    vpcmpgtq (%rdi), %ymm0, %ymm0
; CHECK-NEXT:    vpsrlq $63, %ymm1, %ymm1
; CHECK-NEXT:    vpsrlq $63, %ymm0, %ymm0
; CHECK-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <8 x i64>, <8 x i64>* %xptr
 %y = load <8 x i64>, <8 x i64>* %yptr
 %cmp = icmp slt <8 x i64> %x, %y
 %ext = zext <8 x i1> %cmp to <8 x i64>
 store <8 x i64> %ext, <8 x i64>* %zptr
 ret void
}

define <16 x i8> @var_rotate_v16i8(<16 x i8> %a, <16 x i8> %b) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: var_rotate_v16i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa {{.*#+}} xmm2 = [8,8,8,8,8,8,8,8,8,8,8,8,8,8,8,8]
; CHECK-NEXT:    vpsubb %xmm1, %xmm2, %xmm2
; CHECK-NEXT:    vpmovzxbw {{.*#+}} ymm1 =
```

```
xmm1[0],zero,xmm1[1],zero,xmm1[2],zero,xmm1[3],zero,xmm1[4],zero,xmm1[5],zero,xmm1[6],zero,xmm1[7],zer
o,xmm1[8],zero,xmm1[9],zero,xmm1[10],zero,xmm1[11],zero,xmm1[12],zero,xmm1[13],zero,xmm1[14],zero,xm
m1[15],zero
; CHECK-NEXT:    vpmovzxbw {{.*#+}} ymm0 =
xmm0[0],zero,xmm0[1],zero,xmm0[2],zero,xmm0[3],zero,xmm0[4],zero,xmm0[5],zero,xmm0[6],zero,xmm0[7],zer
o,xmm0[8],zero,xmm0[9],zero,xmm0[10],zero,xmm0[11],zero,xmm0[12],zero,xmm0[13],zero,xmm0[14],zero,xm
m0[15],zero
; CHECK-NEXT:    vpsllvw %ymm1, %ymm0, %ymm1
; CHECK-NEXT:    vpmovzxbw {{.*#+}} ymm2 =
xmm2[0],zero,xmm2[1],zero,xmm2[2],zero,xmm2[3],zero,xmm2[4],zero,xmm2[5],zero,xmm2[6],zero,xmm2[7],zer
o,xmm2[8],zero,xmm2[9],zero,xmm2[10],zero,xmm2[11],zero,xmm2[12],zero,xmm2[13],zero,xmm2[14],zero,xm
m2[15],zero
; CHECK-NEXT:    vpsrlvw %ymm2, %ymm0, %ymm0
; CHECK-NEXT:    vpor %ymm0, %ymm1, %ymm0
; CHECK-NEXT:    vpmovwb %ymm0, %xmm0
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %b8 = sub <16 x i8> <i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8>, %b
 %shl = shl <16 x i8> %a, %b
 %lshr = lshr <16 x i8> %a, %b8
 %or = or <16 x i8> %shl, %lshr
 ret <16 x i8> %or
}

define <32 x i8> @var_rotate_v32i8(<32 x i8> %a, <32 x i8> %b) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: var_rotate_v32i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpsllw $4, %ymm0, %ymm2
; CHECK-NEXT:    vpsrlw $4, %ymm0, %ymm3
; CHECK-NEXT:    vpternlogq $216, {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm2, %ymm3
; CHECK-NEXT:    vpsllw $5, %ymm1, %ymm1
; CHECK-NEXT:    vpblendvb %ymm1, %ymm3, %ymm0, %ymm0
; CHECK-NEXT:    vpsllw $2, %ymm0, %ymm2
; CHECK-NEXT:    vpsrlw $6, %ymm0, %ymm3
; CHECK-NEXT:    vpternlogq $216, {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm2, %ymm3
; CHECK-NEXT:    vpaddb %ymm1, %ymm1, %ymm1
; CHECK-NEXT:    vpblendvb %ymm1, %ymm3, %ymm0, %ymm0
; CHECK-NEXT:    vpsrlw $7, %ymm0, %ymm2
; CHECK-NEXT:    vpaddb %ymm0, %ymm0, %ymm3
; CHECK-NEXT:    vpternlogq $248, {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm2, %ymm3
; CHECK-NEXT:    vpaddb %ymm1, %ymm1, %ymm1
; CHECK-NEXT:    vpblendvb %ymm1, %ymm3, %ymm0, %ymm0
; CHECK-NEXT:    retq
 %b8 = sub <32 x i8> <i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8
8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8>, %b
 %shl = shl <32 x i8> %a, %b
 %lshr = lshr <32 x i8> %a, %b8
 %or = or <32 x i8> %shl, %lshr
```

```
 ret <32 x i8> %or
}

define <32 x i8> @splatvar_rotate_v32i8(<32 x i8> %a, <32 x i8> %b) nounwind "min-legal-vector-width"="256"
{
; CHECK-AVX512-LABEL: splatvar_rotate_v32i8:
; CHECK-AVX512:       # %bb.0:
; CHECK-AVX512-NEXT:    vpand {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm1, %xmm1
; CHECK-AVX512-NEXT:    vpmovzxbq {{.*#+}} xmm2 =
xmm1[0],zero,zero,zero,zero,zero,zero,zero,xmm1[1],zero,zero,zero,zero,zero,zero,zero
; CHECK-AVX512-NEXT:    vpsllw %xmm2, %ymm0, %ymm3
; CHECK-AVX512-NEXT:    vmovdqa {{.*#+}} xmm4 = [8,8,8,8,8,8,8,8,8,8,8,8,8,8,8,8]
; CHECK-AVX512-NEXT:    vpsubb %xmm1, %xmm4, %xmm1
; CHECK-AVX512-NEXT:    vpcmpeqd %xmm4, %xmm4, %xmm4
; CHECK-AVX512-NEXT:    vpsllw %xmm2, %xmm4, %xmm2
; CHECK-AVX512-NEXT:    vpbroadcastb %xmm2, %ymm2
; CHECK-AVX512-NEXT:    vpmovzxbq {{.*#+}} xmm1 =
xmm1[0],zero,zero,zero,zero,zero,zero,zero,xmm1[1],zero,zero,zero,zero,zero,zero,zero
; CHECK-AVX512-NEXT:    vpsrlw %xmm1, %ymm0, %ymm5
; CHECK-AVX512-NEXT:    vpand %ymm2, %ymm3, %ymm2
; CHECK-AVX512-NEXT:    vpsrlw %xmm1, %xmm4, %xmm0
; CHECK-AVX512-NEXT:    vpsrlw $8, %xmm0, %xmm0
; CHECK-AVX512-NEXT:    vpbroadcastb %xmm0, %ymm0
; CHECK-AVX512-NEXT:    vpternlogq $236, %ymm5, %ymm2, %ymm0
; CHECK-AVX512-NEXT:    retq
;
; CHECK-VBMI-LABEL: splatvar_rotate_v32i8:
; CHECK-VBMI:       # %bb.0:
; CHECK-VBMI-NEXT:    vpand {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm1, %xmm1
; CHECK-VBMI-NEXT:    vpmovzxbq {{.*#+}} xmm2 =
xmm1[0],zero,zero,zero,zero,zero,zero,zero,xmm1[1],zero,zero,zero,zero,zero,zero,zero
; CHECK-VBMI-NEXT:    vpsllw %xmm2, %ymm0, %ymm3
; CHECK-VBMI-NEXT:    vpcmpeqd %xmm4, %xmm4, %xmm4
; CHECK-VBMI-NEXT:    vpsllw %xmm2, %xmm4, %xmm2
; CHECK-VBMI-NEXT:    vpbroadcastb %xmm2, %ymm2
; CHECK-VBMI-NEXT:    vpand %ymm2, %ymm3, %ymm2
; CHECK-VBMI-NEXT:    vmovdqa {{.*#+}} xmm3 = [8,8,8,8,8,8,8,8,8,8,8,8,8,8,8,8]
; CHECK-VBMI-NEXT:    vpsubb %xmm1, %xmm3, %xmm1
; CHECK-VBMI-NEXT:    vpmovzxbq {{.*#+}} xmm1 =
xmm1[0],zero,zero,zero,zero,zero,zero,zero,xmm1[1],zero,zero,zero,zero,zero,zero,zero
; CHECK-VBMI-NEXT:    vpsrlw %xmm1, %ymm0, %ymm3
; CHECK-VBMI-NEXT:    vpsrlw %xmm1, %xmm4, %xmm0
; CHECK-VBMI-NEXT:    vmovdqa {{.*#+}} ymm1 =
[1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1]
; CHECK-VBMI-NEXT:    vpermb %ymm0, %ymm1, %ymm0
; CHECK-VBMI-NEXT:    vpternlogq $236, %ymm3, %ymm2, %ymm0
; CHECK-VBMI-NEXT:    retq
 %splat = shufflevector <32 x i8> %b, <32 x i8> undef, <32 x i32> zeroinitializer
```

```
 %splat8 = sub <32 x i8> <i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8>, %splat
 %shl = shl <32 x i8> %a, %splat
 %lshr = lshr <32 x i8> %a, %splat8
 %or = or <32 x i8> %shl, %lshr
 ret <32 x i8> %or
}

define <32 x i8> @constant_rotate_v32i8(<32 x i8> %a) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: constant_rotate_v32i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpsllw $4, %ymm0, %ymm1
; CHECK-NEXT:    vpand {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm1, %ymm1
; CHECK-NEXT:    vbroadcasti128 {{.*#+}} ymm2 = [8192,24640,41088,57536,57344,41152,24704,8256,8192,24640,41088,57536,57344,41152,24704,8256]
; CHECK-NEXT:    # ymm2 = mem[0,1,0,1]
; CHECK-NEXT:    vpblendvb %ymm2, %ymm1, %ymm0, %ymm1
; CHECK-NEXT:    vpsllw $2, %ymm1, %ymm3
; CHECK-NEXT:    vpand {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm3, %ymm3
; CHECK-NEXT:    vpaddb %ymm2, %ymm2, %ymm2
; CHECK-NEXT:    vpblendvb %ymm2, %ymm3, %ymm1, %ymm1
; CHECK-NEXT:    vpaddb %ymm1, %ymm1, %ymm3
; CHECK-NEXT:    vpaddb %ymm2, %ymm2, %ymm2
; CHECK-NEXT:    vpblendvb %ymm2, %ymm3, %ymm1, %ymm1
; CHECK-NEXT:    vpxor %xmm2, %xmm2, %xmm2
; CHECK-NEXT:    vpunpckhbw {{.*#+}} ymm3 = ymm0[8],ymm2[8],ymm0[9],ymm2[9],ymm0[10],ymm2[10],ymm0[11],ymm2[11],ymm0[12],ymm2[12],ymm0[13],ymm2[13],ymm0[14],ymm2[14],ymm0[15],ymm2[15],ymm0[24],ymm2[24],ymm0[25],ymm2[25],ymm0[26],ymm2[26],ymm0[27],ymm2[27],ymm0[28],ymm2[28],ymm0[29],ymm2[29],ymm0[30],ymm2[30],ymm0[31],ymm2[31]
; CHECK-NEXT:    vpsllvw {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm3, %ymm3
; CHECK-NEXT:    vpsrlw $8, %ymm3, %ymm3
; CHECK-NEXT:    vpunpcklbw {{.*#+}} ymm0 = ymm0[0],ymm2[0],ymm0[1],ymm2[1],ymm0[2],ymm2[2],ymm0[3],ymm2[3],ymm0[4],ymm2[4],ymm0[5],ymm2[5],ymm0[6],ymm2[6],ymm0[7],ymm2[7],ymm0[16],ymm2[16],ymm0[17],ymm2[17],ymm0[18],ymm2[18],ymm0[19],ymm2[19],ymm0[20],ymm2[20],ymm0[21],ymm2[21],ymm0[22],ymm2[22],ymm0[23],ymm2[23]
; CHECK-NEXT:    vpsllvw {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm0, %ymm0
; CHECK-NEXT:    vpsrlw $8, %ymm0, %ymm0
; CHECK-NEXT:    vpackuswb %ymm3, %ymm0, %ymm0
; CHECK-NEXT:    vpor %ymm0, %ymm1, %ymm0
; CHECK-NEXT:    retq
 %shl = shl <32 x i8> %a, <i8 0, i8 1, i8 2, i8 3, i8 4, i8 5, i8 6, i8 7, i8 8, i8 7, i8 6, i8 5, i8 4, i8 3, i8 2, i8 1, i8 0, i8 1, i8 2, i8 3, i8 4, i8 5, i8 6, i8 7, i8 8, i8 7, i8 6, i8 5, i8 4, i8 3, i8 2, i8 1>
 %lshr = lshr <32 x i8> %a, <i8 8, i8 7, i8 6, i8 5, i8 4, i8 3, i8 2, i8 1, i8 0, i8 1, i8 2, i8 3, i8 4, i8 5, i8 6, i8 7, i8 8, i8 7, i8 6, i8 5, i8 4, i8 3, i8 2, i8 1, i8 0, i8 1, i8 2, i8 3, i8 4, i8 5, i8 6, i8 7>
 %or = or <32 x i8> %shl, %lshr
 ret <32 x i8> %or
}
```

```
define <32 x i8> @splatconstant_rotate_v32i8(<32 x i8> %a) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: splatconstant_rotate_v32i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpsllw $4, %ymm0, %ymm1
; CHECK-NEXT:    vpsrlw $4, %ymm0, %ymm0
; CHECK-NEXT:    vpternlogq $216, {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm1, %ymm0
; CHECK-NEXT:    retq
 %shl = shl <32 x i8> %a, <i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8
4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4>
 %lshr = lshr <32 x i8> %a, <i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4,
i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4>
 %or = or <32 x i8> %shl, %lshr
 ret <32 x i8> %or
}

define <32 x i8> @splatconstant_rotate_mask_v32i8(<32 x i8> %a) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: splatconstant_rotate_mask_v32i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpsllw $4, %ymm0, %ymm1
; CHECK-NEXT:    vpsrlw $4, %ymm0, %ymm0
; CHECK-NEXT:    vpternlogq $216, {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm1, %ymm0
; CHECK-NEXT:    vpand {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm0, %ymm0
; CHECK-NEXT:    retq
 %shl = shl <32 x i8> %a, <i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8
4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4>
 %lshr = lshr <32 x i8> %a, <i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4,
i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4>
 %rmask = and <32 x i8> %lshr, <i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55,
i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8
55>
 %lmask = and <32 x i8> %shl, <i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33,
i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8
33>
 %or = or <32 x i8> %lmask, %rmask
 ret <32 x i8> %or
}
; NOTE: Assertions have been autogenerated by utils/update_test_checks.py UTC_ARGS: --function-signature --
check-attributes --check-globals
; RUN: opt -attributor -enable-new-pm=0 -attributor-manifest-internal  -attributor-max-iterations-verify -attributor-
annotate-decl-cs -attributor-max-iterations=6 -S < %s | FileCheck %s --check-
prefixes=CHECK,NOT_CGSCC_NPM,NOT_CGSCC_OPM,NOT_TUNIT_NPM,IS__TUNIT____,IS________OP
M,IS__TUNIT_OPM
; RUN: opt -aa-pipeline=basic-aa -passes=attributor -attributor-manifest-internal  -attributor-max-iterations-verify -
attributor-annotate-decl-cs -attributor-max-iterations=6 -S < %s | FileCheck %s --check-
prefixes=CHECK,NOT_CGSCC_OPM,NOT_CGSCC_NPM,NOT_TUNIT_OPM,IS__TUNIT____,IS________NP
M,IS__TUNIT_NPM
; RUN: opt -attributor-cgscc -enable-new-pm=0 -attributor-manifest-internal  -attributor-annotate-decl-cs -S < %s |
```

```
FileCheck %s --check-
prefixes=CHECK,NOT_TUNIT_NPM,NOT_TUNIT_OPM,NOT_CGSCC_NPM,IS__CGSCC____,IS________OP
M,IS__CGSCC_OPM
; RUN: opt -aa-pipeline=basic-aa -passes=attributor-cgscc -attributor-manifest-internal  -attributor-annotate-decl-cs -
S < %s | FileCheck %s --check-
prefixes=CHECK,NOT_TUNIT_NPM,NOT_TUNIT_OPM,NOT_CGSCC_OPM,IS__CGSCC____,IS________NP
M,IS__CGSCC_NPM
; Test that we only promote arguments when the caller/callee have compatible
; function attrubtes.

target triple = "x86_64-unknown-linux-gnu"

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #0 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR0:[0-9]+]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR0:[0-9]+]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR0:[0-9]+]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
```

```
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %arg) #0 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR0]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6:[0-9]+]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7:[0-9]+]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR0]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6:[0-9]+]]
; IS__TUNIT_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7:[0-9]+]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
```

```
[[ARG:%.*]]) #[[ATTR0]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6:[0-9]+]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7:[0-9]+]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR0]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6:[0-9]+]]
; IS__CGSCC_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7:[0-9]+]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
```

```
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR1:[0-9]+]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR1:[0-9]+]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR1:[0-9]+]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg) #1 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_OPM-NEXT:  bb:
```

```
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
```

```
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR1]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256
```

```
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR1]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR1]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %arg) #0 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR0]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
```

```
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR0]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR0]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR0]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
```

```
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #0 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR0]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR0]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR0]] {
; IS__CGSCC_NPM-NEXT:  bb:
```

```
; IS__CGSCC_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %arg) #1 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
```

```
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}
```

```
; This should not promote
define internal fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define
{{[^@]+}}@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR1]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS________NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS________NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64>* noalias nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[ARG1:%.*]]) #[[ATTR1:[0-9]+]] {
; IS________NPM-NEXT:  bb:
; IS________NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg) #2 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR2:[0-9]+]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
```

```
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR2:[0-9]+]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* noalias nocapture nofree noundef
nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR2:[0-9]+]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR2:[0-9]+]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
```

```
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* noalias nocapture nofree noundef
nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should not promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #2 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR2:[0-9]+]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS________NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS________NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64>* noalias nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[ARG1:%.*]]) #[[ATTR2:[0-9]+]] {
; IS________NPM-NEXT:  bb:
; IS________NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
```

```
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %arg) #1 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* noalias nocapture nofree noundef
nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
```

```
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* noalias nocapture nofree noundef
nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %arg, <8
x i64>* readonly %arg1) #3 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define {{[^@]+}}@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
```

```
#[[ATTR3:[0-9]+]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR3:[0-9]+]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR3:[0-9]+]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %arg) #4 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR4:[0-9]+]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* nocapture nofree noundef nonnull
writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64
```

```
dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR4:[0-9]+]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* noalias nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR4:[0-9]+]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* nocapture nofree noundef nonnull
writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR4:[0-9]+]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
```

```
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* noalias nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %tmp2, <8 x i64>*
%tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %arg, <8
x i64>* readonly %arg1) #4 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define {{[^@]+}}@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR4:[0-9]+]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR4]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
```

```
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR4]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %arg) #3 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR3]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* nocapture nofree noundef nonnull
writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR3]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* noalias nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
```

```
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR3]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* nocapture nofree noundef nonnull
writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR3]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* noalias nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %tmp2, <8 x i64>*
%tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
```

```
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; Function Attrs: argmemonly nounwind
declare void @llvm.memset.p0i8.i64(i8* nocapture writeonly, i8, i64, i1) #5

attributes #0 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-width"="512" "prefer-vector-width"="512" }
attributes #1 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-width"="512" "prefer-vector-width"="256" }
attributes #2 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-width"="256" "prefer-vector-width"="256" }
attributes #3 = { inlinehint norecurse nounwind uwtable "target-features"="+avx2" "min-legal-vector-width"="512" "prefer-vector-width"="256" }
attributes #4 = { inlinehint norecurse nounwind uwtable "target-features"="+avx2" "min-legal-vector-width"="256" "prefer-vector-width"="256" }
attributes #5 = { argmemonly nounwind }
;.
; IS__TUNIT____: attributes #[[ATTR0:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="512" "target-features"="+avx512vl" }
; IS__TUNIT____: attributes #[[ATTR1:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="256" "target-features"="+avx512vl" }
; IS__TUNIT____: attributes #[[ATTR2:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="256" "prefer-vector-width"="256" "target-features"="+avx512vl" }
; IS__TUNIT____: attributes #[[ATTR3:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="256" "target-features"="+avx2" }
; IS__TUNIT____: attributes #[[ATTR4:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="256" "prefer-vector-width"="256" "target-features"="+avx2" }
; IS__TUNIT____: attributes #[[ATTR5:[0-9]+]] = { argmemonly nofree nounwind willreturn writeonly }
; IS__TUNIT____: attributes #[[ATTR6:[0-9]+]] = { willreturn writeonly }
; IS__TUNIT____: attributes #[[ATTR7:[0-9]+]] = { nofree nosync nounwind willreturn }
;.
; IS__CGSCC____: attributes #[[ATTR0:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="512" "target-features"="+avx512vl" }
; IS__CGSCC____: attributes #[[ATTR1:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="256" "target-features"="+avx512vl" }
; IS__CGSCC____: attributes #[[ATTR2:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="256" "prefer-vector-width"="256" "target-features"="+avx512vl" }
; IS__CGSCC____: attributes #[[ATTR3:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="256" "target-features"="+avx2" }
; IS__CGSCC____: attributes #[[ATTR4:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="256" "prefer-vector-width"="256" "target-features"="+avx2" }
; IS__CGSCC____: attributes #[[ATTR5:[0-9]+]] = { argmemonly nofree nounwind willreturn writeonly }
; IS__CGSCC____: attributes #[[ATTR6:[0-9]+]] = { willreturn writeonly }
; IS__CGSCC____: attributes #[[ATTR7:[0-9]+]] = { nounwind willreturn }
;.
```

```
; NOTE: Assertions have been autogenerated by utils/update_test_checks.py UTC_ARGS: --include-generated-funcs
; RUN: opt -S -verify -iroutliner -ir-outlining-no-cost < %s | FileCheck %s

; This test checks that debug info is recognized as able to be extracted along
; with the other instructions, but is not included in the consolidated function.

define void @function1() !dbg !6 {
entry:
 %a = alloca i32, align 4, !dbg !17
 call void @llvm.dbg.value(metadata i32* %a, metadata !9, metadata !DIExpression()), !dbg !17
 %b = alloca i32, align 4, !dbg !18
 call void @llvm.dbg.value(metadata i32* %b, metadata !11, metadata !DIExpression()), !dbg !18
 %c = alloca i32, align 4, !dbg !19
 call void @llvm.dbg.value(metadata i32* %c, metadata !12, metadata !DIExpression()), !dbg !19
 store i32 2, i32* %a, align 4, !dbg !20
 store i32 3, i32* %b, align 4, !dbg !21
 store i32 4, i32* %c, align 4, !dbg !22
 %al = load i32, i32* %a, align 4, !dbg !23
 call void @llvm.dbg.value(metadata i32 %al, metadata !13, metadata !DIExpression()), !dbg !23
 %bl = load i32, i32* %b, align 4, !dbg !24
 call void @llvm.dbg.value(metadata i32 %bl, metadata !15, metadata !DIExpression()), !dbg !24
 %cl = load i32, i32* %c, align 4, !dbg !25
 call void @llvm.dbg.value(metadata i32 %cl, metadata !16, metadata !DIExpression()), !dbg !25
 ret void, !dbg !26
}

define void @function2() !dbg !27 {
entry:
 %a = alloca i32, align 4, !dbg !35
 call void @llvm.dbg.value(metadata i32* %a, metadata !29, metadata !DIExpression()), !dbg !35
 %b = alloca i32, align 4, !dbg !36
 call void @llvm.dbg.value(metadata i32* %b, metadata !30, metadata !DIExpression()), !dbg !36
 %c = alloca i32, align 4, !dbg !37
 call void @llvm.dbg.value(metadata i32* %c, metadata !31, metadata !DIExpression()), !dbg !37
 store i32 2, i32* %a, align 4, !dbg !38
 store i32 3, i32* %b, align 4, !dbg !39
 store i32 4, i32* %c, align 4, !dbg !40
 %al = load i32, i32* %a, align 4, !dbg !41
 call void @llvm.dbg.value(metadata i32 %al, metadata !32, metadata !DIExpression()), !dbg !41
 %bl = load i32, i32* %b, align 4, !dbg !42
 call void @llvm.dbg.value(metadata i32 %bl, metadata !33, metadata !DIExpression()), !dbg !42
 %cl = load i32, i32* %c, align 4, !dbg !43
 call void @llvm.dbg.value(metadata i32 %cl, metadata !34, metadata !DIExpression()), !dbg !43
 ret void, !dbg !44
}
```

```
; Function Attrs: nounwind readnone speculatable willreturn
declare void @llvm.dbg.value(metadata, metadata, metadata) #0

attributes #0 = { nounwind readnone speculatable willreturn }

!llvm.dbg.cu = !{!0}
!llvm.debugify = !{!3, !4}
!llvm.module.flags = !{!5}

!0 = distinct !DICompileUnit(language: DW_LANG_C, file: !1, producer: "debugify", isOptimized: true,
runtimeVersion: 0, emissionKind: FullDebug, enums: !2)
!1 = !DIFile(filename: "legal-debug.ll", directory: "/")
!2 = !{}
!3 = !{i32 20}
!4 = !{i32 12}
!5 = !{i32 2, !"Debug Info Version", i32 3}
!6 = distinct !DISubprogram(name: "function1", linkageName: "function1", scope: null, file: !1, line: 1, type: !7,
scopeLine: 1, spFlags: DISPFlagDefinition | DISPFlagOptimized, unit: !0, retainedNodes: !8)
!7 = !DISubroutineType(types: !2)
!8 = !{!9, !11, !12, !13, !15, !16}
!9 = !DILocalVariable(name: "1", scope: !6, file: !1, line: 1, type: !10)
!10 = !DIBasicType(name: "ty64", size: 64, encoding: DW_ATE_unsigned)
!11 = !DILocalVariable(name: "2", scope: !6, file: !1, line: 2, type: !10)
!12 = !DILocalVariable(name: "3", scope: !6, file: !1, line: 3, type: !10)
!13 = !DILocalVariable(name: "4", scope: !6, file: !1, line: 7, type: !14)
!14 = !DIBasicType(name: "ty32", size: 32, encoding: DW_ATE_unsigned)
!15 = !DILocalVariable(name: "5", scope: !6, file: !1, line: 8, type: !14)
!16 = !DILocalVariable(name: "6", scope: !6, file: !1, line: 9, type: !14)
!17 = !DILocation(line: 1, column: 1, scope: !6)
!18 = !DILocation(line: 2, column: 1, scope: !6)
!19 = !DILocation(line: 3, column: 1, scope: !6)
!20 = !DILocation(line: 4, column: 1, scope: !6)
!21 = !DILocation(line: 5, column: 1, scope: !6)
!22 = !DILocation(line: 6, column: 1, scope: !6)
!23 = !DILocation(line: 7, column: 1, scope: !6)
!24 = !DILocation(line: 8, column: 1, scope: !6)
!25 = !DILocation(line: 9, column: 1, scope: !6)
!26 = !DILocation(line: 10, column: 1, scope: !6)
!27 = distinct !DISubprogram(name: "function2", linkageName: "function2", scope: null, file: !1, line: 11, type: !7,
scopeLine: 11, spFlags: DISPFlagDefinition | DISPFlagOptimized, unit: !0, retainedNodes: !28)
!28 = !{!29, !30, !31, !32, !33, !34}
!29 = !DILocalVariable(name: "7", scope: !27, file: !1, line: 11, type: !10)
!30 = !DILocalVariable(name: "8", scope: !27, file: !1, line: 12, type: !10)
!31 = !DILocalVariable(name: "9", scope: !27, file: !1, line: 13, type: !10)
!32 = !DILocalVariable(name: "10", scope: !27, file: !1, line: 17, type: !14)
!33 = !DILocalVariable(name: "11", scope: !27, file: !1, line: 18, type: !14)
!34 = !DILocalVariable(name: "12", scope: !27, file: !1, line: 19, type: !14)
!35 = !DILocation(line: 11, column: 1, scope: !27)
```

```
!36 = !DILocation(line: 12, column: 1, scope: !27)
!37 = !DILocation(line: 13, column: 1, scope: !27)
!38 = !DILocation(line: 14, column: 1, scope: !27)
!39 = !DILocation(line: 15, column: 1, scope: !27)
!40 = !DILocation(line: 16, column: 1, scope: !27)
!41 = !DILocation(line: 17, column: 1, scope: !27)
!42 = !DILocation(line: 18, column: 1, scope: !27)
!43 = !DILocation(line: 19, column: 1, scope: !27)
!44 = !DILocation(line: 20, column: 1, scope: !27)
; CHECK-LABEL: @function1(
; CHECK-NEXT:  entry:
; CHECK-NEXT:    [[A:%.*]] = alloca i32, align 4, !dbg [[DBG17:![0-9]+]]
; CHECK-NEXT:    call void @llvm.dbg.value(metadata i32* [[A]], metadata [[META9:![0-9]+]], metadata
!DIExpression()), !dbg [[DBG17]]
; CHECK-NEXT:    [[B:%.*]] = alloca i32, align 4, !dbg [[DBG18:![0-9]+]]
; CHECK-NEXT:    call void @llvm.dbg.value(metadata i32* [[B]], metadata [[META11:![0-9]+]], metadata
!DIExpression()), !dbg [[DBG18]]
; CHECK-NEXT:    [[C:%.*]] = alloca i32, align 4, !dbg [[DBG19:![0-9]+]]
; CHECK-NEXT:    call void @llvm.dbg.value(metadata i32* [[C]], metadata [[META12:![0-9]+]], metadata
!DIExpression()), !dbg [[DBG19]]
; CHECK-NEXT:    call void @outlined_ir_func_0(i32* [[A]], i32* [[B]], i32* [[C]]), !dbg [[DBG20:![0-9]+]]
; CHECK-NEXT:    ret void, !dbg [[DBG21:![0-9]+]]
;
;
; CHECK-LABEL: @function2(
; CHECK-NEXT:  entry:
; CHECK-NEXT:    [[A:%.*]] = alloca i32, align 4, !dbg [[DBG30:![0-9]+]]
; CHECK-NEXT:    call void @llvm.dbg.value(metadata i32* [[A]], metadata [[META24:![0-9]+]], metadata
!DIExpression()), !dbg [[DBG30]]
; CHECK-NEXT:    [[B:%.*]] = alloca i32, align 4, !dbg [[DBG31:![0-9]+]]
; CHECK-NEXT:    call void @llvm.dbg.value(metadata i32* [[B]], metadata [[META25:![0-9]+]], metadata
!DIExpression()), !dbg [[DBG31]]
; CHECK-NEXT:    [[C:%.*]] = alloca i32, align 4, !dbg [[DBG32:![0-9]+]]
; CHECK-NEXT:    call void @llvm.dbg.value(metadata i32* [[C]], metadata [[META26:![0-9]+]], metadata
!DIExpression()), !dbg [[DBG32]]
; CHECK-NEXT:    call void @outlined_ir_func_0(i32* [[A]], i32* [[B]], i32* [[C]]), !dbg [[DBG33:![0-9]+]]
; CHECK-NEXT:    ret void, !dbg [[DBG34:![0-9]+]]
;
;
; CHECK: @outlined_ir_func_0(i32* [[TMP0:%.*]], i32* [[TMP1:%.*]], i32*  [[TMP2:%.*]])
; CHECK:       entry_to_outline:
; CHECK-NEXT:    store i32 2, i32* [[TMP0]], align 4
; CHECK-NEXT:    store i32 3, i32* [[TMP1]], align 4
; CHECK-NEXT:    store i32 4, i32* [[TMP2]], align 4
; CHECK-NEXT:    [[AL:%.*]] = load i32, i32* [[TMP0]], align 4
; CHECK-NEXT:    [[BL:%.*]] = load i32, i32* [[TMP1]], align 4
; CHECK-NEXT:    [[CL:%.*]] = load i32, i32* [[TMP2]], align 4
; CHECK-NEXT:    br label [[ENTRY_AFTER_OUTLINE_EXITSTUB:%.*]]
```

```
;
; RUN: opt -mtriple=aarch64-linux-gnu -mattr=+sve -scalarize-masked-mem-intrin -S < %s | FileCheck %s

; Testing that masked gathers operating on scalable vectors that are
; packed in SVE registers are not scalarized.

; CHECK-LABEL: @masked_gather_nxv4i32(
; CHECK: call <vscale x 4 x i32> @llvm.masked.gather.nxv4i32
define <vscale x 4 x i32> @masked_gather_nxv4i32(<vscale x 4 x i32*> %ld, <vscale x 4 x i1> %masks, <vscale x
4 x i32> %passthru) {
 %res = call <vscale x 4 x i32> @llvm.masked.gather.nxv4i32(<vscale x 4 x i32*> %ld, i32 0, <vscale x 4 x i1>
%masks, <vscale x 4 x i32> %passthru)
 ret <vscale x 4 x i32> %res
}

; Testing that masked gathers operating on scalable vectors of FP data
; that is packed in SVE registers are not scalarized.

; CHECK-LABEL: @masked_gather_nxv2f64(
; CHECK: call <vscale x 2 x double> @llvm.masked.gather.nxv2f64
define <vscale x 2 x double> @masked_gather_nxv2f64(<vscale x 2 x double*> %ld, <vscale x 2 x i1> %masks,
<vscale x 2 x double> %passthru) {
 %res = call <vscale x 2 x double> @llvm.masked.gather.nxv2f64(<vscale x 2 x double*> %ld, i32 0, <vscale x 2 x
i1> %masks, <vscale x 2 x double> %passthru)
 ret <vscale x 2 x double> %res
}

; Testing that masked gathers operating on scalable vectors of FP data
; that is unpacked in SVE registers are not scalarized.

; CHECK-LABEL: @masked_gather_nxv2f16(
; CHECK: call <vscale x 2 x half> @llvm.masked.gather.nxv2f16
define <vscale x 2 x half> @masked_gather_nxv2f16(<vscale x 2 x half*> %ld, <vscale x 2 x i1> %masks, <vscale
x 2 x half> %passthru) {
 %res = call <vscale x 2 x half> @llvm.masked.gather.nxv2f16(<vscale x 2 x half*> %ld, i32 0, <vscale x 2 x i1>
%masks, <vscale x 2 x half> %passthru)
 ret <vscale x 2 x half> %res
}

; Testing that masked gathers operating on 64-bit fixed vectors are
; scalarized because NEON doesn't have support for masked gather
; instructions.

; CHECK-LABEL: @masked_gather_v2f32(
; CHECK-NOT: @llvm.masked.gather.v2f32(
define <2 x float> @masked_gather_v2f32(<2 x float*> %ld, <2 x i1> %masks, <2 x float> %passthru) {
 %res = call <2 x float> @llvm.masked.gather.v2f32(<2 x float*> %ld, i32 0, <2 x i1> %masks, <2 x float>
%passthru)
```

```
 ret <2 x float> %res
}

; Testing that masked gathers operating on 128-bit fixed vectors are
; scalarized because NEON doesn't have support for masked gather
; instructions and because we are not targeting fixed width SVE.

; CHECK-LABEL: @masked_gather_v4i32(
; CHECK-NOT: @llvm.masked.gather.v4i32(
define <4 x i32> @masked_gather_v4i32(<4 x i32*> %ld, <4 x i1> %masks, <4 x i32> %passthru) {
 %res = call <4 x i32> @llvm.masked.gather.v4i32(<4 x i32*> %ld, i32 0, <4 x i1> %masks, <4 x i32> %passthru)
 ret <4 x i32> %res
}

declare <vscale x 4 x i32> @llvm.masked.gather.nxv4i32(<vscale x 4 x i32*> %ptrs, i32 %align, <vscale x 4 x i1> %masks, <vscale x 4 x i32> %passthru)
declare <vscale x 2 x double> @llvm.masked.gather.nxv2f64(<vscale x 2 x double*> %ptrs, i32 %align, <vscale x 2 x i1> %masks, <vscale x 2 x double> %passthru)
declare <vscale x 2 x half> @llvm.masked.gather.nxv2f16(<vscale x 2 x half*> %ptrs, i32 %align, <vscale x 2 x i1> %masks, <vscale x 2 x half> %passthru)
declare <2 x float> @llvm.masked.gather.v2f32(<2 x float*> %ptrs, i32 %align, <2 x i1> %masks, <2 x float> %passthru)
declare <4 x i32> @llvm.masked.gather.v4i32(<4 x i32*> %ptrs, i32 %align, <4 x i1> %masks, <4 x i32> %passthru)
```

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```
; RUN: llc -march=hexagon < %s
; REQUIRES: asserts

; The two loads based on %struct.0, loading two different data types
; cause LSR to assume type "void" for the memory type. This would then
; cause an assert in isLegalAddressingMode. Make sure we no longer crash.

target triple = "hexagon"

%struct.0 = type { i8*, i8, %union.anon.0 }
%union.anon.0 = type { i8* }

define hidden fastcc void @fred() unnamed_addr #0 {
entry:
```

```
 br i1 undef, label %while.end, label %while.body.lr.ph

while.body.lr.ph:                                 ; preds = %entry
 br label %while.body

while.body:                                       ; preds = %exit.2, %while.body.lr.ph
 %lsr.iv = phi %struct.0* [ %cgep22, %exit.2 ], [ undef, %while.body.lr.ph ]
 switch i32 undef, label %exit [
   i32 1, label %sw.bb.i
   i32 2, label %sw.bb3.i
 ]

sw.bb.i:                                          ; preds = %while.body
 unreachable

sw.bb3.i:                                         ; preds = %while.body
 unreachable

exit:                                             ; preds = %while.body
 switch i32 undef, label %exit.2 [
   i32 1, label %sw.bb.i17
   i32 2, label %sw.bb3.i20
 ]

sw.bb.i17:                                        ; preds = %.exit
 %0 = bitcast %struct.0* %lsr.iv to i32*
 %1 = load i32, i32* %0, align 4
 unreachable

sw.bb3.i20:                                       ; preds = %exit
 %2 = bitcast %struct.0* %lsr.iv to i8**
 %3 = load i8*, i8** %2, align 4
 unreachable

exit.2:                                           ; preds = %exit
 %cgep22 = getelementptr %struct.0, %struct.0* %lsr.iv, i32 1
 br label %while.body

while.end:                                        ; preds = %entry
 ret void
}

attributes #0 = { nounwind optsize "target-cpu"="hexagonv55" }
; NOTE: Assertions have been autogenerated by utils/update_llc_test_checks.py
; RUN: llc < %s -mtriple=x86_64-linux-android -mattr=+mmx -enable-legalize-types-checking | FileCheck %s
;
; D31946
; Check that we dont end up with the ""LLVM ERROR: Cannot select" error.
```

```
; Additionally ensure that the output code actually put fp128 values in SSE registers.

declare fp128 @llvm.fabs.f128(fp128)
declare fp128 @llvm.copysign.f128(fp128, fp128)

define fp128 @TestSelect(fp128 %a, fp128 %b) {
; CHECK-LABEL: TestSelect:
; CHECK:       # %bb.0:
; CHECK-NEXT:    pushq %rbx
; CHECK-NEXT:    .cfi_def_cfa_offset 16
; CHECK-NEXT:    subq $32, %rsp
; CHECK-NEXT:    .cfi_def_cfa_offset 48
; CHECK-NEXT:    .cfi_offset %rbx, -16
; CHECK-NEXT:    movaps %xmm1, {{[-0-9]+}}(%r{{[sb]}}p) # 16-byte Spill
; CHECK-NEXT:    movaps %xmm0, (%rsp) # 16-byte Spill
; CHECK-NEXT:    callq __gttf2@PLT
; CHECK-NEXT:    movl %eax, %ebx
; CHECK-NEXT:    movaps (%rsp), %xmm0 # 16-byte Reload
; CHECK-NEXT:    movaps {{[-0-9]+}}(%r{{[sb]}}p), %xmm1 # 16-byte Reload
; CHECK-NEXT:    callq __subtf3@PLT
; CHECK-NEXT:    testl %ebx, %ebx
; CHECK-NEXT:    jg .LBB0_2
; CHECK-NEXT:  # %bb.1:
; CHECK-NEXT:    xorps %xmm0, %xmm0
; CHECK-NEXT:  .LBB0_2:
; CHECK-NEXT:    addq $32, %rsp
; CHECK-NEXT:    .cfi_def_cfa_offset 16
; CHECK-NEXT:    popq %rbx
; CHECK-NEXT:    .cfi_def_cfa_offset 8
; CHECK-NEXT:    retq
 %cmp = fcmp ogt fp128 %a, %b
 %sub = fsub fp128 %a, %b
 %res = select i1 %cmp, fp128 %sub, fp128 0xL00000000000000000000000000000000
 ret fp128 %res
}

define fp128 @TestFabs(fp128 %a) {
; CHECK-LABEL: TestFabs:
; CHECK:       # %bb.0:
; CHECK-NEXT:    andps {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm0
; CHECK-NEXT:    retq
 %res = call fp128 @llvm.fabs.f128(fp128 %a)
 ret fp128 %res
}

define fp128 @TestCopysign(fp128 %a, fp128 %b) {
; CHECK-LABEL: TestCopysign:
; CHECK:       # %bb.0:
```

```
; CHECK-NEXT:    andps {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm1
; CHECK-NEXT:    andps {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm0
; CHECK-NEXT:    orps %xmm1, %xmm0
; CHECK-NEXT:    retq
 %res = call fp128 @llvm.copysign.f128(fp128 %a, fp128 %b)
 ret fp128 %res
}

define fp128 @TestFneg(fp128 %a) {
; CHECK-LABEL: TestFneg:
; CHECK:       # %bb.0:
; CHECK-NEXT:    pushq %rax
; CHECK-NEXT:    .cfi_def_cfa_offset 16
; CHECK-NEXT:    movaps %xmm0, %xmm1
; CHECK-NEXT:    callq __multf3@PLT
; CHECK-NEXT:    xorps {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm0
; CHECK-NEXT:    popq %rax
; CHECK-NEXT:    .cfi_def_cfa_offset 8
; CHECK-NEXT:    retq
 %mul = fmul fp128 %a, %a
 %res = fsub fp128 0xL00000000000000008000000000000000, %mul
 ret fp128 %res
}
; RUN: llc -march=hexagon -hexagon-hvx-widen=32 < %s | FileCheck %s

; Truncating a type-to-be-widenened to a legal type (v8i8).
; Check that this compiles successfully.
; CHECK-LABEL: f0:
; CHECK: dealloc_return

target datalayout = "e-m:e-p:32:32:32-a:0-n16:32-i64:64:64-i32:32:32-i16:16:16-i1:8:8-f32:32:32-f64:64:64-
v32:32:32-v64:64:64-v512:512:512-v1024:1024:1024-v2048:2048:2048"
target triple = "hexagon"

define dllexport void @f0(i8* %a0) local_unnamed_addr #0 {
b0:
 %v0 = load i8, i8* undef, align 1
 %v1 = zext i8 %v0 to i16
 %v2 = add i16 0, %v1
 %v3 = icmp sgt i16 %v2, 1
 %v4 = select i1 %v3, i16 %v2, i16 1
 %v5 = udiv i16 -32768, %v4
 %v6 = zext i16 %v5 to i32
 %v7 = insertelement <8 x i32> undef, i32 %v6, i32 0
 %v8 = shufflevector <8 x i32> %v7, <8 x i32> undef, <8 x i32> zeroinitializer
 %v9 = load <8 x i16>, <8 x i16>* undef, align 2
 %v10 = sext <8 x i16> %v9 to <8 x i32>
 %v11 = mul nsw <8 x i32> %v8, %v10
```

```
 %v12 = add nsw <8 x i32> %v11, <i32 16384, i32 16384, i32 16384, i32 16384, i32 16384, i32 16384, i32 16384,
i32 16384>
 %v13 = lshr <8 x i32> %v12, <i32 15, i32 15, i32 15, i32 15, i32 15, i32 15, i32 15, i32 15>
 %v14 = trunc <8 x i32> %v13 to <8 x i8>
 %v15 = getelementptr inbounds i8, i8* %a0, i32 undef
 %v16 = bitcast i8* %v15 to <8 x i8>*
 store <8 x i8> %v14, <8 x i8>* %v16, align 1
 ret void
}

attributes #0 = { "target-features"="+hvx,+hvx-length128b" }
; RUN: llc -mtriple=aarch64-apple-ios %s -o - | FileCheck %s

define <16 x double> @test_sitofp_fixed(<16 x i32> %in) {
; CHECK-LABEL: test_sitofp_fixed:

 ; First, extend each i32 to i64
; CHECK-DAG: sshll2.2d [[BLOCK0_HI:v[0-9]+]], v0, #0
; CHECK-DAG: sshll2.2d [[BLOCK1_HI:v[0-9]+]], v1, #0
; CHECK-DAG: sshll2.2d [[BLOCK2_HI:v[0-9]+]], v2, #0
; CHECK-DAG: sshll2.2d [[BLOCK3_HI:v[0-9]+]], v3, #0
; CHECK-DAG: sshll.2d [[BLOCK0_LO:v[0-9]+]], v0, #0
; CHECK-DAG: sshll.2d [[BLOCK1_LO:v[0-9]+]], v1, #0
; CHECK-DAG: sshll.2d [[BLOCK2_LO:v[0-9]+]], v2, #0
; CHECK-DAG: sshll.2d [[BLOCK3_LO:v[0-9]+]], v3, #0

 ; Next, convert each to double.
; CHECK-DAG: scvtf.2d v0, [[BLOCK0_LO]]
; CHECK-DAG: scvtf.2d v1, [[BLOCK0_HI]]
; CHECK-DAG: scvtf.2d v2, [[BLOCK1_LO]]
; CHECK-DAG: scvtf.2d v3, [[BLOCK1_HI]]
; CHECK-DAG: scvtf.2d v4, [[BLOCK2_LO]]
; CHECK-DAG: scvtf.2d v5, [[BLOCK2_HI]]
; CHECK-DAG: scvtf.2d v6, [[BLOCK3_LO]]
; CHECK-DAG: scvtf.2d v7, [[BLOCK3_HI]]

; CHECK: ret
 %flt = sitofp <16 x i32> %in to <16 x double>
 %res = fdiv <16 x double> %flt, <double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0,
double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0,
double 64.0>
 ret <16 x double> %res
}

; This one is small enough to satisfy isSimple, but still illegally large.
define <4 x double> @test_sitofp_fixed_shortish(<4 x i64> %in) {
; CHECK-LABEL: test_sitofp_fixed_shortish:
```

```
; CHECK-DAG: scvtf.2d v0, v0
; CHECK-DAG: scvtf.2d v1, v1

; CHECK: ret
 %flt = sitofp <4 x i64> %in to <4 x double>
 %res = fdiv <4 x double> %flt, <double 64.0, double 64.0, double 64.0, double 64.0>
 ret <4 x double> %res
}
; RUN: opt %s -inline -S | FileCheck %s

define internal void @innerSmall() "min-legal-vector-width"="128" {
 ret void
}

define internal void @innerLarge() "min-legal-vector-width"="512" {
 ret void
}

define internal void @innerNoAttribute() {
 ret void
}

; We should not add an attribute during inlining. No attribute means unknown.
; Inlining doesn't change the fact that we don't know anything about this
; function.
define void @outerNoAttribute() {
 call void @innerLarge()
 ret void
}

define void @outerConflictingAttributeSmall() "min-legal-vector-width"="128" {
 call void @innerLarge()
 ret void
}

define void @outerConflictingAttributeLarge() "min-legal-vector-width"="512" {
 call void @innerSmall()
 ret void
}

; We should remove the attribute after inlining since the callee's
; vector width requirements are unknown.
define void @outerAttribute() "min-legal-vector-width"="128" {
 call void @innerNoAttribute()
 ret void
}

; CHECK: define void @outerNoAttribute() {
```

```
; CHECK: define void @outerConflictingAttributeSmall() #0
; CHECK: define void @outerConflictingAttributeLarge() #0
; CHECK: define void @outerAttribute() {
; CHECK: attributes #0 = { "min-legal-vector-width"="512" }
```



```
; RUN: opt -consthoist -S -o - %s | FileCheck %s
target datalayout = "e-m:e-p:32:32-i64:64-v128:64:128-a:0:32-n32-S64"
target triple = "thumbv6m-none--musleabi"

; Check that for i8 type, the maximum legal offset is 31.
; Also check that an constant used as value to be stored rather than
; pointer in a store instruction is hoisted.
; CHECK: foo_i8
; CHECK-DAG:  %[[C1:const[0-9]?]] = bitcast i32 805874720 to i32
; CHECK-DAG:  %[[C2:const[0-9]?]] = bitcast i32 805874688 to i32
; CHECK-DAG:  %[[C3:const[0-9]?]] = bitcast i32 805873720 to i32
; CHECK-DAG:  %[[C4:const[0-9]?]] = bitcast i32 805873688 to i32
; CHECK:  %0 = inttoptr i32 %[[C2]] to i8*
; CHECK-NEXT:  %1 = load volatile i8, i8* %0
; CHECK-NEXT:  %[[M1:const_mat[0-9]?]] = add i32 %[[C2]], 4
; CHECK-NEXT:  %2 = inttoptr i32 %[[M1]] to i8*
```

```
; CHECK-NEXT:  %3 = load volatile i8, i8* %2
; CHECK-NEXT:  %[[M2:const_mat[0-9]?]] = add i32 %[[C2]], 31
; CHECK-NEXT:  %4 = inttoptr i32 %[[M2]] to i8*
; CHECK-NEXT:  %5 = load volatile i8, i8* %4
; CHECK-NEXT:  %6 = inttoptr i32 %[[C1]] to i8*
; CHECK-NEXT:  %7 = load volatile i8, i8* %6
; CHECK-NEXT:  %[[M3:const_mat[0-9]?]] = add i32 %[[C1]], 7
; CHECK-NEXT:  %8 = inttoptr i32 %[[M3]] to i8*
; CHECK-NEXT:  %9 = load volatile i8, i8* %8
; CHECK-NEXT:  %10 = inttoptr i32 %[[C4]] to i8*
; CHECK-NEXT:  store i8 %9, i8* %10
; CHECK-NEXT:  %[[M4:const_mat[0-9]?]] = add i32 %[[C4]], 31
; CHECK-NEXT:  %11 = inttoptr i32 %[[M4]] to i8*
; CHECK-NEXT:  store i8 %7, i8* %11
; CHECK-NEXT:  %12 = inttoptr i32 %[[C3]] to i8*
; CHECK-NEXT:  store i8 %5, i8* %12
; CHECK-NEXT:  %[[M5:const_mat[0-9]?]] = add i32 %[[C3]], 7
; CHECK-NEXT:  %13 = inttoptr i32 %[[M5]] to i8*
; CHECK-NEXT:  store i8 %3, i8* %13
; CHECK-NEXT:  %[[M6:const_mat[0-9]?]] = add i32 %[[C1]], 80
; CHECK-NEXT:  %14 = inttoptr i32 %[[M6]] to i8*
; CHECK-NEXT:  store i8* %14, i8** @goo

@goo = global i8* undef

define void @foo_i8() {
entry:
 %0 = load volatile i8, i8* inttoptr (i32 805874688 to i8*)
 %1 = load volatile i8, i8* inttoptr (i32 805874692 to i8*)
 %2 = load volatile i8, i8* inttoptr (i32 805874719 to i8*)
 %3 = load volatile i8, i8* inttoptr (i32 805874720 to i8*)
 %4 = load volatile i8, i8* inttoptr (i32 805874727 to i8*)
 store i8 %4, i8* inttoptr(i32 805873688 to i8*)
 store i8 %3, i8* inttoptr(i32 805873719 to i8*)
 store i8 %2, i8* inttoptr(i32 805873720 to i8*)
 store i8 %1, i8* inttoptr(i32 805873727 to i8*)
 store i8* inttoptr(i32 805874800 to i8*), i8** @goo
 ret void
}

; Check that for i16 type, the maximum legal offset is 62.
; CHECK: foo_i16
; CHECK-DAG: %[[C1:const[0-9]?]] = bitcast i32 805874752 to i32
; CHECK-DAG: %[[C2:const[0-9]?]] = bitcast i32 805874688 to i32
; CHECK: %0 = inttoptr i32 %[[C2]] to i16*
; CHECK-NEXT: %1 = load volatile i16, i16* %0, align 2
; CHECK-NEXT: %[[M1:const_mat[0-9]?]] = add i32 %[[C2]], 4
; CHECK-NEXT: %2 = inttoptr i32 %[[M1]] to i16*
```

```
; CHECK-NEXT: %3 = load volatile i16, i16* %2, align 2
; CHECK-NEXT: %[[M2:const_mat[0-9]?]] = add i32 %[[C2]], 32
; CHECK-NEXT: %4 = inttoptr i32 %[[M2]] to i16*
; CHECK-NEXT: %5 = load volatile i16, i16* %4, align 2
; CHECK-NEXT: %[[M3:const_mat[0-9]?]] = add i32 %[[C2]], 62
; CHECK-NEXT: %6 = inttoptr i32 %[[M3]] to i16*
; CHECK-NEXT: %7 = load volatile i16, i16* %6, align 2
; CHECK-NEXT: %8 = inttoptr i32 %[[C1]] to i16*
; CHECK-NEXT: %9 = load volatile i16, i16* %8, align 2
; CHECK-NEXT: %[[M4:const_mat[0-9]?]] = add i32 %[[C1]], 22
; CHECK-NEXT: %10 = inttoptr i32 %[[M4]] to i16*
; CHECK-NEXT: %11 = load volatile i16, i16* %10, align 2

define void @foo_i16() {
entry:
 %0 = load volatile i16, i16* inttoptr (i32 805874688 to i16*), align 2
 %1 = load volatile i16, i16* inttoptr (i32 805874692 to i16*), align 2
 %2 = load volatile i16, i16* inttoptr (i32 805874720 to i16*), align 2
 %3 = load volatile i16, i16* inttoptr (i32 805874750 to i16*), align 2
 %4 = load volatile i16, i16* inttoptr (i32 805874752 to i16*), align 2
 %5 = load volatile i16, i16* inttoptr (i32 805874774 to i16*), align 2
 ret void
}

; Check that for i32 type, the maximum legal offset is 124.
; CHECK: foo_i32
; CHECK-DAG:  %[[C1:const[0-9]?]] = bitcast i32 805874816 to i32
; CHECK-DAG:  %[[C2:const[0-9]?]] = bitcast i32 805874688 to i32
; CHECK:  %0 = inttoptr i32 %[[C2]] to i32*
; CHECK-NEXT:  %1 = load volatile i32, i32* %0, align 4
; CHECK-NEXT:  %[[M1:const_mat[0-9]?]] = add i32 %[[C2]], 4
; CHECK-NEXT:  %2 = inttoptr i32 %[[M1]] to i32*
; CHECK-NEXT:  %3 = load volatile i32, i32* %2, align 4
; CHECK-NEXT:  %[[M2:const_mat[0-9]?]] = add i32 %[[C2]], 124
; CHECK-NEXT:  %4 = inttoptr i32 %[[M2]] to i32*
; CHECK-NEXT:  %5 = load volatile i32, i32* %4, align 4
; CHECK-NEXT:  %6 = inttoptr i32 %[[C1]] to i32*
; CHECK-NEXT:  %7 = load volatile i32, i32* %6, align 4
; CHECK-NEXT:  %[[M3:const_mat[0-9]?]] = add i32 %[[C1]], 8
; CHECK-NEXT:  %8 = inttoptr i32 %[[M3]] to i32*
; CHECK-NEXT:  %9 = load volatile i32, i32* %8, align 4
; CHECK-NEXT:  %[[M4:const_mat[0-9]?]] = add i32 %[[C1]], 12
; CHECK-NEXT:  %10 = inttoptr i32 %[[M4]] to i32*
; CHECK-NEXT:  %11 = load volatile i32, i32* %10, align 4

define void @foo_i32() {
entry:
 %0 = load volatile i32, i32* inttoptr (i32 805874688 to i32*), align 4
```

```
 %1 = load volatile i32, i32* inttoptr (i32 805874692 to i32*), align 4
 %2 = load volatile i32, i32* inttoptr (i32 805874812 to i32*), align 4
 %3 = load volatile i32, i32* inttoptr (i32 805874816 to i32*), align 4
 %4 = load volatile i32, i32* inttoptr (i32 805874824 to i32*), align 4
 %5 = load volatile i32, i32* inttoptr (i32 805874828 to i32*), align 4
 ret void
}
; RUN: llc -O3 -mtriple=powerpc-unknown-linux-gnu -mcpu=e500 -mattr=spe < %s | FileCheck %s

; PowerPC SPE is a rare in-tree target that has the FP_TO_SINT node marked
; as Legal.

; Verify that fptosi(42.1) isn't simplified when the rounding mode is
; unknown.
; Verify that no gross errors happen.
; CHECK-LABEL: @f20
; COMMON: cfdctsiz
define i32 @f20(double %a) strictfp {
entry:
 %result = call i32 @llvm.experimental.constrained.fptosi.i32.f64(double 42.1,
                                             metadata !"fpexcept.strict")
                                             strictfp
 ret i32 %result
}

@llvm.fp.env = thread_local global i8 zeroinitializer, section "llvm.metadata"
declare i32 @llvm.experimental.constrained.fptosi.i32.f64(double, metadata)
; NOTE: Assertions have been autogenerated by utils/update_test_checks.py UTC_ARGS: --function-signature --
scrub-attributes
; RUN: opt -S -argpromotion < %s | FileCheck %s
; RUN: opt -S -passes=argpromotion < %s | FileCheck %s
; Test that we only promote arguments when the caller/callee have compatible
; function attrubtes.

target triple = "x86_64-unknown-linux-gnu"

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #0 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
```

```
 ret void
}

define void @avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %arg) #0 {
; CHECK-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer512
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:    call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x
i64>* [[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg) #1 {
; CHECK-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
```

```
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:    call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x
i64>* [[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %arg) #0 {
; CHECK-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
```

```
; CHECK-NEXT:    call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x
i64>* [[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #0 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %arg) #1 {
; CHECK-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:    call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x
i64>* [[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
```

```
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should not promote
define internal fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64>* readonly [[ARG1:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]]
; CHECK-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg) #2 {
; CHECK-LABEL: define {{[^@]+}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    call fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x
i64>* [[TMP2]], <8 x i64>* [[TMP]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
```

```
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should not promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #2 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64>* readonly [[ARG1:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]]
; CHECK-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %arg) #1 {
; CHECK-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x
i64>* [[TMP2]], <8 x i64>* [[TMP]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}
```

```
; This should promote
define internal fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %arg, <8
x i64>* readonly %arg1) #3 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %arg) #4 {
; CHECK-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:    call fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>*
[[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %tmp2, <8 x i64>*
%tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %arg, <8
x i64>* readonly %arg1) #4 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT:  bb:
```

```
; CHECK-NEXT:    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %arg) #3 {
; CHECK-LABEL: define {{[^@]+}}@avx2_legal512_prefer256_call_avx2_legal256_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:    call fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>*
[[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %tmp2, <8 x i64>*
%tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; If the arguments are scalar, its ok to promote.
define internal i32 @scalar_callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(i32* %X, i32*
%Y) #2 {
; CHECK-LABEL: define
{{[^@]+}}@scalar_callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (i32 [[X_VAL:%.*]], i32 [[Y_VAL:%.*]])
; CHECK-NEXT:    [[C:%.*]] = add i32 [[X_VAL]], [[Y_VAL]]
; CHECK-NEXT:    ret i32 [[C]]
;
 %A = load i32, i32* %X
 %B = load i32, i32* %Y
 %C = add i32 %A, %B
```

```
 ret i32 %C
}

define i32 @scalar_avx512_legal256_prefer256_call_avx512_legal512_prefer256(i32* %B) #2 {
; CHECK-LABEL: define {{[^@]+}}@scalar_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (i32* [[B:%.*]])
; CHECK-NEXT:    [[A:%.*]] = alloca i32
; CHECK-NEXT:    store i32 1, i32* [[A]]
; CHECK-NEXT:    [[A_VAL:%.*]] = load i32, i32* [[A]]
; CHECK-NEXT:    [[B_VAL:%.*]] = load i32, i32* [[B]]
; CHECK-NEXT:    [[C:%.*]] = call i32
@scalar_callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(i32 [[A_VAL]], i32 [[B_VAL]])
; CHECK-NEXT:    ret i32 [[C]]
;
 %A = alloca i32
 store i32 1, i32* %A
 %C = call i32 @scalar_callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(i32* %A, i32* %B)
 ret i32 %C
}

; If the arguments are scalar, its ok to promote.
define internal i32 @scalar_callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(i32* %X, i32*
%Y) #2 {
; CHECK-LABEL: define
{{[^@]+}}@scalar_callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; CHECK-SAME: (i32 [[X_VAL:%.*]], i32 [[Y_VAL:%.*]])
; CHECK-NEXT:    [[C:%.*]] = add i32 [[X_VAL]], [[Y_VAL]]
; CHECK-NEXT:    ret i32 [[C]]
;
 %A = load i32, i32* %X
 %B = load i32, i32* %Y
 %C = add i32 %A, %B
 ret i32 %C
}

define i32 @scalar_avx512_legal512_prefer256_call_avx512_legal256_prefer256(i32* %B) #2 {
; CHECK-LABEL: define {{[^@]+}}@scalar_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; CHECK-SAME: (i32* [[B:%.*]])
; CHECK-NEXT:    [[A:%.*]] = alloca i32
; CHECK-NEXT:    store i32 1, i32* [[A]]
; CHECK-NEXT:    [[A_VAL:%.*]] = load i32, i32* [[A]]
; CHECK-NEXT:    [[B_VAL:%.*]] = load i32, i32* [[B]]
; CHECK-NEXT:    [[C:%.*]] = call i32
@scalar_callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(i32 [[A_VAL]], i32 [[B_VAL]])
; CHECK-NEXT:    ret i32 [[C]]
;
 %A = alloca i32
 store i32 1, i32* %A
```

```
 %C = call i32 @scalar_callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(i32* %A, i32* %B)
 ret i32 %C
}

; Function Attrs: argmemonly nounwind
declare void @llvm.memset.p0i8.i64(i8* nocapture writeonly, i8, i64, i1) #5

attributes #0 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-
width"="512" "prefer-vector-width"="512" }
attributes #1 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-
width"="512" "prefer-vector-width"="256" }
attributes #2 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-
width"="256" "prefer-vector-width"="256" }
attributes #3 = { inlinehint norecurse nounwind uwtable "target-features"="+avx2" "min-legal-vector-width"="512"
"prefer-vector-width"="256" }
attributes #4 = { inlinehint norecurse nounwind uwtable "target-features"="+avx2" "min-legal-vector-width"="256"
"prefer-vector-width"="256" }
attributes #5 = { argmemonly nounwind }
; NOTE: Assertions have been autogenerated by utils/update_analyze_test_checks.py
; RUN: opt < %s  -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -mattr=+avx2 | FileCheck %s --check-
prefixes=VEC256,AVX
; RUN: opt < %s  -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -mattr=+avx512vl,+prefer-256-bit |
FileCheck %s --check-prefixes=VEC256,AVX512VL256
; RUN: opt < %s  -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -mattr=+avx512vl,-prefer-256-bit |
FileCheck %s --check-prefixes=AVX512VL512
; RUN: opt < %s  -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -
mattr=+avx512vl,+avx512bw,+avx512dq,+prefer-256-bit | FileCheck %s --check-prefixes=VEC256,SKX256
; RUN: opt < %s  -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -
mattr=+avx512vl,+avx512bw,+avx512dq,-prefer-256-bit | FileCheck %s --check-prefixes=SKX512

define void @zext256() "min-legal-vector-width"="256" {
; AVX-LABEL: 'zext256'
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %D = zext <16 x i16> undef to <16 x
i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL256-LABEL: 'zext256'
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %A = zext <8 x i16> undef to
<8 x i64>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %B = zext <8 x i32> undef to
<8 x i64>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %C = zext <16 x i8> undef to
<16 x i32>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %D = zext <16 x i16> undef to
```

```
<16 x i32>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'zext256'
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX256-LABEL: 'zext256'
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'zext256'
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
 %A = zext <8 x i16> undef to <8 x i64>
 %B = zext <8 x i32> undef to <8 x i64>
 %C = zext <16 x i8> undef to <16 x i32>
 %D = zext <16 x i16> undef to <16 x i32>
```

```
 %E = zext <32 x i8> undef to <32 x i16>
 ret void
}

define void @zext512() "min-legal-vector-width"="512" {
; AVX-LABEL: 'zext512'
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %D = zext <16 x i16> undef to <16 x
i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL256-LABEL: 'zext512'
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to
<8 x i64>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to
<8 x i64>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to
<16 x i32>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to
<16 x i32>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to
<32 x i16>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'zext512'
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to
<8 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to
<8 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to
<16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to
<16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to
<32 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX256-LABEL: 'zext512'
; SKX256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x
i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x
i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to <16 x
i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x
```

```
i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = zext <32 x i8> undef to <32 x
i16>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'zext512'
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x
i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x
i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to <16 x
i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x
i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = zext <32 x i8> undef to <32 x
i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
 %A = zext <8 x i16> undef to <8 x i64>
 %B = zext <8 x i32> undef to <8 x i64>
 %C = zext <16 x i8> undef to <16 x i32>
 %D = zext <16 x i16> undef to <16 x i32>
 %E = zext <32 x i8> undef to <32 x i16>
 ret void
}

define void @sext256() "min-legal-vector-width"="256" {
; AVX-LABEL: 'sext256'
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL256-LABEL: 'sext256'
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %A = sext <8 x i8> undef to <8
x i64>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %B = sext <8 x i16> undef to
<8 x i64>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %C = sext <8 x i32> undef to
<8 x i64>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %D = sext <16 x i8> undef to
<16 x i32>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = sext <16 x i16> undef to
<16 x i32>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to
```

```
<32 x i16>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'sext256'
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX256-LABEL: 'sext256'
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'sext256'
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
 %A = sext <8 x i8> undef to <8 x i64>
 %B = sext <8 x i16> undef to <8 x i64>
```

```
 %C = sext <8 x i32> undef to <8 x i64>
 %D = sext <16 x i8> undef to <16 x i32>
 %E = sext <16 x i16> undef to <16 x i32>
 %F = sext <32 x i8> undef to <32 x i16>
 ret void
}

define void @sext512() "min-legal-vector-width"="512" {
; AVX-LABEL: 'sext512'
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL256-LABEL: 'sext512'
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8
x i64>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to
<8 x i64>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to
<8 x i64>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to
<16 x i32>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to
<16 x i32>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to
<32 x i16>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'sext512'
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8
x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to
<8 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to
<8 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to
<16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to
<16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to
<32 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX256-LABEL: 'sext512'
```

```
; SKX256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x
i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x
i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to <16 x
i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x
i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %F = sext <32 x i8> undef to <32 x
i16>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'sext512'
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x
i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x
i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to <16 x
i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x
i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %F = sext <32 x i8> undef to <32 x
i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
 %A = sext <8 x i8> undef to <8 x i64>
 %B = sext <8 x i16> undef to <8 x i64>
 %C = sext <8 x i32> undef to <8 x i64>
 %D = sext <16 x i8> undef to <16 x i32>
 %E = sext <16 x i16> undef to <16 x i32>
 %F = sext <32 x i8> undef to <32 x i16>
 ret void
}

define void @trunc256() "min-legal-vector-width"="256" {
; VEC256-LABEL: 'trunc256'
; VEC256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %A = trunc <8 x i64> undef to <8 x
i32>
; VEC256-NEXT:  Cost Model: Found an estimated cost of 10 for instruction: %B = trunc <8 x i64> undef to <8 x
i16>
; VEC256-NEXT:  Cost Model: Found an estimated cost of 8 for instruction: %C = trunc <8 x i64> undef to <8 x
i8>
; VEC256-NEXT:  Cost Model: Found an estimated cost of 10 for instruction: %D = trunc <16 x i32> undef to <16
x i16>
; VEC256-NEXT:  Cost Model: Found an estimated cost of 7 for instruction: %E = trunc <16 x i32> undef to <16 x
i8>
```

```
; VEC256-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %F = trunc <32 x i16> undef to <32 x
i8>
; VEC256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'trunc256'
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = trunc <8 x i64> undef to
<8 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %B = trunc <8 x i64> undef to
<8 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %C = trunc <8 x i64> undef to
<8 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %D = trunc <16 x i32> undef
to <16 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %E = trunc <16 x i32> undef to
<16 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 8 for instruction: %F = trunc <32 x i16> undef to
<32 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'trunc256'
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = trunc <8 x i64> undef to <8 x
i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %B = trunc <8 x i64> undef to <8 x
i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %C = trunc <8 x i64> undef to <8 x
i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %D = trunc <16 x i32> undef to <16 x
i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %E = trunc <16 x i32> undef to <16 x
i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %F = trunc <32 x i16> undef to <32 x
i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
 %A = trunc <8 x i64> undef to <8 x i32>
 %B = trunc <8 x i64> undef to <8 x i16>
 %C = trunc <8 x i64> undef to <8 x i8>
 %D = trunc <16 x i32> undef to <16 x i16>
 %E = trunc <16 x i32> undef to <16 x i8>
 %F = trunc <32 x i16> undef to <32 x i8>
 ret void
}

define i32 @zext256_vXi1() "min-legal-vector-width"="256" {
; AVX-LABEL: 'zext256_vXi1'
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = zext <2 x i1> undef to <2 x
i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V4i64 = zext <4 x i1> undef to <4 x
```

i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V8i64 = zext <8 x i1> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = zext <2 x i1> undef to <2 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = zext <4 x i1> undef to <4 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i32 = zext <8 x i1> undef to <8 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V16i32 = zext <16 x i1> undef to <16 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i16 = zext <2 x i1> undef to <2 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i16 = zext <4 x i1> undef to <4 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i16 = zext <8 x i1> undef to <8 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i16 = zext <16 x i1> undef to <16 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V32i16 = zext <32 x i1> undef to <32 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i8 = zext <2 x i1> undef to <2 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i8 = zext <4 x i1> undef to <4 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i8 = zext <8 x i1> undef to <8 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i8 = zext <16 x i1> undef to <16 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V32i8 = zext <32 x i1> undef to <32 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V64i8 = zext <64 x i1> undef to <64 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL256-LABEL: 'zext256_vXi1'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = zext <2 x i1> undef to <2 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = zext <4 x i1> undef to <4 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V8i64 = zext <8 x i1> undef to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = zext <2 x i1> undef to <2 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = zext <4 x i1> undef to <4 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = zext <8 x i1> undef to <8 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V16i32 = zext <16 x i1> undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V2i16 = zext <2 x i1> undef

to <2 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V4i16 = zext <4 x i1> undef to <4 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V8i16 = zext <8 x i1> undef to <8 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 12 for instruction: %V16i16 = zext <16 x i1> undef to <16 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 24 for instruction: %V32i16 = zext <32 x i1> undef to <32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 6 for instruction: %V2i8 = zext <2 x i1> undef to <2 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 6 for instruction: %V4i8 = zext <4 x i1> undef to <4 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 6 for instruction: %V8i8 = zext <8 x i1> undef to <8 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 12 for instruction: %V16i8 = zext <16 x i1> undef to <16 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 25 for instruction: %V32i8 = zext <32 x i1> undef to <32 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 50 for instruction: %V64i8 = zext <64 x i1> undef to <64 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL512-LABEL: 'zext256_vXi1'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = zext <2 x i1> undef to <2 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = zext <4 x i1> undef to <4 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = zext <8 x i1> undef to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = zext <2 x i1> undef to <2 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = zext <4 x i1> undef to <4 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = zext <8 x i1> undef to <8 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = zext <16 x i1> undef to <16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V2i16 = zext <2 x i1> undef to <2 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V4i16 = zext <4 x i1> undef to <4 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V8i16 = zext <8 x i1> undef to <8 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V16i16 = zext <16 x i1> undef to <16 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V32i16 = zext <32 x i1> undef to <32 x i16>

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; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V2i8 = zext <2 x i1> undef to <2 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V4i8 = zext <4 x i1> undef to <4 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V8i8 = zext <8 x i1> undef to <8 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V16i8 = zext <16 x i1> undef to <16 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 9 for instruction: %V32i8 = zext <32 x i1> undef to <32 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 19 for instruction: %V64i8 = zext <64 x i1> undef to <64 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX256-LABEL: 'zext256_vXi1'
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = zext <2 x i1> undef to <2 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = zext <4 x i1> undef to <4 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %V8i64 = zext <8 x i1> undef to <8 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = zext <2 x i1> undef to <2 x i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = zext <4 x i1> undef to <4 x i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = zext <8 x i1> undef to <8 x i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %V16i32 = zext <16 x i1> undef to <16 x i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = zext <2 x i1> undef to <2 x i16>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = zext <4 x i1> undef to <4 x i16>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = zext <8 x i1> undef to <8 x i16>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V16i16 = zext <16 x i1> undef to <16 x i16>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %V32i16 = zext <32 x i1> undef to <32 x i16>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = zext <2 x i1> undef to <2 x i8>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = zext <4 x i1> undef to <4 x i8>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = zext <8 x i1> undef to <8 x i8>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = zext <16 x i1> undef to <16 x i8>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = zext <32 x i1> undef to <32
```

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x i8>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %V64i8 = zext <64 x i1> undef to <64
x i8>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX512-LABEL: 'zext256_vXi1'
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = zext <2 x i1> undef to <2 x
i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = zext <4 x i1> undef to <4 x
i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = zext <8 x i1> undef to <8 x
i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = zext <2 x i1> undef to <2 x
i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = zext <4 x i1> undef to <4 x
i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = zext <8 x i1> undef to <8 x
i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = zext <16 x i1> undef to
<16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = zext <2 x i1> undef to <2 x
i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = zext <4 x i1> undef to <4 x
i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = zext <8 x i1> undef to <8 x
i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V16i16 = zext <16 x i1> undef to
<16 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V32i16 = zext <32 x i1> undef to
<32 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = zext <2 x i1> undef to <2 x
i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = zext <4 x i1> undef to <4 x
i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = zext <8 x i1> undef to <8 x
i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = zext <16 x i1> undef to <16
x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = zext <32 x i1> undef to <32
x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V64i8 = zext <64 x i1> undef to <64
x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
 %V2i64 = zext <2 x i1> undef to <2 x i64>
 %V4i64 = zext <4 x i1> undef to <4 x i64>
 %V8i64 = zext <8 x i1> undef to <8 x i64>
```

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 %V2i32 = zext <2 x i1> undef to <2 x i32>
 %V4i32 = zext <4 x i1> undef to <4 x i32>
 %V8i32 = zext <8 x i1> undef to <8 x i32>
 %V16i32 = zext <16 x i1> undef to <16 x i32>

 %V2i16 = zext <2 x i1> undef to <2 x i16>
 %V4i16 = zext <4 x i1> undef to <4 x i16>
 %V8i16 = zext <8 x i1> undef to <8 x i16>
 %V16i16 = zext <16 x i1> undef to <16 x i16>
 %V32i16 = zext <32 x i1> undef to <32 x i16>

 %V2i8 = zext <2 x i1> undef to <2 x i8>
 %V4i8 = zext <4 x i1> undef to <4 x i8>
 %V8i8 = zext <8 x i1> undef to <8 x i8>
 %V16i8 = zext <16 x i1> undef to <16 x i8>
 %V32i8 = zext <32 x i1> undef to <32 x i8>
 %V64i8 = zext <64 x i1> undef to <64 x i8>

 ret i32 undef
}

define i32 @sext256_vXi1() "min-legal-vector-width"="256" {
; AVX-LABEL: 'sext256_vXi1'
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = sext <2 x i1> undef to <2 x
i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V4i64 = sext <4 x i1> undef to <4 x
i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V8i64 = sext <8 x i1> undef to <8 x
i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = sext <2 x i1> undef to <2 x
i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = sext <4 x i1> undef to <4 x
i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V8i32 = sext <8 x i1> undef to <8 x
i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V16i32 = sext <16 x i1> undef to <16 x
i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = sext <2 x i1> undef to <2 x
i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = sext <4 x i1> undef to <4 x
i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = sext <8 x i1> undef to <8 x
i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V16i16 = sext <16 x i1> undef to <16 x
i16>
```

; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V32i16 = sext <32 x i1> undef to <32 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = sext <2 x i1> undef to <2 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = sext <4 x i1> undef to <4 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = sext <8 x i1> undef to <8 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = sext <16 x i1> undef to <16 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = sext <32 x i1> undef to <32 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V64i8 = sext <64 x i1> undef to <64 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL256-LABEL: 'sext256_vXi1'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = sext <2 x i1> undef to <2 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i64 = sext <4 x i1> undef to <4 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i64 = sext <8 x i1> undef to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = sext <2 x i1> undef to <2 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = sext <4 x i1> undef to <4 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i32 = sext <8 x i1> undef to <8 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i32 = sext <16 x i1> undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V2i16 = sext <2 x i1> undef to <2 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V4i16 = sext <4 x i1> undef to <4 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V8i16 = sext <8 x i1> undef to <8 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 10 for instruction: %V16i16 = sext <16 x i1> undef to <16 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 20 for instruction: %V32i16 = sext <32 x i1> undef to <32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V2i8 = sext <2 x i1> undef to <2 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V4i8 = sext <4 x i1> undef to <4 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V8i8 = sext <8 x i1> undef to

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<8 x i8>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 10 for instruction: %V16i8 = sext <16 x i1>
undef to <16 x i8>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 21 for instruction: %V32i8 = sext <32 x i1>
undef to <32 x i8>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 42 for instruction: %V64i8 = sext <64 x i1>
undef to <64 x i8>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL512-LABEL: 'sext256_vXi1'
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = sext <2 x i1> undef
to <2 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V4i64 = sext <4 x i1> undef
to <4 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V8i64 = sext <8 x i1> undef
to <8 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = sext <2 x i1> undef
to <2 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = sext <4 x i1> undef
to <4 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V8i32 = sext <8 x i1> undef
to <8 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V16i32 = sext <16 x i1>
undef to <16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V2i16 = sext <2 x i1> undef
to <2 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V4i16 = sext <4 x i1> undef
to <4 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V8i16 = sext <8 x i1> undef
to <8 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V16i16 = sext <16 x i1>
undef to <16 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 7 for instruction: %V32i16 = sext <32 x i1>
undef to <32 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V2i8 = sext <2 x i1> undef to
<2 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V4i8 = sext <4 x i1> undef to
<4 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V8i8 = sext <8 x i1> undef to
<8 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V16i8 = sext <16 x i1> undef
to <16 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 7 for instruction: %V32i8 = sext <32 x i1> undef
to <32 x i8>
```

; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 15 for instruction: %V64i8 = sext <64 x i1> undef to <64 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX256-LABEL: 'sext256_vXi1'
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = sext <2 x i1> undef to <2 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i64 = sext <4 x i1> undef to <4 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i64 = sext <8 x i1> undef to <8 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = sext <2 x i1> undef to <2 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = sext <4 x i1> undef to <4 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i32 = sext <8 x i1> undef to <8 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i32 = sext <16 x i1> undef to <16 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i16 = sext <2 x i1> undef to <2 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i16 = sext <4 x i1> undef to <4 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i16 = sext <8 x i1> undef to <8 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i16 = sext <16 x i1> undef to <16 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V32i16 = sext <32 x i1> undef to <32 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i8 = sext <2 x i1> undef to <2 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i8 = sext <4 x i1> undef to <4 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i8 = sext <8 x i1> undef to <8 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i8 = sext <16 x i1> undef to <16 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V32i8 = sext <32 x i1> undef to <32 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V64i8 = sext <64 x i1> undef to <64 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX512-LABEL: 'sext256_vXi1'

; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = sext <2 x i1> undef to <2 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i64 = sext <4 x i1> undef to <4 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i64 = sext <8 x i1> undef to <8 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = sext <2 x i1> undef to <2 x i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = sext <4 x i1> undef to <4 x i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i32 = sext <8 x i1> undef to <8 x i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i32 = sext <16 x i1> undef to <16 x i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i16 = sext <2 x i1> undef to <2 x i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i16 = sext <4 x i1> undef to <4 x i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i16 = sext <8 x i1> undef to <8 x i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i16 = sext <16 x i1> undef to <16 x i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V32i16 = sext <32 x i1> undef to <32 x i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i8 = sext <2 x i1> undef to <2 x i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i8 = sext <4 x i1> undef to <4 x i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i8 = sext <8 x i1> undef to <8 x i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i8 = sext <16 x i1> undef to <16 x i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V32i8 = sext <32 x i1> undef to <32 x i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V64i8 = sext <64 x i1> undef to <64 x i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
 %I64 = sext i1 undef to i64
 %V2i64 = sext <2 x i1> undef to <2 x i64>
 %V4i64 = sext <4 x i1> undef to <4 x i64>
 %V8i64 = sext <8 x i1> undef to <8 x i64>

 %I32 = sext i1 undef to i32

```
 %V2i32 = sext <2 x i1> undef to <2 x i32>
 %V4i32 = sext <4 x i1> undef to <4 x i32>
 %V8i32 = sext <8 x i1> undef to <8 x i32>
 %V16i32 = sext <16 x i1> undef to <16 x i32>

 %I16 = sext i1 undef to i16
 %V2i16 = sext <2 x i1> undef to <2 x i16>
 %V4i16 = sext <4 x i1> undef to <4 x i16>
 %V8i16 = sext <8 x i1> undef to <8 x i16>
 %V16i16 = sext <16 x i1> undef to <16 x i16>
 %V32i16 = sext <32 x i1> undef to <32 x i16>

 %I8 = sext i1 undef to i8
 %V2i8 = sext <2 x i1> undef to <2 x i8>
 %V4i8 = sext <4 x i1> undef to <4 x i8>
 %V8i8 = sext <8 x i1> undef to <8 x i8>
 %V16i8 = sext <16 x i1> undef to <16 x i8>
 %V32i8 = sext <32 x i1> undef to <32 x i8>
 %V64i8 = sext <64 x i1> undef to <64 x i8>

 ret i32 undef
}

define i32 @trunc_vXi1() "min-legal-vector-width"="256" {
; AVX-LABEL: 'trunc_vXi1'
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: %V2i64 = trunc <2 x i64> undef to <2 x
i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V4i64 = trunc <4 x i64> undef to <4 x
i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 9 for instruction: %V8i64 = trunc <8 x i64> undef to <8 x
i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to
<16 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 23 for instruction: %V32i64 = trunc <32 x i64> undef to
<32 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 46 for instruction: %V64i64 = trunc <64 x i64> undef to
<64 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = trunc <2 x i32> undef to <2 x
i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: %V4i32 = trunc <4 x i32> undef to <4 x
i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8 x
i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 8 for instruction: %V16i32 = trunc <16 x i32> undef to <16
x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 17 for instruction: %V32i32 = trunc <32 x i32> undef to
<32 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 34 for instruction: %V64i32 = trunc <64 x i32> undef to
```

<64 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i16 = trunc <2 x i16> undef to <2 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i16 = trunc <4 x i16> undef to <4 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: %V8i16 = trunc <8 x i16> undef to <8 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V16i16 = trunc <16 x i16> undef to <16 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V32i16 = trunc <32 x i16> undef to <32 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 18 for instruction: %V64i16 = trunc <64 x i16> undef to <64 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: %V16i8 = trunc <16 x i8> undef to <16 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: %V32i8 = trunc <32 x i8> undef to <32 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL256-LABEL: 'trunc_vXi1'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = trunc <2 x i64> undef to <2 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = trunc <4 x i64> undef to <4 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V8i64 = trunc <8 x i64> undef to <8 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to <16 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 22 for instruction: %V32i64 = trunc <32 x i64> undef to <32 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 44 for instruction: %V64i64 = trunc <64 x i64> undef to <64 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = trunc <2 x i32> undef to <2 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = trunc <4 x i32> undef to <4 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V16i32 = trunc <16 x i32> undef to <16 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 10 for instruction: %V32i32 = trunc <32 x i32> undef to <32 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 20 for instruction: %V64i32 = trunc <64 x i32>

```
undef to <64 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V2i16 = trunc <2 x i16> undef to <2 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V4i16 = trunc <4 x i16> undef to <4 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V8i16 = trunc <8 x i16> undef to <8 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 8 for instruction: %V16i16 = trunc <16 x i16> undef to <16 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 16 for instruction: %V32i16 = trunc <32 x i16> undef to <32 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 32 for instruction: %V64i16 = trunc <64 x i16> undef to <64 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 8 for instruction: %V16i8 = trunc <16 x i8> undef to <16 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 17 for instruction: %V32i8 = trunc <32 x i8> undef to <32 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 34 for instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL512-LABEL: 'trunc_vXi1'
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = trunc <2 x i64> undef to <2 x i1>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = trunc <4 x i64> undef to <4 x i1>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = trunc <8 x i64> undef to <8 x i1>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to <16 x i1>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 22 for instruction: %V32i64 = trunc <32 x i64> undef to <32 x i1>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 44 for instruction: %V64i64 = trunc <64 x i64> undef to <64 x i1>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = trunc <2 x i32> undef to <2 x i1>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = trunc <4 x i32> undef to <4 x i1>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8 x i1>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = trunc <16 x i32> undef to <16 x i1>
```

; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V32i32 = trunc <32 x i32> undef to <32 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 8 for instruction: %V64i32 = trunc <64 x i32> undef to <64 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i16 = trunc <2 x i16> undef to <2 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i16 = trunc <4 x i16> undef to <4 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i16 = trunc <8 x i16> undef to <8 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i16 = trunc <16 x i16> undef to <16 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 7 for instruction: %V32i16 = trunc <32 x i16> undef to <32 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 14 for instruction: %V64i16 = trunc <64 x i16> undef to <64 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i8 = trunc <16 x i8> undef to <16 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 7 for instruction: %V32i8 = trunc <32 x i8> undef to <32 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 15 for instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX256-LABEL: 'trunc_vXi1'
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = trunc <2 x i64> undef to <2 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = trunc <4 x i64> undef to <4 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V8i64 = trunc <8 x i64> undef to <8 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to <16 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 23 for instruction: %V32i64 = trunc <32 x i64> undef to <32 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 47 for instruction: %V64i64 = trunc <64 x i64> undef to <64 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = trunc <2 x i32> undef to <2 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = trunc <4 x i32> undef to <4 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8

x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V16i32 = trunc <16 x i32> undef to <16 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V32i32 = trunc <32 x i32> undef to <32 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 23 for instruction: %V64i32 = trunc <64 x i32> undef to <64 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = trunc <2 x i16> undef to <2 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = trunc <4 x i16> undef to <4 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = trunc <8 x i16> undef to <8 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i16 = trunc <16 x i16> undef to <16 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V32i16 = trunc <32 x i16> undef to <32 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V64i16 = trunc <64 x i16> undef to <64 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = trunc <16 x i8> undef to <16 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = trunc <32 x i8> undef to <32 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX512-LABEL: 'trunc_vXi1'
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = trunc <2 x i64> undef to <2 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = trunc <4 x i64> undef to <4 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = trunc <8 x i64> undef to <8 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to <16 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 23 for instruction: %V32i64 = trunc <32 x i64> undef to <32 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 47 for instruction: %V64i64 = trunc <64 x i64> undef to <64 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = trunc <2 x i32> undef to <2 x i1>

; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = trunc <4 x i32> undef to <4 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = trunc <16 x i32> undef to <16 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V32i32 = trunc <32 x i32> undef to <32 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V64i32 = trunc <64 x i32> undef to <64 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = trunc <2 x i16> undef to <2 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = trunc <4 x i16> undef to <4 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = trunc <8 x i16> undef to <8 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i16 = trunc <16 x i16> undef to <16 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i16 = trunc <32 x i16> undef to <32 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V64i16 = trunc <64 x i16> undef to <64 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = trunc <16 x i8> undef to <16 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = trunc <32 x i8> undef to <32 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
 %V2i64 = trunc <2 x i64> undef to <2 x i1>
 %V4i64 = trunc <4 x i64> undef to <4 x i1>
 %V8i64 = trunc <8 x i64> undef to <8 x i1>
 %V16i64 = trunc <16 x i64> undef to <16 x i1>
 %V32i64 = trunc <32 x i64> undef to <32 x i1>
 %V64i64 = trunc <64 x i64> undef to <64 x i1>

 %V2i32 = trunc <2 x i32> undef to <2 x i1>
 %V4i32 = trunc <4 x i32> undef to <4 x i1>
 %V8i32 = trunc <8 x i32> undef to <8 x i1>
 %V16i32 = trunc <16 x i32> undef to <16 x i1>
 %V32i32 = trunc <32 x i32> undef to <32 x i1>

```
 %V64i32 = trunc <64 x i32> undef to <64 x i1>

 %V2i16 = trunc <2 x i16> undef to <2 x i1>
 %V4i16 = trunc <4 x i16> undef to <4 x i1>
 %V8i16 = trunc <8 x i16> undef to <8 x i1>
 %V16i16 = trunc <16 x i16> undef to <16 x i1>
 %V32i16 = trunc <32 x i16> undef to <32 x i1>
 %V64i16 = trunc <64 x i16> undef to <64 x i1>

 %V2i8 = trunc <2 x i8> undef to <2 x i1>
 %V4i8 = trunc <4 x i8> undef to <4 x i1>
 %V8i8 = trunc <8 x i8> undef to <8 x i1>
 %V16i8 = trunc <16 x i8> undef to <16 x i1>
 %V32i8 = trunc <32 x i8> undef to <32 x i1>
 %V64i8 = trunc <64 x i8> undef to <64 x i1>

 ret i32 undef
}
```

```
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1.28 tar 6.1.11

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1.29 findmnt 2.38-r1

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2 7680 16383   8704 4.3M   8f8378c0-02
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1.30 promzard 0.3.0

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1.31 libverto 0.3.2-r0

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1.32 minizlib 2.1.2

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1.33 form-data 2.3.3

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1.34 simple-swizzle 0.2.2

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1.35 npmcli-installed-package-contents 1.0.7

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1.36 argcomplete 1.12.2

1.36.1 Available under license :

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```
# Copyright 2012-2019, Andrey Kislyuk and argcomplete contributors.
# Licensed under the Apache License. See https://github.com/kislyuk/argcomplete for more info.

# Copy of __expand_tilde_by_ref from bash-completion
__python_argcomplete_expand_tilde_by_ref () {
  if [ "${!1:0:1}" = "~" ]; then
    if [ "${!1}" != "${!1//\/}" ]; then
      eval $1="${!1/%\/*}"/'${!1#*/}';
    else
      eval $1="${!1}";
    fi;
  fi
}

# Run something, muting output or redirecting it to the debug stream
# depending on the value of _ARC_DEBUG.
# If ARGCOMPLETE_USE_TEMPFILES is set, use tempfiles for IPC.
__python_argcomplete_run() {
  if [[ -z "${ARGCOMPLETE_USE_TEMPFILES-}" ]]; then
    __python_argcomplete_run_inner "$@"
    return
  fi
  local tmpfile="$(mktemp)"
  _ARGCOMPLETE_STDOUT_FILENAME="$tmpfile" __python_argcomplete_run_inner "$@"
  local code=$?
  cat "$tmpfile"
  rm "$tmpfile"
  return $code
}

__python_argcomplete_run_inner() {
  if [[ -z "${_ARC_DEBUG-}" ]]; then
    "$@" 8>&1 9>&2 1>/dev/null 2>&1
```

```
  else
    "$@" 8>&1 9>&2 1>&9 2>&1
  fi
}

# Scan the beginning of an executable file ($1) for a regexp ($2). By default,
# scan for the magic string indicating that the executable supports the
# argcomplete completion protocol. By default, scan the first kilobyte;
# if $3 is set to -n, scan until the first line break up to a kilobyte.
__python_argcomplete_scan_head() {
  read -s -r ${3:--N} 1024 < "$1"
  [[ "$REPLY" =~ ${2:-PYTHON_ARGCOMPLETE_OK} ]]
}

__python_argcomplete_scan_head_noerr() {
  __python_argcomplete_scan_head "$@" 2>/dev/null
}

_python_argcomplete_global() {
  local executable=$1
  __python_argcomplete_expand_tilde_by_ref executable

  local ARGCOMPLETE=0
  if [[ "$executable" == python* ]] || [[ "$executable" == pypy* ]]; then
    if [[ "${COMP_WORDS[1]}" == -m ]]; then
      if __python_argcomplete_run "$executable" -m argcomplete._check_module "${COMP_WORDS[2]}"; then
        ARGCOMPLETE=3
      else
        return
      fi
    elif [[ -f "${COMP_WORDS[1]}" ]] && __python_argcomplete_scan_head_noerr "${COMP_WORDS[1]}";
then
      local ARGCOMPLETE=2
    else
      return
    fi
  elif type -P "$executable" >/dev/null 2>&1; then
    local SCRIPT_NAME=$(type -P "$executable")
    if (type -t pyenv && [[ "$SCRIPT_NAME" = $(pyenv root)/shims/* ]]) >/dev/null 2>&1; then
      local SCRIPT_NAME=$(pyenv which "$executable")
    fi
    if __python_argcomplete_scan_head_noerr "$SCRIPT_NAME"; then
      local ARGCOMPLETE=1
    elif __python_argcomplete_scan_head_noerr "$SCRIPT_NAME" '^#!(.*)$' -n && [[
"${BASH_REMATCH[1]}" =~ ^.*(python|pypy)[0-9\.]*$ ]]; then
      local interpreter="$BASH_REMATCH"
      if (__python_argcomplete_scan_head_noerr "$SCRIPT_NAME" "(PBR Generated)|(EASY-INSTALL-
(SCRIPT|ENTRY-SCRIPT|DEV-SCRIPT))" \
```

```
            && "$interpreter" "$(type -P python-argcomplete-check-easy-install-script)" "$SCRIPT_NAME")
>/dev/null 2>&1; then
            local ARGCOMPLETE=1
          elif __python_argcomplete_run "$interpreter" -m argcomplete._check_console_script "$SCRIPT_NAME";
then
            local ARGCOMPLETE=1
          fi
      fi
  fi

  if [[ $ARGCOMPLETE != 0 ]]; then
      local IFS=$(echo -e '\v')
      COMPREPLY=( $(_ARGCOMPLETE_IFS="$IFS" \
          COMP_LINE="$COMP_LINE" \
          COMP_POINT="$COMP_POINT" \
          COMP_TYPE="$COMP_TYPE" \
          _ARGCOMPLETE_COMP_WORDBREAKS="$COMP_WORDBREAKS" \
          _ARGCOMPLETE=$ARGCOMPLETE \
          _ARGCOMPLETE_SUPPRESS_SPACE=1 \
          __python_argcomplete_run "$executable" "${COMP_WORDS[@]:1:ARGCOMPLETE-1}") )
      if [[ $? != 0 ]]; then
          unset COMPREPLY
      elif [[ "${COMPREPLY-}" =~ [=/:]$ ]]; then
          compopt -o nospace
      fi
  else
      type -t _completion_loader | grep -q 'function' && _completion_loader "$@"
  fi
}
complete -o default -o bashdefault -D -F _python_argcomplete_global
```

Found in path(s):
* /opt/cola/permits/1154477170_1618854374.36/0/argcomplete-1-12-2-tar-gz/argcomplete-1.12.2/argcomplete/bash_completion.d/python-argcomplete
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Metadata-Version: 2.1
Name: argcomplete
Version: 1.12.2
Summary: Bash tab completion for argparse
Home-page: https://github.com/kislyuk/argcomplete
Author: Andrey Kislyuk
Author-email: kislyuk@gmail.com
License: Apache Software License
Project-URL: Documentation, https://kislyuk.github.io/argcomplete
Project-URL: Source Code, https://github.com/kislyuk/argcomplete
Project-URL: Issue Tracker, https://github.com/kislyuk/argcomplete/issues
Project-URL: Change Log, https://github.com/kislyuk/argcomplete/blob/master/Changes.rst

Description: argcomplete - Bash tab completion for argparse
==
Tab complete all the things!

Argcomplete provides easy, extensible command line tab completion of arguments for your Python script.

It makes two assumptions:

* You're using bash as your shell (limited support for zsh, fish, and tcsh is available)
* You're using `argparse <http://docs.python.org/3/library/argparse.html>`_ to manage your command line arguments/options

Argcomplete is particularly useful if your program has lots of options or subparsers, and if your program can dynamically suggest completions for your argument/option values (for example, if the user is browsing resources over the network).

Installation

::

```
pip install argcomplete
activate-global-python-argcomplete
```

See `Activating global completion`_ below for details about the second step (or if it reports an error).

Refresh your bash environment (start a new shell or ``source /etc/profile``).

Synopsis

Python code (e.g. ``my-awesome-script``):

.. code-block:: python

```
#!/usr/bin/env python
# PYTHON_ARGCOMPLETE_OK
import argcomplete, argparse
parser = argparse.ArgumentParser()
...
argcomplete.autocomplete(parser)
args = parser.parse_args()
...
```

Shellcode (only necessary if global completion is not activated - see `Global completion`_ below), to be put in e.g. ``.bashrc``::

```
eval "$(register-python-argcomplete my-awesome-script)"
```

argcomplete.autocomplete(*parser*)
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
This method is the entry point to the module. It must be called **after** ArgumentParser construction is complete, but
before the ``ArgumentParser.parse_args()`` method is called. The method looks for an environment variable that the
completion hook shellcode sets, and if it's there, collects completions, prints them to the output stream (fd 8 by
default), and exits. Otherwise, it returns to the caller immediately.

.. admonition:: Side effects

Argcomplete gets completions by running your program. It intercepts the execution flow at the moment
``argcomplete.autocomplete()`` is called. After sending completions, it exits using ``exit_method`` (``os._exit``
by default). This means if your program has any side effects that happen before ``argcomplete`` is called, those
side effects will happen every time the user presses ``<TAB>`` (although anything your program prints to stdout or
stderr will be suppressed). For this reason it's best to construct the argument parser and call
``argcomplete.autocomplete()`` as early as possible in your execution flow.

.. admonition:: Performance

If the program takes a long time to get to the point where ``argcomplete.autocomplete()`` is called, the tab completion
process will feel sluggish, and the user may lose confidence in it. So it's also important to minimize the startup time
of the program up to that point (for example, by deferring initialization or importing of large modules until after
parsing options).

Specifying completers

You can specify custom completion functions for your options and arguments. Two styles are supported: callable and
readline-style. Callable completers are simpler. They are called with the following keyword arguments:

* ``prefix``: The prefix text of the last word before the cursor on the command line.
For dynamic completers, this can be used to reduce the work required to generate possible completions.
* ``action``: The ``argparse.Action`` instance that this completer was called for.
* ``parser``: The ``argparse.ArgumentParser`` instance that the action was taken by.
* ``parsed_args``: The result of argument parsing so far (the ``argparse.Namespace`` args object normally returned by
``ArgumentParser.parse_args()``).

Completers should return their completions as a list of strings. An example completer for names of environment
variables might look like this:

.. code-block:: python

```
def EnvironCompleter(**kwargs):
```
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

    return os.environ

To specify a completer for an argument or option, set the ``completer`` attribute of its associated action. An easy way to do this at definition time is:

.. code-block:: python

```
from argcomplete.completers import EnvironCompleter

parser = argparse.ArgumentParser()
parser.add_argument("--env-var1").completer = EnvironCompleter
parser.add_argument("--env-var2").completer = EnvironCompleter
argcomplete.autocomplete(parser)
```

If you specify the ``choices`` keyword for an argparse option or argument (and don't specify a completer), it will be
used for completions.

A completer that is initialized with a set of all possible choices of values for its action might look like this:

.. code-block:: python

```
class ChoicesCompleter(object):
    def __init__(self, choices):
        self.choices = choices

    def __call__(self, **kwargs):
        return self.choices
```

The following two ways to specify a static set of choices are equivalent for completion purposes:

.. code-block:: python

```
from argcomplete.completers import ChoicesCompleter

parser.add_argument("--protocol", choices=('http', 'https', 'ssh', 'rsync', 'wss'))
parser.add_argument("--proto").completer=ChoicesCompleter(('http', 'https', 'ssh', 'rsync', 'wss'))
```

Note that if you use the ``choices=<completions>`` option, argparse will show
all these choices in the ``--help`` output by default. To prevent this, set
``metavar`` (like ``parser.add_argument("--protocol", metavar="PROTOCOL",
choices=('http', 'https', 'ssh', 'rsync', 'wss'))``).

The following `script
<https://raw.github.com/kislyuk/argcomplete/master/docs/examples/describe_github_user.py>`_ uses
``parsed_args`` and `Requests <http://python-requests.org/>`_ to query GitHub for publicly known members of an
organization and complete their names, then prints the member description:

.. code-block:: python

```
#!/usr/bin/env python
# PYTHON_ARGCOMPLETE_OK
import argcomplete, argparse, requests, pprint

def github_org_members(prefix, parsed_args, **kwargs):
    resource = "https://api.github.com/orgs/{org}/members".format(org=parsed_args.organization)
    return (member['login'] for member in requests.get(resource).json() if member['login'].startswith(prefix))

parser = argparse.ArgumentParser()
parser.add_argument("--organization", help="GitHub organization")
parser.add_argument("--member", help="GitHub member").completer = github_org_members

argcomplete.autocomplete(parser)
args = parser.parse_args()

pprint.pprint(requests.get("https://api.github.com/users/{m}".format(m=args.member)).json())
```

`Try it <https://raw.github.com/kislyuk/argcomplete/master/docs/examples/describe_github_user.py>`_ like this::

```
./describe_github_user.py --organization heroku --member <TAB>
```

If you have a useful completer to add to the `completer library
<https://github.com/kislyuk/argcomplete/blob/master/argcomplete/completers.py>`_, send a pull request!

Readline-style completers
~~~~~~~~~~~~~~~~~~~~~~~~~~
The readline_ module defines a completer protocol in rlcompleter_. Readline-style completers are also supported by
argcomplete, so you can use the same completer object both in an interactive readline-powered shell and on the bash
command line. For example, you can use the readline-style completer provided by IPython_ to get introspective
completions like you would get in the IPython shell:

.. _readline: http://docs.python.org/3/library/readline.html
.. _rlcompleter: http://docs.python.org/3/library/rlcompleter.html#completer-objects
.. _IPython: http://ipython.org/

.. code-block:: python

```
import IPython
parser.add_argument("--python-name").completer = IPython.core.completer.Completer()
```

``argcomplete.CompletionFinder.rl_complete`` can also be used to plug in an argparse parser as a readline completer.
~~~~~~~~~~~~~~~~~~~~~~~~~~

Printing warnings in completers
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Normal stdout/stderr output is suspended when argcomplete runs. Sometimes, though, when the user presses ``<TAB>``, it's
appropriate to print information about why completions generation failed. To do this, use ``warn``:

.. code-block:: python

```
from argcomplete import warn

def AwesomeWebServiceCompleter(prefix, **kwargs):
    if login_failed:
        warn("Please log in to Awesome Web Service to use autocompletion")
    return completions
```

Using a custom completion validator
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
By default, argcomplete validates your completions by checking if they start with the prefix given to the completer. You
can override this validation check by supplying the ``validator`` keyword to ``argcomplete.autocomplete()``:

.. code-block:: python

```
def my_validator(current_input, keyword_to_check_against):
    # Pass through ALL options even if they don't all start with 'current_input'
    return True

argcomplete.autocomplete(parser, validator=my_validator)
```

Global completion

In global completion mode, you don't have to register each argcomplete-capable executable separately. Instead, bash
will look for the string **PYTHON_ARGCOMPLETE_OK** in the first 1024 bytes of any executable that it's running
completion for, and if it's found, follow the rest of the argcomplete protocol as described above.

Additionally, completion is activated for scripts run as ``python <script>`` and ``python -m <module>``.
This also works for alternate Python versions (e.g. ``python3`` and ``pypy``), as long as that version of Python has
argcomplete installed.

.. admonition:: Bash version compatibility

Global completion requires bash support for ``complete -D``, which was introduced in bash 4.2. On OS X or older Linux
systems, you will need to update bash to use this feature. Check the version of the running copy of bash with

``echo $BASH_VERSION``. On OS X, install bash via `Homebrew <http://brew.sh/>`_ (``brew install bash``), add
``/usr/local/bin/bash`` to ``/etc/shells``, and run ``chsh`` to change your shell.

Global completion is not currently compatible with zsh.

.. note:: If you use setuptools/distribute ``scripts`` or ``entry_points`` directives to package your module,
argcomplete will follow the wrapper scripts to their destination and look for ``PYTHON_ARGCOMPLETE_OK`` in the
destination code.

If you choose not to use global completion, or ship a bash completion module that depends on argcomplete, you must
register your script explicitly using ``eval "$(register-python-argcomplete my-awesome-script)"``. Standard bash
completion registration roules apply: namely, the script name is passed directly to ``complete``, meaning it is only tab
completed when invoked exactly as it was registered. In the above example, ``my-awesome-script`` must be on the path,
and the user must be attempting to complete it by that name. The above line alone would **not** allow you to complete
``./my-awesome-script``, or ``/path/to/my-awesome-script``.

Activating global completion
~~~~~~~~~~~~~~~~~~~~~~~~~~~~
The script ``activate-global-python-argcomplete`` will try to install the file
``bash_completion.d/python-argcomplete`` (`see on GitHub`_) into an appropriate location on your system
(``/etc/bash_completion.d/`` or ``~/.bash_completion.d/``). If it
fails, but you know the correct location of your bash completion scripts directory, you can specify it with ``--dest``::

    activate-global-python-argcomplete --dest=/path/to/bash_completion.d

Otherwise, you can redirect its shellcode output into a file::

    activate-global-python-argcomplete --dest=- > file

The file's contents should then be sourced in e.g. ``~/.bashrc``.

.. _`see on GitHub`: https://github.com/kislyuk/argcomplete/blob/master/argcomplete/bash_completion.d/python-argcomplete

Zsh Support

To activate completions for zsh you need to have ``bashcompinit`` enabled in zsh::

    autoload -U bashcompinit
~~~~~~~~~~~~~~~~~~~~~~~~~~~~

bashcompinit

Afterwards you can enable completion for your scripts with ``register-python-argcomplete``::

```
eval "$(register-python-argcomplete my-awesome-script)"
```

Tcsh Support

To activate completions for tcsh use::

```
eval `register-python-argcomplete --shell tcsh my-awesome-script`
```

The ``python-argcomplete-tcsh`` script provides completions for tcsh.
The following is an example of the tcsh completion syntax for
``my-awesome-script`` emitted by ``register-python-argcomplete``::

```
complete my-awesome-script 'p@*@`python-argcomplete-tcsh my-awesome-script`@'
```

Fish Support

To activate completions for fish use::

```
register-python-argcomplete --shell fish my-awesome-script | source
```

or create new completion file, e.g::

```
register-python-argcomplete --shell fish ~/.config/fish/completions/my-awesome-script.fish
```

Completion Description For Fish
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
By default help string is added as completion description.

.. image:: docs/fish_help_string.png

You can disable this feature by removing ``_ARGCOMPLETE_DFS`` variable, e.g::

```
register-python-argcomplete --shell fish my-awesome-script | grep -v _ARGCOMPLETE_DFS | .
```

Git Bash Support

Due to limitations of file descriptor inheritance on Windows,
Git Bash not supported out of the box. You can opt in to using
temporary files instead of file descriptors for for IPC
by setting the environment variable ``ARGCOMPLETE_USE_TEMPFILES``,
e.g. by adding ``export ARGCOMPLETE_USE_TEMPFILES=1`` to ``~/.bashrc``.

For full support, consider using Bash with the
Windows Subsystem for Linux (WSL).
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

External argcomplete script

To register an argcomplete script for an arbitrary name, the ``--external-argcomplete-script`` argument of the ``register-python-argcomplete`` script can be used::

    eval "$(register-python-argcomplete --external-argcomplete-script /path/to/script arbitrary-name)"

This allows, for example, to use the auto completion functionality of argcomplete for an application not written in Python.
The command line interface of this program must be additionally implemented in a Python script with argparse and argcomplete and whenever the application is called the registered external argcomplete script is used for auto completion.

This option can also be used in combination with the other supported shells.

Python Support

Argcomplete requires Python 2.7 or 3.5+.

Common Problems

If global completion is not completing your script, bash may have registered a
default completion function::

    $ complete | grep my-awesome-script
    complete -F _minimal my-awesome-script

You can fix this by restarting your shell, or by running
``complete -r my-awesome-script``.

Debugging

Set the ``_ARC_DEBUG`` variable in your shell to enable verbose debug output every time argcomplete runs. This will
disrupt the command line composition state of your terminal, but make it possible to see the internal state of the completer if it encounters problems.

Acknowledgments

Inspired and informed by the optcomplete_ module by Martin Blais.

.. _optcomplete: http://pypi.python.org/pypi/optcomplete

Links
-----
* `Project home page (GitHub) <https://github.com/kislyuk/argcomplete>`_
* `Documentation <https://kislyuk.github.io/argcomplete/>`_

* `Package distribution (PyPI) <https://pypi.python.org/pypi/argcomplete>`_
* `Change log <https://github.com/kislyuk/argcomplete/blob/master/Changes.rst>`_
* `xontrib-argcomplete <https://github.com/anki-code/xontrib-argcomplete>`_ - support argcomplete in `xonsh <https://github.com/xonsh/xonsh>`_ shell

Bugs
~~~~
Please report bugs, issues, feature requests, etc. on `GitHub &lt;https://github.com/kislyuk/argcomplete/issues&gt;`_.

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-------
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.. image:: https://github.com/kislyuk/argcomplete/workflows/Python%20package/badge.svg
    :target: https://github.com/kislyuk/argcomplete/actions
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Provides-Extra: test

Found in path(s):
~~~~

* /opt/cola/permits/1154477170_1618854374.36/0/argcomplete-1-12-2-tar-gz/argcomplete-1.12.2/argcomplete.egg-info/PKG-INFO
* /opt/cola/permits/1154477170_1618854374.36/0/argcomplete-1-12-2-tar-gz/argcomplete-1.12.2/PKG-INFO
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* /opt/cola/permits/1154477170_1618854374.36/0/argcomplete-1-12-2-tar-gz/argcomplete-1.12.2/scripts/register-python-argcomplete
* /opt/cola/permits/1154477170_1618854374.36/0/argcomplete-1-12-2-tar-gz/argcomplete-1.12.2/argcomplete/completers.py
* /opt/cola/permits/1154477170_1618854374.36/0/argcomplete-1-12-2-tar-gz/argcomplete-1.12.2/argcomplete/__init__.py
* /opt/cola/permits/1154477170_1618854374.36/0/argcomplete-1-12-2-tar-gz/argcomplete-1.12.2/scripts/python-argcomplete-check-easy-install-script
* /opt/cola/permits/1154477170_1618854374.36/0/argcomplete-1-12-2-tar-gz/argcomplete-1.12.2/argcomplete/my_argparse.py
* /opt/cola/permits/1154477170_1618854374.36/0/argcomplete-1-12-2-tar-gz/argcomplete-1.12.2/scripts/activate-global-python-argcomplete
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1.37 basic-auth 2.0.1

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1.38 appdirs 1.4.4

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1.39 pyotp 2.7.0

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1.40 alpine-keys 2.4-r1

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1.41 fastutil-core 8.5.8

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*/


package PACKAGE;

import java.util.function.BinaryOperator;

/** A type-specific {@link BinaryOperator}; provides methods operating both on objects
* and on primitives.
*
* @see BinaryOperator
* @since 8.5.0
*/

@FunctionalInterface
#if ! KEY_CLASS_Boolean
public interface KEY_BINARY_OPERATOR KEY_GENERIC extends
BinaryOperator<KEY_GENERIC_CLASS>, JDK_PRIMITIVE_BINARY_OPERATOR {
#else
public interface KEY_BINARY_OPERATOR KEY_GENERIC extends
BinaryOperator<KEY_GENERIC_CLASS> {
#endif

 /**
  * Computes the operator on the given inputs.
  *
  * @param x the first input.
  * @param y the second input.
  * @return the output of the operator on the given inputs.
  */
 KEY_TYPE apply(KEY_TYPE x, KEY_TYPE y);

#if KEYS_INT_LONG_DOUBLE
 /** {@inheritDoc}
  *
  * @implSpec This default implementation delegates to {@link #apply}.
  * @deprecated Please use {@link #apply}.
  */
#else
 /** {@inheritDoc}
  *
  * @implSpec This default implementation delegates to
```

```
 * {@link #apply} after narrowing down the arguments to the
 * actual key type, throwing an exception if the arguments cannot be
 * represented in the restricted domain. This is done for interoperability
 * with the Java 8 function environment. The use of this method discouraged, as
 * unexpected errors can occur.
 *
 * @throws IllegalArgumentException If the given operands are not an element of the key domain.
 * @since 8.5.0
 * @deprecated Please use {@link #apply}.
 */
#endif

#if ! KEY_CLASS_Boolean
 @Deprecated
 @Override
 default KEY_TYPE_WIDENED JDK_PRIMITIVE_BINARY_OPERATOR_APPLY(final
KEY_TYPE_WIDENED x, final KEY_TYPE_WIDENED y) {
  return apply(KEY_NARROWING(x), KEY_NARROWING(y));
 }
#endif

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 @SuppressWarnings("boxing")
 default KEY_CLASS apply(final KEY_CLASS x, final KEY_CLASS y) {
  return apply(x.KEY_VALUE(), y.KEY_VALUE());
 }
}
```

Found in path(s):
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```
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*/


package PACKAGE;

import static it.unimi.dsi.fastutil.BigArrays.grow;
import static it.unimi.dsi.fastutil.BigArrays.length;
import static it.unimi.dsi.fastutil.BigArrays.set;
import static it.unimi.dsi.fastutil.BigArrays.trim;

import java.util.Iterator;
import java.util.ListIterator;
import java.util.NoSuchElementException;
import java.util.Objects;
import java.util.function.Consumer;
#if KEYS_PRIMITIVE && ! KEY_CLASS_Boolean
import java.util.PrimitiveIterator;
#if KEYS_BYTE_CHAR_SHORT_FLOAT
import WIDENED_PACKAGE.KEY_WIDENED_ITERATOR;
import WIDENED_PACKAGE.WIDENED_ITERATORS;
#endif
#endif

#if KEYS_REFERENCE
import java.util.function.Predicate;
#endif

/** A class providing static methods and objects that do useful things with type-specific iterators.
*
* @see Iterator
*/

public final class ITERATORS {

 private ITERATORS() {}

 /** A class returning no elements and a type-specific iterator interface.
  *
  * <p>This class may be useful to implement your own in case you subclass
  * a type-specific iterator.
  */

 public static class EmptyIterator KEY_GENERIC implements KEY_LIST_ITERATOR KEY_GENERIC,
java.io.Serializable, Cloneable {

  private static final long serialVersionUID = -7046029254386353129L;
```

```
 protected EmptyIterator() {}

 @Override
 public boolean hasNext() { return false; }

 @Override
 public boolean hasPrevious() { return false; }

 @Override
 public KEY_GENERIC_TYPE NEXT_KEY() { throw new NoSuchElementException(); }

 @Override
 public KEY_GENERIC_TYPE PREV_KEY() { throw new NoSuchElementException(); }

 @Override
 public int nextIndex() { return 0; }

 @Override
 public int previousIndex() { return -1; }

 @Override
 public int skip(int n) { return 0; }

 @Override
 public int back(int n) { return 0; }

#if KEYS_PRIMITIVE
 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) { }
#endif

 DEPRECATED_IF_KEYS_PRIMITIVE
 @Override
 public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) { }

 @Override
 public Object clone() { return EMPTY_ITERATOR; }

 private Object readResolve() { return EMPTY_ITERATOR; }
}

/** An empty iterator. It is serializable and cloneable.
 *
 * <p>The class of this objects represent an abstract empty iterator
 * that can iterate as a type-specific (list) iterator.
 */

SUPPRESS_WARNINGS_KEY_RAWTYPES
```

```
 public static final EmptyIterator EMPTY_ITERATOR = new EmptyIterator();

#if KEYS_REFERENCE
 /** Returns an empty iterator. It is serializable and cloneable.
  *
  * <p>The class of the object returned represent an abstract empty iterator
  * that can iterate as a type-specific (list) iterator.
  *
  * <p>This method provides a typesafe access to {@link #EMPTY_ITERATOR}.
  * @return an empty iterator.
  */
 @SuppressWarnings("unchecked")
 public static KEY_GENERIC KEY_ITERATOR KEY_GENERIC emptyIterator() { return EMPTY_ITERATOR; }
#endif


 /** An iterator returning a single element. */

 private static class SingletonIterator KEY_GENERIC implements KEY_LIST_ITERATOR KEY_GENERIC {
  private final KEY_GENERIC_TYPE element;
  private byte curr;

  public SingletonIterator(final KEY_GENERIC_TYPE element) {
   this.element = element;
  }

  @Override
  public boolean hasNext() { return curr == 0; }

  @Override
  public boolean hasPrevious() { return curr == 1; }

  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() {
   if (! hasNext()) throw new NoSuchElementException();
   curr = 1;
   return element;
  }

  @Override
  public KEY_GENERIC_TYPE PREV_KEY() {
   if (! hasPrevious()) throw new NoSuchElementException();
   curr = 0;
   return element;
  }

  @Override
#if KEYS_PRIMITIVE
```

```
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
#else // ! KEY_PRIMITIVE == KEY_REFERENCE
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
#endif
   Objects.requireNonNull(action);
   if (curr == 0) {
    action.accept(element);
    curr = 1;
   }
  }


  @Override
  public int nextIndex() {
   return curr;
  }

  @Override
  public int previousIndex() {
   return curr - 1;
  }

  @Override
  public int back(int n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   if (n == 0 || curr < 1) return 0;
   curr = 1;
   return 1;
  }

  @Override
  public int skip(int n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   if (n == 0 || curr > 0) return 0;
   curr = 0;
   return 1;
  }
 }


 /** Returns an immutable iterator that iterates just over the given element.
  *
  * @param element the only element to be returned by a type-specific list iterator.
  * @return an immutable iterator that iterates just over {@code element}.
  */
 public static KEY_GENERIC KEY_LIST_ITERATOR KEY_GENERIC singleton(final KEY_GENERIC_TYPE
element) {
  return new SingletonIterator KEY_GENERIC_DIAMOND(element);
```

```
 }


 /** A class to wrap arrays in iterators. */

 private static class ArrayIterator KEY_GENERIC implements KEY_LIST_ITERATOR KEY_GENERIC {
  private final KEY_GENERIC_TYPE[] array;
  private final int offset, length;
  private int curr;

  public ArrayIterator(final KEY_GENERIC_TYPE[] array, final int offset, final int length) {
   this.array = array;
   this.offset = offset;
   this.length = length;
  }

  @Override
  public boolean hasNext() { return curr < length; }

  @Override
  public boolean hasPrevious() { return curr > 0; }

  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() {
   if (! hasNext()) throw new NoSuchElementException();
   return array[offset + curr++];
  }

  @Override
  public KEY_GENERIC_TYPE PREV_KEY() {
   if (! hasPrevious()) throw new NoSuchElementException();
   return array[offset + --curr];
  }

  @Override
#if KEYS_PRIMITIVE
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
#else // ! KEY_PRIMITIVE == KEY_REFERENCE
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
#endif
   Objects.requireNonNull(action);
   for (; curr < length; ++curr) {
    action.accept(array[offset + curr]);
   }
  }

  @Override
  public int skip(int n) {
```

```
  if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
  if (n <= length - curr) {
   curr += n;
   return n;
  }
  n = length - curr;
  curr = length;
  return n;
 }

 @Override
 public int back(int n) {
  if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
  if (n <= curr) {
   curr -= n;
   return n;
  }
  n = curr;
  curr = 0;
  return n;
 }

 @Override
 public int nextIndex() {
  return curr;
 }

 @Override
 public int previousIndex() {
  return curr - 1;
 }
}


/** Wraps the given part of an array into a type-specific list iterator.
 *
 * <p>The type-specific list iterator returned by this method will iterate
 * {@code length} times, returning consecutive elements of the given
 * array starting from the one with index {@code offset}.
 *
 * @param array an array to wrap into a type-specific list iterator.
 * @param offset the first element of the array to be returned.
 * @param length the number of elements to return.
 * @return an iterator that will return {@code length} elements of {@code array} starting at position {@code
offset}.
 */
public static KEY_GENERIC KEY_LIST_ITERATOR KEY_GENERIC wrap(final KEY_GENERIC_TYPE[]
array, final int offset, final int length) {
```

```
 ARRAYS.ensureOffsetLength(array, offset, length);
 return new ArrayIterator KEY_GENERIC_DIAMOND(array, offset, length);
}

/** Wraps the given array into a type-specific list iterator.
 *
 * <p>The type-specific list iterator returned by this method will return
 * all elements of the given array.
 *
 * @param array an array to wrap into a type-specific list iterator.
 * @return an iterator that will return the elements of {@code array}.
 */
public static KEY_GENERIC KEY_LIST_ITERATOR KEY_GENERIC wrap(final KEY_GENERIC_TYPE[]
array) {
 return new ArrayIterator KEY_GENERIC_DIAMOND(array, 0, array.length);
}


/** Unwraps an iterator into an array starting at a given offset for a given number of elements.
 *
 * <p>This method iterates over the given type-specific iterator and stores the elements
 * returned, up to a maximum of {@code length}, in the given array starting at {@code offset}.
 * The number of actually unwrapped elements is returned (it may be less than {@code max} if
 * the iterator emits less than {@code max} elements).
 *
 * @param i a type-specific iterator.
 * @param array an array to contain the output of the iterator.
 * @param offset the first element of the array to be returned.
 * @param max the maximum number of elements to unwrap.
 * @return the number of elements unwrapped.
 */
public static KEY_GENERIC int unwrap(final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i, final
KEY_GENERIC_TYPE array[], int offset, final int max) {
 if (max < 0) throw new IllegalArgumentException("The maximum number of elements (" + max + ") is negative");
 if (offset < 0 || offset + max > array.length) throw new IllegalArgumentException();
 int j = max;
 while(j-- != 0 && i.hasNext()) array[offset++] = i.NEXT_KEY();
 return max - j - 1;
}

/** Unwraps an iterator into an array.
 *
 * <p>This method iterates over the given type-specific iterator and stores the
 * elements returned in the given array. The iteration will stop when the
 * iterator has no more elements or when the end of the array has been reached.
 *
 * @param i a type-specific iterator.
 * @param array an array to contain the output of the iterator.
```

```
 * @return the number of elements unwrapped.
 */
public static KEY_GENERIC int unwrap(final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i, final
KEY_GENERIC_TYPE array[]) {
 return unwrap(i, array, 0, array.length);
}

/** Unwraps an iterator, returning an array, with a limit on the number of elements.
 *
 * <p>This method iterates over the given type-specific iterator and returns an array
 * containing the elements returned by the iterator. At most {@code max} elements
 * will be returned.
 *
 * @param i a type-specific iterator.
 * @param max the maximum number of elements to be unwrapped.
 * @return an array containing the elements returned by the iterator (at most {@code max}).
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
public static KEY_GENERIC KEY_GENERIC_TYPE[] unwrap(final STD_KEY_ITERATOR
KEY_EXTENDS_GENERIC i, int max) {
 if (max < 0) throw new IllegalArgumentException("The maximum number of elements (" + max + ") is negative");
 KEY_GENERIC_TYPE array[] = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[16];
 int j = 0;

 while(max-- != 0 && i.hasNext()) {
  if (j == array.length) array = ARRAYS.grow(array, j + 1);
  array[j++] = i.NEXT_KEY();
 }

 return ARRAYS.trim(array, j);
}


/** Unwraps an iterator, returning an array.
 *
 * <p>This method iterates over the given type-specific iterator and returns an array
 * containing the elements returned by the iterator.
 *
 * @param i a type-specific iterator.
 * @return an array containing the elements returned by the iterator.
 */

public static KEY_GENERIC KEY_GENERIC_TYPE[] unwrap(final STD_KEY_ITERATOR
KEY_EXTENDS_GENERIC i) {
 return unwrap(i, Integer.MAX_VALUE);
}
```

```
/** Unwraps an iterator into a big array starting at a given offset for a given number of elements.
 *
 * <p>This method iterates over the given type-specific iterator and stores the elements
 * returned, up to a maximum of {@code length}, in the given big array starting at {@code offset}.
 * The number of actually unwrapped elements is returned (it may be less than {@code max} if
 * the iterator emits less than {@code max} elements).
 *
 * @param i a type-specific iterator.
 * @param array a big array to contain the output of the iterator.
 * @param offset the first element of the array to be returned.
 * @param max the maximum number of elements to unwrap.
 * @return the number of elements unwrapped.
 */
public static KEY_GENERIC long unwrap(final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i, final
KEY_GENERIC_TYPE array[][], long offset, final long max) {
 if (max < 0) throw new IllegalArgumentException("The maximum number of elements (" + max + ") is negative");
 if (offset < 0 || offset + max > length(array)) throw new IllegalArgumentException();
 long j = max;
 while(j-- != 0 && i.hasNext()) set(array, offset++, i.NEXT_KEY());
 return max - j - 1;
}

/** Unwraps an iterator into a big array.
 *
 * <p>This method iterates over the given type-specific iterator and stores the
 * elements returned in the given big array. The iteration will stop when the
 * iterator has no more elements or when the end of the array has been reached.
 *
 * @param i a type-specific iterator.
 * @param array a big array to contain the output of the iterator.
 * @return the number of elements unwrapped.
 */
public static KEY_GENERIC long unwrap(final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i, final
KEY_GENERIC_TYPE array[][]) {
 return unwrap(i, array, 0, length(array));
}

/** Unwraps an iterator into a type-specific collection, with a limit on the number of elements.
 *
 * <p>This method iterates over the given type-specific iterator and stores the elements
 * returned, up to a maximum of {@code max}, in the given type-specific collection.
 * The number of actually unwrapped elements is returned (it may be less than {@code max} if
 * the iterator emits less than {@code max} elements).
 *
 * @param i a type-specific iterator.
 * @param c a type-specific collection array to contain the output of the iterator.
 * @param max the maximum number of elements to unwrap.
 * @return the number of elements unwrapped. Note that
```

```
 * this is the number of elements returned by the iterator, which is not necessarily the number
 * of elements that have been added to the collection (because of duplicates).
 */
public static KEY_GENERIC int unwrap(final STD_KEY_ITERATOR KEY_GENERIC i, final COLLECTION
KEY_SUPER_GENERIC c, final int max) {
 if (max < 0) throw new IllegalArgumentException("The maximum number of elements (" + max + ") is negative");
 int j = max;
 while(j-- != 0 && i.hasNext()) c.add(i.NEXT_KEY());
 return max - j - 1;
}

/** Unwraps an iterator, returning a big array, with a limit on the number of elements.
 *
 * <p>This method iterates over the given type-specific iterator and returns a big array
 * containing the elements returned by the iterator. At most {@code max} elements
 * will be returned.
 *
 * @param i a type-specific iterator.
 * @param max the maximum number of elements to be unwrapped.
 * @return a big array containing the elements returned by the iterator (at most {@code max}).
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
public static KEY_GENERIC KEY_GENERIC_TYPE[][] unwrapBig(final STD_KEY_ITERATOR
KEY_EXTENDS_GENERIC i, long max) {
 if (max < 0) throw new IllegalArgumentException("The maximum number of elements (" + max + ") is negative");
 KEY_GENERIC_TYPE array[][] = KEY_GENERIC_BIG_ARRAY_CAST BIG_ARRAYS.newBigArray(16);
 long j = 0;

 while(max-- != 0 && i.hasNext()) {
  if (j == length(array)) array = grow(array, j + 1);
  set(array, j++, i.NEXT_KEY());
 }

 return trim(array, j);
}



/** Unwraps an iterator, returning a big array.
 *
 * <p>This method iterates over the given type-specific iterator and returns a big array
 * containing the elements returned by the iterator.
 *
 * @param i a type-specific iterator.
 * @return a big array containing the elements returned by the iterator.
 */

public static KEY_GENERIC KEY_GENERIC_TYPE[][] unwrapBig(final STD_KEY_ITERATOR
KEY_EXTENDS_GENERIC i) {
```

```
 return unwrapBig(i, Long.MAX_VALUE);
}

/** Unwraps an iterator into a type-specific collection.
 *
 * <p>This method iterates over the given type-specific iterator and stores the
 * elements returned in the given type-specific collection. The returned count on the number
 * unwrapped elements is a long, so that it will work also with very large collections.
 *
 * @param i a type-specific iterator.
 * @param c a type-specific collection to contain the output of the iterator.
 * @return the number of elements unwrapped. Note that
 * this is the number of elements returned by the iterator, which is not necessarily the number
 * of elements that have been added to the collection (because of duplicates).
 */
public static KEY_GENERIC long unwrap(final STD_KEY_ITERATOR KEY_GENERIC i, final COLLECTION
KEY_SUPER_GENERIC c) {
 long n = 0;
 while(i.hasNext()) {
  c.add(i.NEXT_KEY());
  n++;
 }
 return n;
}


/** Pours an iterator into a type-specific collection, with a limit on the number of elements.
 *
 * <p>This method iterates over the given type-specific iterator and adds
 * the returned elements to the given collection (up to {@code max}).
 *
 * @param i a type-specific iterator.
 * @param s a type-specific collection.
 * @param max the maximum number of elements to be poured.
 * @return the number of elements poured. Note that
 * this is the number of elements returned by the iterator, which is not necessarily the number
 * of elements that have been added to the collection (because of duplicates).
 */

public static KEY_GENERIC int pour(final STD_KEY_ITERATOR KEY_GENERIC i, final COLLECTION
KEY_SUPER_GENERIC s, final int max) {
 if (max < 0) throw new IllegalArgumentException("The maximum number of elements (" + max + ") is negative");
 int j = max;
 while(j-- != 0 && i.hasNext()) s.add(i.NEXT_KEY());
 return max - j - 1;
}

/** Pours an iterator into a type-specific collection.
```

```
 *
 * <p>This method iterates over the given type-specific iterator and adds
 * the returned elements to the given collection.
 *
 * @param i a type-specific iterator.
 * @param s a type-specific collection.
 * @return the number of elements poured. Note that
 * this is the number of elements returned by the iterator, which is not necessarily the number
 * of elements that have been added to the collection (because of duplicates).
 */

public static KEY_GENERIC int pour(final STD_KEY_ITERATOR KEY_GENERIC i, final COLLECTION
KEY_SUPER_GENERIC s) {
 return pour(i, s, Integer.MAX_VALUE);
}

/** Pours an iterator, returning a type-specific list, with a limit on the number of elements.
 *
 * <p>This method iterates over the given type-specific iterator and returns
 * a type-specific list containing the returned elements (up to {@code max}). Iteration
 * on the returned list is guaranteed to produce the elements in the same order
 * in which they appeared in the iterator.
 *
 *
 * @param i a type-specific iterator.
 * @param max the maximum number of elements to be poured.
 * @return a type-specific list containing the returned elements, up to {@code max}.
 */

public static KEY_GENERIC LIST KEY_GENERIC pour(final STD_KEY_ITERATOR KEY_GENERIC i, int
max) {
 final ARRAY_LIST KEY_GENERIC l = new ARRAY_LIST KEY_GENERIC_DIAMOND();
 pour(i, l, max);
 l.trim();
 return l;
}

/** Pours an iterator, returning a type-specific list.
 *
 * <p>This method iterates over the given type-specific iterator and returns
 * a list containing the returned elements. Iteration
 * on the returned list is guaranteed to produce the elements in the same order
 * in which they appeared in the iterator.
 *
 * @param i a type-specific iterator.
 * @return a type-specific list containing the returned elements.
 */
```

```
 public static KEY_GENERIC LIST KEY_GENERIC pour(final STD_KEY_ITERATOR KEY_GENERIC i) {
  return pour(i, Integer.MAX_VALUE);
 }

 private static class IteratorWrapper KEY_GENERIC implements KEY_ITERATOR KEY_GENERIC {
  final Iterator<KEY_GENERIC_CLASS> i;

  public IteratorWrapper(final Iterator<KEY_GENERIC_CLASS> i) {
   this.i = i;
  }

  @Override
  public boolean hasNext() { return i.hasNext(); }
  @Override
  public void remove() { i.remove(); }
  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() { return KEY_CLASS2TYPE(i.next()); }

#if KEYS_INT_LONG_DOUBLE
  // This is pretty much the only time overriding this overload is correct; we want to
  // delegate as an Object consumer, not wrap it as a primitive one.
  @Override
  public void forEachRemaining(final KEY_CONSUMER action) {
   i.forEachRemaining(action);
  }
#endif

#if KEYS_PRIMITIVE
#if KEYS_INT_LONG_DOUBLE
  @SuppressWarnings("unchecked")
#endif
  @Override
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
#if KEYS_INT_LONG_DOUBLE // The JDK's IntConsumer is not a subclass of Consumer, so we need another
lambda.
   Objects.requireNonNull(action);
   i.forEachRemaining(action instanceof Consumer ? (Consumer<? super KEY_GENERIC_CLASS>)action :
action::accept);
#else
   i.forEachRemaining(action);
#endif
  }
#endif

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
   i.forEachRemaining(action);
```

```
  }
 }

#if KEYS_PRIMITIVE && ! KEY_CLASS_Boolean
 private static class PrimitiveIteratorWrapper KEY_GENERIC implements KEY_ITERATOR KEY_GENERIC {
  final JDK_PRIMITIVE_ITERATOR i;

  public PrimitiveIteratorWrapper(JDK_PRIMITIVE_ITERATOR i) {
   this.i = i;
  }

  @Override
  public boolean hasNext() { return i.hasNext(); }
  @Override
  public void remove() { i.remove(); }
  @Override
#if KEYS_INT_LONG_DOUBLE
  public KEY_GENERIC_TYPE NEXT_KEY() { return i.NEXT_KEY_WIDENED(); }
#else
  public KEY_GENERIC_TYPE NEXT_KEY() { return (KEY_GENERIC_TYPE)i.NEXT_KEY_WIDENED(); }
#endif

  @Override
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
   i.forEachRemaining(action);
  }
 }
#endif

#if KEYS_BYTE_CHAR_SHORT_FLOAT
 private static class CheckedPrimitiveIteratorWrapper KEY_GENERIC extends PrimitiveIteratorWrapper {
  public CheckedPrimitiveIteratorWrapper(JDK_PRIMITIVE_ITERATOR i) {
   super(i);
  }

  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() { return KEY_NARROWING(i.NEXT_KEY_WIDENED()); }

  @Override
  public void forEachRemaining(final KEY_CONSUMER action) {
   i.forEachRemaining((JDK_PRIMITIVE_KEY_CONSUMER)(KEY_GENERIC_TYPE_WIDENED value) -> {
action.accept(KEY_NARROWING(value)); });
  }
 }
#endif

 /** Wraps a standard iterator into a type-specific iterator.
  *
```

```
 * <p>This method wraps a standard iterator into a type-specific one which will handle the
 * type conversions for you. Of course, any attempt to wrap an iterator returning the
 * instances of the wrong class will generate a {@link ClassCastException}. The
 * returned iterator is backed by {@code i}: changes to one of the iterators
 * will affect the other, too.
 *
 * @implNote If {@code i} is already type-specific, it will returned and no new object
 * will be generated.
 *
 * @param i an iterator.
 * @return a type-specific iterator backed by {@code i}.
 */
#if KEYS_PRIMITIVE
 @SuppressWarnings({"unchecked","rawtypes"})
#endif
 public static KEY_GENERIC KEY_ITERATOR KEY_GENERIC AS_KEY_ITERATOR(final Iterator
KEY_GENERIC i) {
  if (i instanceof KEY_ITERATOR) return (KEY_ITERATOR KEY_GENERIC)i;
#if KEYS_INT_LONG_DOUBLE
  if (i instanceof JDK_PRIMITIVE_ITERATOR) return new PrimitiveIteratorWrapper
KEY_GENERIC_DIAMOND((JDK_PRIMITIVE_ITERATOR)i);
#endif
  return new IteratorWrapper KEY_GENERIC_DIAMOND(i);
 }

#if KEYS_BYTE_CHAR_SHORT_FLOAT
 /** Wrap a JDK primitive iterator to a type-specific iterator, making checked
  * narrowed casts.
  *
  * @implNote The {@code next} method throws {@link IllegalArgumentException} if any element would
underflow or overflow.
  *
  * @param i an iterator.
  * @return a type-specific iterator backed by {@code i}.
  * @since 8.5.0
  */
 public static KEY_GENERIC KEY_ITERATOR KEY_GENERIC narrow(final JDK_PRIMITIVE_ITERATOR i)
{
  return new CheckedPrimitiveIteratorWrapper KEY_GENERIC_DIAMOND(i);
 }
#endif

#if KEYS_BYTE_CHAR_SHORT_FLOAT
 /** Wrap a JDK primitive iterator to a type-specific iterator, making <em>unchecked</em>
  * narrowing casts.
  *
  * <p><em>No</em> test is done for overflow or underflow.
  *
```

```
  * @param i an iterator.
  * @return a type-specific iterator backed by {@code i}.
  * @since 8.5.0
  */
 public static KEY_GENERIC KEY_ITERATOR KEY_GENERIC uncheckedNarrow(final
JDK_PRIMITIVE_ITERATOR i) {
  return new PrimitiveIteratorWrapper KEY_GENERIC_DIAMOND(i);
 }
#endif

#if KEYS_BYTE_CHAR_SHORT_FLOAT
#if KEY_CLASS_Character
 /** Wrap a type-specific iterator to a JDK compatible primitive iterator.
  *
  * <p><b>WARNING</b>: This is <em>not</em> the same as converting the source to a sequence
  * of code points. This returned instance literally performs {@code (int)(charValue)} casts.
  * Surrogate pairs will be left as separate elements instead of combined into a single element
  * with the code point it represents. See {@link Character} for more discussion on code points,
  * char values, and surrogate pairs.
  *
  * @param i an iterator
  * @return a JDK compatible primitive iterator backed by {@code i}
  * @since 8.5.0
  */
#else
 /** Wrap a type-specific iterator to a JDK compatible primitive iterator.
  *
  * @param i an iterator
  * @return a JDK compatible primitive iterator backed by {@code i}
  * @since 8.5.0
  */
#endif
 public static KEY_WIDENED_ITERATOR widen(KEY_ITERATOR i) { return
WIDENED_ITERATORS.wrap(i); }
#endif

 private static class ListIteratorWrapper KEY_GENERIC implements KEY_LIST_ITERATOR KEY_GENERIC {
  final ListIterator<KEY_GENERIC_CLASS> i;

  public ListIteratorWrapper(final ListIterator<KEY_GENERIC_CLASS> i) {
   this.i = i;
  }

  @Override
  public boolean hasNext() { return i.hasNext(); }

  @Override
  public boolean hasPrevious() { return i.hasPrevious(); }
```

```
  @Override
  public int nextIndex() { return i.nextIndex(); }

  @Override
  public int previousIndex() { return i.previousIndex(); }

  @Override
  public void set(KEY_GENERIC_TYPE k) { i.set(KEY2OBJ(k)); }

  @Override
  public void add(KEY_GENERIC_TYPE k) { i.add(KEY2OBJ(k)); }

  @Override
  public void remove() { i.remove(); }

  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() { return KEY_CLASS2TYPE(i.next()); }

  @Override
  public KEY_GENERIC_TYPE PREV_KEY() { return KEY_CLASS2TYPE(i.previous()); }

#if KEYS_INT_LONG_DOUBLE
  // This is pretty much the only time overriding this overload is correct; we want to
  // delegate as an Object consumer, not wrap it as a primitive one.
  @Override
  public void forEachRemaining(final KEY_CONSUMER action) {
   i.forEachRemaining(action);
  }
#endif

#if KEYS_PRIMITIVE
#if KEYS_INT_LONG_DOUBLE
  @SuppressWarnings("unchecked")
#endif
  @Override
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
#if KEYS_INT_LONG_DOUBLE  // The JDK's IntConsumer is not a subclass of Consumer, so we another lambda.
   Objects.requireNonNull(action);
   i.forEachRemaining(action instanceof Consumer ? (Consumer<? super KEY_GENERIC_CLASS>)action :
action::accept);
#else
   i.forEachRemaining(action);
#endif
  }
#endif

  DEPRECATED_IF_KEYS_PRIMITIVE
```

```
 @Override
 public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
  i.forEachRemaining(action);
 }
}

/** Wraps a standard list iterator into a type-specific list iterator.
 *
 * <p>This method wraps a standard list iterator into a type-specific one
 * which will handle the type conversions for you. Of course, any attempt
 * to wrap an iterator returning the instances of the wrong class will
 * generate a {@link ClassCastException}. The
 * returned iterator is backed by {@code i}: changes to one of the iterators
 * will affect the other, too.
 *
 * <p>If {@code i} is already type-specific, it will returned and no new object
 * will be generated.
 *
 * @param i a list iterator.
 * @return a type-specific list iterator backed by {@code i}.
 */
#if KEYS_PRIMITIVE
 @SuppressWarnings({"unchecked","rawtypes"})
#endif
 public static KEY_GENERIC KEY_LIST_ITERATOR KEY_GENERIC AS_KEY_ITERATOR(final ListIterator
KEY_GENERIC i) {
  if (i instanceof KEY_LIST_ITERATOR) return (KEY_LIST_ITERATOR KEY_GENERIC)i;
  return new ListIteratorWrapper KEY_GENERIC_DIAMOND(i);
 }

 /**
  * Returns whether an element returned by the given iterator satisfies the given predicate.
  * <p>Short circuit evaluation is performed; the first {@code true} from the predicate terminates the loop.
  * @return true if an element returned by {@code iterator} satisfies {@code predicate}.
  */
 public static KEY_GENERIC boolean any(final STD_KEY_ITERATOR KEY_GENERIC iterator, final
METHOD_ARG_PREDICATE predicate) {
  return indexOf(iterator, predicate) != -1;
 }
#if KEYS_BYTE_CHAR_SHORT_FLOAT
 /**
  * Returns whether an element returned by the given iterator satisfies the given predicate.
  * <p>Short circuit evaluation is performed; the first {@code true} from the predicate terminates the loop.
  * @return true if an element returned by {@code iterator} satisfies {@code predicate}.
  *   lambda to perform widening casts. Please use the type-specific overload to avoid this overhead.
  */
 public static KEY_GENERIC boolean any(final KEY_ITERATOR KEY_GENERIC iterator, final
JDK_PRIMITIVE_PREDICATE predicate) {
```

```
 return any(iterator, predicate instanceof METHOD_ARG_PREDICATE ? (METHOD_ARG_PREDICATE)
predicate : (METHOD_ARG_PREDICATE) predicate::test);
 }
#endif

 /**
  * Returns whether all elements returned by the given iterator satisfy the given predicate.
  * <p>Short circuit evaluation is performed; the first {@code false} from the predicate terminates the loop.
  * @return true if all elements returned by {@code iterator} satisfy {@code predicate}.
  */
 public static KEY_GENERIC boolean all(final STD_KEY_ITERATOR KEY_GENERIC iterator, final
METHOD_ARG_PREDICATE predicate) {
  Objects.requireNonNull(predicate);
  do {
   if (!iterator.hasNext()) return true;
  } while (predicate.test(iterator.NEXT_KEY()));
  return false;
 }
#if KEYS_BYTE_CHAR_SHORT_FLOAT
 /**
  * Returns whether all elements returned by the given iterator satisfy the given predicate.
  * <p>Short circuit evaluation is performed; the first {@code false} from the predicate terminates the loop.
  * @return true if all elements returned by {@code iterator} satisfy {@code predicate}.
  * @implNote Unless the argument is type-specific, this method will introduce an intermediary
  *   lambda to perform widening casts. Please use the type-specific overload to avoid this overhead.
  */
 public static KEY_GENERIC boolean all(final KEY_ITERATOR KEY_GENERIC iterator, final
JDK_PRIMITIVE_PREDICATE predicate) {
  return all(iterator, predicate instanceof METHOD_ARG_PREDICATE ? (METHOD_ARG_PREDICATE)
predicate : (METHOD_ARG_PREDICATE) predicate::test);
 }
#endif

 /**
  * Returns the index of the first element returned by the given iterator that satisfies the given predicate, or &minus;1
if
  * no such element was found.
  * <p>The next element returned by the iterator always considered element 0, even for
  * {@link java.util.ListIterator ListIterators}. In other words {@link java.util.ListIterator#nextIndex
  * ListIterator.nextIndex} is ignored.
  * @return the index of the first element returned by {@code iterator} that satisfies {@code predicate}, or
&minus;1 if
  * no such element was found.
  */
 public static KEY_GENERIC int indexOf(final STD_KEY_ITERATOR KEY_GENERIC iterator, final
METHOD_ARG_PREDICATE predicate) {
  Objects.requireNonNull(predicate);
```

```
  for (int i = 0; iterator.hasNext(); ++i) {
   if (predicate.test(iterator.NEXT_KEY())) return i;
  }

  return -1;
 }
#if KEYS_BYTE_CHAR_SHORT_FLOAT
 /**
  * Returns the index of the first element returned by the given iterator that satisfies the given predicate, or &minus;1
if
  * no such element was found.
  * <p>The next element returned by the iterator always considered element 0, even for
  * {@link java.util.ListIterator ListIterators}. In other words {@link java.util.ListIterator#nextIndex
  * ListIterator.nextIndex} is ignored.
  * @return the index of the first element returned by {@code iterator} that satisfies {@code predicate}, or
&minus;1 if
  * no such element was found.
  * @implNote Unless the argument is type-specific, this method will introduce an intermediary
  *   lambda to perform widening casts. Please use the type-specific overload to avoid this overhead.
  */
 public static KEY_GENERIC int indexOf(final KEY_ITERATOR KEY_GENERIC iterator, final
JDK_PRIMITIVE_PREDICATE predicate) {
  return indexOf(iterator, predicate instanceof METHOD_ARG_PREDICATE ? (METHOD_ARG_PREDICATE)
predicate : (METHOD_ARG_PREDICATE) predicate::test);
 }
#endif

 /**
  * A skeletal implementation for an iterator backed by an index-based data store. High performance
  * concrete implementations (like the main Iterator of ArrayList) generally should avoid using this
  * and just implement the interface directly, but should be decent for less
  * performance critical implementations.
  *
  * <p>This class is only appropriate for sequences that are at most {@link Integer#MAX_VALUE} long.
  * If your backing data store can be bigger then this, consider the equivalently named class in
  * the type specific {@code BigListIterators} class.
  *
  * <p>As the abstract methods in this class are used in inner loops, it is generally a
  * good idea to override the class as {@code final} as to encourage the JVM to inline
  * them (or alternatively, override the abstract methods as final).
  */
 public static abstract class AbstractIndexBasedIterator KEY_GENERIC extends KEY_ABSTRACT_ITERATOR
KEY_GENERIC {
  /** The minimum pos can be, and is the logical start of the "range".
   * Usually set to the initialPos unless it is a ListIterator, in which case it can vary.
   *
   * There isn't any way for a range to shift its beginning like the end can (through {@link #remove}),
   * so this is final.
```

```
 */
 protected final int minPos;
 /** The current position index, the index of the item to be returned after the next call to {@link #next()}.
  *
  * <p>This value will be between {@code minPos} and {@link #getMaxPos()} (exclusive) (on a best effort, so
concurrent
  * structural modifications outside this iterator may cause this to be violated, but that usually invalidates
  * iterators anyways). Thus {@code pos} being {@code minPos + 2} would mean {@link #next()}
  * was called twice and the next call will return the third element of this iterator.
  */
 protected int pos;
 /** The last returned index by a call to {@link #next} or, if a list-iterator, {@link java.util.ListIterator#previous().
  *
  * It is &minus;1 if no such call has occurred or a mutation has occurred through this iterator and no
  * advancement has been done.
  */
 protected int lastReturned;

 protected AbstractIndexBasedIterator(int minPos, int initialPos) {
  this.minPos = minPos;
  this.pos = initialPos;
 }

 // When you implement these, you should probably declare them final to encourage the JVM to inline them.

 /** Get the item corresponding to the given index location.
  *
  * <p>Do <em>not</em> advance {@link #pos} in this method; the default {@code next} method takes care of
this.
  *
  * <p>The {@code location} given will be between {@code minPos} and {@link #getMaxPos()} (exclusive).
  * Thus, a {@code location} of {@code minPos + 2} would mean {@link #next()} was called twice
  * and this method should return what the next call to {@link #next()} should return.
  */
 protected abstract KEY_GENERIC_TYPE get(int location);

 /** Remove the item at the given index.
  *
  * <p>Do <em>not</em> modify {@link #pos} in this method; the default {@code #remove()} method takes care
of this.
  *
  * <p>This method should also do what is needed to track the change to the {@link #getMaxPos}.
  * Usually this is accomplished by having this method call the parent {@link Collection}'s appropriate remove
  * method, and having {@link #getMaxPos} track the parent {@linkplain Collection#size() collection's size}.
  */
 protected abstract void remove(int location);

 /** The maximum pos can be, and is the logical end (exclusive) of the "range".
```

```
  *
  * <p>If pos is equal to the return of this method, this means the last element has been returned and the next call to
{@link #next()} will throw.
  *
  * <p>Usually set return the parent {@linkplain Collection#size() collection's size}, but does not have to be
  * (for example, sublists and subranges).
  */
 protected abstract int getMaxPos();

 @Override
 public boolean hasNext() { return pos < getMaxPos(); }
 @Override
 public KEY_GENERIC_TYPE NEXT_KEY() { if (! hasNext()) throw new NoSuchElementException(); return
get(lastReturned = pos++); }
 @Override
 public void remove() {
  if (lastReturned == -1) throw new IllegalStateException();
  remove(lastReturned);
  /* If the last operation was a next(), we are removing an element *before* us, and we must decrease pos
correspondingly. */
  if (lastReturned < pos) pos--;
  lastReturned = -1;
 }

 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  while(pos < getMaxPos()) {
   action.accept(get(lastReturned = pos++));
  }
 }

 // TODO since this method doesn't depend on the type at all, should it be "hoisted" into a
 // non type-specific superclass in it.unimi.dsi.fastutil?
 @Override
 public int skip(int n) {
  if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
  final int max = getMaxPos();
  final int remaining = max - pos;
  if (n < remaining) {
   pos += n;
  } else {
   n = remaining;
   pos = max;
  }
  lastReturned = pos - 1;
  return n;
 }
}
```

```
 /**
  * A skeletal implementation for a list-iterator backed by an index-based data store. High performance
  * concrete implementations (like the main ListIterator of ArrayList) generally should avoid using this
  * and just implement the interface directly, but should be decent for less
  * performance critical implementations.
  *
  * <p>This class is only appropriate for sequences that are at most {@link Integer#MAX_VALUE} long.
  * If your backing data store can be bigger then this, consider the equivalently named class in
  * the type specific {@code BigListSpliterators} class.
  *
  * <p>As the abstract methods in this class are used in inner loops, it is generally a
  * good idea to override the class as {@code final} as to encourage the JVM to inline
  * them (or alternatively, override the abstract methods as final).
  */
 public static abstract class AbstractIndexBasedListIterator KEY_GENERIC extends AbstractIndexBasedIterator
KEY_GENERIC implements KEY_LIST_ITERATOR KEY_GENERIC {

  protected AbstractIndexBasedListIterator(int minPos, int initialPos) {
   super(minPos, initialPos);
  }

  // When you implement these, you should probably declare them final to encourage the JVM to inline them.

  /** Add the given item at the given index.
   *
   * <p>This method should also do what is needed to track the change to the {@link #getMaxPos}.
   * Usually this is accomplished by having this method call the parent {@link Collection}'s appropriate add
   * method, and having {@link #getMaxPos} track the parent {@linkplain Collection#size() collection's size}.
   *
   * <p>Do <em>not</em> modify {@link #pos} in this method; the default {@code #add()} method takes care of
this.
   *
   * <p>See {@link #pos} and {@link #get(int)} for discussion on what the location means.
   */
  protected abstract void add(int location, KEY_GENERIC_TYPE k);

  /** Sets the given item at the given index.
   *
   * <p>See {@link #pos} and {@link #get(int)} for discussion on what the location means.
   */
  protected abstract void set(int location, KEY_GENERIC_TYPE k);

  @Override
  public boolean hasPrevious() { return pos > minPos; }
  @Override
  public KEY_GENERIC_TYPE PREV_KEY() { if (! hasPrevious()) throw new NoSuchElementException(); return
get(lastReturned = --pos); }
```

```
  @Override
  public int nextIndex() { return pos; }
  @Override
  public int previousIndex() { return pos - 1; }
  @Override
  public void add(final KEY_GENERIC_TYPE k) {
   add(pos++, k);
   lastReturned = -1;
  }
  @Override
  public void set(final KEY_GENERIC_TYPE k) {
   if (lastReturned == -1) throw new IllegalStateException();
   set(lastReturned, k);
  }
  // TODO since this method doesn't depend on the type at all, should it be "hoisted" into a
  // non type-specific superclass in it.unimi.dsi.fastutil?
  @Override
  public int back(int n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   final int remaining = pos - minPos;
   if (n < remaining) {
    pos -= n;
   } else {
    n = remaining;
    pos = minPos;
   }
   lastReturned = pos;
   return n;
  }
 }

#if KEY_CLASS_Integer || KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character ||
KEY_CLASS_Long

#if KEY_CLASS_Long
 private static class IntervalIterator implements KEY_BIDI_ITERATOR {
#else
 private static class IntervalIterator implements KEY_LIST_ITERATOR {
#endif
  private final KEY_TYPE from, to;
  KEY_TYPE curr;

  public IntervalIterator(final KEY_TYPE from, final KEY_TYPE to) {
   this.from = this.curr = from;
   this.to = to;
  }

  @Override
```

```
  public boolean hasNext() { return curr < to; }

  @Override
  public boolean hasPrevious() { return curr > from; }

  @Override
  public KEY_TYPE NEXT_KEY() {
   if (! hasNext()) throw new NoSuchElementException();
   return curr++;
  }

  @Override
  public KEY_TYPE PREV_KEY() {
   if (! hasPrevious()) throw new NoSuchElementException();
   return --curr;
  }

  @Override
#if KEYS_PRIMITIVE
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
#else // ! KEY_PRIMITIVE == KEY_REFERENCE
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
#endif
   Objects.requireNonNull(action);
   for (; curr < to; ++curr) {
    action.accept(curr);
   }
  }

#if ! KEY_CLASS_Long
  @Override
  public int nextIndex() { return curr - from; }

  @Override
  public int previousIndex() { return curr - from - 1; }
#endif

  @Override
  public int skip(int n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   if (curr + n <= to) {
    curr += n;
    return n;
   }
#if ! KEY_CLASS_Long
   n = to - curr;
#else
   n = (int)(to - curr);
```

```
#endif
   curr = to;
   return n;
  }

  @Override
  public int back(int n) {
   if (curr - n >= from) {
    curr -= n;
    return n;
   }
#if ! KEY_CLASS_Long
   n = curr - from ;
#else
   n = (int)(curr - from);
#endif
   curr = from;
   return n;
  }
 }

#if KEY_CLASS_Long
 /** Creates a type-specific bidirectional iterator over an interval.
  *
  * <p>The type-specific bidirectional iterator returned by this method will return the
  * elements {@code from}, {@code from+1},&hellip;, {@code to-1}.
  *
  * <p>Note that all other type-specific interval iterator are <em>list</em>
  * iterators. Of course, this is not possible with longs as the index
  * returned by {@link java.util.ListIterator#nextIndex() nextIndex()}/{@link
  * java.util.ListIterator#previousIndex() previousIndex()} would exceed an integer.
  *
  * @param from the starting element (inclusive).
  * @param to the ending element (exclusive).
  * @return a type-specific bidirectional iterator enumerating the elements from {@code from} to {@code to}.
  */
 public static KEY_BIDI_ITERATOR fromTo(final KEY_TYPE from, final KEY_TYPE to) {
  return new IntervalIterator(from, to);
 }
#else

 /** Creates a type-specific list iterator over an interval.
  *
  * <p>The type-specific list iterator returned by this method will return the
  * elements {@code from}, {@code from+1},&hellip;, {@code to-1}.
  *
  * @param from the starting element (inclusive).
  * @param to the ending element (exclusive).
```

```
 * @return a type-specific list iterator enumerating the elements from {@code from} to {@code to}.
 */
public static KEY_LIST_ITERATOR fromTo(final KEY_TYPE from, final KEY_TYPE to) {
 return new IntervalIterator(from, to);
}

#endif

#endif

private static class IteratorConcatenator KEY_GENERIC implements KEY_ITERATOR KEY_GENERIC {
 final KEY_ITERATOR KEY_EXTENDS_GENERIC a[];
 int offset, length, lastOffset = -1;

 public IteratorConcatenator(final KEY_ITERATOR KEY_EXTENDS_GENERIC a[], int offset, int length) {
  this.a = a;
  this.offset = offset;
  this.length = length;
  advance();
 }

 private void advance() {
  while(length != 0) {
   if (a[offset].hasNext()) break;
   length--;
   offset++;
  }

  return;
 }

 @Override
 public boolean hasNext() {
  return length > 0;
 }

 @Override
 public KEY_GENERIC_TYPE NEXT_KEY() {
  if (! hasNext()) throw new NoSuchElementException();
  KEY_GENERIC_TYPE next = a[lastOffset = offset].NEXT_KEY();
  advance();
  return next;
 }

#if KEYS_PRIMITIVE
 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  while (length > 0) {
```

```
    a[lastOffset = offset].forEachRemaining(action);
    advance();
   }
  }
#endif


  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
   while (length > 0) {
    a[lastOffset = offset].forEachRemaining(action);
    advance();
   }
  }

  @Override
  public void remove() {
   if (lastOffset == -1) throw new IllegalStateException();
   a[lastOffset].remove();
  }

  @Override
  public int skip(int n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   lastOffset = -1;

   int skipped = 0;

   while(skipped < n && length != 0) {
    skipped += a[offset].skip(n - skipped);
    if (a[offset].hasNext()) break;
    length--;
    offset++;
   }

   return skipped;
  }
 }


 /** Concatenates all iterators contained in an array.
  *
  * <p>This method returns an iterator that will enumerate in order the elements returned
  * by all iterators contained in the given array.
  *
  * @param a an array of iterators.
  * @return an iterator obtained by concatenation.
```

```
 */
#if KEYS_REFERENCE
 @SafeVarargs  // Spliterators can only give K, never consume them, making this safe.
#endif
 public static KEY_GENERIC KEY_ITERATOR KEY_GENERIC concat(final KEY_ITERATOR
KEY_EXTENDS_GENERIC... a) {
  return concat(a, 0, a.length);
 }


 /** Concatenates a sequence of iterators contained in an array.
  *
  * <p>This method returns an iterator that will enumerate in order the elements returned
  * by {@code a[offset]}, then those returned
  * by {@code a[offset + 1]}, and so on up to
  * {@code a[offset + length - 1]}.
  *
  * @param a an array of iterators.
  * @param offset the index of the first iterator to concatenate.
  * @param length the number of iterators to concatenate.
  * @return an iterator obtained by concatenation of {@code length} elements of {@code a} starting at {@code
offset}.
  */

 public static KEY_GENERIC KEY_ITERATOR KEY_GENERIC concat(final KEY_ITERATOR
KEY_EXTENDS_GENERIC a[], final int offset, final int length) {
  return new IteratorConcatenator KEY_GENERIC_DIAMOND(a, offset, length);
 }


 /** An unmodifiable wrapper class for iterators. */


 public static class UnmodifiableIterator KEY_GENERIC implements KEY_ITERATOR KEY_GENERIC {
  protected final KEY_ITERATOR KEY_EXTENDS_GENERIC i;

  public UnmodifiableIterator(final KEY_ITERATOR KEY_EXTENDS_GENERIC i) {
   this.i = i;
  }

  @Override
  public boolean hasNext() { return i.hasNext(); }

  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() { return i.NEXT_KEY(); }

#if KEYS_PRIMITIVE
  @Override
```

```
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
   i.forEachRemaining(action);
  }
#endif

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
   i.forEachRemaining(action);
  }

 }


 /** Returns an unmodifiable iterator backed by the specified iterator.
  *
  * @param i the iterator to be wrapped in an unmodifiable iterator.
  * @return an unmodifiable view of the specified iterator.
  */
 public static KEY_GENERIC KEY_ITERATOR KEY_GENERIC unmodifiable(final KEY_ITERATOR
KEY_EXTENDS_GENERIC i) { return new UnmodifiableIterator KEY_GENERIC_DIAMOND(i); }



 /** An unmodifiable wrapper class for bidirectional iterators. */

 public static class UnmodifiableBidirectionalIterator KEY_GENERIC implements KEY_BIDI_ITERATOR
KEY_GENERIC {
  protected final KEY_BIDI_ITERATOR KEY_EXTENDS_GENERIC i;

  public UnmodifiableBidirectionalIterator(final KEY_BIDI_ITERATOR KEY_EXTENDS_GENERIC i) {
   this.i = i;
  }

  @Override
  public boolean hasNext() { return i.hasNext(); }

  @Override
  public boolean hasPrevious() { return i.hasPrevious(); }

  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() { return i.NEXT_KEY(); }

  @Override
  public KEY_GENERIC_TYPE PREV_KEY() { return i.PREV_KEY(); }

#if KEYS_PRIMITIVE
  @Override
```

```
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
   i.forEachRemaining(action);
  }
#endif

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
   i.forEachRemaining(action);
  }
 }


 /** Returns an unmodifiable bidirectional iterator backed by the specified bidirectional iterator.
  *
  * @param i the bidirectional iterator to be wrapped in an unmodifiable bidirectional iterator.
  * @return an unmodifiable view of the specified bidirectional iterator.
  */
 public static KEY_GENERIC KEY_BIDI_ITERATOR KEY_GENERIC unmodifiable(final
KEY_BIDI_ITERATOR KEY_EXTENDS_GENERIC i) { return new UnmodifiableBidirectionalIterator
KEY_GENERIC_DIAMOND(i); }


 /** An unmodifiable wrapper class for list iterators. */

 public static class UnmodifiableListIterator KEY_GENERIC implements KEY_LIST_ITERATOR
KEY_GENERIC {
  protected final KEY_LIST_ITERATOR KEY_EXTENDS_GENERIC i;

  public UnmodifiableListIterator(final KEY_LIST_ITERATOR KEY_EXTENDS_GENERIC i) {
   this.i = i;
  }

  @Override
  public boolean hasNext() { return i.hasNext(); }

  @Override
  public boolean hasPrevious() { return i.hasPrevious(); }

  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() { return i.NEXT_KEY(); }

  @Override
  public KEY_GENERIC_TYPE PREV_KEY() { return i.PREV_KEY(); }

  @Override
  public int nextIndex() { return i.nextIndex(); }
```

```
 @Override
 public int previousIndex() { return i.previousIndex(); }

#if KEYS_PRIMITIVE
 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  i.forEachRemaining(action);
 }
#endif

 DEPRECATED_IF_KEYS_PRIMITIVE
 @Override
 public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
  i.forEachRemaining(action);
 }
}

/** Returns an unmodifiable list iterator backed by the specified list iterator.
 *
 * @param i the list iterator to be wrapped in an unmodifiable list iterator.
 * @return an unmodifiable view of the specified list iterator.
 */
public static KEY_GENERIC KEY_LIST_ITERATOR KEY_GENERIC unmodifiable(final
KEY_LIST_ITERATOR KEY_EXTENDS_GENERIC i) { return new UnmodifiableListIterator
KEY_GENERIC_DIAMOND(i); }

#if KEY_CLASS_Short || KEY_CLASS_Integer || KEY_CLASS_Long || KEY_CLASS_Float ||
KEY_CLASS_Double

/** A wrapper promoting the results of a ByteIterator. */

private final static class ByteIteratorWrapper implements KEY_ITERATOR {
 final it.unimi.dsi.fastutil.bytes.ByteIterator iterator;

 public ByteIteratorWrapper(final it.unimi.dsi.fastutil.bytes.ByteIterator iterator) {
  this.iterator = iterator;
 }

 @Override
 public boolean hasNext() { return iterator.hasNext(); }

 @Deprecated
 @Override
 public KEY_GENERIC_CLASS next() { return KEY_GENERIC_CLASS.valueOf(iterator.nextByte()); }

 @Override
 public KEY_TYPE NEXT_KEY() { return iterator.nextByte(); }
```

```
 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  iterator.forEachRemaining(action::accept);
 }

 @Override
 public void remove() { iterator.remove(); }

 @Override
 public int skip(final int n) { return iterator.skip(n); }
}

/** Returns an iterator backed by the specified byte iterator.
 * @param iterator a byte iterator.
 * @return an iterator backed by the specified byte iterator.
 */
public static KEY_ITERATOR wrap(final it.unimi.dsi.fastutil.bytes.ByteIterator iterator) {
 return new ByteIteratorWrapper(iterator);
}
#endif

#if KEY_CLASS_Integer || KEY_CLASS_Long || KEY_CLASS_Float || KEY_CLASS_Double

/** A wrapper promoting the results of a ShortIterator. */

private final static class ShortIteratorWrapper implements KEY_ITERATOR {
 final it.unimi.dsi.fastutil.shorts.ShortIterator iterator;

 public ShortIteratorWrapper(final it.unimi.dsi.fastutil.shorts.ShortIterator iterator) {
  this.iterator = iterator;
 }

 @Override
 public boolean hasNext() { return iterator.hasNext(); }

 @Deprecated
 @Override
 public KEY_GENERIC_CLASS next() { return KEY_GENERIC_CLASS.valueOf(iterator.nextShort()); }

 @Override
 public KEY_TYPE NEXT_KEY() { return iterator.nextShort(); }

 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  iterator.forEachRemaining(action::accept);
 }
```

```
 @Override
 public void remove() { iterator.remove(); }

 @Override
 public int skip(final int n) { return iterator.skip(n); }
}

/** Returns an iterator backed by the specified short iterator.
 * @param iterator a short iterator.
 * @return an iterator backed by the specified short iterator.
 */
public static KEY_ITERATOR wrap(final it.unimi.dsi.fastutil.shorts.ShortIterator iterator) {
 return new ShortIteratorWrapper(iterator);
}

#endif

#if KEY_CLASS_Integer || KEY_CLASS_Long || KEY_CLASS_Float || KEY_CLASS_Double

/** A wrapper promoting the results of a CharIterator. */

private final static class CharIteratorWrapper implements KEY_ITERATOR {
 final it.unimi.dsi.fastutil.chars.CharIterator iterator;

 public CharIteratorWrapper(final it.unimi.dsi.fastutil.chars.CharIterator iterator) {
  this.iterator = iterator;
 }

 @Override
 public boolean hasNext() { return iterator.hasNext(); }

 @Deprecated
 @Override
 public KEY_GENERIC_CLASS next() { return KEY_GENERIC_CLASS.valueOf(iterator.nextChar()); }

 @Override
 public KEY_TYPE NEXT_KEY() { return iterator.nextChar(); }

 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  iterator.forEachRemaining(action::accept);
 }

 @Override
 public void remove() { iterator.remove(); }
```

```
 @Override
 public int skip(final int n) { return iterator.skip(n); }
}

/** Returns an iterator backed by the specified char iterator.
 *
 * <p><b>WARNING</b>: This is <em>not</em> the same as converting the source to a sequence
 * of code points. This returned instance literally performs {@code (int)(charValue)} casts.
 * Surrogate pairs will be left as separate elements instead of combined into a single element
 * with the code point it represents. See {@link Character} for more discussion on code points,
 * char values, and surrogate pairs.
 *
 * @param iterator a char iterator.
 * @return an iterator backed by the specified char iterator.
 */
public static KEY_ITERATOR wrap(final it.unimi.dsi.fastutil.chars.CharIterator iterator) {
 return new CharIteratorWrapper(iterator);
}

#endif

#if KEY_CLASS_Long || KEY_CLASS_Double

/** A wrapper promoting the results of an IntIterator. */

private final static class IntIteratorWrapper implements KEY_ITERATOR {
 final it.unimi.dsi.fastutil.ints.IntIterator iterator;

 public IntIteratorWrapper(final it.unimi.dsi.fastutil.ints.IntIterator iterator) {
  this.iterator = iterator;
 }

 @Override
 public boolean hasNext() { return iterator.hasNext(); }

 @Deprecated
 @Override
 public KEY_GENERIC_CLASS next() { return KEY_GENERIC_CLASS.valueOf(iterator.nextInt()); }

 @Override
 public KEY_TYPE NEXT_KEY() { return iterator.nextInt(); }

 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  iterator.forEachRemaining(action::accept);
 }
```

```
 @Override
 public void remove() { iterator.remove(); }

 @Override
 public int skip(final int n) { return iterator.skip(n); }
}

/** Returns an iterator backed by the specified integer iterator.
 * @param iterator an integer iterator.
 * @return an iterator backed by the specified integer iterator.
 */

public static KEY_ITERATOR wrap(final it.unimi.dsi.fastutil.ints.IntIterator iterator) {
 return new IntIteratorWrapper(iterator);
}

#endif

#if KEY_CLASS_Double

/** A wrapper promoting the results of a FloatIterator. */

private final static class FloatIteratorWrapper implements KEY_ITERATOR {
 final it.unimi.dsi.fastutil.floats.FloatIterator iterator;

 public FloatIteratorWrapper(final it.unimi.dsi.fastutil.floats.FloatIterator iterator) {
  this.iterator = iterator;
 }

 @Override
 public boolean hasNext() { return iterator.hasNext(); }

 @Deprecated
 @Override
 public KEY_GENERIC_CLASS next() { return KEY_GENERIC_CLASS.valueOf(iterator.nextFloat()); }

 @Override
 public KEY_TYPE NEXT_KEY() { return iterator.nextFloat(); }

 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  iterator.forEachRemaining(action::accept);
 }

 @Override
 public void remove() { iterator.remove(); }
```

```
  @Override
  public int skip(final int n) { return iterator.skip(n); }
 }

 /** Returns an iterator backed by the specified float iterator.
  * @param iterator a float iterator.
  * @return an iterator backed by the specified float iterator.
  */
 public static KEY_ITERATOR wrap(final it.unimi.dsi.fastutil.floats.FloatIterator iterator) {
  return new FloatIteratorWrapper(iterator);
 }
#endif
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Iterators.drv
No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

import java.util.Set;

/**  An abstract class providing basic methods for sets implementing a type-specific interface.
*
* <p>Note that the type-specific {@link Set} interface adds a type-specific {@code remove()}
* method, as it is no longer harmful for subclasses. Thus, concrete subclasses of this class
* must implement {@code remove()} (the {@code rem()} implementation of this
* class just delegates to {@code remove()}).
*/

public abstract class ABSTRACT_SET KEY_GENERIC extends ABSTRACT_COLLECTION KEY_GENERIC
```

```
implements Cloneable, SET KEY_GENERIC {

 protected ABSTRACT_SET() {}

 @Override
 public abstract KEY_ITERATOR KEY_GENERIC iterator();

 @Override
 public boolean equals(final Object o) {
  if (o == this) return true;
  if (!(o instanceof Set)) return false;

  Set<?> s = (Set<?>) o;
  if (s.size() != size()) return false;
#if KEYS_PRIMITIVE
  if (s instanceof SET) {
   return containsAll((SET) s);
  }
#endif
  return containsAll(s);
 }


 /** Returns a hash code for this set.
  *
  * The hash code of a set is computed by summing the hash codes of
  * its elements.
  *
  * @return a hash code for this set.
  */
 @Override
 public int hashCode() {
  int h = 0, n = size();
  KEY_ITERATOR KEY_GENERIC i = iterator();
  KEY_GENERIC_TYPE k;

  while(n-- != 0) {
   k = i.NEXT_KEY(); // We need k because KEY2JAVAHASH() is a macro with repeated evaluation.
   h += KEY2JAVAHASH(k);
  }
  return h;
 }


#if KEYS_PRIMITIVE
 /** {@inheritDoc}
  * Delegates to the type-specific {@code rem()} method
  * implemented by type-specific abstract {@link java.util.Collection} superclass.
```

```
 */
 @Override
 public boolean remove(KEY_TYPE k) {
  return super.rem(k);
 }

 /** {@inheritDoc}
  * Delegates to the type-specific {@code remove()} method
  * specified in the type-specific {@link Set} interface.
  * @deprecated Please use {@code remove()} instead.
  */
 @Deprecated
 @Override
 public boolean rem(KEY_TYPE k) {
  return remove(k);
 }
#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractSet.drv
No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

import it.unimi.dsi.fastutil.Hash;
import it.unimi.dsi.fastutil.HashCommon;
import static it.unimi.dsi.fastutil.HashCommon.arraySize;
import static it.unimi.dsi.fastutil.HashCommon.maxFill;
```

```
import java.util.Map;
import java.util.Arrays;
import java.util.NoSuchElementException;
import java.util.function.Consumer;

#if KEY_INDEX != VALUE_INDEX && VALUES_BYTE_CHAR_SHORT_FLOAT
import VALUE_PACKAGE.VALUE_CONSUMER;
#endif

#if KEY_INDEX != VALUE_INDEX && !(KEYS_REFERENCE && VALUES_REFERENCE)
import VALUE_PACKAGE.VALUE_COLLECTION;
import VALUE_PACKAGE.VALUE_ABSTRACT_COLLECTION;

#if VALUES_PRIMITIVE
import VALUE_PACKAGE.VALUE_ITERATOR;
import VALUE_PACKAGE.VALUE_SPLITERATOR;
import VALUE_PACKAGE.VALUE_SPLITERATORS;
#endif

#if VALUE_CLASS_Boolean
import it.unimi.dsi.fastutil.booleans.BooleanConsumer;
#endif
#endif

#ifdef Linked

import java.util.Comparator;

#if KEY_INDEX != VALUE_INDEX && !(KEYS_REFERENCE && VALUES_REFERENCE)
#if VALUES_PRIMITIVE
import VALUE_PACKAGE.VALUE_LIST_ITERATOR;
#else
import it.unimi.dsi.fastutil.objects.ObjectIterator;
#endif
#endif

#if ! KEYS_REFERENCE
import it.unimi.dsi.fastutil.objects.AbstractObjectSortedSet;
import it.unimi.dsi.fastutil.objects.ObjectListIterator;
import it.unimi.dsi.fastutil.objects.ObjectBidirectionalIterator;
import it.unimi.dsi.fastutil.objects.ObjectSpliterator;
import it.unimi.dsi.fastutil.objects.ObjectSpliterators;
import it.unimi.dsi.fastutil.objects.ObjectSortedSet;
#endif

/**  A type-specific linked hash map with with a fast, small-footprint implementation.
*
* <p>Instances of this class use a hash table to represent a map. The table is
```

* filled up to a specified load factor, and then doubled in size to
* accommodate new entries. If the table is emptied below one fourth
* of the load factor, it is halved in size; however, the table is never reduced to a
* size smaller than that at creation time: this approach makes it
* possible to create maps with a large capacity in which insertions and
* deletions do not cause immediately rehashing. Moreover, halving is
* not performed when deleting entries from an iterator, as it would interfere
* with the iteration process.
*
* <p>Note that {@link #clear()} does not modify the hash table size.
* Rather, a family of {@linkplain #trim() trimming
* methods} lets you control the size of the table; this is particularly useful
* if you reuse instances of this class.
*
* <p>Entries returned by the type-specific {@link #entrySet()} method implement
* the suitable type-specific {@link it.unimi.dsi.fastutil.Pair Pair} interface;
* only values are mutable.
*
* <p>Iterators generated by this map will enumerate pairs in the same order in which they
* have been added to the map (addition of pairs whose key is already present
* in the map does not change the iteration order). Note that this order has nothing in common with the natural
* order of the keys. The order is kept by means of a doubly linked list, represented
* <i>via</i> an array of longs parallel to the table.
*
* <p>This class implements the interface of a sorted map, so to allow easy
* access of the iteration order: for instance, you can get the first key
* in iteration order with {@code firstKey()} without having to create an
* iterator; however, this class partially violates the {@link java.util.SortedMap}
* contract because all submap methods throw an exception and {@link
* #comparator()} returns always {@code null}.
*
* <p>Additional methods, such as {@code getAndMoveToFirst()}, make it easy
* to use instances of this class as a cache (e.g., with LRU policy).
*
* <p>The iterators provided by the views of this class using are type-specific
* {@linkplain java.util.ListIterator list iterators}, and can be started at any
* element which is a key of the map, or
* a {@link NoSuchElementException} exception will be thrown.
* If, however, the provided element is not the first or last key in the
* map, the first access to the list index will require linear time, as in the worst case
* the entire key set must be scanned in iteration order to retrieve the positional
* index of the starting key. If you use just the methods of a type-specific {@link
it.unimi.dsi.fastutil.BidirectionalIterator},
* however, all operations will be performed in constant time.
*
* @see Hash
* @see HashCommon
*/

public class OPEN_HASH_MAP KEY_VALUE_GENERIC extends ABSTRACT_SORTED_MAP KEY_VALUE_GENERIC implements java.io.Serializable, Cloneable, Hash {

#else

#if ! KEYS_REFERENCE
import it.unimi.dsi.fastutil.objects.AbstractObjectSet;
import it.unimi.dsi.fastutil.objects.ObjectIterator;
import it.unimi.dsi.fastutil.objects.ObjectSpliterator;
import it.unimi.dsi.fastutil.objects.ObjectSpliterators;
#endif

#ifdef Custom

/** A type-specific hash map with a fast, small-footprint implementation whose {@linkplain it.unimi.dsi.fastutil.Hash.Strategy hashing strategy}
* is specified at creation time.
*
* <p>Instances of this class use a hash table to represent a map. The table is
* filled up to a specified load factor, and then doubled in size to
* accommodate new entries. If the table is emptied below one fourth
* of the load factor, it is halved in size; however, the table is never reduced to a
* size smaller than that at creation time: this approach makes it
* possible to create maps with a large capacity in which insertions and
* deletions do not cause immediately rehashing. Moreover, halving is
* not performed when deleting entries from an iterator, as it would interfere
* with the iteration process.
*
* <p>Note that {@link #clear()} does not modify the hash table size.
* Rather, a family of {@linkplain #trim() trimming
* methods} lets you control the size of the table; this is particularly useful
* if you reuse instances of this class.
*
* <p>Entries returned by the type-specific {@link #entrySet()} method implement
* the suitable type-specific {@link it.unimi.dsi.fastutil.Pair Pair} interface;
* only values are mutable.
*
* @see Hash
* @see HashCommon
*/

public class OPEN_HASH_MAP KEY_VALUE_GENERIC extends ABSTRACT_MAP KEY_VALUE_GENERIC implements java.io.Serializable, Cloneable, Hash {

#else

/** A type-specific hash map with a fast, small-footprint implementation.

```
*
* <p>Instances of this class use a hash table to represent a map. The table is
* filled up to a specified <em>load factor</em>, and then doubled in size to
* accommodate new entries. If the table is emptied below <em>one fourth</em>
* of the load factor, it is halved in size; however, the table is never reduced to a
* size smaller than that at creation time: this approach makes it
* possible to create maps with a large capacity in which insertions and
* deletions do not cause immediately rehashing. Moreover, halving is
* not performed when deleting entries from an iterator, as it would interfere
* with the iteration process.
*
* <p>Note that {@link #clear()} does not modify the hash table size.
* Rather, a family of {@linkplain #trim() trimming
* methods} lets you control the size of the table; this is particularly useful
* if you reuse instances of this class.
*
* <p>Entries returned by the type-specific {@link #entrySet()} method implement
* the suitable type-specific {@link it.unimi.dsi.fastutil.Pair Pair} interface;
* only values are mutable.
*
* @see Hash
* @see HashCommon
*/

public class OPEN_HASH_MAP KEY_VALUE_GENERIC extends ABSTRACT_MAP
KEY_VALUE_GENERIC implements java.io.Serializable, Cloneable, Hash {

#endif

#endif

 private static final long serialVersionUID = 0L;
 private static final boolean ASSERTS = ASSERTS_VALUE;

 /** The array of keys. */
 protected transient KEY_GENERIC_TYPE[] key;

 /** The array of values. */
 protected transient VALUE_GENERIC_TYPE[] value;

 /** The mask for wrapping a position counter. */
 protected transient int mask;

 /** Whether this map contains the key zero. */
 protected transient boolean containsNullKey;

#ifdef Custom
 /** The hash strategy of this custom map. */
```

```
 protected STRATEGY KEY_SUPER_GENERIC strategy;
#endif

#ifdef Linked
 /** The index of the first entry in iteration order. It is valid iff {@link #size} is nonzero; otherwise, it contains -1. */
 protected transient int first = -1;
 /** The index of the last entry in iteration order. It is valid iff {@link #size} is nonzero; otherwise, it contains -1. */
 protected transient int last = -1;
 /** For each entry, the next and the previous entry in iteration order,
  * stored as {@code ((prev & 0xFFFFFFFFL) << 32) | (next & 0xFFFFFFFFL)}.
  * The first entry contains predecessor -1, and the last entry
  * contains successor -1. */
  protected transient long[] link;
#endif

 /** The current table size. */
 protected transient int n;

 /** Threshold after which we rehash. It must be the table size times {@link #f}. */
 protected transient int maxFill;

 /** We never resize below this threshold, which is the construction-time {#n}. */
 protected final transient int minN;

 /** Number of entries in the set (including the key zero, if present). */
 protected int size;

 /** The acceptable load factor. */
 protected final float f;

#ifdef Linked
 /** Cached set of entries. */
 protected transient FastSortedEntrySet KEY_VALUE_GENERIC entries;

 /** Cached set of keys. */
 protected transient SORTED_SET KEY_GENERIC keys;
#else
 /** Cached set of entries. */
 protected transient FastEntrySet KEY_VALUE_GENERIC entries;

 /** Cached set of keys. */
 protected transient SET KEY_GENERIC keys;
#endif

 /** Cached collection of values. */
 protected transient VALUE_COLLECTION VALUE_GENERIC values;
```

```
#ifdef Custom
 /** Creates a new hash map.
  *
  * <p>The actual table size will be the least power of two greater than {@code expected}/{@code f}.
  *
  * @param expected the expected number of elements in the hash map.
  * @param f the load factor.
  * @param strategy the strategy.
  */
 SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
 public OPEN_HASH_MAP(final int expected, final float f, final STRATEGY KEY_SUPER_GENERIC strategy) {
  this.strategy = strategy;
#else
 /** Creates a new hash map.
  *
  * <p>The actual table size will be the least power of two greater than {@code expected}/{@code f}.
  *
  * @param expected the expected number of elements in the hash map.
  * @param f the load factor.
  */
 SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
 public OPEN_HASH_MAP(final int expected, final float f) {
#endif
  if (f <= 0 || f >= 1) throw new IllegalArgumentException("Load factor must be greater than 0 and smaller than 1");
  if (expected < 0) throw new IllegalArgumentException("The expected number of elements must be nonnegative");

  this.f = f;

  minN = n = arraySize(expected, f);
  mask = n - 1;
  maxFill = maxFill(n, f);
  key = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[n + 1];
  value = VALUE_GENERIC_ARRAY_CAST new VALUE_TYPE[n + 1];
#ifdef Linked
  link = new long[n + 1];
#endif
 }


#ifdef Custom
 /** Creates a new hash map with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor.
  *
  * @param expected the expected number of elements in the hash map.
  * @param strategy the strategy.
  */

 public OPEN_HASH_MAP(final int expected, final STRATEGY KEY_SUPER_GENERIC strategy) {
  this(expected, DEFAULT_LOAD_FACTOR, strategy);
```

```
 }
#else
 /** Creates a new hash map with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor.
  *
  * @param expected the expected number of elements in the hash map.
  */

 public OPEN_HASH_MAP(final int expected) {
  this(expected, DEFAULT_LOAD_FACTOR);
 }
#endif


#ifdef Custom
 /** Creates a new hash map with initial expected {@link Hash#DEFAULT_INITIAL_SIZE} entries
  * and {@link Hash#DEFAULT_LOAD_FACTOR} as load factor.
  * @param strategy the strategy.
  */

 public OPEN_HASH_MAP(final STRATEGY KEY_SUPER_GENERIC strategy) {
  this(DEFAULT_INITIAL_SIZE, DEFAULT_LOAD_FACTOR, strategy);
 }
#else
 /** Creates a new hash map with initial expected {@link Hash#DEFAULT_INITIAL_SIZE} entries
  * and {@link Hash#DEFAULT_LOAD_FACTOR} as load factor.
  */

 public OPEN_HASH_MAP() {
  this(DEFAULT_INITIAL_SIZE, DEFAULT_LOAD_FACTOR);
 }
#endif


#ifdef Custom
 /** Creates a new hash map copying a given one.
  *
  * @param m a {@link Map} to be copied into the new hash map.
  * @param f the load factor.
  * @param strategy the strategy.
  */

 public OPEN_HASH_MAP(final Map<? extends KEY_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> m, final float f, final STRATEGY KEY_SUPER_GENERIC strategy) {
  this(m.size(), f, strategy);
  putAll(m);
 }
#else
 /** Creates a new hash map copying a given one.
```

```
  *
  * @param m a {@link Map} to be copied into the new hash map.
  * @param f the load factor.
  */

 public OPEN_HASH_MAP(final Map<? extends KEY_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> m, final float f) {
  this(m.size(), f);
  putAll(m);
 }
#endif

#ifdef Custom
 /** Creates a new hash map with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor copying a given one.
  *
  * @param m a {@link Map} to be copied into the new hash map.
  * @param strategy the strategy.
  */

 public OPEN_HASH_MAP(final Map<? extends KEY_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> m, final STRATEGY KEY_SUPER_GENERIC strategy) {
  this(m, DEFAULT_LOAD_FACTOR, strategy);
 }
#else
 /** Creates a new hash map with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor copying a given one.
  *
  * @param m a {@link Map} to be copied into the new hash map.
  */

 public OPEN_HASH_MAP(final Map<? extends KEY_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> m) {
  this(m, DEFAULT_LOAD_FACTOR);
 }
#endif

#ifdef Custom
 /** Creates a new hash map copying a given type-specific one.
  *
  * @param m a type-specific map to be copied into the new hash map.
  * @param f the load factor.
  * @param strategy the strategy.
  */

 public OPEN_HASH_MAP(final MAP KEY_VALUE_GENERIC m, final float f, final STRATEGY
KEY_SUPER_GENERIC strategy) {
  this(m.size(), f, strategy);
  putAll(m);
 }
```

```
#else
 /** Creates a new hash map copying a given type-specific one.
  *
  * @param m a type-specific map to be copied into the new hash map.
  * @param f the load factor.
  */

 public OPEN_HASH_MAP(final MAP KEY_VALUE_GENERIC m, final float f) {
  this(m.size(), f);
  putAll(m);
 }
#endif

#ifdef Custom
 /** Creates a new hash map with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor copying a given type-specific one.
  *
  * @param m a type-specific map to be copied into the new hash map.
  * @param strategy the strategy.
  */

 public OPEN_HASH_MAP(final MAP KEY_VALUE_GENERIC m, final STRATEGY KEY_SUPER_GENERIC strategy) {
  this(m, DEFAULT_LOAD_FACTOR, strategy);
 }
#else
 /** Creates a new hash map with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor copying a given type-specific one.
  *
  * @param m a type-specific map to be copied into the new hash map.
  */

 public OPEN_HASH_MAP(final MAP KEY_VALUE_GENERIC m) {
  this(m, DEFAULT_LOAD_FACTOR);
 }
#endif



#ifdef Custom
 /** Creates a new hash map using the elements of two parallel arrays.
  *
  * @param k the array of keys of the new hash map.
  * @param v the array of corresponding values in the new hash map.
  * @param f the load factor.
  * @param strategy the strategy.
  * @throws IllegalArgumentException if {@code k} and {@code v} have different lengths.
  */
```

```
 public OPEN_HASH_MAP(final KEY_GENERIC_TYPE[] k, final VALUE_GENERIC_TYPE[] v, final float f,
final STRATEGY KEY_SUPER_GENERIC strategy) {
  this(k.length, f, strategy);
  if (k.length != v.length) throw new IllegalArgumentException("The key array and the value array have different
lengths (" + k.length + " and " + v.length + ")");
  for(int i = 0; i < k.length; i++) this.put(k[i], v[i]);
 }
#else
 /** Creates a new hash map using the elements of two parallel arrays.
  *
  * @param k the array of keys of the new hash map.
  * @param v the array of corresponding values in the new hash map.
  * @param f the load factor.
  * @throws IllegalArgumentException if {@code k} and {@code v} have different lengths.
  */

 public OPEN_HASH_MAP(final KEY_GENERIC_TYPE[] k, final VALUE_GENERIC_TYPE[] v, final float f) {
  this(k.length, f);
  if (k.length != v.length) throw new IllegalArgumentException("The key array and the value array have different
lengths (" + k.length + " and " + v.length + ")");
  for(int i = 0; i < k.length; i++) this.put(k[i], v[i]);
 }
#endif

#ifdef Custom
 /** Creates a new hash map with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor using the elements of
two parallel arrays.
  *
  * @param k the array of keys of the new hash map.
  * @param v the array of corresponding values in the new hash map.
  * @param strategy the strategy.
  * @throws IllegalArgumentException if {@code k} and {@code v} have different lengths.
  */

 public OPEN_HASH_MAP(final KEY_GENERIC_TYPE[] k, final VALUE_GENERIC_TYPE[] v, final
STRATEGY KEY_SUPER_GENERIC strategy) {
  this(k, v, DEFAULT_LOAD_FACTOR, strategy);
 }
#else
 /** Creates a new hash map with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor using the elements of
two parallel arrays.
  *
  * @param k the array of keys of the new hash map.
  * @param v the array of corresponding values in the new hash map.
  * @throws IllegalArgumentException if {@code k} and {@code v} have different lengths.
  */

 public OPEN_HASH_MAP(final KEY_GENERIC_TYPE[] k, final VALUE_GENERIC_TYPE[] v) {
```

```
  this(k, v, DEFAULT_LOAD_FACTOR);
 }
#endif



#ifdef Custom
 /** Returns the hashing strategy.
  *
  * @return the hashing strategy of this custom hash map.
  */

 public STRATEGY KEY_SUPER_GENERIC strategy() {
  return strategy;
 }
#endif

 private int realSize() {
  return containsNullKey ? size - 1 : size;
 }

 private void ensureCapacity(final int capacity) {
  final int needed = arraySize(capacity, f);
  if (needed > n) rehash(needed);
 }

 private void tryCapacity(final long capacity) {
  final int needed = (int)Math.min(1 << 30, Math.max(2, HashCommon.nextPowerOfTwo((long)Math.ceil(capacity /
f))));
  if (needed > n) rehash(needed);
 }

 private VALUE_GENERIC_TYPE removeEntry(final int pos) {
  final VALUE_GENERIC_TYPE oldValue = value[pos];
#if VALUES_REFERENCE
  value[pos] = null;
#endif
  size--;
#ifdef Linked
  fixPointers(pos);
#endif

  shiftKeys(pos);
  if (n > minN && size < maxFill / 4 && n > DEFAULT_INITIAL_SIZE) rehash(n / 2);
  return oldValue;
 }

 private VALUE_GENERIC_TYPE removeNullEntry() {
```

```
  containsNullKey = false;
#if KEYS_REFERENCE
  key[n] = null;
#endif
  final VALUE_GENERIC_TYPE oldValue = value[n];
#if VALUES_REFERENCE
  value[n] = null;
#endif
  size--;
#ifdef Linked
  fixPointers(n);
#endif
  if (n > minN && size < maxFill / 4 && n > DEFAULT_INITIAL_SIZE) rehash(n / 2);
  return oldValue;
 }


 @Override
 public void putAll(Map<? extends KEY_GENERIC_CLASS,? extends VALUE_GENERIC_CLASS> m) {
  if (f <= .5) ensureCapacity(m.size()); // The resulting map will be sized for m.size() elements
  else tryCapacity(size() + m.size()); // The resulting map will be tentatively sized for size() + m.size() elements
  super.putAll(m);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private int find(final KEY_GENERIC_TYPE k) {
  if (KEY_EQUALS_NULL(k)) return containsNullKey ? n : -(n + 1);

  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[] key = this.key;
  int pos;

  // The starting point.
  if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH(k) & mask])) return -(pos + 1);
  if (KEY_EQUALS_NOT_NULL(k, curr)) return pos;
  // There's always an unused entry.
  while(true) {
   if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return -(pos + 1);
   if (KEY_EQUALS_NOT_NULL(k, curr)) return pos;
  }
 }


 private void insert(final int pos, final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v) {
  if (pos == n) containsNullKey = true;
  key[pos] = k;
  value[pos] = v;
#ifdef Linked
```

```
  if (size == 0) {
   first = last = pos;
   // Special case of SET_UPPER_LOWER(link[pos], -1, -1);
   link[pos] = -1L;
  }
  else {
   SET_NEXT(link[last], pos);
   SET_UPPER_LOWER(link[pos], last, -1);
   last = pos;
  }
#endif

  if (size++ >= maxFill) rehash(arraySize(size + 1, f));
  if (ASSERTS) checkTable();
 }


 @Override
 public VALUE_GENERIC_TYPE put(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v) {
  final int pos = find(k);
  if (pos < 0) {
   insert(-pos - 1, k, v);
   return defRetValue;
  }
  final VALUE_GENERIC_TYPE oldValue = value[pos];
  value[pos] = v;
  return oldValue;
 }

#if VALUE_CLASS_Byte || VALUE_CLASS_Short || VALUE_CLASS_Character || VALUE_CLASS_Integer ||
VALUE_CLASS_Long || VALUE_CLASS_Float || VALUE_CLASS_Double

 private VALUE_GENERIC_TYPE addToValue(final int pos, final VALUE_GENERIC_TYPE incr) {
  final VALUE_GENERIC_TYPE oldValue = value[pos];
#if VALUE_CLASS_Byte || VALUE_CLASS_Short || VALUE_CLASS_Character
  value[pos] = (VALUE_TYPE)(oldValue + incr);
#else
  value[pos] = oldValue + incr;
#endif
  return oldValue;
 }

 /** Adds an increment to value currently associated with a key.
  *
  * <p>Note that this method respects the {@linkplain #defaultReturnValue() default return value} semantics: when
  * called with a key that does not currently appears in the map, the key
  * will be associated with the default return value plus
  * the given increment.
```

```
 *
 * @param k the key.
 * @param incr the increment.
 * @return the old value, or the {@linkplain #defaultReturnValue() default return value} if no value was present for
the given key.
 */
public VALUE_GENERIC_TYPE addTo(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE incr) {
 int pos;

 if (KEY_EQUALS_NULL(k)) {
  if (containsNullKey) return addToValue(n, incr);
  pos = n;
  containsNullKey = true;
 }
 else {
  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[] key = this.key;

  // The starting point.
  if (! KEY_IS_NULL(curr = key[pos = KEY2INTHASH(k) & mask])) {
   if (KEY_EQUALS_NOT_NULL(curr, k)) return addToValue(pos, incr);
   while(! KEY_IS_NULL(curr = key[pos = (pos + 1) & mask]))
    if (KEY_EQUALS_NOT_NULL(curr, k)) return addToValue(pos, incr);
  }
 }

 key[pos] = k;

#if VALUE_CLASS_Byte || VALUE_CLASS_Short || VALUE_CLASS_Character
 value[pos] = (VALUE_TYPE)(defRetValue + incr);
#else
 value[pos] = defRetValue + incr;
#endif

#ifdef Linked
 if (size == 0) {
  first = last = pos;
  // Special case of SET_UPPER_LOWER(link[pos], -1, -1);
  link[pos] = -1L;
 }
 else {
  SET_NEXT(link[last], pos);
  SET_UPPER_LOWER(link[pos], last, -1);
  last = pos;
 }
#endif

 if (size++ >= maxFill) rehash(arraySize(size + 1, f));
```

```
  if (ASSERTS) checkTable();
  return defRetValue;
 }

#endif

 /** Shifts left entries with the specified hash code, starting at the specified position,
  * and empties the resulting free entry.
  *
  * @param pos a starting position.
  */
 protected final void shiftKeys(int pos) {
  // Shift entries with the same hash.
  int last, slot;
  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[] key = this.key;

  for(;;) {
   pos = ((last = pos) + 1) & mask;

   for(;;) {
    if (KEY_IS_NULL(curr = key[pos])) {
     key[last] = KEY_NULL;
#if VALUES_REFERENCE
     value[last] = null;
#endif
     return;
    }
    slot = KEY2INTHASH(curr) & mask;
    if (last <= pos ? last >= slot || slot > pos : last >= slot && slot > pos) break;
    pos = (pos + 1) & mask;
   }

   key[last] = curr;
   value[last] = value[pos];
#ifdef Linked
   fixPointers(pos, last);
#endif
  }
 }

 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public VALUE_GENERIC_TYPE REMOVE_VALUE(final KEY_TYPE k) {
  if (KEY_EQUALS_NULL(KEY_GENERIC_CAST k)) {
   if (containsNullKey) return removeNullEntry();
   return defRetValue;
  }
```

```
  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[] key = this.key;
  int pos;

  // The starting point.
  if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH_CAST(k) & mask])) return defRetValue;
  if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return removeEntry(pos);
  while(true) {
   if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return defRetValue;
   if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return removeEntry(pos);
  }
 }


#ifdef Linked

 private VALUE_GENERIC_TYPE setValue(final int pos, final VALUE_GENERIC_TYPE v) {
  final VALUE_GENERIC_TYPE oldValue = value[pos];
  value[pos] = v;
  return oldValue;
 }

 /** Removes the mapping associated with the first key in iteration order.
  * @return the value previously associated with the first key in iteration order.
  * @throws NoSuchElementException is this map is empty.
  */
 public VALUE_GENERIC_TYPE REMOVE_FIRST_VALUE() {
  if (size == 0) throw new NoSuchElementException();
  final int pos = first;
  // Abbreviated version of fixPointers(pos)
  first = GET_NEXT(link[pos]);
  if (0 <= first) {
   // Special case of SET_PREV(link[first], -1)
   link[first] |= (-1 & 0xFFFFFFFFL) << 32;
  }
  size--;
  final VALUE_GENERIC_TYPE v = value[pos];
  if (pos == n) {
   containsNullKey = false;
#if KEYS_REFERENCE
   key[n] = null;
#endif
#if VALUES_REFERENCE
   value[n] = null;
#endif
  }
  else shiftKeys(pos);
```

```
 if (n > minN && size < maxFill / 4 && n > DEFAULT_INITIAL_SIZE) rehash(n / 2);
 return v;
}

/** Removes the mapping associated with the last key in iteration order.
 * @return the value previously associated with the last key in iteration order.
 * @throws NoSuchElementException is this map is empty.
 */
public VALUE_GENERIC_TYPE REMOVE_LAST_VALUE() {
 if (size == 0) throw new NoSuchElementException();
 final int pos = last;
 // Abbreviated version of fixPointers(pos)
 last = GET_PREV(link[pos]);
 if (0 <= last) {
  // Special case of SET_NEXT(link[last], -1)
  link[last] |= -1 & 0xFFFFFFFFL;
 }
 size--;
 final VALUE_GENERIC_TYPE v = value[pos];
 if (pos == n) {
  containsNullKey = false;
#if KEYS_REFERENCE
  key[n] = null;
#endif
#if VALUES_REFERENCE
  value[n] = null;
#endif
 }
 else shiftKeys(pos);
 if (n > minN && size < maxFill / 4 && n > DEFAULT_INITIAL_SIZE) rehash(n / 2);
 return v;
}

private void moveIndexToFirst(final int i) {
 if (size == 1 || first == i) return;
 if (last == i) {
  last = GET_PREV(link[i]);
  // Special case of SET_NEXT(link[last], -1);
  link[last] |= -1 & 0xFFFFFFFFL;
 }
 else {
  final long linki = link[i];
  final int prev = GET_PREV(linki);
  final int next = GET_NEXT(linki);
  COPY_NEXT(link[prev], linki);
  COPY_PREV(link[next], linki);
 }
 SET_PREV(link[first], i);
```

```
 SET_UPPER_LOWER(link[i], -1, first);
 first = i;
}

private void moveIndexToLast(final int i) {
 if (size == 1 ||  last == i) return;
 if (first == i) {
  first = GET_NEXT(link[i]);
  // Special case of SET_PREV(link[first], -1);
  link[first] |= (-1 & 0xFFFFFFFFL) << 32;
 }
 else {
  final long linki = link[i];
  final int prev = GET_PREV(linki);
  final int next = GET_NEXT(linki);
  COPY_NEXT(link[prev], linki);
  COPY_PREV(link[next], linki);
 }
 SET_NEXT(link[last], i);
 SET_UPPER_LOWER(link[i], last, -1);
 last = i;
}

/** Returns the value to which the given key is mapped; if the key is present, it is moved to the first position of the
iteration order.
 *
 * @param k the key.
 * @return the corresponding value, or the {@linkplain #defaultReturnValue() default return value} if no value was
present for the given key.
 */
public VALUE_GENERIC_TYPE getAndMoveToFirst(final KEY_GENERIC_TYPE k) {
 if (KEY_EQUALS_NULL(k)) {
  if (containsNullKey) {
   moveIndexToFirst(n);
   return value[n];
  }

  return defRetValue;
 }

 KEY_GENERIC_TYPE curr;
 final KEY_GENERIC_TYPE[] key = this.key;
 int pos;

 // The starting point.
 if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH(k) & mask])) return defRetValue;
 if (KEY_EQUALS_NOT_NULL(k, curr)) {
  moveIndexToFirst(pos);
```

```
  return value[pos];
 }

 // There's always an unused entry.
 while(true) {
  if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return defRetValue;
  if (KEY_EQUALS_NOT_NULL(k, curr))  {
   moveIndexToFirst(pos);
   return value[pos];
  }
 }
}

/** Returns the value to which the given key is mapped; if the key is present, it is moved to the last position of the
iteration order.
 *
 * @param k the key.
 * @return the corresponding value, or the {@linkplain #defaultReturnValue() default return value} if no value was
present for the given key.
 */
public VALUE_GENERIC_TYPE getAndMoveToLast(final KEY_GENERIC_TYPE k) {
 if (KEY_EQUALS_NULL(k)) {
  if (containsNullKey) {
   moveIndexToLast(n);
   return value[n];
  }

  return defRetValue;
 }

 KEY_GENERIC_TYPE curr;
 final KEY_GENERIC_TYPE[] key = this.key;
 int pos;

 // The starting point.
 if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH(k) & mask])) return defRetValue;
 if (KEY_EQUALS_NOT_NULL(k, curr)) {
  moveIndexToLast(pos);
  return value[pos];
 }

 // There's always an unused entry.
 while(true) {
  if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return defRetValue;
  if (KEY_EQUALS_NOT_NULL(k, curr))  {
   moveIndexToLast(pos);
   return value[pos];
  }
```

```
  }
 }

 /** Adds a pair to the map; if the key is already present, it is moved to the first position of the iteration order.
  *
  * @param k the key.
  * @param v the value.
  * @return the old value, or the {@linkplain #defaultReturnValue() default return value} if no value was present for
the given key.
  */
 public VALUE_GENERIC_TYPE putAndMoveToFirst(final KEY_GENERIC_TYPE k, final
VALUE_GENERIC_TYPE v) {
  int pos;

  if (KEY_EQUALS_NULL(k)) {
   if (containsNullKey) {
    moveIndexToFirst(n);
    return setValue(n, v);
   }
   containsNullKey = true;
   pos = n;
  }
  else {
   KEY_GENERIC_TYPE curr;
   final KEY_GENERIC_TYPE[] key = this.key;

   // The starting point.
   if (! KEY_IS_NULL(curr = key[pos = KEY2INTHASH(k) & mask])) {
    if (KEY_EQUALS_NOT_NULL(curr, k)) {
     moveIndexToFirst(pos);
     return setValue(pos, v);
    }
    while(! KEY_IS_NULL(curr = key[pos = (pos + 1) & mask]))
     if (KEY_EQUALS_NOT_NULL(curr, k)) {
      moveIndexToFirst(pos);
      return setValue(pos, v);
     }
   }
  }

  key[pos] = k;
  value[pos] = v;

  if (size == 0) {
   first = last = pos;
   // Special case of SET_UPPER_LOWER(link[pos], -1, -1);
   link[pos] = -1L;
  }
```

```
  else {
   SET_PREV(link[first], pos);
   SET_UPPER_LOWER(link[pos], -1, first);
   first = pos;
  }

  if (size++ >= maxFill) rehash(arraySize(size, f));
  if (ASSERTS) checkTable();
  return defRetValue;
 }

 /** Adds a pair to the map; if the key is already present, it is moved to the last position of the iteration order.
  *
  * @param k the key.
  * @param v the value.
  * @return the old value, or the {@linkplain #defaultReturnValue() default return value} if no value was present for
the given key.
  */
 public VALUE_GENERIC_TYPE putAndMoveToLast(final KEY_GENERIC_TYPE k, final
VALUE_GENERIC_TYPE v) {
  int pos;

  if (KEY_EQUALS_NULL(k)) {
   if (containsNullKey) {
    moveIndexToLast(n);
    return setValue(n, v);
   }
   containsNullKey = true;
   pos = n;
  }
  else {
   KEY_GENERIC_TYPE curr;
   final KEY_GENERIC_TYPE[] key = this.key;

   // The starting point.
   if (! KEY_IS_NULL(curr = key[pos = KEY2INTHASH(k) & mask])) {
    if (KEY_EQUALS_NOT_NULL(curr, k)) {
     moveIndexToLast(pos);
     return setValue(pos, v);
    }
    while(! KEY_IS_NULL(curr = key[pos = (pos + 1) & mask]))
     if (KEY_EQUALS_NOT_NULL(curr, k)) {
      moveIndexToLast(pos);
      return setValue(pos, v);
     }
   }
  }
```

```
  key[pos] = k;
  value[pos] = v;

  if (size == 0) {
   first = last = pos;
   // Special case of SET_UPPER_LOWER(link[pos], -1, -1);
   link[pos] = -1L;
  }
  else {
   SET_NEXT(link[last], pos);
   SET_UPPER_LOWER(link[pos], last, -1);
   last = pos;
  }

  if (size++ >= maxFill) rehash(arraySize(size, f));
  if (ASSERTS) checkTable();
  return defRetValue;
 }

#endif

 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public VALUE_GENERIC_TYPE GET_VALUE(final KEY_TYPE k) {
  if (KEY_EQUALS_NULL(KEY_GENERIC_CAST k)) return containsNullKey ? value[n] : defRetValue;

  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[] key = this.key;
  int pos;

  // The starting point.
  if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH_CAST(k) & mask])) return defRetValue;
  if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return value[pos];
  // There's always an unused entry.
  while(true) {
   if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return defRetValue;
   if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return value[pos];
  }
 }

 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public boolean containsKey(final KEY_TYPE k) {
  if (KEY_EQUALS_NULL(KEY_GENERIC_CAST k)) return containsNullKey;

  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[] key = this.key;
  int pos;
```

```
 // The starting point.
 if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH_CAST(k) & mask])) return false;
 if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return true;
 // There's always an unused entry.
 while(true) {
  if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return false;
  if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return true;
 }
}


@Override
public boolean containsValue(final VALUE_TYPE v) {
 final VALUE_GENERIC_TYPE value[] = this.value;
 final KEY_GENERIC_TYPE key[] = this.key;
 if (containsNullKey && VALUE_EQUALS(value[n], v)) return true;
 for(int i = n; i-- != 0;) if (! KEY_IS_NULL(key[i]) && VALUE_EQUALS(value[i], v)) return true;
 return false;
}


/** {@inheritDoc} */
@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public VALUE_GENERIC_TYPE getOrDefault(final KEY_TYPE k, final VALUE_GENERIC_TYPE
defaultValue) {
 if (KEY_EQUALS_NULL(KEY_GENERIC_CAST k)) return containsNullKey ? value[n] : defaultValue;

 KEY_GENERIC_TYPE curr;
 final KEY_GENERIC_TYPE[] key = this.key;
 int pos;

 // The starting point.
 if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH_CAST(k) & mask])) return defaultValue;
 if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return value[pos];
 // There's always an unused entry.
 while(true) {
  if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return defaultValue;
  if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return value[pos];
 }
}

/** {@inheritDoc} */
@Override
public VALUE_GENERIC_TYPE putIfAbsent(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE
v) {
 final int pos = find(k);
```

```
 if (pos >= 0) return value[pos];
 insert(-pos - 1, k, v);
 return defRetValue;
}

/** {@inheritDoc} */
@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public boolean remove(final KEY_TYPE k, final VALUE_TYPE v) {
 if (KEY_EQUALS_NULL(KEY_GENERIC_CAST k)) {
  if (containsNullKey && VALUE_EQUALS(v, value[n])) {
   removeNullEntry();
   return true;
  }
  return false;
 }

 KEY_GENERIC_TYPE curr;
 final KEY_GENERIC_TYPE[] key = this.key;
 int pos;

 // The starting point.
 if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH_CAST(k) & mask])) return false;
 if (KEY_EQUALS_NOT_NULL_CAST(k, curr) && VALUE_EQUALS(v, value[pos])) {
  removeEntry(pos);
  return true;
 }
 while(true) {
  if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return false;
  if (KEY_EQUALS_NOT_NULL_CAST(k, curr) && VALUE_EQUALS(v, value[pos])) {
   removeEntry(pos);
   return true;
  }
 }
}

/** {@inheritDoc} */
@Override
public boolean replace(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE oldValue, final
VALUE_GENERIC_TYPE v) {
 final int pos = find(k);
 if (pos < 0 || ! VALUE_EQUALS(oldValue, value[pos])) return false;
 value[pos] = v;
 return true;
}

/** {@inheritDoc} */
@Override
```

```
 public VALUE_GENERIC_TYPE replace(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v) {
  final int pos = find(k);
  if (pos < 0) return defRetValue;
  final VALUE_GENERIC_TYPE oldValue = value[pos];
  value[pos] = v;
  return oldValue;
 }


#ifdef JDK_PRIMITIVE_FUNCTION

 /** {@inheritDoc} */
 @Override
 public VALUE_GENERIC_TYPE computeIfAbsent(final KEY_GENERIC_TYPE k, final
JDK_PRIMITIVE_FUNCTION KEY_SUPER_GENERIC_VALUE_EXTENDS_GENERIC mappingFunction) {
  java.util.Objects.requireNonNull(mappingFunction);
  final int pos = find(k);
  if (pos >= 0) return value[pos];
  final VALUE_GENERIC_TYPE newValue =
VALUE_NARROWING(mappingFunction.JDK_PRIMITIVE_FUNCTION_APPLY(k));
  insert(-pos -1, k, newValue);
  return newValue;
 }

#endif

 /** {@inheritDoc} */
 @Override
 public VALUE_GENERIC_TYPE computeIfAbsent(final KEY_GENERIC_TYPE key, final FUNCTION
KEY_SUPER_GENERIC_VALUE_EXTENDS_GENERIC mappingFunction) {
  java.util.Objects.requireNonNull(mappingFunction);
  final int pos = find(key);
  if (pos >= 0) return value[pos];

  if (!mappingFunction.containsKey(key)) return defRetValue;
  final VALUE_GENERIC_TYPE newValue = mappingFunction.GET_VALUE(key);
  insert(-pos -1, key, newValue);
  return newValue;
 }


#if KEYS_PRIMITIVE && VALUES_PRIMITIVE

 /** {@inheritDoc} */
 @Override
 public VALUE_GENERIC_TYPE computeIfAbsentNullable(final KEY_GENERIC_TYPE k, final
JDK_KEY_TO_GENERIC_FUNCTION<? extends VALUE_GENERIC_CLASS> mappingFunction) {
  java.util.Objects.requireNonNull(mappingFunction);
```

```
  final int pos = find(k);
  if (pos >= 0) return value[pos];
  final VALUE_GENERIC_CLASS newValue = mappingFunction.apply(k);
  if (newValue == null) return defRetValue;
  final VALUE_GENERIC_TYPE v = VALUE_CLASS2TYPE(newValue);
  insert(-pos - 1, k, v);
  return v;
 }

#endif

 /** {@inheritDoc} */
 @Override
 public VALUE_GENERIC_TYPE COMPUTE_IF_PRESENT(final KEY_GENERIC_TYPE k, final
java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> remappingFunction) {
  java.util.Objects.requireNonNull(remappingFunction);
  final int pos = find(k);
  if (pos < 0) return defRetValue;
#if VALUES_REFERENCE
  if (value[pos] == null) return defRetValue;
#endif
  final VALUE_GENERIC_CLASS newValue = remappingFunction.apply(KEY2OBJ(k),
VALUE2OBJ(value[pos]));
  if (newValue == null) {
   if (KEY_EQUALS_NULL(k)) removeNullEntry();
   else removeEntry(pos);
   return defRetValue;
  }
  return value[pos] = VALUE_CLASS2TYPE(newValue);
 }

 /** {@inheritDoc} */
 @Override
 public VALUE_GENERIC_TYPE COMPUTE(final KEY_GENERIC_TYPE k, final
java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> remappingFunction) {
  java.util.Objects.requireNonNull(remappingFunction);
  final int pos = find(k);
  final VALUE_GENERIC_CLASS newValue = remappingFunction.apply(KEY2OBJ(k), pos >= 0 ?
VALUE2OBJ(value[pos]) : null);
  if (newValue == null) {
   if (pos >= 0) {
    if (KEY_EQUALS_NULL(k)) removeNullEntry();
    else removeEntry(pos);
   }
   return defRetValue;
  }
```

```
  VALUE_GENERIC_TYPE newVal = VALUE_CLASS2TYPE(newValue);
  if (pos < 0) {
   insert(-pos - 1, k, newVal);
   return newVal;
  }

  return value[pos] = newVal;
 }

 /** {@inheritDoc} */
 @Override
 public VALUE_GENERIC_TYPE merge(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v, final
java.util.function.BiFunction<? super VALUE_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> remappingFunction) {
  java.util.Objects.requireNonNull(remappingFunction);
  REQUIRE_VALUE_NON_NULL(v)

  final int pos = find(k);
#if VALUES_PRIMITIVE
  if (pos < 0) {
#else
  if (pos < 0 || value[pos] == null) {
#endif
   if (pos < 0) insert(-pos - 1, k, v);
   else value[pos] = v;

   return v;
  }

  final VALUE_GENERIC_CLASS newValue = remappingFunction.apply(VALUE2OBJ(value[pos]),
VALUE2OBJ(v));
  if (newValue == null) {
   if (KEY_EQUALS_NULL(k)) removeNullEntry();
   else removeEntry(pos);
   return defRetValue;
  }

  return value[pos] = VALUE_CLASS2TYPE(newValue);
 }


 /* Removes all elements from this map.
  *
  * <p>To increase object reuse, this method does not change the table size.
  * If you want to reduce the table size, you must use {@link #trim()}.
  *
  */
```

```
 @Override
 public void clear() {
  if (size == 0) return;
  size = 0;
  containsNullKey = false;

  Arrays.fill(key, KEY_NULL);
#if VALUES_REFERENCE
  Arrays.fill(value, null);
#endif

#ifdef Linked
  first = last = -1;
#endif
 }

 @Override
 public int size() {
  return size;
 }

 @Override
 public boolean isEmpty() {
  return size == 0;
 }


 /** The entry class for a hash map does not record key and value, but
  * rather the position in the hash table of the corresponding entry. This
  * is necessary so that calls to {@link java.util.Map.Entry#setValue(Object)} are reflected in
  * the map */

 final class MapEntry implements MAP.Entry KEY_VALUE_GENERIC, Map.Entry<KEY_GENERIC_CLASS,
VALUE_GENERIC_CLASS>, PAIR KEY_VALUE_GENERIC {
  // The table index this entry refers to, or -1 if this entry has been deleted.
  int index;

  MapEntry(final int index) {
   this.index = index;
  }

  MapEntry() {}

  @Override
  public KEY_GENERIC_TYPE ENTRY_GET_KEY() {
      return key[index];
  }
```

```
 @Override
 public KEY_GENERIC_TYPE PAIR_LEFT() {
     return key[index];
 }

 @Override
 public VALUE_GENERIC_TYPE ENTRY_GET_VALUE() {
  return value[index];
 }

 @Override
 public VALUE_GENERIC_TYPE PAIR_RIGHT() {
  return value[index];
 }

 @Override
 public VALUE_GENERIC_TYPE setValue(final VALUE_GENERIC_TYPE v) {
  final VALUE_GENERIC_TYPE oldValue = value[index];
  value[index] = v;
  return oldValue;
 }

 @Override
 public PAIR KEY_VALUE_GENERIC right(final VALUE_GENERIC_TYPE v) {
  value[index] = v;
  return this;
 }

#if KEYS_PRIMITIVE
 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public KEY_GENERIC_CLASS getKey() {
  return KEY2OBJ(key[index]);
 }
#endif

#if VALUES_PRIMITIVE
 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public VALUE_GENERIC_CLASS getValue() {
  return VALUE2OBJ(value[index]);
 }

 /** {@inheritDoc}
```

```
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public VALUE_GENERIC_CLASS setValue(final VALUE_GENERIC_CLASS v) {
  return VALUE2OBJ(setValue(VALUE_CLASS2TYPE(v)));
 }
#endif

 @SuppressWarnings("unchecked")
 @Override
 public boolean equals(final Object o) {
  if (!(o instanceof Map.Entry)) return false;
  Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS> e = (Map.Entry<KEY_GENERIC_CLASS,
VALUE_GENERIC_CLASS>)o;

  return KEY_EQUALS(key[index], KEY_CLASS2TYPE(e.getKey())) && VALUE_EQUALS(value[index],
VALUE_CLASS2TYPE(e.getValue()));
 }

 @Override
 public int hashCode() {
  return KEY2JAVAHASH(key[index]) ^ VALUE2JAVAHASH(value[index]);
 }

 @Override
 public String toString() {
  return key[index] + "=>" + value[index];
 }
}


#ifdef Linked

/** Modifies the {@link #link} vector so that the given entry is removed.
 * This method will complete in constant time.
 *
 * @param i the index of an entry.
 */
protected void fixPointers(final int i) {
 if (size == 0) {
  first = last = -1;
  return;
 }
 if (first == i) {
  first = GET_NEXT(link[i]);
  if (0 <= first) {
   // Special case of SET_PREV(link[first], -1)
   link[first] |= (-1 & 0xFFFFFFFFL) << 32;
```

```
   }
   return;
  }
  if (last == i) {
   last = GET_PREV(link[i]);
   if (0 <= last) {
    // Special case of SET_NEXT(link[last], -1)
    link[last] |= -1 & 0xFFFFFFFFL;
   }
   return;
  }
  final long linki = link[i];
  final int prev = GET_PREV(linki);
  final int next = GET_NEXT(linki);
  COPY_NEXT(link[prev], linki);
  COPY_PREV(link[next], linki);
 }


 /** Modifies the {@link #link} vector for a shift from s to d.
  * <p>This method will complete in constant time.
  *
  * @param s the source position.
  * @param d the destination position.
  */
 protected void fixPointers(int s, int d) {
  if (size == 1) {
   first = last = d;
   // Special case of SET_UPPER_LOWER(link[d], -1, -1)
   link[d] = -1L;
   return;
  }
  if (first == s) {
   first = d;
   SET_PREV(link[GET_NEXT(link[s])], d);
   link[d] = link[s];
   return;
  }
  if (last == s) {
   last = d;
   SET_NEXT(link[GET_PREV(link[s])], d);
   link[d] = link[s];
   return;
  }
  final long links = link[s];
  final int prev = GET_PREV(links);
  final int next = GET_NEXT(links);
  SET_NEXT(link[prev], d);
```

```
 SET_PREV(link[next], d);
 link[d] = links;
}


/** Returns the first key of this map in iteration order.
 *
 * @return the first key in iteration order.
 */
@Override
public KEY_GENERIC_TYPE FIRST_KEY() {
 if (size == 0) throw new NoSuchElementException();
 return key[first];
}


/** Returns the last key of this map in iteration order.
 *
 * @return the last key in iteration order.
 */
@Override
public KEY_GENERIC_TYPE LAST_KEY() {
 if (size == 0) throw new NoSuchElementException();
 return key[last];
}

/** {@inheritDoc}
 * @implSpec This implementation just throws an {@link UnsupportedOperationException}.*/
@Override
public SORTED_MAP KEY_VALUE_GENERIC tailMap(KEY_GENERIC_TYPE from) { throw new
UnsupportedOperationException(); }

/** {@inheritDoc}
 * @implSpec This implementation just throws an {@link UnsupportedOperationException}.*/
@Override
public SORTED_MAP KEY_VALUE_GENERIC headMap(KEY_GENERIC_TYPE to) { throw new
UnsupportedOperationException(); }

/** {@inheritDoc}
 * @implSpec This implementation just throws an {@link UnsupportedOperationException}.*/
@Override
public SORTED_MAP KEY_VALUE_GENERIC subMap(KEY_GENERIC_TYPE from, KEY_GENERIC_TYPE
to) { throw new UnsupportedOperationException(); }

/** {@inheritDoc}
 * @implSpec This implementation just returns {@code null}.*/
@Override
public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return null; }
```

```
/** A list iterator over a linked map.
 *
 * <p>This class provides a list iterator over a linked hash map. The constructor runs in constant time.
 */
private abstract class MapIterator<ConsumerType> {
 /** The entry that will be returned by the next call to {@link java.util.ListIterator#previous()} (or {@code null} if
no previous entry exists). */
 int prev = -1;
 /** The entry that will be returned by the next call to {@link java.util.ListIterator#next()} (or {@code null} if no
next entry exists). */
 int next = -1;
 /** The last entry that was returned (or -1 if we did not iterate or used {@link java.util.Iterator#remove()}). */
 int curr = -1;
 /** The current index (in the sense of a {@link java.util.ListIterator}). Note that this value is not meaningful when
this iterator has been created using the nonempty constructor.*/
 int index = -1;

 @SuppressWarnings("unused")
 abstract void acceptOnIndex(final ConsumerType action, final int index);

 protected MapIterator() {
  next = first;
  index = 0;
 }

 private MapIterator(final KEY_GENERIC_TYPE from) {
  if (KEY_EQUALS_NULL(from)) {
   if (OPEN_HASH_MAP.this.containsNullKey) {
    next = GET_NEXT(link[n]);
    prev = n;
    return;
   }
   else throw new NoSuchElementException("The key " + from + " does not belong to this map.");
  }

  if (KEY_EQUALS(key[last], from)) {
   prev = last;
   index = size;
   return;
  }

  // The starting point.
  int pos = KEY2INTHASH(from) & mask;

  // There's always an unused entry.
  while(! KEY_IS_NULL(key[pos])) {
   if (KEY_EQUALS_NOT_NULL(key[pos], from)) {
```

```
   // Note: no valid index known.
   next = GET_NEXT(link[pos]);
   prev = pos;
   return;
  }
  pos = (pos + 1) & mask;
 }
 throw new NoSuchElementException("The key " + from + " does not belong to this map.");
}

public boolean hasNext() { return next != -1; }

public boolean hasPrevious() { return prev != -1; }

private final void ensureIndexKnown() {
 if (index >= 0) return;
 if (prev == -1) {
  index = 0;
  return;
 }
 if (next == -1) {
  index = size;
  return;
 }
 int pos = first;
 index = 1;
 while(pos != prev) {
  pos = GET_NEXT(link[pos]);
  index++;
 }
}

public int nextIndex() {
 ensureIndexKnown();
 return index;
}

public int previousIndex() {
 ensureIndexKnown();
 return index - 1;
}

public int nextEntry() {
 if (! hasNext()) throw new NoSuchElementException();

 curr = next;
 next = GET_NEXT(link[curr]);
 prev = curr;
```

```
 if (index >= 0) index++;

 return curr;
}

public int previousEntry() {
 if (! hasPrevious()) throw new NoSuchElementException();

 curr = prev;
 prev = GET_PREV(link[curr]);
 next = curr;

 if (index >= 0) index--;

 return curr;
}

public void forEachRemaining(final ConsumerType action) {
 while (hasNext()) {
  curr = next;
  next = GET_NEXT(link[curr]);
  prev = curr;

  if (index >= 0) index++;

  acceptOnIndex(action, curr);
 }
}

public void remove() {
 ensureIndexKnown();
 if (curr == -1) throw new IllegalStateException();

 if (curr == prev) {
  /* If the last operation was a next(), we are removing an entry that preceeds
     the current index, and thus we must decrement it. */
  index--;
  prev = GET_PREV(link[curr]);
 }
 else
  next = GET_NEXT(link[curr]);

 size--;
 /* Now we manually fix the pointers. Because of our knowledge of next
    and prev, this is going to be faster than calling fixPointers(). */
 if (prev == -1) first = next;
 else
```

```
  SET_NEXT(link[prev], next);
 if (next == -1) last = prev;
 else
  SET_PREV(link[next], prev);

 int last, slot, pos = curr;
 curr = -1;

 if (pos == n) {
  OPEN_HASH_MAP.this.containsNullKey = false;
#if KEYS_REFERENCE
  key[n] = null;
#endif
#if VALUES_REFERENCE
  value[n] = null;
#endif
 }
 else {
  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[] key = OPEN_HASH_MAP.this.key;
  // We have to horribly duplicate the shiftKeys() code because we need to update next/prev.
  for(;;) {
   pos = ((last = pos) + 1) & mask;
   for(;;) {
    if (KEY_IS_NULL(curr = key[pos])) {
     key[last] = KEY_NULL;
#if VALUES_REFERENCE
     value[last] = null;
#endif
     return;
    }
    slot = KEY2INTHASH(curr) & mask;
    if (last <= pos ? last >= slot || slot > pos : last >= slot && slot > pos) break;
    pos = (pos + 1) & mask;
   }

   key[last] = curr;
   value[last] = value[pos];
   if (next == pos) next = last;
   if (prev == pos) prev = last;
   fixPointers(pos, last);
  }
 }
}

public int skip(final int n) {
 int i = n;
 while(i-- != 0 && hasNext()) nextEntry();
```

```
   return n - i - 1;
  }

  public int back(final int n) {
   int i = n;
   while(i-- != 0 && hasPrevious()) previousEntry();
   return n - i - 1;
  }

  public void set(@SuppressWarnings("unused") MAP.Entry KEY_VALUE_GENERIC ok) {
   throw new UnsupportedOperationException();
  }

  public void add(@SuppressWarnings("unused") MAP.Entry KEY_VALUE_GENERIC ok) {
   throw new UnsupportedOperationException();
  }
 }

 private final class EntryIterator extends MapIterator<Consumer<? super MAP.Entry KEY_VALUE_GENERIC>>
implements ObjectListIterator<MAP.Entry KEY_VALUE_GENERIC> {
  private MapEntry entry;

  public EntryIterator() {}

  public EntryIterator(KEY_GENERIC_TYPE from) {
   super(from);
  }

  // forEachRemaining inherited from MapIterator superclass.

  @Override
  final void acceptOnIndex(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> action, final int index) {
   action.accept(new MapEntry(index));
  }

  @Override
  public MapEntry next() {
   return entry = new MapEntry(nextEntry());
  }

  @Override
  public MapEntry previous() {
   return entry = new MapEntry(previousEntry());
  }

  @Override
  public void remove() {
   super.remove();
```

```
  entry.index = -1; // You cannot use a deleted entry.
  }
 }

 private final class FastEntryIterator extends MapIterator<Consumer<? super MAP.Entry
KEY_VALUE_GENERIC>> implements ObjectListIterator<MAP.Entry KEY_VALUE_GENERIC> {
  final MapEntry entry = new MapEntry();

  public FastEntryIterator() {}

  public FastEntryIterator(KEY_GENERIC_TYPE from) {
   super(from);
  }

  // forEachRemaining inherited from MapIterator superclass.

  @Override
  final void acceptOnIndex(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> action, final int index) {
   entry.index = index;
   action.accept(entry);
  }

  @Override
  public MapEntry next() {
   entry.index = nextEntry();
   return entry;
  }

  @Override
  public MapEntry previous() {
   entry.index = previousEntry();
   return entry;
  }
 }

#else

 /** An iterator over a hash map. */

 private abstract class MapIterator<ConsumerType> {
  /** The index of the last entry returned, if positive or zero; initially, {@link #n}. If negative, the last
   entry returned was that of the key of index {@code - pos - 1} from the {@link #wrapped} list. */
  int pos = n;
  /** The index of the last entry that has been returned (more precisely, the value of {@link #pos} if {@link #pos} is
positive,
   or {@link Integer#MIN_VALUE} if {@link #pos} is negative). It is -1 if either
   we did not return an entry yet, or the last returned entry has been removed. */
  int last = -1;
```

```
/** A downward counter measuring how many entries must still be returned. */
int c = size;
/** A boolean telling us whether we should return the entry with the null key. */
boolean mustReturnNullKey = OPEN_HASH_MAP.this.containsNullKey;
/** A lazily allocated list containing keys of entries that have wrapped around the table because of removals. */
ARRAY_LIST KEY_GENERIC wrapped;

@SuppressWarnings("unused")
abstract void acceptOnIndex(final ConsumerType action, final int index);

public boolean hasNext() {
 return c != 0;
}

public int nextEntry() {
 if (! hasNext()) throw new NoSuchElementException();

 c--;
 if (mustReturnNullKey) {
  mustReturnNullKey = false;
  return last = n;
 }

 final KEY_GENERIC_TYPE key[] = OPEN_HASH_MAP.this.key;

 for(;;) {
  if (--pos < 0) {
   // We are just enumerating elements from the wrapped list.
   last = Integer.MIN_VALUE;
   final KEY_GENERIC_TYPE k = wrapped.GET_KEY(- pos - 1);
   int p = KEY2INTHASH(k) & mask;
   while (! KEY_EQUALS_NOT_NULL(k, key[p])) p = (p + 1) & mask;
   return p;
  }
  if (! KEY_IS_NULL(key[pos])) return last = pos;
 }
}

public void forEachRemaining(final ConsumerType action) {
 if (mustReturnNullKey) {
  mustReturnNullKey = false;
  acceptOnIndex(action, last = n);
  c--;
 }

 final KEY_GENERIC_TYPE key[] = OPEN_HASH_MAP.this.key;

 while (c != 0) {
```

```
    if (--pos < 0) {
     // We are just enumerating elements from the wrapped list.
     last = Integer.MIN_VALUE;
     final KEY_GENERIC_TYPE k = wrapped.GET_KEY(- pos - 1);
     int p = KEY2INTHASH(k) & mask;
     while (! KEY_EQUALS_NOT_NULL(k, key[p])) p = (p + 1) & mask;
     acceptOnIndex(action, p);
     c--;
    } else if (! KEY_IS_NULL(key[pos])) {
     acceptOnIndex(action, last = pos);
     c--;
    }
   }
  }

  /** Shifts left entries with the specified hash code, starting at the specified position,
   * and empties the resulting free entry.
   *
   * @param pos a starting position.
   */
  private void shiftKeys(int pos) {
   // Shift entries with the same hash.
   int last, slot;
   KEY_GENERIC_TYPE curr;
   final KEY_GENERIC_TYPE[] key = OPEN_HASH_MAP.this.key;

   for(;;) {
    pos = ((last = pos) + 1) & mask;

    for(;;) {
     if (KEY_IS_NULL(curr = key[pos])) {
      key[last] = KEY_NULL;
#if VALUES_REFERENCE
      value[last] = null;
#endif
      return;
     }
     slot = KEY2INTHASH(curr) & mask;
     if (last <= pos ? last >= slot || slot > pos : last >= slot && slot > pos) break;
     pos = (pos + 1) & mask;
    }

    if (pos < last) { // Wrapped entry.
     if (wrapped == null) wrapped = new ARRAY_LIST KEY_GENERIC_DIAMOND(2);
     wrapped.add(key[pos]);
    }

    key[last] = curr;
```

```
    value[last] = value[pos];
   }
  }

  public void remove() {
   if (last == -1) throw new IllegalStateException();
   if (last == n) {
    containsNullKey = false;
#if KEYS_REFERENCE
    key[n] = null;
#endif
#if VALUES_REFERENCE
    value[n] = null;
#endif
   }
   else if (pos >= 0) shiftKeys(last);
   else {
    // We're removing wrapped entries.
#if KEYS_REFERENCE
    OPEN_HASH_MAP.this.REMOVE_VALUE(wrapped.set(- pos - 1, null));
#else
    OPEN_HASH_MAP.this.REMOVE_VALUE(wrapped.GET_KEY(- pos - 1));
#endif
    last = -1; // Note that we must not decrement size
    return;
   }

   size--;
   last = -1; // You can no longer remove this entry.
   if (ASSERTS) checkTable();
  }

  public int skip(final int n) {
   int i = n;
   while(i-- != 0 && hasNext()) nextEntry();
   return n - i - 1;
  }
 }


 private final class EntryIterator extends MapIterator<Consumer<? super MAP.Entry KEY_VALUE_GENERIC>>
implements ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> {
  private MapEntry entry;

  @Override
  public MapEntry next() {
   return entry = new MapEntry(nextEntry());
  }
```

```
  // forEachRemaining inherited from MapIterator superclass.

  @Override
  final void acceptOnIndex(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> action, final int index) {
   action.accept(entry = new MapEntry(index));
  }

  @Override
  public void remove() {
   super.remove();
   entry.index = -1; // You cannot use a deleted entry.
  }
 }

 private final class FastEntryIterator extends MapIterator<Consumer<? super MAP.Entry
KEY_VALUE_GENERIC>> implements ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> {
  private final MapEntry entry = new MapEntry();

  @Override
  public MapEntry next() {
   entry.index = nextEntry();
   return entry;
  }

  // forEachRemaining inherited from MapIterator superclass.

  @Override
  final void acceptOnIndex(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> action, final int index) {
   entry.index = index;
   action.accept(entry);
  }
 }

 private abstract class MapSpliterator<ConsumerType, SplitType extends MapSpliterator<ConsumerType,
SplitType>> {
  /** The index (which bucket) of the next item to give to the action.
   * Unlike {@link SetIterator}, this counts up instead of down.
   */
  int pos = 0;
  /** The maximum bucket (exclusive) to iterate to */
  int max = n;
  /** An upwards counter counting how many we have given */
  int c = 0;
  /** A boolean telling us whether we should return the null key. */
  boolean mustReturnNull = OPEN_HASH_MAP.this.containsNullKey;
  boolean hasSplit = false;
```

```
MapSpliterator() {}

MapSpliterator(int pos, int max, boolean mustReturnNull, boolean hasSplit) {
 this.pos = pos;
 this.max = max;
 this.mustReturnNull = mustReturnNull;
 this.hasSplit = hasSplit;
}

abstract void acceptOnIndex(final ConsumerType action, final int index);

abstract SplitType makeForSplit(int pos, int max, boolean mustReturnNull);

public boolean tryAdvance(final ConsumerType action) {
 if (mustReturnNull) {
  mustReturnNull = false;
  ++c;
  acceptOnIndex(action, n);
  return true;
 }
 final KEY_GENERIC_TYPE key[] = OPEN_HASH_MAP.this.key;
 while (pos < max) {
  if (! KEY_IS_NULL(key[pos])) {
   ++c;
   acceptOnIndex(action, pos++);
   return true;
  }
  ++pos;
 }
 return false;
}

public void forEachRemaining(final ConsumerType action) {
 if (mustReturnNull) {
  mustReturnNull = false;
  ++c;
  acceptOnIndex(action, n);
 }

 final KEY_GENERIC_TYPE key[] = OPEN_HASH_MAP.this.key;

 while (pos < max) {
  if (! KEY_IS_NULL(key[pos])) {
   acceptOnIndex(action, pos);
   ++c;
  }
  ++pos;
 }
```

```
 }

 public long estimateSize() {
  if (!hasSplit) {
   // Root spliterator; we know how many are remaining.
   return size - c;
  } else {
   // After we split, we can no longer know exactly how many we have (or at least not efficiently).
   // (size / n) * (max - pos) aka currentTableDensity * numberOfBucketsLeft seems like a good estimate.
   return Math.min(size - c, (long)(((double)realSize() / n) * (max - pos)) + (mustReturnNull ? 1 : 0));
  }
 }

 public SplitType trySplit() {
  if (pos >= max - 1) return null;
  int retLen = (max - pos) >> 1;
  if (retLen <= 1) return null;
  int myNewPos = pos + retLen;
  int retPos = pos;
  int retMax = myNewPos;
  // Since null is returned first, and the convention is that the returned split is the prefix of elements,
  // the split will take care of returning null (if needed), and we won't return it anymore.
  SplitType split = makeForSplit(retPos, retMax, mustReturnNull);
  this.pos = myNewPos;
  this.mustReturnNull = false;
  this.hasSplit = true;
  return split;
 }

 public long skip(long n) {
  if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
  if (n == 0) return 0;
  long skipped = 0;
  if (mustReturnNull) {
   mustReturnNull = false;
   ++skipped;
   --n;
  }
  final KEY_GENERIC_TYPE key[] = OPEN_HASH_MAP.this.key;
  while (pos < max && n > 0) {
   if (! KEY_IS_NULL(key[pos++])) {
    ++skipped;
    --n;
   }
  }
  return skipped;
 }
}
```

```
 private final class EntrySpliterator extends MapSpliterator<Consumer<? super MAP.Entry
KEY_VALUE_GENERIC>, EntrySpliterator> implements ObjectSpliterator<MAP.Entry
KEY_VALUE_GENERIC> {

  private static final int POST_SPLIT_CHARACTERISTICS =
ObjectSpliterators.SET_SPLITERATOR_CHARACTERISTICS & ~java.util.Spliterator.SIZED;

  EntrySpliterator() {}

  EntrySpliterator(int pos, int max, boolean mustReturnNull, boolean hasSplit) {
   super(pos, max, mustReturnNull, hasSplit);
  }

  @Override
  public int characteristics() {
   return hasSplit ? POST_SPLIT_CHARACTERISTICS :
ObjectSpliterators.SET_SPLITERATOR_CHARACTERISTICS;
  }

  @Override
  final void acceptOnIndex(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> action, final int index) {
   action.accept(new MapEntry(index));
  }

  @Override
  final EntrySpliterator makeForSplit(int pos, int max, boolean mustReturnNull) {
   return new EntrySpliterator(pos, max, mustReturnNull, true);
  }
 }

#endif

#ifdef Linked
 private final class MapEntrySet extends AbstractObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC>
implements FastSortedEntrySet KEY_VALUE_GENERIC {

  private static final int SPLITERATOR_CHARACTERISTICS =
ObjectSpliterators.SET_SPLITERATOR_CHARACTERISTICS | java.util.Spliterator.ORDERED;

  @Override
  public ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> iterator() { return new EntryIterator(); }

  /** {@inheritDoc}
   *
   * <p>There isn't a way to split efficiently while still preserving order for a linked data structure,
   * so this implementation is just backed by the iterator. Thus, this spliterator is not well optimized
   * for parallel streams.
```

```
 *
 * <p>Note, contrary to the specification of {@link java.util.SortedSet}, this spliterator does not,
 * report {@link java.util.Spliterators.SORTED}. This is because iteration order is based on insertion
 * order, not natural ordering.
 */
@Override
public ObjectSpliterator<MAP.Entry KEY_VALUE_GENERIC> spliterator() {
 return ObjectSpliterators.asSpliterator(
  iterator(), it.unimi.dsi.fastutil.Size64.sizeOf(OPEN_HASH_MAP.this), SPLITERATOR_CHARACTERISTICS);
}

@Override
public Comparator<? super MAP.Entry KEY_VALUE_GENERIC> comparator() { return null; }

@Override
public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> subSet(MAP.Entry KEY_VALUE_GENERIC
fromElement, MAP.Entry KEY_VALUE_GENERIC toElement) { throw new UnsupportedOperationException(); }

@Override
public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> headSet(MAP.Entry KEY_VALUE_GENERIC
toElement) { throw new UnsupportedOperationException(); }

@Override
public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> tailSet(MAP.Entry KEY_VALUE_GENERIC
fromElement) { throw new UnsupportedOperationException(); }

@Override
public MAP.Entry KEY_VALUE_GENERIC first() {
 if (size == 0) throw new NoSuchElementException();
 return new MapEntry(OPEN_HASH_MAP.this.first);
}

@Override
public MAP.Entry KEY_VALUE_GENERIC last() {
 if (size == 0) throw new NoSuchElementException();
 return new MapEntry(OPEN_HASH_MAP.this.last);
}

#else
 private final class MapEntrySet extends AbstractObjectSet<MAP.Entry KEY_VALUE_GENERIC> implements
FastEntrySet KEY_VALUE_GENERIC {

@Override
public ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> iterator() { return new EntryIterator(); }

@Override
public ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> fastIterator() { return new FastEntryIterator(); }
```

```
  @Override
  public ObjectSpliterator<MAP.Entry KEY_VALUE_GENERIC> spliterator() { return new EntrySpliterator(); }

  //
#endif

  @Override
  SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
  public boolean contains(final Object o) {
   if (!(o instanceof Map.Entry)) return false;
   final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
#if KEYS_PRIMITIVE
   if (e.getKey() == null || ! (e.getKey() instanceof KEY_CLASS)) return false;
#endif
#if VALUES_PRIMITIVE
   if (e.getValue() == null || ! (e.getValue() instanceof VALUE_CLASS)) return false;
#endif
   final KEY_GENERIC_TYPE k = KEY_OBJ2TYPE(KEY_GENERIC_CAST e.getKey());
   final VALUE_GENERIC_TYPE v = VALUE_OBJ2TYPE(VALUE_GENERIC_CAST e.getValue());

   if (KEY_EQUALS_NULL(k)) return OPEN_HASH_MAP.this.containsNullKey && VALUE_EQUALS(value[n],
v);

   KEY_GENERIC_TYPE curr;
   final KEY_GENERIC_TYPE[] key = OPEN_HASH_MAP.this.key;
   int pos;

   // The starting point.
   if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH(k) & mask])) return false;
   if (KEY_EQUALS_NOT_NULL(k, curr)) return VALUE_EQUALS(value[pos], v);
   // There's always an unused entry.
   while(true) {
    if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return false;
    if (KEY_EQUALS_NOT_NULL(k, curr)) return VALUE_EQUALS(value[pos], v);
   }
  }

  @Override
  SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
  public boolean remove(final Object o) {
   if (!(o instanceof Map.Entry)) return false;
   final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
#if KEYS_PRIMITIVE
   if (e.getKey() == null || ! (e.getKey() instanceof KEY_CLASS)) return false;
#endif
#if VALUES_PRIMITIVE
   if (e.getValue() == null || ! (e.getValue() instanceof VALUE_CLASS)) return false;
#endif
```

```
  final KEY_GENERIC_TYPE k = KEY_OBJ2TYPE(KEY_GENERIC_CAST e.getKey());
  final VALUE_GENERIC_TYPE v = VALUE_OBJ2TYPE(VALUE_GENERIC_CAST e.getValue());


  if (KEY_EQUALS_NULL(k)) {
   if (containsNullKey && VALUE_EQUALS(value[n], v)) {
    removeNullEntry();
    return true;
   }
   return false;
  }

  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[] key = OPEN_HASH_MAP.this.key;
  int pos;

  // The starting point.
  if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH(k) & mask])) return false;
  if (KEY_EQUALS_NOT_NULL(curr, k)) {
   if (VALUE_EQUALS(value[pos], v)) {
    removeEntry(pos);
    return true;
   }
   return false;
  }

  while(true) {
   if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return false;
   if (KEY_EQUALS_NOT_NULL(curr, k))  {
    if (VALUE_EQUALS(value[pos], v)) {
     removeEntry(pos);
     return true;
    }
   }
  }
 }

 @Override
 public int size() {
  return size;
 }

 @Override
 public void clear() {
  OPEN_HASH_MAP.this.clear();
 }

#ifdef Linked
```

```
/** Returns a type-specific list iterator on the elements in this set, starting from a given element of the set.
 * Please see the class documentation for implementation details.
 *
 * @param from an element to start from.
 * @return a type-specific list iterator starting at the given element.
 * @throws IllegalArgumentException if {@code from} does not belong to the set.
 */
@Override
public ObjectListIterator<MAP.Entry KEY_VALUE_GENERIC> iterator(final MAP.Entry
KEY_VALUE_GENERIC from) {
 return new EntryIterator(from.ENTRY_GET_KEY());
}

/** Returns a type-specific fast list iterator on the elements in this set, starting from the first element.
 * Please see the class documentation for implementation details.
 *
 * @return a type-specific list iterator starting at the first element.
 */
@Override
public ObjectListIterator<MAP.Entry KEY_VALUE_GENERIC> fastIterator() {
 return new FastEntryIterator();
}

/** Returns a type-specific fast list iterator on the elements in this set, starting from a given element of the set.
 * Please see the class documentation for implementation details.
 *
 * @param from an element to start from.
 * @return a type-specific list iterator starting at the given element.
 * @throws IllegalArgumentException if {@code from} does not belong to the set.
 */
@Override
public ObjectListIterator<MAP.Entry KEY_VALUE_GENERIC> fastIterator(final MAP.Entry
KEY_VALUE_GENERIC from) {
 return new FastEntryIterator(from.ENTRY_GET_KEY());
}

/** {@inheritDoc} */
@Override
public void forEach(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> consumer) {
 for(int i = size, curr, next = first; i-- != 0;) {
  curr = next;
  next = GET_NEXT(link[curr]);
  consumer.accept(new ABSTRACT_MAP.BasicEntry KEY_VALUE_GENERIC(key[curr], value[curr]));
 }
}

/** {@inheritDoc} */
@Override
```

```
  public void fastForEach(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> consumer) {
   final ABSTRACT_MAP.BasicEntry KEY_VALUE_GENERIC entry = new ABSTRACT_MAP.BasicEntry
KEY_VALUE_GENERIC_DIAMOND();
   for(int i = size, curr, next = first; i-- != 0;) {
    curr = next;
    next = GET_NEXT(link[curr]);
    entry.key = key[curr];
    entry.value = value[curr];
    consumer.accept(entry);
   }
  }

#else

  /** {@inheritDoc} */
  @Override
  public void forEach(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> consumer) {
   if (containsNullKey) consumer.accept(new ABSTRACT_MAP.BasicEntry KEY_VALUE_GENERIC(key[n],
value[n]));
   for(int pos = n; pos-- != 0;)
    if (! KEY_IS_NULL(key[pos])) consumer.accept(new ABSTRACT_MAP.BasicEntry
KEY_VALUE_GENERIC(key[pos], value[pos]));
  }

  /** {@inheritDoc} */
  @Override
  public void fastForEach(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> consumer) {
   final ABSTRACT_MAP.BasicEntry KEY_VALUE_GENERIC entry = new ABSTRACT_MAP.BasicEntry
KEY_VALUE_GENERIC_DIAMOND();
   if (containsNullKey) {
    entry.key = key[n];
    entry.value = value[n];
    consumer.accept(entry);
   }
   for(int pos = n; pos-- != 0;)
    if (! KEY_IS_NULL(key[pos])) {
     entry.key = key[pos];
     entry.value = value[pos];
     consumer.accept(entry);
    }
  }

#endif
 }


#ifdef Linked
 @Override
```

```
 public FastSortedEntrySet KEY_VALUE_GENERIC ENTRYSET() {
  if (entries == null) entries = new MapEntrySet();
#else
 @Override
 public FastEntrySet KEY_VALUE_GENERIC ENTRYSET() {
  if (entries == null) entries = new MapEntrySet();
#endif
  return entries;
 }

 /** An iterator on keys.
  *
  * <p>We simply override the {@link java.util.ListIterator#next()}/{@link java.util.ListIterator#previous()}
methods
  * (and possibly their type-specific counterparts) so that they return keys
  * instead of entries.
  */

#ifdef Linked
 private final class KeyIterator extends MapIterator<METHOD_ARG_KEY_CONSUMER> implements
KEY_LIST_ITERATOR KEY_GENERIC {
  public KeyIterator(final KEY_GENERIC_TYPE k) { super(k); }

  @Override
  public KEY_GENERIC_TYPE PREV_KEY() { return key[previousEntry()]; }
#else
 private final class KeyIterator extends MapIterator<METHOD_ARG_KEY_CONSUMER> implements
KEY_ITERATOR KEY_GENERIC {
#endif
  public KeyIterator() { super(); }

  // forEachRemaining inherited from MapIterator superclass.
  // Despite the superclass declared with generics, the way Java inherits and generates bridge methods avoids the
boxing/unboxing

  @Override
  final void acceptOnIndex(final METHOD_ARG_KEY_CONSUMER action, final int index) {
   action.accept(key[index]);
  }



  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() { return key[nextEntry()]; }
 }

#ifndef Linked
 private final class KeySpliterator extends MapSpliterator<METHOD_ARG_KEY_CONSUMER, KeySpliterator>
implements KEY_SPLITERATOR KEY_GENERIC {
```

```
  private static final int POST_SPLIT_CHARACTERISTICS =
SPLITERATORS.SET_SPLITERATOR_CHARACTERISTICS & ~java.util.Spliterator.SIZED;

  KeySpliterator() {}

  KeySpliterator(int pos, int max, boolean mustReturnNull, boolean hasSplit) {
   super(pos, max, mustReturnNull, hasSplit);
  }

  @Override
  public int characteristics() {
   return hasSplit ? POST_SPLIT_CHARACTERISTICS :
SPLITERATORS.SET_SPLITERATOR_CHARACTERISTICS;
  }

  @Override
  final void acceptOnIndex(final METHOD_ARG_KEY_CONSUMER action, final int index) {
   action.accept(key[index]);
  }

  @Override
  final KeySpliterator makeForSplit(int pos, int max, boolean mustReturnNull) {
   return new KeySpliterator(pos, max, mustReturnNull, true);
  }
 }
#endif

#ifdef Linked
 private final class KeySet extends ABSTRACT_SORTED_SET KEY_GENERIC {

  private static final int SPLITERATOR_CHARACTERISTICS =
SPLITERATORS.SET_SPLITERATOR_CHARACTERISTICS | java.util.Spliterator.ORDERED;

  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC iterator(final KEY_GENERIC_TYPE from) { return new
KeyIterator(from); }

  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC iterator() { return new KeyIterator(); }

  /** {@inheritDoc}
   * @see EntrySet#spliterator()
   */
  @Override
  public KEY_SPLITERATOR KEY_GENERIC spliterator() {
   return SPLITERATORS.asSpliterator(
    iterator(), it.unimi.dsi.fastutil.Size64.sizeOf(OPEN_HASH_MAP.this), SPLITERATOR_CHARACTERISTICS);
```

```
  }

  /** {@inheritDoc} */
  @Override
  public void forEach(final METHOD_ARG_KEY_CONSUMER consumer) {
   for(int i = size, curr, next = first; i-- != 0;) {
    curr = next;
    next = GET_NEXT(link[curr]);
    consumer.accept(key[curr]);
   }
  }

#else
 private final class KeySet extends ABSTRACT_SET KEY_GENERIC {

  @Override
  public KEY_ITERATOR KEY_GENERIC iterator() { return new KeyIterator(); }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC spliterator() { return new KeySpliterator(); }

  /** {@inheritDoc} */
  @Override
  public void forEach(final METHOD_ARG_KEY_CONSUMER consumer) {
   if (containsNullKey) consumer.accept(key[n]);
   for(int pos = n; pos-- != 0;) {
    final KEY_GENERIC_TYPE k = key[pos];
    if (! KEY_IS_NULL(k)) consumer.accept(k);
   }
  }
#endif

  @Override
  public int size() { return size; }

  @Override
  public boolean contains(KEY_TYPE k) { return containsKey(k); }

  @Override
  public boolean remove(KEY_TYPE k) {
   final int oldSize = size;
   OPEN_HASH_MAP.this.REMOVE_VALUE(k);
   return size != oldSize;
  }

  @Override
  public void clear() { OPEN_HASH_MAP.this.clear();}
```

```
#ifdef Linked
  @Override
  public KEY_GENERIC_TYPE FIRST() {
   if (size == 0) throw new NoSuchElementException();
   return key[first];
  }

  @Override
  public KEY_GENERIC_TYPE LAST() {
   if (size == 0) throw new NoSuchElementException();
   return key[last];
  }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return null; }

  @Override
  public SORTED_SET KEY_GENERIC tailSet(KEY_GENERIC_TYPE from) { throw new
UnsupportedOperationException(); }

  @Override
  public SORTED_SET KEY_GENERIC headSet(KEY_GENERIC_TYPE to) { throw new
UnsupportedOperationException(); }

  @Override
  public SORTED_SET KEY_GENERIC subSet(KEY_GENERIC_TYPE from, KEY_GENERIC_TYPE to) { throw
new UnsupportedOperationException(); }
#endif
 }


#ifdef Linked
 @Override
 public SORTED_SET KEY_GENERIC keySet() {
#else
 @Override
 public SET KEY_GENERIC keySet() {
#endif
  if (keys == null) keys = new KeySet();
  return keys;
 }


 /** An iterator on values.
  *
  * <p>We simply override the {@link java.util.ListIterator#next()}/{@link java.util.ListIterator#previous()}
methods
  * (and possibly their type-specific counterparts) so that they return values
```

```
  * instead of entries.
  */

#ifdef Linked
 private final class ValueIterator extends MapIterator<METHOD_ARG_VALUE_CONSUMER> implements
VALUE_LIST_ITERATOR VALUE_GENERIC {
  @Override
  public VALUE_GENERIC_TYPE PREV_VALUE() { return value[previousEntry()]; }
#else
 private final class ValueIterator extends MapIterator<METHOD_ARG_VALUE_CONSUMER> implements
VALUE_ITERATOR VALUE_GENERIC {
#endif

  public ValueIterator() { super(); }

  // forEachRemaining inherited from MapIterator superclass.
  // Despite the superclass declared with generics, the way Java inherits and generates bridge methods avoids the
boxing/unboxing

  @Override
  final void acceptOnIndex(final METHOD_ARG_VALUE_CONSUMER action, final int index) {
   action.accept(value[index]);
  }

  @Override
  public VALUE_GENERIC_TYPE NEXT_VALUE() { return value[nextEntry()]; }
 }

#ifndef Linked
 private final class ValueSpliterator extends MapSpliterator<METHOD_ARG_VALUE_CONSUMER,
ValueSpliterator> implements VALUE_SPLITERATOR VALUE_GENERIC {

  private static final int POST_SPLIT_CHARACTERISTICS =
VALUE_SPLITERATORS.COLLECTION_SPLITERATOR_CHARACTERISTICS &
~java.util.Spliterator.SIZED;

  ValueSpliterator() {}

  ValueSpliterator(int pos, int max, boolean mustReturnNull, boolean hasSplit) {
   super(pos, max, mustReturnNull, hasSplit);
  }

  @Override
  public int characteristics() {
   return hasSplit ? POST_SPLIT_CHARACTERISTICS :
VALUE_SPLITERATORS.COLLECTION_SPLITERATOR_CHARACTERISTICS;
  }
```

```
  @Override
  final void acceptOnIndex(final METHOD_ARG_VALUE_CONSUMER action, final int index) {
   action.accept(value[index]);
  }

  @Override
  final ValueSpliterator makeForSplit(int pos, int max, boolean mustReturnNull) {
   return new ValueSpliterator(pos, max, mustReturnNull, true);
  }
 }
#endif

 @Override
 public VALUE_COLLECTION VALUE_GENERIC values() {
  if (values == null) values = new VALUE_ABSTRACT_COLLECTION VALUE_GENERIC() {
#ifdef Linked
    private static final int SPLITERATOR_CHARACTERISTICS =
VALUE_SPLITERATORS.COLLECTION_SPLITERATOR_CHARACTERISTICS |
java.util.Spliterator.ORDERED;
#endif
    @Override
    public VALUE_ITERATOR VALUE_GENERIC iterator() { return new ValueIterator(); }
#ifdef Linked
    /** {@inheritDoc}
     * @see EntrySet#spliterator()
     */
    @Override
    public VALUE_SPLITERATOR VALUE_GENERIC spliterator() {
     return VALUE_SPLITERATORS.asSpliterator(
      iterator(), it.unimi.dsi.fastutil.Size64.sizeOf(OPEN_HASH_MAP.this), SPLITERATOR_CHARACTERISTICS);
    }

    /** {@inheritDoc} */
    @Override
    public void forEach(final METHOD_ARG_VALUE_CONSUMER consumer) {
     for(int i = size, curr, next = first; i-- != 0;) {
      curr = next;
      next = GET_NEXT(link[curr]);
      consumer.accept(value[curr]);
     }
    }
#else
    @Override
    public VALUE_SPLITERATOR VALUE_GENERIC spliterator() { return new ValueSpliterator(); }

    /** {@inheritDoc} */
    @Override
    public void forEach(final METHOD_ARG_VALUE_CONSUMER consumer) {
```

```
    if (containsNullKey) consumer.accept(value[n]);
    for(int pos = n; pos-- != 0;)
     if (! KEY_IS_NULL(key[pos])) consumer.accept(value[pos]);
   }
#endif
   @Override
   public int size() { return size; }
   @Override
   public boolean contains(VALUE_TYPE v) { return containsValue(v); }
   @Override
   public void clear() { OPEN_HASH_MAP.this.clear(); }
  };

 return values;
}



/** Rehashes the map, making the table as small as possible.
 *
 * <p>This method rehashes the table to the smallest size satisfying the
 * load factor. It can be used when the set will not be changed anymore, so
 * to optimize access speed and size.
 *
 * <p>If the table size is already the minimum possible, this method
 * does nothing.
 *
 * @return true if there was enough memory to trim the map.
 * @see #trim(int)
 */

public boolean trim() {
 return trim(size);
}



/** Rehashes this map if the table is too large.
 *
 * <p>Let <var>N</var> be the smallest table size that can hold
 * <code>max(n,{@link #size()})</code> entries, still satisfying the load factor. If the current
 * table size is smaller than or equal to <var>N</var>, this method does
 * nothing. Otherwise, it rehashes this map in a table of size
 * <var>N</var>.
 *
 * <p>This method is useful when reusing maps.  {@linkplain #clear() Clearing a
 * map} leaves the table size untouched. If you are reusing a map
 * many times, you can call this method with a typical
 * size to avoid keeping around a very large table just
 * because of a few large transient maps.
```

```
 *
 * @param n the threshold for the trimming.
 * @return true if there was enough memory to trim the map.
 * @see #trim()
 */

public boolean trim(final int n) {
 final int l = HashCommon.nextPowerOfTwo((int)Math.ceil(n / f));
 if (l >= this.n || size > maxFill(l, f)) return true;
 try {
  rehash(l);
 }
 catch(OutOfMemoryError cantDoIt) { return false; }
 return true;
}

/** Rehashes the map.
 *
 * <p>This method implements the basic rehashing strategy, and may be
 * overridden by subclasses implementing different rehashing strategies (e.g.,
 * disk-based rehashing). However, you should not override this method
 * unless you understand the internal workings of this class.
 *
 * @param newN the new size
 */

SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
protected void rehash(final int newN) {
 final KEY_GENERIC_TYPE key[] = this.key;
 final VALUE_GENERIC_TYPE value[] = this.value;

 final int mask = newN - 1; // Note that this is used by the hashing macro
 final KEY_GENERIC_TYPE newKey[] = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[newN + 1];
 final VALUE_GENERIC_TYPE newValue[] = VALUE_GENERIC_ARRAY_CAST new VALUE_TYPE[newN +
1];

#ifdef Linked
 int i = first, prev = -1, newPrev = -1, t, pos;
 final long link[] = this.link;
 final long newLink[] = new long[newN + 1];
 first = -1;

 for(int j = size; j-- != 0;) {
  if (KEY_EQUALS_NULL(key[i])) pos = newN;
  else {
   pos = KEY2INTHASH(key[i]) & mask;
   while (! KEY_IS_NULL(newKey[pos])) pos = (pos + 1) & mask;
  }
```

```
    newKey[pos] = key[i];
    newValue[pos] = value[i];

    if (prev != -1) {
     SET_NEXT(newLink[newPrev], pos);
     SET_PREV(newLink[pos], newPrev);
     newPrev = pos;
    }
    else {
     newPrev = first = pos;
     // Special case of SET(newLink[pos], -1, -1);
     newLink[pos] = -1L;
    }

    t = i;
    i = GET_NEXT(link[i]);
    prev = t;
   }

  this.link = newLink;
  this.last = newPrev;
  if (newPrev != -1)
   // Special case of SET_NEXT(newLink[newPrev], -1);
   newLink[newPrev] |= -1 & 0xFFFFFFFFL;
#else
  int i = n, pos;

  for(int j = realSize(); j-- != 0;) {
   while(KEY_IS_NULL(key[--i]));

   if (! KEY_IS_NULL(newKey[pos = KEY2INTHASH(key[i]) & mask]))
    while (! KEY_IS_NULL(newKey[pos = (pos + 1) & mask]));

   newKey[pos] = key[i];
   newValue[pos] = value[i];
  }

  newValue[newN] = value[n];

#endif

  n = newN;
  this.mask = mask;
  maxFill = maxFill(n, f);
  this.key = newKey;
  this.value = newValue;
 }
```

```
/** Returns a deep copy of this map.
 *
 * <p>This method performs a deep copy of this hash map; the data stored in the
 * map, however, is not cloned. Note that this makes a difference only for object keys.
 *
 *  @return a deep copy of this map.
 */
@Override
SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
public OPEN_HASH_MAP KEY_VALUE_GENERIC clone() {
 OPEN_HASH_MAP KEY_VALUE_GENERIC c;
 try {
  c = (OPEN_HASH_MAP KEY_VALUE_GENERIC)super.clone();
 }
 catch(CloneNotSupportedException cantHappen) {
  throw new InternalError();
 }

 c.keys = null;
 c.values = null;
 c.entries = null;
 c.containsNullKey = containsNullKey;

 c.key = key.clone();
 c.value = value.clone();
#ifdef Linked
 c.link = link.clone();
#endif
#ifdef Custom
 c.strategy = strategy;
#endif
 return c;
}


/** Returns a hash code for this map.
 *
 * This method overrides the generic method provided by the superclass.
 * Since {@code equals()} is not overriden, it is important
 * that the value returned by this method is the same value as
 * the one returned by the overriden method.
 *
 * @return a hash code for this map.
 */

@Override
```

```
 public int hashCode() {
  int h = 0;
  for(int j = realSize(), i = 0, t = 0; j-- != 0;) {
   while(KEY_IS_NULL(key[i])) i++;
#if KEYS_REFERENCE
   if (this != key[i])
#endif
    t = KEY2JAVAHASH_NOT_NULL(key[i]);
#if VALUES_REFERENCE
   if (this != value[i])
#endif
    t ^=  VALUE2JAVAHASH(value[i]);
   h += t;
   i++;
  }
  // Zero / null keys have hash zero.
  if (containsNullKey) h += VALUE2JAVAHASH(value[n]);
  return h;
 }



 private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
  final KEY_GENERIC_TYPE key[] = this.key;
  final VALUE_GENERIC_TYPE value[] = this.value;
  final EntryIterator i = new EntryIterator();
  s.defaultWriteObject();

  for(int j = size, e; j-- != 0;) {
   e = i.nextEntry();
   s.WRITE_KEY(key[e]);
   s.WRITE_VALUE(value[e]);
  }
 }



 SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
 private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
  s.defaultReadObject();

  n = arraySize(size, f);
  maxFill = maxFill(n, f);
  mask = n - 1;

  final KEY_GENERIC_TYPE key[] = this.key = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[n + 1];
  final VALUE_GENERIC_TYPE value[] = this.value = VALUE_GENERIC_ARRAY_CAST new
VALUE_TYPE[n + 1];
```

```
#ifdef Linked
  final long link[] = this.link = new long[n + 1];
  int prev = -1;
  first = last = -1;
#endif

  KEY_GENERIC_TYPE k;
  VALUE_GENERIC_TYPE v;

  for(int i = size, pos; i-- != 0;) {

   k = KEY_GENERIC_CAST s.READ_KEY();
   v = VALUE_GENERIC_CAST s.READ_VALUE();

   if (KEY_EQUALS_NULL(k)) {
    pos = n;
    containsNullKey = true;
   }
   else {
    pos = KEY2INTHASH(k) & mask;
    while (! KEY_IS_NULL(key[pos])) pos = (pos + 1) & mask;
   }

   key[pos] = k;
   value[pos] = v;

#ifdef Linked
   if (first != -1) {
    SET_NEXT(link[prev], pos);
    SET_PREV(link[pos], prev);
    prev = pos;
   }
   else {
    prev = first = pos;
    // Special case of SET_PREV(newLink[pos], -1);
    link[pos] |= (-1L & 0xFFFFFFFFL) << 32;
   }
#endif
  }

#ifdef Linked
  last = prev;
  if (prev != -1)
   // Special case of SET_NEXT(link[prev], -1);
   link[prev] |= -1 & 0xFFFFFFFFL;
#endif

  if (ASSERTS) checkTable();
```

```
 }



#ifdef ASSERTS_CODE
 private void checkTable() {
  assert (n & -n) == n : "Table length is not a power of two: " + n;
  assert n == key.length - 1;
  int n = key.length - 1;
  while(n-- != 0)
   if (! KEY_IS_NULL(key[n]) && ! containsKey(key[n]))
    throw new AssertionError("Hash table has key " + key[n] + " marked as occupied, but the key does not belong to the
table");

#if KEYS_PRIMITIVE
  java.util.HashSet<KEY_GENERIC_CLASS> s = new java.util.HashSet<KEY_GENERIC_CLASS> ();
#else
  java.util.HashSet<Object> s = new java.util.HashSet<Object>();
#endif

  for(int i = key.length; i-- != 0;)
   if (! KEY_IS_NULL(key[i]) && ! s.add(key[i])) throw new AssertionError("Key " + key[i] + " appears twice at
position " + i);

#ifdef Linked
  KEY_BIDI_ITERATOR KEY_GENERIC i = keySet().iterator();
  KEY_GENERIC_TYPE k;
  n = size();
  while(n-- != 0)
   if (! containsKey(k = i.NEXT_KEY()))
    throw new AssertionError("Linked hash table forward enumerates key " + k + ", but the key does not belong to the
table");

  if (i.hasNext()) throw new AssertionError("Forward iterator not exhausted");

  n = size();
  if (n > 0) {
   i = keySet().iterator(LAST_KEY());
   while(n-- != 0)
    if (! containsKey(k = i.PREV_KEY()))
     throw new AssertionError("Linked hash table backward enumerates key " + k + ", but the key does not belong to the
table");

   if (i.hasPrevious()) throw new AssertionError("Previous iterator not exhausted");
  }
#endif
 }
#else
```

```
 private void checkTable() {}
#endif


#ifdef TEST

 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#elif !KEYS_USE_REFERENCE_EQUALITY
#ifdef Custom
  int i = r.nextInt(3);
  byte a[] = new byte[i];
  while(i-- != 0) a[i] = (byte)r.nextInt();
  return a;
#else
  return Integer.toBinaryString(r.nextInt());
#endif
#else
  return new java.io.Serializable() {};
#endif
 }

 private static VALUE_TYPE genValue() {
#if VALUE_CLASS_Byte || VALUE_CLASS_Short || VALUE_CLASS_Character
  return (VALUE_TYPE)(r.nextInt());
#elif VALUES_PRIMITIVE
  return r.NEXT_VALUE();
#elif !VALUES_USE_REFERENCE_EQUALITY
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }

 private static final class ArrayComparator implements java.util.Comparator {
  public int compare(Object a, Object b) {
   byte[] aa = (byte[])a;
   byte[] bb = (byte[])b;
   int length = Math.min(aa.length, bb.length);
   for(int i = 0; i < length; i++) {
    if (aa[i] < bb[i]) return -1;
    if (aa[i] > bb[i]) return 1;
```

```
  }
  return aa.length == bb.length ? 0 : (aa.length < bb.length ? -1 : 1);
 }
}

private static final class MockMap extends java.util.TreeMap {
 private java.util.List list = new java.util.ArrayList();

 public MockMap(java.util.Comparator c) { super(c); }

 public Object put(Object k, Object v) {
  if (! containsKey(k)) list.add(k);
  return super.put(k, v);
 }

 public void putAll(Map m) {
  java.util.Iterator i = m.entrySet().iterator();
  while(i.hasNext()) {
   Map.Entry e = (Map.Entry)i.next();
   put(e.getKey(), e.getValue());
  }
 }

 public Object remove(Object k) {
  if (containsKey(k)) {
   int i = list.size();
   while(i-- != 0) if (comparator().compare(list.get(i), k) == 0) {
    list.remove(i);
    break;
   }
  }
  return super.remove(k);
 }

 private void justRemove(Object k) { super.remove(k); }
 private java.util.Set justEntrySet() { return super.entrySet(); }
 private java.util.Set justKeySet() { return super.keySet(); }

 public java.util.Set keySet() {
  return new java.util.AbstractSet() {
    final java.util.Set keySet = justKeySet();

    public boolean contains(Object k) { return keySet.contains(k); }
    public int size() { return keySet.size(); }
    public java.util.Iterator iterator() {
     return new java.util.Iterator() {
       final java.util.Iterator iterator = list.iterator();
       Object curr;
```

```
        public Object next() { return curr = iterator.next(); }
        public boolean hasNext() { return iterator.hasNext(); }
        public void remove() {
         justRemove(curr);
         iterator.remove();
        }
       };

     }
    };

  }

  public java.util.Set entrySet() {
   return new java.util.AbstractSet() {
     final java.util.Set entrySet = justEntrySet();

     public boolean contains(Object k) { return entrySet.contains(k); }
     public int size() { return entrySet.size(); }
     public java.util.Iterator iterator() {
      return new java.util.Iterator() {
        final java.util.Iterator iterator = list.iterator();
        Object curr;
        public Object next() {
         curr = iterator.next();
#if VALUES_USE_REFERENCE_EQUALITY
#if KEYS_USE_REFERENCE_EQUALITY
         return new ABSTRACT_MAP.BasicEntry((Object)curr, (Object)get(curr)) {
#else
         return new ABSTRACT_MAP.BasicEntry((KEY_CLASS)curr, (Object)get(curr)) {
#endif
#else
#if KEYS_USE_REFERENCE_EQUALITY
         return new ABSTRACT_MAP.BasicEntry((Object)curr, (VALUE_CLASS)get(curr)) {
#else
         return new ABSTRACT_MAP.BasicEntry((KEY_CLASS)curr, (VALUE_CLASS)get(curr)) {
#endif
#endif
           public VALUE_TYPE setValue(VALUE_TYPE v) {
            return VALUE_OBJ2TYPE(put(getKey(), VALUE2OBJ(v)));
           }
          };
        }
        public boolean hasNext() { return iterator.hasNext(); }
        public void remove() {
         justRemove(((Map.Entry)curr).getKey());
         iterator.remove();
        }
```

```
      };
     }
    };
  }
 }

 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition fp = new java.text.FieldPosition(0);

 private static String format(double d) {
  StringBuffer s = new StringBuffer();
  return format.format(d, s, fp).toString();
 }


 private static void speedTest(int n, float f, boolean comp) {
#ifndef Custom
  int i, j;
  OPEN_HASH_MAP m;
#ifdef Linked
  java.util.LinkedHashMap t;
#else
  java.util.HashMap t;
#endif
  KEY_TYPE k[] = new KEY_TYPE[n];
  KEY_TYPE nk[] = new KEY_TYPE[n];
  VALUE_TYPE v[] = new VALUE_TYPE[n];
  long ns;

  for(i = 0; i < n; i++) {
   k[i] = genKey();
   nk[i] = genKey();
   v[i] = genValue();
  }

  double totPut = 0, totYes = 0, totNo = 0, totIter = 0, totRemYes = 0, totRemNo = 0, d;

  if (comp) { for(j = 0; j < 20; j++) {

#ifdef Linked
   t = new java.util.LinkedHashMap(16);
#else
   t = new java.util.HashMap(16);
#endif

   /* We put pairs to t. */
   ns = System.nanoTime();
   for(i = 0; i < n;  i++) t.put(KEY2OBJ(k[i]), VALUE2OBJ(v[i]));
```

```
  d = (System.nanoTime() - ns) / (double)n;
  if (j > 2) totPut += d;
  System.out.print("Put: " + format(d) + "ns ");

  /* We check for pairs in t. */
  ns = System.nanoTime();
  for(i = 0; i < n;  i++) t.containsKey(KEY2OBJ(k[i]));
  d = (System.nanoTime() - ns) / (double)n;
  if (j > 2) totYes += d;
  System.out.print("Yes: " + format(d) + "ns ");

  /* We check for pairs not in t. */
  ns = System.nanoTime();
  for(i = 0; i < n;  i++) t.containsKey(KEY2OBJ(nk[i]));
  d = (System.nanoTime() - ns) / (double)n;
  if (j > 2) totNo += d;
  System.out.print("No: " + format(d) + "ns ");

  /* We iterate on t. */
  ns = System.nanoTime();
  for(java.util.Iterator it = t.entrySet().iterator(); it.hasNext(); it.next());
  d = (System.nanoTime() - ns) / (double)n;
  if (j > 2) totIter += d;
  System.out.print("Iter: " + format(d) + "ns ");

  /* We delete pairs not in t. */
  ns = System.nanoTime();
  for(i = 0; i < n;  i++) t.remove(KEY2OBJ(nk[i]));
  d = (System.nanoTime() - ns) / (double)n;
  if (j > 2) totRemNo += d;
  System.out.print("RemNo: " + format(d) + "ns ");

  /* We delete pairs in t. */
  ns = System.nanoTime();
  for(i = 0; i < n;  i++) t.remove(KEY2OBJ(k[i]));
  d = (System.nanoTime() - ns) / (double)n;
  if (j > 2) totRemYes += d;
  System.out.print("RemYes: " + format(d) + "ns ");

  System.out.println();
 }

 System.out.println();
 System.out.println("java.util Put: " + format(totPut/(j-3)) + "ns Yes: " + format(totYes/(j-3)) + "ns No: " +
format(totNo/(j-3)) + "ns Iter: " + format(totIter/(j-3)) + "ns RemNo: " + format(totRemNo/(j-3)) + "ns RemYes: " +
format(totRemYes/(j-3)) + "K/s");

 System.out.println();
```

```
totPut = totYes = totNo = totIter = totRemYes = totRemNo = 0;

}

for(j = 0; j < 20; j++) {

 m = new OPEN_HASH_MAP(16, f);

 /* We put pairs to m. */
 ns = System.nanoTime();
 for(i = 0; i < n;  i++) m.put(k[i], v[i]);
 d = (System.nanoTime() - ns) / (double)n;
 if (j > 2) totPut += d;
 System.out.print("Put: " + format(d) + "ns ");

 /* We check for pairs in m. */
 ns = System.nanoTime();
 for(i = 0; i < n;  i++) m.containsKey(k[i]);
 d = (System.nanoTime() - ns) / (double)n;
 if (j > 2) totYes += d;
 System.out.print("Yes: " + format(d) + "ns ");

 /* We check for pairs not in m. */
 ns = System.nanoTime();
 for(i = 0; i < n;  i++) m.containsKey(nk[i]);
 d = (System.nanoTime() - ns) / (double)n;
 if (j > 2) totNo += d;
 System.out.print("No: " + format(d) + "ns ");

 /* We iterate on m. */
 ns = System.nanoTime();
 for(java.util.Iterator it = m.entrySet().iterator(); it.hasNext(); it.next());
 d = (System.nanoTime() - ns) / (double)n;
 if (j > 2) totIter += d;
 System.out.print("Iter: " + format(d) + "ns ");

 /* We delete pairs not in m. */
 ns = System.nanoTime();
 for(i = 0; i < n;  i++) m.remove(nk[i]);
 d = (System.nanoTime() - ns) / (double)n;
 if (j > 2) totRemNo += d;
 System.out.print("RemNo: " + format(d) + "ns ");

 /* We delete pairs in m. */
 ns = System.nanoTime();
 for(i = 0; i < n;  i++) m.remove(k[i]);
 d = (System.nanoTime() - ns) / (double)n;
```

```
   if (j > 2) totRemYes += d;
   System.out.print("RemYes: " + format(d) + "ns ");

   System.out.println();
  }



  System.out.println();
  System.out.println("fastutil Put: " + format(totPut/(j-3)) + "ns Yes: " + format(totYes/(j-3)) + "ns No: " +
format(totNo/(j-3)) + "ns Iter: " + format(totIter/(j-3)) + "ns RemNo: " + format(totRemNo/(j-3)) + "ns RemYes: " +
format(totRemYes/(j-3)) + "ns");

  System.out.println();
#endif
 }

 private static void fatal(String msg) {
  throw new AssertionError(msg);
 }

 private static void ensure(boolean cond, String msg) {
  if (cond) return;
  fatal(msg);
 }

 protected static void runTest(int n, float f) throws Exception {
#if !defined(Custom) || KEYS_REFERENCE

#ifdef Custom
  OPEN_HASH_MAP m = new OPEN_HASH_MAP(Hash.DEFAULT_INITIAL_SIZE, f,
it.unimi.dsi.fastutil.bytes.ByteArrays.HASH_STRATEGY);
#else
  OPEN_HASH_MAP m = new OPEN_HASH_MAP(Hash.DEFAULT_INITIAL_SIZE, f);
#endif

#ifdef Linked
#ifdef Custom
  Map t = new MockMap(new ArrayComparator());
#else
  Map t = new java.util.LinkedHashMap();
#endif
#else
#ifdef Custom
  Map t = new java.util.TreeMap(new ArrayComparator());
#else
  Map t = new java.util.HashMap();
#endif
#endif
```

```
/* First of all, we fill t with random data. */

for(int i=0; i<n;  i++) t.put(KEY2OBJ(genKey()), VALUE2OBJ(genValue()));

/* Now we add to m the same data */

m.putAll(t);

ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after insertion");;
ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after insertion");;

/* Now we check that m actually holds that data. */

for(java.util.Iterator i=t.entrySet().iterator(); i.hasNext();) {
 java.util.Map.Entry e = (java.util.Map.Entry)i.next();
 ensure(java.util.Objects.equals(e.getValue(), m.get(e.getKey())), "Error (" + seed + "): m and t differ on an entry
("+e+") after insertion (iterating on t)");
}

/* Now we check that m actually holds that data, but iterating on m. */

for(java.util.Iterator i=m.entrySet().iterator(); i.hasNext();) {
 java.util.Map.Entry e = (java.util.Map.Entry)i.next();
 ensure(java.util.Objects.equals(e.getValue(), t.get(e.getKey())), "Error (" + seed + "): m and t differ on an entry
("+e+") after insertion (iterating on m)");
}

/* Now we check that m actually holds the same keys. */

for(java.util.Iterator i=t.keySet().iterator(); i.hasNext();) {
 Object o = i.next();
 ensure(m.containsKey(o), "Error (" + seed + "): m and t differ on a key ("+o+") after insertion (iterating on t)");
 ensure(m.keySet().contains(o), "Error (" + seed + "): m and t differ on a key ("+o+", in keySet()) after insertion
(iterating on t)");
}

/* Now we check that m actually holds the same keys, but iterating on m. */

for(java.util.Iterator i=m.keySet().iterator(); i.hasNext();) {
 Object o = i.next();
 ensure(t.containsKey(o), "Error (" + seed + "): m and t differ on a key after insertion (iterating on m)");
 ensure(t.keySet().contains(o), "Error (" + seed + "): m and t differ on a key (in keySet()) after insertion (iterating on
m)");
}


/* Now we check that m actually hold the same values. */
```

```
  for(java.util.Iterator i=t.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(m.containsValue(o), "Error (" + seed + "): m and t differ on a value after insertion (iterating on t)");
   ensure(m.values().contains(o), "Error (" + seed + "): m and t differ on a value (in values()) after insertion (iterating
on t)");
  }

  /* Now we check that m actually hold the same values, but iterating on m. */

  for(java.util.Iterator i=m.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsValue(o), "Error (" + seed + "): m and t differ on a value after insertion (iterating on m)");
   ensure(t.values().contains(o), "Error (" + seed + "): m and t differ on a value (in values()) after insertion (iterating on
m)");
  }

  /* Now we check that inquiries about random data give the same answer in m and t. For
     m we use the polymorphic method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();
   ensure(m.containsKey(KEY2OBJ(T)) == t.containsKey(KEY2OBJ(T)), "Error (" + seed + "): divergence in keys
between t and m (polymorphic method)");

#if (KEYS_REFERENCE) && ! (VALUES_REFERENCE)
   if ((m.GET_VALUE(T) != VALUE_NULL) != ((t.get(KEY2OBJ(T)) == null ? VALUE_NULL :
VALUE_OBJ2TYPE(t.get(KEY2OBJ(T)))) != VALUE_NULL) ||
    t.get(KEY2OBJ(T)) != null &&
    ! VALUE2OBJ(m.GET_VALUE(T)).equals(t.get(KEY2OBJ(T))))
#else
    if ((m.get(T) != VALUE_NULL) != ((t.get(KEY2OBJ(T)) == null ? VALUE_NULL :
VALUE_OBJ2TYPE(t.get(KEY2OBJ(T)))) != VALUE_NULL) ||
     t.get(KEY2OBJ(T)) != null &&
     ! m.get(KEY2OBJ(T)).equals(t.get(KEY2OBJ(T))))
#endif
     {
      ensure(false, "Error (" + seed + "): divergence between t and m (polymorphic method)");
     }
  }

  /* Again, we check that inquiries about random data give the same answer in m and t, but
     for m we use the standard method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();
   ensure(java.util.Objects.equals(m.get(KEY2OBJ(T)), t.get(KEY2OBJ(T))), "Error (" + seed + "): divergence
between t and m (standard method)");
```

```
  }

  /* Now we put and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();
   VALUE_TYPE U = genValue();
   ensure(java.util.Objects.equals(m.put(KEY2OBJ(T), VALUE2OBJ(U)), t.put(KEY2OBJ(T), VALUE2OBJ(U))),
"Error (" + seed + "): divergence in put() between t and m");
   T = genKey();
   ensure(java.util.Objects.equals(m.remove(KEY2OBJ(T)), t.remove(KEY2OBJ(T))), "Error (" + seed + "):
divergence in remove() between t and m");
  }

  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after removal");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after removal");;


  /* Now we check that m actually holds the same data. */

  for(java.util.Iterator i=t.entrySet().iterator(); i.hasNext();) {
   java.util.Map.Entry e = (java.util.Map.Entry)i.next();
   ensure(java.util.Objects.equals(e.getValue(), m.get(e.getKey())), "Error (" + seed + "): m and t differ on an entry
("+e+") after removal (iterating on t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */

  for(java.util.Iterator i=m.entrySet().iterator(); i.hasNext();) {
   java.util.Map.Entry e = (java.util.Map.Entry)i.next();
   ensure(java.util.Objects.equals(e.getValue(), t.get(e.getKey())), "Error (" + seed + "): m and t differ on an entry
("+e+") after removal (iterating on m)");
  }

  /* Now we check that m actually holds the same keys. */

  for(java.util.Iterator i=t.keySet().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(m.containsKey(o), "Error (" + seed + "): m and t differ on a key ("+o+") after removal (iterating on t)");
   ensure(m.keySet().contains(o), "Error (" + seed + "): m and t differ on a key ("+o+", in keySet()) after removal
(iterating on t)");
  }

  /* Now we check that m actually holds the same keys, but iterating on m. */

  for(java.util.Iterator i=m.keySet().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsKey(o), "Error (" + seed + "): m and t differ on a key after removal (iterating on m)");
```

```
    ensure(t.keySet().contains(o), "Error (" + seed + "): m and t differ on a key (in keySet()) after removal (iterating on m)");
  }


  /* Now we check that m actually hold the same values. */

  for(java.util.Iterator i=t.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(m.containsValue(o), "Error (" + seed + "): m and t differ on a value after removal (iterating on t)");
   ensure(m.values().contains(o), "Error (" + seed + "): m and t differ on a value (in values()) after removal (iterating on t)");
  }

  /* Now we check that m actually hold the same values, but iterating on m. */

  for(java.util.Iterator i=m.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsValue(o), "Error (" + seed + "): m and t differ on a value after removal (iterating on m)");
   ensure(t.values().contains(o), "Error (" + seed + "): m and t differ on a value (in values()) after removal (iterating on m)");
  }


  int h = m.hashCode();


  /* Now we save and read m. */

  {
   java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
   java.io.OutputStream os = new java.io.FileOutputStream(ff);
   java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

   oos.writeObject(m);
   oos.close();

   java.io.InputStream is = new java.io.FileInputStream(ff);
   java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

   m = (OPEN_HASH_MAP)ois.readObject();
   ois.close();
   ff.delete();
  }


#if !KEYS_USE_REFERENCE_EQUALITY && !VALUES_USE_REFERENCE_EQUALITY
  ensure(m.hashCode() == h, "Error (" + seed + "): hashCode() changed after save/read");;
```

```
  /* Now we check that m actually holds that data. */

  for(java.util.Iterator i=t.keySet().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(java.util.Objects.equals(m.get(o),t.get(o)), "Error (" + seed + "): m and t differ on an entry after save/read");
  }
#else
  m.clear();
  m.putAll(t);
#endif

  /* Now we put and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();
   VALUE_TYPE U = genValue();
   ensure(java.util.Objects.equals(m.put(KEY2OBJ(T), VALUE2OBJ(U)), t.put(KEY2OBJ(T), VALUE2OBJ(U))),
"Error (" + seed + "): divergence in put() between t and m after save/read");
   T = genKey();
   ensure(java.util.Objects.equals(m.remove(KEY2OBJ(T)), t.remove(KEY2OBJ(T))), "Error (" + seed + "):
divergence in remove() between t and m after save/read");
  }

  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after post-save/read removal");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after post-save/read removal");;



#ifdef Linked


  /* Now we play with iterators. */

  {
   java.util.ListIterator i, j;
   Object J;
   Map.Entry E, F;
   i = (java.util.ListIterator)m.entrySet().iterator();
   j = new java.util.LinkedList(t.entrySet()).listIterator();

   for(int k = 0; k < 2*n; k++) {
    ensure(i.hasNext() == j.hasNext(), "Error (" + seed + "): divergence in hasNext()");
    ensure(i.hasPrevious() == j.hasPrevious(), "Error (" + seed + "): divergence in hasPrevious()");

    if (r.nextFloat() < .8 && i.hasNext()) {
#ifdef Custom
     ensure(m.strategy().equals((E=(java.util.Map.Entry)i.next()).getKey(), J = (F=(Map.Entry)j.next()).getKey()), "Error
```

```
(" + seed + "): divergence in next()");
#else
     ensure((E=(java.util.Map.Entry)i.next()).getKey().equals(J = (F=(Map.Entry)j.next()).getKey()), "Error (" + seed +
"): divergence in next()");
#endif

     if (r.nextFloat() < 0.3) {
      i.remove();
      j.remove();
      t.remove(J);
     }
     else if (r.nextFloat() < 0.3) {
      Object U = VALUE2OBJ(genValue());
      E.setValue(U);
      t.put(F.getKey(), U);
     }
    }
    else if (r.nextFloat() < .2 && i.hasPrevious()) {
#ifdef Custom
     ensure(m.strategy().equals((E=(java.util.Map.Entry)i.previous()).getKey(), J =
(F=(Map.Entry)j.previous()).getKey()), "Error (" + seed + "): divergence in previous()");
#else
     ensure((E=(java.util.Map.Entry)i.previous()).getKey().equals(J = (F=(Map.Entry)j.previous()).getKey()), "Error (" +
seed + "): divergence in previous()");
#endif

     if (r.nextFloat() < 0.3) {
      i.remove();
      j.remove();
      t.remove(J);
     }
     else if (r.nextFloat() < 0.3) {
      Object U = VALUE2OBJ(genValue());
      E.setValue(U);
      t.put(F.getKey(), U);
     }
    }

    ensure(i.nextIndex() == j.nextIndex(), "Error (" + seed + "): divergence in nextIndex()");
    ensure(i.previousIndex() == j.previousIndex(), "Error (" + seed + "): divergence in previousIndex()");

   }

  }

  if (t.size() > 0) {
   java.util.ListIterator i, j;
   Object J;
```

```
  j = new java.util.LinkedList(t.keySet()).listIterator();
  int e = r.nextInt(t.size());
  Object from;
  do from = j.next(); while(e-- != 0);

  i = (java.util.ListIterator)((SORTED_SET)m.keySet()).iterator(KEY_OBJ2TYPE(from));

  for(int k = 0; k < 2*n; k++) {
   ensure(i.hasNext() == j.hasNext(), "Error (" + seed + "): divergence in hasNext() (iterator with starting point " +
from + ")");
   ensure(i.hasPrevious() == j.hasPrevious(), "Error (" + seed + "): divergence in hasPrevious() (iterator with starting
point " + from + ")");

   if (r.nextFloat() < .8 && i.hasNext()) {
#ifdef Custom
    ensure(m.strategy().equals(i.next(), J = j.next()), "Error (" + seed + "): divergence in next() (iterator with starting
point " + from + ")");
#else
    ensure(i.next().equals(J = j.next()), "Error (" + seed + "): divergence in next() (iterator with starting point " + from +
")");
#endif

    if (r.nextFloat() < 0.5) {
     i.remove();
     j.remove();
     t.remove(J);
    }
   }
   else if (r.nextFloat() < .2 && i.hasPrevious()) {
#ifdef Custom
    ensure(m.strategy().equals(i.previous(), J = j.previous()), "Error (" + seed + "): divergence in previous() (iterator
with starting point " + from + ")");
#else
    ensure(i.previous().equals(J = j.previous()), "Error (" + seed + "): divergence in previous() (iterator with starting
point " + from + ")");
#endif

    if (r.nextFloat() < 0.5) {
     i.remove();
     j.remove();
     t.remove(J);
    }
   }

   ensure(i.nextIndex() == j.nextIndex(), "Error (" + seed + "): divergence in nextIndex() (iterator with starting point "
+ from + ")");
   ensure(i.previousIndex() == j.previousIndex(), "Error (" + seed + "): divergence in previousIndex() (iterator with
starting point " + from + ")");
```

```
  }
 }

 /* Now we check that m actually holds that data. */

 ensure(m.equals(t), "Error (" + seed + "): ! m.equals(t) after iteration");
 ensure(t.equals(m), "Error (" + seed + "): ! t.equals(m) after iteration");

#endif

 /* Now we take out of m everything, and check that it is empty. */

 for(java.util.Iterator i=t.keySet().iterator(); i.hasNext();) m.remove(i.next());

 ensure(m.isEmpty(), "Error (" + seed + "): m is not empty (as it should be)");

#ifdef NumericEnhancements
#if VALUE_CLASS_Byte || VALUE_CLASS_Character || VALUE_CLASS_Short || VALUE_CLASS_Integer ||
VALUE_CLASS_Long
 /* Now we check that increment works properly, using random data */

 {
  t.clear();
  m.clear();

  for(int k = 0; k < 2*n; k++) {
   KEY_TYPE T = genKey();
   VALUE_TYPE U = genValue();

   VALUE_TYPE rU = m.increment(T, U);
   VALUE_GENERIC_CLASS tU = (VALUE_GENERIC_CLASS) t.get(KEY2OBJ(T));
   if (null == tU) {
    ensure(m.defaultReturnValue() == rU, "Error (" + seed + "): map increment does not return proper starting value.");
    t.put(KEY2OBJ(T), VALUE2OBJ((VALUE_TYPE) (m.defaultReturnValue() + U)));
   }
   else {
    t.put(KEY2OBJ(T), VALUE2OBJ((VALUE_TYPE) (((VALUE_TYPE) tU) + U)));
   }
  }

  // Maps should contain identical values
  ensure(new java.util.HashMap(m).equals(new java.util.HashMap(t)),
   "Error(" + seed + "): incremented maps are not equal.");
```

```
  }
#endif
#endif


#if (KEY_CLASS_Integer || KEY_CLASS_Long) && (VALUE_CLASS_Integer || VALUE_CLASS_Long)
  m = new OPEN_HASH_MAP(n, f);
  t.clear();
  int x;

  /* Now we torture-test the hash table. This part is implemented only for integers and longs. */

  int p = m.key.length;

  for(int i=0; i<p; i++) {
   for (int j=0; j<20; j++) {
    m.put(i+(r.nextInt() % 10)*p, 1);
    m.remove(i+(r.nextInt() % 10)*p);
   }

   for (int j=-10; j<10; j++) m.remove(i+j*p);
  }

  t.putAll(m);

  /* Now all table entries are REMOVED. */

  for(int i=0; i<(p*f)/10; i++) {
   for (int j=0; j<10; j++) {
    ensure(java.util.Objects.equals(m.put(KEY2OBJ(x = i+(r.nextInt() % 10)*p), VALUE2OBJ(1)),
t.put(KEY2OBJ(x), VALUE2OBJ(1))),
     "Error (" + seed + "): m and t differ on an entry during torture-test insertion.");
   }
  }

  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after torture-test insertion");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after torture-test insertion");;

  for(int i=0; i<p/10; i++) {
   for (int j=0; j<10; j++) {
    ensure(java.util.Objects.equals(m.remove(KEY2OBJ(x = i+(r.nextInt() % 10)*p)), t.remove(KEY2OBJ(x))),
     "Error (" + seed + "): m and t differ on an entry during torture-test removal.");
   }
  }

  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after torture-test removal");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after torture-test removal");;
```

```
  ensure(m.equals(m.clone()), "Error (" + seed + "): !m.equals(m.clone()) after torture-test removal");;
  ensure(((OPEN_HASH_MAP)m.clone()).equals(m), "Error (" + seed + "): !m.clone().equals(m) after torture-test
removal");;

  m.trim();

  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after trim()");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after trim()");;
#endif

  System.out.println("Test OK");
  return;

#endif
 }


 public static void main(String args[]) throws Exception {
  float f = Hash.DEFAULT_LOAD_FACTOR;
  int n  = Integer.parseInt(args[1]);
  if (args.length>2) f = Float.parseFloat(args[2]);
  if (args.length > 3) r = new java.util.Random(seed = Long.parseLong(args[3]));

  try {
   if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, f, "speedComp".equals(args[0]));
   else if ("test".equals(args[0])) runTest(n, f);
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }

 }

#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/OpenCustomHashMap.drv
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/LinkedOpenHashMap.drv
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/LinkedOpenCustomHashMap.drv
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/OpenHashMap.drv
No license file was found, but licenses were detected in source scan.

```
package PACKAGE;

import java.util.Collection;
import java.util.Comparator;
import java.util.Iterator;
import java.util.SortedSet;
import java.util.NoSuchElementException;

/** A type-specific AVL tree set with a fast, small-footprint implementation.
*
* <p>The iterators provided by this class are type-specific {@link
* it.unimi.dsi.fastutil.BidirectionalIterator bidirectional iterators}.
* Moreover, the iterator returned by {@code iterator()} can be safely cast
* to a type-specific {@linkplain java.util.ListIterator list iterator}.
*/

public class AVL_TREE_SET KEY_GENERIC extends ABSTRACT_SORTED_SET KEY_GENERIC
implements java.io.Serializable, Cloneable, SORTED_SET KEY_GENERIC {

 /** A reference to the root entry. */
 protected transient Entry KEY_GENERIC tree;

 /** Number of elements in this set. */
 protected int count;

 /** The entry of the first element of this set. */
 protected transient Entry KEY_GENERIC firstEntry;

 /** The entry of the last element of this set. */
 protected transient Entry KEY_GENERIC lastEntry;
```

```
/** This set's comparator, as provided in the constructor. */
protected Comparator<? super KEY_GENERIC_CLASS> storedComparator;

/** This set's actual comparator; it may differ from {@link #storedComparator} because it is
 always a type-specific comparator, so it could be derived from the former by wrapping. */
protected transient KEY_COMPARATOR KEY_SUPER_GENERIC actualComparator;

private static final long serialVersionUID = -7046029254386353130L;

{
 allocatePaths();
}

/** Creates a new empty tree set.
 */

public AVL_TREE_SET() {
 tree = null;
 count = 0;
}

/** Generates the comparator that will be actually used.
 *
 * <p>When a given {@link Comparator} is specified and stored in {@link
 * #storedComparator}, we must check whether it is type-specific.  If it is
 * so, we can used directly, and we store it in {@link #actualComparator}. Otherwise,
 * we adapt it using a helper static method.
 */
private void setActualComparator() {
#if KEY_CLASS_Object
 actualComparator = storedComparator;
#else
 actualComparator = COMPARATORS.AS_KEY_COMPARATOR(storedComparator);
#endif
}


/** Creates a new empty tree set with the given comparator.
 *
 * @param c a {@link Comparator} (even better, a type-specific comparator).
 */

public AVL_TREE_SET(final Comparator<? super KEY_GENERIC_CLASS> c) {
 this();
 storedComparator = c;
 setActualComparator();
}
```

```
/** Creates a new tree set copying a given set.
 *
 * @param c a collection to be copied into the new tree set.
 */

public AVL_TREE_SET(final Collection<? extends KEY_GENERIC_CLASS> c) {
 this();
 addAll(c);
}

/** Creates a new tree set copying a given sorted set (and its {@link Comparator}).
 *
 * @param s a {@link SortedSet} to be copied into the new tree set.
 */

public AVL_TREE_SET(final SortedSet <KEY_GENERIC_CLASS> s) {
 this(s.comparator());
 addAll(s);
}

/** Creates a new tree set copying a given type-specific collection.
 *
 * @param c a type-specific collection to be copied into the new tree set.
 */

public AVL_TREE_SET(final COLLECTION KEY_EXTENDS_GENERIC c) {
 this();
 addAll(c);
}

/** Creates a new tree set copying a given type-specific sorted set (and its {@link Comparator}).
 *
 * @param s a type-specific sorted set to be copied into the new tree set.
 */

public AVL_TREE_SET(final SORTED_SET KEY_GENERIC s) {
 this(s.comparator());
 addAll(s);
}


/** Creates a new tree set using elements provided by a type-specific iterator.
 *
 * @param i a type-specific iterator whose elements will fill the set.
 */

public AVL_TREE_SET(final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i) {
```

```
 while(i.hasNext()) add(i.NEXT_KEY());
 }

#if KEYS_PRIMITIVE

 /** Creates a new tree set using elements provided by an iterator.
  *
  * @param i an iterator whose elements will fill the set.
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public AVL_TREE_SET(final Iterator<?> i) {
  this(ITERATORS.AS_KEY_ITERATOR(i));
 }

#endif

 /** Creates a new tree set and fills it with the elements of a given array using a given {@link Comparator}.
  *
  * @param a an array whose elements will be used to fill the set.
  * @param offset the first element to use.
  * @param length the number of elements to use.
  * @param c a {@link Comparator} (even better, a type-specific comparator).
  */

 public AVL_TREE_SET(final KEY_GENERIC_TYPE[] a, final int offset, final int length, final Comparator<?
super KEY_GENERIC_CLASS> c) {
  this(c);
  ARRAYS.ensureOffsetLength(a, offset, length);
  for(int i = 0; i < length; i++) add(a[offset + i]);
 }


 /** Creates a new tree set and fills it with the elements of a given array.
  *
  * @param a an array whose elements will be used to fill the set.
  * @param offset the first element to use.
  * @param length the number of elements to use.
  */

 public AVL_TREE_SET(final KEY_GENERIC_TYPE[] a, final int offset, final int length) {
  this(a, offset, length, null);
 }


 /** Creates a new tree set copying the elements of an array.
  *
  * @param a an array to be copied into the new tree set.
```

```
 */

public AVL_TREE_SET(final KEY_GENERIC_TYPE[] a) {
 this();
 int i = a.length;
 while(i-- != 0) add(a[i]);
}


/** Creates a new tree set copying the elements of an array using a given {@link Comparator}.
 *
 * @param a an array to be copied into the new tree set.
 * @param c a {@link Comparator} (even better, a type-specific comparator).
 */

public AVL_TREE_SET(final KEY_GENERIC_TYPE[] a, final Comparator<? super KEY_GENERIC_CLASS>
c) {
 this(c);
 int i = a.length;
 while(i-- != 0) add(a[i]);
}




/*
 * The following methods implements some basic building blocks used by
 * all accessors.  They are (and should be maintained) identical to those used in AVLTreeMap.drv.
 *
 * The add()/remove() code is derived from Ben Pfaff's GNU libavl
 * (https://adtinfo.org/). If you want to understand what's
 * going on, you should have a look at the literate code contained therein
 * first.
 */


/** Compares two keys in the right way.
 *
 * <p>This method uses the {@link #actualComparator} if it is non-{@code null}.
 * Otherwise, it resorts to primitive type comparisons or to {@link Comparable#compareTo(Object) compareTo()}.
 *
 * @param k1 the first key.
 * @param k2 the second key.
 * @return a number smaller than, equal to or greater than 0, as usual
 * (i.e., when k1 &lt; k2, k1 = k2 or k1 &gt; k2, respectively).
 */

SUPPRESS_WARNINGS_KEY_UNCHECKED
```

```
final int compare(final KEY_GENERIC_TYPE k1, final KEY_GENERIC_TYPE k2) {
 return actualComparator == null ? KEY_CMP(k1, k2) : actualComparator.compare(k1, k2);
}



/** Returns the entry corresponding to the given key, if it is in the tree; {@code null}, otherwise.
 *
 * @param k the key to search for.
 * @return the corresponding entry, or {@code null} if no entry with the given key exists.
 */

private Entry KEY_GENERIC findKey(final KEY_GENERIC_TYPE k) {
 Entry KEY_GENERIC e = tree;
 int cmp;

 while (e != null && (cmp = compare(k, e.key)) != 0)
  e = cmp < 0 ? e.left() : e.right();

 return e;
}

/** Locates a key.
 *
 * @param k a key.
 * @return the last entry on a search for the given key; this will be
 * the given key, if it present; otherwise, it will be either the smallest greater key or the greatest smaller key.
 */

final Entry KEY_GENERIC locateKey(final KEY_GENERIC_TYPE k) {
 Entry KEY_GENERIC e = tree, last = tree;
 int cmp = 0;

 while (e != null && (cmp = compare(k, e.key)) != 0) {
  last = e;
  e = cmp < 0 ? e.left() : e.right();
 }

 return cmp == 0 ? e : last;
}


/** This vector remembers the path followed during the current insertion. It suffices for
 about 2<sup>32</sup> entries. */
private transient boolean dirPath[];

private void allocatePaths() {
 dirPath = new boolean[48];
```

```
}


@Override
public boolean add(final KEY_GENERIC_TYPE k) {
 REQUIRE_KEY_NON_NULL(k)

 if (tree == null) { // The case of the empty tree is treated separately.
  count++;
  tree = lastEntry = firstEntry = new Entry KEY_GENERIC_DIAMOND(k);
 }
 else {
  Entry KEY_GENERIC p = tree, q = null, y = tree, z = null, e = null, w = null;
  int cmp, i = 0;

  while(true) {
   if ((cmp = compare(k, p.key)) == 0) return false;

   if (p.balance() != 0) {
    i = 0;
    z = q;
    y = p;
   }

   if (dirPath[i++] = cmp > 0) {
    if (p.succ()) {
     count++;
     e = new Entry KEY_GENERIC_DIAMOND(k);

     if (p.right == null) lastEntry = e;

     e.left = p;
     e.right = p.right;

     p.right(e);

     break;
    }

    q = p;
    p = p.right;
   }
   else {
    if (p.pred()) {
     count++;
     e = new Entry KEY_GENERIC_DIAMOND(k);

     if (p.left == null) firstEntry = e;
```

```
   e.right = p;
   e.left = p.left;

   p.left(e);

   break;
  }

  q = p;
  p = p.left;
 }
}

p = y;
i = 0;

while(p != e) {
 if (dirPath[i]) p.incBalance();
 else p.decBalance();

 p = dirPath[i++] ? p.right : p.left;
}

if (y.balance() == -2) {
 Entry KEY_GENERIC x = y.left;

 if (x.balance() == -1) {
  w = x;
  if (x.succ()) {
   x.succ(false);
   y.pred(x);
  }
  else y.left = x.right;

  x.right = y;
  x.balance(0);
  y.balance(0);
 }
 else {
  assert x.balance() == 1;

  w = x.right;
  x.right = w.left;
  w.left = x;
  y.left = w.right;
  w.right = y;
  if (w.balance() == -1) {
```

```
  x.balance(0);
  y.balance(1);
 }
 else if (w.balance() == 0) {
  x.balance(0);
  y.balance(0);
 }
 else {
  x.balance(-1);
  y.balance(0);
 }
 w.balance(0);


 if (w.pred()) {
  x.succ(w);
  w.pred(false);
 }
 if (w.succ()) {
  y.pred(w);
  w.succ(false);
 }

}
}
else if (y.balance() == +2) {
 Entry KEY_GENERIC x = y.right;

 if (x.balance() == 1) {
  w = x;
  if (x.pred()) {
   x.pred(false);
   y.succ(x);
  }
  else y.right = x.left;

  x.left = y;
  x.balance(0);
  y.balance(0);
 }
 else {
  assert x.balance() == -1;

  w = x.left;
  x.left = w.right;
  w.right = x;
  y.right = w.left;
  w.left = y;
```

```
    if (w.balance() == 1) {
     x.balance(0);
     y.balance(-1);
    }
    else if (w.balance() == 0) {
     x.balance(0);
     y.balance(0);
    }
    else {
     x.balance(1);
     y.balance(0);
    }
    w.balance(0);


    if (w.pred()) {
     y.succ(w);
     w.pred(false);
    }
    if (w.succ()) {
     x.pred(w);
     w.succ(false);
    }

   }
  }
  else return true;

  if (z == null) tree = w;
  else {
   if (z.left == y) z.left = w;
   else z.right = w;
  }
 }

 return true;
}




/** Finds the parent of an entry.
 *
 * @param e a node of the tree.
 * @return the parent of the given node, or {@code null} for the root.
 */

private Entry KEY_GENERIC parent(final Entry KEY_GENERIC e) {
```

```
 if (e == tree) return null;

 Entry KEY_GENERIC x, y, p;
 x = y = e;

 while(true) {
  if (y.succ()) {
   p = y.right;
   if (p == null || p.left != e) {
    while(! x.pred()) x = x.left;
    p = x.left;
   }
   return p;
  }
  else if (x.pred()) {
   p = x.left;
   if (p == null || p.right != e) {
    while(! y.succ()) y = y.right;
    p = y.right;
   }
   return p;
  }

  x = x.left;
  y = y.right;
 }
}


SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public boolean remove(final KEY_TYPE k) {
 if (tree == null) return false;

 int cmp;
 Entry KEY_GENERIC p = tree, q = null;
 boolean dir = false;
 final KEY_GENERIC_TYPE kk = KEY_GENERIC_CAST k;

 while(true) {
  if ((cmp = compare(kk, p.key)) == 0) break;
  else if (dir = cmp > 0) {
   q = p;
   if ((p = p.right()) == null) return false;
  }
  else {
   q = p;
   if ((p = p.left()) == null) return false;
```

```
 }
}

if (p.left == null) firstEntry = p.next();
if (p.right == null) lastEntry = p.prev();

if (p.succ()) {
 if (p.pred()) {
  if (q != null) {
   if (dir) q.succ(p.right);
   else q.pred(p.left);
  }
  else tree = dir ? p.right : p.left;
 }
 else {
  p.prev().right = p.right;

  if (q != null) {
   if (dir) q.right = p.left;
   else q.left = p.left;
  }
  else tree = p.left;
 }
}
else {
 Entry KEY_GENERIC r = p.right;

 if (r.pred()) {
  r.left = p.left;
  r.pred(p.pred());
  if (! r.pred()) r.prev().right = r;
  if (q != null) {
   if (dir) q.right = r;
   else q.left = r;
  }
  else tree = r;

  r.balance(p.balance());
  q = r;
  dir = true;

 }
 else {
  Entry KEY_GENERIC s;

  while(true) {
   s = r.left;
   if (s.pred()) break;
```

```
  r = s;
 }

 if (s.succ()) r.pred(s);
 else r.left = s.right;

 s.left = p.left;

 if (! p.pred()) {
  p.prev().right = s;
  s.pred(false);
 }

 s.right = p.right;
 s.succ(false);

 if (q != null) {
  if (dir) q.right = s;
  else q.left = s;
 }
 else tree = s;

 s.balance(p.balance());
 q = r;
 dir = false;
}
}

Entry KEY_GENERIC y;

while(q != null) {
 y = q;
 q = parent(y);

 if (! dir) {
  dir = q != null && q.left != y;
  y.incBalance();

  if (y.balance() == 1) break;
  else if (y.balance() == 2) {

   Entry KEY_GENERIC x = y.right;
   assert x != null;

   if (x.balance() == -1) {
    Entry KEY_GENERIC w;

    assert x.balance() == -1;
```

```
 w = x.left;
 x.left = w.right;
 w.right = x;
 y.right = w.left;
 w.left = y;

 if (w.balance() == 1) {
  x.balance(0);
  y.balance(-1);
 }
 else if (w.balance() == 0) {
  x.balance(0);
  y.balance(0);
 }
 else {
  assert w.balance() == -1;

  x.balance(1);
  y.balance(0);
 }

 w.balance(0);

 if (w.pred()) {
  y.succ(w);
  w.pred(false);
 }
 if (w.succ()) {
  x.pred(w);
  w.succ(false);
 }

 if (q != null) {
  if (dir) q.right = w;
  else q.left = w;
 }
 else tree = w;
}
else {
 if (q != null) {
  if (dir) q.right = x;
  else q.left = x;
 }
 else tree = x;

 if (x.balance() == 0) {
  y.right = x.left;
```

```
    x.left = y;
    x.balance(-1);
    y.balance(+1);
    break;
   }

   assert x.balance() == 1;

   if (x.pred()) {
    y.succ(true);
    x.pred(false);
   }
   else y.right = x.left;

   x.left = y;
   y.balance(0);
   x.balance(0);
  }
 }
}
else {
 dir = q != null && q.left != y;
 y.decBalance();

 if (y.balance() == -1) break;
 else if (y.balance() == -2) {

  Entry KEY_GENERIC x = y.left;
  assert x != null;

  if (x.balance() == 1) {
   Entry KEY_GENERIC w;

   assert x.balance() == 1;

   w = x.right;
   x.right = w.left;
   w.left = x;
   y.left = w.right;
   w.right = y;

   if (w.balance() == -1) {
    x.balance(0);
    y.balance(1);
   }
   else if (w.balance() == 0) {
    x.balance(0);
    y.balance(0);
```

```
 }
 else {
  assert w.balance() == 1;

  x.balance(-1);
  y.balance(0);
 }

 w.balance(0);

 if (w.pred()) {
  x.succ(w);
  w.pred(false);
 }
 if (w.succ()) {
  y.pred(w);
  w.succ(false);
 }

 if (q != null) {
  if (dir) q.right = w;
  else q.left = w;
 }
 else tree = w;
}
else {
 if (q != null) {
  if (dir) q.right = x;
  else q.left = x;
 }
 else tree = x;

 if (x.balance() == 0) {
  y.left = x.right;
  x.right = y;
  x.balance(+1);
  y.balance(-1);
  break;
 }

 assert x.balance() == -1;

 if (x.succ()) {
  y.pred(true);
  x.succ(false);
 }
 else y.left = x.right;
```

```
     x.right = y;
     y.balance(0);
     x.balance(0);
    }
   }
  }
 }

 count--;
 return true;
}

SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public boolean contains(final KEY_TYPE k) {
 return findKey(KEY_GENERIC_CAST k) != null;
}

#if KEY_CLASS_Object
SUPPRESS_WARNINGS_KEY_UNCHECKED
public K get(final KEY_TYPE k) {
 final Entry KEY_GENERIC entry = findKey(KEY_GENERIC_CAST k);
 return entry == null ? null : entry.key;
}
#endif

@Override
public void clear() {
 count = 0;
 tree = null;
 firstEntry = lastEntry = null;
}


/** This class represent an entry in a tree set.
 *
 * <p>We use the only "metadata", i.e., {@link Entry#info}, to store
 * information about balance, predecessor status and successor status.
 *
 * <p>Note that since the class is recursive, it can be
 * considered equivalently a tree.
 */

private static final class Entry KEY_GENERIC implements Cloneable {
 /** If the bit in this mask is true, {@link #right} points to a successor. */
 private static final int SUCC_MASK = 1 << 31;
 /** If the bit in this mask is true, {@link #left} points to a predecessor. */
 private static final int PRED_MASK = 1 << 30;
```

```
/** The bits in this mask hold the node balance info. You can get it just by casting to byte. */
private static final int BALANCE_MASK = 0xFF;
/** The key of this entry. */
KEY_GENERIC_TYPE key;
/** The pointers to the left and right subtrees. */
Entry KEY_GENERIC left, right;
/** This integers holds different information in different bits (see {@link #SUCC_MASK}, {@link
#PRED_MASK} and {@link #BALANCE_MASK}). */
int info;

Entry() {}

/** Creates a new entry with the given key.
 *
 * @param k a key.
 */
Entry(final KEY_GENERIC_TYPE k) {
 this.key = k;
 info = SUCC_MASK | PRED_MASK;
}

/** Returns the left subtree.
 *
 * @return the left subtree ({@code null} if the left
 * subtree is empty).
 */
Entry KEY_GENERIC left() {
 return (info & PRED_MASK) != 0 ? null : left;
}

/** Returns the right subtree.
 *
 * @return the right subtree ({@code null} if the right
 * subtree is empty).
 */
Entry KEY_GENERIC right() {
 return (info & SUCC_MASK) != 0 ? null : right;
}

/** Checks whether the left pointer is really a predecessor.
 * @return true if the left pointer is a predecessor.
 */
boolean pred() {
 return (info & PRED_MASK) != 0;
}

/** Checks whether the right pointer is really a successor.
 * @return true if the right pointer is a successor.
```

```
 */
boolean succ() {
 return (info & SUCC_MASK) != 0;
}

/** Sets whether the left pointer is really a predecessor.
 * @param pred if true then the left pointer will be considered a predecessor.
 */
void pred(final boolean pred) {
 if (pred) info |= PRED_MASK;
 else info &= ~PRED_MASK;
}

/** Sets whether the right pointer is really a successor.
 * @param succ if true then the right pointer will be considered a successor.
 */
void succ(final boolean succ) {
 if (succ) info |= SUCC_MASK;
 else info &= ~SUCC_MASK;
}

/** Sets the left pointer to a predecessor.
 * @param pred the predecessr.
 */
void pred(final Entry KEY_GENERIC pred) {
 info |= PRED_MASK;
 left = pred;
}

/** Sets the right pointer to a successor.
 * @param succ the successor.
 */
void succ(final Entry KEY_GENERIC succ) {
 info |= SUCC_MASK;
 right = succ;
}

/** Sets the left pointer to the given subtree.
 * @param left the new left subtree.
 */
void left(final Entry KEY_GENERIC left) {
 info &= ~PRED_MASK;
 this.left = left;
}

/** Sets the right pointer to the given subtree.
 * @param right the new right subtree.
 */
```

```
void right(final Entry KEY_GENERIC right) {
 info &= ~SUCC_MASK;
 this.right = right;
}

/** Returns the current level of the node.
 * @return the current level of this node.
 */
int balance() {
 return (byte)info;
}

/** Sets the level of this node.
 * @param level the new level of this node.
 */
void balance(int level) {
 info &= ~BALANCE_MASK;
 info |= (level & BALANCE_MASK);
}

/** Increments the level of this node. */
void incBalance() {
 info = info & ~BALANCE_MASK | ((byte)info + 1) & 0xFF;
}

/** Decrements the level of this node. */
protected void decBalance() {
 info = info & ~BALANCE_MASK | ((byte)info - 1) & 0xFF;
}

/** Computes the next entry in the set order.
 *
 * @return the next entry ({@code null}) if this is the last entry).
 */

Entry KEY_GENERIC next() {
 Entry KEY_GENERIC next = this.right;
 if ((info & SUCC_MASK) == 0) while ((next.info & PRED_MASK) == 0) next = next.left;
 return next;
}

/** Computes the previous entry in the set order.
 *
 * @return the previous entry ({@code null}) if this is the first entry).
 */

Entry KEY_GENERIC prev() {
 Entry KEY_GENERIC prev = this.left;
```

```
 if ((info & PRED_MASK) == 0) while ((prev.info & SUCC_MASK) == 0) prev = prev.right;
 return prev;
}

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public Entry KEY_GENERIC clone() {
 Entry KEY_GENERIC c;
 try {
  c = (Entry KEY_GENERIC)super.clone();
 }
 catch(CloneNotSupportedException cantHappen) {
  throw new InternalError();
 }

 c.key = key;
 c.info = info;

 return c;
}

@Override
public boolean equals(final Object o) {
 if (!(o instanceof Entry)) return false;
 Entry KEY_GENERIC_WILDCARD e = (Entry KEY_GENERIC_WILDCARD)o;

 return KEY_EQUALS(key, e.key);
}

@Override
public int hashCode() {
 return KEY2JAVAHASH_NOT_NULL(key);
}

@Override
public String toString() {
 return String.valueOf(key);
}

/*
  public void prettyPrint() {
  prettyPrint(0);
  }

  public void prettyPrint(int level) {
  if (pred()) {
  for (int i = 0; i < level; i++)
  System.err.print("  ");
```

```
   System.err.println("pred: " + left);
   }
   else if (left != null)
   left.prettyPrint(level +1);
   for (int i = 0; i < level; i++)
   System.err.print("  ");
   System.err.println(key + " (" + level() + ")");
   if (succ()) {
   for (int i = 0; i < level; i++)
   System.err.print("  ");
   System.err.println("succ: " + right);
   }
   else if (right != null)
   right.prettyPrint(level + 1);
   }
 */
}

/*
  public void prettyPrint() {
  System.err.println("size: " + count);
  if (tree != null) tree.prettyPrint();
  }
*/

@Override
public int size() {
 return count;
}

@Override
public boolean isEmpty() {
 return count == 0;
}

@Override
public KEY_GENERIC_TYPE FIRST() {
 if (tree == null) throw new NoSuchElementException();
 return firstEntry.key;
}

@Override
public KEY_GENERIC_TYPE LAST() {
 if (tree == null) throw new NoSuchElementException();
 return lastEntry.key;
}
```

```
/** An iterator on the whole range.
 *
 * <p>This class can iterate in both directions on a threaded tree.
 */

private class SetIterator implements KEY_LIST_ITERATOR KEY_GENERIC {
 /** The entry that will be returned by the next call to {@link java.util.ListIterator#previous()} (or {@code null} if no previous entry exists). */
 Entry KEY_GENERIC prev;
 /** The entry that will be returned by the next call to {@link java.util.ListIterator#next()} (or {@code null} if no next entry exists). */
 Entry KEY_GENERIC next;
 /** The last entry that was returned (or {@code null} if we did not iterate or used {@link #remove()}). */
 Entry KEY_GENERIC curr;
 /** The current index (in the sense of a {@link java.util.ListIterator}). Note that this value is not meaningful when this {@link SetIterator} has been created using the nonempty constructor.*/
 int index = 0;

 SetIterator() {
  next = firstEntry;
 }

 SetIterator(final KEY_GENERIC_TYPE k) {
  if ((next = locateKey(k)) != null) {
   if (compare(next.key, k) <= 0) {
    prev = next;
    next = next.next();
   }
   else prev = next.prev();
  }
 }

 @Override
 public boolean hasNext() { return next != null; }
 @Override
 public boolean hasPrevious() { return prev != null; }

 void updateNext() { next = next.next(); }

 Entry KEY_GENERIC nextEntry() {
  if (! hasNext()) throw new NoSuchElementException();
  curr = prev = next;
  index++;
  updateNext();
  return curr;
 }

 @Override
```

```
 public KEY_GENERIC_TYPE NEXT_KEY() { return nextEntry().key; }
 @Override
 public KEY_GENERIC_TYPE PREV_KEY() { return previousEntry().key; }

 void updatePrevious() { prev = prev.prev(); }

 Entry KEY_GENERIC previousEntry() {
  if (! hasPrevious()) throw new NoSuchElementException();
  curr = next = prev;
  index--;
  updatePrevious();
  return curr;
 }

 @Override
 public int nextIndex() { return index; }

 @Override
 public int previousIndex() { return index - 1; }

 @Override
 public void remove() {
  if (curr == null) throw new IllegalStateException();
  /* If the last operation was a next(), we are removing an entry that preceeds
     the current index, and thus we must decrement it. */
  if (curr == prev) index--;
  next = prev = curr;
  updatePrevious();
  updateNext();
  AVL_TREE_SET.this.remove(curr.key);
  curr = null;
 }
}

@Override
public KEY_BIDI_ITERATOR KEY_GENERIC iterator() { return new SetIterator(); }

@Override
public KEY_BIDI_ITERATOR KEY_GENERIC iterator(final KEY_GENERIC_TYPE from) { return new
SetIterator(from); }

@Override
public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return actualComparator; }

@Override
public SORTED_SET KEY_GENERIC headSet(final KEY_GENERIC_TYPE to) { return new
Subset(KEY_NULL, true, to, false); }
```

```
 @Override
 public SORTED_SET KEY_GENERIC tailSet(final KEY_GENERIC_TYPE from) { return new Subset(from,
false, KEY_NULL, true); }

 @Override
 public SORTED_SET KEY_GENERIC subSet(final KEY_GENERIC_TYPE from, final KEY_GENERIC_TYPE
to) { return new Subset(from, false, to, false); }

 /** A subset with given range.
  *
  * <p>This class represents a subset. One has to specify the left/right
  * limits (which can be set to -&infin; or &infin;). Since the subset is a
  * view on the set, at a given moment it could happen that the limits of
  * the range are not any longer in the main set. Thus, things such as
  * {@link java.util.SortedSet#first()} or {@link java.util.SortedSet#size()} must be always computed
  * on-the-fly.
  */
 private final class Subset extends ABSTRACT_SORTED_SET KEY_GENERIC implements java.io.Serializable,
SORTED_SET KEY_GENERIC {
  private static final long serialVersionUID = -7046029254386353129L;

  /** The start of the subset range, unless {@link #bottom} is true. */
  KEY_GENERIC_TYPE from;
  /** The end of the subset range, unless {@link #top} is true. */
  KEY_GENERIC_TYPE to;
  /** If true, the subset range starts from -&infin;. */
  boolean bottom;
  /** If true, the subset range goes to &infin;. */
  boolean top;

  /** Creates a new subset with given key range.
   *
   * @param from the start of the subset range.
   * @param bottom if true, the first parameter is ignored and the range starts from -&infin;.
   * @param to the end of the subset range.
   * @param top if true, the third parameter is ignored and the range goes to &infin;.
   */
  public Subset(final KEY_GENERIC_TYPE from, final boolean bottom, final KEY_GENERIC_TYPE to, final
boolean top) {
   if (! bottom && ! top && AVL_TREE_SET.this.compare(from, to) > 0) throw new
IllegalArgumentException("Start element (" + from  + ") is larger than end element (" + to + ")");

   this.from = from;
   this.bottom = bottom;
   this.to = to;
   this.top = top;
  }
```

```
@Override
public void clear() {
 final SubsetIterator i = new SubsetIterator();
 while(i.hasNext()) {
  i.NEXT_KEY();
  i.remove();
 }
}

/** Checks whether a key is in the subset range.
 * @param k a key.
 * @return true if is the key is in the subset range.
 */
final boolean in(final KEY_GENERIC_TYPE k) {
 return (bottom || AVL_TREE_SET.this.compare(k, from) >= 0) &&
  (top || AVL_TREE_SET.this.compare(k, to) < 0);
}

SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public boolean contains(final KEY_TYPE k) {
 return in(KEY_GENERIC_CAST k) && AVL_TREE_SET.this.contains(k);
}

@Override
public boolean add(final KEY_GENERIC_TYPE  k) {
 if (! in(k)) throw new IllegalArgumentException("Element (" + k + ") out of range [" + (bottom ? "-" :
String.valueOf(from)) + ", " + (top ? "-" : String.valueOf(to)) + ")");
 return AVL_TREE_SET.this.add(k);
}

SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public boolean remove(final KEY_TYPE k) {
 if (! in(KEY_GENERIC_CAST k)) return false;
 return AVL_TREE_SET.this.remove(k);
}

@Override
public int size() {
 final SubsetIterator i = new SubsetIterator();
 int n = 0;

 while(i.hasNext()) {
  n++;
  i.NEXT_KEY();
 }
```

```
 return n;
}

@Override
public boolean isEmpty() { return ! new SubsetIterator().hasNext(); }

@Override
public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return actualComparator; }

@Override
public KEY_BIDI_ITERATOR KEY_GENERIC iterator() { return new SubsetIterator(); }

@Override
public KEY_BIDI_ITERATOR KEY_GENERIC iterator(final KEY_GENERIC_TYPE from) { return new
SubsetIterator(from); }

@Override
public SORTED_SET KEY_GENERIC headSet(final KEY_GENERIC_TYPE to) {
 if (top) return new Subset(from, bottom, to, false);
 return compare(to, this.to) < 0 ? new Subset(from, bottom, to, false) : this;
}

@Override
public SORTED_SET KEY_GENERIC tailSet(final KEY_GENERIC_TYPE from) {
 if (bottom) return new Subset(from, false, to, top);
 return compare(from, this.from) > 0 ? new Subset(from, false, to, top) : this;
}

@Override
public SORTED_SET KEY_GENERIC subSet(KEY_GENERIC_TYPE from, KEY_GENERIC_TYPE to) {
 if (top && bottom) return new Subset(from, false, to, false);
 if (! top) to = compare(to, this.to) < 0 ? to : this.to;
 if (! bottom) from = compare(from, this.from) > 0 ? from : this.from;
    if (! top && ! bottom && from == this.from && to == this.to) return this;
 return new Subset(from, false, to, false);
}

/** Locates the first entry.
 *
 * @return the first entry of this subset, or {@code null} if the subset is empty.
 */
public AVL_TREE_SET.Entry KEY_GENERIC firstEntry() {
 if (tree == null) return null;
 // If this subset goes to -infinity, we return the main set first entry; otherwise, we locate the start of the set.
 AVL_TREE_SET.Entry KEY_GENERIC e;
 if (bottom) e = firstEntry;
 else {
  e = locateKey(from);
```

```
  // If we find either the start or something greater we're OK.
  if (compare(e.key, from) < 0) e = e.next();
 }
 // Finally, if this subset doesn't go to infinity, we check that the resulting key isn't greater than the end.
 if (e == null || ! top && compare(e.key, to) >= 0) return null;
 return e;
}

/** Locates the last entry.
 *
 * @return the last entry of this subset, or {@code null} if the subset is empty.
 */
public AVL_TREE_SET.Entry KEY_GENERIC lastEntry() {
 if (tree == null) return null;
 // If this subset goes to infinity, we return the main set last entry; otherwise, we locate the end of the set.
 AVL_TREE_SET.Entry KEY_GENERIC e;
 if (top) e = lastEntry;
 else {
  e = locateKey(to);
  // If we find something smaller than the end we're OK.
  if (compare(e.key, to) >= 0) e = e.prev();
 }
 // Finally, if this subset doesn't go to -infinity, we check that the resulting key isn't smaller than the start.
 if (e == null || ! bottom && compare(e.key, from) < 0) return null;
 return e;
}

@Override
public KEY_GENERIC_TYPE FIRST() {
 AVL_TREE_SET.Entry KEY_GENERIC e = firstEntry();
 if (e == null) throw new NoSuchElementException();
 return e.key;
}

@Override
public KEY_GENERIC_TYPE LAST() {
 AVL_TREE_SET.Entry KEY_GENERIC e = lastEntry();
 if (e == null) throw new NoSuchElementException();
 return e.key;
}

/** An iterator for subranges.
 *
 * <p>This class inherits from {@link SetIterator}, but overrides the methods that
 * update the pointer after a {@link java.util.ListIterator#next()} or {@link java.util.ListIterator#previous()}. If we
would
 * move out of the range of the subset we just overwrite the next or previous
 * entry with {@code null}.
```

```
 */
private final class SubsetIterator extends SetIterator {
 SubsetIterator() {
  next = firstEntry();
 }

 SubsetIterator(final KEY_GENERIC_TYPE k) {
  this();

  if (next != null) {
   if (! bottom && compare(k, next.key) < 0) prev = null;
   else if (! top && compare(k, (prev = lastEntry()).key) >= 0) next = null;
   else {
    next = locateKey(k);

    if (compare(next.key, k) <= 0) {
     prev = next;
     next = next.next();
    }
    else prev = next.prev();
   }
  }
 }

 @Override
 void updatePrevious() {
  prev = prev.prev();
  if (! bottom && prev != null && AVL_TREE_SET.this.compare(prev.key, from) < 0) prev = null;
 }

 @Override
 void updateNext() {
  next = next.next();
  if (! top && next != null && AVL_TREE_SET.this.compare(next.key, to) >= 0) next = null;
 }
}
}

/** Returns a deep copy of this tree set.
 *
 * <p>This method performs a deep copy of this tree set; the data stored in the
 * set, however, is not cloned. Note that this makes a difference only for object keys.
 *
 * @return a deep copy of this tree set.
 */

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
```

```
 public Object clone() {
  AVL_TREE_SET KEY_GENERIC c;
  try {
   c = (AVL_TREE_SET KEY_GENERIC)super.clone();
  }
  catch(CloneNotSupportedException cantHappen) {
   throw new InternalError();
  }

  c.allocatePaths();

  if (count != 0) {
   // Also this apparently unfathomable code is derived from GNU libavl.
   Entry KEY_GENERIC e, p, q, rp = new Entry KEY_GENERIC_DIAMOND(), rq = new Entry
KEY_GENERIC_DIAMOND();

   p = rp;
   rp.left(tree);

   q = rq;
   rq.pred(null);

   while(true) {
    if (! p.pred()) {
     e = p.left.clone();
     e.pred(q.left);
     e.succ(q);
     q.left(e);

     p = p.left;
     q = q.left;
    }
    else {
     while(p.succ()) {
      p = p.right;

      if (p == null) {
       q.right = null;
       c.tree = rq.left;

       c.firstEntry = c.tree;
       while(c.firstEntry.left != null) c.firstEntry = c.firstEntry.left;
       c.lastEntry = c.tree;
       while(c.lastEntry.right != null) c.lastEntry = c.lastEntry.right;

       return c;
      }
      q = q.right;
```

```
    }

    p = p.right;
    q = q.right;
   }

   if (! p.succ()) {
    e = p.right.clone();
    e.succ(q.right);
    e.pred(q);
    q.right(e);
   }
  }
 }

 return c;
}


private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
 int n = count;
 SetIterator i = new SetIterator();

 s.defaultWriteObject();
 while(n-- != 0) s.WRITE_KEY(i.NEXT_KEY());
}


/** Reads the given number of entries from the input stream, returning the corresponding tree.
 *
 * @param s the input stream.
 * @param n the (positive) number of entries to read.
 * @param pred the entry containing the key that preceeds the first key in the tree.
 * @param succ the entry containing the key that follows the last key in the tree.
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
private Entry KEY_GENERIC readTree(final java.io.ObjectInputStream s, final int n, final Entry KEY_GENERIC
pred, final Entry KEY_GENERIC succ) throws java.io.IOException, ClassNotFoundException {
 if (n == 1) {
  final Entry KEY_GENERIC top = new Entry KEY_GENERIC_DIAMOND(KEY_GENERIC_CAST
s.READ_KEY());
  top.pred(pred);
  top.succ(succ);

  return top;
 }

 if (n == 2) {
```

```
  /* We handle separately this case so that recursion will
   *always* be on nonempty subtrees. */
  final Entry KEY_GENERIC top = new Entry KEY_GENERIC_DIAMOND(KEY_GENERIC_CAST
s.READ_KEY());
  top.right(new Entry KEY_GENERIC_DIAMOND(KEY_GENERIC_CAST s.READ_KEY()));
  top.right.pred(top);
  top.balance(1);
  top.pred(pred);
  top.right.succ(succ);

  return top;
 }

 // The right subtree is the largest one.
 final int rightN = n / 2, leftN = n - rightN - 1;

 final Entry KEY_GENERIC top = new Entry KEY_GENERIC_DIAMOND();

 top.left(readTree(s, leftN, pred, top));

 top.key = KEY_GENERIC_CAST s.READ_KEY();

 top.right(readTree(s, rightN, top, succ));

 if (n == (n & -n)) top.balance(1); // Quick test for determining whether n is a power of 2.

 return top;
}


private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
 s.defaultReadObject();
 /* The storedComparator is now correctly set, but we must restore
    on-the-fly the actualComparator. */
 setActualComparator();
 allocatePaths();

 if (count != 0) {
  tree = readTree(s, count, null, null);
  Entry KEY_GENERIC e;

  e = tree;
  while(e.left() != null) e = e.left();
  firstEntry = e;

  e = tree;
  while(e.right() != null) e = e.right();
  lastEntry = e;
```

```
  }
 }

#ifdef ASSERTS_CODE
 private static KEY_GENERIC int checkTree(Entry KEY_GENERIC e) {
  if (e == null) return 0;

  final int leftN = checkTree(e.left()), rightN = checkTree(e.right());
  if (leftN + e.balance() != rightN)
   throw new AssertionError("Mismatch between left tree size (" + leftN + "), right tree size (" + rightN + ") and
balance (" + e.balance() + ")");

  return Math.max(leftN , rightN) + 1;
 }
#endif

#ifdef TEST

 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#else
  return Integer.toBinaryString(r.nextInt());
#endif
 }

 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition p = new java.text.FieldPosition(0);

 private static String format(double d) {
  StringBuffer s = new StringBuffer();
  return format.format(d, s, p).toString();
 }

 private static void speedTest(int n, boolean comp) {
  int i, j;
  AVL_TREE_SET m;
  java.util.TreeSet t;
  KEY_TYPE k[] = new KEY_TYPE[n];
  KEY_TYPE nk[] = new KEY_TYPE[n];
  long ms;

  for(i = 0; i < n; i++) {
```

```
 k[i] = genKey();
 nk[i] = genKey();
}

double totAdd = 0, totYes = 0, totNo = 0, totIterFor = 0, totIterBack = 0, totRemYes = 0, d, dd;

if (comp) {
 for(j = 0; j < 20; j++) {

  t = new java.util.TreeSet();

  /* We first add all pairs to t. */
  for(i = 0; i < n;  i++) t.add(KEY2OBJ(k[i]));

  /* Then we remove the first half and put it back. */
  for(i = 0; i < n/2;  i++) t.remove(KEY2OBJ(k[i]));

  ms = System.currentTimeMillis();
  for(i = 0; i < n/2;  i++) t.add(KEY2OBJ(k[i]));
  d = System.currentTimeMillis() - ms;

  /* Then we remove the other half and put it back again. */
  ms = System.currentTimeMillis();
  for(i = n/2; i < n;  i++) t.remove(KEY2OBJ(k[i]));
  dd = System.currentTimeMillis() - ms ;

  ms = System.currentTimeMillis();
  for(i = n/2; i < n;  i++) t.add(KEY2OBJ(k[i]));
  d += System.currentTimeMillis() - ms;
  if (j > 2) totAdd += n/d;
  System.out.print("Add: " + format(n/d) +" K/s ");

  /* Then we remove again the first half. */
  ms = System.currentTimeMillis();
  for(i = 0; i < n/2;  i++) t.remove(KEY2OBJ(k[i]));
  dd += System.currentTimeMillis() - ms ;
  if (j > 2) totRemYes += n/dd;
  System.out.print("RemYes: " + format(n/dd) +" K/s ");

  /* And then we put it back. */
  for(i = 0; i < n/2;  i++) t.add(KEY2OBJ(k[i]));

  /* We check for pairs in t. */
  ms = System.currentTimeMillis();
  for(i = 0; i < n;  i++) t.contains(KEY2OBJ(k[i]));
  d = 1.0 * n / (System.currentTimeMillis() - ms);
  if (j > 2) totYes += d;
  System.out.print("Yes: " + format(d) +" K/s ");
```

```
    /* We check for pairs not in t. */
    ms = System.currentTimeMillis();
    for(i = 0; i < n;  i++) t.contains(KEY2OBJ(nk[i]));
    d = 1.0 * n / (System.currentTimeMillis() - ms);
    if (j > 2) totNo += d;
    System.out.print("No: " + format(d) +" K/s ");

    /* We iterate on t. */
    ms = System.currentTimeMillis();
    for(Iterator it = t.iterator(); it.hasNext(); it.next());
    d = 1.0 * n / (System.currentTimeMillis() - ms);
    if (j > 2) totIterFor += d;
    System.out.print("IterFor: " + format(d) +" K/s ");

    System.out.println();
   }

   System.out.println();
   System.out.println("java.util Add: " + format(totAdd/(j-3)) + " K/s RemYes: " + format(totRemYes/(j-3)) + " K/s
Yes: " + format(totYes/(j-3)) + " K/s No: " + format(totNo/(j-3)) + " K/s IterFor: " + format(totIterFor/(j-3))  + "
K/s");

   System.out.println();

   totAdd = totYes = totNo = totIterFor = totIterBack = totRemYes = 0;

  }

  for(j = 0; j < 20; j++) {

   m = new AVL_TREE_SET();

   /* We first add all pairs to m. */
   for(i = 0; i < n;  i++) m.add(k[i]);

   /* Then we remove the first half and put it back. */
   for(i = 0; i < n/2;  i++) m.remove(k[i]);

   ms = System.currentTimeMillis();
   for(i = 0; i < n/2;  i++) m.add(k[i]);
   d = System.currentTimeMillis() - ms;

   /* Then we remove the other half and put it back again. */
   ms = System.currentTimeMillis();
   for(i = n/2; i < n;  i++) m.remove(k[i]);
   dd = System.currentTimeMillis() - ms ;
```

```
ms = System.currentTimeMillis();
for(i = n/2; i < n;  i++) m.add(k[i]);
d += System.currentTimeMillis() - ms;
if (j > 2) totAdd += n/d;
System.out.print("Add: " + format(n/d) +" K/s ");

/* Then we remove again the first half. */
ms = System.currentTimeMillis();
for(i = 0; i < n/2;  i++) m.remove(k[i]);
dd += System.currentTimeMillis() - ms ;
if (j > 2) totRemYes += n/dd;
System.out.print("RemYes: " + format(n/dd) +" K/s ");

/* And then we put it back. */
for(i = 0; i < n/2;  i++) m.add(k[i]);

/* We check for pairs in m. */
ms = System.currentTimeMillis();
for(i = 0; i < n;  i++) m.contains(k[i]);
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totYes += d;
System.out.print("Yes: " + format(d) +" K/s ");

/* We check for pairs not in m. */
ms = System.currentTimeMillis();
for(i = 0; i < n;  i++) m.contains(nk[i]);
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totNo += d;
System.out.print("No: " + format(d) +" K/s ");

/* We iterate on m. */
KEY_LIST_ITERATOR it = (KEY_LIST_ITERATOR)m.iterator();
ms = System.currentTimeMillis();
for(; it.hasNext(); it.NEXT_KEY());
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totIterFor += d;
System.out.print("IterFor: " + format(d) +" K/s ");

/* We iterate back on m. */
ms = System.currentTimeMillis();
for(; it.hasPrevious(); it.PREV_KEY());
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totIterBack += d;
System.out.print("IterBack: " + format(d) +" K/s ");

System.out.println();
}
```

```
 System.out.println();
 System.out.println("fastutil  Add: " + format(totAdd/(j-3)) + " K/s RemYes: " + format(totRemYes/(j-3)) + " K/s
Yes: " + format(totYes/(j-3)) + " K/s No: " + format(totNo/(j-3)) + " K/s IterFor: " + format(totIterFor/(j-3))  + " K/s
IterBack: " + format(totIterBack/(j-3)) + "K/s");

 System.out.println();
 }


private static boolean valEquals(Object o1, Object o2) {
 return o1 == null ? o2 == null : o1.equals(o2);
 }

private static void fatal(String msg) {
 throw new AssertionError(msg);
 }

private static void ensure(boolean cond, String msg) {
 if (cond) return;
 fatal(msg);
 }

private static Object[] k, v, nk;
private static KEY_TYPE kt[];
private static KEY_TYPE nkt[];
private static AVL_TREE_SET topSet;

protected static void testSets(SORTED_SET m, SortedSet t, int n, int level) throws Exception {
 long ms;
 boolean mThrowsIllegal, tThrowsIllegal, mThrowsNoElement, tThrowsNoElement;
 boolean rt = false, rm = false;

 if (level > 4) return;


 /* Now we check that both sets agree on first/last keys. */

 mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

 try {
  m.first();
 }
 catch (NoSuchElementException e) { mThrowsNoElement = true; }
 try {
  t.first();
 }
 catch (NoSuchElementException e) { tThrowsNoElement = true; }
```

```
  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): first() divergence at start in
NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
  if (! mThrowsNoElement) ensure(t.first().equals(m.first()), "Error (" + level + ", " + seed + "): m and t differ at start
on their first key (" + m.first() + ", " + t.first() +")");

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.last();
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.last();
  }
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): last() divergence at start in
NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");


  if (! mThrowsNoElement) ensure(t.last().equals(m.last()), "Error (" + level + ", " + seed + "): m and t differ at start
on their last key (" + m.last() + ", " + t.last() +")");


  /* Now we check that m and t are equal. */
  if (!m.equals(t) || ! t.equals(m)) System.err.println("m: " + m + " t: " + t);

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) at start");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) at start");



  /* Now we check that m actually holds that data. */
  for(Iterator i=t.iterator(); i.hasNext();) {
   ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on
t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */
  for(Iterator i=m.iterator(); i.hasNext();) {
   ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on
m)");
  }

  /* Now we check that inquiries about random data give the same answer in m and t. For
     m we use the polymorphic method. */
```

```
for(int i=0; i<n;  i++) {
 KEY_TYPE T = genKey();

 mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

 try {
  m.contains(T);
 }
 catch (NoSuchElementException e) { mThrowsNoElement = true; }
 catch (IllegalArgumentException e) { mThrowsIllegal = true; }

 try {
  t.contains(KEY2OBJ(T));
 }
 catch (NoSuchElementException e) { tThrowsNoElement = true; }
 catch (IllegalArgumentException e) { tThrowsIllegal = true; }

 ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): contains() divergence in
NoSuchElementException (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
 ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): contains() divergence in
IllegalArgumentException (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
 if (!mThrowsNoElement && !mThrowsIllegal) ensure(m.contains(KEY2OBJ(T)) == t.contains(KEY2OBJ(T)),
"Error (" + level + ", " + seed + "): divergence in keys between t and m (polymorphic method)");
}

/* Again, we check that inquiries about random data give the same answer in m and t, but
   for m we use the standard method. */

for(int i=0; i<n;  i++) {
 KEY_TYPE T = genKey();

 mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

 try {
  m.contains(KEY2OBJ(T));
 }
 catch (NoSuchElementException e) { mThrowsNoElement = true; }
 catch (IllegalArgumentException e) { mThrowsIllegal = true; }

 try {
  t.contains(KEY2OBJ(T));
 }
 catch (NoSuchElementException e) { tThrowsNoElement = true; }
 catch (IllegalArgumentException e) { tThrowsIllegal = true; }

 ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): contains() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
 ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): contains() divergence in
```

```
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(m.contains(KEY2OBJ(T)) ==  t.contains(KEY2OBJ(T)),
"Error (" + level + ", " + seed + "): divergence between t and m (standard method)");
  }

  /* Now we add and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

   try {
    rm = m.add(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    rt = t.add(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }


   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): add() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): add() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(rm == rt, "Error (" + level + ", " + seed + "): divergence in
add() between t and m");

   T = genKey();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

   try {
    rm = m.remove(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    rt = t.remove(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
```

```
   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): remove() divergence in NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): remove() divergence in IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(rm == rt, "Error (" + level + ", " + seed + "): divergence in remove() between t and m");
  }

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after removal");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after removal");

  /* Now we check that m actually holds the same data. */

  for(Iterator i=t.iterator(); i.hasNext();) {
   ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after removal (iterating on t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */

  for(Iterator i=m.iterator(); i.hasNext();) {
   ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after removal (iterating on m)");
  }

  /* Now we check that both sets agree on first/last keys. */

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.first();
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.first();
  }
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): first() divergence in NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
  if (! mThrowsNoElement) ensure(t.first().equals(m.first()), "Error (" + level + ", " + seed + "): m and t differ on their first key (" + m.first() + ", " + t.first() +")");

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.last();
```

```
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.last();
  }
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): last() divergence in
NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");

  if (! mThrowsNoElement) ensure(t.last().equals(m.last()), "Error (" + level + ", " + seed + "): m and t differ on their
last key (" + m.last() + ", " + t.last() +")");

  /* Now we check cloning. */

  if (level == 0) {
   ensure(m.equals(((AVL_TREE_SET)m).clone()), "Error (" + level + ", " + seed + "): m does not equal m.clone()");
   ensure(((AVL_TREE_SET)m).clone().equals(m), "Error (" + level + ", " + seed + "): m.clone() does not equal m");
  }

  int h = m.hashCode();


  /* Now we save and read m. */

  SORTED_SET m2 = null;

  {
   java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
   java.io.OutputStream os = new java.io.FileOutputStream(ff);
   java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

   oos.writeObject(m);
   oos.close();

   java.io.InputStream is = new java.io.FileInputStream(ff);
   java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

   m2 = (SORTED_SET)ois.readObject();
   ois.close();
   ff.delete();
  }

  ensure(m2.hashCode() == h, "Error (" + level + ", " + seed + "): hashCode() changed after save/read");

  /* Now we check that m2 actually holds that data. */

  ensure(m2.equals(t), "Error (" + level + ", " + seed + "): ! m2.equals(t) after save/read");
```

```
ensure(t.equals(m2), "Error (" + level + ", " + seed + "): ! t.equals(m2) after save/read");
/* Now we take out of m everything, and check that it is empty. */

for(Iterator i=t.iterator(); i.hasNext();) m2.remove(i.next());

ensure(m2.isEmpty(), "Error (" + level + ", " + seed + "): m2 is not empty (as it should be)");

/* Now we play with iterators. */

{
 java.util.ListIterator i, j;
 Object J;
 i = (java.util.ListIterator)m.iterator();
 j = new java.util.LinkedList(t).listIterator();

 for(int k = 0; k < 2*n; k++) {
  ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext()");
  ensure(i.hasPrevious() == j.hasPrevious(), "Error (" + level + ", " + seed + "): divergence in hasPrevious()");

  if (r.nextFloat() < .8 && i.hasNext()) {
   ensure(i.next().equals(J = j.next()), "Error (" + level + ", " + seed + "): divergence in next()");

   if (r.nextFloat() < 0.5) {
    i.remove();
    j.remove();
    t.remove(J);
   }
  }
  else if (r.nextFloat() < .2 && i.hasPrevious()) {
   ensure(i.previous().equals(J = j.previous()), "Error (" + level + ", " + seed + "): divergence in previous()");

   if (r.nextFloat() < 0.5) {
    i.remove();
    j.remove();
    t.remove(J);
   }
  }

  ensure(i.nextIndex() == j.nextIndex(), "Error (" + level + ", " + seed + "): divergence in nextIndex()");
  ensure(i.previousIndex() == j.previousIndex(), "Error (" + level + ", " + seed + "): divergence in previousIndex()");

 }

}

{
 boolean badPrevious = false;
 Object previous = null;
```

```
   it.unimi.dsi.fastutil.BidirectionalIterator i;
   java.util.ListIterator j;
   Object I, J;
   KEY_TYPE from = genKey();
   j = new java.util.LinkedList(t).listIterator();
   while(j.hasNext()) {
    Object k = j.next();
    if (((Comparable)k).compareTo(KEY2OBJ(from)) > 0) {
     badPrevious = true;
     j.previous();
     break;
    }
    previous = k;
   }

   i = (it.unimi.dsi.fastutil.BidirectionalIterator)m.iterator(from);

   for(int k = 0; k < 2*n; k++) {
    ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext() (iterator with starting
point " + from + ")");
    ensure(i.hasPrevious() == j.hasPrevious() || badPrevious && (i.hasPrevious() == (previous != null)), "Error (" +
level + ", " + seed + "): divergence in hasPrevious() (iterator with starting point " + from + ")");

    if (r.nextFloat() < .8 && i.hasNext()) {
     ensure((I = i.next()).equals(J = j.next()), "Error (" + level + ", " + seed + "): divergence in next() (" + I + ", " + J + ",
iterator with starting point " + from + ")");
     //System.err.println("Done next " + I + " " + J + "  " + badPrevious);

     badPrevious = false;

     if (r.nextFloat() < 0.5) {
      //System.err.println("Removing in next");
      i.remove();
      j.remove();
      t.remove(J);
     }
    }
    else if (!badPrevious && r.nextFloat() < .2 && i.hasPrevious()) {
     ensure((I = i.previous()).equals(J = j.previous()), "Error (" + level + ", " + seed + "): divergence in previous() (" + I +
", " + J + ", iterator with starting point " + from + ")");

     if (r.nextFloat() < 0.5) {
      //System.err.println("Removing in prev");
      i.remove();
      j.remove();
      t.remove(J);
     }
    }
```

```
 }

}

/* Now we check that m actually holds that data. */

ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after iteration");
ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after iteration");

/* Now we select a pair of keys and create a subset. */

if (! m.isEmpty()) {
 java.util.ListIterator i;
 Object start = m.first(), end = m.first();
 for(i = (java.util.ListIterator)m.iterator(); i.hasNext() && r.nextFloat() < .3; start = end = i.next());
 for(; i.hasNext() && r.nextFloat() < .95; end = i.next());

 //System.err.println("Checking subSet from " + start + " to " + end + " (level=" + (level+1) + ")...");
 testSets((SORTED_SET)m.subSet((KEY_CLASS)start, (KEY_CLASS)end), t.subSet(start, end), n, level + 1);

 ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after subSet");
 ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after subSet");

 //System.err.println("Checking headSet to " + end + " (level=" + (level+1) + ")...");
 testSets((SORTED_SET)m.headSet((KEY_CLASS)end), t.headSet(end), n, level + 1);

 ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after headSet");
 ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after headSet");

 //System.err.println("Checking tailSet from " + start + " (level=" + (level+1) + ")...");
 testSets((SORTED_SET)m.tailSet((KEY_CLASS)start), t.tailSet(start), n, level + 1);

 ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after tailSet");
 ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after tailSet");
}


}


private static void runTest(int n) throws Exception {
 AVL_TREE_SET m = new AVL_TREE_SET();
 SortedSet t = new java.util.TreeSet();
 topSet = m;
 k = new Object[n];
 nk = new Object[n];
 kt = new KEY_TYPE[n];
 nkt = new KEY_TYPE[n];
```

```
  for(int i = 0; i < n; i++) {
#if KEY_CLASS_Object
   k[i] = kt[i] = genKey();
   nk[i] = nkt[i] = genKey();
#else
   k[i] = new KEY_CLASS(kt[i] = genKey());
   nk[i] = new KEY_CLASS(nkt[i] = genKey());
#endif
  }

  /* We add pairs to t. */
  for(int i = 0; i < n;  i++) t.add(k[i]);

  /* We add to m the same data */
  m.addAll(t);

  testSets(m, t, n, 0);

  System.out.println("Test OK");
  return;
 }


 public static void main(String args[]) throws Exception {
  int n  = Integer.parseInt(args[1]);
  if (args.length > 2) r = new java.util.Random(seed = Long.parseLong(args[2]));


  try {
   if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, "speedComp".equals(args[0]));
   else if ("test".equals(args[0])) runTest(n);
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif


}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AVLTreeSet.drv
No license file was found, but licenses were detected in source scan.

```
/*
* Copyright (C) 2002-2022 Sebastiano Vigna
*
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* distributed under the License is distributed on an "AS IS" BASIS,
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* limitations under the License.
*/


package PACKAGE;

import java.util.Iterator;
import java.util.NoSuchElementException;
import java.util.Objects;
import java.util.function.Consumer;
import it.unimi.dsi.fastutil.SafeMath;

/** A class providing static methods and objects that do useful things with type-specific iterators.
*
* @see Iterator
*/

public final class BIG_LIST_ITERATORS {

 private BIG_LIST_ITERATORS() {}

 /** A class returning no elements and a type-specific big list iterator interface.
  *
  * <p>This class may be useful to implement your own in case you subclass
  * a type-specific iterator.
  */

 public static class EmptyBigListIterator KEY_GENERIC implements KEY_BIG_LIST_ITERATOR
KEY_GENERIC, java.io.Serializable, Cloneable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected EmptyBigListIterator() {}

  @Override
```

```
 public boolean hasNext() { return false; }

 @Override
 public boolean hasPrevious() { return false; }

 @Override
 public KEY_GENERIC_TYPE NEXT_KEY() { throw new NoSuchElementException(); }

 @Override
 public KEY_GENERIC_TYPE PREV_KEY() { throw new NoSuchElementException(); }

 @Override
 public long nextIndex() { return 0; }

 @Override
 public long previousIndex() { return -1; }

 @Override
 public long skip(long n) { return 0; }

 @Override
 public long back(long n) { return 0; }

 @Override
 public Object clone() { return EMPTY_BIG_LIST_ITERATOR; }

#if KEYS_PRIMITIVE
 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) { }
#endif

 DEPRECATED_IF_KEYS_PRIMITIVE
 @Override
 public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) { }

 private Object readResolve() { return EMPTY_BIG_LIST_ITERATOR; }
}

/** An empty iterator (immutable). It is serializable and cloneable.
 *
 * <p>The class of this objects represent an abstract empty iterator
 * that can iterate as a type-specific (list) iterator.
 */

SUPPRESS_WARNINGS_KEY_RAWTYPES
public static final EmptyBigListIterator EMPTY_BIG_LIST_ITERATOR = new EmptyBigListIterator();
```

```
 /** An iterator returning a single element. */

 private static class SingletonBigListIterator KEY_GENERIC implements KEY_BIG_LIST_ITERATOR
KEY_GENERIC {
  private final KEY_GENERIC_TYPE element;
  private int curr;

  public SingletonBigListIterator(final KEY_GENERIC_TYPE element) {
   this.element = element;
  }

  @Override
  public boolean hasNext() { return curr == 0; }

  @Override
  public boolean hasPrevious() { return curr == 1; }

  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() {
   if (! hasNext()) throw new NoSuchElementException();
   curr = 1;
   return element;
  }

  @Override
  public KEY_GENERIC_TYPE PREV_KEY() {
   if (! hasPrevious()) throw new NoSuchElementException();
   curr = 0;
   return element;
  }

  @Override
#if KEYS_PRIMITIVE
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
#else // ! KEY_PRIMITIVE == KEY_REFERENCE
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
#endif
   Objects.requireNonNull(action);
   if (curr == 0) {
    action.accept(element);
    curr = 1;
   }
  }

  @Override
  public long nextIndex() {
   return curr;
  }
```

```
 @Override
 public long previousIndex() {
  return curr - 1;
 }

 @Override
 public long back(long n) {
  if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
  if (n == 0 || curr < 1) return 0;
  curr = 1;
  return 1;
 }

 @Override
 public long skip(long n) {
  if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
  if (n == 0 || curr > 0) return 0;
  curr = 0;
  return 1;
 }
}


/** Returns an iterator that iterates just over the given element.
 *
 * @param element the only element to be returned by a type-specific list iterator.
 * @return  an iterator that iterates just over {@code element}.
 */
public static KEY_GENERIC KEY_BIG_LIST_ITERATOR KEY_GENERIC singleton(final
KEY_GENERIC_TYPE element) {
 return new SingletonBigListIterator KEY_GENERIC_DIAMOND(element);
}


/** An unmodifiable wrapper class for big list iterators. */

public static class UnmodifiableBigListIterator KEY_GENERIC implements KEY_BIG_LIST_ITERATOR
KEY_GENERIC {
 protected final KEY_BIG_LIST_ITERATOR KEY_EXTENDS_GENERIC i;

 public UnmodifiableBigListIterator(final KEY_BIG_LIST_ITERATOR KEY_EXTENDS_GENERIC i) {
  this.i = i;
 }

 @Override
 public boolean hasNext() { return i.hasNext(); }
```

```
 @Override
 public boolean hasPrevious() { return i.hasPrevious(); }

 @Override
 public KEY_GENERIC_TYPE NEXT_KEY() { return i.NEXT_KEY(); }

 @Override
 public KEY_GENERIC_TYPE PREV_KEY() { return i.PREV_KEY(); }

 @Override
 public long nextIndex() { return i.nextIndex(); }

 @Override
 public long previousIndex() { return i.previousIndex(); }

#if KEYS_PRIMITIVE
 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  i.forEachRemaining(action);
 }
#endif

 DEPRECATED_IF_KEYS_PRIMITIVE
 @Override
 public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
  i.forEachRemaining(action);
 }
}

/** Returns an unmodifiable list iterator backed by the specified list iterator.
 *
 * @param i the list iterator to be wrapped in an unmodifiable list iterator.
 * @return an unmodifiable view of the specified list iterator.
 */
public static KEY_GENERIC KEY_BIG_LIST_ITERATOR KEY_GENERIC unmodifiable(final
KEY_BIG_LIST_ITERATOR KEY_EXTENDS_GENERIC i) { return new UnmodifiableBigListIterator
KEY_GENERIC_DIAMOND(i); }


/** A class exposing a list iterator as a big-list iterator.. */

public static class BigListIteratorListIterator KEY_GENERIC implements KEY_BIG_LIST_ITERATOR
KEY_GENERIC {
 protected final KEY_LIST_ITERATOR KEY_GENERIC i;

 protected BigListIteratorListIterator(final KEY_LIST_ITERATOR KEY_GENERIC i) {
  this.i = i;
 }
```

```
 private int intDisplacement(long n) {
  if (n < Integer.MIN_VALUE || n > Integer.MAX_VALUE) throw new IndexOutOfBoundsException("This big
iterator is restricted to 32-bit displacements");
  return (int)n;
 }

 @Override
 public void set(KEY_GENERIC_TYPE ok) { i.set(ok); }

 @Override
 public void add(KEY_GENERIC_TYPE ok) { i.add(ok); }

 @Override
 public int back(int n) { return i.back(n); }

 @Override
 public long back(long n) { return i.back(intDisplacement(n)); }

 @Override
 public void remove() { i.remove(); }

 @Override
 public int skip(int n) { return i.skip(n); }

 @Override
 public long skip(long n) { return i.skip(intDisplacement(n)); }

 @Override
 public boolean hasNext() { return i.hasNext(); }

 @Override
 public boolean hasPrevious() { return i.hasPrevious(); }

 @Override
 public KEY_GENERIC_TYPE NEXT_KEY() { return i.NEXT_KEY(); }

 @Override
 public KEY_GENERIC_TYPE PREV_KEY() { return i.PREV_KEY(); }

 @Override
 public long nextIndex() { return i.nextIndex(); }

 @Override
 public long previousIndex() { return i.previousIndex(); }

#if KEYS_PRIMITIVE
 @Override
```

```
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
   i.forEachRemaining(action);
  }
#endif

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
   i.forEachRemaining(action);
  }
 }

  /** Returns a big-list iterator backed by the specified list iterator.
   *
   * @param i the list iterator to adapted to the big-list-iterator interface.
   * @return a big-list iterator backed by the specified list iterator.
   */
 public static KEY_GENERIC KEY_BIG_LIST_ITERATOR KEY_GENERIC asBigListIterator(final
KEY_LIST_ITERATOR KEY_GENERIC i) { return new BigListIteratorListIterator
KEY_GENERIC_DIAMOND(i); }

 /**
  * A skeletal implementation for an iterator backed by an index based data store. High performance
  * concrete implementations (like the main Iterator of BigArrayBigList) generally should avoid using this
  * and just implement the interface directly, but should be decent for less
  * performance critical implementations.
  *
  * <p>As the abstract methods in this class are used in inner loops, it is generally a
  * good idea to override the class as {@code final} as to encourage the JVM to inline
  * them (or alternatively, override the abstract methods as final).
  */
 public static abstract class AbstractIndexBasedBigIterator KEY_GENERIC extends
KEY_ABSTRACT_ITERATOR KEY_GENERIC {
  /** The minimum pos can be, and is the logical start of the "range".
   * Usually set to the initialPos unless it is a ListIterator, in which case it can vary.
   *
   * There isn't any way for a range to shift its beginning like the end can (through {@link #remove}),
   * so this is final.
   */
  protected final long minPos;
  /** The current position index, the index of the item to be returned after the next call to {@link #next()}.
   *
   * <p>This value will be between {@code minPos} and {@link #getMaxPos()} (exclusive) (on a best effort, so
concurrent
   * structural modifications outside this iterator may cause this to be violated, but that usually invalidates
   * iterators anyways). Thus {@code pos} being {@code minPos + 2} would mean {@link #next()}
   * was called twice and the next call will return the third element of this iterator.
   */
```

```
  protected long pos;
  /** The last returned index by a call to {@link #next} or, if a list-iterator, {@link java.util.ListIterator#previous().
   *
   * Is {@code -1} if no such call has occurred or a mutation has occurred through this iterator and no
   * advancement has been done.
   */
  protected long lastReturned;

  protected AbstractIndexBasedBigIterator(long minPos, long initialPos) {
   this.minPos = minPos;
   this.pos = initialPos;
  }

  // When you implement these, you should probably declare them final to encourage the JVM to inline them.

  /** Get the item corresponding to the given index location.
   *
   * <p>Do <em>not</em> advance {@link #pos} in this method; the default {@code next} method takes care of
this.
   *
   * <p>The {@code location} given will be between {@code minPos} and {@link #getMaxPos()} (exclusive).
   * Thus, a {@code location} of {@code minPos + 2} would mean {@link #next()} was called twice
   * and this method should return what the next call to {@link #next()} should return.
   */
  protected abstract KEY_GENERIC_TYPE get(long location);

  /** Remove the item at the given index.
   *
   * <p>Do <em>not</em> modify {@link #pos} in this method; the default {@code #remove()} method takes care
of this.
   *
   * <p>This method should also do what is needed to track the change to the {@link #getMaxPos}.
   * Usually this is accomplished by having this method call the parent {@link Collection}'s appropriate remove
   * method, and having {@link #getMaxPos} track the parent collection's {@code size64()}.
   */
  protected abstract void remove(long location);

  /** The maximum pos can be, and is the logical end of the "range".
   *
   * <p>If pos is equal to the return of this method, this means the last element has been returned and the next call to
{@link #next()} will throw.
   *
   * <p>Usually set return the parent collection's {@code size64()}, but does not have to be
   * (for example, sublists and subranges).
   */
  protected abstract long getMaxPos();

  @Override
```

```
 public boolean hasNext() { return pos < getMaxPos(); }
 @Override
 public KEY_GENERIC_TYPE NEXT_KEY() { if (! hasNext()) throw new NoSuchElementException(); return
get(lastReturned = pos++); }
 @Override
 public void remove() {
  if (lastReturned == -1) throw new IllegalStateException();
  remove(lastReturned);
  /* If the last operation was a next(), we are removing an element *before* us, and we must decrease pos
correspondingly. */
  if (lastReturned < pos) pos--;
  lastReturned = -1;
 }

 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  while(pos < getMaxPos()) {
   action.accept(get(lastReturned = pos++));
  }
 }

 public long skip(long n) {
  if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
  final long max = getMaxPos();
  final long remaining = max - pos;
  if (n < remaining) {
   pos += n;
  } else {
   n = remaining;
   pos = max;
  }
  lastReturned = pos - 1;
  return n;
 }

 @Override
 public int skip(int n) {
  return SafeMath.safeLongToInt(skip((long) n));
 }

}

/**
 * A skeletal implementation for a list-iterator backed by an index based data store. High performance
 * concrete implementations (like the main ListIterator of ArrayList) generally should avoid using this
 * and just implement the interface directly, but should be decent for less
 * performance critical implementations.
 *
```

```
 * <p>As the abstract methods in this class are used in inner loops, it is generally a
 * good idea to override the class as {@code final} as to encourage the JVM to inline
 * them (or alternatively, override the abstract methods as final).
 */
public static abstract class AbstractIndexBasedBigListIterator KEY_GENERIC extends
AbstractIndexBasedBigIterator KEY_GENERIC implements KEY_BIG_LIST_ITERATOR KEY_GENERIC {

 protected AbstractIndexBasedBigListIterator(long minPos, long initialPos) {
  super(minPos, initialPos);
 }

 // When you implement these, you should probably declare them final to encourage the JVM to inline them.

 /** Add the given item at the given index.
  *
  * <p>This method should also do what is needed to track the change to the {@link #getMaxPos}.
  * Usually this is accomplished by having this method call the parent {@link Collection}'s appropriate add
  * method, and having {@link #getMaxPos} track the parent {@linkplain Collection#size() collection's size}.
  *
  * <p>Do <em>not</em> modify {@link #pos} in this method; the default {@code #add()} method takes care of
this.
  *
  * <p>See {@link #pos} and {@link #get(int)} for discussion on what the location means.
  */
 protected abstract void add(long location, KEY_GENERIC_TYPE k);

 /** Sets the given item at the given index.
  *
  * <p>See {@link #pos} and {@link #get(int)} for discussion on what the location means.
  */
 protected abstract void set(long location, KEY_GENERIC_TYPE k);

 @Override
 public boolean hasPrevious() { return pos > minPos; }
 @Override
 public KEY_GENERIC_TYPE PREV_KEY() { if (! hasPrevious()) throw new NoSuchElementException(); return
get(lastReturned = --pos); }
 @Override
 public long nextIndex() { return pos; }
 @Override
 public long previousIndex() { return pos - 1; }
 @Override
 public void add(final KEY_GENERIC_TYPE k) {
  add(pos++, k);
  lastReturned = -1;
 }
 @Override
 public void set(final KEY_GENERIC_TYPE k) {
```

```
   if (lastReturned == -1) throw new IllegalStateException();
   set(lastReturned, k);
  }
  // TODO since this method doesn't depend on the type at all, should it be "hoisted" into a
  // non type-specific superclass in it.unimi.dsi.fastutil?
  @Override
  public long back(long n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   final long remaining = pos - minPos;
   if (n < remaining) {
    pos -= n;
   } else {
    n = remaining;
    pos = minPos;
   }
   lastReturned = pos;
   return n;
  }
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/BigListIterators.drv
No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

import it.unimi.dsi.fastutil.Function;

/** A class providing static methods and objects that do useful things with type-specific functions.
*
```

```
* @see it.unimi.dsi.fastutil.Function
* @see java.util.Collections
*/

public final class FUNCTIONS {

 private FUNCTIONS() {}

 /** An immutable class representing an empty type-specific function.
  *
  * <p>This class may be useful to implement your own in case you subclass
  * a type-specific function.
  */

 public static class EmptyFunction KEY_VALUE_GENERIC extends ABSTRACT_FUNCTION
KEY_VALUE_GENERIC implements java.io.Serializable, Cloneable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected EmptyFunction() {}

  @Override
  public VALUE_GENERIC_TYPE GET_VALUE(final KEY_TYPE k) { return VALUE_NULL; }

  @Override
  public VALUE_GENERIC_TYPE getOrDefault(final KEY_TYPE k, final VALUE_GENERIC_TYPE
defaultValue) { return defaultValue; }

  @Override
  public boolean containsKey(final KEY_TYPE k) { return false; }

  @Override
  public VALUE_GENERIC_TYPE defaultReturnValue()  { return VALUE_NULL; }

  @Override
  public void defaultReturnValue(final VALUE_GENERIC_TYPE defRetValue)  { throw new
UnsupportedOperationException(); }

  @Override
  public int size() { return 0; }

  @Override
  public void clear() {}

  @Override
  public Object clone() { return EMPTY_FUNCTION; }

  @Override
```

```
 public int hashCode() { return 0; }

 @Override
 public boolean equals(final Object o) {
  if (! (o instanceof Function)) return false;
  return ((Function<?,?>)o).size() == 0;
 }

 @Override
 public String toString() { return "{}"; }

 private Object readResolve() { return EMPTY_FUNCTION; }
}


/** An empty type-specific function (immutable). It is serializable and cloneable. */

SUPPRESS_WARNINGS_KEY_VALUE_RAWTYPES
public static final EmptyFunction EMPTY_FUNCTION = new EmptyFunction();


/** An immutable class representing a type-specific singleton function. Note
 *  that the default return value is still settable.
 *
 * <p>Note that albeit the function is immutable, its default return value may be changed.
 *
 * <p>This class may be useful to implement your own in case you subclass
 * a type-specific function.
 */

public static class Singleton KEY_VALUE_GENERIC extends ABSTRACT_FUNCTION
KEY_VALUE_GENERIC implements java.io.Serializable, Cloneable {

 private static final long serialVersionUID = -7046029254386353129L;

 protected final KEY_GENERIC_TYPE key;
 protected final VALUE_GENERIC_TYPE value;

 protected Singleton(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE value) {
  this.key = key;
  this.value = value;
 }

 @Override
 public boolean containsKey(final KEY_TYPE k) { return KEY_EQUALS(key, k); }

 @Override
 public VALUE_GENERIC_TYPE GET_VALUE(final KEY_TYPE k) { return KEY_EQUALS(key, k) ? value :
```

```
defRetValue; }

  @Override
  public VALUE_GENERIC_TYPE getOrDefault(final KEY_TYPE k, final VALUE_GENERIC_TYPE
defaultValue) { return KEY_EQUALS(key, k) ? value : defaultValue; }

  @Override
  public int size() { return 1; }

  @Override
  public Object clone() { return this; }
 }

 /** Returns a type-specific immutable function containing only the specified pair.
  * The returned function is serializable and cloneable.
  *
  * <p>Note that albeit the returned function is immutable, its default return value may be changed.
  *
  * @param key the only key of the returned function.
  * @param value the only value of the returned function.
  * @return a type-specific immutable function containing just the pair {@code &lt;key,value&gt;}.
  */

 public static KEY_VALUE_GENERIC FUNCTION KEY_VALUE_GENERIC singleton(final
KEY_GENERIC_TYPE key, VALUE_GENERIC_TYPE value) {
  return new Singleton KEY_VALUE_GENERIC_DIAMOND(key, value);
 }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE

 /** Returns a type-specific immutable function containing only the specified pair. The returned function is
serializable and cloneable.
  *
  * <p>Note that albeit the returned function is immutable, its default return value may be changed.
  *
  * @param key the only key of the returned function.
  * @param value the only value of the returned function.
  * @return a type-specific immutable function containing just the pair {@code &lt;key,value&gt;}.
  */

 public static KEY_VALUE_GENERIC FUNCTION KEY_VALUE_GENERIC singleton(final
KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS value) {
  return new Singleton KEY_VALUE_GENERIC_DIAMOND(KEY_CLASS2TYPE(key),
VALUE_CLASS2TYPE(value));
 }

#endif
```

```
 /** A synchronized wrapper class for functions. */

 public static class SynchronizedFunction KEY_VALUE_GENERIC implements FUNCTION
KEY_VALUE_GENERIC, java.io.Serializable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected final FUNCTION KEY_VALUE_GENERIC function;
  protected final Object sync;

  protected SynchronizedFunction(final FUNCTION KEY_VALUE_GENERIC f, final Object sync) {
   if (f == null) throw new NullPointerException();
   this.function = f;
   this.sync = sync;
  }

  protected SynchronizedFunction(final FUNCTION KEY_VALUE_GENERIC f) {
   if (f == null) throw new NullPointerException();
   this.function = f;
   this.sync = this;
  }

#ifdef JDK_PRIMITIVE_FUNCTION

#if KEYS_BYTE_CHAR_SHORT_FLOAT
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#endif
  @Override
  public VALUE_GENERIC_TYPE_WIDENED
JDK_PRIMITIVE_FUNCTION_APPLY(KEY_GENERIC_TYPE_WIDENED operand) { synchronized(sync) {
return function.JDK_PRIMITIVE_FUNCTION_APPLY(operand); } }

#endif

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#endif
  @Override
  public VALUE_GENERIC_CLASS apply(final KEY_GENERIC_CLASS key) { synchronized (sync) { return
function.apply(key); } }

  @Override
  public int size() { synchronized(sync) { return function.size(); } }
```

```
  @Override
  public VALUE_GENERIC_TYPE defaultReturnValue()  { synchronized(sync) { return
function.defaultReturnValue(); } }

  @Override
  public void defaultReturnValue(final VALUE_GENERIC_TYPE defRetValue)  { synchronized(sync) {
function.defaultReturnValue(defRetValue); } }

  @Override
  public boolean containsKey(final KEY_TYPE k) { synchronized(sync) { return function.containsKey(k); } }

#if KEYS_PRIMITIVE

  @Deprecated
  @Override
  public boolean containsKey(final Object k) { synchronized(sync) { return function.containsKey(k); } }

#endif

  @Override
  public VALUE_GENERIC_TYPE put(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v) {
synchronized(sync) { return function.put(k, v); } }

  @Override
  public VALUE_GENERIC_TYPE GET_VALUE(final KEY_TYPE k) { synchronized(sync) { return
function.GET_VALUE(k); } }

  @Override
  public VALUE_GENERIC_TYPE getOrDefault(final KEY_TYPE k, final VALUE_GENERIC_TYPE
defaultValue) { synchronized(sync) { return function.getOrDefault(k, defaultValue); } }

  @Override
  public VALUE_GENERIC_TYPE REMOVE_VALUE(final KEY_TYPE k) { synchronized(sync) { return
function.REMOVE_VALUE(k); } }

  @Override
  public void clear() { synchronized(sync) { function.clear(); } }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public VALUE_GENERIC_CLASS put(final KEY_GENERIC_CLASS k, final VALUE_GENERIC_CLASS v) {
synchronized(sync) { return function.put(k, v); } }
```

```
 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public VALUE_GENERIC_CLASS get(final Object k) { synchronized(sync) { return function.get(k); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public VALUE_GENERIC_CLASS getOrDefault(final Object k, final VALUE_GENERIC_CLASS defaultValue)
{ synchronized(sync) { return function.getOrDefault(k, defaultValue); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public VALUE_GENERIC_CLASS remove(final Object k) { synchronized(sync) { return function.remove(k); } }

#endif

 @Override
 public int hashCode() { synchronized(sync) { return function.hashCode(); } }

 @Override
 public boolean equals(final Object o) {
  if (o == this) return true;
  synchronized(sync) { return function.equals(o); }
 }

 @Override
 public String toString() { synchronized(sync) { return function.toString(); } }

 private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
  synchronized(sync) { s.defaultWriteObject(); }
 }
}

/** Returns a synchronized type-specific function backed by the given type-specific function.
 *
 * @param f the function to be wrapped in a synchronized function.
 * @return a synchronized view of the specified function.
 * @see java.util.Collections#synchronizedMap(java.util.Map)
 */
public static KEY_VALUE_GENERIC FUNCTION KEY_VALUE_GENERIC synchronize(final FUNCTION
KEY_VALUE_GENERIC f) { return new SynchronizedFunction KEY_VALUE_GENERIC_DIAMOND(f); }

/** Returns a synchronized type-specific function backed by the given type-specific function, using an assigned
```

object to synchronize.
 *
 * @param f the function to be wrapped in a synchronized function.
 * @param sync an object that will be used to synchronize the access to the function.
 * @return a synchronized view of the specified function.
 * @see java.util.Collections#synchronizedMap(java.util.Map)
 */

public static KEY_VALUE_GENERIC FUNCTION KEY_VALUE_GENERIC synchronize(final FUNCTION KEY_VALUE_GENERIC f, final Object sync) { return new SynchronizedFunction KEY_VALUE_GENERIC_DIAMOND(f, sync); }

/** An unmodifiable wrapper class for functions. */

public static class UnmodifiableFunction KEY_VALUE_GENERIC extends ABSTRACT_FUNCTION KEY_VALUE_GENERIC implements java.io.Serializable {

 private static final long serialVersionUID = -7046029254386353129L;

 protected final FUNCTION KEY_VALUE_EXTENDS_GENERIC function;

 protected UnmodifiableFunction(final FUNCTION KEY_VALUE_EXTENDS_GENERIC f) {
  if (f == null) throw new NullPointerException();
  this.function = f;
 }

 @Override
 public int size() { return function.size(); }

 @Override
 public VALUE_GENERIC_TYPE defaultReturnValue() { return function.defaultReturnValue(); }

 @Override
 public void defaultReturnValue(final VALUE_GENERIC_TYPE defRetValue) { throw new UnsupportedOperationException(); }

 @Override
 public boolean containsKey(final KEY_TYPE k) { return function.containsKey(k); }

 @Override
 public VALUE_GENERIC_TYPE put(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v) { throw new UnsupportedOperationException(); }

 @Override
 public VALUE_GENERIC_TYPE GET_VALUE(final KEY_TYPE k) { return function.GET_VALUE(k); }

```
  @Override
#if KEYS_REFERENCE || VALUES_REFERENCE
  @SuppressWarnings("unchecked")
  public VALUE_GENERIC_TYPE getOrDefault(final KEY_TYPE k, final VALUE_GENERIC_TYPE
defaultValue) { return ((FUNCTION KEY_VALUE_GENERIC) function).getOrDefault(k, defaultValue); }
#else
  public VALUE_GENERIC_TYPE getOrDefault(final KEY_TYPE k, final VALUE_GENERIC_TYPE
defaultValue) { return function.getOrDefault(k, defaultValue); }
#endif

  @Override
  public VALUE_GENERIC_TYPE REMOVE_VALUE(final KEY_TYPE k) { throw new
UnsupportedOperationException(); }

  @Override
  public void clear() { throw new UnsupportedOperationException(); }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public VALUE_GENERIC_CLASS put(final KEY_GENERIC_CLASS k, final VALUE_GENERIC_CLASS v) {
throw new UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public VALUE_GENERIC_CLASS get(final Object k) { return function.get(k); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
#if KEYS_REFERENCE || VALUES_REFERENCE
  @SuppressWarnings("unchecked")
  public VALUE_GENERIC_CLASS getOrDefault(final Object k, final VALUE_GENERIC_CLASS defaultValue)
{ return ((FUNCTION KEY_VALUE_GENERIC)function).getOrDefault(k, defaultValue); }
#else
  public VALUE_GENERIC_CLASS getOrDefault(final Object k, final VALUE_GENERIC_CLASS defaultValue)
{ return function.getOrDefault(k, defaultValue); }
#endif

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
```

```
  public VALUE_GENERIC_CLASS remove(final Object k) { throw new UnsupportedOperationException(); }
#endif

  @Override
  public int hashCode() { return function.hashCode(); }

  @Override
  public boolean equals(Object o) { return o == this || function.equals(o); }

  @Override
  public String toString() { return function.toString(); }
 }

 /** Returns an unmodifiable type-specific function backed by the given type-specific function.
  *
  * @param f the function to be wrapped in an unmodifiable function.
  * @return an unmodifiable view of the specified function.
  * @see java.util.Collections#unmodifiableMap(java.util.Map)
  */
 public static KEY_VALUE_GENERIC FUNCTION KEY_VALUE_GENERIC unmodifiable(final FUNCTION
KEY_VALUE_EXTENDS_GENERIC f) { return new UnmodifiableFunction
KEY_VALUE_GENERIC_DIAMOND(f); }


#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
 /** An adapter for mapping generic total functions to partial primitive functions. */

 public static class PrimitiveFunction KEY_VALUE_GENERIC implements FUNCTION
KEY_VALUE_GENERIC {
  protected final java.util.function.Function<? super KEY_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> function;

  protected PrimitiveFunction(java.util.function.Function<? super KEY_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> function) {
   this.function = function;
  }

#if KEYS_PRIMITIVE
  @Override
  public boolean containsKey(KEY_GENERIC_TYPE key) { return function.apply(KEY2OBJ(key)) != null; }
#endif

  SUPPRESS_WARNINGS_KEY_UNCHECKED
#if KEYS_PRIMITIVE
  @Deprecated
#endif
  @Override
  public boolean containsKey(Object key) {
```

```
#if KEYS_PRIMITIVE
   if (key == null) return false;
#endif
   return function.apply(KEY_CLASS_CAST (key)) != null;
  }

  SUPPRESS_WARNINGS_KEY_UNCHECKED
  @Override
  public VALUE_GENERIC_TYPE GET_VALUE(KEY_TYPE key) {
   VALUE_GENERIC_CLASS v = function.apply(KEY_GENERIC_CAST KEY2OBJ(key));
#if VALUES_PRIMITIVE
   if (v == null) return defaultReturnValue();
#else
   if (v == null) return null;
#endif
   return VALUE_CLASS2TYPE(v);
  }

  SUPPRESS_WARNINGS_KEY_UNCHECKED
  @Override
  public VALUE_GENERIC_TYPE getOrDefault(KEY_TYPE key, VALUE_GENERIC_TYPE defaultValue) {
   VALUE_GENERIC_CLASS v = function.apply(KEY_GENERIC_CAST KEY2OBJ(key));
   if (v == null) return defaultValue;
   return VALUE_CLASS2TYPE(v);
  }

  SUPPRESS_WARNINGS_KEY_UNCHECKED
  @Deprecated
  @Override
  public VALUE_GENERIC_CLASS get(Object key) {
#if KEYS_PRIMITIVE
   if (key == null) return null;
#endif
   return function.apply(KEY_CLASS_CAST key);
  }

  SUPPRESS_WARNINGS_KEY_UNCHECKED
  @Deprecated
  @Override
  public VALUE_GENERIC_CLASS getOrDefault(Object key, VALUE_GENERIC_CLASS defaultValue) {
#if KEYS_PRIMITIVE
   if (key == null) return defaultValue;
#endif
   final VALUE_GENERIC_CLASS v;
   return (v = function.apply(KEY_CLASS_CAST key)) == null ? defaultValue : v;
  }

  @Deprecated
```

```
  @Override
  public VALUE_GENERIC_CLASS put(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS
value) { throw new UnsupportedOperationException(); }
 }

 /** Returns a (partial) type-specific function based on the given total generic function.
  * <p>The returned function contains all keys which are not mapped to {@code null}. If the function already
  * is a primitive function, it is returned without changes.
  * <p><strong>Warning</strong>: If the given function is a &ldquo;widened&rdquo; primitive function (e.g. an
  * {@code Int2IntFunction} given to {@code Short2ShortFunctions}), it still is wrapped into a proxy,
  * decreasing performance.
  *
  * @param f the function to be converted to a type-specific function.
  * @return a primitive view of the specified function.
  * @throws NullPointerException if {@code f} is null.
  * @see PrimitiveFunction
  * @since 8.1.0
  */
 SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
 public static KEY_VALUE_GENERIC FUNCTION KEY_VALUE_GENERIC primitive(final
java.util.function.Function<? super KEY_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> f) {
  java.util.Objects.requireNonNull(f);

  if (f instanceof FUNCTION) return (FUNCTION KEY_VALUE_GENERIC) f;
#if defined JDK_PRIMITIVE_FUNCTION
  if (f instanceof JDK_PRIMITIVE_FUNCTION)
#if KEYS_PRIMITIVE
#if VALUES_BYTE_CHAR_SHORT_FLOAT
   return key -> VALUE_NARROWING(((JDK_PRIMITIVE_FUNCTION KEY_VALUE_GENERIC)
f).JDK_PRIMITIVE_FUNCTION_APPLY(key));
#else
   return ((JDK_PRIMITIVE_FUNCTION KEY_VALUE_GENERIC) f)::JDK_PRIMITIVE_FUNCTION_APPLY;
#endif
#else
   return key -> VALUE_NARROWING(((JDK_PRIMITIVE_FUNCTION KEY_VALUE_GENERIC)
f).JDK_PRIMITIVE_FUNCTION_APPLY((K)(key)));
#endif
#endif
  return new PrimitiveFunction KEY_VALUE_GENERIC_DIAMOND(f);
 }
#endif
}
```

Found in path(s):

* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Functions.drv

No license file was found, but licenses were detected in source scan.

/*

```
package PACKAGE;

#if KEY_INDEX != VALUE_INDEX && !(KEYS_REFERENCE && VALUES_REFERENCE)
import VALUE_PACKAGE.VALUE_COLLECTION;
#endif

#if KEYS_PRIMITIVE
import it.unimi.dsi.fastutil.objects.ObjectSet;
import it.unimi.dsi.fastutil.objects.ObjectIterator;
#endif

import java.util.function.Consumer;
import java.util.Map;

#if !KEYS_USE_REFERENCE_EQUALITY && !VALUES_USE_REFERENCE_EQUALITY
/** A type-specific {@link Map}; provides some additional methods that use polymorphism to avoid (un)boxing, and handling of a default return value.
*
* <p>Besides extending the corresponding type-specific {@linkplain it.unimi.dsi.fastutil.Function function}, this interface strengthens {@link Map#entrySet()},
* {@link #keySet()} and {@link #values()}. Moreover, a number of methods, such as {@link #size()}, {@link #defaultReturnValue()}, etc., are un-defaulted
* as their function default do not make sense for a map.
* Maps returning entry sets of type {@link FastEntrySet} support also fast iteration.
*
* <p>A submap or subset may or may not have an
* independent default return value (which however must be initialized to the
* default return value of the originator).
*
* @see Map
*/
#else
```

/** A type-specific {@link Map}; provides some additional methods that use polymorphism to avoid (un)boxing, and handling of a default return value.
*
* <p>Besides extending the corresponding type-specific {@linkplain it.unimi.dsi.fastutil.Function function}, this interface strengthens {@link Map#entrySet()},
* {@link #keySet()} and {@link #values()}. Moreover, a number of methods, such as {@link #size()}, {@link #defaultReturnValue()}, etc., are un-defaulted
* as their function default do not make sense for a map.
* Maps returning entry sets of type {@link FastEntrySet} support also fast iteration.
*
* <p>This interface specifies reference equality semantics (members will be compared equal with
* {@code ==} instead of {@link Object#equals(Object) equals}) for its keys or values (or both), which may result in breaks in contract
* if attempted to be used with non reference-equality semantics based {@link Map}s. For example, a
* {@code aReferenceToIntMap.equals(aObjectToIntMap)} may return different a different result then
* {@code aObjectToIntMap.equals(aReferenceToIntMap)}, in violation of {@link Object#equals equals}'s
* contract requiring it being symmetric.
*
* <p>A submap or subset may or may not have an
* independent default return value (which however must be initialized to the
* default return value of the originator).
*
* @see Map
*/
#endif
public interface MAP KEY_VALUE_GENERIC extends FUNCTION KEY_VALUE_GENERIC, Map<KEY_GENERIC_CLASS,VALUE_GENERIC_CLASS> {

/** An entry set providing fast iteration.
*
* <p>In some cases (e.g., hash-based classes) iteration over an entry set requires the creation
* of a large number of {@link java.util.Map.Entry} objects. Some {@code fastutil}
* maps might return {@linkplain Map#entrySet() entry set} objects of type {@code FastEntrySet}: in this case, {@link #fastIterator() fastIterator()}
* will return an iterator that is guaranteed not to create a large number of objects, possibly
* by returning always the same entry (of course, mutated), and {@link #fastForEach(Consumer)} will apply
* the provided consumer to all elements of the entry set, which might be represented
* always by the same entry (of course, mutated).
*/

interface FastEntrySet KEY_VALUE_GENERIC extends ObjectSet<MAP.Entry KEY_VALUE_GENERIC> {
/** Returns a fast iterator over this entry set; the iterator might return always the same entry instance, suitably mutated.
*
* @return a fast iterator over this entry set; the iterator might return always the same {@link java.util.Map.Entry} instance, suitably mutated.
*/
ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> fastIterator();

```
 /** Iterates quickly over this entry set; the iteration might happen always on the same entry instance, suitably
mutated.
  *
  * <p>This default implementation just delegates to {@link #forEach(Consumer)}.
  *
  * @param consumer a consumer that will by applied to the entries of this set; the entries might be represented
  * by the same entry instance, suitably mutated.
  * @since 8.1.0
  */
 default void fastForEach(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> consumer) {
  forEach(consumer);
 }
 }

 /**
  * Returns the number of key/value mappings in this map.  If the
  * map contains more than {@link Integer#MAX_VALUE} elements, returns {@link Integer#MAX_VALUE}.
  *
  * @return the number of key-value mappings in this map.
  * @see it.unimi.dsi.fastutil.Size64
  */

 @Override
 int size();

 /** Removes all of the mappings from this map (optional operation).
  * The map will be empty after this call returns.
  *
  * @throws UnsupportedOperationException if the {@link #clear()} operation is not supported by this map
  */

 @Override
 default void clear() { throw new UnsupportedOperationException(); }

#if VALUES_PRIMITIVE
 /** Sets the default return value (optional operation).
  *
  * This value must be returned by type-specific versions of {@code get()},
  * {@code put()} and {@code remove()} to denote that the map does not contain
  * the specified key. It must be 0/{@code false} by default.
  *
  * @param rv the new default return value.
  * @see #defaultReturnValue()
  */
#else
 /** Sets the default return value (optional operation).
  *
```

```
 * This value must be returned by type-specific versions of {@code get()},
 * {@code put()} and {@code remove()} to denote that the map does not contain
 * the specified key. It must be {@code null} by default.
 *
 * <p><strong>Warning</strong>: Changing this to a non-null value can have
 * unforeseen consequences. Especially, it breaks compatibility with the
 * specifications of Java's {@link java.util.Map} interface. It has to be
 * used with great care and thorough study of all method comments is
 * recommended.
 *
 * @param rv the new default return value.
 * @see #defaultReturnValue()
 */
#endif

 @Override
 void defaultReturnValue(VALUE_GENERIC_TYPE rv);

 /** Gets the default return value.
  *
  * @return the current default return value.
  */

 @Override
 VALUE_GENERIC_TYPE defaultReturnValue();

 /** Returns a type-specific set view of the mappings contained in this map.
  *
  * <p>This method is necessary because there is no inheritance along
  * type parameters: it is thus impossible to strengthen {@link Map#entrySet()}
  * so that it returns an {@link it.unimi.dsi.fastutil.objects.ObjectSet}
  * of type-specific entries (the latter makes it possible to
  * access keys and values with type-specific methods).
  *
  * @return a type-specific set view of the mappings contained in this map.
  * @see Map#entrySet()
  */
 ObjectSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET();

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
 /** Returns a set view of the mappings contained in this map.
  *  @apiNote Note that this specification strengthens the one given in {@link Map#entrySet()}.
  *
  * @return a set view of the mappings contained in this map.
  * @see Map#entrySet()
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
```

```
 @Override
 @SuppressWarnings({ "unchecked", "rawtypes" })
 default ObjectSet<Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS>> entrySet() {
  return (ObjectSet)ENTRYSET();
 }
#else
 /** Returns a set view of the mappings contained in this map.
  *  @apiNote Note that this specification strengthens the one given in {@link Map#entrySet()}.
  *
  * @return a set view of the mappings contained in this map.
  * @see Map#entrySet()
  */

 @Override
 @SuppressWarnings({ "unchecked", "rawtypes" })
 default ObjectSet<Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS>> entrySet() {
  return (ObjectSet)ENTRYSET();
 }
#endif

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding type-specific&ndash;{@linkplain
it.unimi.dsi.fastutil.Function function} method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
#else
 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding function method.
  */
#endif
 @Override
 default VALUE_GENERIC_CLASS put(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS
value) {
  return FUNCTION.super.put(key, value);
 }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE

 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding type-specific&ndash;{@linkplain
it.unimi.dsi.fastutil.Function function} method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default VALUE_GENERIC_CLASS get(final Object key) {
  return FUNCTION.super.get(key);
 }
```

```
#endif

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding type-specific&ndash;{@linkplain
it.unimi.dsi.fastutil.Function function} method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
#else
 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding type-specific&ndash;{@linkplain
it.unimi.dsi.fastutil.Function function} method.
  */
#endif
 @Override
 default VALUE_GENERIC_CLASS remove(final Object key) {
  return FUNCTION.super.remove(key);
 }

 /** {@inheritDoc}
  * @apiNote Note that this specification strengthens the one given in {@link Map#keySet()}.
  * @return a set view of the keys contained in this map.
  * @see Map#keySet()
  */

 @Override
 SET KEY_GENERIC keySet();

 /** {@inheritDoc}
  * @apiNote Note that this specification strengthens the one given in {@link Map#values()}.
  * @return a set view of the values contained in this map.
  * @see Map#values()
  */

 @Override
 VALUE_COLLECTION VALUE_GENERIC values();

#if KEYS_PRIMITIVE

 /** Returns true if this function contains a mapping for the specified key.
  *
  * @param key the key.
  * @return true if this function associates a value to {@code key}.
  * @see Map#containsKey(Object)
  */

 @Override
```

```
 boolean containsKey(KEY_TYPE key);

 /** Returns true if this function contains a mapping for the specified key.
  * <p>This default implementation just delegates to the corresponding type-specific&ndash;{@linkplain
it.unimi.dsi.fastutil.Function function} method.
  * @deprecated Please use the corresponding type-specific method instead.
  */

 @Deprecated
 @Override
 default boolean containsKey(final Object key) {
  return FUNCTION.super.containsKey(key);
 }
#else

 /** Returns true if this function contains a mapping for the specified key.
  *
  * @param key the key.
  * @return true if this function associates a value to {@code key}.
  * @see Map#containsKey(Object)
  */

 @Override
 boolean containsKey(Object key);

#endif

#if VALUES_PRIMITIVE

 /** Returns {@code true} if this map maps one or more keys to the specified value.
  * @see Map#containsValue(Object)
  */

 boolean containsValue(VALUE_TYPE value);

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */

 @Deprecated
 @Override
 default boolean containsValue(final Object value) {
  return value == null ? false : containsValue(VALUE_OBJ2TYPE(value));
 }

#endif

 // Defaultable methods
```

```
 @Override
 default void forEach(final java.util.function.BiConsumer<? super KEY_GENERIC_CLASS, ? super
VALUE_GENERIC_CLASS> consumer) {
  final ObjectSet<MAP.Entry KEY_VALUE_GENERIC> entrySet = ENTRYSET();
  final Consumer<MAP.Entry KEY_VALUE_GENERIC> wrappingConsumer = (entry) ->
consumer.accept(KEY2OBJ(entry.ENTRY_GET_KEY()), VALUE2OBJ(entry.ENTRY_GET_VALUE()));
  if (entrySet instanceof FastEntrySet) {
   ((FastEntrySet KEY_VALUE_GENERIC)entrySet).fastForEach(wrappingConsumer);
  } else {
   entrySet.forEach(wrappingConsumer);
  }
 }


 /** Returns the value to which the specified key is mapped, or the {@code defaultValue} if this
  * map contains no mapping for the key.
  *
  * @param key the key.
  * @param defaultValue the default mapping of the key.
  *
  * @return the value to which the specified key is mapped, or the {@code defaultValue} if this map contains no
mapping for the key.
  *
  * @see java.util.Map#getOrDefault(Object, Object)
  * @since 8.0.0
  */
 @Override
 default VALUE_GENERIC_TYPE getOrDefault(final KEY_TYPE key, final VALUE_GENERIC_TYPE
defaultValue) {
  final VALUE_GENERIC_TYPE v;
  return ((v = GET_VALUE(key)) != defaultReturnValue() || containsKey(key)) ? v : defaultValue;
 }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding {@link Map} method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default VALUE_GENERIC_CLASS getOrDefault(final Object key, final VALUE_GENERIC_CLASS
defaultValue) {
  return Map.super.getOrDefault(key, defaultValue);
 }
#endif

 /** If the specified key is not already associated with a value, associates it with the given
  * value and returns the {@linkplain #defaultReturnValue() default return value}, else returns
  * the current value.
```

```
 *
 * @param key key with which the specified value is to be associated.
 * @param value value to be associated with the specified key.
 *
 * @return the previous value associated with the specified key, or the {@linkplain #defaultReturnValue() default
return value} if there was no mapping for the key.
 *
 * @see java.util.Map#putIfAbsent(Object, Object)
 * @since 8.0.0
 */

default VALUE_GENERIC_TYPE putIfAbsent(final KEY_GENERIC_TYPE key, final
VALUE_GENERIC_TYPE value) {
 final VALUE_GENERIC_TYPE v = GET_VALUE(key), drv = defaultReturnValue();
 if (v != drv || containsKey(key)) return v;
 put(key, value);
 return drv;
}

/** Removes the entry for the specified key only if it is currently mapped to the specified value.
 *
 * @param key key with which the specified value is associated.
 * @param value value expected to be associated with the specified key.
 *
 * @return {@code true} if the value was removed.
 *
 * @see java.util.Map#remove(Object, Object)
 * @since 8.0.0
 */

default boolean remove(final KEY_TYPE key, final VALUE_TYPE value) {
 final VALUE_GENERIC_TYPE curValue = GET_VALUE(key);
 if (!VALUE_EQUALS(curValue, value) || (curValue == defaultReturnValue() && !containsKey(key))) return false;
 REMOVE_VALUE(key);
 return true;
}

/** Replaces the entry for the specified key only if currently mapped to the specified value.
 *
 * @param key key with which the specified value is associated.
 * @param oldValue value expected to be associated with the specified key.
 * @param newValue value to be associated with the specified key.
 *
 * @return {@code true} if the value was replaced.
 *
 * @see java.util.Map#replace(Object, Object, Object)
 * @since 8.0.0
 */
```

```
 default boolean replace(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE oldValue, final
VALUE_GENERIC_TYPE newValue) {
  final VALUE_GENERIC_TYPE curValue = GET_VALUE(key);
  if (!VALUE_EQUALS(curValue, oldValue) || (curValue == defaultReturnValue() && !containsKey(key))) return
false;
  put(key, newValue);
  return true;
 }

 /** Replaces the entry for the specified key only if it is currently mapped to some value.
  *
  * @param key key with which the specified value is associated.
  * @param value value to be associated with the specified key.
  *
  * @return the previous value associated with the specified key, or the {@linkplain #defaultReturnValue() default
return value} if there was no mapping for the key.
  *
  * @see java.util.Map#replace(Object, Object)
  * @since 8.0.0
  */

 default VALUE_GENERIC_TYPE replace(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE
value) { return containsKey(key) ? put(key, value) : defaultReturnValue(); }

#ifdef JDK_PRIMITIVE_FUNCTION

 /** If the specified key is not already associated with a value, attempts to compute its value
  * using the given mapping function and enters it into this map.
  *
  * <p>Note that contrarily to the default {@linkplain java.util.Map#computeIfAbsent(Object,
java.util.function.Function) computeIfAbsent()},
  * it is not possible to not add a value for a given key, since the {@code mappingFunction} cannot
  * return {@code null}. If such a behavior is needed, please use the corresponding <em>nullable</em> version.
  *
  * @apiNote all {@code computeIfAbsent()} methods have a different logic based on the argument;
  * no delegation is performed, contrarily to other superficially similar
  * methods such as {@link java.util.Iterator#forEachRemaining} or {@link java.util.List#replaceAll}.
  *
  * @param key key with which the specified value is to be associated.
  * @param mappingFunction the function to compute a value.
  *
  * @return the current (existing or computed) value associated with the specified key.
  *
  * @see java.util.Map#computeIfAbsent(Object, java.util.function.Function)
  * @since 8.0.0
  */
```

```
 default VALUE_GENERIC_TYPE computeIfAbsent(final KEY_GENERIC_TYPE key, final
JDK_PRIMITIVE_FUNCTION KEY_SUPER_GENERIC_VALUE_EXTENDS_GENERIC mappingFunction) {
  java.util.Objects.requireNonNull(mappingFunction);
  final VALUE_GENERIC_TYPE v = GET_VALUE(key);
  if (v != defaultReturnValue() || containsKey(key)) return v;

  VALUE_GENERIC_TYPE newValue =
VALUE_NARROWING(mappingFunction.JDK_PRIMITIVE_FUNCTION_APPLY(key));
  put(key, newValue);
  return newValue;
 }

#if KEYS_REFERENCE
 /**
  * @deprecated Please use {@code computeIfAbsent()} instead.
  */
 @Deprecated
 default VALUE_GENERIC_TYPE COMPUTE_IF_ABSENT_JDK(final KEY_GENERIC_TYPE key, final
JDK_PRIMITIVE_FUNCTION KEY_SUPER_GENERIC_VALUE_EXTENDS_GENERIC mappingFunction) {
  return computeIfAbsent(key, mappingFunction);
 }
#endif

#endif

#if KEYS_PRIMITIVE && VALUES_PRIMITIVE

 /** If the specified key is not already associated with a value, attempts to compute its value
  * using the given mapping function and enters it into this map unless it is {@code null}.
  *
  * <p>Note that this version of {@linkplain java.util.Map#computeIfAbsent(Object, java.util.function.Function)
computeIfAbsent()}
  * should be used only if you plan to return {@code null} in the mapping function.
  *
  * @param key key with which the specified value is to be associated.
  * @param mappingFunction the function to compute a value.
  *
  * @return the current (existing or computed) value associated with the specified key,
  * or the {@linkplain #defaultReturnValue() default return value} if the computed value is {@code null}.
  *
  * @see java.util.Map#computeIfAbsent(Object, java.util.function.Function)
  * @since 8.0.0
  */

 default VALUE_GENERIC_TYPE COMPUTE_IF_ABSENT_NULLABLE(final KEY_GENERIC_TYPE key,
final JDK_KEY_TO_GENERIC_FUNCTION<? extends VALUE_GENERIC_CLASS> mappingFunction) {
  java.util.Objects.requireNonNull(mappingFunction);
  final VALUE_GENERIC_TYPE v = GET_VALUE(key), drv = defaultReturnValue();
```

```
 if (v != drv || containsKey(key)) return v;

 VALUE_GENERIC_CLASS mappedValue = mappingFunction.apply(key);
 if (mappedValue == null) return drv;
 VALUE_GENERIC_TYPE newValue = VALUE_CLASS2TYPE(mappedValue);
 put(key, newValue);
 return newValue;
}

#endif

/** If the specified key is not already associated with a value, attempts to compute its value
 * using the given mapping function and enters it into this map, unless the key is not present
 * in the given mapping function.
 *
 * <p>This version of {@linkplain java.util.Map#computeIfAbsent(Object, java.util.function.Function)
computeIfAbsent()}
 * uses a type-specific version of {@code fastutil}'s {@link it.unimi.dsi.fastutil.Function Function}.
 * Since {@link it.unimi.dsi.fastutil.Function Function} has a {@link
it.unimi.dsi.fastutil.Function#containsKey(Object) containsKey()}
 * method, it is possible to avoid adding a key by having {@code containsKey()} return {@code false} for that key.
 *
 * @apiNote all {@code computeIfAbsent()} methods have a different logic based on the argument;
 * no delegation is performed, contrarily to other superficially similar
 * methods such as {@link java.util.Iterator#forEachRemaining} or {@link java.util.List#replaceAll}.
 *
 * @param key key with which the specified value is to be associated.
 * @param mappingFunction the function to compute a value.
 *
 * @return the current (existing or computed) value associated with the specified key.
 *
 * @see java.util.Map#computeIfAbsent(Object, java.util.function.Function)
 * @since 8.0.0
 */

default VALUE_GENERIC_TYPE computeIfAbsent(final KEY_GENERIC_TYPE key, final FUNCTION
KEY_SUPER_GENERIC_VALUE_EXTENDS_GENERIC mappingFunction) {
 java.util.Objects.requireNonNull(mappingFunction);
 final VALUE_GENERIC_TYPE v = GET_VALUE(key), drv = defaultReturnValue();
 if (v != drv || containsKey(key)) return v;

 if (!mappingFunction.containsKey(key)) return drv;
 VALUE_GENERIC_TYPE newValue = mappingFunction.GET_VALUE(key);
 put(key, newValue);
 return newValue;
}

/**
```

```
  * @deprecated Please use {@code computeIfAbsent()} instead.
  */
 @Deprecated
 default VALUE_GENERIC_TYPE COMPUTE_IF_ABSENT_PARTIAL(final KEY_GENERIC_TYPE key, final
FUNCTION KEY_SUPER_GENERIC_VALUE_EXTENDS_GENERIC mappingFunction) {
  return computeIfAbsent(key, mappingFunction);
 }


 /** If the value for the specified key is present, attempts to compute a new mapping given the key and its current
mapped value.
  *
  * @apiNote The JDK specification for this method equates not being associated with a value with being associated
with {code null}.
  * This is not the case for this method.
  *
  * @param key key with which the specified value is to be associated.
  * @param remappingFunction the function to compute a value.
  *
  * @return the new value associated with the specified key, or the {@linkplain #defaultReturnValue() default return
value} if none.
  *
  * @see java.util.Map#computeIfPresent(Object, java.util.function.BiFunction)
  * @since 8.0.0
  */

 default VALUE_GENERIC_TYPE COMPUTE_IF_PRESENT(final KEY_GENERIC_TYPE key, final
java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> remappingFunction) {
  java.util.Objects.requireNonNull(remappingFunction);

  final VALUE_GENERIC_TYPE oldValue = GET_VALUE(key), drv = defaultReturnValue();
  if (oldValue == drv && !containsKey(key)) return drv;
  final VALUE_GENERIC_CLASS newValue = remappingFunction.apply(KEY2OBJ(key),
VALUE2OBJ(oldValue));

  if (newValue == null) { REMOVE_VALUE(key); return drv; }

#if VALUES_PRIMITIVE
  VALUE_GENERIC_TYPE newVal = VALUE_CLASS2TYPE(newValue);
  put(key, newVal);
  return newVal;
#else
  put(key, newValue);
  return newValue;
#endif
 }
```

```
 /** Attempts to compute a mapping for the specified key and its current mapped value (or {@code null} if there is
no current mapping).
  *
  * <p>If the function returns {@code null}, the mapping is removed (or remains absent if initially absent).
  * If the function itself throws an (unchecked) exception, the exception is rethrown, and the current mapping is left
unchanged.
  *
  * @param key key with which the specified value is to be associated.
  * @param remappingFunction the function to compute a value.
  *
  * @return the new value associated with the specified key, or the {@linkplain #defaultReturnValue() default return
value} if none.
  *
  * @see java.util.Map#compute(Object, java.util.function.BiFunction)
  * @since 8.0.0
  */

 default VALUE_GENERIC_TYPE COMPUTE(final KEY_GENERIC_TYPE key, final
java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> remappingFunction) {
  java.util.Objects.requireNonNull(remappingFunction);
  final VALUE_GENERIC_TYPE oldValue = GET_VALUE(key), drv = defaultReturnValue();
  final boolean contained = oldValue != drv || containsKey(key);
  final VALUE_GENERIC_CLASS newValue = remappingFunction.apply(KEY2OBJ(key), contained ?
VALUE2OBJ(oldValue) : null);

  if (newValue == null) {
   if (contained) REMOVE_VALUE(key);
   return drv;
  }
#if VALUES_PRIMITIVE
  final VALUE_GENERIC_TYPE newVal = VALUE_CLASS2TYPE(newValue);
  put(key, newVal);
  return newVal;
#else
  put(key, newValue);
  return newValue;
#endif
 }

 /**
  * If the specified key is not already associated with a value, associates it with the given {@code value}.
  * Otherwise, replaces the associated value with the results of the given remapping function, or removes if the result
is {@code null}.
  *
  * @apiNote The JDK specification for this method equates not being associated with a value with being associated
with {code null}.
  * This is not the case for this method.
```

```
 *
 * @param key key with which the resulting value is to be associated.
 * @param value the value to be merged with the existing value associated with the key or, if no existing value is
associated with the key, to be associated with the key.
 * @param remappingFunction the function to recompute a value if present.
 *
 * @return the new value associated with the specified key, or the {@linkplain #defaultReturnValue() default return
value} if no value is associated with the key.
 *
 * @see java.util.Map#merge(Object, Object, java.util.function.BiFunction)
 * @since 8.0.0
 */
default VALUE_GENERIC_TYPE merge(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE
value, final java.util.function.BiFunction<? super VALUE_GENERIC_CLASS, ? super
VALUE_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> remappingFunction) {
 java.util.Objects.requireNonNull(remappingFunction);
 REQUIRE_VALUE_NON_NULL(value)

 final VALUE_GENERIC_TYPE oldValue = GET_VALUE(key), drv = defaultReturnValue();
 final VALUE_GENERIC_TYPE newValue;
 if (oldValue != drv || containsKey(key)) {
  final VALUE_GENERIC_CLASS mergedValue = remappingFunction.apply(VALUE2OBJ(oldValue),
VALUE2OBJ(value));
  if (mergedValue == null) { REMOVE_VALUE(key); return drv; }
  newValue = VALUE_CLASS2TYPE(mergedValue);
 } else {
  newValue = value;
 }

 put(key, newValue);
 return newValue;
}

#if VALUES_PRIMITIVE && ! VALUE_CLASS_Boolean

/**
 * If the specified key is not already associated with a value, associates it with the given {@code value}.
 * Otherwise, replaces the associated value with the results of the given remapping function.
 *
 * @apiNote The JDK specification for this method equates not being associated with a value with being associated
with {code null}.
 * This is not the case for this method. Moreover, this method cannot delete entries as the type-specific remapping
 * function cannot return {@code null}.
 *
 * @param key key with which the resulting value is to be associated.
 * @param value the value to be merged with the existing value associated with the key or, if no existing value is
associated with the key, to be associated with the key.
 * @param remappingFunction the function to recompute a value if present.
```

```
 *
 * @return the new value associated with the specified key.
 *
 * @see java.util.Map#merge(Object, Object, java.util.function.BiFunction)
 * @since 8.5.0
 */
default VALUE_TYPE MERGE_VALUE(final KEY_GENERIC_TYPE key, final VALUE_TYPE value, final
METHOD_ARG_VALUE_BINARY_OPERATOR remappingFunction) {
 java.util.Objects.requireNonNull(remappingFunction);
 final VALUE_TYPE oldValue = GET_VALUE(key), drv = defaultReturnValue();
 final VALUE_TYPE newValue = oldValue != drv || containsKey(key) ?
remappingFunction.VALUE_OPERATOR_APPLY(oldValue, value) : value;
 put(key, newValue);
 return newValue;
}

#if VALUES_INT_LONG_DOUBLE
// Because our primitive BinaryOperator interface extends both the JDK's primitive
// and object BinaryOperator interfaces, calling this method with it would be ambiguous.
// This overload exists to pass it to the proper primitive overload.
/**
 * If the specified key is not already associated with a value, associates it with the given {@code value}.
 * Otherwise, replaces the associated value with the results of the given remapping function.
 *
 * @apiNote The JDK specification for this method equates not being associated with a value with being associated
with {code null}.
 * This is not the case for this method. Moreover, this method cannot delete entries as the type-specific remapping
 * function cannot return {@code null}.
 *
 * <p><b>WARNING</b>: Overriding this method is almost always a mistake, as this
 * overload only exists to disambiguate. Instead, override the overload
 * that uses the JDK's primitive binary operator (e.g. {@link java.util.function.IntBinaryOperator}).
 *
 * <p>If Java supported final default methods, this would be one, but sadly it does not.
 *
 * <p>If you checked and are overriding the version with {@code java.util.function.XBinaryOperator}, and
 * still see this warning, then your IDE is incorrectly conflating this method with the proper
 * method to override, and you can safely ignore this message.
 *
 * @param key key with which the resulting value is to be associated.
 * @param value the value to be merged with the existing value associated with the key or, if no existing value is
associated with the key, to be associated with the key.
 * @param remappingFunction the function to recompute a value if present.
 *
 * @see java.util.Map#merge(Object, Object, java.util.function.BiFunction)
 * @since 8.5.1
 */
```

```
 default VALUE_TYPE MERGE_VALUE(final KEY_GENERIC_TYPE key, final VALUE_TYPE value, final
VALUE_PACKAGE.VALUE_BINARY_OPERATOR remappingFunction) {
  return MERGE_VALUE(key, value, (JDK_PRIMITIVE_VALUE_BINARY_OPERATOR)remappingFunction);
 }
#else
 /**
  * If the specified key is not already associated with a value, associates it with the given {@code value}.
  * Otherwise, replaces the associated value with the results of the given remapping function.
  *
  * @apiNote The JDK specification for this method equates not being associated with a value with being associated
with {code null}.
  * This is not the case for this method. Moreover, this method cannot delete entries as the type-specific remapping
  * function cannot return {@code null}.
  *
  * @param key key with which the resulting value is to be associated.
  * @param value the value to be merged with the existing value associated with the key or, if no existing value is
associated with the key, to be associated with the key.
  * @param remappingFunction the function to recompute a value if present.
  *
  * @return the new value associated with the specified key.
  *
  * @see java.util.Map#merge(Object, Object, java.util.function.BiFunction)
  * @since 8.5.0
  * @implNote Unless the argument is type-specific, this method will introduce an intermediary
  *   lambda to perform narrowing and widening casts. Please use the type-specific overload to avoid this overhead.
  */

 default VALUE_TYPE MERGE_VALUE(final KEY_GENERIC_TYPE key, final VALUE_TYPE value, final
JDK_PRIMITIVE_VALUE_BINARY_OPERATOR remappingFunction) {
  return MERGE_VALUE(key, value, remappingFunction instanceof
METHOD_ARG_VALUE_BINARY_OPERATOR ?
(METHOD_ARG_VALUE_BINARY_OPERATOR)remappingFunction : (x, y) ->
VALUE_NARROWING(remappingFunction.JDK_PRIMITIVE_VALUE_OPERATOR_APPLY(x, y)));
 }

#endif

#if KEYS_REFERENCE

 /**
  * @deprecated Please use {@code merge()} instead.
  */
 @Deprecated
 default VALUE_GENERIC_TYPE MERGE(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE
value, final java.util.function.BiFunction<? super VALUE_GENERIC_CLASS, ? super
VALUE_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> remappingFunction) {
  return merge(key, value, remappingFunction);
 }
```

```
#endif

 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding {@link Map} method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default VALUE_GENERIC_CLASS putIfAbsent(final KEY_GENERIC_CLASS key, final
VALUE_GENERIC_CLASS value) {
  return Map.super.putIfAbsent(key, value);
 }

 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding {@link Map} method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default boolean remove(final Object key, final Object value) {
  return Map.super.remove(key, value);
 }

 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding {@link Map} method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default boolean replace(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS oldValue, final
VALUE_GENERIC_CLASS newValue) {
  return Map.super.replace(key, oldValue, newValue);
 }

 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding {@link Map} method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default VALUE_GENERIC_CLASS replace(final KEY_GENERIC_CLASS key, final
VALUE_GENERIC_CLASS value) {
  return Map.super.replace(key, value);
 }

#if KEYS_PRIMITIVE

 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding {@link Map} method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
```

```
 @Override
 default VALUE_GENERIC_CLASS computeIfAbsent(final KEY_GENERIC_CLASS key, final
java.util.function.Function<? super KEY_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS>
mappingFunction) {
  return Map.super.computeIfAbsent(key, mappingFunction);
 }

 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding {@link Map} method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default VALUE_GENERIC_CLASS computeIfPresent(final KEY_GENERIC_CLASS key, final
java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> remappingFunction) {
  return Map.super.computeIfPresent(key, remappingFunction);
 }

 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding {@link Map} method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default VALUE_GENERIC_CLASS compute(final KEY_GENERIC_CLASS key, final
java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> remappingFunction) {
  return Map.super.compute(key, remappingFunction);
 }

#endif

 /** {@inheritDoc}
  * <p>This default implementation just delegates to the corresponding {@link Map} method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default VALUE_GENERIC_CLASS merge(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS
value, final java.util.function.BiFunction<? super VALUE_GENERIC_CLASS, ? super
VALUE_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> remappingFunction) {
  return Map.super.merge(key, value, remappingFunction);
 }

#endif

 /** A type-specific {@link java.util.Map.Entry}; provides some additional methods
  *  that use polymorphism to avoid (un)boxing.
  *
  * @see java.util.Map.Entry
```

```
 */

interface Entry KEY_VALUE_GENERIC extends Map.Entry
<KEY_GENERIC_CLASS,VALUE_GENERIC_CLASS> {

#if KEYS_PRIMITIVE
 /** Returns the key corresponding to this entry.
  * @see java.util.Map.Entry#getKey()
  */
 KEY_TYPE ENTRY_GET_KEY();

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default KEY_GENERIC_CLASS getKey() {
  return KEY2OBJ(ENTRY_GET_KEY());
 }
#endif

#if VALUES_PRIMITIVE
 /** Returns the value corresponding to this entry.
  * @see java.util.Map.Entry#getValue()
  */
 VALUE_TYPE ENTRY_GET_VALUE();

 /** Replaces the value corresponding to this entry with the specified value (optional operation).
  * @see java.util.Map.Entry#setValue(Object)
  */
 VALUE_TYPE setValue(final VALUE_TYPE value);

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default VALUE_GENERIC_CLASS getValue() {
  return VALUE2OBJ(ENTRY_GET_VALUE());
 }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default VALUE_GENERIC_CLASS setValue(final VALUE_GENERIC_CLASS value) {
  return VALUE2OBJ(setValue(VALUE_CLASS2TYPE(value)));
 }
#endif
}
```

}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Map.drv
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Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/chars/CharBigSpliterators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/ShortBigSpliterators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectBigSpliterators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongBigSpliterators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/floats/FloatBigSpliterators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleBigSpliterators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntBigSpliterators.java
No license file was found, but licenses were detected in source scan.

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*/


package PACKAGE;

import java.util.Collection;
import java.util.Set;
import java.util.function.Consumer;
#if KEYS_BYTE_CHAR_SHORT_FLOAT
import WIDENED_PACKAGE.KEY_WIDENED_ITERATOR;
import WIDENED_PACKAGE.WIDENED_ITERATORS;
import WIDENED_PACKAGE.KEY_WIDENED_SPLITERATOR;
import WIDENED_PACKAGE.WIDENED_SPLITERATORS;
#endif

/** A class providing static methods and objects that do useful things with type-specific sets.
*
* @see java.util.Collections
*/

public final class SETS {

 private SETS() {}

 /** The maximum size to choose ArraySet over OpenHashSet for utilites that automatically choose. */
 static final int ARRAY_SET_CUTOFF = 4;

 /** An immutable class representing the empty set and implementing a type-specific set interface.
  *
  * <p>This class may be useful to implement your own in case you subclass
  * a type-specific set.
  */

 public static class EmptySet KEY_GENERIC extends COLLECTIONS.EmptyCollection KEY_GENERIC
implements SET KEY_GENERIC, java.io.Serializable, Cloneable {
  private static final long serialVersionUID = -7046029254386353129L;

  protected EmptySet() {}

  @Override
  public boolean remove(KEY_TYPE ok) { throw new UnsupportedOperationException(); }

  @Override
```

```
  public Object clone() { return EMPTY_SET; }

  @Override
  @SuppressWarnings("rawtypes")
  public boolean equals(final Object o) { return o instanceof Set && ((Set)o).isEmpty(); }

#if KEYS_PRIMITIVE
  @Deprecated
  @Override
  public boolean rem(final KEY_TYPE k) { return super.rem(k); }
#endif

  private Object readResolve() { return EMPTY_SET; }
 }


 /** An empty set (immutable). It is serializable and cloneable.
  */
 SUPPRESS_WARNINGS_KEY_RAWTYPES
 public static final EmptySet EMPTY_SET = new EmptySet();

 // Used by Sets.of() instead of SETS.EMPTY_SET to make a dimorphic call site.
 // See https://github.com/vigna/fastutil/issues/183
 SUPPRESS_WARNINGS_KEY_UNCHECKED_RAWTYPES
 static final SET UNMODIFIABLE_EMPTY_SET = SETS.unmodifiable(new
ARRAY_SET(ARRAYS.EMPTY_ARRAY));

 /** Returns an empty set (immutable). It is serializable and cloneable.
  *
  * <p>This method provides a typesafe access to {@link #EMPTY_SET}.
  * @return an empty set (immutable).
  */
 @SuppressWarnings("unchecked")
 public static KEY_GENERIC SET KEY_GENERIC emptySet() {
  return EMPTY_SET;
 }

 /** An immutable class representing a type-specific singleton set.
  *
  * <p>This class may be useful to implement your own in case you subclass
  * a type-specific set.
  */

 public static class Singleton KEY_GENERIC extends ABSTRACT_SET KEY_GENERIC implements
java.io.Serializable, Cloneable {

  private static final long serialVersionUID = -7046029254386353129L;
```

```
  protected final KEY_GENERIC_TYPE element;

  protected Singleton(final KEY_GENERIC_TYPE element) {
   this.element = element;
  }

  @Override
  public boolean contains(final KEY_TYPE k) { return KEY_EQUALS(k, element); }

  @Override
  public boolean remove(final KEY_TYPE k) { throw new UnsupportedOperationException(); }

  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC iterator() { return ITERATORS.singleton(element); }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC spliterator() { return SPLITERATORS.singleton(element); }

  @Override
  public int size() { return 1; }

  @Override
  public KEY_TYPE[] TO_KEY_ARRAY() { return new KEY_TYPE[]{element}; }

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void forEach(final Consumer<? super KEY_GENERIC_CLASS> action) {
action.accept(KEY2OBJ(element)); }

  @Override
  public boolean addAll(final Collection<? extends KEY_GENERIC_CLASS> c) { throw new
UnsupportedOperationException(); }

  @Override
  public boolean removeAll(final Collection<?> c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean retainAll(final Collection<?> c) { throw new UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
  @Deprecated
#endif
  @Override
  public boolean removeIf(final java.util.function.Predicate<? super KEY_GENERIC_CLASS> filter) { throw new
UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
```

```
  @Override
  public void forEach(final METHOD_ARG_KEY_CONSUMER action) { action.accept(element); }

  @Override
  public boolean addAll(final COLLECTION c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean removeAll(final COLLECTION c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean retainAll(final COLLECTION c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean removeIf(final METHOD_ARG_PREDICATE filter) { throw new
UnsupportedOperationException(); }

#if KEYS_BYTE_CHAR_SHORT_FLOAT
  @Override
  public KEY_WIDENED_ITERATOR KEY_WIDENED_ITERATOR_METHOD() { return
WIDENED_ITERATORS.singleton(element); }

  @Override
  public KEY_WIDENED_SPLITERATOR KEY_WIDENED_SPLITERATOR_METHOD() { return
WIDENED_SPLITERATORS.singleton(element); }
#endif

  @Deprecated
  @Override
  public Object[] toArray() { return new Object[]{ KEY2OBJ(element) }; }


#endif
  @Override
  public Object clone() { return this; }
 }

 /** Returns a type-specific immutable set containing only the specified element. The returned set is serializable and
cloneable.
  *
  * @param element the only element of the returned set.
  * @return a type-specific immutable set containing just {@code element}.
  */

 public static KEY_GENERIC SET KEY_GENERIC singleton(final KEY_GENERIC_TYPE element) {
  return new Singleton KEY_GENERIC_DIAMOND(element);
 }

#if KEYS_PRIMITIVE
```

```
 /** Returns a type-specific immutable set containing only the specified element. The returned set is serializable and
cloneable.
  *
  * @param element the only element of the returned set.
  * @return a type-specific immutable set containing just {@code element}.
  */

 public static KEY_GENERIC SET KEY_GENERIC singleton(final KEY_GENERIC_CLASS element) {
  return new Singleton KEY_GENERIC_DIAMOND(KEY_CLASS2TYPE(element));
 }

#endif

 /** A synchronized wrapper class for sets. */

 public static class SynchronizedSet KEY_GENERIC extends COLLECTIONS.SynchronizedCollection
KEY_GENERIC implements SET KEY_GENERIC, java.io.Serializable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected SynchronizedSet(final SET KEY_GENERIC s, final Object sync) {
   super(s, sync);
  }

  protected SynchronizedSet(final SET KEY_GENERIC s) {
   super(s);
  }

  @Override
  public boolean remove(final KEY_TYPE k) { synchronized(sync) { return collection.REMOVE(k); } }

#if KEYS_PRIMITIVE
  @Deprecated
  @Override
  public boolean rem(final KEY_TYPE k) { return super.rem(k); }
#endif
 }


 /** Returns a synchronized type-specific set backed by the given type-specific set.
  *
  * @param s the set to be wrapped in a synchronized set.
  * @return a synchronized view of the specified set.
  * @see java.util.Collections#synchronizedSet(Set)
  */
 public static KEY_GENERIC SET KEY_GENERIC synchronize(final SET KEY_GENERIC s) { return new
SynchronizedSet KEY_GENERIC_DIAMOND(s); }
```

```
 /** Returns a synchronized type-specific set backed by the given type-specific set, using an assigned object to synchronize.
  *
  * @param s the set to be wrapped in a synchronized set.
  * @param sync an object that will be used to synchronize the access to the set.
  * @return a synchronized view of the specified set.
  * @see java.util.Collections#synchronizedSet(Set)
  */

 public static KEY_GENERIC SET KEY_GENERIC synchronize(final SET KEY_GENERIC s, final Object sync) { return new SynchronizedSet KEY_GENERIC_DIAMOND(s, sync); }



 /** An unmodifiable wrapper class for sets. */

 public static class UnmodifiableSet KEY_GENERIC extends COLLECTIONS.UnmodifiableCollection KEY_GENERIC implements SET KEY_GENERIC, java.io.Serializable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected UnmodifiableSet(final SET KEY_EXTENDS_GENERIC s) {
   super(s);
  }

  @Override
  public boolean remove(final KEY_TYPE k) { throw new UnsupportedOperationException(); }

  @Override
  public boolean equals(final Object o) { if (o == this) return true; return collection.equals(o); }

  @Override
  public int hashCode() { return collection.hashCode(); }

#if KEYS_PRIMITIVE
  @Deprecated
  @Override
  public boolean rem(final KEY_TYPE k) { return super.rem(k); }
#endif
 }


 /** Returns an unmodifiable type-specific set backed by the given type-specific set.
  *
  * @param s the set to be wrapped in an unmodifiable set.
  * @return an unmodifiable view of the specified set.
  * @see java.util.Collections#unmodifiableSet(Set)
```

```
 */
 public static KEY_GENERIC SET KEY_GENERIC unmodifiable(final SET KEY_EXTENDS_GENERIC s) {
return new UnmodifiableSet KEY_GENERIC_DIAMOND(s); }


#if KEY_CLASS_Byte || KEY_CLASS_Character || KEY_CLASS_Short || KEY_CLASS_Integer ||
KEY_CLASS_Long

 /** Returns an unmodifiable type-specific set containing elements in the given range.
  *
  * @param from the starting element (lower bound) of the set (inclusive).
  * @param to the ending element (upper bound) of the set (exclusive).
  * @return an unmodifiable set containing the elements in the given range.
  */
 public static SET fromTo(final KEY_TYPE from, final KEY_TYPE to) {
  return new ABSTRACT_SET() {
   @Override
   public boolean contains(final KEY_TYPE x) {
    return x >= from && x < to;
   }

   @Override
   public KEY_ITERATOR iterator() {
    return ITERATORS.fromTo(from, to);
   }

   @Override
   public int size() {
#if KEY_CLASS_Long
    final long size = to - from;
#else
    final long size = (long)to - (long)from;
#endif
    return size >= 0 && size <= Integer.MAX_VALUE ? (int)size : Integer.MAX_VALUE;
   }
  };
 }

 /** Returns an unmodifiable type-specific set containing elements greater than or equal to a given element.
  *
  * @param from the starting element (lower bound) of the set (inclusive).
  * @return an unmodifiable set containing the elements greater than or equal to {@code from}.
  */
 public static SET from(final KEY_TYPE from) {
  return new ABSTRACT_SET() {
   @Override
   public boolean contains(final KEY_TYPE x) {
    return x >= from;
```

```
   }

   @Override
   public KEY_ITERATOR iterator() {
    return ITERATORS.concat(new KEY_ITERATOR[] { ITERATORS.fromTo(from, KEY_CLASS.MAX_VALUE),
SETS.singleton(KEY_CLASS.MAX_VALUE).iterator() });
   }

   @Override
   public int size() {
#if KEY_CLASS_Long
    final long size = Long.MAX_VALUE - from + 1;
#else
    final long size = KEY_CLASS.MAX_VALUE - (long)from + 1;
#endif
    return size >= 0 && size <= Integer.MAX_VALUE ? (int)size : Integer.MAX_VALUE;
   }
  };
 }

 /** Returns an unmodifiable type-specific set containing elements smaller than a given element.
  *
  * @param to the ending element (upper bound) of the set (exclusive).
  * @return an unmodifiable set containing the elements smaller than {@code to}.
  */
 public static SET to(final KEY_TYPE to) {
  return new ABSTRACT_SET() {
   @Override
   public boolean contains(final KEY_TYPE x) {
    return x < to;
   }

   @Override
   public KEY_ITERATOR iterator() {
    return ITERATORS.fromTo(KEY_CLASS.MIN_VALUE, to);
   }

   @Override
   public int size() {
#if KEY_CLASS_Long
    final long size = to - Long.MIN_VALUE;
#else
    final long size = (long)to - KEY_CLASS.MIN_VALUE;
#endif
    return size >= 0 && size <= Integer.MAX_VALUE ? (int)size : Integer.MAX_VALUE;
   }
  };
 }
```

```
#endif

#ifdef TEST

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#elif KEY_CLASS_Object
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }


 private static void test() throws Exception{
  int n = 100;
  int c;
  KEY_TYPE k = genKey();
  Singleton m = new Singleton(k);
  Set t = java.util.Collections.singleton(KEY2OBJ(k));

  long ms;
  boolean mThrowsIllegal, tThrowsIllegal, mThrowsNoElement, tThrowsNoElement, mThrowsIndex, tThrowsIndex,
mThrowsUnsupp, tThrowsUnsupp;
  boolean rt = false, rm = false;


  /* Now we check that m and t are equal. */
  if (!m.equals(t) || ! t.equals(m)) System.err.println("m: " + m + " t: " + t);

  ensure(m.equals(t), "Error (" + seed + "): ! m.equals(t) at start");
  ensure(t.equals(m), "Error (" + seed + "): ! t.equals(m) at start");

  /* Now we check that m actually holds that data. */
  for(java.util.Iterator i=t.iterator(); i.hasNext();) {
   ensure(m.contains(i.next()), "Error (" + seed + "): m and t differ on an entry after insertion (iterating on t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */
  for(java.util.Iterator i=m.iterator(); i.hasNext();) {
   ensure(t.contains(i.next()), "Error (" + seed + "): m and t differ on an entry after insertion (iterating on m)");
  }

  /* Now we check that inquiries about random data give the same answer in m and t. For
```

```
   m we use the polymorphic method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    m.contains(T);
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }

   try {
    t.contains(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + seed + "): contains() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + seed + "): contains() divergence in IllegalArgumentException
for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + seed + "): contains() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex) ensure(m.contains(KEY2OBJ(T)) ==
t.contains(KEY2OBJ(T)), "Error (" + seed + "): divergence in keys between t and m (polymorphic method) " + m);
  }

  /* Again, we check that inquiries about random data give the same answer in m and t, but
     for m we use the standard method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    m.contains(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }
```

```
   try {
    t.contains(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + seed + "): contains() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + seed + "): contains() divergence in IllegalArgumentException
for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + seed + "): contains() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + seed + "): contains() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp)
ensure(m.contains(KEY2OBJ(T)) ==  t.contains(KEY2OBJ(T)), "Error (" + seed + "): divergence between t and m
(standard method) " + m);
  }

  /* Now we add and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    rm = m.add(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    rt = t.add(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + seed + "): add() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
```

```
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + seed + "): add() divergence in IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + seed + "): add() divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + seed + "): add() divergence in UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error (" + seed + "): divergence in add() between t and m " + m);

   T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal = mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    rm = m.remove(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    rt = t.remove(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

   if (! KEY_EQUALS(T, k) && mThrowsUnsupp && ! tThrowsUnsupp) mThrowsUnsupp = false; // Stupid bug in Collections.singleton()

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + seed + "): remove() divergence in java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + seed + "): remove() divergence in IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + seed + "): remove() divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + seed + "): remove() divergence in UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error (" + seed + "): divergence in remove() between t and m " + m);
  }

  ensure(m.equals(t), "Error (" + seed + "): ! m.equals(t) after removal " + m);
  ensure(t.equals(m), "Error (" + seed + "): ! t.equals(m) after removal " + m);
```

```
/* Now we add and remove random collections in m and t, checking that the result is the same. */

for(int i=0; i<20*n;  i++) {
 KEY_TYPE T = genKey();

 mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

 try {
  rm = m.addAll(java.util.Collections.singleton(KEY2OBJ(T)));
 }
 catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
 catch (IllegalArgumentException e) { mThrowsIllegal = true; }
 catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
 catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

 try {
  rt = t.addAll(java.util.Collections.singleton(KEY2OBJ(T)));
 }
 catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
 catch (IllegalArgumentException e) { tThrowsIllegal = true; }
 catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
 catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

 ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + seed + "): addAll() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
 ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + seed + "): addAll() divergence in IllegalArgumentException
for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
 ensure(mThrowsIndex == tThrowsIndex, "Error (" + seed + "): addAll() divergence in IndexOutOfBoundsException
for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
 ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + seed + "): addAll() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
 if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error
(" + seed + "): divergence in addAll() between t and m " + m);

 T = genKey();

 mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

 try {
  rm = m.removeAll(java.util.Collections.singleton(KEY2OBJ(T)));
 }
 catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
 catch (IllegalArgumentException e) { mThrowsIllegal = true; }
 catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
 catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }
```

```
  try {
   rt = t.removeAll(java.util.Collections.singleton(KEY2OBJ(T)));
  }
  catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
  catch (IllegalArgumentException e) { tThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
  catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

  if (! KEY_EQUALS(T, k) && mThrowsUnsupp && ! tThrowsUnsupp) mThrowsUnsupp = false; // Stupid bug in
Collections.singleton()

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + seed + "): removeAll() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
  ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + seed + "): removeAll() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
  ensure(mThrowsIndex == tThrowsIndex, "Error (" + seed + "): removeAll() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
  ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + seed + "): removeAll() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
  if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error
(" + seed + "): divergence in removeAll() between t and m " + m);
 }

 ensure(m.equals(t), "Error (" + seed + "): ! m.equals(t) after set removal " + m);
 ensure(t.equals(m), "Error (" + seed + "): ! t.equals(m) after set removal " + m);

 /* Now we check that m actually holds the same data. */

 for(java.util.Iterator i=t.iterator(); i.hasNext();) {
  ensure(m.contains(i.next()), "Error (" + seed + "): m and t differ on an entry after removal (iterating on t)");
 }

 /* Now we check that m actually holds that data, but iterating on m. */

 for(java.util.Iterator i=m.iterator(); i.hasNext();) {
  ensure(t.contains(i.next()), "Error (" + seed + "): m and t differ on an entry after removal (iterating on m)");
 }

 if (m instanceof Singleton) {
  ensure(m.equals(((Singleton)m).clone()), "Error (" + seed + "): m does not equal m.clone()");
  ensure(((Singleton)m).clone().equals(m), "Error (" + seed + "): m.clone() does not equal m");
 }

 int h = m.hashCode();

 /* Now we save and read m. */

 SET m2 = null;
```

```
  {
   java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
   java.io.OutputStream os = new java.io.FileOutputStream(ff);
   java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

   oos.writeObject(m);
   oos.close();

   java.io.InputStream is = new java.io.FileInputStream(ff);
   java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

   m2 = (SET)ois.readObject();
   ois.close();
   ff.delete();
  }

#if ! KEYS_USE_REFERENCE_EQUALITY

  ensure(m2.hashCode() == h, "Error (" + seed + "): hashCode() changed after save/read");

  /* Now we check that m2 actually holds that data. */

  ensure(m2.equals(t), "Error (" + seed + "): ! m2.equals(t) after save/read");
  ensure(t.equals(m2), "Error (" + seed + "): ! t.equals(m2) after save/read");
#endif

  System.out.println("Test OK");
  return;
 }

 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition fp = new java.text.FieldPosition(0);

 private static String format(double d) {
  StringBuffer s = new StringBuffer();
  return format.format(d, s, fp).toString();
 }

 private static void fatal(String msg) {
  throw new AssertionError(msg);
 }

 private static void ensure(boolean cond, String msg) {
  if (cond) return;
```

```
  fatal(msg);
 }

 /** This method expects as first argument a lower-cased type (e.g., "int"),
  * and as second optional argument a seed. */

 public static void main(String arg[]) throws Exception {
  if (arg.length > 1) r = new java.util.Random(seed = Long.parseLong(arg[1]));

  try {
   test();
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Sets.drv
No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

import java.util.List;
import java.util.Collection;
import java.util.Random;
```

```
import java.util.RandomAccess;
import java.util.function.Consumer;
#if KEYS_BYTE_CHAR_SHORT_FLOAT
import WIDENED_PACKAGE.KEY_WIDENED_ITERATOR;
import WIDENED_PACKAGE.WIDENED_ITERATORS;
import WIDENED_PACKAGE.KEY_WIDENED_SPLITERATOR;
import WIDENED_PACKAGE.WIDENED_SPLITERATORS;
#endif

#if KEYS_REFERENCE
import java.util.function.Predicate;
import java.util.function.UnaryOperator;
#endif

/** A class providing static methods and objects that do useful things with type-specific lists.
*
* @see java.util.Collections
*/

public final class LISTS {

#if KEYS_PRIMITIVE && !KEY_TYPE_Boolean
 /* Only in the EmptyList and Singleton classes, where performance is critical, do we override
  * the deprecated, Object based functional methods. For the rest, we just override the
  * non-deprecated type-specific method, and let the default method from the interface
  * filter into that. This is an extra method call and lambda creation, but it isn't worth
  * complexifying the code generation for a case that is already marked as being inefficient.
  */
#endif

 private LISTS() {}

 /** Shuffles the specified list using the specified pseudorandom number generator.
  *
  * @param l the list to be shuffled.
  * @param random a pseudorandom number generator.
  * @return {@code l}.
  */
 public static KEY_GENERIC LIST KEY_GENERIC shuffle(final LIST KEY_GENERIC l, final Random random)
{
  for(int i = l.size(); i-- != 0;) {
   final int p = random.nextInt(i + 1);
   final KEY_GENERIC_TYPE t = l.GET_KEY(i);
   l.set(i, l.GET_KEY(p));
   l.set(p, t);
  }
  return l;
 }
```

```
 /** An immutable class representing an empty type-specific list.
  *
  * <p>This class may be useful to implement your own in case you subclass
  * a type-specific list.
  */

 public static class EmptyList KEY_GENERIC extends COLLECTIONS.EmptyCollection KEY_GENERIC
implements LIST KEY_GENERIC, RandomAccess, java.io.Serializable, Cloneable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected EmptyList() {}

  @Override
  public KEY_GENERIC_TYPE GET_KEY(int i) { throw new IndexOutOfBoundsException(); }

  @Override
  public boolean REMOVE(KEY_TYPE k) { throw new UnsupportedOperationException(); }

  @Override
  public KEY_GENERIC_TYPE REMOVE_KEY(int i) { throw new UnsupportedOperationException(); }

  @Override
  public void add(final int index, final KEY_GENERIC_TYPE k) { throw new UnsupportedOperationException(); }

  @Override
  public KEY_GENERIC_TYPE set(final int index, final KEY_GENERIC_TYPE k) { throw new
UnsupportedOperationException(); }

  @Override
  public int indexOf(KEY_TYPE k) { return -1; }

  @Override
  public int lastIndexOf(KEY_TYPE k) { return -1; }

  @Override
  public boolean addAll(int i, Collection<? extends KEY_GENERIC_CLASS> c) { throw new
UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
  @Deprecated
#endif
  @Override
  public void replaceAll(final java.util.function.UnaryOperator<KEY_GENERIC_CLASS> operator) {  throw new
UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
```

```
  @Override
  public void replaceAll(final METHOD_ARG_KEY_UNARY_OPERATOR operator) { throw new
UnsupportedOperationException(); }

  @Override
  public boolean addAll(LIST c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean addAll(int i, COLLECTION c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean addAll(int i, LIST c) { throw new UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @SuppressWarnings("deprecation")
  @Deprecated
  @Override
  public void add(final int index, final KEY_GENERIC_CLASS k) { throw new UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @SuppressWarnings("deprecation")
  @Deprecated
  @Override
  public KEY_CLASS get(final int index) { throw new UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @SuppressWarnings("deprecation")
  @Deprecated
  @Override
  public boolean add(final KEY_GENERIC_CLASS k) { throw new UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @SuppressWarnings("deprecation")
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS set(final int index, final KEY_GENERIC_CLASS k) { throw new
UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @SuppressWarnings("deprecation")
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS remove(int k) { throw new UnsupportedOperationException(); }
```

```
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @SuppressWarnings("deprecation")
  @Deprecated
  @Override
  public int indexOf(Object k) { return -1; }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @SuppressWarnings("deprecation")
  @Deprecated
  @Override
  public int lastIndexOf(Object k) { return -1; }

  // Empty lists are trivially always sorted
  @Override
  public void sort(final KEY_COMPARATOR comparator) { }

  @Override
  public void unstableSort(final KEY_COMPARATOR comparator) { }
#endif

  // Empty lists are trivially always sorted
  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void sort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) { }

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void unstableSort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) { }

  SUPPRESS_WARNINGS_KEY_UNCHECKED
  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC listIterator() { return ITERATORS.EMPTY_ITERATOR; }

  SUPPRESS_WARNINGS_KEY_UNCHECKED
  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC iterator() { return ITERATORS.EMPTY_ITERATOR; }

  SUPPRESS_WARNINGS_KEY_UNCHECKED
  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC listIterator(int i) { if (i == 0) return
ITERATORS.EMPTY_ITERATOR; throw new IndexOutOfBoundsException(String.valueOf(i)); }

  @Override
  public LIST KEY_GENERIC subList(int from, int to) { if (from == 0 && to == 0) return this; throw new
IndexOutOfBoundsException(); }
```

```
  @Override
  public void getElements(int from, KEY_TYPE[] a, int offset, int length) { if (from == 0 && length == 0 && offset
>= 0 && offset <= a.length) return; throw new IndexOutOfBoundsException(); }

  @Override
  public void removeElements(int from, int to) { throw new UnsupportedOperationException(); }

  @Override
  public void addElements(int index, final KEY_GENERIC_TYPE a[], int offset, int length) { throw new
UnsupportedOperationException(); }

  @Override
  public void addElements(int index, final KEY_GENERIC_TYPE a[]) { throw new
UnsupportedOperationException(); }

  @Override
  public void setElements(final KEY_GENERIC_TYPE a[]) { throw new UnsupportedOperationException(); }

  @Override
  public void setElements(int index, final KEY_GENERIC_TYPE a[]) { throw new
UnsupportedOperationException(); }

  @Override
  public void setElements(int index, final KEY_GENERIC_TYPE a[], int offset, int length) { throw new
UnsupportedOperationException(); }

  @Override
  public void size(int s)  { throw new UnsupportedOperationException(); }

#if ! KEYS_USE_REFERENCE_EQUALITY
  @Override
  public int compareTo(final List<? extends KEY_GENERIC_CLASS> o) {
   if (o == this) return 0;
   return ((List<?>)o).isEmpty() ? 0 : -1;
  }
#endif

  @Override
  public Object clone() { return EMPTY_LIST; }

  @Override
  public int hashCode() { return 1; }

  @Override
  @SuppressWarnings("rawtypes")
  public boolean equals(Object o) { return o instanceof List && ((List)o).isEmpty(); }
```

```
 @Override
 public String toString() { return "[]"; }

 private Object readResolve() { return EMPTY_LIST; }
}

/** An empty list (immutable). It is serializable and cloneable.
 */
SUPPRESS_WARNINGS_KEY_RAWTYPES
public static final EmptyList EMPTY_LIST = new EmptyList();

/** Returns an empty list (immutable). It is serializable and cloneable.
 *
 * <p>This method provides a typesafe access to {@link #EMPTY_LIST}.
 * @return an empty list (immutable).
 */
@SuppressWarnings("unchecked")
public static KEY_GENERIC LIST KEY_GENERIC emptyList() {
 return EMPTY_LIST;
}

/** An immutable class representing a type-specific singleton list.
 *
 * <p>This class may be useful to implement your own in case you subclass
 * a type-specific list.
 */

public static class Singleton KEY_GENERIC extends ABSTRACT_LIST KEY_GENERIC implements
RandomAccess, java.io.Serializable, Cloneable {

 private static final long serialVersionUID = -7046029254386353129L;

 private final KEY_GENERIC_TYPE element;

 protected Singleton(final KEY_GENERIC_TYPE element) { this.element = element; }

 @Override
 public KEY_GENERIC_TYPE GET_KEY(final int i) { if (i == 0) return element; throw new
IndexOutOfBoundsException(); }

 @Override
 public boolean REMOVE(KEY_TYPE k) { throw new UnsupportedOperationException(); }

 @Override
 public KEY_GENERIC_TYPE REMOVE_KEY(final int i) { throw new UnsupportedOperationException(); }

 @Override
 public boolean contains(final KEY_TYPE k) { return KEY_EQUALS(k, element); }
```

```
 @Override
 public int indexOf(final KEY_TYPE k) { return KEY_EQUALS(k, element) ? 0 : -1; }

 /* Slightly optimized w.r.t. the one in ABSTRACT_SET. */

 @Override
 public KEY_TYPE[] TO_KEY_ARRAY() { return new KEY_TYPE[]{element}; }

 @Override
 public KEY_LIST_ITERATOR KEY_GENERIC listIterator() { return ITERATORS.singleton(element); }

 @Override
 public KEY_LIST_ITERATOR KEY_GENERIC iterator() { return listIterator(); }

 @Override
 public KEY_SPLITERATOR KEY_GENERIC spliterator() { return SPLITERATORS.singleton(element); }

 @Override
 public KEY_LIST_ITERATOR KEY_GENERIC listIterator(final int i) {
  if (i > 1 || i < 0) throw new  IndexOutOfBoundsException();
  final KEY_LIST_ITERATOR KEY_GENERIC l = listIterator();
  if (i == 1) l.NEXT_KEY();
  return l;
 }

 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public LIST KEY_GENERIC subList(final int from, final int to) {
  ensureIndex(from);
  ensureIndex(to);
  if (from > to) throw new IndexOutOfBoundsException("Start index (" + from + ") is greater than end index (" + to +
")");
  if (from != 0 || to != 1) return EMPTY_LIST;
  return this;
 }

 DEPRECATED_IF_KEYS_PRIMITIVE
 @Override
 public void forEach(final Consumer<? super KEY_GENERIC_CLASS> action) {
action.accept(KEY2OBJ(element)); }

 @Override
 public boolean addAll(int i, Collection<? extends KEY_GENERIC_CLASS> c) { throw new
UnsupportedOperationException(); }

 @Override
 public boolean addAll(final Collection<? extends KEY_GENERIC_CLASS> c) { throw new
```

```
UnsupportedOperationException(); }

  @Override
  public boolean removeAll(final Collection<?> c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean retainAll(final Collection<?> c) { throw new UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
  @Deprecated
#endif
  @Override
  public boolean removeIf(final java.util.function.Predicate<? super KEY_GENERIC_CLASS> filter) { throw new
UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
  @Deprecated
#endif
  @Override
  public void replaceAll(final java.util.function.UnaryOperator<KEY_GENERIC_CLASS> operator) { throw new
UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
  @Override
  public void replaceAll(final METHOD_ARG_KEY_UNARY_OPERATOR operator) { throw new
UnsupportedOperationException(); }

  @Override
  public void forEach(final METHOD_ARG_KEY_CONSUMER action) { action.accept(element); }

  @Override
  public boolean addAll(LIST c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean addAll(int i, LIST c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean addAll(int i, COLLECTION c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean addAll(final COLLECTION c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean removeAll(final COLLECTION c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean retainAll(final COLLECTION c) { throw new UnsupportedOperationException(); }
```

```
#if ! KEY_CLASS_Boolean
  @Override
  public boolean removeIf(final METHOD_ARG_PREDICATE filter) { throw new
UnsupportedOperationException(); }
#endif

#if KEYS_BYTE_CHAR_SHORT_FLOAT
  @Override
  public KEY_WIDENED_ITERATOR KEY_WIDENED_ITERATOR_METHOD() { return
WIDENED_ITERATORS.singleton(element); }

  @Override
  public KEY_WIDENED_SPLITERATOR KEY_WIDENED_SPLITERATOR_METHOD() { return
WIDENED_SPLITERATORS.singleton(element); }
#endif

  @Deprecated
  @Override
  public Object[] toArray() { return new Object[]{ KEY2OBJ(element) }; }

  // Lists of size 1 are trivially always sorted
  @Override
  public void sort(final KEY_COMPARATOR comparator) { }

  @Override
  public void unstableSort(final KEY_COMPARATOR comparator) { }
#endif

  // Lists of size 1 are trivially always sorted
  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void sort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) { }

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void unstableSort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) { }

  @Override
  public void getElements(int from, KEY_TYPE a[], int offset, int length) {
   if (offset < 0) throw new ArrayIndexOutOfBoundsException("Offset (" + offset + ") is negative");
   if (offset + length > a.length) throw new ArrayIndexOutOfBoundsException("End index (" + (offset + length) + ") is
greater than array length (" + a.length + ")");
   if (from + length > size()) throw new IndexOutOfBoundsException("End index (" + (from + length) + ") is greater
than list size (" + size() + ")");
   // Should be from == 0
   if (length <= 0) return;
   a[offset] = element;
  }
```

```
 @Override
 public void removeElements(int from, int to) { throw new UnsupportedOperationException(); }

 @Override
 public void addElements(int index, KEY_GENERIC_TYPE a[]) { throw new UnsupportedOperationException(); }

 @Override
 public void addElements(int index, KEY_GENERIC_TYPE a[], int offset, int length) { throw new
UnsupportedOperationException(); }

 @Override
 public void setElements(final KEY_GENERIC_TYPE a[]) { throw new UnsupportedOperationException(); }

 @Override
 public void setElements(int index, final KEY_GENERIC_TYPE a[]) { throw new
UnsupportedOperationException(); }

 @Override
 public void setElements(int index, final KEY_GENERIC_TYPE a[], int offset, int length) { throw new
UnsupportedOperationException(); }

 @Override
 public int size() { return 1; }

 @Override
 public void size(final int size) { throw new UnsupportedOperationException(); }

 @Override
 public void clear() { throw new UnsupportedOperationException(); }

 @Override
 public Object clone() { return this; }
}

/** Returns a type-specific immutable list containing only the specified element. The returned list is serializable and
cloneable.
 *
 * @param element the only element of the returned list.
 * @return a type-specific immutable list containing just {@code element}.
 */

public static KEY_GENERIC LIST KEY_GENERIC singleton(final KEY_GENERIC_TYPE element) { return new
Singleton KEY_GENERIC_DIAMOND(element); }

#if KEYS_PRIMITIVE

/** Returns a type-specific immutable list containing only the specified element. The returned list is serializable and
```

cloneable.
  *
  * @param element the only element of the returned list.
  * @return a type-specific immutable list containing just {@code element}.
  */

 public static KEY_GENERIC LIST KEY_GENERIC singleton(final Object element) { return new Singleton KEY_GENERIC_DIAMOND(KEY_OBJ2TYPE(element)); }

#endif

 /** A synchronized wrapper class for lists. */

 public static class SynchronizedList KEY_GENERIC extends COLLECTIONS.SynchronizedCollection KEY_GENERIC implements LIST KEY_GENERIC, java.io.Serializable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected final LIST KEY_GENERIC list; // Due to the large number of methods that are not in COLLECTION, this is worth caching.

  protected SynchronizedList(final LIST KEY_GENERIC l, final Object sync) {
   super(l, sync);
   this.list = l;
  }

  protected SynchronizedList(final LIST KEY_GENERIC l) {
   super(l);
   this.list = l;
  }

  @Override
  public KEY_GENERIC_TYPE GET_KEY(final int i) { synchronized(sync) { return list.GET_KEY(i); } }

  @Override
  public KEY_GENERIC_TYPE set(final int i, final KEY_GENERIC_TYPE k) { synchronized(sync) { return list.set(i, k); } }

  @Override
  public void add(final int i, final KEY_GENERIC_TYPE k) { synchronized(sync) { list.add(i, k); } }

  @Override
  public KEY_GENERIC_TYPE REMOVE_KEY(final int i) { synchronized(sync) { return list.REMOVE_KEY(i); } }

  @Override
  public int indexOf(final KEY_TYPE k) { synchronized(sync) { return list.indexOf(k); } }

```
  @Override
  public int lastIndexOf(final KEY_TYPE k) { synchronized(sync) { return list.lastIndexOf(k); } }

  @Override
  public boolean removeIf(final METHOD_ARG_PREDICATE filter) { synchronized(sync) { return
list.removeIf(filter); } }

  @Override
  public void replaceAll(final METHOD_ARG_KEY_UNARY_OPERATOR operator) { synchronized(sync) {
list.replaceAll(operator); } }

  @Override
  public boolean addAll(final int index, final Collection<? extends KEY_GENERIC_CLASS> c) {
synchronized(sync) { return list.addAll(index, c); } }

  @Override
  public void getElements(final int from, final KEY_TYPE a[], final int offset, final int length) { synchronized(sync)
{ list.getElements(from, a, offset, length); } }

  @Override
  public void removeElements(final int from, final int to) { synchronized(sync) { list.removeElements(from, to); } }

  @Override
  public void addElements(int index, final KEY_GENERIC_TYPE a[], int offset, int length) { synchronized(sync) {
list.addElements(index, a, offset, length); } }

  @Override
  public void addElements(int index, final KEY_GENERIC_TYPE a[]) { synchronized(sync) {
list.addElements(index, a); } }

  @Override
  public void setElements(final KEY_GENERIC_TYPE a[]) { synchronized(sync) { list.setElements(a); } }

  @Override
  public void setElements(int index, final KEY_GENERIC_TYPE a[]) { synchronized(sync) { list.setElements(index,
a); } }

  @Override
  public void setElements(int index, final KEY_GENERIC_TYPE a[], int offset, int length) { synchronized(sync) {
list.setElements(index, a, offset, length); } }

  @Override
  public void size(final int size) { synchronized(sync) { list.size(size); } }

  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC listIterator() { return list.listIterator(); }
```

```
  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC iterator() { return listIterator(); }

  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC listIterator(final int i) { return list.listIterator(i); }

  @Override
  public LIST KEY_GENERIC subList(final int from, final int to) { synchronized(sync) { return new
SynchronizedList KEY_GENERIC_DIAMOND(list.subList(from, to), sync); } }

  @Override
  public boolean equals(final Object o) { if (o == this) return true; synchronized(sync) { return collection.equals(o); }
}

  @Override
  public int hashCode() { synchronized(sync) { return collection.hashCode(); } }

#if ! KEYS_USE_REFERENCE_EQUALITY
  @Override
  public int compareTo(final List<? extends KEY_GENERIC_CLASS> o) { synchronized(sync) { return
list.compareTo(o); } }
#endif

#if KEYS_PRIMITIVE
  @Override
  public boolean addAll(final int index, final COLLECTION c) { synchronized(sync) { return list.addAll(index, c); }
}

  @Override
  public boolean addAll(final int index, LIST l) { synchronized(sync) { return list.addAll(index, l); } }

  @Override
  public boolean addAll(LIST l) { synchronized(sync) { return list.addAll(l); } }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS get(final int i) { synchronized(sync) { return list.get(i); } }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public void add(final int i, KEY_GENERIC_CLASS k) { synchronized(sync) { list.add(i, k); } }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
```

```
 @Deprecated
 @Override
 public KEY_GENERIC_CLASS set(final int index, KEY_GENERIC_CLASS k) { synchronized(sync) { return
list.set(index, k); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public KEY_GENERIC_CLASS remove(final int i) { synchronized(sync) { return list.remove(i); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public int indexOf(final Object o) { synchronized(sync) { return list.indexOf(o); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public int lastIndexOf(final Object o) { synchronized(sync) { return list.lastIndexOf(o); } }

 @Override
 public void sort(final KEY_COMPARATOR comparator) { synchronized(sync) { list.sort(comparator); } }

 @Override
 public void unstableSort(final KEY_COMPARATOR comparator) { synchronized(sync) {
list.unstableSort(comparator); } }
#endif

 DEPRECATED_IF_KEYS_PRIMITIVE
 @Override
 public void sort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) { synchronized(sync)
{list.sort(comparator); } }

 DEPRECATED_IF_KEYS_PRIMITIVE
 @Override
 public void unstableSort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) {
synchronized(sync) {list.unstableSort(comparator); } }

 private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
  synchronized(sync) { s.defaultWriteObject(); }
 }
}


/** A synchronized wrapper class for random-access lists. */
```

```
 public static class SynchronizedRandomAccessList KEY_GENERIC extends SynchronizedList KEY_GENERIC
implements RandomAccess, java.io.Serializable {
  private static final long serialVersionUID = 0L;

  protected SynchronizedRandomAccessList(final LIST KEY_GENERIC l, final Object sync) {
   super(l, sync);
  }

  protected SynchronizedRandomAccessList(final LIST KEY_GENERIC l) {
   super(l);
  }

  @Override
  public LIST KEY_GENERIC subList(final int from, final int to) { synchronized(sync) { return new
SynchronizedRandomAccessList KEY_GENERIC_DIAMOND(list.subList(from, to), sync); } }
 }



 /** Returns a synchronized type-specific list backed by the given type-specific list.
  *
  * @param l the list to be wrapped in a synchronized list.
  * @return a synchronized view of the specified list.
  * @see java.util.Collections#synchronizedList(List)
  */
 public static KEY_GENERIC LIST KEY_GENERIC synchronize(final LIST KEY_GENERIC l) {
  return l instanceof RandomAccess ? new SynchronizedRandomAccessList KEY_GENERIC_DIAMOND(l) : new
SynchronizedList KEY_GENERIC_DIAMOND(l);
 }

 /** Returns a synchronized type-specific list backed by the given type-specific list, using an assigned object to
synchronize.
  *
  * @param l the list to be wrapped in a synchronized list.
  * @param sync an object that will be used to synchronize the access to the list.
  * @return a synchronized view of the specified list.
  * @see java.util.Collections#synchronizedList(List)
  */

 public static KEY_GENERIC LIST KEY_GENERIC synchronize(final LIST KEY_GENERIC l, final Object sync)
{
  return l instanceof RandomAccess ? new SynchronizedRandomAccessList KEY_GENERIC_DIAMOND(l, sync) :
new SynchronizedList KEY_GENERIC_DIAMOND(l, sync);
 }



 /** An unmodifiable wrapper class for lists. */
```

```
 public static class UnmodifiableList KEY_GENERIC extends COLLECTIONS.UnmodifiableCollection
KEY_GENERIC implements LIST KEY_GENERIC, java.io.Serializable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected final LIST KEY_EXTENDS_GENERIC list; // Due to the large number of methods that are not in
COLLECTION, this is worth caching.

  protected UnmodifiableList(final LIST KEY_EXTENDS_GENERIC l) {
   super(l);
   this.list = l;
  }

  @Override
  public KEY_GENERIC_TYPE GET_KEY(final int i) { return list.GET_KEY(i); }

  @Override
  public KEY_GENERIC_TYPE set(final int i, final KEY_GENERIC_TYPE k) { throw new
UnsupportedOperationException(); }

  @Override
  public void add(final int i, final KEY_GENERIC_TYPE k) { throw new UnsupportedOperationException(); }

  @Override
  public KEY_GENERIC_TYPE REMOVE_KEY(final int i) { throw new UnsupportedOperationException(); }

  @Override
  public int indexOf(final KEY_TYPE k) { return list.indexOf(k); }

  @Override
  public int lastIndexOf(final KEY_TYPE k) { return list.lastIndexOf(k); }

  @Override
  public boolean addAll(final int index, final Collection<? extends KEY_GENERIC_CLASS> c) { throw new
UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
  @Deprecated
#endif
  @Override
  public void replaceAll(final java.util.function.UnaryOperator<KEY_GENERIC_CLASS> operator) { throw new
UnsupportedOperationException(); }

  @Override
  public void getElements(final int from, final KEY_TYPE a[], final int offset, final int length) {
list.getElements(from, a, offset, length); }
```

```
  @Override
  public void removeElements(final int from, final int to) { throw new UnsupportedOperationException(); }

  @Override
  public void addElements(int index, final KEY_GENERIC_TYPE a[], int offset, int length) { throw new
UnsupportedOperationException(); }

  @Override
  public void addElements(int index, final KEY_GENERIC_TYPE a[]) { throw new
UnsupportedOperationException(); }

  @Override
  public void setElements(final KEY_GENERIC_TYPE a[]) { throw new UnsupportedOperationException(); }

  @Override
  public void setElements(int index, final KEY_GENERIC_TYPE a[]) { throw new
UnsupportedOperationException(); }

  @Override
  public void setElements(int index, final KEY_GENERIC_TYPE a[], int offset, int length) { throw new
UnsupportedOperationException(); }

  @Override
  public void size(final int size) { list.size(size); }

  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC listIterator() { return
ITERATORS.unmodifiable(list.listIterator()); }

  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC iterator() { return listIterator(); }

  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC listIterator(final int i) { return
ITERATORS.unmodifiable(list.listIterator(i)); }

  @Override
  public LIST KEY_GENERIC subList(final int from, final int to) { return new UnmodifiableList
KEY_GENERIC_DIAMOND(list.subList(from, to)); }

  @Override
  public boolean equals(final Object o) { if (o == this) return true; return collection.equals(o); }

  @Override
  public int hashCode() { return collection.hashCode(); }

#if ! KEYS_USE_REFERENCE_EQUALITY
  @Override
```

```
#if KEYS_PRIMITIVE
  public int compareTo(final List<? extends KEY_GENERIC_CLASS> o) { return list.compareTo(o); }
#else
  @SuppressWarnings("unchecked")
  public int compareTo(final List<? extends KEY_GENERIC_CLASS> o) { return ((LIST
KEY_GENERIC)list).compareTo(o); }
#endif
#endif

#if KEYS_PRIMITIVE
  @Override
  public boolean addAll(final int index, final COLLECTION c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean addAll(final LIST l) { throw new UnsupportedOperationException(); }

  @Override
  public boolean addAll(final int index, final LIST l) { throw new UnsupportedOperationException(); }

#if defined JDK_PRIMITIVE_UNARY_OPERATOR
  @Override
  public void replaceAll(final JDK_PRIMITIVE_UNARY_OPERATOR operator) { throw new
UnsupportedOperationException(); }
#endif

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS get(final int i) { return list.get(i); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public void add(final int i, KEY_GENERIC_CLASS k) { throw new UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS set(final int index, KEY_GENERIC_CLASS k) { throw new
UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
```

```
  public KEY_GENERIC_CLASS remove(final int i) { throw new UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public int indexOf(final Object o) { return list.indexOf(o); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public int lastIndexOf(final Object o) { return list.lastIndexOf(o); }

  @Override
  public void sort(final KEY_COMPARATOR comparator) { throw new UnsupportedOperationException(); }

  @Override
  public void unstableSort(final KEY_COMPARATOR comparator) { throw new UnsupportedOperationException();
}
#endif
  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void sort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) { throw new
UnsupportedOperationException(); }

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void unstableSort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) { throw new
UnsupportedOperationException(); }
 }


 /** An unmodifiable wrapper class for random-access lists. */

 public static class UnmodifiableRandomAccessList KEY_GENERIC extends UnmodifiableList KEY_GENERIC
implements RandomAccess, java.io.Serializable {

  private static final long serialVersionUID = 0L;

  protected UnmodifiableRandomAccessList(final LIST KEY_EXTENDS_GENERIC l) {
   super(l);
  }

  @Override
  public LIST KEY_GENERIC subList(final int from, final int to) { return new UnmodifiableRandomAccessList
KEY_GENERIC_DIAMOND(list.subList(from, to)); }
 }
```

```
/** Returns an unmodifiable type-specific list backed by the given type-specific list.
 *
 * @param l the list to be wrapped in an unmodifiable list.
 * @return an unmodifiable view of the specified list.
 * @see java.util.Collections#unmodifiableList(List)
 */
public static KEY_GENERIC LIST KEY_GENERIC unmodifiable(final LIST KEY_EXTENDS_GENERIC l) {
 return l instanceof RandomAccess ? new UnmodifiableRandomAccessList KEY_GENERIC_DIAMOND(l) : new
UnmodifiableList KEY_GENERIC_DIAMOND(l);
}

/** A stub class making all known mutation methods throw {@link UnsupportedOperationException}. */
static abstract class ImmutableListBase KEY_GENERIC extends ABSTRACT_LIST KEY_GENERIC implements
LIST KEY_GENERIC {
 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final void add(final int index, final KEY_GENERIC_TYPE k) {
  throw new UnsupportedOperationException();
 }

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final boolean add(final KEY_GENERIC_TYPE k) {
  throw new UnsupportedOperationException();
 }

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final boolean addAll(final java.util.Collection<? extends KEY_GENERIC_CLASS> c) {
  throw new UnsupportedOperationException();
 }
```

```
/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
 * @deprecated
 */
@Override
@Deprecated
public final boolean addAll(int index, final java.util.Collection<? extends KEY_GENERIC_CLASS> c) {
 throw new UnsupportedOperationException();
}

/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
 * @deprecated
 */
@Override
@Deprecated
public final KEY_GENERIC_TYPE REMOVE_KEY(final int index) {
 throw new UnsupportedOperationException();
}

/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
 * @deprecated
 */
@Override
@Deprecated
public final boolean REMOVE(final KEY_TYPE k) {
 throw new UnsupportedOperationException();
}

/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
 * @deprecated
 */
@Override
@Deprecated
public final boolean removeAll(final java.util.Collection<?> c) {
 throw new UnsupportedOperationException();
}

/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
```

```
  * @deprecated
  */
 @Override
 @Deprecated
 public final boolean retainAll(final java.util.Collection<?> c) {
  throw new UnsupportedOperationException();
 }

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final boolean removeIf(final java.util.function.Predicate<? super KEY_GENERIC_CLASS> c) {
  throw new UnsupportedOperationException();
 }

#if KEYS_PRIMITIVE
 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final boolean removeIf(final METHOD_ARG_PREDICATE c) {
  throw new UnsupportedOperationException();
 }
#endif

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final void replaceAll(final java.util.function.UnaryOperator<KEY_GENERIC_CLASS> operator) {
  throw new UnsupportedOperationException();
 }

#if KEYS_PRIMITIVE && ! KEY_CLASS_Boolean
 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
```

```
 */
 @Override
 @Deprecated
 public final void replaceAll(final JDK_PRIMITIVE_UNARY_OPERATOR operator) {
  throw new UnsupportedOperationException();
 }
#endif

#if KEYS_PRIMITIVE
 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final void add(final int index, final KEY_GENERIC_CLASS k) {
  throw new UnsupportedOperationException();
 }

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final boolean add(final KEY_GENERIC_CLASS k) {
  throw new UnsupportedOperationException();
 }

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final KEY_GENERIC_CLASS remove(final int index) {
  throw new UnsupportedOperationException();
 }

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
```

```
@Deprecated
public final boolean remove(final Object k) {
 throw new UnsupportedOperationException();
}

/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
 * @deprecated
 */
@Override
@Deprecated
public final KEY_GENERIC_CLASS set(final int index, final KEY_GENERIC_CLASS k) {
 throw new UnsupportedOperationException();
}

/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
 * @deprecated
 */
@Override
@Deprecated
public final boolean addAll(final COLLECTION c) {
 throw new UnsupportedOperationException();
}

/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
 * @deprecated
 */
@Override
@Deprecated
public final boolean addAll(final LIST c) {
 throw new UnsupportedOperationException();
}

/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
 * @deprecated
 */
@Override
@Deprecated
public final boolean addAll(final int index, final COLLECTION c) {
 throw new UnsupportedOperationException();
}
```

```
 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final boolean addAll(final int index, final LIST c) {
  throw new UnsupportedOperationException();
 }

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final boolean removeAll(final COLLECTION c) {
  throw new UnsupportedOperationException();
 }

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final boolean retainAll(final COLLECTION c) {
  throw new UnsupportedOperationException();
 }
#endif

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final KEY_GENERIC_TYPE set(final int index, final KEY_GENERIC_TYPE k) {
  throw new UnsupportedOperationException();
 }

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
```

```
 *
 * @deprecated
 */
@Override
@Deprecated
public final void clear() {
 throw new UnsupportedOperationException();
}

/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
 * @deprecated
 */
@Override
@Deprecated
public final void size(final int size) {
 throw new UnsupportedOperationException();
}

/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
 * @deprecated
 */
@Override
@Deprecated
public final void removeElements(final int from, final int to) {
 throw new UnsupportedOperationException();
}

/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
 * @deprecated
 */
@Override
@Deprecated
public final void addElements(final int index, final KEY_GENERIC_TYPE a[], final int offset, final int length) {
 throw new UnsupportedOperationException();
}

/**
 * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
 *
 * @deprecated
 */
@Override
```

```
 @Deprecated
 public final void setElements(final int index, final KEY_GENERIC_TYPE a[], final int offset, final int length) {
  throw new UnsupportedOperationException();
 }

#if KEYS_PRIMITIVE
 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final void sort(final KEY_COMPARATOR KEY_SUPER_GENERIC comp) {
  throw new UnsupportedOperationException();
 }

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final void unstableSort(final KEY_COMPARATOR KEY_SUPER_GENERIC comp) {
  throw new UnsupportedOperationException();
 }
#endif

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final void sort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) {
  throw new UnsupportedOperationException();
 }

 /**
  * @implSpec Always throws {@link UnsupportedOperationException} as this is an immutable type.
  *
  * @deprecated
  */
 @Override
 @Deprecated
 public final void unstableSort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) {
```

```
  throw new UnsupportedOperationException();
 }
}

#ifdef TEST

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#elif KEY_CLASS_Object
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }


 private static void testLists(KEY_TYPE k, LIST m, List t, int level) throws Exception {
  int n = 100;
  int c;

  long ms;
  boolean mThrowsIllegal, tThrowsIllegal, mThrowsNoElement, tThrowsNoElement, mThrowsIndex, tThrowsIndex,
mThrowsUnsupp, tThrowsUnsupp;
  boolean rt = false, rm = false;
  Object Rt = null, Rm = null;

  if (level == 0) return;

  /* Now we check that m and t are equal. */
  if (!m.equals(t) || ! t.equals(m)) System.err.println("m: " + m + " t: " + t);

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) at start");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) at start");

  /* Now we check that m actually holds that data. */
  for(java.util.Iterator i=t.iterator(); i.hasNext();) {
   ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on
t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */
  for(java.util.Iterator i=m.listIterator(); i.hasNext();) {
   ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on
m)");
  }
```

```
  /* Now we check that inquiries about random data give the same answer in m and t. For
     m we use the polymorphic method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    m.contains(T);
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }

   try {
    t.contains(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): contains() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): contains() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): contains() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex) ensure(m.contains(KEY2OBJ(T)) ==
t.contains(KEY2OBJ(T)), "Error (" + level + ", " + seed + "): divergence in keys between t and m (polymorphic
method) " + m);
  }

  /* Again, we check that inquiries about random data give the same answer in m and t, but
     for m we use the standard method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    m.contains(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
```

```
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    t.contains(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): contains() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): contains() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): contains() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): contains() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp)
ensure(m.contains(KEY2OBJ(T)) ==  t.contains(KEY2OBJ(T)), "Error (" + level + ", " + seed + "): divergence
between t and m (standard method) " + m);
  }

  /* Now we add and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    rm = m.add(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    rt = t.add(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }
```

```
  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): add() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
  ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): add() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
  ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): add() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
  ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): add() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
  if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error
(" + level + ", " + seed + "): divergence in add() between t and m " + m);

  T = genKey();

  mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

  try {
   rm = m.remove(KEY2OBJ(T));
  }
  catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
  catch (IllegalArgumentException e) { mThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
  catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

  try {
   rt = t.remove(KEY2OBJ(T));
  }
  catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
  catch (IllegalArgumentException e) { tThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
  catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

  if (! KEY_EQUALS(T, k) && mThrowsUnsupp && ! tThrowsUnsupp) mThrowsUnsupp = true; // Stupid bug in
Collections.singleton()

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): remove() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
  ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): remove() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
  ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): remove() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
  ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): remove() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
  if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error
(" + level + ", " + seed + "): divergence in remove() between t and m " + m);
 }
```

```
  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after removal " + m);
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after removal " + m);

  /* Now we add and remove random data in m and t at specific positions, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   int pos = r.nextInt(2);

   try {
    m.add(pos, KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    t.add(pos, KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): add() at " + pos + "
divergence in java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement
+ ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): add() at " + pos + " divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): add() at " + pos + " divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): add() at " + pos + " divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);

   T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   pos = r.nextInt(2);

   try {
    Rm = m.remove(pos);
```

```
  }
  catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
  catch (IllegalArgumentException e) { mThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
  catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

  try {
   Rt = t.remove(pos);
  }
  catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
  catch (IllegalArgumentException e) { tThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
  catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }


  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): remove() at " + pos + " divergence in java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
  ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): remove() at " + pos + " divergence in IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
  ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): remove() at " + pos + " divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
  ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): remove() at " + pos + " divergence in UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
  if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(Rm == Rt || Rm != null && Rm.equals(Rt), "Error (" + level + ", " + seed + "): divergence in remove() at " + pos + " between t and m " + m);
 }

 ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after removal " + m);
 ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after removal " + m);

 /* Now we add and remove random collections in m and t, checking that the result is the same. */

 for(int i=0; i<20*n;  i++) {
  KEY_TYPE T = genKey();

  mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal = mThrowsUnsupp = tThrowsUnsupp = false;

  try {
   rm = m.addAll(java.util.Collections.singleton(KEY2OBJ(T)));
  }
  catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
  catch (IllegalArgumentException e) { mThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
  catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }
```

```
try {
 rt = t.addAll(java.util.Collections.singleton(KEY2OBJ(T)));
}
catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
catch (IllegalArgumentException e) { tThrowsIllegal = true; }
catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): addAll() divergence in java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): addAll() divergence in IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): addAll() divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): addAll() divergence in UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error (" + level + ", " + seed + "): divergence in addAll() between t and m " + m);

T = genKey();

mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal = mThrowsUnsupp = tThrowsUnsupp = false;

try {
 rm = m.removeAll(java.util.Collections.singleton(KEY2OBJ(T)));
}
catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
catch (IllegalArgumentException e) { mThrowsIllegal = true; }
catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

try {
 rt = t.removeAll(java.util.Collections.singleton(KEY2OBJ(T)));
}
catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
catch (IllegalArgumentException e) { tThrowsIllegal = true; }
catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }


ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): removeAll() divergence in java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): removeAll() divergence in IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): removeAll() divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): removeAll() divergence in
```

```
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error
(" + level + ", " + seed + "): divergence in removeAll() between t and m " + m);
  }

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after set removal " + m);
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after set removal " + m);

  /* Now we add random collections at specific positions in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   int pos = r.nextInt(2);

   try {
    rm = m.addAll(pos, java.util.Collections.singleton(KEY2OBJ(T)));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    rt = t.addAll(pos, java.util.Collections.singleton(KEY2OBJ(T)));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): addAll() at " + pos + "
divergence in java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement
+ ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): addAll() at " + pos + " divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): addAll() at " + pos + " divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): addAll() at " + pos + " divergence
in UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error
(" + level + ", " + seed + "): divergence in addAll() at " + pos + " between t and m " + m);

  }
```

```
  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after set removal " + m);
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after set removal " + m);

  /* Now we check that m actually holds the same data. */

  for(java.util.Iterator i=t.iterator(); i.hasNext();) {
   ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after removal (iterating on
t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */

  for(java.util.Iterator i=m.listIterator(); i.hasNext();) {
   ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after removal (iterating on
m)");
  }

  if (m instanceof Singleton) {
   ensure(m.equals(((Singleton)m).clone()), "Error (" + level + ", " + seed + "): m does not equal m.clone()");
   ensure(((Singleton)m).clone().equals(m), "Error (" + level + ", " + seed + "): m.clone() does not equal m");
  }

  int h = m.hashCode();

  /* Now we save and read m. */

  LIST m2 = null;

  {
   java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
   java.io.OutputStream os = new java.io.FileOutputStream(ff);
   java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

   oos.writeObject(m);
   oos.close();

   java.io.InputStream is = new java.io.FileInputStream(ff);
   java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

   m2 = (LIST)ois.readObject();
   ois.close();
   ff.delete();
  }

#if ! KEYS_USE_REFERENCE_EQUALITY

  ensure(m2.hashCode() == h, "Error (" + level + ", " + seed + "): hashCode() changed after save/read");
```

```
 /* Now we check that m2 actually holds that data. */

 ensure(m2.equals(t), "Error (" + level + ", " + seed + "): ! m2.equals(t) after save/read");
 ensure(t.equals(m2), "Error (" + level + ", " + seed + "): ! t.equals(m2) after save/read");
#endif

 if (! m.isEmpty()) {
  int start = r.nextInt(m.size());
  int end = start + r.nextInt(m.size() - start);
  //System.err.println("Checking subList from " + start + " to " + end + " (level=" + (level+1) + ")...");
  testLists(k, m.subList(start, end), t.subList(start, end), level - 1);

  ensure(m.equals(t), () -> "Error (" + level + ", " + seed + m + t + "): ! m.equals(t) after subList");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after subList");

 }

 return;
}

private static void test() throws Exception {
 KEY_TYPE k = genKey();
 LIST m = new Singleton(k);
 List u = java.util.Collections.singletonList(KEY2OBJ(k));
 testLists(k, m, java.util.Collections.unmodifiableList(u), 3);
 System.out.println("Test OK");
}

private static long seed = System.currentTimeMillis();
private static java.util.Random r = new java.util.Random(seed);

private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
private static java.text.FieldPosition fp = new java.text.FieldPosition(0);

private static String format(double d) {
 StringBuffer s = new StringBuffer();
 return format.format(d, s, fp).toString();
}

private static void fatal(String msg) {
 throw new AssertionError(msg);
}

private static void ensure(boolean cond, String msg) {
 if (cond) return;
 fatal(msg);
}
```

```
 private static void ensure(boolean cond, java.util.function.Supplier<String> msgSupplier) {
  if (cond) return;
  fatal(msgSupplier.get());
 }

 /** This method expects as first argument a lower-cased type (e.g., "int"),
  * and as second optional argument a seed. */

 public static void main(String arg[]) throws Exception {
  if (arg.length > 1) r = new java.util.Random(seed = Long.parseLong(arg[1]));

  try {
   test();
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Lists.drv
No license file was found, but licenses were detected in source scan.

/** Loads elements from a given fast buffered reader, storing them in a given array fragment.
*

```
* @param reader a buffered reader.
* @param array an array which will be filled with data from {@code reader}.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from {@code reader} (it might be less than {@code length} if
{@code reader} ends).
*/
public static int LOAD_KEYS(final BufferedReader reader, final KEY_TYPE[] array, final int offset, final int
length) throws IOException {
 PACKAGE.ARRAYS.ensureOffsetLength(array, offset, length);
 int i = 0;
 String s;
 try {
  for(i = 0; i < length; i++)
   if ((s = reader.readLine()) != null) array[i + offset] = KEY_CLASS.PARSE_KEY(s.trim());
   else break;
 }
 catch(EOFException itsOk) {}
 return i;
}

/** Loads elements from a given buffered reader, storing them in a given array.
*
* @param reader a buffered reader.
* @param array an array which will be filled with data from {@code reader}.
* @return the number of elements actually read from {@code reader} (it might be less than the array length if
{@code reader} ends).
*/
public static int LOAD_KEYS(final BufferedReader reader, final KEY_TYPE[] array) throws IOException {
 return LOAD_KEYS(reader, array, 0, array.length);
}

/** Loads elements from a file given by a {@link File} object, storing them in a given array fragment.
*
* @param file a file.
* @param array an array which will be filled with data from the specified file.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from the given file (it might be less than {@code length} if the file
is too short).
*/
public static int LOAD_KEYS(final File file, final KEY_TYPE[] array, final int offset, final int length) throws
IOException {
 final BufferedReader reader = new BufferedReader(new FileReader(file));
 final int result = LOAD_KEYS(reader, array, offset, length);
 reader.close();

 return result;
```

```
}

/** Loads elements from a file given by a filename, storing them in a given array fragment.
*
* @param filename a filename.
* @param array an array which will be filled with data from the specified file.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from the given file (it might be less than {@code length} if the file
is too short).
*/
public static int LOAD_KEYS(final CharSequence filename, final KEY_TYPE[] array, final int offset, final int
length) throws IOException {
 return LOAD_KEYS(new File(filename.toString()), array, offset, length);
}

/** Loads elements from a file given by a {@link File} object, storing them in a given array.
*
* @param file a file.
* @param array an array which will be filled with data from the specified file.
* @return the number of elements actually read from the given file (it might be less than the array length if the file
is too short).
*/
public static int LOAD_KEYS(final File file, final KEY_TYPE[] array) throws IOException {
 return LOAD_KEYS(file, array, 0, array.length);
}

/** Loads elements from a file given by a filename, storing them in a given array.
*
* @param filename a filename.
* @param array an array which will be filled with data from the specified file.
* @return the number of elements actually read from the given file (it might be less than the array length if the file
is too short).
*/
public static int LOAD_KEYS(final CharSequence filename, final KEY_TYPE[] array) throws IOException {
 return LOAD_KEYS(filename, array, 0, array.length);
}

/** Stores an array fragment to a given print stream.
*
* @param array an array whose elements will be written to {@code stream}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param stream a print stream.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final int offset, final int length, final PrintStream
stream) {
 PACKAGE.ARRAYS.ensureOffsetLength(array, offset, length);
```

```
 for(int i = 0; i < length; i++) stream.println(array[offset + i]);
}

/** Stores an array to a given print stream.
*
* @param array an array whose elements will be written to {@code stream}.
* @param stream a print stream.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final PrintStream stream) {
 STORE_KEYS(array, 0, array.length, stream);
}

/** Stores an array fragment to a file given by a {@link File} object.
*
* @param array an array whose elements will be written to {@code filename}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param file a file.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final int offset, final int length, final File file) throws
IOException {
 final PrintStream stream = new PrintStream(new FastBufferedOutputStream(new FileOutputStream(file)));
 STORE_KEYS(array, offset, length, stream);
 stream.close();
}

/** Stores an array fragment to a file given by a pathname.
*
* @param array an array whose elements will be written to {@code filename}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param filename a filename.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final int offset, final int length, final CharSequence
filename) throws IOException {
 STORE_KEYS(array, offset, length, new File(filename.toString()));
}

/** Stores an array to a file given by a {@link File} object.
*
* @param array an array whose elements will be written to {@code filename}.
* @param file a file.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final File file) throws IOException {
 STORE_KEYS(array, 0, array.length, file);
}

/** Stores an array to a file given by a pathname.
```

```
*
* @param array an array whose elements will be written to {@code filename}.
* @param filename a filename.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final CharSequence filename) throws IOException {
 STORE_KEYS(array, 0, array.length, filename);
}

/** Stores the element returned by an iterator to a given print stream.
*
* @param i an iterator whose output will be written to {@code stream}.
* @param stream a print stream.
*/
public static void STORE_KEYS(final KEY_ITERATOR i, final PrintStream stream) {
 while(i.hasNext()) stream.println(i.NEXT_KEY());
}

/** Stores the element returned by an iterator to a file given by a {@link File} object.
*
* @param i an iterator whose output will be written to {@code filename}.
* @param file a file.
*/
public static void STORE_KEYS(final KEY_ITERATOR i, final File file) throws IOException {
 final PrintStream stream = new PrintStream(new FastBufferedOutputStream(new FileOutputStream(file)));
 STORE_KEYS(i, stream);
 stream.close();
}

/** Stores the element returned by an iterator to a file given by a pathname.
*
* @param i an iterator whose output will be written to {@code filename}.
* @param filename a filename.
*/
public static void STORE_KEYS(final KEY_ITERATOR i, final CharSequence filename) throws IOException {
 STORE_KEYS(i, new File(filename.toString()));
}


/** Loads elements from a given fast buffered reader, storing them in a given big-array fragment.
*
* @param reader a buffered reader.
* @param array a big array which will be filled with data from {@code reader}.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from {@code reader} (it might be less than {@code length} if
{@code reader} ends).
*/
public static long LOAD_KEYS(final BufferedReader reader, final KEY_TYPE[][] array, final long offset, final
```

```
long length) throws IOException {
 ensureOffsetLength(array, offset, length);
 long c = 0;
 String s;
 try {
  for(int i = segment(offset); i < segment(offset + length + SEGMENT_MASK); i++) {
   final KEY_TYPE[] t = array[i];
   final int l = (int)Math.min(t.length, offset + length - start(i));
   for(int d = (int)Math.max(0, offset - start(i)); d < l; d++) {
    if ((s = reader.readLine()) != null) t[d] = KEY_CLASS.PARSE_KEY(s.trim());
    else return c;
    c++;
   }
  }
 }
 catch(EOFException itsOk) {}
 return c;
}

/** Loads elements from a given buffered reader, storing them in a given array.
*
* @param reader a buffered reader.
* @param array a big array which will be filled with data from {@code reader}.
* @return the number of elements actually read from {@code reader} (it might be less than the array length if
{@code reader} ends).
*/
public static long LOAD_KEYS(final BufferedReader reader, final KEY_TYPE[][] array) throws IOException {
 return LOAD_KEYS(reader, array, 0, length(array));
}

/** Loads elements from a file given by a {@link File} object, storing them in a given big-array fragment.
*
* @param file a file.
* @param array a big array which will be filled with data from the specified file.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from the given file (it might be less than {@code length} if the file
is too short).
*/
public static long LOAD_KEYS(final File file, final KEY_TYPE[][] array, final long offset, final long length)
throws IOException {
 final BufferedReader reader = new BufferedReader(new FileReader(file));
 final long result = LOAD_KEYS(reader, array, offset, length);
 reader.close();

 return result;
}
```

```
/** Loads elements from a file given by a filename, storing them in a given big-array fragment.
*
* @param filename a filename.
* @param array a big array which will be filled with data from the specified file.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from the given file (it might be less than {@code length} if the file
is too short).
*/
public static long LOAD_KEYS(final CharSequence filename, final KEY_TYPE[][] array, final long offset, final
long length) throws IOException {
 return LOAD_KEYS(new File(filename.toString()), array, offset, length);
}

/** Loads elements from a file given by a {@link File} object, storing them in a given array.
*
* @param file a file.
* @param array a big array which will be filled with data from the specified file.
* @return the number of elements actually read from the given file (it might be less than the array length if the file
is too short).
*/
public static long LOAD_KEYS(final File file, final KEY_TYPE[][] array) throws IOException {
 return LOAD_KEYS(file, array, 0, length(array));
}

/** Loads elements from a file given by a filename, storing them in a given array.
*
* @param filename a filename.
* @param array a big array which will be filled with data from the specified file.
* @return the number of elements actually read from the given file (it might be less than the array length if the file
is too short).
*/
public static long LOAD_KEYS(final CharSequence filename, final KEY_TYPE[][] array) throws IOException {
 return LOAD_KEYS(filename, array, 0, length(array));
}

/** Stores a big-array fragment to a given print stream.
*
* @param array a big array whose elements will be written to {@code stream}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param stream a print stream.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final long offset, final long length, final PrintStream
stream) {
 ensureOffsetLength(array, offset, length);

 for(int i = segment(offset); i < segment(offset + length + SEGMENT_MASK); i++) {
```

```
  final KEY_TYPE[] t = array[i];
  final int l = (int)Math.min(t.length, offset + length - start(i));
  for(int d = (int)Math.max(0, offset - start(i)); d < l; d++) stream.println(t[d]);
 }
}

/** Stores a big array to a given print stream.
*
* @param array a big array whose elements will be written to {@code stream}.
* @param stream a print stream.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final PrintStream stream) {
 STORE_KEYS(array, 0, length(array), stream);
}

/** Stores a big-array fragment to a file given by a {@link File} object.
*
* @param array a big array whose elements will be written to {@code filename}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param file a file.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final long offset, final long length, final File file)
throws IOException {
 final PrintStream stream = new PrintStream(new FastBufferedOutputStream(new FileOutputStream(file)));
 STORE_KEYS(array, offset, length, stream);
 stream.close();
}

/** Stores a big-array fragment to a file given by a pathname.
*
* @param array a big array whose elements will be written to {@code filename}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param filename a filename.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final long offset, final long length, final
CharSequence filename) throws IOException {
 STORE_KEYS(array, offset, length, new File(filename.toString()));
}

/** Stores a big array to a file given by a {@link File} object.
*
* @param array a big array whose elements will be written to {@code filename}.
* @param file a file.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final File file) throws IOException {
 STORE_KEYS(array, 0, length(array), file);
```

```
}

/** Stores a big array to a file given by a pathname.
*
* @param array a big array whose elements will be written to {@code filename}.
* @param filename a filename.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final CharSequence filename) throws IOException {
 STORE_KEYS(array, 0, length(array), filename);
}


/** A wrapper that exhibits the content of a reader as a type-specific iterator. */

private static final class KEY_READER_WRAPPER implements KEY_ITERATOR {
 private final BufferedReader reader;
 private boolean toAdvance = true;
 private String s;
 private KEY_TYPE next;

 public KEY_READER_WRAPPER(final BufferedReader reader) {
  this.reader = reader;
 }

 @Override
 public boolean hasNext() {
  if (! toAdvance) return s != null;

  toAdvance = false;

  try {
   s = reader.readLine();
  }
  catch(EOFException itsOk) {}
  catch(IOException rethrow) { throw new RuntimeException(rethrow); }

  if (s == null) return false;

  next = KEY_CLASS.PARSE_KEY(s.trim());
  return true;
 }

 @Override
 public KEY_TYPE NEXT_KEY() {
  if (! hasNext()) throw new NoSuchElementException();
  toAdvance = true;
  return next;
 }
```

```
}



/** Wraps the given buffered reader into an iterator.
*
* @param reader a buffered reader.
*/
public static KEY_ITERATOR AS_KEY_ITERATOR(final BufferedReader reader) {
 return new KEY_READER_WRAPPER(reader);
}

/** Wraps a file given by a {@link File} object into an iterator.
*
* @param file a file.
*/
public static KEY_ITERATOR AS_KEY_ITERATOR(final File file) throws IOException {
 return new KEY_READER_WRAPPER(new BufferedReader(new FileReader(file)));
}

/** Wraps a file given by a pathname into an iterator.
*
* @param filename a filename.
*/
public static KEY_ITERATOR AS_KEY_ITERATOR(final CharSequence filename) throws IOException {
 return AS_KEY_ITERATOR(new File(filename.toString()));
}

/** Wraps a file given by a {@link File} object into an iterable object.
*
* @param file a file.
*/
public static KEY_ITERABLE AS_KEY_ITERABLE(final File file) {
 return () -> {
  try { return AS_KEY_ITERATOR(file); }
  catch(IOException e) { throw new RuntimeException(e); }
 };
}

/** Wraps a file given by a pathname into an iterable object.
*
* @param filename a filename.
*/
public static KEY_ITERABLE AS_KEY_ITERABLE(final CharSequence filename) {
 return () -> {
  try { return AS_KEY_ITERATOR(filename); }
  catch(IOException e) { throw new RuntimeException(e); }
 };
```

}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/TextIOFragment.drv
No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

import java.util.Collection;
import java.util.NoSuchElementException;
import java.util.Set;

#if KEYS_REFERENCE
import java.util.function.Consumer;
#endif


/** A simple, brute-force implementation of a set based on a backing array.
*
* <p>The main purpose of this
* implementation is that of wrapping cleanly the brute-force approach to the storage of a very
* small number of items: just put them into an array and scan linearly to find an item.
*/

public class ARRAY_SET KEY_GENERIC extends ABSTRACT_SET KEY_GENERIC implements
java.io.Serializable, Cloneable {

 private static final long serialVersionUID = 1L;
 /** The backing array (valid up to {@link #size}, excluded). */
 private transient KEY_TYPE[] a;
 /** The number of valid entries in {@link #a}. */
```

```
private int size;

/** Creates a new array set using the given backing array. The resulting set will have as many elements as the array.
 *
 * <p>It is the responsibility of the caller to ensure that the elements of {@code a} are distinct.
 *
 * @param a the backing array.
 */
public ARRAY_SET(final KEY_TYPE[] a) {
 this.a = a;
 size = a.length;
}

/** Creates a new empty array set.
 */
public ARRAY_SET() { this.a = ARRAYS.EMPTY_ARRAY; }

/** Creates a new empty array set of given initial capacity.
 *
 * @param capacity the initial capacity.
 */
public ARRAY_SET(final int capacity) { this.a = new KEY_TYPE[capacity]; }

/** Creates a new array set copying the contents of a given collection.
 * @param c a collection.
 */
public ARRAY_SET(COLLECTION KEY_GENERIC c) {
 this(c.size());
 addAll(c);
}

/** Creates a new array set copying the contents of a given set.
 * @param c a collection.
 */
public ARRAY_SET(final Collection<? extends KEY_GENERIC_CLASS> c) {
 this(c.size());
 addAll(c);
}

/** Creates a new array set copying the contents of a given collection.
 * @param c a collection.
 */
public ARRAY_SET(SET KEY_GENERIC c) {
 this(c.size());
 int i = 0;
 for(KEY_TYPE x : c) {
  a[i] = x;
  i++;
```

```
 }
 size = i;
}

/** Creates a new array set copying the contents of a given set.
 * @param c a collection.
 */
public ARRAY_SET(final Set<? extends KEY_GENERIC_CLASS> c) {
 this(c.size());
 int i = 0;
 for(KEY_GENERIC_CLASS x: c) {
  a[i] = KEY_CLASS2TYPE(x);
  i++;
 }
 size = i;
}


/** Creates a new array set using the given backing array and the given number of elements of the array.
 *
 * <p>It is the responsibility of the caller to ensure that the first {@code size} elements of {@code a} are distinct.
 *
 * @param a the backing array.
 * @param size the number of valid elements in {@code a}.
 */
public ARRAY_SET(final KEY_TYPE[] a, final int size) {
 this.a = a;
 this.size = size;
 if (size > a.length) throw new IllegalArgumentException("The provided size (" + size + ") is larger than or equal to
the array size (" + a.length + ")");
}

// The 0 and 1 arg overloads allow us to skip the temporary hash set creation.

/** Creates a new empty array set.
 *
 * @return a new empty array set.
 */
public static KEY_GENERIC ARRAY_SET KEY_GENERIC of() {
 return ofUnchecked();
}

/** Creates a new array set using the element given.
 *
 * @param e the element that the returned set will contain.
 * @return a new array set containing {@code e}.
 */
public static KEY_GENERIC ARRAY_SET KEY_GENERIC of(final KEY_GENERIC_TYPE e) {
```

```
 return ofUnchecked(e);
}

/** Creates a new array set using an array of elements.
 *
 * <p>Unlike the array accepting constructors, this method will throw if duplicate elements
 * are encountered. This adds a non-trivial validation burden. Use {@link #ofUnchecked} if you
 * know your input has no duplicates, which will skip this validation.
 *
 * @param a the backing array of the returned array set.
 * @throws IllegalArgumentException if there were duplicate entries.
 * @return a new array set containing the elements in {@code a}.
 */
SAFE_VARARGS
public static KEY_GENERIC ARRAY_SET KEY_GENERIC of(final KEY_GENERIC_TYPE... a) {
 if (a.length == 2) {
  if (KEY_EQUALS(a[0], a[1])) {
   throw new IllegalArgumentException("Duplicate element: " + a[1]);
  }
 } else if (a.length > 2) {
  // Will throw on a duplicate entry for us.
  OPEN_HASH_SET.of(a);
 }
 return ofUnchecked(a);
}

/** Creates a new empty array set.
 *
 * @return a new empty array set.
 */
public static KEY_GENERIC ARRAY_SET KEY_GENERIC ofUnchecked() {
 return new ARRAY_SET KEY_GENERIC_DIAMOND();
}

// No 1 element overload; we want the temporary array constructed for us in the varargs overload

/** Creates a new array set using an array of elements.
 *
 * <p>It is the responsibility of the caller to ensure that the elements of {@code a} are distinct.
 *
 * @param a the backing array of the returned array set.
 * @return a new array set containing the elements in {@code a}.
 */
SAFE_VARARGS
public static KEY_GENERIC ARRAY_SET KEY_GENERIC ofUnchecked(final KEY_GENERIC_TYPE... a) {
 return new ARRAY_SET KEY_GENERIC(a);
}
```

```
 private int findKey(final KEY_TYPE o) {
  for(int i = size; i-- != 0;) if (KEY_EQUALS(a[i], o)) return i;
  return -1;
 }

 // TODO Maybe make this return a list-iterator like the LinkedXHashSets do?

 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public KEY_ITERATOR KEY_GENERIC iterator() {
  return new KEY_ITERATOR KEY_GENERIC () {
   int next = 0;

   @Override
   public boolean hasNext() { return next < size; }

   @Override
   public KEY_GENERIC_TYPE NEXT_KEY() {
    if (! hasNext()) throw new NoSuchElementException();
    return KEY_GENERIC_CAST a[next++];
   }

   @Override
   public void remove() {
    final int tail = size-- - next--;
    System.arraycopy(a, next + 1, a, next, tail);
#if KEYS_REFERENCE
    a[size] = null;
#endif
   }

   @Override
   public int skip(int n) {
    if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
    final int remaining = size - next;
    if (n < remaining) {
     next += n;
     return n;
    }
    n = remaining;
    next = size;
    return n;
   }
  };
 }

 // If you update this, you will probably want to update ArrayList as well
 private final class Spliterator implements KEY_SPLITERATOR KEY_GENERIC {
```

```
  // Until we split, we will track the size of the set
  // Once we split, then we stop updating on structural modifications.
  // Aka, size is late-binding.
  boolean hasSplit = false;
  int pos, max;

#ifdef TEST
  // Sentinal to make sure we don't accidentally use size when we mean max
  @Deprecated
  private final Object size = null;
#endif

  public Spliterator() {
   this(0, ARRAY_SET.this.size, false);
  }

  private Spliterator(int pos, int max, boolean hasSplit) {
   assert pos <= max : "pos " + pos + " must be <= max " + max;
   this.pos = pos;
   this.max = max;
   this.hasSplit = hasSplit;
  }

  private int getWorkingMax() {
   return hasSplit ? max : ARRAY_SET.this.size;
  }

  @Override
  public int characteristics() { return SPLITERATORS.SET_SPLITERATOR_CHARACTERISTICS |
java.util.Spliterator.SUBSIZED | java.util.Spliterator.ORDERED; }

  @Override
  public long estimateSize() { return getWorkingMax() - pos; }

  SUPPRESS_WARNINGS_KEY_UNCHECKED
  @Override
  public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
   if (pos >= getWorkingMax()) return false;
   action.accept(KEY_GENERIC_CAST a[pos++]);
   return true;
  }

  SUPPRESS_WARNINGS_KEY_UNCHECKED
  @Override
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
   for (final int max = getWorkingMax(); pos < max; ++pos) {
    action.accept(KEY_GENERIC_CAST a[pos]);
   }
```

```
 }

 @Override
 public long skip(long n) {
  if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
  final int max = getWorkingMax();
  if (pos >= max) return 0;
  final int remaining = max - pos;
  if (n < remaining) {
   pos = it.unimi.dsi.fastutil.SafeMath.safeLongToInt(pos + n);
   return n;
  }
  n = remaining;
  pos = max;
  return n;
 }

 @Override
 public KEY_SPLITERATOR KEY_GENERIC trySplit() {
  final int max = getWorkingMax();
  int retLen = (max - pos) >> 1;
  if (retLen <= 1) return null;
  // Update instance max with the last seen list size (if needed) before continuing
  this.max = max;
  int myNewPos = pos + retLen;
  int retMax = myNewPos;
  int oldPos = pos;
  this.pos = myNewPos;
  this.hasSplit = true;
  return new Spliterator(oldPos, retMax, true);
 }
}

/** {@inheritDoc}
 *
 * <p>In addition to the usual trait of {@link java.util.Spliterator#DISTINCT DISTINCT} for
 * sets, the returned spliterator will also {@linkplain java.util.Spliterator#characteristics() report}
 * the trait {@link java.util.Spliterator#ORDERED ORDERED}.
 *
 * <p>The returned spliterator is late-binding; it will track structural changes
 * after the current item, up until the first {@link java.util.Spliterator#trySplit() trySplit()},
 * at which point the maximum index will be fixed.
 * <br>Structural changes before the current item or after the first
 * {@link java.util.Spliterator#trySplit() trySplit()} will result in unspecified behavior.
 */
@Override
public KEY_SPLITERATOR KEY_GENERIC spliterator() {
 return new Spliterator();
```

```
 }

 @Override
 public boolean contains(final KEY_TYPE k) { return findKey(k) != -1; }

 @Override
 public int size() { return size; }

 @Override
 public boolean remove(final KEY_TYPE k) {
  final int pos = findKey(k);
  if (pos == -1) return false;
  final int tail = size - pos - 1;
  for(int i = 0; i < tail; i++) a[pos + i] = a[pos + i + 1];
  size--;
#if KEYS_REFERENCE
  a[size] = null;
#endif
  return true;
 }

 @Override
 public boolean add(final KEY_GENERIC_TYPE k) {
  final int pos = findKey(k);
  if (pos != -1) return false;
  if (size == a.length) {
   final KEY_TYPE[] b = new KEY_TYPE[size == 0 ? 2 : size * 2];
   for(int i = size; i-- != 0;) b[i] = a[i];
   a = b;
  }
  a[size++] = k;
  return true;
 }

 @Override
 public void clear() {
#if KEYS_REFERENCE
  java.util.Arrays.fill(a, 0, size, null);
#endif
  size = 0;
 }

 @Override
 public boolean isEmpty() { return size == 0; }

#if KEYS_PRIMITIVE
 @Override
 public KEY_TYPE[] TO_KEY_ARRAY() {
```

```
  return java.util.Arrays.copyOf(a, size);
 }

 @Override
 public KEY_TYPE[] toArray(KEY_TYPE a[]) {
  if (a == null || a.length < size) a = new KEY_TYPE[size];
  System.arraycopy(this.a, 0, a, 0, size);
  return a;
 }
#else // KEYS_REFERENCE
 @Override
 public Object[] toArray() {
  // A subtle part of the spec says the returned array must be Object[] exactly.
  return java.util.Arrays.copyOf(a, size, Object[].class);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public KEY_GENERIC KEY_GENERIC_TYPE[] toArray(KEY_GENERIC_TYPE a[]) {
  if (a == null) {
   a = KEY_GENERIC_ARRAY_CAST new Object[size];
  } else if (a.length < size) {
   a = KEY_GENERIC_ARRAY_CAST java.lang.reflect.Array.newInstance(a.getClass().getComponentType(), size);
  }
  System.arraycopy(this.a, 0, a, 0, size);
  if (a.length > size) {
   a[size] = null;
  }
  return a;
 }
#endif

 /** Returns a deep copy of this set.
  *
  * <p>This method performs a deep copy of this array set; the data stored in the
  * set, however, is not cloned. Note that this makes a difference only for object keys.
  *
  *  @return a deep copy of this set.
  */
 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public ARRAY_SET KEY_GENERIC clone() {
  ARRAY_SET KEY_GENERIC c;
  try {
   c = (ARRAY_SET KEY_GENERIC)super.clone();
  }
  catch(CloneNotSupportedException cantHappen) {
   throw new InternalError();
```

```
 }
 c.a = a.clone();
 return c;
}

private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
 s.defaultWriteObject();
 for(int i = 0; i < size; i++) s.WRITE_KEY(a[i]);
}

private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
 s.defaultReadObject();
 a = new KEY_TYPE[size];
 for(int i = 0; i < size; i++) a[i] = s.READ_KEY();
}
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/ArraySet.drv
No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

import java.util.Map;
import java.util.NoSuchElementException;
import java.util.function.Consumer;


#if ! KEYS_REFERENCE
import it.unimi.dsi.fastutil.objects.AbstractObjectSet;
import it.unimi.dsi.fastutil.objects.ObjectIterator;
```

```
import it.unimi.dsi.fastutil.objects.ObjectSpliterator;
import it.unimi.dsi.fastutil.objects.ObjectSpliterators;
#endif

#if KEY_INDEX != VALUE_INDEX && !(KEYS_REFERENCE && VALUES_REFERENCE)
import VALUE_PACKAGE.VALUE_COLLECTION;
import VALUE_PACKAGE.VALUE_ABSTRACT_COLLECTION;
import VALUE_PACKAGE.VALUE_ARRAYS;
#endif
#if VALUES_PRIMITIVE && ! VALUES_INT_LONG_DOUBLE && KEY_INDEX != VALUE_INDEX
import VALUE_PACKAGE.METHOD_ARG_VALUE_CONSUMER;
#endif

/** A simple, brute-force implementation of a map based on two parallel backing arrays.
*
* <p>The main purpose of this
* implementation is that of wrapping cleanly the brute-force approach to the storage of a very
* small number of pairs: just put them into two parallel arrays and scan linearly to find an item.
*/

public class ARRAY_MAP KEY_VALUE_GENERIC extends ABSTRACT_MAP KEY_VALUE_GENERIC
implements java.io.Serializable, Cloneable {

 private static final long serialVersionUID = 1L;
 /** The keys (valid up to {@link #size}, excluded). */
 private transient KEY_TYPE[] key;
 /** The values (parallel to {@link #key}). */
 private transient VALUE_TYPE[] value;
 /** The number of valid entries in {@link #key} and {@link #value}. */
 private int size;

 /** Cached set of entries. */
 private transient FastEntrySet KEY_VALUE_GENERIC entries;

 /** Cached set of keys. */
 private transient SET KEY_GENERIC keys;

 /** Cached collection of values. */
 private transient VALUE_COLLECTION VALUE_GENERIC values;

 /** Creates a new empty array map with given key and value backing arrays. The resulting map will have as many
entries as the given arrays.
  *
  * <p>It is responsibility of the caller that the elements of {@code key} are distinct.
  *
  * @param key the key array.
  * @param value the value array (it <em>must</em> have the same length as {@code key}).
  */
```

```
 public ARRAY_MAP(final KEY_TYPE[] key, final VALUE_TYPE[] value) {
  this.key = key;
  this.value = value;
  size = key.length;
  if(key.length != value.length) throw new IllegalArgumentException("Keys and values have different lengths (" +
key.length + ", " + value.length + ")");
 }

 /** Creates a new empty array map.
  */
 public ARRAY_MAP() {
  this.key = ARRAYS.EMPTY_ARRAY;
  this.value = VALUE_ARRAYS.EMPTY_ARRAY;
 }

 /** Creates a new empty array map of given capacity.
  *
  * @param capacity the initial capacity.
  */
 public ARRAY_MAP(final int capacity) {
  this.key = new KEY_TYPE[capacity];
  this.value = new VALUE_TYPE[capacity];
 }

 /** Creates a new empty array map copying the entries of a given map.
  *
  * @param m a map.
  */
 public ARRAY_MAP(final MAP KEY_VALUE_GENERIC m) {
  this(m.size());
  int i = 0;
  for(MAP.Entry KEY_VALUE_GENERIC e : m.ENTRYSET()) {
   key[i] = e.ENTRY_GET_KEY();
   value[i] = e.ENTRY_GET_VALUE();
   i++;
  }
  size = i;
 }

 /** Creates a new empty array map copying the entries of a given map.
  *
  * @param m a map.
  */
 public ARRAY_MAP(final Map<? extends KEY_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> m)
{
  this(m.size());
  int i = 0;
  for(Map.Entry<? extends KEY_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> e : m.entrySet()) {
```

```
   key[i] = KEY_CLASS2TYPE(e.getKey());
   value[i] = VALUE_CLASS2TYPE(e.getValue());
   i++;
  }
  size = i;
 }

 /** Creates a new array map with given key and value backing arrays, using the given number of elements.
  *
  * <p>It is responsibility of the caller that the first {@code size} elements of {@code key} are distinct.
  *
  * @param key the key array.
  * @param value the value array (it <em>must</em> have the same length as {@code key}).
  * @param size the number of valid elements in {@code key} and {@code value}.
  */
 public ARRAY_MAP(final KEY_TYPE[] key, final VALUE_TYPE[] value, final int size) {
  this.key = key;
  this.value = value;
  this.size = size;
  if(key.length != value.length) throw new IllegalArgumentException("Keys and values have different lengths (" +
key.length + ", " + value.length + ")");
  if (size > key.length) throw new IllegalArgumentException("The provided size (" + size + ") is larger than or equal
to the backing-arrays size (" + key.length + ")");
 }

 private final class EntrySet extends AbstractObjectSet<MAP.Entry KEY_VALUE_GENERIC> implements
FastEntrySet KEY_VALUE_GENERIC {

  // TODO Maybe make this return a list-iterator like the LinkedXHashMaps do? (same for other collection view
types)

  @Override
  public ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> iterator() {
   return new ObjectIterator<MAP.Entry KEY_VALUE_GENERIC>() {
    int curr = -1, next = 0;

    @Override
    public boolean hasNext() { return next < size; }

    @Override
    SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
    public Entry KEY_VALUE_GENERIC next() {
     if (! hasNext()) throw new NoSuchElementException();
     return new ABSTRACT_MAP.BasicEntry KEY_VALUE_GENERIC_DIAMOND(KEY_GENERIC_CAST
key[curr = next], VALUE_GENERIC_CAST value[next++]);
    }

    @Override
```

```
    public void remove() {
     if (curr == -1) throw new IllegalStateException();
     curr = -1;
     final int tail = size-- - next--;
     System.arraycopy(key, next + 1, key, next, tail);
     System.arraycopy(value, next + 1, value, next, tail);
#if KEYS_REFERENCE
     key[size] = null;
#endif
#if VALUES_REFERENCE
     value[size] = null;
#endif
    }

    @Override
    SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
    public void forEachRemaining(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> action) {
     // Hoist containing class field ref into local
     final int max = size;
     while (next < max) {
      action.accept(new ABSTRACT_MAP.BasicEntry KEY_VALUE_GENERIC_DIAMOND(KEY_GENERIC_CAST
key[curr = next], VALUE_GENERIC_CAST value[next++]));
     }
    }
   };
  }

  @Override
  public ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> fastIterator() {
   return new ObjectIterator<MAP.Entry KEY_VALUE_GENERIC>() {
    int next = 0, curr = -1;
    final BasicEntry KEY_VALUE_GENERIC entry = new BasicEntry KEY_VALUE_GENERIC_DIAMOND ();

    @Override
    public boolean hasNext() { return next < size; }

    @Override
    SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
    public Entry KEY_VALUE_GENERIC next() {
     if (! hasNext()) throw new NoSuchElementException();
     entry.key = KEY_GENERIC_CAST key[curr = next];
     entry.value = VALUE_GENERIC_CAST value[next++];
     return entry;
    }

    @Override
    public void remove() {
     if (curr == -1) throw new IllegalStateException();
```

```
     curr = -1;
     final int tail = size-- - next--;
     System.arraycopy(key, next + 1, key, next, tail);
     System.arraycopy(value, next + 1, value, next, tail);
#if KEYS_REFERENCE
     key[size] = null;
#endif
#if VALUES_REFERENCE
     value[size] = null;
#endif
    }

    @Override
    SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
    public void forEachRemaining(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> action) {
     // Hoist containing class field ref into local
     final int max = size;
     while (next < max) {
      entry.key = KEY_GENERIC_CAST key[curr = next];
      entry.value = VALUE_GENERIC_CAST value[next++];
      action.accept(entry);
     }
    }
   };
  }

  // We already have to create an Entry object for each iteration, so the overhead from having
  // skeletal implementations isn't significant.
  final class EntrySetSpliterator extends ObjectSpliterators.EarlyBindingSizeIndexBasedSpliterator<MAP.Entry
KEY_VALUE_GENERIC>
    implements ObjectSpliterator<MAP.Entry KEY_VALUE_GENERIC> {

   EntrySetSpliterator(int pos, int maxPos) {
    super(pos, maxPos);
   }

   @Override
   public int characteristics() {
    return ObjectSpliterators.SET_SPLITERATOR_CHARACTERISTICS | java.util.Spliterator.SUBSIZED |
java.util.Spliterator.ORDERED;
   }

   @Override
   SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
   protected final MAP.Entry KEY_VALUE_GENERIC get(int location) {
    return new ABSTRACT_MAP.BasicEntry KEY_VALUE_GENERIC_DIAMOND(KEY_GENERIC_CAST
key[location], VALUE_GENERIC_CAST value[location]);
   }
```

```
  @Override
  protected final EntrySetSpliterator makeForSplit(int pos, int maxPos) {
   return new EntrySetSpliterator(pos, maxPos);
  }
 }

 @Override
 public ObjectSpliterator<MAP.Entry KEY_VALUE_GENERIC> spliterator() {
  return new EntrySetSpliterator(0, size);
 }

 /** {@inheritDoc} */
 @Override
 SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
 public void forEach(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> action) {
  // Hoist containing class field ref into local
  for (int i = 0, max = size; i < max; ++i) {
   action.accept(new ABSTRACT_MAP.BasicEntry KEY_VALUE_GENERIC_DIAMOND(KEY_GENERIC_CAST
key[i], VALUE_GENERIC_CAST value[i]));
  }
 }

 /** {@inheritDoc} */
 @Override
 SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
 public void fastForEach(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> action) {
  final BasicEntry KEY_VALUE_GENERIC entry = new BasicEntry KEY_VALUE_GENERIC_DIAMOND ();
  // Hoist containing class field ref into local
  for (int i = 0, max = size; i < max; ++i) {
   entry.key = KEY_GENERIC_CAST key[i];
   entry.value = VALUE_GENERIC_CAST value[i];
   action.accept(entry);
  }
 }

 @Override
 public int size() { return size; }

 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public boolean contains(Object o) {
  if (! (o instanceof Map.Entry)) return false;
  final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
#if KEYS_PRIMITIVE
  if (e.getKey() == null || ! (e.getKey() instanceof KEY_CLASS)) return false;
#endif
#if VALUES_PRIMITIVE
```

```
   if (e.getValue() == null || ! (e.getValue() instanceof VALUE_CLASS)) return false;
#endif
   final KEY_GENERIC_TYPE k = KEY_OBJ2TYPE(KEY_GENERIC_CAST e.getKey());
   return ARRAY_MAP.this.containsKey(k) && VALUE_EQUALS(ARRAY_MAP.this.GET_VALUE(k),
VALUE_OBJ2TYPE(e.getValue()));
  }

  @Override
  SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
  public boolean remove(final Object o) {
   if (!(o instanceof Map.Entry)) return false;
   final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
#if KEYS_PRIMITIVE
   if (e.getKey() == null || ! (e.getKey() instanceof KEY_CLASS)) return false;
#endif
#if VALUES_PRIMITIVE
   if (e.getValue() == null || ! (e.getValue() instanceof VALUE_CLASS)) return false;
#endif
   final KEY_GENERIC_TYPE k = KEY_OBJ2TYPE(KEY_GENERIC_CAST e.getKey());
   final VALUE_GENERIC_TYPE v = VALUE_OBJ2TYPE(VALUE_GENERIC_CAST e.getValue());

   final int oldPos = ARRAY_MAP.this.findKey(k);
   if (oldPos == -1 || ! VALUE_EQUALS(v, ARRAY_MAP.this.value[oldPos])) return false;
   final int tail = size - oldPos - 1;
   System.arraycopy(ARRAY_MAP.this.key, oldPos + 1, ARRAY_MAP.this.key, oldPos, tail);
   System.arraycopy(ARRAY_MAP.this.value, oldPos + 1, ARRAY_MAP.this.value, oldPos, tail);
   ARRAY_MAP.this.size--;
#if KEYS_REFERENCE
   ARRAY_MAP.this.key[size] = null;
#endif
#if VALUES_REFERENCE
   ARRAY_MAP.this.value[size] = null;
#endif
   return true;
  }
 }

 @Override
 public FastEntrySet KEY_VALUE_GENERIC ENTRYSET() {
  if (entries == null) entries = new EntrySet();
  return entries;
 }

 private int findKey(final KEY_TYPE k) {
  final KEY_TYPE[] key = this.key;
  for(int i = size; i-- != 0;) if (KEY_EQUALS(key[i], k)) return i;
  return -1;
 }
```

```
 @Override
 SUPPRESS_WARNINGS_VALUE_UNCHECKED
 public VALUE_GENERIC_TYPE GET_VALUE(final KEY_TYPE k) {
  final KEY_TYPE[] key = this.key;
  for(int i = size; i-- != 0;) if (KEY_EQUALS(key[i], k)) return VALUE_GENERIC_CAST value[i];
  return defRetValue;
 }

 @Override
 public int size() { return size; }

 @Override
 public void clear() {
#if KEYS_REFERENCE || VALUES_REFERENCE
  for(int i = size; i-- != 0;) {
#if KEYS_REFERENCE
   key[i] = null;
#endif
#if VALUES_REFERENCE
   value[i] = null;
#endif
  }
#endif
  size = 0;
 }

 @Override
 public boolean containsKey(final KEY_TYPE k) { return findKey(k) != -1; }

 @Override
 public boolean containsValue(VALUE_TYPE v) {
  for(int i = size; i-- != 0;) if (VALUE_EQUALS(value[i], v)) return true;
  return false;
 }

 @Override
 public boolean isEmpty() { return size == 0; }

 @Override
 SUPPRESS_WARNINGS_VALUE_UNCHECKED
 public VALUE_GENERIC_TYPE put(KEY_GENERIC_TYPE k, VALUE_GENERIC_TYPE v) {
  final int oldKey = findKey(k);
  if (oldKey != -1) {
   final VALUE_GENERIC_TYPE oldValue = VALUE_GENERIC_CAST value[oldKey];
   value[oldKey] = v;
   return oldValue;
  }
```

```
  if (size == key.length) {
   final KEY_TYPE[] newKey = new KEY_TYPE[size == 0 ? 2 : size * 2];
   final VALUE_TYPE[] newValue = new VALUE_TYPE[size == 0 ? 2 : size * 2];
   for(int i = size; i-- != 0;) {
    newKey[i] = key[i];
    newValue[i] = value[i];
   }
   key = newKey;
   value = newValue;
  }
  key[size] = k;
  value[size] = v;
  size++;
  return defRetValue;
 }

 @Override
 SUPPRESS_WARNINGS_VALUE_UNCHECKED
 public VALUE_GENERIC_TYPE REMOVE_VALUE(final KEY_TYPE k) {
  final int oldPos = findKey(k);
  if (oldPos == -1) return defRetValue;
  final VALUE_GENERIC_TYPE oldValue = VALUE_GENERIC_CAST value[oldPos];
  final int tail = size - oldPos - 1;
  System.arraycopy(key, oldPos + 1, key, oldPos, tail);
  System.arraycopy(value, oldPos + 1, value, oldPos, tail);
  size--;
#if KEYS_REFERENCE
  key[size] = null;
#endif
#if VALUES_REFERENCE
  value[size] = null;
#endif
  return oldValue;
 }

 private final class KeySet extends ABSTRACT_SET KEY_GENERIC {
  @Override
  public boolean contains(final KEY_TYPE k) {
   return findKey(k) != -1;
  }

  @Override
  public boolean remove(final KEY_TYPE k) {
    final int oldPos = findKey(k);
    if (oldPos == -1) return false;
    final int tail = size - oldPos - 1;
    System.arraycopy(key, oldPos + 1, key, oldPos, tail);
    System.arraycopy(value, oldPos + 1, value, oldPos, tail);
```

```
    size--;
#if KEYS_REFERENCE
   ARRAY_MAP.this.key[size] = null;
#endif
#if VALUES_REFERENCE
   ARRAY_MAP.this.value[size] = null;
#endif
    return true;
  }

  @Override
  public KEY_ITERATOR KEY_GENERIC iterator() {
   return new KEY_ITERATOR KEY_GENERIC() {
    int pos = 0;
    @Override
    public boolean hasNext() {
     return pos < size;
    }

    @Override
    SUPPRESS_WARNINGS_KEY_UNCHECKED
    public KEY_GENERIC_TYPE NEXT_KEY() {
     if (! hasNext()) throw new NoSuchElementException();
     return KEY_GENERIC_CAST key[pos++];
    }

    @Override
    public void remove() {
     if (pos == 0) throw new IllegalStateException();
     final int tail = size - pos;
     System.arraycopy(key, pos, key, pos - 1, tail);
     System.arraycopy(value, pos, value, pos - 1, tail);
     size--;
     pos--;
#if KEYS_REFERENCE
     ARRAY_MAP.this.key[size] = null;
#endif
#if VALUES_REFERENCE
     ARRAY_MAP.this.value[size] = null;
#endif
    }

    @Override
    SUPPRESS_WARNINGS_KEY_UNCHECKED
    public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
     // Hoist containing class field ref into local
     final int max = size;
     while (pos < max) {
```

```
      action.accept(KEY_GENERIC_CAST key[pos++]);
     }
    }

    // TODO either override skip or extend from AbstractIndexBasedIterator.
   };
  }

  final class KeySetSpliterator extends SPLITERATORS.EarlyBindingSizeIndexBasedSpliterator KEY_GENERIC
    implements KEY_SPLITERATOR KEY_GENERIC {

   KeySetSpliterator(int pos, int maxPos) {
    super(pos, maxPos);
   }

   @Override
   public int characteristics() {
    return SPLITERATORS.SET_SPLITERATOR_CHARACTERISTICS | java.util.Spliterator.SUBSIZED |
java.util.Spliterator.ORDERED;
   }

   @Override
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   protected final KEY_GENERIC_TYPE get(int location) { return KEY_GENERIC_CAST key[location]; }

   @Override
   protected final KeySetSpliterator makeForSplit(int pos, int maxPos) {
    return new KeySetSpliterator(pos, maxPos);
   }

   @Override
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
    // Hoist containing class field ref into local
    final int max = size;
    while (pos < max) {
     action.accept(KEY_GENERIC_CAST key[pos++]);
    }
   }
  }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC spliterator() {
   return new KeySetSpliterator(0, size);
  }

  @Override
  SUPPRESS_WARNINGS_KEY_UNCHECKED
```

```
 public void forEach(METHOD_ARG_KEY_CONSUMER action) {
  // Hoist containing class field ref into local
  for (int i = 0, max = size; i < max; ++i) {
   action.accept(KEY_GENERIC_CAST key[i]);
  }
 }

 @Override
 public int size() {
  return size;
 }

 @Override
 public void clear() {
  ARRAY_MAP.this.clear();
 }
}

@Override
public SET KEY_GENERIC keySet() {
 if (keys == null) keys = new KeySet();
 return keys;
}

private final class ValuesCollection extends VALUE_ABSTRACT_COLLECTION VALUE_GENERIC {
 @Override
 public boolean contains(final VALUE_TYPE v) {
  return containsValue(v);
 }

 @Override
 public VALUE_PACKAGE.VALUE_ITERATOR VALUE_GENERIC iterator() {
  return new VALUE_PACKAGE.VALUE_ITERATOR VALUE_GENERIC() {
   int pos = 0;
   @Override
   public boolean hasNext() {
    return pos < size;
   }

   @Override
   SUPPRESS_WARNINGS_VALUE_UNCHECKED
   public VALUE_GENERIC_TYPE NEXT_VALUE() {
    if (! hasNext()) throw new NoSuchElementException();
    return VALUE_GENERIC_CAST value[pos++];
   }

   @Override
   public void remove() {
```

```
      if (pos == 0) throw new IllegalStateException();
      final int tail = size - pos;
      System.arraycopy(key, pos, key, pos - 1, tail);
      System.arraycopy(value, pos, value, pos - 1, tail);
      size--;
      pos--;
#if KEYS_REFERENCE
      ARRAY_MAP.this.key[size] = null;
#endif
#if VALUES_REFERENCE
      ARRAY_MAP.this.value[size] = null;
#endif
     }

     @Override
     SUPPRESS_WARNINGS_VALUE_UNCHECKED
     public void forEachRemaining(final METHOD_ARG_VALUE_CONSUMER action) {
      // Hoist containing class field ref into local
      final int max = size;
      while (pos < max) {
       action.accept(VALUE_GENERIC_CAST value[pos++]);
      }
     }

     // TODO either override skip or extend from AbstractIndexBasedIterator.
    };
   }

   final class ValuesSpliterator extends
VALUE_PACKAGE.VALUE_SPLITERATORS.EarlyBindingSizeIndexBasedSpliterator VALUE_GENERIC
     implements VALUE_PACKAGE.VALUE_SPLITERATOR VALUE_GENERIC {

    ValuesSpliterator(int pos, int maxPos) {
     super(pos, maxPos);
    }

    @Override
    public int characteristics() {
     return VALUE_PACKAGE.VALUE_SPLITERATORS.COLLECTION_SPLITERATOR_CHARACTERISTICS
      | java.util.Spliterator.SUBSIZED | java.util.Spliterator.ORDERED;
    }

    @Override
    SUPPRESS_WARNINGS_VALUE_UNCHECKED
    protected final VALUE_GENERIC_TYPE get(int location) { return VALUE_GENERIC_CAST value[location]; }

    @Override
    protected final ValuesSpliterator makeForSplit(int pos, int maxPos) {
```

```
   return new ValuesSpliterator(pos, maxPos);
  }

  @Override
  SUPPRESS_WARNINGS_VALUE_UNCHECKED
  public void forEachRemaining(final METHOD_ARG_VALUE_CONSUMER action) {
   // Hoist containing class field ref into local
   final int max = size;
   while (pos < max) {
    action.accept(VALUE_GENERIC_CAST value[pos++]);
   }
  }
 }

 @Override
 public VALUE_PACKAGE.VALUE_SPLITERATOR VALUE_GENERIC spliterator() {
  return new ValuesSpliterator(0, size);
 }

 @Override
 SUPPRESS_WARNINGS_VALUE_UNCHECKED
 public void forEach(METHOD_ARG_VALUE_CONSUMER action) {
  // Hoist containing class field ref into local
  for (int i = 0, max = size; i < max; ++i) {
   action.accept(VALUE_GENERIC_CAST value[i]);
  }
 }

 @Override
 public int size() {
  return size;
 }

 @Override
 public void clear() {
  ARRAY_MAP.this.clear();
 }
}

@Override
public VALUE_COLLECTION VALUE_GENERIC values() {
 if (values == null) values = new ValuesCollection();
 return values;
}

/** Returns a deep copy of this map.
 *
 * <p>This method performs a deep copy of this hash map; the data stored in the
```

```
 * map, however, is not cloned. Note that this makes a difference only for object keys.
 *
 *  @return a deep copy of this map.
 */
@Override
SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
public ARRAY_MAP KEY_VALUE_GENERIC clone() {
 ARRAY_MAP KEY_VALUE_GENERIC c;
 try {
  c = (ARRAY_MAP KEY_VALUE_GENERIC)super.clone();
 }
 catch(CloneNotSupportedException cantHappen) {
  throw new InternalError();
 }
 c.key = key.clone();
 c.value = value.clone();
 c.entries = null;
 c.keys = null;
 c.values = null;
 return c;
}

private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
 s.defaultWriteObject();
 for(int i = 0, max = size; i < max; i++) {
  s.WRITE_KEY(key[i]);
  s.WRITE_VALUE(value[i]);
 }
}

private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
 s.defaultReadObject();
 key = new KEY_TYPE[size];
 value = new VALUE_TYPE[size];
 for(int i = 0; i < size; i++) {
  key[i] = s.READ_KEY();
  value[i] = s.READ_VALUE();
 }
}
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/ArrayMap.drv
No license file was found, but licenses were detected in source scan.

```
package PACKAGE;

import java.lang.Iterable;
#if KEYS_PRIMITIVE
import java.util.Objects;
import java.util.function.Consumer;
#if KEYS_BYTE_CHAR_SHORT_FLOAT
import WIDENED_PACKAGE.KEY_WIDENED_ITERATOR;
import WIDENED_PACKAGE.WIDENED_ITERATORS;
import WIDENED_PACKAGE.KEY_WIDENED_SPLITERATOR;
import WIDENED_PACKAGE.WIDENED_SPLITERATORS;
#endif

/** A type-specific {@link Iterable} that strengthens that specification of {@link #iterator()} and {@link
#forEach(Consumer)}.
*
* <p>Note that whenever there exist a primitive consumer in {@link java.util.function} (e.g., {@link
java.util.function.IntConsumer}),
* trying to access any version of {@link #forEach(Consumer)} using a lambda expression with untyped arguments
* will generate an ambiguous method error. This can be easily solved by specifying the type of the argument, as in
* <pre>
*    intIterable.forEach((int x) -&gt; { // Do something with x });
* </pre>
* <p>The same problem plagues, for example, {@link
java.util.PrimitiveIterator.OfInt#forEachRemaining(java.util.function.IntConsumer)}.
*
* <p><strong>Warning</strong>: Java will let you write &ldquo;colon&rdquo; {@code for} statements with
primitive-type
* loop variables; however, what is (unfortunately) really happening is that at each iteration an
* unboxing (and, in the case of {@code fastutil} type-specific data structures, a boxing) will be performed. Watch
out.
*
* @see Iterable
*/
```

```
#else // !KEYS_PRIMITIVE

/** A type-specific {@link Iterable} that strengthens that specification of {@link #iterator()}.
*
* @see Iterable
*/

#endif


public interface KEY_ITERABLE KEY_GENERIC extends Iterable<KEY_GENERIC_CLASS> {

 /** Returns a type-specific iterator.
  *
  * @apiNote Note that this specification strengthens the one given in {@link Iterable#iterator()}.
  *
  * @return a type-specific iterator.
  * @see Iterable#iterator()
  */

 @Override
 KEY_ITERATOR KEY_GENERIC iterator();

#if KEYS_PRIMITIVE && !KEY_CLASS_Boolean
#if KEYS_INT_LONG_DOUBLE
 /** Returns a primitive iterator on the elements of this iterable.<p>
  *
  * This method is identical to {@link #iterator()}, as the type-specific
  * iterator is already compatible with the JDK's primitive iterators.
  * It only exists for compatibility with the other primitive types' {@code Iterable}s
  * that have use for widened iterators.
  *
  * @return a primitive iterator on the elements of this iterable.
  * @since 8.5.0
  */
 default KEY_WIDENED_ITERATOR KEY_WIDENED_ITERATOR_METHOD() { return iterator(); }
#else
#if KEY_CLASS_Character
 /**
  * Returns a widened primitive iterator on the elements of this iterable.<p>
  *
  * This method is provided for the purpose of APIs that expect only the JDK's
  * primitive iterators, of which there are only {@code int}, {@code long}, and {@code double}.
  *
  * <p><b>WARNING:</b> This is <em>not</em> the same as converting the source to a sequence
  * of code points. This returned instance literally performs {@code (int)(charValue)} casts.
  * Surrogate pairs will be left as separate elements instead of combined into a single element
```

```
  * with the code point it represents. See {@link Character} for more discussion on code points,
  * char values, and surrogate pairs.
  *
  * @return a widened primitive iterator on the elements of this iterable.
  * @since 8.5.0
  */
#else
 /**
  * Returns a widened primitive iterator on the elements of this iterable.<p>
  *
  * This method is provided for the purpose of APIs that expect only the JDK's
  * primitive iterators, of which there are only {@code int}, {@code long}, and {@code double}.
  *
  * @return a widened primitive iterator on the elements of this iterable.
  * @since 8.5.0
  */
#endif
 default KEY_WIDENED_ITERATOR KEY_WIDENED_ITERATOR_METHOD() {
  return WIDENED_ITERATORS.wrap(iterator());
 }
#endif
#endif

 // If you change these default spliterator methods, you will likely need to update Collection, List, Set, and SortedSet too.

 /** Returns a type-specific spliterator on the elements of this iterable.
  *
  * @apiNote Note that this specification strengthens the one given in
  * {@link java.lang.Iterable#spliterator()}.
  *
  * @return a type-specific spliterator on the elements of this iterable.
  * @since 8.5.0
  */
 @Override
#if SPLITERATOR_ASSURE_OVERRIDE
 abstract KEY_SPLITERATOR KEY_GENERIC spliterator();
#else
 default KEY_SPLITERATOR KEY_GENERIC spliterator() {
  return SPLITERATORS.asSpliteratorUnknownSize(iterator(), 0);
 }
#endif

#if KEYS_PRIMITIVE
#if !KEY_CLASS_Boolean
#if KEYS_INT_LONG_DOUBLE
 /** Returns a primitive spliterator on the elements of this iterable.<p>
  *
```

```
  * This method is identical to {@link #spliterator()}, as the type-specific
  * spliterator is already compatible with the JDK's primitive spliterators.
  * It only exists for compatibility with the other primitive types' {@code Iterable}s
  * that have use for widened spliterators.
  *
  * @return a primitive spliterator on the elements of this collection.
  * @since 8.5.0
  */
 default KEY_WIDENED_SPLITERATOR KEY_WIDENED_SPLITERATOR_METHOD() { return spliterator();
}
#else
#if KEY_CLASS_Character
 /** Returns widened primitive spliterator on the elements of this iterable.<p>
  *
  * This method is provided for the purpose of APIs that expect only the JDK's
  * primitive spliterators, of which there are only {@code int}, {@code long}, and {@code double}.
  *
  * <p><b>WARNING:</b> This is <em>not</em> the same as converting the source to a sequence
  * of code points. This returned instance literally performs {@code (int)(charValue)} casts.
  * Surrogate pairs will be left as separate elements instead of combined into a single element
  * with the code point it represents. See {@link Character} for more discussion on code points,
  * char values, and surrogate pairs.
  *
  * @implSpec The default implementation widens the spliterator from {@link #spliterator()}.
  * @return a widened primitive spliterator on the elements of this iterable.
  * @since 8.5.0
  */
#else
 /** Returns widened primitive spliterator on the elements of this iterable.<p>
  *
  * This method is provided for the purpose of APIs that expect only the JDK's
  * primitive spliterators, of which there are only {@code int}, {@code long}, and {@code double}.
  *
  * @implSpec The default implementation widens the spliterator from {@link #spliterator()}.
  * @return a widened primitive spliterator on the elements of this iterable.
  * @since 8.5.0
  */
#endif
 default KEY_WIDENED_SPLITERATOR KEY_WIDENED_SPLITERATOR_METHOD() {
  return WIDENED_SPLITERATORS.wrap(spliterator());
 }
#endif
#endif


 /**
  * Performs the given action for each element of this type-specific {@link java.lang.Iterable}
  * until all elements have been processed or the action throws an
```

```
 * exception.
 *
 * @param action the action to be performed for each element.
 * @see java.lang.Iterable#forEach(java.util.function.Consumer)
 * @since 8.0.0
 * @apiNote Implementing classes should generally override this method, and take the default
 *   implementation of the other overloads which will delegate to this method (after proper
 *   conversions).
 */
default void forEach(final METHOD_ARG_KEY_CONSUMER action) {
 Objects.requireNonNull(action);
 iterator().forEachRemaining(action);
}

#if KEYS_INT_LONG_DOUBLE
// Because our primitive Consumer interface extends both the JDK's primitive
// and object Consumer interfaces, calling this method with it would be ambiguous.
// This overload exists to pass it to the proper primitive overload.
/**
 * Performs the given action for each element of this type-specific {@link java.lang.Iterable}
 * until all elements have been processed or the action throws an exception.
 *
 * <p><b>WARNING</b>: Overriding this method is almost always a mistake, as this
 * overload only exists to disambiguate. Instead, override the {@code forEach()} overload
 * that uses the JDK's primitive consumer type (e.g. {@link java.util.function.IntConsumer}).
 *
 * <p>If Java supported final default methods, this would be one, but sadly it does not.
 *
 * <p>If you checked and are overriding the version with {@code java.util.function.XConsumer}, and
 * still see this warning, then your IDE is incorrectly conflating this method with the proper
 * method to override, and you can safely ignore this message.
 *
 * @param action the action to be performed for each element.
 * @see java.lang.Iterable#forEach(java.util.function.Consumer)
 * @since 8.5.0
 */
default void forEach(final KEY_CONSUMER action) {
 forEach((JDK_PRIMITIVE_KEY_CONSUMER) action);
}
#elif KEYS_BYTE_CHAR_SHORT_FLOAT
/**
 * Performs the given action for each element of this type-specific {@link java.lang.Iterable},
 * performing widening primitive casts, until all elements have been processed or the action
 * throws an exception.
 *
 * @param action the action to be performed for each element.
 * @see java.lang.Iterable#forEach(java.util.function.Consumer)
 * @since 8.0.0
```

```
 * @implNote Unless the argument is type-specific, this method will introduce an intermediary
 *   lambda to perform widening casts. Please use the type-specific overload to avoid this overhead.
 */
default void forEach(final JDK_PRIMITIVE_KEY_CONSUMER action) {
 Objects.requireNonNull(action);
 forEach(action instanceof KEY_CONSUMER ? (KEY_CONSUMER)action : (KEY_CONSUMER)action::accept);
}
#endif

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default void forEach(final Consumer<? super KEY_GENERIC_CLASS> action) {
 Objects.requireNonNull(action);
 // The instanceof and cast is required for performance. Without it, calls routed through this
 // overload using a primitive consumer would go through the slow lambda.
 forEach(action instanceof METHOD_ARG_KEY_CONSUMER ? (METHOD_ARG_KEY_CONSUMER)action :
(METHOD_ARG_KEY_CONSUMER) action::accept);
}
#endif
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Iterable.drv
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Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/io/FastMultiByteArrayInputStream.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/io/FastBufferedOutputStream.java

* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/io/MeasurableStream.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/io/MeasurableOutputStream.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/io/FastBufferedInputStream.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/TextIO.drv
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/io/FastByteArrayOutputStream.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/io/RepositionableStream.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/io/MeasurableInputStream.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/BinIO.drv
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/io/InspectableFileCachedInputStream.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/io/FastByteArrayInputStream.java

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```
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```

```
*/


package PACKAGE;

import java.util.SortedSet;
import java.util.NoSuchElementException;
#if KEYS_REFERENCE
import java.util.Comparator;
#endif
#if KEYS_BYTE_CHAR_SHORT_FLOAT
import WIDENED_PACKAGE.KEY_WIDENED_SPLITERATOR;
import WIDENED_PACKAGE.WIDENED_SPLITERATORS;
#endif


/** A class providing static methods and objects that do useful things with type-specific sorted sets.
*
* @see java.util.Collections
*/

public final class SORTED_SETS {

 private SORTED_SETS() {}

 /** An immutable class representing the empty sorted set and implementing a type-specific set interface.
  *
  * <p>This class may be useful to implement your own in case you subclass
  * a type-specific sorted set.
  */

 public static class EmptySet KEY_GENERIC extends SETS.EmptySet KEY_GENERIC implements
SORTED_SET KEY_GENERIC, java.io.Serializable, Cloneable {
  private static final long serialVersionUID = -7046029254386353129L;

  protected EmptySet() {}

  @Override
  SUPPRESS_WARNINGS_KEY_UNCHECKED
  public KEY_BIDI_ITERATOR KEY_GENERIC iterator(KEY_GENERIC_TYPE from) { return
ITERATORS.EMPTY_ITERATOR; }

  @Override
  SUPPRESS_WARNINGS_KEY_UNCHECKED
  public SORTED_SET KEY_GENERIC subSet(KEY_GENERIC_TYPE from, KEY_GENERIC_TYPE to) { return
EMPTY_SET; }

  @Override
```

```
  SUPPRESS_WARNINGS_KEY_UNCHECKED
  public SORTED_SET KEY_GENERIC headSet(KEY_GENERIC_TYPE from) { return EMPTY_SET; }

  @Override
  SUPPRESS_WARNINGS_KEY_UNCHECKED
  public SORTED_SET KEY_GENERIC tailSet(KEY_GENERIC_TYPE to) { return EMPTY_SET; }

  @Override
  public KEY_GENERIC_TYPE FIRST() { throw new NoSuchElementException(); }

  @Override
  public KEY_GENERIC_TYPE LAST() { throw new NoSuchElementException(); }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return null; }

#if KEYS_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_SET KEY_GENERIC subSet(KEY_GENERIC_CLASS from, KEY_GENERIC_CLASS to) {
return EMPTY_SET; }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_SET KEY_GENERIC headSet(KEY_GENERIC_CLASS from) { return EMPTY_SET; }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_SET KEY_GENERIC tailSet(KEY_GENERIC_CLASS to) { return EMPTY_SET; }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS first() { throw new NoSuchElementException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS last() { throw new NoSuchElementException(); }
#endif
```

```
 @Override
 public Object clone() { return EMPTY_SET; }

 private Object readResolve() { return EMPTY_SET; }
}


/** An empty sorted set (immutable). It is serializable and cloneable.
 *
 */
SUPPRESS_WARNINGS_KEY_RAWTYPES
public static final EmptySet EMPTY_SET = new EmptySet();

#if KEYS_REFERENCE
/** Returns an empty sorted set (immutable). It is serializable and cloneable.
 *
 * <p>This method provides a typesafe access to {@link #EMPTY_SET}.
 * @return an empty sorted set (immutable).
 */
@SuppressWarnings("unchecked")
public static KEY_GENERIC SET KEY_GENERIC emptySet() {
 return EMPTY_SET;
}
#endif

/** A class representing a singleton sorted set.
 *
 * <p>This class may be useful to implement your own in case you subclass
 * a type-specific sorted set.
 *
 */

public static class Singleton KEY_GENERIC extends SETS.Singleton KEY_GENERIC implements SORTED_SET
KEY_GENERIC, java.io.Serializable, Cloneable {

 private static final long serialVersionUID = -7046029254386353129L;

 final KEY_COMPARATOR KEY_SUPER_GENERIC comparator;

 protected Singleton(final KEY_GENERIC_TYPE element, final KEY_COMPARATOR KEY_SUPER_GENERIC
comparator) {
  super(element);
  this.comparator = comparator;
 }

 Singleton(final KEY_GENERIC_TYPE element) {
  this(element, null);
```

```
}

SUPPRESS_WARNINGS_KEY_UNCHECKED
final int compare(final KEY_GENERIC_TYPE k1, final KEY_GENERIC_TYPE k2) {
 return comparator == null ? KEY_CMP(k1, k2) : comparator.compare(k1, k2);
}

@Override
public KEY_BIDI_ITERATOR KEY_GENERIC iterator(KEY_GENERIC_TYPE from) {
 KEY_BIDI_ITERATOR KEY_GENERIC i = iterator();
 if (compare(element, from) <= 0) i.NEXT_KEY();
 return i;
}

@Override
public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return comparator; }

@Override
public KEY_SPLITERATOR KEY_GENERIC spliterator() { return SPLITERATORS.singleton(element,
comparator); }

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public SORTED_SET KEY_GENERIC subSet(final KEY_GENERIC_TYPE from, final KEY_GENERIC_TYPE
to) { if (compare(from, element) <= 0 && compare(element, to) < 0) return this; return EMPTY_SET; }

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public SORTED_SET KEY_GENERIC headSet(final KEY_GENERIC_TYPE to) { if (compare(element, to) < 0)
return this; return EMPTY_SET; }

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public SORTED_SET KEY_GENERIC tailSet(final KEY_GENERIC_TYPE from) { if (compare(from, element)
<= 0) return this; return EMPTY_SET; }

@Override
public KEY_GENERIC_TYPE FIRST() { return element; }

@Override
public KEY_GENERIC_TYPE LAST() { return element; }

#if KEYS_PRIMITIVE
#if KEYS_BYTE_CHAR_SHORT_FLOAT
@Override
public KEY_WIDENED_SPLITERATOR KEY_WIDENED_SPLITERATOR_METHOD() {
 return WIDENED_SPLITERATORS.singleton(
  element,
```

```
   (KEY_TYPE_WIDENED left, KEY_TYPE_WIDENED right) ->
comparator().compare(KEY_NARROWING(left), KEY_NARROWING(right)));
  }
#endif

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_SET KEY_GENERIC subSet(final KEY_CLASS from, final KEY_CLASS to) { return
subSet(KEY_CLASS2TYPE(from), KEY_CLASS2TYPE(to)); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_SET KEY_GENERIC headSet(final KEY_CLASS to) { return headSet(KEY_CLASS2TYPE(to));
}

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_SET KEY_GENERIC tailSet(final KEY_CLASS from) { return
tailSet(KEY_CLASS2TYPE(from)); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_CLASS first() { return KEY2OBJ(element); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_CLASS last() { return KEY2OBJ(element); }
#endif
 }


 /** Returns a type-specific immutable sorted set containing only the specified element. The returned sorted set is
serializable and cloneable.
  *
  * @param element the only element of the returned sorted set.
  * @return a type-specific immutable sorted set containing just {@code element}.
  */
```

```
 public static KEY_GENERIC SORTED_SET KEY_GENERIC singleton(final KEY_GENERIC_TYPE element) {
  return new Singleton KEY_GENERIC_DIAMOND(element);
 }

 /** Returns a type-specific immutable sorted set containing only the specified element, and using a specified comparator. The returned sorted set is serializable and cloneable.
  *
  * @param element the only element of the returned sorted set.
  * @param comparator the comparator to use in the returned sorted set.
  * @return a type-specific immutable sorted set containing just {@code element}.
  */

 public static KEY_GENERIC SORTED_SET KEY_GENERIC singleton(final KEY_GENERIC_TYPE element, final KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
  return new Singleton KEY_GENERIC_DIAMOND(element, comparator);
 }

#if KEYS_PRIMITIVE

 /** Returns a type-specific immutable sorted set containing only the specified element. The returned sorted set is serializable and cloneable.
  *
  * @param element the only element of the returned sorted set.
  * @return a type-specific immutable sorted set containing just {@code element}.
  */

 public static KEY_GENERIC SORTED_SET KEY_GENERIC singleton(final Object element) {
  return new Singleton(KEY_OBJ2TYPE(element));
 }

 /** Returns a type-specific immutable sorted set containing only the specified element, and using a specified comparator. The returned sorted set is serializable and cloneable.
  *
  * @param element the only element of the returned sorted set.
  * @param comparator the comparator to use in the returned sorted set.
  * @return a type-specific immutable sorted set containing just {@code element}.
  */

 public static KEY_GENERIC SORTED_SET KEY_GENERIC singleton(final Object element, final KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
  return new Singleton(KEY_OBJ2TYPE(element), comparator);
 }
#endif


 /** A synchronized wrapper class for sorted sets. */

 public static class SynchronizedSortedSet KEY_GENERIC extends SETS.SynchronizedSet KEY_GENERIC
```

```
implements SORTED_SET KEY_GENERIC, java.io.Serializable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected final SORTED_SET KEY_GENERIC sortedSet;

  protected SynchronizedSortedSet(final SORTED_SET KEY_GENERIC s, final Object sync) {
   super(s, sync);
   sortedSet = s;
  }

  protected SynchronizedSortedSet(final SORTED_SET KEY_GENERIC s) {
   super(s);
   sortedSet = s;
  }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { synchronized(sync) { return
sortedSet.comparator(); } }

  @Override
  public SORTED_SET KEY_GENERIC subSet(final KEY_GENERIC_TYPE from, final KEY_GENERIC_TYPE
to) { return new SynchronizedSortedSet KEY_GENERIC_DIAMOND(sortedSet.subSet(from, to), sync); }

  @Override
  public SORTED_SET KEY_GENERIC headSet(final KEY_GENERIC_TYPE to) { return new
SynchronizedSortedSet KEY_GENERIC_DIAMOND(sortedSet.headSet(to), sync); }

  @Override
  public SORTED_SET KEY_GENERIC tailSet(final KEY_GENERIC_TYPE from) { return new
SynchronizedSortedSet KEY_GENERIC_DIAMOND(sortedSet.tailSet(from), sync); }

  @Override
  public KEY_BIDI_ITERATOR KEY_GENERIC iterator() { return sortedSet.iterator(); }

  @Override
  public KEY_BIDI_ITERATOR KEY_GENERIC iterator(final KEY_GENERIC_TYPE from) { return
sortedSet.iterator(from); }

  @Override
  public KEY_GENERIC_TYPE FIRST() {  synchronized(sync) { return sortedSet.FIRST(); } }

  @Override
  public KEY_GENERIC_TYPE LAST() {  synchronized(sync) { return sortedSet.LAST(); } }

#if KEYS_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
```

```
  @Deprecated
  @Override
  public KEY_CLASS first() {  synchronized(sync) { return sortedSet.first(); } }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_CLASS last() {  synchronized(sync) { return sortedSet.last(); } }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_SET KEY_GENERIC subSet(final KEY_CLASS from, final KEY_CLASS to) { return new
SynchronizedSortedSet(sortedSet.subSet(from, to), sync); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_SET KEY_GENERIC headSet(final KEY_CLASS to) { return new
SynchronizedSortedSet(sortedSet.headSet(to), sync); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_SET KEY_GENERIC tailSet(final KEY_CLASS from) { return new
SynchronizedSortedSet(sortedSet.tailSet(from), sync); }
#endif
 }


 /** Returns a synchronized type-specific sorted set backed by the given type-specific sorted set.
  *
  * @param s the sorted set to be wrapped in a synchronized sorted set.
  * @return a synchronized view of the specified sorted set.
  * @see java.util.Collections#synchronizedSortedSet(SortedSet)
  */
 public static KEY_GENERIC SORTED_SET KEY_GENERIC synchronize(final SORTED_SET KEY_GENERIC
s) { return new SynchronizedSortedSet KEY_GENERIC_DIAMOND(s); }

 /** Returns a synchronized type-specific sorted set backed by the given type-specific sorted set, using an assigned
object to synchronize.
  *
  * @param s the sorted set to be wrapped in a synchronized sorted set.
  * @param sync an object that will be used to synchronize the access to the sorted set.
```

```
 * @return a synchronized view of the specified sorted set.
 * @see java.util.Collections#synchronizedSortedSet(SortedSet)
 */

public static KEY_GENERIC SORTED_SET KEY_GENERIC synchronize(final SORTED_SET KEY_GENERIC s, final Object sync) { return new SynchronizedSortedSet KEY_GENERIC_DIAMOND(s, sync); }




/** An unmodifiable wrapper class for sorted sets. */

public static class UnmodifiableSortedSet KEY_GENERIC extends SETS.UnmodifiableSet KEY_GENERIC implements SORTED_SET KEY_GENERIC, java.io.Serializable {

 private static final long serialVersionUID = -7046029254386353129L;

 protected final SORTED_SET KEY_GENERIC sortedSet;

 protected UnmodifiableSortedSet(final SORTED_SET KEY_GENERIC s) {
  super(s);
  sortedSet = s;
 }

 @Override
 public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return sortedSet.comparator(); }

 @Override
 public SORTED_SET KEY_GENERIC subSet(final KEY_GENERIC_TYPE from, final KEY_GENERIC_TYPE to) { return new UnmodifiableSortedSet KEY_GENERIC_DIAMOND(sortedSet.subSet(from, to)); }

 @Override
 public SORTED_SET KEY_GENERIC headSet(final KEY_GENERIC_TYPE to) { return new UnmodifiableSortedSet KEY_GENERIC_DIAMOND(sortedSet.headSet(to)); }

 @Override
 public SORTED_SET KEY_GENERIC tailSet(final KEY_GENERIC_TYPE from) { return new UnmodifiableSortedSet KEY_GENERIC_DIAMOND(sortedSet.tailSet(from)); }

 @Override
 public KEY_BIDI_ITERATOR KEY_GENERIC iterator() { return ITERATORS.unmodifiable(sortedSet.iterator()); }

 @Override
 public KEY_BIDI_ITERATOR KEY_GENERIC iterator(final KEY_GENERIC_TYPE from) { return ITERATORS.unmodifiable(sortedSet.iterator(from)); }
```

```
  @Override
  public KEY_GENERIC_TYPE FIRST() {  return sortedSet.FIRST(); }

  @Override
  public KEY_GENERIC_TYPE LAST() {  return sortedSet.LAST(); }

#if KEYS_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_CLASS first() {  return sortedSet.first(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_CLASS last() {  return sortedSet.last(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_SET KEY_GENERIC subSet(final KEY_GENERIC_CLASS from, final
KEY_GENERIC_CLASS to) { return new UnmodifiableSortedSet(sortedSet.subSet(from, to)); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_SET KEY_GENERIC headSet(final KEY_GENERIC_CLASS to) { return new
UnmodifiableSortedSet(sortedSet.headSet(to)); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_SET KEY_GENERIC tailSet(final KEY_GENERIC_CLASS from) { return new
UnmodifiableSortedSet(sortedSet.tailSet(from)); }
#endif
 }


 /** Returns an unmodifiable type-specific sorted set backed by the given type-specific sorted set.
  *
  * @param s the sorted set to be wrapped in an unmodifiable sorted set.
  * @return an unmodifiable view of the specified sorted set.
  * @see java.util.Collections#unmodifiableSortedSet(SortedSet)
```

```
 */
 public static KEY_GENERIC SORTED_SET KEY_GENERIC unmodifiable(final SORTED_SET
KEY_GENERIC s) { return new UnmodifiableSortedSet KEY_GENERIC_DIAMOND(s); }



#if defined(TEST) && ! KEYS_USE_REFERENCE_EQUALITY

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#elif KEY_CLASS_Object
  return Integer.toBinaryString(r.nextInt());
#endif
 }


 protected static void testSets(KEY_TYPE k, SORTED_SET m, SortedSet t, int level) throws Exception {
  int n = 100;
  int c;

  long ms;
  boolean mThrowsIllegal, tThrowsIllegal, mThrowsNoElement, tThrowsNoElement, mThrowsIndex, tThrowsIndex,
mThrowsUnsupp, tThrowsUnsupp;
  boolean rt = false, rm = false;

  if (level == 0) return;

  /* Now we check that m and t are equal. */
  if (!m.equals(t) || ! t.equals(m)) System.err.println("m: " + m + " t: " + t);

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) at start");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) at start");

  /* Now we check that m actually holds that data. */
  for(java.util.Iterator i=t.iterator(); i.hasNext();) {
   ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on
t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */
  for(java.util.Iterator i=m.iterator(); i.hasNext();) {
   ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on
m)");
  }
```

```
  /* Now we check that inquiries about random data give the same answer in m and t. For
     m we use the polymorphic method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal = 
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    m.contains(T);
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }

   try {
    t.contains(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): contains() divergence in 
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): contains() divergence in 
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): contains() divergence in 
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex) ensure(m.contains(KEY2OBJ(T)) == 
t.contains(KEY2OBJ(T)), "Error (" + level + ", " + seed + "): divergence in keys between t and m (polymorphic 
method) " + m);
  }

  /* Again, we check that inquiries about random data give the same answer in m and t, but
     for m we use the standard method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal = 
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    m.contains(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
```

```
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    t.contains(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): contains() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): contains() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): contains() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): contains() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp)
ensure(m.contains(KEY2OBJ(T)) ==  t.contains(KEY2OBJ(T)), "Error (" + level + ", " + seed + "): divergence
between t and m (standard method) " + m);
  }

  /* Now we add and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    rm = m.add(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    rt = t.add(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }
```

```
   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): add() divergence in NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): add() divergence in IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): add() divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): add() divergence in UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error (" + level + ", " + seed + "): divergence in add() between t and m " + m);

   T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal = mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    rm = m.remove(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    rt = t.remove(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

   if (! KEY_EQUALS(T, k) && ! mThrowsUnsupp && tThrowsUnsupp) mThrowsUnsupp = false; // Stupid bug in Collections.singleton()

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): remove() divergence in NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): remove() divergence in IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): remove() divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   // This cannot be possibly made work without a lot of fuss
   //ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): remove() divergence in UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error (" + level + ", " + seed + "): divergence in remove() between t and m " + m);
  }
```

```
  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after removal " + m);
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after removal " + m);

  /* Now we add and remove random collections in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    rm = m.addAll(java.util.Collections.singleton(KEY2OBJ(T)));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    rt = t.addAll(java.util.Collections.singleton(KEY2OBJ(T)));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): addAll() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): addAll() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): addAll() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): addAll() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error
(" + level + ", " + seed + "): divergence in addAll() between t and m " + m);

   T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    rm = m.removeAll(java.util.Collections.singleton(KEY2OBJ(T)));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
```

```
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    rt = t.removeAll(java.util.Collections.singleton(KEY2OBJ(T)));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }


   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): removeAll() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): removeAll() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): removeAll() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): removeAll() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error
(" + level + ", " + seed + "): divergence in removeAll() between t and m " + m);
  }

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after set removal " + m);
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after set removal " + m);

  /* Now we check that m actually holds the same data. */

  for(java.util.Iterator i=t.iterator(); i.hasNext();) {
   ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after removal (iterating on
t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */

  for(java.util.Iterator i=m.iterator(); i.hasNext();) {
   ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after removal (iterating on
m)");
  }

  if (m instanceof Singleton) {
   ensure(m.equals(((Singleton)m).clone()), "Error (" + level + ", " + seed + "): m does not equal m.clone()");
   ensure(((Singleton)m).clone().equals(m), "Error (" + level + ", " + seed + "): m.clone() does not equal m");
  }

  int h = m.hashCode();
```

```
  /* Now we save and read m. */

  SORTED_SET m2 = null;

  {
   java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
   java.io.OutputStream os = new java.io.FileOutputStream(ff);
   java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

   oos.writeObject(m);
   oos.close();

   java.io.InputStream is = new java.io.FileInputStream(ff);
   java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

   m2 = (SORTED_SET)ois.readObject();
   ois.close();
   ff.delete();
  }

#if ! KEYS_USE_REFERENCE_EQUALITY

  ensure(m2.hashCode() == h, "Error (" + level + ", " + seed + "): hashCode() changed after save/read");

  /* Now we check that m2 actually holds that data. */

  ensure(m2.equals(t), "Error (" + level + ", " + seed + "): ! m2.equals(t) after save/read");
  ensure(t.equals(m2), "Error (" + level + ", " + seed + "): ! t.equals(m2) after save/read");
#endif

  /* Now we select a pair of keys and create a subset. */

  if (! m.isEmpty()) {
   java.util.ListIterator i;
   Object start = m.first(), end = m.first();
   for(i = (java.util.ListIterator)m.iterator(); i.hasNext() && r.nextBoolean(); start = end = i.next());
   for(; i.hasNext() && r.nextBoolean(); end = i.next());

   //System.err.println("Checking subSet from " + start + " to " + end + " (level=" + (level+1) + ")...");
   testSets(k, (SORTED_SET)m.subSet((KEY_CLASS)start, (KEY_CLASS)end), t.subSet(start, end), level - 1);

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after subSet");
   ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after subSet");

   //System.err.println("Checking headSet to " + end + " (level=" + (level+1) + ")...");
   testSets(k, (SORTED_SET)m.headSet((KEY_CLASS)end), t.headSet(end), level - 1);

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after headSet");
```

```
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after headSet");

  //System.err.println("Checking tailSet from " + start + " (level=" + (level+1) + ")...");
  testSets(k, (SORTED_SET)m.tailSet((KEY_CLASS)start), t.tailSet(start), level - 1);

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after tailSet");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after tailSet");
 }

 return;
}

private static void test() throws Exception {
 KEY_TYPE k = genKey();
 Singleton m = new Singleton(k);
 SortedSet u = new java.util.TreeSet();
 u.add(KEY2OBJ(k));
 testSets(k, m, java.util.Collections.unmodifiableSortedSet(u), 2);
 System.out.println("Test OK");
}


private static long seed = System.currentTimeMillis();
private static java.util.Random r = new java.util.Random(seed);

private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
private static java.text.FieldPosition fp = new java.text.FieldPosition(0);

private static String format(double d) {
 StringBuffer s = new StringBuffer();
 return format.format(d, s, fp).toString();
}

private static void fatal(String msg) {
 throw new AssertionError(msg);
}

private static void ensure(boolean cond, String msg) {
 if (cond) return;
 fatal(msg);
}

/** This method expects as first argument a lower-cased type (e.g., "int"),
 * and as second optional argument a seed. */

public static void main(String arg[]) throws Exception {
 if (arg.length > 1) r = new java.util.Random(seed = Long.parseLong(arg[1]));
```

```
  try {
   test();
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/SortedSets.drv
No license file was found, but licenses were detected in source scan.

```
/*
* Copyright (C) 2020-2022 Sebastiano Vigna
*
* Licensed under the Apache License, Version 2.0 (the "License");
* you may not use this file except in compliance with the License.
* You may obtain a copy of the License at
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*     http://www.apache.org/licenses/LICENSE-2.0
*
* Unless required by applicable law or agreed to in writing, software
* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/



package PACKAGE;

import java.util.Objects;
import java.util.function.Predicate;

/** A type-specific {@link Predicate}; provides methods to test a primitive type both as object
* and as primitive.
*
* <p>Except for the boolean case, this interface extends both a parameterized {@link java.util.function.Predicate}
* and a type-specific JDK predicate (e.g., {@link java.util.function.IntPredicate}). For types missing
* a type-specific JDK predicate (e.g., {@code short} or {@code float}), we extend the predicate associated with
* the smallest primitive type that can represent the current type (e.g., {@code int} or {@code double},
respectively).
*
```

```
* @see Predicate
* @since 8.5.0
*/

@FunctionalInterface
#if ! KEY_CLASS_Boolean
public interface KEY_PREDICATE KEY_GENERIC extends Predicate<KEY_GENERIC_CLASS>,
JDK_PRIMITIVE_PREDICATE {
#else
public interface KEY_PREDICATE KEY_GENERIC extends Predicate<KEY_GENERIC_CLASS> {
#endif

#if ! KEYS_INT_LONG_DOUBLE
 /**
  * Evaluates this predicate on the given input.
  *
  * @param t the input.
  * @return {@code true} if the input matches the predicate,
  * otherwise {@code false}
  */
 boolean test(KEY_TYPE t);

#if ! KEY_CLASS_Boolean
 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default boolean test(final KEY_TYPE_WIDENED t) {
  return test(KEY_NARROWING(t));
 }
#endif

#if KEY_CLASS_Boolean
 /**
  * Returns a {@code BooleanPredicate} that returns the boolean to be tested unmodified.
  * @see java.util.function.UnaryOperator#identity()
  */
 public static KEY_PREDICATE identity() {
  // Java is smart enough to see this lambda is stateless and will return the same instance every time.
  return b -> b;
 }

 /** Returns a {@code BooleanPredicate} that returns the negation of the boolean to be tested. */
 public static KEY_PREDICATE negation() {
  return b -> !b;
 }
#endif
```

```
#endif

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default boolean test(final KEY_CLASS t) {
  return test(t.KEY_VALUE());
 }

  /**
  * Returns a composed type-specific predicate that represents a short-circuiting logical
  * AND of this type-specific predicate and another.
  * @param other a predicate that will be logically-ANDed with this predicate.
    * @return a composed predicate that represents the short-circuiting logical
    * AND of this predicate and the {@code other} predicate.
  * @see Predicate#and
  * @apiNote Implementing classes should generally override this method and
  * keep the default implementation of the other overloads, which will
  * delegate to this method (after proper conversions).
  */
 default KEY_PREDICATE and(final METHOD_ARG_PREDICATE other) {
  Objects.requireNonNull(other);
  return t -> test(t) && other.test(t);
 }

#if KEYS_INT_LONG_DOUBLE

 /**
  * Returns a composed type-specific predicate that represents a short-circuiting logical
  * AND of this type-specific predicate and another.
  *
  * <p><b>WARNING</b>: Overriding this method is almost always a mistake, as this
  * overload only exists to disambiguate. Instead, override the {@code and()} overload
  * that uses the JDK's primitive predicate type (e.g. {@link java.util.function.IntPredicate}).
  *
  * <p>If Java supported final default methods, this would be one, but sadly it does not.
  *
  * <p>If you checked and are overriding the version with {@code java.util.function.XPredicate}, and
  * you still see this warning, then your IDE is incorrectly conflating this method with the proper
  * method to override, and you can safely ignore this message.
  *
  * @param other a predicate that will be logically-ANDed with this predicate.
    * @return a composed predicate that represents the short-circuiting logical
    * AND of this predicate and the {@code other} predicate.
  * @see Predicate#and
  */
 default KEY_PREDICATE and(final KEY_PREDICATE other) {
```

```
  return and((JDK_PRIMITIVE_PREDICATE) other);
 }


#elif ! KEY_CLASS_Boolean

 /** {@inheritDoc}
  * @implNote Composing with a JDK type-specific predicate will be slightly less efficient than using a type-specific predicate, as the argument will have to be widened at each call.  */
 @Override
 default KEY_PREDICATE and(final JDK_PRIMITIVE_PREDICATE other) {
  return and(other instanceof KEY_PREDICATE ? (KEY_PREDICATE)other : (KEY_PREDICATE)other::test);
 }

#endif

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default Predicate<KEY_GENERIC_CLASS> and(final Predicate<? super KEY_GENERIC_CLASS> other) {
  return Predicate.super.and(other);
 }

 @Override
 /** {@inheritDoc} */
 default KEY_PREDICATE negate() {
  return t -> ! test(t);
 }

   /**
  * Returns a composed type-specific predicate that represents a short-circuiting logical
  * OR of this type-specific predicate and another.
  * @param other a predicate that will be logically-ORed with this predicate.
  * @return a composed predicate that represents the short-circuiting logical
  * OR of this predicate and the {@code other} predicate.
  * @see Predicate#or
  * @apiNote Implementing classes should generally override this method and
  * keep the default implementation of the other overloads, which will
  * delegate to this method (after proper conversions).
  */
 default KEY_PREDICATE or(final METHOD_ARG_PREDICATE other) {
  Objects.requireNonNull(other);
  return t -> test(t) || other.test(t);
 }

#if KEYS_INT_LONG_DOUBLE
```

```
 /**
  * Returns a composed type-specific predicate that represents a short-circuiting logical
  * OR of this type-specific predicate and another.
  *
  * <p><b>WARNING</b>: Overriding this method is almost always a mistake, as this
  * overload only exists to disambiguate. Instead, override the {@code or()} overload
  * that uses the JDK's primitive predicate type (e.g. {@link java.util.function.IntPredicate}).
  *
  * <p>If Java supported final default methods, this would be one, but sadly it does not.
  *
  * <p>If you checked and are overriding the version with {@code java.util.function.XPredicate}, and
  * you still see this warning, then your IDE is incorrectly conflating this method with the proper
  * method to override, and you can safely ignore this message.
  *
  * @param other a predicate that will be logically-ORed with this predicate.
  * @return a composed predicate that represents the short-circuiting logical
  * OR of this predicate and the {@code other} predicate.
  * @see Predicate#or
  */
 default KEY_PREDICATE or(final KEY_PREDICATE other) {
  return or((JDK_PRIMITIVE_PREDICATE) other);
 }

#elif ! KEY_CLASS_Boolean

 /** {@inheritDoc}
  * @implNote Composing with a JDK type-specific predicate will be slightly less efficient than using a type-specific
predicate, as the argument will have to be widened at each call.  */
 @Override
 default KEY_PREDICATE or(final JDK_PRIMITIVE_PREDICATE other) {
  return or(other instanceof KEY_PREDICATE ? (KEY_PREDICATE)other : (KEY_PREDICATE)other::test);
 }

#endif

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default Predicate<KEY_GENERIC_CLASS> or(final Predicate<? super KEY_GENERIC_CLASS> other) {
  return Predicate.super.or(other);
 }

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Predicate.drv

No license file was found, but licenses were detected in source scan.

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/ShortComparators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/bytes/ByteComparators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongHeaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongComparators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntHeapIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectArrayIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectHeaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleSemiIndirectHeaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongSemiIndirectHeaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectHeapPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntArrayPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectComparators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongHeapPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-

jar/it/unimi/dsi/fastutil/longs/LongHeapSemiIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntHeaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntIndirectHeaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectHeapSemiIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectSemiIndirectHeaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleArrayPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntHeapPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongIndirectHeaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectHeapIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoublePriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/floats/FloatComparators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntComparators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectArrayPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongArrayIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntSemiIndirectHeaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleIndirectHeaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleArrayIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleHeapSemiIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongArrayPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/chars/CharComparators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntArrayIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleHeapPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-

jar/it/unimi/dsi/fastutil/doubles/DoubleHeapIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongHeapIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntHeapSemiIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectIndirectHeaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleHeaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/booleans/BooleanComparators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleComparators.java
No license file was found, but licenses were detected in source scan.

package PACKAGE;

/** An abstract class providing basic methods for functions implementing a type-specific interface.
*
* <p>This class handles directly a default return
* value (including {@linkplain #defaultReturnValue() methods to access
* it}). Instances of classes inheriting from this class have just to return
* {@code defRetValue} to denote lack of a key in type-specific methods. The value
* is serialized.
*
* <p>Implementing subclasses have just to provide type-specific {@code get()},
* type-specific {@code containsKey()}, and {@code size()} methods.

```
*
*/

public abstract class ABSTRACT_FUNCTION KEY_VALUE_GENERIC implements FUNCTION
KEY_VALUE_GENERIC, java.io.Serializable {

 private static final long serialVersionUID = -4940583368468432370L;

 protected ABSTRACT_FUNCTION() {}

 /**
  * The default return value for {@code get()}, {@code put()} and
  * {@code remove()}.
  */

 protected VALUE_GENERIC_TYPE defRetValue;

 @Override
 public void defaultReturnValue(final VALUE_GENERIC_TYPE rv) {
  defRetValue = rv;
 }

 @Override
 public VALUE_GENERIC_TYPE defaultReturnValue() {
  return defRetValue;
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractFunction.drv
No license file was found, but licenses were detected in source scan.

```
*
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*/

package PACKAGE;

import java.util.Arrays;
import java.util.Random;
import java.util.concurrent.ForkJoinPool;
import java.util.concurrent.ForkJoinTask;
import java.util.concurrent.RecursiveAction;

import it.unimi.dsi.fastutil.BigArrays;
import it.unimi.dsi.fastutil.Hash;
import static it.unimi.dsi.fastutil.BigArrays.ensureLength;
import static it.unimi.dsi.fastutil.BigArrays.start;
import static it.unimi.dsi.fastutil.BigArrays.segment;
import static it.unimi.dsi.fastutil.BigArrays.displacement;
import static it.unimi.dsi.fastutil.BigArrays.SEGMENT_MASK;
import static it.unimi.dsi.fastutil.BigArrays.SEGMENT_SHIFT;
import static it.unimi.dsi.fastutil.BigArrays.SEGMENT_SIZE;

#if KEYS_PRIMITIVE
#if KEY_CLASS_Integer
import java.util.concurrent.atomic.AtomicIntegerArray;
#endif
#if KEY_CLASS_Long
import java.util.concurrent.atomic.AtomicLongArray;
#endif

#if ! KEY_CLASS_Byte && ! KEY_CLASS_Boolean
import it.unimi.dsi.fastutil.bytes.ByteBigArrays;
#endif

/** A class providing static methods and objects that do useful things with {@linkplain BigArrays big arrays}.
*
* <p>Note that {@link it.unimi.dsi.fastutil.io.BinIO} and {@link it.unimi.dsi.fastutil.io.TextIO}
* contain several methods that make it possible to load and save big arrays of primitive types as sequences
* of elements in {@link java.io.DataInput} format (i.e., not as objects) or as sequences of lines of text.
*
```

```
* <h2>Parallel operations</h2>
* Some algorithms provide a parallel version that will by default use the
* {@linkplain ForkJoinPool#commonPool() common pool}, but this can be overridden by calling the
* function in a task already in the {@link ForkJoinPool} that the operation should run in. For example,
* something along the lines of "{@code poolToParallelSortIn.invoke(() -> parallelQuickSort(arrayToSort))}"
* will run the parallel sort in {@code poolToParallelSortIn} instead of the default pool.
*
* @see BigArrays
*/

public final class BIG_ARRAYS {

#else

import java.util.Comparator;

/** A class providing static methods and objects that do useful things with {@linkplain BigArrays big arrays}.
*
* <p>Note that {@link it.unimi.dsi.fastutil.io.BinIO} and {@link it.unimi.dsi.fastutil.io.TextIO}
* contain several methods make it possible to load and save big arrays of primitive types as sequences
* of elements in {@link java.io.DataInput} format (i.e., not as objects) or as sequences of lines of text.
*
* <h2>Parallel operations</h2>
* Some algorithms provide a parallel version that will by default use the
* {@linkplain ForkJoinPool#commonPool() common pool}, but this can be overridden by calling the
* function in a task already in the {@link ForkJoinPool} that the operation should run in. For example,
* something along the lines of "{@code poolToParallelSortIn.invoke(() -> parallelQuickSort(arrayToSort))}"
* will run the parallel sort in {@code poolToParallelSortIn} instead of the default pool.
*
* <p><strong>Warning:</strong> creating arrays
* using {@linkplain java.lang.reflect.Array#newInstance(Class,int) reflection}, as it
* happens in {@link #ensureCapacity(Object[][],long,long)} and {@link #grow(Object[][],long,long)},
* is <em>significantly slower</em> than using {@code new}. This phenomenon is particularly
* evident in the first growth phases of an array reallocated with doubling (or similar) logic.
*
* @see BigArrays
*/

public final class BIG_ARRAYS {

#endif
 private BIG_ARRAYS() {}

 /** A static, final, empty big array. */
 public static final KEY_TYPE[][] EMPTY_BIG_ARRAY = {};

 /** A static, final, empty big array to be used as default big array in allocations. An
   * object distinct from {@link #EMPTY_BIG_ARRAY} makes it possible to have different
```

```
 * behaviors depending on whether the user required an empty allocation, or we are
 * just lazily delaying allocation.
 *
 * @see java.util.ArrayList
 */
public static final KEY_TYPE[][] DEFAULT_EMPTY_BIG_ARRAY = {};

/** Returns the element of the given big array of specified index.
 *
 * @param array a big array.
 * @param index a position in the big array.
 * @return the element of the big array at the specified position.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC KEY_GENERIC_TYPE get(final KEY_GENERIC_TYPE[][] array, final long index)
{
 return array[segment(index)][displacement(index)];
}

/** Sets the element of the given big array of specified index.
 *
 * @param array a big array.
 * @param index a position in the big array.
 * @param value the new value for the array element at the specified position.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC void set(final KEY_GENERIC_TYPE[][] array, final long index,
KEY_GENERIC_TYPE value) {
 array[segment(index)][displacement(index)] = value;
}

/** Swaps the element of the given big array of specified indices.
 *
 * @param array a big array.
 * @param first a position in the big array.
 * @param second a position in the big array.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC void swap(final KEY_GENERIC_TYPE[][] array, final long first, final long second)
{
 final KEY_GENERIC_TYPE t = array[segment(first)][displacement(first)];
 array[segment(first)][displacement(first)] = array[segment(second)][displacement(second)];
 array[segment(second)][displacement(second)] = t;
}
```

```
#if KEYS_PRIMITIVE && ! KEY_CLASS_Boolean
 /** Adds the specified increment the element of the given big array of specified index.
  *
  * @param array a big array.
  * @param index a position in the big array.
  * @param incr the increment
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static void add(final KEY_GENERIC_TYPE[][] array, final long index, KEY_GENERIC_TYPE incr) {
  array[segment(index)][displacement(index)] += incr;
 }

 /** Multiplies by the specified factor the element of the given big array of specified index.
  *
  * @param array a big array.
  * @param index a position in the big array.
  * @param factor the factor
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static void mul(final KEY_GENERIC_TYPE[][] array, final long index, KEY_GENERIC_TYPE factor) {
  array[segment(index)][displacement(index)] *= factor;
 }

 /** Increments the element of the given big array of specified index.
  *
  * @param array a big array.
  * @param index a position in the big array.
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static void incr(final KEY_GENERIC_TYPE[][] array, final long index) {
  array[segment(index)][displacement(index)]++;
 }

 /** Decrements the element of the given big array of specified index.
  *
  * @param array a big array.
  * @param index a position in the big array.
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static void decr(final KEY_GENERIC_TYPE[][] array, final long index) {
  array[segment(index)][displacement(index)]--;
 }
```

```
#endif


 /** Returns the length of the given big array.
  *
  * @param array a big array.
  * @return the length of the given big array.
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static KEY_GENERIC long length(final KEY_GENERIC_TYPE[][] array) {
  final int length = array.length;
  return length == 0 ? 0 : start(length - 1) + array[length - 1].length;
 }

 /** Copies a big array from the specified source big array, beginning at the specified position, to the specified
position of the destination big array.
  * Handles correctly overlapping regions of the same big array.
  *
  * @param srcArray the source big array.
  * @param srcPos the starting position in the source big array.
  * @param destArray the destination big array.
  * @param destPos the starting position in the destination data.
  * @param length the number of elements to be copied.
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static KEY_GENERIC void copy(final KEY_GENERIC_TYPE[][] srcArray, final long srcPos, final
KEY_GENERIC_TYPE[][] destArray, final long destPos, long length) {
  BigArrays.copy(srcArray, srcPos, destArray, destPos, length);
 }

 /** Copies a big array from the specified source big array, beginning at the specified position, to the specified
position of the destination array.
  *
  * @param srcArray the source big array.
  * @param srcPos the starting position in the source big array.
  * @param destArray the destination array.
  * @param destPos the starting position in the destination data.
  * @param length the number of elements to be copied.
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static KEY_GENERIC void copyFromBig(final KEY_GENERIC_TYPE[][] srcArray, final long srcPos, final
KEY_GENERIC_TYPE[] destArray, int destPos, int length) {
  BigArrays.copyFromBig(srcArray, srcPos, destArray, destPos, length);
 }
```

```
/** Copies an array from the specified source array, beginning at the specified position, to the specified position of the destination big array.
 *
 * @param srcArray the source array.
 * @param srcPos the starting position in the source array.
 * @param destArray the destination big array.
 * @param destPos the starting position in the destination data.
 * @param length the number of elements to be copied.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC void copyToBig(final KEY_GENERIC_TYPE[] srcArray, int srcPos, final KEY_GENERIC_TYPE[][] destArray, final long destPos, long length) {
 BigArrays.copyToBig(srcArray, srcPos, destArray, destPos, length);
}

#if KEY_CLASS_Object
/** Creates a new big array using the given one as prototype.
 *
 * <p>This method returns a new big array of the given length whose element
 * are of the same class as of those of {@code prototype}. In case
 * of an empty big array, it tries to return {@link #EMPTY_BIG_ARRAY}, if possible.
 *
 * @param prototype a big array that will be used to type the new one.
 * @param length the length of the new big array.
 * @return a new big array of given type and length.
 */

SUPPRESS_WARNINGS_KEY_UNCHECKED
public static <K> K[][] newBigArray(final K[][] prototype, final long length) {
 return (K[][])newBigArray(prototype.getClass().getComponentType(), length);
}

/** Creates a new big array using a given component type.
 *
 * <p>This method returns a new big array whose segments
 * are of class {@code componentType}. In case
 * of an empty big array, it tries to return {@link #EMPTY_BIG_ARRAY}, if possible.
 *
 * @param componentType a class representing the type of segments of the array to be created.
 * @param length the length of the new big array.
 * @return a new big array of given type and length.
 */

public static Object[][] newBigArray(Class<?> componentType, final long length) {
 if (length == 0 && componentType == Object[].class) return EMPTY_BIG_ARRAY;
 ensureLength(length);
 final int baseLength = (int)((length + SEGMENT_MASK) >>> SEGMENT_SHIFT);
```

```
  Object[][] base = (Object[][])java.lang.reflect.Array.newInstance(componentType, baseLength);
  final int residual = (int)(length & SEGMENT_MASK);
  if (residual != 0) {
   for(int i = 0; i < baseLength - 1; i++) base[i] =
(Object[])java.lang.reflect.Array.newInstance(componentType.getComponentType(), SEGMENT_SIZE);
   base[baseLength - 1] = (Object[])java.lang.reflect.Array.newInstance(componentType.getComponentType(),
residual);
  }
  else for(int i = 0; i < baseLength; i++) base[i] =
(Object[])java.lang.reflect.Array.newInstance(componentType.getComponentType(), SEGMENT_SIZE);

  return base;
 }
#endif

 /** Creates a new big array.
  *
  * @param length the length of the new big array.
  * @return a new big array of given length.
  */

 public static KEY_TYPE[][] newBigArray(final long length) {
  if (length == 0) return EMPTY_BIG_ARRAY;
  ensureLength(length);
  final int baseLength = (int)((length + SEGMENT_MASK) >>> SEGMENT_SHIFT);
  KEY_TYPE[][] base = new KEY_TYPE[baseLength][];
  final int residual = (int)(length & SEGMENT_MASK);
  if (residual != 0) {
   for(int i = 0; i < baseLength - 1; i++) base[i] = new KEY_TYPE[SEGMENT_SIZE];
   base[baseLength - 1] = new KEY_TYPE[residual];
  }
  else for(int i = 0; i < baseLength; i++) base[i] = new KEY_TYPE[SEGMENT_SIZE];

  return base;
 }

#if KEY_CLASS_Long || KEY_CLASS_Integer
 /** A static, final, empty big atomic array. */
 public static final ATOMIC_ARRAY[] EMPTY_BIG_ATOMIC_ARRAY = {};

 /** Creates a new big atomic array.
  *
  * @param length the length of the new big array.
  * @return a new big atomic array of given length.
  */

 public static ATOMIC_ARRAY[] newBigAtomicArray(final long length) {
  if (length == 0) return EMPTY_BIG_ATOMIC_ARRAY;
```

```
  ensureLength(length);
  final int baseLength = (int)((length + SEGMENT_MASK) >>> SEGMENT_SHIFT);
  ATOMIC_ARRAY[] base = new ATOMIC_ARRAY[baseLength];
  final int residual = (int)(length & SEGMENT_MASK);
  if (residual != 0) {
   for(int i = 0; i < baseLength - 1; i++) base[i] = new ATOMIC_ARRAY(SEGMENT_SIZE);
   base[baseLength - 1] = new ATOMIC_ARRAY(residual);
  }
  else for(int i = 0; i < baseLength; i++) base[i] = new ATOMIC_ARRAY(SEGMENT_SIZE);

  return base;
 }
#endif

#if KEY_CLASS_Object
 /** Turns a standard array into a big array.
  *
  * <p>Note that the returned big array might contain as a segment the original array.
  *
  * @param array an array.
  * @return a new big array with the same length and content of {@code array}.
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static <K> K[][] wrap(final K[] array) {
  return BigArrays.wrap(array);
 }

#else
 /** Turns a standard array into a big array.
  *
  * <p>Note that the returned big array might contain as a segment the original array.
  *
  * @param array an array.
  * @return a new big array with the same length and content of {@code array}.
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static KEY_TYPE[][] wrap(final KEY_TYPE[] array) {
  return BigArrays.wrap(array);
 }
#endif
 /** Ensures that a big array can contain the given number of entries.
  *
  * <p>If you cannot foresee whether this big array will need again to be
  * enlarged, you should probably use {@code grow()} instead.
  *
```

```
 * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
 * array, which must be considered read-only after calling this method.
 *
 * @param array a big array.
 * @param length the new minimum length for this big array.
 * @return {@code array}, if it contains {@code length} entries or more; otherwise,
 * a big array with {@code length} entries whose first {@code length(array)}
 * entries are the same as those of {@code array}.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC KEY_GENERIC_TYPE[][] ensureCapacity(final KEY_GENERIC_TYPE[][] array,
final long length) {
 return ensureCapacity(array, length, length(array));
}

#if KEY_CLASS_Object

/** Forces a big array to contain the given number of entries, preserving just a part of the big array.
 *
 * <p>This method returns a new big array of the given length whose element
 * are of the same class as of those of {@code array}.
 *
 * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
 * array, which must be considered read-only after calling this method.
 *
 * @param array a big array.
 * @param length the new minimum length for this big array.
 * @param preserve the number of elements of the big array that must be preserved in case a new allocation is
necessary.
 * @return a big array with {@code length} entries whose first {@code preserve}
 * entries are the same as those of {@code array}.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
SUPPRESS_WARNINGS_KEY_UNCHECKED
public static KEY_GENERIC KEY_GENERIC_TYPE[][] forceCapacity(final KEY_GENERIC_TYPE[][] array,
final long length, final long preserve) {
 return BigArrays.forceCapacity(array, length, preserve);
}

/** Ensures that a big array can contain the given number of entries, preserving just a part of the big array.
 *
 * <p>This method returns a new big array of the given length whose element
 * are of the same class as of those of {@code array}.
 *
 * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
 * array, which must be considered read-only after calling this method.
```

```
  *
  * @param array a big array.
  * @param length the new minimum length for this big array.
  * @param preserve the number of elements of the big array that must be preserved in case a new allocation is
necessary.
  * @return {@code array}, if it can contain {@code length} entries or more; otherwise,
  * a big array with {@code length} entries whose first {@code preserve}
  * entries are the same as those of {@code array}.
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static KEY_GENERIC KEY_GENERIC_TYPE[][] ensureCapacity(final KEY_GENERIC_TYPE[][] array,
final long length, final long preserve) {
  return length > length(array) ? forceCapacity(array, length, preserve) : array;
 }

#else

 /** Forces a big array to contain the given number of entries, preserving just a part of the big array.
  *
  * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
  * array, which must be considered read-only after calling this method.
  *
  * @param array a big array.
  * @param length the new minimum length for this big array.
  * @param preserve the number of elements of the big array that must be preserved in case a new allocation is
necessary.
  * @return a big array with {@code length} entries whose first {@code preserve}
  * entries are the same as those of {@code array}.
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static KEY_TYPE[][] forceCapacity(final KEY_TYPE[][] array, final long length, final long preserve) {
  return BigArrays.forceCapacity(array, length, preserve);
 }

 /** Ensures that a big array can contain the given number of entries, preserving just a part of the big array.
  *
  * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
  * array, which must be considered read-only after calling this method.
  *
  * @param array a big array.
  * @param length the new minimum length for this big array.
  * @param preserve the number of elements of the big array that must be preserved in case a new allocation is
necessary.
  * @return {@code array}, if it can contain {@code length} entries or more; otherwise,
  * a big array with {@code length} entries whose first {@code preserve}
  * entries are the same as those of {@code array}.
```

```
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_TYPE[][] ensureCapacity(final KEY_TYPE[][] array, final long length, final long preserve) {
 return length > length(array) ? forceCapacity(array, length, preserve) : array;
}

#endif

/** Grows the given big array to the maximum between the given length and
 * the current length increased by 50%, provided that the given
 * length is larger than the current length.
 *
 * <p>If you want complete control on the big array growth, you
 * should probably use {@code ensureCapacity()} instead.
 *
 * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
 * array, which must be considered read-only after calling this method.
 *
 * @param array a big array.
 * @param length the new minimum length for this big array.
 * @return {@code array}, if it can contain {@code length}
 * entries; otherwise, a big array with
 * max({@code length},{@code length(array)}/&phi;) entries whose first
 * {@code length(array)} entries are the same as those of {@code array}.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC KEY_GENERIC_TYPE[][] grow(final KEY_GENERIC_TYPE[][] array, final long
length) {
 final long oldLength = length(array);
 return length > oldLength ? grow(array, length, oldLength) : array;
}

/** Grows the given big array to the maximum between the given length and
 * the current length increased by 50%, provided that the given
 * length is larger than the current length, preserving just a part of the big array.
 *
 * <p>If you want complete control on the big array growth, you
 * should probably use {@code ensureCapacity()} instead.
 *
 * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
 * array, which must be considered read-only after calling this method.
 *
 * @param array a big array.
 * @param length the new minimum length for this big array.
 * @param preserve the number of elements of the big array that must be preserved in case a new allocation is
necessary.
```

```
 * @return {@code array}, if it can contain {@code length}
 * entries; otherwise, a big array with
 * max({@code length},{@code length(array)}/&phi;) entries whose first
 * {@code preserve} entries are the same as those of {@code array}.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC KEY_GENERIC_TYPE[][] grow(final KEY_GENERIC_TYPE[][] array, final long
length, final long preserve) {
 final long oldLength = length(array);
 return length > oldLength ? ensureCapacity(array, Math.max(oldLength + (oldLength >> 1), length), preserve) :
array;
}

#if KEY_CLASS_Object

/** Trims the given big array to the given length.
 *
 * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
 * array, which must be considered read-only after calling this method.
 *
 * @param array a big array.
 * @param length the new maximum length for the big array.
 * @return {@code array}, if it contains {@code length}
 * entries or less; otherwise, a big array with
 * {@code length} entries whose entries are the same as
 * the first {@code length} entries of {@code array}.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC KEY_GENERIC_TYPE[][] trim(final KEY_GENERIC_TYPE[][] array, final long
length) {
 return BigArrays.trim(array, length);
}

#else

/** Trims the given big array to the given length.
 *
 * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
 * array, which must be considered read-only after calling this method.
 *
 * @param array a big array.
 * @param length the new maximum length for the big array.
 * @return {@code array}, if it contains {@code length}
 * entries or less; otherwise, a big array with
 * {@code length} entries whose entries are the same as
 * the first {@code length} entries of {@code array}.
```

```
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC KEY_GENERIC_TYPE[][] trim(final KEY_GENERIC_TYPE[][] array, final long
length) {
 ensureLength(length);
 final long oldLength = length(array);
 if (length >= oldLength) return array;
 final int baseLength = (int)((length + SEGMENT_MASK) >>> SEGMENT_SHIFT);
 final KEY_TYPE[][] base = Arrays.copyOf(array, baseLength);
 final int residual = (int)(length & SEGMENT_MASK);
 if (residual != 0) base[baseLength - 1] = ARRAYS.trim(base[baseLength - 1], residual);
 return base;
}

#endif

/** Sets the length of the given big array.
 *
 * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
 * array, which must be considered read-only after calling this method.
 *
 * @param array a big array.
 * @param length the new length for the big array.
 * @return {@code array}, if it contains exactly {@code length}
 * entries; otherwise, if it contains <em>more</em> than
 * {@code length} entries, a big array with {@code length} entries
 * whose entries are the same as the first {@code length} entries of
 * {@code array}; otherwise, a big array with {@code length} entries
 * whose first {@code length(array)} entries are the same as those of
 * {@code array}.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC KEY_GENERIC_TYPE[][] setLength(final KEY_GENERIC_TYPE[][] array, final
long length) {
 return BigArrays.setLength(array, length);
}

/** Returns a copy of a portion of a big array.
 *
 * @param array a big array.
 * @param offset the first element to copy.
 * @param length the number of elements to copy.
 * @return a new big array containing {@code length} elements of {@code array} starting at {@code offset}.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
```

```
 public static KEY_GENERIC KEY_GENERIC_TYPE[][] copy(final KEY_GENERIC_TYPE[][] array, final long
offset, final long length) {
  return BigArrays.copy(array, offset, length);
 }

 /** Returns a copy of a big array.
  *
  * @param array a big array.
  * @return a copy of {@code array}.
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static KEY_GENERIC KEY_GENERIC_TYPE[][] copy(final KEY_GENERIC_TYPE[][] array) {
  return BigArrays.copy(array);
 }

 /** Fills the given big array with the given value.
  *
  * <p>This method uses a backward loop. It is significantly faster than the corresponding
  * method in {@link java.util.Arrays}.
  *
  * @param array a big array.
  * @param value the new value for all elements of the big array.
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static KEY_GENERIC void fill(final KEY_GENERIC_TYPE[][] array, final KEY_GENERIC_TYPE value)
{
  for(int i = array.length; i-- != 0;) Arrays.fill(array[i], value);
 }

 /** Fills a portion of the given big array with the given value.
  *
  * <p>If possible (i.e., {@code from} is 0) this method uses a
  * backward loop. In this case, it is significantly faster than the
  * corresponding method in {@link java.util.Arrays}.
  *
  * @param array a big array.
  * @param from the starting index of the portion to fill.
  * @param to the end index of the portion to fill.
  * @param value the new value for all elements of the specified portion of the big array.
  * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
  */
 @Deprecated
 public static KEY_GENERIC void fill(final KEY_GENERIC_TYPE[][] array, final long from, long to, final
KEY_GENERIC_TYPE value) {
  BigArrays.fill(array, from, to, value);
 }
```

/** Returns true if the two big arrays are elementwise equal.
 *
 * <p>This method uses a backward loop. It is significantly faster than the corresponding
 * method in {@link java.util.Arrays}.
 *
 * @param a1 a big array.
 * @param a2 another big array.
 * @return true if the two big arrays are of the same length, and their elements are equal.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC boolean equals(final KEY_GENERIC_TYPE[][] a1, final KEY_GENERIC_TYPE a2[][]) {
 return BigArrays.equals(a1, a2);
}

/* Returns a string representation of the contents of the specified big array.
 *
 * The string representation consists of a list of the big array's elements, enclosed in square brackets ("[]"). Adjacent elements are separated by the characters ", " (a comma followed by a space). Returns "null" if {@code a} is null.
 * @param a the big array whose string representation to return.
 * @return the string representation of {@code a}.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC String toString(final KEY_GENERIC_TYPE[][] a) {
 return BigArrays.toString(a);
}

/** Ensures that a range given by its first (inclusive) and last (exclusive) elements fits a big array.
 *
 * <p>This method may be used whenever a big array range check is needed.
 *
 * @param a a big array.
 * @param from a start index (inclusive).
 * @param to an end index (inclusive).
 * @throws IllegalArgumentException if {@code from} is greater than {@code to}.
 * @throws ArrayIndexOutOfBoundsException if {@code from} or {@code to} are greater than the big array length or negative.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC void ensureFromTo(final KEY_GENERIC_TYPE[][] a, final long from, final long to) {
 BigArrays.ensureFromTo(length(a), from, to);

}

/** Ensures that a range given by an offset and a length fits a big array.
 *
 * <p>This method may be used whenever a big array range check is needed.
 *
 * @param a a big array.
 * @param offset a start index.
 * @param length a length (the number of elements in the range).
 * @throws IllegalArgumentException if {@code length} is negative.
 * @throws ArrayIndexOutOfBoundsException if {@code offset} is negative or {@code offset}+{@code length} is greater than the big array length.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC void ensureOffsetLength(final KEY_GENERIC_TYPE[][] a, final long offset, final long length) {
 BigArrays.ensureOffsetLength(length(a), offset, length);
}

/** Ensures that two big arrays are of the same length.
 *
 * @param a a big array.
 * @param b another big array.
 * @throws IllegalArgumentException if the two argument arrays are not of the same length.
 * @deprecated Please use the version in {@link it.unimi.dsi.fastutil.BigArrays}.
 */
@Deprecated
public static KEY_GENERIC void ensureSameLength(final KEY_GENERIC_TYPE[][] a, final KEY_GENERIC_TYPE[][] b) {
 if (length(a) != length(b)) throw new IllegalArgumentException("Array size mismatch: " + length(a) + " != " + length(b));
}

/** A type-specific content-based hash strategy for big arrays. */

private static final class BigArrayHashStrategy KEY_GENERIC implements Hash.Strategy<KEY_GENERIC_TYPE[][]>, java.io.Serializable {
 private static final long serialVersionUID = -7046029254386353129L;

 @Override
 public int hashCode(final KEY_GENERIC_TYPE[][] o) { return java.util.Arrays.deepHashCode(o); }

 @Override
 public boolean equals(final KEY_GENERIC_TYPE[][] a, final KEY_GENERIC_TYPE[][] b) { return BIG_ARRAYS.equals(a, b); }
}

```
/** A type-specific content-based hash strategy for big arrays.
 *
 * <p>This hash strategy may be used in custom hash collections whenever keys are
 * big arrays, and they must be considered equal by content. This strategy
 * will handle {@code null} correctly, and it is serializable.
 */

@SuppressWarnings({"rawtypes"})
public static final Hash.Strategy HASH_STRATEGY = new BigArrayHashStrategy();

private static final int QUICKSORT_NO_REC = 7;
private static final int PARALLEL_QUICKSORT_NO_FORK = 8192;
private static final int MEDIUM = 40;

private static ForkJoinPool getPool() {
 // Make sure to update Arrays.drv, BigArrays.drv, and src/it/unimi/dsi/fastutil/Arrays.java as well
 ForkJoinPool current = ForkJoinTask.getPool();
 return current == null ? ForkJoinPool.commonPool() : current;
}

private static KEY_GENERIC void swap(final KEY_GENERIC_TYPE[][] x, long a, long b, final long n) {
 for(int i = 0; i < n; i++, a++, b++) BigArrays.swap(x, a, b);
}

private static KEY_GENERIC long med3(final KEY_GENERIC_TYPE x[][], final long a, final long b, final long c,
KEY_COMPARATOR KEY_GENERIC comp) {
 int ab = comp.compare(BigArrays.get(x, a), BigArrays.get(x, b));
 int ac = comp.compare(BigArrays.get(x, a), BigArrays.get(x, c));
 int bc = comp.compare(BigArrays.get(x, b), BigArrays.get(x, c));
 return (ab < 0 ?
  (bc < 0 ? b : ac < 0 ? c : a) :
  (bc > 0 ? b : ac > 0 ? c : a));
}

private static KEY_GENERIC void selectionSort(final KEY_GENERIC_TYPE[][] a, final long from, final long to,
final KEY_COMPARATOR KEY_GENERIC comp) {
 for(long i = from; i < to - 1; i++) {
  long m = i;
  for(long j = i + 1; j < to; j++) if (comp.compare(BigArrays.get(a, j), BigArrays.get(a, m)) < 0) m = j;
  if (m != i) BigArrays.swap(a, i, m);
 }
}

/** Sorts the specified range of elements according to the order induced by the specified
 * comparator using quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
```

```
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * @param x the big array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 * @param comp the comparator to determine the sorting order.
 */
public static KEY_GENERIC void quickSort(final KEY_GENERIC_TYPE[][] x, final long from, final long to,
final KEY_COMPARATOR KEY_GENERIC comp) {
 final long len = to - from;

 // Selection sort on smallest arrays
 if (len < QUICKSORT_NO_REC) {
  selectionSort(x, from, to, comp);
  return;
 }

 // Choose a partition element, v
 long m = from + len / 2;  // Small arrays, middle element
 if (len > QUICKSORT_NO_REC) {
  long l = from;
  long n = to - 1;
  if (len > MEDIUM) {  // Big arrays, pseudomedian of 9
   long s = len / 8;
   l = med3(x, l, l + s, l + 2 * s, comp);
   m = med3(x, m - s, m, m + s, comp);
   n = med3(x, n - 2 * s, n - s, n, comp);
  }
  m = med3(x, l, m, n, comp); // Mid-size, med of 3
 }

 final KEY_GENERIC_TYPE v = BigArrays.get(x, m);

 // Establish Invariant: v* (<v)* (>v)* v*
 long a = from, b = a, c = to - 1, d = c;
 while(true) {
  int comparison;
  while (b <= c && (comparison = comp.compare(BigArrays.get(x, b), v)) <= 0) {
   if (comparison == 0) BigArrays.swap(x, a++, b);
   b++;
  }
  while (c >= b && (comparison = comp.compare(BigArrays.get(x, c), v)) >=0) {
   if (comparison == 0) BigArrays.swap(x, c, d--);
   c--;
  }
  if (b > c) break;
  BigArrays.swap(x, b++, c--);
```

```
 }

 // Swap partition elements back to middle
 long s, n = to;
 s = Math.min(a - from, b - a);
 swap(x, from, b - s, s);
 s = Math.min(d - c, n - d- 1);
 swap(x, b, n - s, s);

 // Recursively sort non-partition-elements
 if ((s = b - a) > 1) quickSort(x, from, from + s, comp);
 if ((s = d - c) > 1) quickSort(x, n - s, n, comp);

}

SUPPRESS_WARNINGS_KEY_UNCHECKED
private static KEY_GENERIC long med3(final KEY_GENERIC_TYPE x[][], final long a, final long b, final long c)
{
 int ab = KEY_CMP(BigArrays.get(x, a), BigArrays.get(x, b));
 int ac = KEY_CMP(BigArrays.get(x, a), BigArrays.get(x, c));
 int bc = KEY_CMP(BigArrays.get(x, b), BigArrays.get(x, c));
 return (ab < 0 ?
  (bc < 0 ? b : ac < 0 ? c : a) :
  (bc > 0 ? b : ac > 0 ? c : a));
}


SUPPRESS_WARNINGS_KEY_UNCHECKED
private static KEY_GENERIC void selectionSort(final KEY_GENERIC_TYPE[][] a, final long from, final long to)
{
 for(long i = from; i < to - 1; i++) {
  long m = i;
  for(long j = i + 1; j < to; j++) if (KEY_LESS(BigArrays.get(a, j), BigArrays.get(a, m))) m = j;
  if (m != i) BigArrays.swap(a, i, m);
 }
}

/** Sorts the specified big array according to the order induced by the specified
 * comparator using quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * @param x the big array to be sorted.
 * @param comp the comparator to determine the sorting order.
 *
 */
```

```
 public static KEY_GENERIC void quickSort(final KEY_GENERIC_TYPE[][] x, final KEY_COMPARATOR
KEY_GENERIC comp) {
  quickSort(x, 0, BigArrays.length(x), comp);
 }

 /** Sorts the specified range of elements according to the natural ascending order using quicksort.
  *
  * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
  * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
  * 1249&minus;1265, 1993.
  *
  * @param x the big array to be sorted.
  * @param from the index of the first element (inclusive) to be sorted.
  * @param to the index of the last element (exclusive) to be sorted.
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static KEY_GENERIC void quickSort(final KEY_GENERIC_TYPE[][] x, final long from, final long to) {
  final long len = to - from;

  // Selection sort on smallest arrays
  if (len < QUICKSORT_NO_REC) {
   selectionSort(x, from, to);
   return;
  }

  // Choose a partition element, v
  long m = from + len / 2;  // Small arrays, middle element
  if (len > QUICKSORT_NO_REC) {
   long l = from;
   long n = to - 1;
   if (len > MEDIUM) {  // Big arrays, pseudomedian of 9
    long s = len / 8;
    l = med3(x, l, l + s, l + 2 * s);
    m = med3(x, m - s, m, m + s);
    n = med3(x, n - 2 * s, n - s, n);
   }
   m = med3(x, l, m, n); // Mid-size, med of 3
  }

  final KEY_GENERIC_TYPE v = BigArrays.get(x, m);

  // Establish Invariant: v* (<v)* (>v)* v*
  long a = from, b = a, c = to - 1, d = c;
  while(true) {
   int comparison;
   while (b <= c && (comparison = KEY_CMP(BigArrays.get(x, b), v)) <= 0) {
    if (comparison == 0) BigArrays.swap(x, a++, b);
```

```
  b++;
 }
 while (c >= b && (comparison = KEY_CMP(BigArrays.get(x, c), v)) >=0) {
  if (comparison == 0) BigArrays.swap(x, c, d--);
  c--;
 }
 if (b > c) break;
 BigArrays.swap(x, b++, c--);
}

// Swap partition elements back to middle
long s, n = to;
s = Math.min(a - from, b - a);
swap(x, from, b - s, s);
s = Math.min(d - c, n - d- 1);
swap(x, b, n - s, s);

// Recursively sort non-partition-elements
if ((s = b - a) > 1) quickSort(x, from, from + s);
if ((s = d - c) > 1) quickSort(x, n - s, n);

}


/** Sorts the specified big array according to the natural ascending order using quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * @param x the big array to be sorted.
 */

public static KEY_GENERIC void quickSort(final KEY_GENERIC_TYPE[][] x) {
 quickSort(x, 0, BigArrays.length(x));
}



protected static class ForkJoinQuickSort KEY_GENERIC extends RecursiveAction {
 private static final long serialVersionUID = 1L;
 private final long from;
 private final long to;
 private final KEY_GENERIC_TYPE[][] x;

 public ForkJoinQuickSort(final KEY_GENERIC_TYPE[][] x , final long from , final long to) {
  this.from = from;
  this.to = to;
  this.x = x;
```

```
}

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
protected void compute() {
 final KEY_GENERIC_TYPE[][] x = this.x;
 final long len = to - from;
 if (len < PARALLEL_QUICKSORT_NO_FORK) {
  quickSort(x, from, to);
  return;
 }
 // Choose a partition element, v
 long m = from + len / 2;
 long l = from;
 long n = to - 1;
 long s = len / 8;
 l = med3(x, l, l + s, l + 2 * s);
 m = med3(x, m - s, m, m + s);
 n = med3(x, n - 2 * s, n - s, n);
 m = med3(x, l, m, n);
 final KEY_GENERIC_TYPE v = BigArrays.get(x, m);
 // Establish Invariant: v* (<v)* (>v)* v*
 long a = from, b = a, c = to - 1, d = c;
 while (true) {
  int comparison;
  while (b <= c && (comparison = KEY_CMP(BigArrays.get(x, b), v)) <= 0) {
   if (comparison == 0) BigArrays.swap(x, a++, b);
   b++;
  }
  while (c >= b && (comparison = KEY_CMP(BigArrays.get(x, c), v)) >= 0) {
   if (comparison == 0) BigArrays.swap(x, c, d--);
   c--;
  }
  if (b > c) break;
  BigArrays.swap(x, b++, c--);
 }
 // Swap partition elements back to middle
 long t;
 s = Math.min(a - from, b - a);
 swap(x, from, b - s, s);
 s = Math.min(d - c, to - d - 1);
 swap(x, b, to - s, s);
 // Recursively sort non-partition-elements
 s = b - a;
 t = d - c;
 if (s > 1 && t > 1) invokeAll(new ForkJoinQuickSort KEY_GENERIC_DIAMOND(x, from, from + s), new
ForkJoinQuickSort KEY_GENERIC_DIAMOND(x, to - t, to));
 else if (s > 1) invokeAll(new ForkJoinQuickSort KEY_GENERIC_DIAMOND(x, from, from + s));
```

```
  else invokeAll(new ForkJoinQuickSort KEY_GENERIC_DIAMOND(x, to - t, to));
 }
}

/**  Sorts the specified range of elements according to the natural ascending order using a parallel quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * @param x the big array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 */
public static KEY_GENERIC void parallelQuickSort(final KEY_GENERIC_TYPE[][] x, final long from, final long
to) {
 ForkJoinPool pool = getPool();
 if (to - from < PARALLEL_QUICKSORT_NO_FORK || pool.getParallelism() == 1) quickSort(x, from, to);
 else {
  pool.invoke(new ForkJoinQuickSort KEY_GENERIC_DIAMOND(x, from, to));
 }
}

/** Sorts a big array according to the natural ascending order using a parallel quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * @param x the big array to be sorted.
 */
public static KEY_GENERIC void parallelQuickSort(final KEY_GENERIC_TYPE[][] x) {
 parallelQuickSort(x, 0, BigArrays.length(x));
}


protected static class ForkJoinQuickSortComp KEY_GENERIC extends RecursiveAction {
 private static final long serialVersionUID = 1L;
 private final long from;
 private final long to;
 private final KEY_GENERIC_TYPE[][] x;
 private final KEY_COMPARATOR KEY_GENERIC comp;

 public ForkJoinQuickSortComp(final KEY_GENERIC_TYPE[][] x , final long from , final long to, final
KEY_COMPARATOR KEY_GENERIC comp) {
  this.from = from;
  this.to = to;
  this.x = x;
```

```
  this.comp = comp;
 }

 @Override
 protected void compute() {
  final KEY_GENERIC_TYPE[][] x = this.x;
  final long len = to - from;
  if (len < PARALLEL_QUICKSORT_NO_FORK) {
   quickSort(x, from, to, comp);
   return;
  }
  // Choose a partition element, v
  long m = from + len / 2;
  long l = from;
  long n = to - 1;
  long s = len / 8;
  l = med3(x, l, l + s, l + 2 * s, comp);
  m = med3(x, m - s, m, m + s, comp);
  n = med3(x, n - 2 * s, n - s, n, comp);
  m = med3(x, l, m, n, comp);
  final KEY_GENERIC_TYPE v = BigArrays.get(x, m);
  // Establish Invariant: v* (<v)* (>v)* v*
  long a = from, b = a, c = to - 1, d = c;
  while (true) {
   int comparison;
   while (b <= c && (comparison = comp.compare(BigArrays.get(x, b), v)) <= 0) {
    if (comparison == 0) BigArrays.swap(x, a++, b);
    b++;
   }
   while (c >= b && (comparison = comp.compare(BigArrays.get(x, c), v)) >= 0) {
    if (comparison == 0) BigArrays.swap(x, c, d--);
    c--;
   }
   if (b > c) break;
   BigArrays.swap(x, b++, c--);
  }
  // Swap partition elements back to middle
  long t;
  s = Math.min(a - from, b - a);
  swap(x, from, b - s, s);
  s = Math.min(d - c, to - d - 1);
  swap(x, b, to - s, s);
  // Recursively sort non-partition-elements
  s = b - a;
  t = d - c;
  if (s > 1 && t > 1) invokeAll(new ForkJoinQuickSortComp KEY_GENERIC_DIAMOND(x, from, from + s,
comp), new ForkJoinQuickSortComp KEY_GENERIC_DIAMOND(x, to - t, to, comp));
  else if (s > 1) invokeAll(new ForkJoinQuickSortComp KEY_GENERIC_DIAMOND(x, from, from + s, comp));
```

```
  else invokeAll(new ForkJoinQuickSortComp KEY_GENERIC_DIAMOND(x, to - t, to, comp));
 }
}

/** Sorts the specified range of elements according to the order induced by the specified
 * comparator using a parallel quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * @param x the big array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 * @param comp the comparator to determine the sorting order.
 */
public static KEY_GENERIC void parallelQuickSort(final KEY_GENERIC_TYPE[][] x, final long from, final long
to, final KEY_COMPARATOR KEY_GENERIC comp) {
 ForkJoinPool pool = getPool();
 if (to - from < PARALLEL_QUICKSORT_NO_FORK || pool.getParallelism() == 1) quickSort(x, from, to, comp);
 else {
  pool.invoke(new ForkJoinQuickSortComp KEY_GENERIC_DIAMOND(x, from, to, comp));
 }
}

/** Sorts a big array according to the order induced by the specified
 * comparator using a parallel quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * @param x the big array to be sorted.
 * @param comp the comparator to determine the sorting order.
 */
public static KEY_GENERIC void parallelQuickSort(final KEY_GENERIC_TYPE[][] x, final
KEY_COMPARATOR KEY_GENERIC comp) {
 parallelQuickSort(x, 0, BigArrays.length(x), comp);
}


#if ! KEY_CLASS_Boolean

/**
 * Searches a range of the specified big array for the specified value using
 * the binary search algorithm. The range must be sorted prior to making this call.
 * If it is not sorted, the results are undefined. If the range contains multiple elements with
 * the specified value, there is no guarantee which one will be found.
```

```
 *
 * @param a the big array to be searched.
 * @param from  the index of the first element (inclusive) to be searched.
 * @param to  the index of the last element (exclusive) to be searched.
 * @param key the value to be searched for.
 * @return index of the search key, if it is contained in the big array;
 *         otherwise, <code>(-(<i>insertion point</i>) - 1)</code>.  The <i>insertion
 *         point</i> is defined as the the point at which the value would
 *         be inserted into the big array: the index of the first
 *         element greater than the key, or the length of the big array, if all
 *         elements in the big array are less than the specified key.  Note
 *         that this guarantees that the return value will be &gt;= 0 if
 *         and only if the key is found.
 * @see java.util.Arrays
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
public static KEY_GENERIC long binarySearch(final KEY_GENERIC_TYPE[][] a, long from, long to, final
KEY_GENERIC_TYPE key) {
 KEY_GENERIC_TYPE midVal;
 to--;
 while (from <= to) {
  final long mid = (from + to) >>> 1;
  midVal = BigArrays.get(a, mid);
#if KEYS_PRIMITIVE
  if (midVal < key) from = mid + 1;
  else if (midVal > key) to = mid - 1;
  else return mid;
#else
  final int cmp = ((Comparable KEY_SUPER_GENERIC)midVal).compareTo(key);
  if (cmp < 0) from = mid + 1;
  else if (cmp > 0) to = mid - 1;
  else return mid;
#endif
 }
 return -(from + 1);
}

/**
 * Searches a big array for the specified value using
 * the binary search algorithm. The range must be sorted prior to making this call.
 * If it is not sorted, the results are undefined. If the range contains multiple elements with
 * the specified value, there is no guarantee which one will be found.
 *
 * @param a the big array to be searched.
 * @param key the value to be searched for.
 * @return index of the search key, if it is contained in the big array;
 *         otherwise, <code>(-(<i>insertion point</i>) - 1)</code>.  The <i>insertion
 *         point</i> is defined as the the point at which the value would
```

```
 *          be inserted into the big array: the index of the first
 *          element greater than the key, or the length of the big array, if all
 *          elements in the big array are less than the specified key.  Note
 *          that this guarantees that the return value will be &gt;= 0 if
 *          and only if the key is found.
 * @see java.util.Arrays
 */
public static KEY_GENERIC long binarySearch(final KEY_GENERIC_TYPE[][] a, final KEY_TYPE key) {
 return binarySearch(a, 0, BigArrays.length(a), key);
}

/**
 * Searches a range of the specified big array for the specified value using
 * the binary search algorithm and a specified comparator. The range must be sorted following the comparator prior
to making this call.
 * If it is not sorted, the results are undefined. If the range contains multiple elements with
 * the specified value, there is no guarantee which one will be found.
 *
 * @param a the big array to be searched.
 * @param from  the index of the first element (inclusive) to be searched.
 * @param to  the index of the last element (exclusive) to be searched.
 * @param key the value to be searched for.
 * @param c a comparator.
 * @return index of the search key, if it is contained in the big array;
 *          otherwise, <code>(-(<i>insertion point</i>) - 1)</code>.  The <i>insertion
 *          point</i> is defined as the the point at which the value would
 *          be inserted into the big array: the index of the first
 *          element greater than the key, or the length of the big array, if all
 *          elements in the big array are less than the specified key.  Note
 *          that this guarantees that the return value will be &gt;= 0 if
 *          and only if the key is found.
 * @see java.util.Arrays
 */
public static KEY_GENERIC long binarySearch(final KEY_GENERIC_TYPE[][] a, long from, long to, final
KEY_GENERIC_TYPE key, final KEY_COMPARATOR KEY_GENERIC c) {
 KEY_GENERIC_TYPE midVal;
 to--;
 while (from <= to) {
  final long mid = (from + to) >>> 1;
  midVal = BigArrays.get(a, mid);
  final int cmp = c.compare(midVal, key);
  if (cmp < 0) from = mid + 1;
  else if (cmp > 0) to = mid - 1;
  else return mid; // key found
 }
 return -(from + 1);
}
```

```
/**
 * Searches a big array for the specified value using
 * the binary search algorithm and a specified comparator. The range must be sorted following the comparator prior to making this call.
 * If it is not sorted, the results are undefined. If the range contains multiple elements with
 * the specified value, there is no guarantee which one will be found.
 *
 * @param a the big array to be searched.
 * @param key the value to be searched for.
 * @param c a comparator.
 * @return index of the search key, if it is contained in the big array;
 *         otherwise, <code>(-(<i>insertion point</i>) - 1)</code>.  The <i>insertion
 *         point</i> is defined as the the point at which the value would
 *         be inserted into the big array: the index of the first
 *         element greater than the key, or the length of the big array, if all
 *         elements in the big array are less than the specified key.  Note
 *         that this guarantees that the return value will be &gt;= 0 if
 *         and only if the key is found.
 * @see java.util.Arrays
 */
 public static KEY_GENERIC long binarySearch(final KEY_GENERIC_TYPE[][] a, final KEY_GENERIC_TYPE key, final KEY_COMPARATOR KEY_GENERIC c) {
  return binarySearch(a, 0, BigArrays.length(a), key, c);
 }


#if KEYS_PRIMITIVE
 /** The size of a digit used during radix sort (must be a power of 2). */
 private static final int DIGIT_BITS = 8;
 /** The mask to extract a digit of {@link #DIGIT_BITS} bits. */
 private static final int DIGIT_MASK = (1 << DIGIT_BITS) - 1;
 /** The number of digits per element. */
 private static final int DIGITS_PER_ELEMENT = KEY_CLASS.SIZE / DIGIT_BITS;

 /** This method fixes negative numbers so that the combination exponent/significand is lexicographically sorted. */
#if KEY_CLASS_Double
 private static final long fixDouble(final double d) {
  final long l = Double.doubleToRawLongBits(d);
  return l >= 0 ? l : l ^ 0x7FFFFFFFFFFFFFFFL;
 }
#elif KEY_CLASS_Float
 private static final int fixFloat(final float f) {
  final int i = Float.floatToRawIntBits(f);
  return i >= 0 ? i : i ^ 0x7FFFFFFF;
 }
#endif
```

```
/** Sorts the specified big array using radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993),
 * and further improved using the digit-oracle idea described by
 * Juha K&auml;rkk&auml;inen and Tommi Rantala in &ldquo;Engineering radix sort for strings&rdquo;,
 * <i>String Processing and Information Retrieval, 15th International Symposium</i>, volume 5280 of
 * Lecture Notes in Computer Science, pages 3&minus;14, Springer (2008).
 *
 * @implSpec This implementation is significantly faster than quicksort
 * already at small sizes (say, more than 10000 elements), but it can only
 * sort in ascending order.
 * It will allocate a support array of bytes with the same number of elements as the array to be sorted.
 *
 * @param a the big array to be sorted.
 */
public static void radixSort(final KEY_TYPE[][] a) {
 radixSort(a, 0, BigArrays.length(a));
}

/** Sorts the specified big array using radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993),
 * and further improved using the digit-oracle idea described by
 * Juha K&auml;rkk&auml;inen and Tommi Rantala in &ldquo;Engineering radix sort for strings&rdquo;,
 * <i>String Processing and Information Retrieval, 15th International Symposium</i>, volume 5280 of
 * Lecture Notes in Computer Science, pages 3&minus;14, Springer (2008).
 *
 * @implSpec This implementation is significantly faster than quicksort
 * already at small sizes (say, more than 10000 elements), but it can only
 * sort in ascending order.
 * It will allocate a support array of bytes with the same number of elements as the array to be sorted.
 *
 * @param a the big array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 */
public static void radixSort(final KEY_TYPE[][] a, final long from, final long to) {
 final int maxLevel = DIGITS_PER_ELEMENT - 1;

 final int stackSize = ((1 << DIGIT_BITS) - 1) * (DIGITS_PER_ELEMENT - 1) + 1;
 final long[] offsetStack = new long[stackSize];
 int offsetPos = 0;
 final long[] lengthStack = new long[stackSize];
 int lengthPos = 0;
 final int[] levelStack = new int[stackSize];
 int levelPos = 0;
```

```
  offsetStack[offsetPos++] = from;
  lengthStack[lengthPos++] = to - from;
  levelStack[levelPos++] = 0;

  final long[] count = new long[1 << DIGIT_BITS];
  final long[] pos = new long[1 << DIGIT_BITS];
  final byte[][] digit = ByteBigArrays.newBigArray(to - from);

  while(offsetPos > 0) {
   final long first = offsetStack[--offsetPos];
   final long length = lengthStack[--lengthPos];
   final int level = levelStack[--levelPos];
#if KEY_CLASS_Character
   final int signMask = 0;
#else
   final int signMask = level % DIGITS_PER_ELEMENT == 0 ? 1 << DIGIT_BITS - 1 : 0;
#endif

   if (length < MEDIUM) {
    selectionSort(a, first, first + length);
    continue;
   }

   final int shift = (DIGITS_PER_ELEMENT - 1 - level % DIGITS_PER_ELEMENT) * DIGIT_BITS; // This is the
shift that extract the right byte from a key

   // Count keys.

   for(long i = length; i-- != 0;) BigArrays.set(digit, i, (byte)(((KEY2LEXINT(BigArrays.get(a, first + i)) >>> shift) &
DIGIT_MASK) ^ signMask));
   for(long i = length; i-- != 0;) count[BigArrays.get(digit, i) & 0xFF]++;
   // Compute cumulative distribution and push non-singleton keys on stack.
   int lastUsed = -1;

   long p = 0;
   for(int i = 0; i < 1 << DIGIT_BITS; i++) {
    if (count[i] != 0) {
     lastUsed = i;
     if (level < maxLevel && count[i] > 1){
      //System.err.println(" Pushing " + new StackEntry(first + pos[i - 1], first + pos[i], level + 1));
      offsetStack[offsetPos++] = p + first;
      lengthStack[lengthPos++] = count[i];
      levelStack[levelPos++] = level + 1;
     }
    }
    pos[i] = (p += count[i]);
   }
```

```
  // When all slots are OK, the last slot is necessarily OK.
  final long end = length - count[lastUsed];
  count[lastUsed] = 0;

  // i moves through the start of each block
  int c = -1;
  for(long i = 0, d; i < end; i += count[c], count[c] = 0) {
   KEY_TYPE t = BigArrays.get(a, i +first);
   c = BigArrays.get(digit, i) & 0xFF;
   while((d = --pos[c]) > i) {
    final KEY_TYPE z = t;
    final int zz = c;
    t = BigArrays.get(a, d + first);
    c = BigArrays.get(digit, d) & 0xFF;
    BigArrays.set(a, d + first, z);
    BigArrays.set(digit, d, (byte)zz);
   }

   BigArrays.set(a, i + first, t);
  }
 }
}


private static void selectionSort(final KEY_TYPE[][] a, final KEY_TYPE[][] b, final long from, final long to) {
 for(long i = from; i < to - 1; i++) {
  long m = i;
  for(long j = i + 1; j < to; j++)
   if (KEY_LESS(BigArrays.get(a, j), BigArrays.get(a, m)) || KEY_CMP_EQ(BigArrays.get(a, j), BigArrays.get(a,
m)) && KEY_LESS(BigArrays.get(b, j), BigArrays.get(b, m))) m = j;

  if (m != i) {
   KEY_TYPE t = BigArrays.get(a, i);
   BigArrays.set(a, i, BigArrays.get(a, m));
   BigArrays.set(a, m, t);
   t = BigArrays.get(b, i);
   BigArrays.set(b, i, BigArrays.get(b, m));
   BigArrays.set(b, m, t);
  }
 }
}

/** Sorts the specified pair of big arrays lexicographically using radix sort.
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993),
 * and further improved using the digit-oracle idea described by
 * Juha K&auml;rkk&auml;inen and Tommi Rantala in &ldquo;Engineering radix sort for strings&rdquo;,
```

```
 * <i>String Processing and Information Retrieval, 15th International Symposium</i>, volume 5280 of
 * Lecture Notes in Computer Science, pages 3&minus;14, Springer (2008).
 *
 * <p>This method implements a <em>lexicographical</em> sorting of the arguments. Pairs of elements
 * in the same position in the two provided arrays will be considered a single key, and permuted
 * accordingly. In the end, either {@code a[i] &lt; a[i + 1]} or {@code a[i] == a[i + 1]} and {@code b[i] &lt;= b[i + 1]}.
 *
 * @implSpec This implementation is significantly faster than quicksort
 * already at small sizes (say, more than 10000 elements), but it can only
 * sort in ascending order. It will allocate a support array of bytes with the same number of elements as the arrays to be sorted.
 *
 * @param a the first big array to be sorted.
 * @param b the second big array to be sorted.
 */

public static void radixSort(final KEY_TYPE[][] a, final KEY_TYPE[][] b) {
 radixSort(a, b, 0, BigArrays.length(a));
}

/** Sorts the specified pair of big arrays lexicographically using radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993),
 * and further improved using the digit-oracle idea described by
 * Juha K&auml;rkk&auml;inen and Tommi Rantala in &ldquo;Engineering radix sort for strings&rdquo;,
 * <i>String Processing and Information Retrieval, 15th International Symposium</i>, volume 5280 of
 * Lecture Notes in Computer Science, pages 3&minus;14, Springer (2008).
 *
 * <p>This method implements a <em>lexicographical</em> sorting of the arguments. Pairs of elements
 * in the same position in the two provided arrays will be considered a single key, and permuted
 * accordingly. In the end, either {@code a[i] &lt; a[i + 1]} or {@code a[i] == a[i + 1]} and {@code b[i] &lt;= b[i + 1]}.
 *
 * @implSpec This implementation is significantly faster than quicksort
 * already at small sizes (say, more than 10000 elements), but it can only
 * sort in ascending order. It will allocate a support array of bytes with the same number of elements as the arrays to be sorted.
 *
 * @param a the first big array to be sorted.
 * @param b the second big array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 */
public static void radixSort(final KEY_TYPE[][] a, final KEY_TYPE[][] b, final long from, final long to) {
 final int layers = 2;
 if (BigArrays.length(a) != BigArrays.length(b)) throw new IllegalArgumentException("Array size mismatch.");
```

```
  final int maxLevel = DIGITS_PER_ELEMENT * layers - 1;

  final int stackSize = ((1 << DIGIT_BITS) - 1) * (layers * DIGITS_PER_ELEMENT - 1) + 1;
  final long[] offsetStack = new long[stackSize];
  int offsetPos = 0;
  final long[] lengthStack = new long[stackSize];
  int lengthPos = 0;
  final int[] levelStack = new int[stackSize];
  int levelPos = 0;

  offsetStack[offsetPos++] = from;
  lengthStack[lengthPos++] = to - from;
  levelStack[levelPos++] = 0;

  final long[] count = new long[1 << DIGIT_BITS];
  final long[] pos = new long[1 << DIGIT_BITS];
  final byte[][] digit = ByteBigArrays.newBigArray(to - from);

  while(offsetPos > 0) {
   final long first = offsetStack[--offsetPos];
   final long length = lengthStack[--lengthPos];
   final int level = levelStack[--levelPos];
#if KEY_CLASS_Character
   final int signMask = 0;
#else
   final int signMask = level % DIGITS_PER_ELEMENT == 0 ? 1 << DIGIT_BITS - 1 : 0;
#endif

   if (length < MEDIUM) {
    selectionSort(a, b, first, first + length);
    continue;
   }

   final KEY_TYPE[][] k = level < DIGITS_PER_ELEMENT ? a : b; // This is the key array
   final int shift = (DIGITS_PER_ELEMENT - 1 - level % DIGITS_PER_ELEMENT) * DIGIT_BITS; // This is the
shift that extract the right byte from a key

   // Count keys.
   for(long i = length; i-- != 0;) BigArrays.set(digit, i, (byte)(((KEY2LEXINT(BigArrays.get(k, first + i)) >>> shift) &
DIGIT_MASK) ^ signMask));
   for(long i = length; i-- != 0;) count[BigArrays.get(digit, i) & 0xFF]++;
   // Compute cumulative distribution and push non-singleton keys on stack.
   int lastUsed = -1;

   long p = 0;
   for(int i = 0; i < 1 << DIGIT_BITS; i++) {
    if (count[i] != 0) {
     lastUsed = i;
```

```
    if (level < maxLevel && count[i] > 1){
     offsetStack[offsetPos++] = p + first;
     lengthStack[lengthPos++] = count[i];
     levelStack[levelPos++] = level + 1;
    }
   }
   pos[i] = (p += count[i]);
  }

  // When all slots are OK, the last slot is necessarily OK.
  final long end = length - count[lastUsed];
  count[lastUsed] = 0;

  // i moves through the start of each block
  int c = -1;
  for(long i = 0, d; i < end; i += count[c], count[c] = 0) {
   KEY_TYPE t = BigArrays.get(a, i + first);
   KEY_TYPE u = BigArrays.get(b, i + first);
   c = BigArrays.get(digit, i) & 0xFF;
   while((d = --pos[c]) > i) {
    KEY_TYPE z = t;
    final int zz = c;
    t = BigArrays.get(a, d + first);
    BigArrays.set(a, d + first, z);
    z = u;
    u = BigArrays.get(b, d + first);
    BigArrays.set(b, d + first, z);
    c = BigArrays.get(digit, d) & 0xFF;
    BigArrays.set(digit, d, (byte)zz);
   }

   BigArrays.set(a, i + first, t);
   BigArrays.set(b, i + first, u);
  }
 }
}


private static final int RADIXSORT_NO_REC = 1024;

private static KEY_GENERIC void insertionSortIndirect(final long[][] perm, final KEY_TYPE[][] a, final
KEY_TYPE[][] b, final long from, final long to) {
 for (long i = from; ++i < to;) {
  long t = BigArrays.get(perm, i);
  long j = i;
  for (long u = BigArrays.get(perm, j - 1); KEY_LESS(BigArrays.get(a, t), BigArrays.get(a, u)) ||
KEY_CMP_EQ(BigArrays.get(a, t), BigArrays.get(a, u)) && KEY_LESS(BigArrays.get(b, t), BigArrays.get(b, u));
u = BigArrays.get(perm, --j - 1)) {
```

```
   BigArrays.set(perm, j, u);
   if (from == j - 1) {
    --j;
    break;
   }
  }
  BigArrays.set(perm, j, t);
 }
}

/** Sorts the specified pair of arrays lexicographically using indirect radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
 *
 * <p>This method implement an <em>indirect</em> sort. The elements of {@code perm} (which must
 * be exactly the numbers in the interval {@code [0..length(perm))}) will be permuted so that
 * {@code a[perm[i]] &le; a[perm[i + 1]]} or {@code a[perm[i]] == a[perm[i + 1]]} and {@code b[perm[i]] &le;
b[perm[i + 1]]}.
 *
 * @implSpec This implementation will allocate, in the stable case, a further support array as large as {@code
perm} (note that the stable
 * version is slightly faster).
 *
 * @param perm a permutation array indexing {@code a}.
 * @param a the array to be sorted.
 * @param b the second array to be sorted.
 * @param stable whether the sorting algorithm should be stable.
 */
public static void radixSortIndirect(final long[][] perm, final KEY_TYPE[][] a, final KEY_TYPE[][] b, final
boolean stable) {
 ensureSameLength(a, b);
 radixSortIndirect(perm, a, b, 0, BigArrays.length(a), stable);
}

/** Sorts the specified pair of arrays lexicographically using indirect radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
 *
 * <p>This method implement an <em>indirect</em> sort. The elements of {@code perm} (which must
 * be exactly the numbers in the interval {@code [0..length(perm))}) will be permuted so that
 * {@code a[perm[i]] &le; a[perm[i + 1]]} or {@code a[perm[i]] == a[perm[i + 1]]} and {@code b[perm[i]] &le;
b[perm[i + 1]]}.
 *
 * @implSpec This implementation will allocate, in the stable case, a further support array as large as {@code
perm} (note that the stable
 * version is slightly faster).
```

```
 *
 * @param perm a permutation array indexing {@code a}.
 * @param a the array to be sorted.
 * @param b the second array to be sorted.
 * @param from the index of the first element of {@code perm} (inclusive) to be permuted.
 * @param to the index of the last element of {@code perm} (exclusive) to be permuted.
 * @param stable whether the sorting algorithm should be stable.
 */
public static void radixSortIndirect(final long[][] perm, final KEY_TYPE[][] a, final KEY_TYPE[][] b, final long
from, final long to, final boolean stable) {
 if (to - from < RADIXSORT_NO_REC) {
  insertionSortIndirect(perm, a, b, from, to);
  return;
 }

 final int layers = 2;
 final int maxLevel = DIGITS_PER_ELEMENT * layers - 1;

 final int stackSize = ((1 << DIGIT_BITS) - 1) * (layers * DIGITS_PER_ELEMENT - 1) + 1;
 int stackPos = 0;
 final long[] offsetStack = new long[stackSize];
 final long[] lengthStack = new long[stackSize];
 final int[] levelStack = new int[stackSize];

 offsetStack[stackPos] = from;
 lengthStack[stackPos] = to - from;
 levelStack[stackPos++] = 0;

 final long[] count = new long[1 << DIGIT_BITS];
 final long[] pos = new long[1 << DIGIT_BITS];
 final long[][] support = stable ? it.unimi.dsi.fastutil.longs.LongBigArrays.newBigArray(BigArrays.length(perm)) :
null;

 while(stackPos > 0) {
  final long first = offsetStack[--stackPos];
  final long length = lengthStack[stackPos];
  final int level = levelStack[stackPos];
#if KEY_CLASS_Character
  final int signMask = 0;
#else
  final int signMask = level % DIGITS_PER_ELEMENT == 0 ? 1 << DIGIT_BITS - 1 : 0;
#endif

  final KEY_TYPE[][] k = level < DIGITS_PER_ELEMENT ? a : b; // This is the key array
  final int shift = (DIGITS_PER_ELEMENT - 1 - level % DIGITS_PER_ELEMENT) * DIGIT_BITS; // This is the
shift that extract the right byte from a key

  // Count keys.
```

```
   for(long i = first + length; i-- != first;) count[INT(KEY2LEXINT(BigArrays.get(k, BigArrays.get(perm, i))) >>>
shift & DIGIT_MASK ^ signMask)]++;
   // Compute cumulative distribution
   int lastUsed = -1;
   long p = stable ? 0 : first;
   for (int i = 0; i < 1 << DIGIT_BITS; i++) {
    if (count[i] != 0) lastUsed = i;
    pos[i] = (p += count[i]);
   }

   if (stable) {
    for(long i = first + length; i-- != first;) BigArrays.set(support, --pos[INT(KEY2LEXINT(BigArrays.get(k,
BigArrays.get(perm, i))) >>> shift & DIGIT_MASK ^ signMask)], BigArrays.get(perm, i));
    BigArrays.copy(support, 0, perm, first, length);
    p = first;
    for(int i = 0; i < 1 << DIGIT_BITS; i++) {
     if (level < maxLevel && count[i] > 1) {
      if (count[i] < RADIXSORT_NO_REC) insertionSortIndirect(perm, a, b, p, p + count[i]);
      else {
       offsetStack[stackPos] = p;
       lengthStack[stackPos] = count[i];
       levelStack[stackPos++] = level + 1;
      }
     }
     p += count[i];
    }
    java.util.Arrays.fill(count, 0);
   }
   else {
    final long end = first + length - count[lastUsed];
    // i moves through the start of each block
    int c = -1;
    for(long i = first, d; i <= end; i += count[c], count[c] = 0) {
     long t = BigArrays.get(perm, i);
     c = INT(KEY2LEXINT(BigArrays.get(k, t)) >>> shift & DIGIT_MASK ^ signMask);

     if (i < end) { // When all slots are OK, the last slot is necessarily OK.
      while((d = --pos[c]) > i) {
       final long z = t;
       t = BigArrays.get(perm, d);
       BigArrays.set(perm, d, z);
       c = INT(KEY2LEXINT(BigArrays.get(k, t)) >>> shift & DIGIT_MASK ^ signMask);
      }
      BigArrays.set(perm, i, t);
     }


     if (level < maxLevel && count[c] > 1) {
```

```
      if (count[c] < RADIXSORT_NO_REC) insertionSortIndirect(perm, a, b, i, i + count[c]);
      else {
       offsetStack[stackPos] = i;
       lengthStack[stackPos] = count[c];
       levelStack[stackPos++] = level + 1;
      }
     }
    }
   }
  }
 }

#endif

#endif

 /** Shuffles the specified big array fragment using the specified pseudorandom number generator.
  *
  * @param a the big array to be shuffled.
  * @param from the index of the first element (inclusive) to be shuffled.
  * @param to the index of the last element (exclusive) to be shuffled.
  * @param random a pseudorandom number generator.
  * @return {@code a}.
  */
 public static KEY_GENERIC KEY_GENERIC_TYPE[][] shuffle(final KEY_GENERIC_TYPE[][] a, final long from, final long to, final Random random) {
  return BigArrays.shuffle(a, from, to, random);
 }

 /** Shuffles the specified big array using the specified pseudorandom number generator.
  *
  * @param a the big array to be shuffled.
  * @param random a pseudorandom number generator.
  * @return {@code a}.
  */
 public static KEY_GENERIC KEY_GENERIC_TYPE[][] shuffle(final KEY_GENERIC_TYPE[][] a, final Random random) {
  return BigArrays.shuffle(a, random);
 }

#if KEY_CLASS_Integer
#ifdef TEST
```

```
 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#elif KEY_CLASS_Object
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }

 private static Object[] k, v, nk;
 private static KEY_TYPE kt[];
 private static KEY_TYPE nkt[];
 private static BIG_ARRAY_BIG_LIST topList;

 protected static void speedTest(int n, boolean b) {}

 protected static void runTest(int n) {
  KEY_TYPE[][] a = BIG_ARRAYS.newBigArray(n);
  for(int i = 0; i < n; i++) BigArrays.set(a, i, i);
  BIG_ARRAYS.copy(a, 0, a, 1, n - 2);
  assert a[0][0] == 0;
  for(int i = 0; i < n - 2; i++) assert BigArrays.get(a, i + 1) == i;

  for(int i = 0; i < n; i++) BigArrays.set(a, i, i);
  BIG_ARRAYS.copy(a, 1, a, 0, n - 1);
  for(int i = 0; i < n - 1; i++) assert BigArrays.get(a, i) == i + 1;

  for(int i = 0; i < n; i++) BigArrays.set(a, i, i);
  KEY_TYPE[] b = new KEY_TYPE[n];
  for(int i = 0; i < n; i++) b[i] = i;

  assert equals(wrap(b), a);

  System.out.println("Test OK");
  return;

 }


 public static void main(String args[]) throws Exception {
  int n  = Integer.parseInt(args[1]);
  if (args.length > 2) r = new java.util.Random(seed = Long.parseLong(args[2]));
```

```
  try {
   if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, "speedComp".equals(args[0]));
   else if ("test".equals(args[0])) runTest(n);
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif
#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/BigArrays.drv
No license file was found, but licenses were detected in source scan.

```
/*
 * Copyright (C) 2020-2022 Sebastiano Vigna
 *
 * Licensed under the Apache License, Version 2.0 (the "License");
 * you may not use this file except in compliance with the License.
 * You may obtain a copy of the License at
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 *     http://www.apache.org/licenses/LICENSE-2.0
 *
 * Unless required by applicable law or agreed to in writing, software
 * distributed under the License is distributed on an "AS IS" BASIS,
 * WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
 * See the License for the specific language governing permissions and
 * limitations under the License.
 */
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleLongPair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/bytes/BytePredicate.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleObjectImmutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongIterables.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleObjectMutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-

jar/it/unimi/dsi/fastutil/ints/IntImmutableList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/ShortImmutableList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntBinaryOperator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntIntImmutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongLongMutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/booleans/AbstractBooleanSpliterator.java
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectIntImmutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectImmutableList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntDoublePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongLongPair.java
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectLongImmutablePair.java
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleIntImmutablePair.java
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongLongImmutableSortedPair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleDoubleSortedPair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/floats/FloatPredicate.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntIntPair.java
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectIntPair.java
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntIntSortedPair.java
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleIntMutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntIntImmutableSortedPair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleLongMutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectObjectImmutableSortedPair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectDoubleImmutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleDoubleImmutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongLongSortedPair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongObjectImmutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/floats/AbstractFloatSpliterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleUnaryOperator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntObjectImmutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/floats/FloatUnaryOperator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectDoublePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/AbstractIntSpliterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoublePredicate.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectIterables.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectIntMutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongLongImmutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongPredicate.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleDoublePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-

jar/it/unimi/dsi/fastutil/ints/IntLongImmutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongDoubleMutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntUnaryOperator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongObjectPair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongDoubleImmutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntObjectPair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/ShortPredicate.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleObjectPair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntDoubleMutablePair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntLongPair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleDoubleImmutableSortedPair.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntIterables.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/ShortUnaryOperator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectDoubleMutablePair.java
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```
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*/


package PACKAGE;
```

```
#if KEY_CLASS_Object
import java.util.Comparator;
#endif

import java.util.Arrays;

/** A class providing static methods and objects that do useful things with indirect heaps.
*
* <p>An indirect heap is an extension of a semi-indirect heap using also an
* <em>inversion array</em> of the same length as the reference array,
* satisfying the relation {@code heap[inv[i]]==i} when
* {@code inv[i]&gt;=0}, and {@code inv[heap[i]]==i} for all elements in the heap.
*/

public final class INDIRECT_HEAPS {

 private INDIRECT_HEAPS() {}

 /** Moves the given element down into the indirect heap until it reaches the lowest possible position.
  *
  * @param refArray the reference array.
  * @param heap the indirect heap (starting at 0).
  * @param inv the inversion array.
  * @param size the number of elements in the heap.
  * @param i the index in the heap of the element to be moved down.
  * @param c a type-specific comparator, or {@code null} for the natural order.
  * @return the new position in the heap of the element of heap index {@code i}.
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static KEY_GENERIC int downHeap(final KEY_GENERIC_TYPE[] refArray, final int[] heap, final int[]
inv, final int size, int i, final KEY_COMPARATOR KEY_GENERIC c) {
  assert i < size;

  final int e = heap[i];
  final KEY_GENERIC_TYPE E = refArray[e];
  int child;

  if (c == null)
   while ((child = (i << 1) + 1) < size) {
    int t = heap[child];
    final int right = child + 1;
    if (right < size && KEY_LESS(refArray[heap[right]], refArray[t])) t = heap[child = right];
    if (KEY_LESSEQ(E, refArray[t])) break;
    heap[i] = t;
    inv[heap[i]] = i;
    i = child;
   }
```

```
else
 while ((child = (i << 1) + 1) < size) {
  int t = heap[child];
  final int right = child + 1;
  if (right < size && c.compare(refArray[heap[right]], refArray[t]) < 0) t = heap[child = right];
  if (c.compare(E, refArray[t]) <= 0) break;
  heap[i] = t;
  inv[heap[i]] = i;
  i = child;
 }

heap[i] = e;
inv[e] = i;
return i;
}

/** Moves the given element up in the indirect heap until it reaches the highest possible position.
 *
 * Note that in principle after this call the heap property may be violated.
 *
 * @param refArray the reference array.
 * @param heap the indirect heap (starting at 0).
 * @param inv the inversion array.
 * @param size the number of elements in the heap.
 * @param i the index in the heap of the element to be moved up.
 * @param c a type-specific comparator, or {@code null} for the natural order.
 * @return the new position in the heap of the element of heap index {@code i}.
 */

SUPPRESS_WARNINGS_KEY_UNCHECKED
public static KEY_GENERIC int upHeap(final KEY_GENERIC_TYPE[] refArray, final int[] heap, final int[] inv,
final int size, int i, final KEY_COMPARATOR KEY_GENERIC c) {
 assert i < size;

 final int e = heap[i];
 final KEY_GENERIC_TYPE E = refArray[e];

 if (c == null)
  while (i != 0) {
   final int parent = (i - 1) >>> 1;
   final int t = heap[parent];
   if (KEY_LESSEQ(refArray[t], E)) break;
   heap[i] = t;
   inv[heap[i]] = i;
   i = parent;
  }
 else
  while (i != 0) {
```

```
   final int parent = (i - 1) >>> 1;
   final int t = heap[parent];
   if (c.compare(refArray[t], E) <= 0) break;
   heap[i] = t;
   inv[heap[i]] = i;
   i = parent;
  }

 heap[i] = e;
 inv[e] = i;

 return i;
}

/** Creates an indirect heap in the given array.
 *
 * @param refArray the reference array.
 * @param offset the first element of the reference array to be put in the heap.
 * @param length the number of elements to be put in the heap.
 * @param heap the array where the heap is to be created.
 * @param inv the inversion array.
 * @param c a type-specific comparator, or {@code null} for the natural order.
 */

 public static KEY_GENERIC void makeHeap(final KEY_GENERIC_TYPE[] refArray, final int offset, final int
length, final int[] heap, final int[] inv, final KEY_COMPARATOR KEY_GENERIC c) {
 ARRAYS.ensureOffsetLength(refArray, offset, length);
 if (heap.length < length) throw new IllegalArgumentException("The heap length (" + heap.length + ") is smaller
than the number of elements (" + length + ")");
 if (inv.length < refArray.length) throw new IllegalArgumentException("The inversion array length (" + heap.length
+ ") is smaller than the length of the reference array (" + refArray.length + ")");

 Arrays.fill(inv, 0, refArray.length, -1);

 int i = length;
 while(i-- != 0) inv[heap[i] = offset + i] = i;

 i = length >>> 1;
 while(i-- != 0) downHeap(refArray, heap, inv, length, i, c);
}


/** Creates an indirect heap from a given index array.
 *
 * @param refArray the reference array.
 * @param heap an array containing indices into {@code refArray}.
 * @param inv the inversion array.
 * @param size the number of elements in the heap.
```

* @param c a type-specific comparator, or {@code null} for the natural order.
 */

```
public static KEY_GENERIC void makeHeap(final KEY_GENERIC_TYPE[] refArray, final int[] heap, final int[] inv, final int size, final KEY_COMPARATOR KEY_GENERIC c) {
  int i = size >>> 1;
  while(i-- != 0) downHeap(refArray, heap, inv, size, i, c);
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/IndirectHeaps.drv
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/SafeMath.java
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*
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/chars/CharBigArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/booleans/BooleanBigArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleBigArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntBigArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/floats/FloatBigArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongBigArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectBigArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/ShortBigArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/bytes/ByteBigArrays.java
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongArraySet.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/Double2LongArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/Object2IntArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/Object2ObjectArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/Long2ObjectArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectArraySet.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/Long2DoubleArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/Double2ObjectArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/Object2LongArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/Int2ObjectArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/Int2LongArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/Long2IntArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/Double2DoubleArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/Int2IntArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/Long2LongArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/Double2IntArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/Object2DoubleArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/Int2DoubleArrayMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntArraySet.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleArraySet.java
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/*

```
package PACKAGE;

/** An abstract class facilitating the creation of type-specific iterators.
*
* @apiNote Up to version 8.5.0, this class was deprecated as abstract methods were
* turned into default methods of the type-specific interface. Now the class hosts
* finalized versions of default delegating methods such as {@link #forEachRemaining}.
*/

public abstract class KEY_ABSTRACT_ITERATOR KEY_GENERIC implements KEY_ITERATOR
KEY_GENERIC {
 protected KEY_ABSTRACT_ITERATOR() {}

#if KEYS_INT_LONG_DOUBLE
 /** {@inheritDoc}
  * @implSpec This method just delegates to the interface default method,
  * as the default method, but it is final, so it cannot be overridden.
  */
 @Override
 public final void forEachRemaining(final KEY_CONSUMER action) {
  forEachRemaining((JDK_PRIMITIVE_KEY_CONSUMER) action);
 }
#endif
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractIterator.drv
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```
package PACKAGE;

import java.util.ListIterator;

/** A type-specific bidirectional iterator that is also a {@link ListIterator}.
*
* <p>This interface merges the methods provided by a {@link ListIterator} and
* a type-specific {@link it.unimi.dsi.fastutil.BidirectionalIterator}. Moreover, it provides
* type-specific versions of {@link ListIterator#add(Object) add()}
* and {@link ListIterator#set(Object) set()}.
*
* @see java.util.ListIterator
* @see it.unimi.dsi.fastutil.BidirectionalIterator
*/

public interface KEY_LIST_ITERATOR KEY_GENERIC extends KEY_BIDI_ITERATOR KEY_GENERIC,
ListIterator<KEY_GENERIC_CLASS> {

 /**
  * Replaces the last element returned by {@link #next} or
  * {@link #previous} with the specified element (optional operation).
  * @param k the element used to replace the last element returned.
  *
  * <p>This default implementation just throws an {@link UnsupportedOperationException}.
  * @see ListIterator#set(Object)
  */

#if KEYS_REFERENCE
 @Override
#endif
 default void set(final KEY_GENERIC_TYPE k) { throw new UnsupportedOperationException(); }

 /**
  * Inserts the specified element into the list (optional operation).
```

```
 *
 * <p>This default implementation just throws an {@link UnsupportedOperationException}.
 * @param k the element to insert.
 * @see ListIterator#add(Object)
 */

#if KEYS_REFERENCE
@Override
#endif
default void add(final KEY_GENERIC_TYPE k) { throw new UnsupportedOperationException(); }

/**
 * Removes from the underlying collection the last element returned
 * by this iterator (optional operation).
 *
 * <p>This default implementation just throws an {@link UnsupportedOperationException}.
 * @see ListIterator#remove()
 */

@Override
default void remove() { throw new UnsupportedOperationException(); }



#if KEYS_PRIMITIVE
/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default void set(final KEY_CLASS k) { set(k.KEY_VALUE()); }

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default void add(final KEY_CLASS k) { add(k.KEY_VALUE()); }

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default KEY_GENERIC_CLASS next() { return KEY_BIDI_ITERATOR.super.next(); }

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default KEY_GENERIC_CLASS previous() { return KEY_BIDI_ITERATOR.super.previous(); }
```

#endif

}

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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/ListIterator.drv
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package PACKAGE;

import java.util.Spliterator;
import java.util.List;
import static it.unimi.dsi.fastutil.Size64.sizeOf;

#if ! KEYS_USE_REFERENCE_EQUALITY
/** A type-specific {@link List}; provides some additional methods that use polymorphism to avoid (un)boxing.
*
* <p>Note that this type-specific interface extends {@link Comparable}: it is expected that implementing
* classes perform a lexicographical comparison using the standard operator "less then" for primitive types,
* and the usual {@link Comparable#compareTo(Object) compareTo()} method for objects.
*
* <p>Additionally, this interface strengthens {@link #iterator()}, {@link #listIterator()},
* {@link #listIterator(int)} and {@link #subList(int,int)}. The former had been already
* strengthened upstream, but unfortunately {@link List} re-specifies it.
*
* <p>Besides polymorphic methods, this interfaces specifies methods to copy into an array or remove contiguous
* sublists. Although the abstract implementation of this interface provides simple, one-by-one implementations
* of these methods, it is expected that concrete implementation override them with optimized versions.
*
* @see List
*/

```
public interface LIST KEY_GENERIC extends List<KEY_GENERIC_CLASS>, Comparable<List<? extends
KEY_GENERIC_CLASS>>, COLLECTION KEY_GENERIC {
#else
/** A type-specific {@link List}; provides some additional methods that use polymorphism to avoid (un)boxing.
*
* <p>Additionally, this interface strengthens {@link #iterator()}, {@link #listIterator()},
* {@link #listIterator(int)} and {@link #subList(int,int)}. The former had been already
* strengthened upstream, but unfortunately {@link List} re-specifies it.
*
* <p>This interface specifies reference equality semantics (members will be compared equal with
* {@code ==} instead of {@link Object#equals(Object) equals}), which may result in breaks in contract
* if attempted to be used with non reference-equality semantics based {@link List}s. For example, a
* {@code aReferenceList.equals(aObjectList)} may return different a different result then
* {@code aObjectList.equals(aReferenceList)}, in violation of {@link Object#equals equals}'s contract
* requiring it being symmetric.
*
* <p>Besides polymorphic methods, this interfaces specifies methods to copy into an array or remove contiguous
* sublists. Although the abstract implementation of this interface provides simple, one-by-one implementations
* of these methods, it is expected that concrete implementation override them with optimized versions.
*
* @see List
*/
public interface LIST KEY_GENERIC extends List<KEY_GENERIC_CLASS>, COLLECTION KEY_GENERIC
{
#endif

 /** Returns a type-specific iterator on the elements of this list.
  *
  * @apiNote This specification strengthens the one given in {@link List#iterator()}.
  * It would not be normally necessary, but {@link java.lang.Iterable#iterator()} is bizarrily re-specified
  * in {@link List}.
  * <p>Also, this is generally the only {@code iterator} method subclasses should override.
  *
  * @return an iterator on the elements of this list.
  */
 @Override
 KEY_LIST_ITERATOR KEY_GENERIC iterator();

 /** Returns a type-specific spliterator on the elements of this list.
  *
  * <p>List spliterators must report at least {@link Spliterator#SIZED} and {@link Spliterator#ORDERED}.
  *
  * <p>See {@link java.util.List#spliterator()} for more documentation on the requirements
  * of the returned spliterator.
  *
  * @apiNote This specification strengthens the one given in
  * {@link java.util.Collection#spliterator()}, which was already
```

```
  * strengthened in the corresponding type-specific class,
  * but was weakened by the fact that this interface extends {@link List}.
  * <p>Also, this is generally the only {@code spliterator} method subclasses should override.
  *
  * @implSpec The default implementation returns a late-binding spliterator (see
  * {@link Spliterator} for documentation on what binding policies mean).
  * <ul>
  * <li>For {@link java.util.RandomAccess RandomAccess} lists, this will return a spliterator
  * that calls the type-specific {@link #get(int)} method on the appropriate indexes.</li>
  * <li>Otherwise, the spliterator returned will wrap this instance's type specific {@link #iterator}.</li>
  * </ul>
  * <p>In either case, the spliterator reports {@link Spliterator#SIZED},
  * {@link Spliterator#SUBSIZED}, and {@link Spliterator#ORDERED}.
  *
  * @implNote As the non-{@linkplain java.util.RandomAccess RandomAccess} case is based on the
  * iterator, and {@link java.util.Iterator} is an inherently linear API, the returned
  * spliterator will yield limited performance gains when run in parallel contexts, as the
  * returned spliterator's {@link Spliterator#trySplit() trySplit()} will have linear runtime.
  * <p>For {@link java.util.RandomAccess RandomAccess} lists, the parallel performance should
  * be reasonable assuming {@link #get(int)} is truly constant time like {@link java.util.RandomAccess
  * RandomAccess} suggests.
  *
  * @return {@inheritDoc}
  * @since 8.5.0
  */
 @Override
#if SPLITERATOR_ASSURE_OVERRIDE
 abstract KEY_SPLITERATOR KEY_GENERIC spliterator();
#else
 default KEY_SPLITERATOR KEY_GENERIC spliterator() {
  if (this instanceof java.util.RandomAccess) {
   return new ABSTRACT_LIST.IndexBasedSpliterator KEY_GENERIC_DIAMOND(this, 0);
  } else {
   return SPLITERATORS.asSpliterator(
    iterator(), sizeOf(this), SPLITERATORS.LIST_SPLITERATOR_CHARACTERISTICS);
  }
 }
#endif

 /** Returns a type-specific list iterator on the list.
  *
  * @see List#listIterator()
  */
 @Override
 KEY_LIST_ITERATOR KEY_GENERIC listIterator();

 /** Returns a type-specific list iterator on the list starting at a given index.
  *
```

```
 * @see List#listIterator(int)
 */
@Override
KEY_LIST_ITERATOR KEY_GENERIC listIterator(int index);

/** Returns a type-specific view of the portion of this list from the index {@code from}, inclusive, to the index
{@code to}, exclusive.
 *
 * @apiNote This specification strengthens the one given in {@link List#subList(int,int)}.
 *
 * @see List#subList(int,int)
 */
@Override
LIST KEY_GENERIC subList(int from, int to);

/** Sets the size of this list.
 *
 * <p>If the specified size is smaller than the current size, the last elements are
 * discarded. Otherwise, they are filled with 0/{@code null}/{@code false}.
 *
 * @param size the new size.
 */

void size(int size);

/** Copies (hopefully quickly) elements of this type-specific list into the given array.
 *
 * @param from the start index (inclusive).
 * @param a the destination array.
 * @param offset the offset into the destination array where to store the first element copied.
 * @param length the number of elements to be copied.
 */
void getElements(int from, KEY_TYPE a[], int offset, int length);

/** Removes (hopefully quickly) elements of this type-specific list.
 *
 * @param from the start index (inclusive).
 * @param to the end index (exclusive).
 */
void removeElements(int from, int to);

/** Add (hopefully quickly) elements to this type-specific list.
 *
 * @param index the index at which to add elements.
 * @param a the array containing the elements.
 */
void addElements(int index, KEY_GENERIC_TYPE a[]);
```

```
/** Add (hopefully quickly) elements to this type-specific list.
 *
 * @param index the index at which to add elements.
 * @param a the array containing the elements.
 * @param offset the offset of the first element to add.
 * @param length the number of elements to add.
 */
void addElements(int index, KEY_GENERIC_TYPE a[], int offset, int length);

/** Set (hopefully quickly) elements to match the array given.
 * @param a the array containing the elements.
 * @since 8.3.0
 */
default void setElements(KEY_GENERIC_TYPE a[]) {
 setElements(0, a);
}

/** Set (hopefully quickly) elements to match the array given.
 * @param index the index at which to start setting elements.
 * @param a the array containing the elements.
 * @since 8.3.0
 */
default void setElements(int index, KEY_GENERIC_TYPE a[]) {
 setElements(index, a, 0, a.length);
}

/** Set (hopefully quickly) elements to match the array given.
 *
 * Sets each in this list to the corresponding elements in the array, as if by
 * <pre>
 * ListIterator iter = listIterator(index);
 * int i = 0;
 * while (i &lt; length) {
 *   iter.next();
 *   iter.set(a[offset + i++]);
 * }
 * </pre>
 * However, the exact implementation may be more efficient, taking into account
 * whether random access is faster or not, or at the discretion of subclasses,
 * abuse internals.
 *
 * @param index the index at which to start setting elements.
 * @param a the array containing the elements
 * @param offset the offset of the first element to add.
 * @param length the number of elements to add.
 * @since 8.3.0
 */
default void setElements(int index, KEY_GENERIC_TYPE a[], int offset, int length) {
```

```
  // We can't use AbstractList#ensureIndex, sadly.
  if (index < 0)  throw new IndexOutOfBoundsException("Index (" + index + ") is negative");
  if (index > size()) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than list size (" +
(size()) + ")");
  ARRAYS.ensureOffsetLength(a, offset, length);
  if (index + length > size()) throw new IndexOutOfBoundsException("End index (" + (index + length) + ") is greater
than list size (" + size() + ")");
  KEY_LIST_ITERATOR KEY_GENERIC iter = listIterator(index);
  int i = 0;
  while (i < length) {
   iter.NEXT_KEY();
   iter.set(a[offset + i++]);
  }
 }

#if KEYS_PRIMITIVE

 /** Appends the specified element to the end of this list (optional operation).
  * @see List#add(Object)
  */
 @Override
 boolean add(KEY_TYPE key);

 /** Inserts the specified element at the specified position in this list (optional operation).
  * @see List#add(int,Object)
  */
 void add(int index, KEY_TYPE key);

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default void add(int index, KEY_CLASS key) {
  add(index, KEY_CLASS2TYPE(key));
 }

 /** Inserts all of the elements in the specified type-specific collection into this type-specific list at the specified
position (optional operation).
  * @see List#addAll(int,java.util.Collection)
  */
 boolean addAll(int index, COLLECTION c);

 /** Replaces the element at the specified position in this list with the specified element (optional operation).
  * @see List#set(int,Object)
  */
 KEY_TYPE set(int index, KEY_TYPE k);

 /**
```

```
 * Replaces each element of this list with the result of applying the
 * operator to that element.
 * @param operator the operator to apply to each element.
 * @see java.util.List#replaceAll
 */
default void replaceAll(final METHOD_ARG_KEY_UNARY_OPERATOR operator) {
 final KEY_LIST_ITERATOR iter = listIterator();
 while(iter.hasNext()) {
  iter.set(operator.KEY_OPERATOR_APPLY(iter.NEXT_KEY()));
 }
}

#if KEYS_INT_LONG_DOUBLE
// Because our primitive UnaryOperator interface extends both the JDK's primitive
// and object UnaryOperator interfaces, calling this method with it would be ambiguous.
// This overload exists to pass it to the proper primitive overload.
/**
 * Replaces each element of this list with the result of applying the
 * operator to that element.
 *
 * <p><b>WARNING</b>: Overriding this method is almost always a mistake, as this
 * overload only exists to disambiguate. Instead, override the {@code replaceAll()} overload
 * that uses the JDK's primitive unary operator type (e.g. {@link java.util.function.IntUnaryOperator}).
 *
 * <p>If Java supported final default methods, this would be one, but sadly it does not.
 *
 * <p>If you checked and are overriding the version with {@code java.util.function.XUnaryOperator}, and
 * still see this warning, then your IDE is incorrectly conflating this method with the proper
 * method to override, and you can safely ignore this message.
 *
 * @param operator the operator to apply to each element
 * @see java.util.List#replaceAll
 * @since 8.5.0
 */
default void replaceAll(final KEY_UNARY_OPERATOR operator) {
 replaceAll((METHOD_ARG_KEY_UNARY_OPERATOR) operator);
}

#elif KEYS_BYTE_CHAR_SHORT_FLOAT
/**
 * Replaces each element of this list with the result of applying the
 * operator to that element, performing widening and narrowing primitive casts,
 * until all elements have been processed or the action
 * throws an exception.
 *
 * @param operator the operator to apply to each element
 * @see java.util.List#replaceAll
 * @since 8.5.0
```

```
 * @implNote Unless the argument is type-specific, this method will introduce an intermediary
 *   lambda to perform widening and narrowing casts. Please use the type-specific overload to avoid this overhead.
 */
default void replaceAll(final JDK_PRIMITIVE_UNARY_OPERATOR operator) {
 replaceAll(operator instanceof METHOD_ARG_KEY_UNARY_OPERATOR ?
(METHOD_ARG_KEY_UNARY_OPERATOR) operator : x ->
KEY_NARROWING(operator.JDK_PRIMITIVE_KEY_APPLY(x)));
}
#endif

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
@SuppressWarnings("boxing")
default void replaceAll(final java.util.function.UnaryOperator<KEY_GENERIC_CLASS> operator) {
 java.util.Objects.requireNonNull(operator);
 // The instanceof and cast is required for performance. Without it, calls routed through this
 // overload using a primitive consumer would go through the slow lambda.
 replaceAll(operator instanceof METHOD_ARG_KEY_UNARY_OPERATOR ?
(METHOD_ARG_KEY_UNARY_OPERATOR) operator : (METHOD_ARG_KEY_UNARY_OPERATOR)
operator::apply);
}

/** Returns the element at the specified position in this list.
 * @see List#get(int)
 */
KEY_TYPE GET_KEY(int index);

/** Returns the index of the first occurrence of the specified element in this list, or -1 if this list does not contain the
element.
 * @see List#indexOf(Object)
 */
int indexOf(KEY_TYPE k);

/** Returns the index of the last occurrence of the specified element in this list, or -1 if this list does not contain the
element.
 * @see List#lastIndexOf(Object)
 */
int lastIndexOf(KEY_TYPE k);

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
default boolean contains(final Object key) {
```

```
 return COLLECTION.super.contains(key);
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default KEY_GENERIC_CLASS get(int index) {
 return KEY2OBJ(GET_KEY(index));
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default int indexOf(Object o) {
 return indexOf(KEY_OBJ2TYPE(o));
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default int lastIndexOf(Object o) {
 return lastIndexOf(KEY_OBJ2TYPE(o));
}

/** {@inheritDoc}
 * <p>This method specification is a workaround for
 * <a href="http://bugs.java.com/bugdatabase/view_bug.do?bug_id=JDK-8177440">bug 8177440</a>.
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default boolean add(KEY_CLASS k) {
 return add(KEY_CLASS2TYPE(k));
}

/** Removes the element at the specified position in this list (optional operation).
 * @see List#remove(int)
 */
KEY_TYPE REMOVE_KEY(int index);

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
default boolean remove(final Object key) {
```

```
 return COLLECTION.super.remove(key);
 }

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default KEY_GENERIC_CLASS remove(int index) {
 return KEY2OBJ(REMOVE_KEY(index));
 }

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default KEY_GENERIC_CLASS set(int index, KEY_CLASS k) {
 return KEY2OBJ(set(index, KEY_CLASS2TYPE(k)));
 }

#endif

/** Inserts all of the elements in the specified type-specific list into this type-specific list at the specified position
(optional operation).
 * @apiNote This method exists only for the sake of efficiency: override are expected to use {@link
#getElements}/{@link #addElements}.
 * @implSpec This method delegates to the one accepting a collection, but it might be implemented more
efficiently.
 * @see List#addAll(int,Collection)
 */
default boolean addAll(int index, LIST KEY_EXTENDS_GENERIC l) {
 return addAll(index, (COLLECTION KEY_EXTENDS_GENERIC) l);
 }

/** Appends all of the elements in the specified type-specific list to the end of this type-specific list (optional
operation).
 * @implSpec This method delegates to the index-based version, passing {@link #size()} as first argument.
 * @see List#addAll(Collection)
 */
default boolean addAll(LIST KEY_EXTENDS_GENERIC l) {
 return addAll(size(), l);
 }

/** Returns an immutable empty list.
 *
 * @return an immutable empty list.
 */
public static KEY_GENERIC LIST KEY_GENERIC of() {
 // Returning ImmutableList.EMPTY instead of LISTS.EMPTY_LIST to make dimorphic call site.
```

```
  // See https://github.com/vigna/fastutil/issues/183
  return IMMUTABLE_LIST.of();
 }

 /** Returns an immutable list with the element given.
  *
  * @param e the element that the returned list will contain.
  * @return an immutable list containing {@code e}.
  */
 public static KEY_GENERIC LIST KEY_GENERIC of(final KEY_GENERIC_TYPE e) {
  return LISTS.singleton(e);
 }

 /** Returns an immutable list with the elements given.
  *
  * @param e0 the first element.
  * @param e1 the second element.
  * @return an immutable list containing {@code e0} and {@code e1}.
  */
 public static KEY_GENERIC LIST KEY_GENERIC of(final KEY_GENERIC_TYPE e0, final
KEY_GENERIC_TYPE e1) {
  return IMMUTABLE_LIST.of(e0, e1);
 }

 /** Returns an immutable list with the elements given.
  *
  * @param e0 the first element.
  * @param e1 the second element.
  * @param e2 the third element.
  * @return an immutable list containing {@code e0}, {@code e1}, and {@code e2}.
  */
 public static KEY_GENERIC LIST KEY_GENERIC of(final KEY_GENERIC_TYPE e0, final
KEY_GENERIC_TYPE e1, final KEY_GENERIC_TYPE e2) {
  return IMMUTABLE_LIST.of(e0, e1, e2);
 }

 /** Returns an immutable list with the elements given.
  *
  * <p>Note that this method does not perform a defensive copy.
  *
  * @param a a list of elements that will be used to initialize the immutable list.
  * @return an immutable list containing the elements of {@code a}.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 SAFE_VARARGS
 public static KEY_GENERIC LIST KEY_GENERIC of(final KEY_GENERIC_TYPE... a) {
  switch(a.length) {
   case 0:
```

```
   return of();
  case 1:
   return of(a[0]);
  // Add cases of 2 and 3 if we ever have special logic for those.
  default:
   // fall through
 }
 return IMMUTABLE_LIST.of(a);
}

#if defined(KEY_COMPARATOR) && KEYS_PRIMITIVE
 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 default void sort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) {
  sort(COMPARATORS.AS_KEY_COMPARATOR(comparator));
 }

 /** Sort a list using a type-specific comparator.
  *
  * <p>Pass {@code null} to sort using natural ordering.
  * @see List#sort(java.util.Comparator)
  *
  * @implSpec The default implementation dumps the elements into an array using
  * {@link #toArray()}, sorts the array, then replaces all elements using the
  * {@link #setElements} function.
  *
  * <p>It is possible for this method to call {@link #unstableSort} if it can
  * determine that the results of a stable and unstable sort are completely equivalent.
  * This means if you override {@link #unstableSort}, it should <em>not</em> call this
  * method unless you override this method as well.
  *
  * @since 8.3.0
  */
 default void sort(final KEY_COMPARATOR comparator) {
#if !(KEY_CLASS_Float || KEY_CLASS_Double)
  if (comparator == null) {
   // For non-floating point primitive types, when comparing naturally,
   // it is impossible to tell the difference between a stable and not-stable sort.
   // So just use the probably faster unstable sort.
   unstableSort(comparator);
  } else {
   KEY_TYPE[] elements = TO_KEY_ARRAY();
   ARRAYS.stableSort(elements, comparator);
   setElements(elements);
  }
```

```
#else
 KEY_TYPE[] elements = TO_KEY_ARRAY();
 if (comparator == null) {
  ARRAYS.stableSort(elements);
 } else {
  ARRAYS.stableSort(elements, comparator);
 }
 setElements(elements);
#endif
}

/** Sorts this list using a sort not assured to be stable.
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
default void unstableSort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) {
 unstableSort(COMPARATORS.AS_KEY_COMPARATOR(comparator));
}

/** Sorts this list using a sort not assured to be stable.
 *
 * <p>Pass {@code null} to sort using natural ordering.
 *
 * <p>This differs from {@link List#sort(java.util.Comparator)} in that the results are
 * not assured to be stable, but may be a bit faster.
 *
 * <p>Unless a subclass specifies otherwise, the results of the method if the list is
 * concurrently modified during the sort are unspecified.
 *
 * @implSpec The default implementation dumps the elements into an array using
 * {@link #toArray()}, sorts the array, then replaces all elements using the
 * {@link #setElements} function.
 *
 * @since 8.3.0
 */
default void unstableSort(final KEY_COMPARATOR comparator) {
 KEY_TYPE[] elements = TO_KEY_ARRAY();
 if (comparator == null) {
  ARRAYS.unstableSort(elements);
 } else {
  ARRAYS.unstableSort(elements, comparator);
 }
 setElements(elements);
}
#else
#if !KEYS_REFERENCE
#error Assertion error: No KEY_COMPARATOR defined, but not a reference type.
#endif
```

```
/** Sorts this list using a sort assured to be stable.
 *
 * <p>Pass {@code null} to sort using natural ordering.
 *
 * <p>Unless a subclass specifies otherwise, the results of the method if the list is
 * concurrently modified during the sort are unspecified.
 *
 * @implSpec The default implementation dumps the elements into an array using
 * {@link #toArray()}, sorts the array, then replaces all elements using the
 * {@link #setElements} function.
 *
 * @since 8.5.0
 */
@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
default void sort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) {
 KEY_GENERIC_TYPE[] elements = (KEY_GENERIC_TYPE[])toArray();
 // Current stableSort implementation delegates to java.util.Arrays.sort for reference types,
 // so we aren't losing out on JDK's optimized Timsort.
 if (comparator == null) {
  ARRAYS.stableSort(elements);
 } else {
  ARRAYS.stableSort(elements, comparator);
 }
 setElements(elements);
}

/** Sorts this list using a sort not assured to be stable.
 * This differs from {@link List#sort(java.util.Comparator)} in that the results are
 * not assured to be stable, but may be a bit faster.
 *
 * <p>Pass {@code null} to sort using natural ordering.
 *
 * <p>Unless a subclass specifies otherwise, the results of the method if the list is
 * concurrently modified during the sort are unspecified.
 *
 * @implSpec The default implementation dumps the elements into an array using
 * {@link #toArray()}, sorts the array, then replaces all elements using the
 * {@link #setElements} function.
 *
 * @since 8.3.0
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
default void unstableSort(final java.util.Comparator<? super KEY_GENERIC_CLASS> comparator) {
 KEY_GENERIC_TYPE[] elements = (KEY_GENERIC_TYPE[])toArray();
 if (comparator == null) {
  ARRAYS.unstableSort(elements);
```

```
  } else {
   ARRAYS.unstableSort(elements, comparator);
  }
  setElements(elements);
 }
#endif
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/List.drv
No license file was found, but licenses were detected in source scan.

```
/*
* Copyright (C) 2002-2022 Sebastiano Vigna
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* limitations under the License.
*/


package PACKAGE;

import java.util.Spliterator;
import java.util.SortedSet;
import java.util.Collection;
import static it.unimi.dsi.fastutil.Size64.sizeOf;


/** A type-specific {@link SortedSet}; provides some additional methods that use polymorphism to avoid
(un)boxing.
*
* <p>Additionally, this interface strengthens {@link #iterator()},
* {@link #comparator()} (for primitive types), {@link SortedSet#subSet(Object,Object)},
* {@link SortedSet#headSet(Object)} and {@link SortedSet#tailSet(Object)}.
*
* @see SortedSet
*/
```

```
public interface SORTED_SET KEY_GENERIC extends SET KEY_GENERIC,
SortedSet<KEY_GENERIC_CLASS>, KEY_BIDI_ITERABLE KEY_GENERIC {

 /** Returns a type-specific {@link it.unimi.dsi.fastutil.BidirectionalIterator} on the elements in
  * this set, starting from a given element of the domain (optional operation).
  *
  * <p>This method returns a type-specific bidirectional iterator with given
  * starting point. The starting point is any element comparable to the
  * elements of this set (even if it does not actually belong to the
  * set). The next element of the returned iterator is the least element of
  * the set that is greater than the starting point (if there are no
  * elements greater than the starting point, {@link
  * it.unimi.dsi.fastutil.BidirectionalIterator#hasNext() hasNext()} will return
  * {@code false}). The previous element of the returned iterator is
  * the greatest element of the set that is smaller than or equal to the
  * starting point (if there are no elements smaller than or equal to the
  * starting point, {@link it.unimi.dsi.fastutil.BidirectionalIterator#hasPrevious()
  * hasPrevious()} will return {@code false}).
  *
  * <p>Note that passing the last element of the set as starting point and
  * calling {@link it.unimi.dsi.fastutil.BidirectionalIterator#previous() previous()} you can traverse the
  * entire set in reverse order.
  *
  * @param fromElement an element to start from.
  * @return a bidirectional iterator on the element in this set, starting at the given element.
  * @throws UnsupportedOperationException if this set does not support iterators with a starting point.
  */

 KEY_BIDI_ITERATOR KEY_GENERIC iterator(KEY_GENERIC_TYPE fromElement);

 /** Returns a type-specific {@link it.unimi.dsi.fastutil.BidirectionalIterator} on the elements in
  * this set.
  *
  * <p>This method returns a parameterised bidirectional iterator. The iterator
  * can be moreover safely cast to a type-specific iterator.
  *
  * @apiNote This specification strengthens the one given in the corresponding type-specific
  * {@link Collection}.
  *
  * @return a bidirectional iterator on the element in this set.
  */

 @Override
 KEY_BIDI_ITERATOR KEY_GENERIC iterator();

 /**
  * Returns a type-specific spliterator on the elements of this sorted-set.
  *
```

```
 * <p>SortedSet spliterators must report at least {@link Spliterator#DISTINCT},
 * {@link Spliterator#ORDERED}, and {@link Spliterator#SORTED}. The returned spliterator's
 * {@link Spliterator#getComparator() getComparator()} must be the same (or at the very least,
 * consistent with) this instance's {@link #comparator()}.
 *
 * <p>See {@link java.util.SortedSet#spliterator()} for more documentation on the requirements
 * of the returned spliterator.
 *
 * @apiNote This specification strengthens the one given in
 * {@link java.util.Collection#spliterator()}, which was already
 * strengthened in the corresponding type-specific class,
 * but was weakened by the fact that this interface extends {@link SortedSet}.
 * <p>Also, this is generally the only {@code spliterator} method subclasses should override.
 *
 * @implSpec The default implementation returns a late-binding spliterator (see
 * {@link Spliterator} for documentation on what binding policies mean)
 * that wraps this instance's type specific {@link #iterator}.
 * <p>Additionally, it reports {@link Spliterator#SIZED}, {@link Spliterator#DISTINCT},
 * {@link Spliterator#SORTED}, and {@link Spliterator#ORDERED}. The reported {@link java.util.Comparator}
 * from {@link Spliterator#getComparator()} will be the one reported by this instance's {@link #comparator()}.
 *
 * @implNote As this default implementation wraps the iterator, and {@link java.util.Iterator}
 * is an inherently linear API, the returned spliterator will yield limited performance gains
 * when run in parallel contexts, as the returned spliterator's
 * {@link Spliterator#trySplit() trySplit()} will have linear runtime.
 *
 * @return {@inheritDoc}
 * @since 8.5.0
 */
 @Override
#if SPLITERATOR_ASSURE_OVERRIDE
 abstract KEY_SPLITERATOR KEY_GENERIC spliterator();
#else
 default KEY_SPLITERATOR KEY_GENERIC spliterator() {
  return SPLITERATORS.asSpliteratorFromSorted(iterator(), sizeOf(this),
SPLITERATORS.SORTED_SET_SPLITERATOR_CHARACTERISTICS, comparator());
 }
#endif

 /** Returns a view of the portion of this sorted set whose elements range from {@code fromElement}, inclusive, to
{@code toElement}, exclusive.
 * @apiNote This specification strengthens the one given in {@link SortedSet#subSet(Object,Object)}.
 * @see SortedSet#subSet(Object,Object)
 */

#if KEYS_REFERENCE
 @Override
#endif
```

```
 SORTED_SET KEY_GENERIC subSet(KEY_GENERIC_TYPE fromElement, KEY_GENERIC_TYPE
toElement) ;

 /** Returns a view of the portion of this sorted set whose elements are strictly less than {@code toElement}.
  * @apiNote This specification strengthens the one given in {@link SortedSet#headSet(Object)}.
  * @see SortedSet#headSet(Object)
  */

#if KEYS_REFERENCE
 @Override
#endif
 SORTED_SET KEY_GENERIC headSet(KEY_GENERIC_TYPE toElement);

 /** Returns a view of the portion of this sorted set whose elements are greater than or equal to {@code
fromElement}.
  * @apiNote This specification strengthens the one given in {@link SortedSet#headSet(Object)}.
  * @see SortedSet#tailSet(Object)
  */

#if KEYS_REFERENCE
 @Override
#endif
 SORTED_SET KEY_GENERIC tailSet(KEY_GENERIC_TYPE fromElement);

#if KEYS_PRIMITIVE
 /** {@inheritDoc}
  * @apiNote This specification strengthens the one given in {@link SortedSet#comparator()}.
  */
 @Override
 KEY_COMPARATOR comparator();

 /** Returns the first (lowest) element currently in this set.
  * @see SortedSet#first()
  */
 KEY_TYPE FIRST();

 /** Returns the last (highest) element currently in this set.
  * @see SortedSet#last()
  */
 KEY_TYPE LAST();

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 default SORTED_SET KEY_GENERIC subSet(final KEY_GENERIC_CLASS from, final
KEY_GENERIC_CLASS to) {
```

```
 return subSet(from.KEY_VALUE(), to.KEY_VALUE());
 }

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
default SORTED_SET KEY_GENERIC headSet(final KEY_GENERIC_CLASS to) {
 return headSet(to.KEY_VALUE());
 }

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
default SORTED_SET KEY_GENERIC tailSet(final KEY_GENERIC_CLASS from) {
 return tailSet(from.KEY_VALUE());
 }

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
default KEY_GENERIC_CLASS first() {
 return KEY2OBJ(FIRST());
 }

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
default KEY_CLASS last() {
 return KEY2OBJ(LAST());
 }

#endif
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/SortedSet.drv
No license file was found, but licenses were detected in source scan.

```
package PACKAGE;

#if KEY_INDEX != VALUE_INDEX && !(KEYS_REFERENCE && VALUES_REFERENCE)
import VALUE_PACKAGE.VALUE_COLLECTION;
#endif

import java.util.Map;
import java.util.SortedMap;

#if KEYS_REFERENCE
import java.util.Comparator;
#else
import it.unimi.dsi.fastutil.objects.ObjectSortedSet;
import it.unimi.dsi.fastutil.objects.ObjectBidirectionalIterator;
#endif

/** A type-specific {@link SortedMap}; provides some additional methods that use polymorphism to avoid
(un)boxing.
*
* <p>Additionally, this interface strengthens {@link #entrySet()},
* {@link #keySet()}, {@link #values()},
* {@link #comparator()}, {@link SortedMap#subMap(Object,Object)}, {@link SortedMap#headMap(Object)} and
{@link SortedMap#tailMap(Object)}.
*
* @see SortedMap
*/

public interface SORTED_MAP KEY_VALUE_GENERIC extends MAP KEY_VALUE_GENERIC,
SortedMap<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS> {

 /** Returns a view of the portion of this sorted map whose keys range from {@code fromKey}, inclusive, to
{@code toKey}, exclusive.
  *
```

```
 * @apiNote Note that this specification strengthens the one given in {@link SortedMap#subMap(Object,Object)}.
 *
 * @see SortedMap#subMap(Object,Object)
 */
#if KEYS_REFERENCE
@Override
#endif
SORTED_MAP KEY_VALUE_GENERIC subMap(KEY_GENERIC_TYPE fromKey, KEY_GENERIC_TYPE
toKey);

/** Returns a view of the portion of this sorted map whose keys are strictly less than {@code toKey}.
 *
 * @apiNote Note that this specification strengthens the one given in {@link SortedMap#headMap(Object)}.
 *
 * @see SortedMap#headMap(Object)
 */
#if KEYS_REFERENCE
@Override
#endif
SORTED_MAP KEY_VALUE_GENERIC headMap(KEY_GENERIC_TYPE toKey);

/** Returns a view of the portion of this sorted map whose keys are greater than or equal to {@code fromKey}.
 *
 * @apiNote Note that this specification strengthens the one given in {@link SortedMap#tailMap(Object)}.
 *
 * @see SortedMap#tailMap(Object)
 */
#if KEYS_REFERENCE
@Override
#endif
SORTED_MAP KEY_VALUE_GENERIC tailMap(KEY_GENERIC_TYPE fromKey);

#if KEYS_PRIMITIVE

/** Returns the first (lowest) key currently in this map.
 * @see SortedMap#firstKey()
 */
KEY_GENERIC_TYPE FIRST_KEY();

/** Returns the last (highest) key currently in this map.
 * @see SortedMap#lastKey()
 */
KEY_GENERIC_TYPE LAST_KEY();

/** {@inheritDoc}
 * @apiNote Note that this specification strengthens the one given in {@link SortedMap#subMap(Object,Object)}.
 * @deprecated Please use the corresponding type-specific method instead.
 */
```

```
 @Deprecated
 @Override
 default SORTED_MAP KEY_VALUE_GENERIC subMap(final KEY_GENERIC_CLASS from, final
KEY_GENERIC_CLASS to) {
  return subMap(KEY_CLASS2TYPE(from), KEY_CLASS2TYPE(to));
 }

 /** {@inheritDoc}
  * @apiNote Note that this specification strengthens the one given in {@link SortedMap#headMap(Object)}.
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 default SORTED_MAP KEY_VALUE_GENERIC headMap(final KEY_GENERIC_CLASS to) {
  return headMap(KEY_CLASS2TYPE(to));
 }

 /** {@inheritDoc}
  * @apiNote Note that this specification strengthens the one given in {@link SortedMap#tailMap(Object)}.
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 default SORTED_MAP KEY_VALUE_GENERIC tailMap(final KEY_GENERIC_CLASS from) {
  return tailMap(KEY_CLASS2TYPE(from));
 }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 default KEY_GENERIC_CLASS firstKey() {
  return KEY2OBJ(FIRST_KEY());
 }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 default KEY_GENERIC_CLASS lastKey() {
  return KEY2OBJ(LAST_KEY());
 }
#endif


 /** A sorted entry set providing fast iteration.
```

```
  *
  * <p>In some cases (e.g., hash-based classes) iteration over an entry set requires the creation
  * of a large number of entry objects. Some {@code fastutil}
  * maps might return {@linkplain #entrySet() entry set} objects of type {@code FastSortedEntrySet}: in this case,
{@link #fastIterator() fastIterator()}
  * will return an iterator that is guaranteed not to create a large number of objects, <em>possibly
  * by returning always the same entry</em> (of course, mutated).
  */
 interface FastSortedEntrySet KEY_VALUE_GENERIC extends ObjectSortedSet<MAP.Entry
KEY_VALUE_GENERIC>, FastEntrySet KEY_VALUE_GENERIC {
  /** {@inheritDoc}
   */
  @Override
  ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> fastIterator();


  /** Returns a fast iterator over this entry set, starting from a given element of the domain (optional operation);
   * the iterator might return always the same entry instance, suitably mutated.
   *
   * @param from an element to start from.
   * @return a fast iterator over this sorted entry set starting at {@code from}; the iterator might return always the
same entry object, suitably mutated.
   */
  ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> fastIterator(MAP.Entry
KEY_VALUE_GENERIC from);
 }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
 /** Returns a sorted-set view of the mappings contained in this map.
  *
  * @apiNote Note that this specification strengthens the one given in the
  *  corresponding type-specific unsorted map.
  *
  * @return a sorted-set view of the mappings contained in this map.
  * @see SortedMap#entrySet()
  * @deprecated Please use the corresponding type-specific method instead.
  */

 @SuppressWarnings({ "unchecked", "rawtypes" })
 @Deprecated
 @Override
 default ObjectSortedSet<Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS>> entrySet() {
  return (ObjectSortedSet)ENTRYSET();
 }
#else
 /** Returns a sorted-set view of the mappings contained in this map.
  *
  * @apiNote Note that this specification strengthens the one given in the
```

```
 *  corresponding type-specific unsorted map.
 *
 * @return a sorted-set view of the mappings contained in this map.
 * @see Map#entrySet()
 */

@SuppressWarnings({ "unchecked", "rawtypes" })
@Override
default ObjectSortedSet<Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS>> entrySet() {
 return (ObjectSortedSet)ENTRYSET();
}
#endif

/** Returns a type-specific sorted-set view of the mappings contained in this map.
 *
 * @apiNote Note that this specification strengthens the one given in the
 * corresponding type-specific unsorted map.
 *
 * @return a type-specific sorted-set view of the mappings contained in this map.
 * @see #entrySet()
 */

@Override
ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET();

/** Returns a type-specific sorted-set view of the keys contained in this map.
 *
 * @apiNote Note that this specification strengthens the one given in the
 *  corresponding type-specific unsorted map.
 *
 * @return a sorted-set view of the keys contained in this map.
 * @see SortedMap#keySet()
 */

@Override
SORTED_SET KEY_GENERIC keySet();

/** Returns a type-specific set view of the values contained in this map.
 *
 * @apiNote Note that this specification strengthens the one given in {@link Map#values()},
 * which was already strengthened in the corresponding type-specific class,
 * but was weakened by the fact that this interface extends {@link SortedMap}.
 *
 * @return a set view of the values contained in this map.
 * @see SortedMap#values()
 */

@Override
```

VALUE_COLLECTION VALUE_GENERIC values();

/** Returns the comparator associated with this sorted set, or null if it uses its keys' natural ordering.
 *
 * @apiNote Note that this specification strengthens the one given in {@link SortedMap#comparator()}.
 *
 * @see SortedMap#comparator()
 */

@Override
KEY_COMPARATOR KEY_SUPER_GENERIC comparator();
}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/SortedMap.drv
No license file was found, but licenses were detected in source scan.

package PACKAGE;

/** An abstract class providing basic methods for priority queues implementing a type-specific interface.
* @deprecated As of {@code fastutil} 8 this class is no longer necessary, as its previous abstract
* methods are now default methods of the type-specific interface.
*/
@Deprecated
public abstract class ABSTRACT_PRIORITY_QUEUE KEY_GENERIC extends
it.unimi.dsi.fastutil.AbstractPriorityQueue<KEY_GENERIC_CLASS> implements java.io.Serializable,
PRIORITY_QUEUE KEY_GENERIC {
 private static final long serialVersionUID = 1L;
}

Found in path(s):

* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractPriorityQueue.drv
No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

import it.unimi.dsi.fastutil.BigList;
import it.unimi.dsi.fastutil.BigArrays;
import java.util.Collection;
import java.util.List;
import java.util.Random;

/** A class providing static methods and objects that do useful things with type-specific big lists.
*
* @see java.util.Collections
* @see it.unimi.dsi.fastutil.BigList
*/

public final class BIG_LISTS {

 private BIG_LISTS() {}

 /** Shuffles the specified big list using the specified pseudorandom number generator.
  *
  * @param l the big list to be shuffled.
  * @param random a pseudorandom number generator.
  * @return {@code l}.
  */
 public static KEY_GENERIC BIG_LIST KEY_GENERIC shuffle(final BIG_LIST KEY_GENERIC l, final
Random random) {
  for(long i = l.size64(); i-- != 0;) {
```

```
   final long p = (random.nextLong() & 0x7FFFFFFFFFFFFFFFL) % (i + 1);
   final KEY_GENERIC_TYPE t = l.GET_KEY(i);
   l.set(i, l.GET_KEY(p));
   l.set(p, t);
  }
  return l;
 }


 /** An immutable class representing an empty type-specific big list.
  *
  * <p>This class may be useful to implement your own in case you subclass
  * a type-specific list.
  */

 public static class EmptyBigList KEY_GENERIC extends COLLECTIONS.EmptyCollection KEY_GENERIC
implements BIG_LIST KEY_GENERIC, java.io.Serializable, Cloneable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected EmptyBigList() {}

  @Override
  public KEY_GENERIC_TYPE GET_KEY(long i) { throw new IndexOutOfBoundsException(); }

  @Override
  public boolean REMOVE(KEY_TYPE k) { throw new UnsupportedOperationException(); }

  @Override
  public KEY_GENERIC_TYPE REMOVE_KEY(long i) { throw new UnsupportedOperationException(); }

  @Override
  public void add(final long index, final KEY_GENERIC_TYPE k) { throw new UnsupportedOperationException();
}

  @Override
  public KEY_GENERIC_TYPE set(final long index, final KEY_GENERIC_TYPE k) { throw new
UnsupportedOperationException(); }

  @Override
  public long indexOf(KEY_TYPE k) { return -1; }

  @Override
  public long lastIndexOf(KEY_TYPE k) { return -1; }

  @Override
  public boolean addAll(long i, Collection<? extends KEY_GENERIC_CLASS> c) { throw new
UnsupportedOperationException(); }
```

```
#if KEYS_PRIMITIVE
 @Override
 public boolean addAll(COLLECTION c) { throw new UnsupportedOperationException(); }

 @Override
 public boolean addAll(BIG_LIST c) { throw new UnsupportedOperationException(); }

 @Override
 public boolean addAll(long i, COLLECTION c) { throw new UnsupportedOperationException(); }

 @Override
 public boolean addAll(long i, BIG_LIST c) { throw new UnsupportedOperationException(); }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public void add(final long index, final KEY_GENERIC_CLASS k) { throw new UnsupportedOperationException();
}

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public boolean add(final KEY_GENERIC_CLASS k) { throw new UnsupportedOperationException(); }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public KEY_GENERIC_CLASS get(long i) { throw new IndexOutOfBoundsException(); }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public KEY_GENERIC_CLASS set(final long index, final KEY_GENERIC_CLASS k) { throw new
UnsupportedOperationException(); }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public KEY_GENERIC_CLASS remove(long k) { throw new UnsupportedOperationException(); }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
```

```
  @Deprecated
  @Override
  public long indexOf(Object k) { return -1; }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public long lastIndexOf(Object k) { return -1; }
#endif

  @Override
  SUPPRESS_WARNINGS_KEY_UNCHECKED
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator() { return
BIG_LIST_ITERATORS.EMPTY_BIG_LIST_ITERATOR; }

  @Override
  SUPPRESS_WARNINGS_KEY_UNCHECKED
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC iterator() { return
BIG_LIST_ITERATORS.EMPTY_BIG_LIST_ITERATOR; }

  @Override
  SUPPRESS_WARNINGS_KEY_UNCHECKED
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator(long i) { if (i == 0) return
BIG_LIST_ITERATORS.EMPTY_BIG_LIST_ITERATOR; throw new
IndexOutOfBoundsException(String.valueOf(i)); }

  @Override
  SUPPRESS_WARNINGS_KEY_UNCHECKED
  public KEY_SPLITERATOR KEY_GENERIC spliterator() { return SPLITERATORS.EMPTY_SPLITERATOR; }

  @Override
  public BIG_LIST KEY_GENERIC subList(long from, long to) { if (from == 0 && to == 0) return this; throw new
IndexOutOfBoundsException(); }

  @Override
  public void getElements(long from, KEY_TYPE[][] a, long offset, long length) { BigArrays.ensureOffsetLength(a,
offset, length); if (from != 0) throw new IndexOutOfBoundsException(); }

  @Override
  public void removeElements(long from, long to) { throw new UnsupportedOperationException(); }

  @Override
  public void addElements(long index, final KEY_GENERIC_TYPE a[][], long offset, long length) { throw new
UnsupportedOperationException(); }

  @Override
  public void addElements(long index, final KEY_GENERIC_TYPE a[][]) { throw new
```

```
UnsupportedOperationException(); }

  @Override
  public void size(long s)  { throw new UnsupportedOperationException(); }

  @Override
  public long size64() { return 0; }

#if ! KEYS_USE_REFERENCE_EQUALITY
  @Override
  public int compareTo(final BigList<? extends KEY_GENERIC_CLASS> o) {
   if (o == this) return 0;
   return ((BigList<?>)o).isEmpty() ? 0 : -1;
  }
#endif
  @Override
  public Object clone() { return EMPTY_BIG_LIST; }

  @Override
  public int hashCode() { return 1; }

  @Override
  @SuppressWarnings("rawtypes")
  public boolean equals(Object o) { return o instanceof BigList && ((BigList)o).isEmpty(); }

  @Override
  public String toString() { return "[]"; }

  private Object readResolve() { return EMPTY_BIG_LIST; }
 }

 /** An empty big list (immutable). It is serializable and cloneable.
  */
 SUPPRESS_WARNINGS_KEY_RAWTYPES
 public static final EmptyBigList EMPTY_BIG_LIST = new EmptyBigList();

#if KEYS_REFERENCE
 /** Returns an empty big list (immutable). It is serializable and cloneable.
  *
  * <p>This method provides a typesafe access to {@link #EMPTY_BIG_LIST}.
  * @return an empty big list (immutable).
  */
 @SuppressWarnings("unchecked")
 public static KEY_GENERIC BIG_LIST KEY_GENERIC emptyList() {
  return EMPTY_BIG_LIST;
 }
#endif
```

```
/** An immutable class representing a type-specific singleton big list.
 *
 * <p>This class may be useful to implement your own in case you subclass
 * a type-specific big list.
 */

public static class Singleton KEY_GENERIC extends ABSTRACT_BIG_LIST KEY_GENERIC implements
java.io.Serializable, Cloneable {

 private static final long serialVersionUID = -7046029254386353129L;

 private final KEY_GENERIC_TYPE element;

 protected Singleton(final KEY_GENERIC_TYPE element) { this.element = element; }

 @Override
 public KEY_GENERIC_TYPE GET_KEY(final long i) { if (i == 0) return element; throw new
IndexOutOfBoundsException(); }

 @Override
 public boolean REMOVE(KEY_TYPE k) { throw new UnsupportedOperationException(); }

 @Override
 public KEY_GENERIC_TYPE REMOVE_KEY(final long i) { throw new UnsupportedOperationException(); }

 @Override
 public boolean contains(final KEY_TYPE k) { return KEY_EQUALS(k, element); }

 @Override
 public long indexOf(final KEY_TYPE k) { return KEY_EQUALS(k, element) ? 0 : -1; }

 /* Slightly optimized w.r.t. the one in ABSTRACT_SET. */

 @Override
 public KEY_TYPE[] TO_KEY_ARRAY() {
  KEY_TYPE a[] = new KEY_TYPE[1];
  a[0] = element;
  return a;
 }

 @Override
 public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator() { return
BIG_LIST_ITERATORS.singleton(element); }

 @Override
 public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator(long i) {
  if (i > 1 || i < 0) throw new  IndexOutOfBoundsException();
  KEY_BIG_LIST_ITERATOR KEY_GENERIC l = listIterator();
```

```
  if (i == 1) l.NEXT_KEY();
  return l;
 }

 @Override
 public KEY_SPLITERATOR KEY_GENERIC spliterator() { return SPLITERATORS.singleton(element); }

 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public BIG_LIST KEY_GENERIC subList(final long from, final long to) {
  ensureIndex(from);
  ensureIndex(to);
  if (from > to) throw new IndexOutOfBoundsException("Start index (" + from + ") is greater than end index (" + to +
")");

  if (from != 0 || to != 1) return EMPTY_BIG_LIST;
  return this;
 }

 @Override
 public boolean addAll(long i, Collection<? extends KEY_GENERIC_CLASS> c) { throw new
UnsupportedOperationException(); }

 @Override
 public boolean addAll(final Collection<? extends KEY_GENERIC_CLASS> c) { throw new
UnsupportedOperationException(); }

 @Override
 public boolean removeAll(final Collection<?> c) { throw new UnsupportedOperationException(); }

 @Override
 public boolean retainAll(final Collection<?> c) { throw new UnsupportedOperationException(); }

#if KEYS_PRIMITIVE

 @Override
 public boolean addAll(BIG_LIST c) { throw new UnsupportedOperationException(); }

 @Override
 public boolean addAll(long i, BIG_LIST c) { throw new UnsupportedOperationException(); }

 @Override
 public boolean addAll(long i, COLLECTION c) { throw new UnsupportedOperationException(); }

 @Override
 public boolean addAll(final COLLECTION c) { throw new UnsupportedOperationException(); }

 @Override
```

```
 public boolean removeAll(final COLLECTION c) { throw new UnsupportedOperationException(); }

 @Override
 public boolean retainAll(final COLLECTION c) { throw new UnsupportedOperationException(); }

#endif

 @Override
 public void clear() { throw new UnsupportedOperationException(); }

 @Override
 public long size64() { return 1; }

 @Override
 public Object clone() { return this; }
}

/** Returns a type-specific immutable big list containing only the specified element. The returned big list is
serializable and cloneable.
 *
 * @param element the only element of the returned big list.
 * @return a type-specific immutable big list containing just {@code element}.
 */

public static KEY_GENERIC BIG_LIST KEY_GENERIC singleton(final KEY_GENERIC_TYPE element) {
return new Singleton KEY_GENERIC_DIAMOND(element); }

#if KEYS_PRIMITIVE

/** Returns a type-specific immutable big list containing only the specified element. The returned big list is
serializable and cloneable.
 *
 * @param element the only element of the returned big list.
 * @return a type-specific immutable big list containing just {@code element}.
 */

public static KEY_GENERIC BIG_LIST KEY_GENERIC singleton(final Object element) { return new Singleton
KEY_GENERIC_DIAMOND(KEY_OBJ2TYPE(element)); }

#endif


/** A synchronized wrapper class for big lists. */

public static class SynchronizedBigList KEY_GENERIC extends COLLECTIONS.SynchronizedCollection
KEY_GENERIC implements BIG_LIST KEY_GENERIC, java.io.Serializable {

 private static final long serialVersionUID = -7046029254386353129L;
```

```
  protected final BIG_LIST KEY_GENERIC list; // Due to the large number of methods that are not in
COLLECTION, this is worth caching.

  protected SynchronizedBigList(final BIG_LIST KEY_GENERIC l, final Object sync) {
   super(l, sync);
   this.list = l;
  }

  protected SynchronizedBigList(final BIG_LIST KEY_GENERIC l) {
   super(l);
   this.list = l;
  }

  @Override
  public KEY_GENERIC_TYPE GET_KEY(final long i) { synchronized(sync) { return list.GET_KEY(i); } }

  @Override
  public KEY_GENERIC_TYPE set(final long i, final KEY_GENERIC_TYPE k) { synchronized(sync) { return
list.set(i, k); } }

  @Override
  public void add(final long i, final KEY_GENERIC_TYPE k) { synchronized(sync) { list.add(i, k); } }

  @Override
  public KEY_GENERIC_TYPE REMOVE_KEY(final long i) { synchronized(sync) { return list.REMOVE_KEY(i);
} }

  @Override
  public long indexOf(final KEY_TYPE k) { synchronized(sync) { return list.indexOf(k); } }

  @Override
  public long lastIndexOf(final KEY_TYPE k) { synchronized(sync) { return list.lastIndexOf(k); } }

  @Override
  public boolean addAll(final long index, final Collection<? extends KEY_GENERIC_CLASS> c) {
synchronized(sync) { return list.addAll(index, c); } }

  @Override
  public void getElements(final long from, final KEY_TYPE a[][], final long offset, final long length) {
synchronized(sync) { list.getElements(from, a, offset, length); } }

  @Override
  public void removeElements(final long from, final long to) { synchronized(sync) { list.removeElements(from, to); }
}

  @Override
  public void addElements(long index, final KEY_GENERIC_TYPE a[][], long offset, long length) {
```

```
synchronized(sync) { list.addElements(index, a, offset, length); } }

  @Override
  public void addElements(long index, final KEY_GENERIC_TYPE a[][]) { synchronized(sync) {
list.addElements(index, a); } }

  /* {@inheritDoc}
   * @deprecated Use {@link #size64()} instead.
   */
  @Deprecated
  @Override
  public void size(final long size) { synchronized(sync) { list.size(size); } }

  @Override
  public long size64() { synchronized(sync) { return list.size64(); } }

  @Override
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC iterator() { return list.listIterator(); }

  @Override
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator() { return list.listIterator(); }

  @Override
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator(final long i) { return list.listIterator(i); }

  @Override
  public BIG_LIST KEY_GENERIC subList(final long from, final long to) { synchronized(sync) { return
synchronize(list.subList(from, to), sync); } }

  @Override
  public boolean equals(final Object o) { if (o == this) return true; synchronized(sync) { return list.equals(o); } }

  @Override
  public int hashCode() { synchronized(sync) { return list.hashCode(); } }

#if ! KEYS_USE_REFERENCE_EQUALITY
  @Override
  public int compareTo(final BigList<? extends KEY_GENERIC_CLASS> o) { synchronized(sync) { return
list.compareTo(o); } }
#endif

#if KEYS_PRIMITIVE
  @Override
  public boolean addAll(final long index, final COLLECTION c) { synchronized(sync) { return list.addAll(index, c);
} }

  @Override
  public boolean addAll(final long index, BIG_LIST l) { synchronized(sync) { return list.addAll(index, l); } }
```

```
 @Override
 public boolean addAll(BIG_LIST l) { synchronized(sync) { return list.addAll(l); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public void add(final long i, KEY_GENERIC_CLASS k) { synchronized(sync) { list.add(i, k); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public KEY_GENERIC_CLASS get(final long i) { synchronized(sync) { return list.get(i); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public KEY_GENERIC_CLASS set(final long index, KEY_GENERIC_CLASS k) { synchronized(sync) { return
list.set(index, k); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public KEY_GENERIC_CLASS remove(final long i) { synchronized(sync) { return list.remove(i); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public long indexOf(final Object o) { synchronized(sync) { return list.indexOf(o); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public long lastIndexOf(final Object o) { synchronized(sync) { return list.lastIndexOf(o); } }
#endif
 }


 /** Returns a synchronized type-specific big list backed by the given type-specific big list.
  *
  * @param l the big list to be wrapped in a synchronized big list.
  * @return a synchronized view of the specified big list.
```

```
 * @see java.util.Collections#synchronizedList(List)
 */
 public static KEY_GENERIC BIG_LIST KEY_GENERIC synchronize(final BIG_LIST KEY_GENERIC l) {
return new SynchronizedBigList KEY_GENERIC_DIAMOND(l); }

 /** Returns a synchronized type-specific big list backed by the given type-specific big list, using an assigned object
to synchronize.
 *
 * @param l the big list to be wrapped in a synchronized big list.
 * @param sync an object that will be used to synchronize the access to the big list.
 * @return a synchronized view of the specified big list.
 * @see java.util.Collections#synchronizedList(List)
 */

 public static KEY_GENERIC BIG_LIST KEY_GENERIC synchronize(final BIG_LIST KEY_GENERIC l, final
Object sync) { return new SynchronizedBigList KEY_GENERIC_DIAMOND(l, sync); }



 /** An unmodifiable wrapper class for big lists. */

 public static class UnmodifiableBigList KEY_GENERIC extends COLLECTIONS.UnmodifiableCollection
KEY_GENERIC implements BIG_LIST KEY_GENERIC, java.io.Serializable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected final BIG_LIST KEY_EXTENDS_GENERIC list; // Due to the large number of methods that are not in
COLLECTION, this is worth caching.

  protected UnmodifiableBigList(final BIG_LIST KEY_EXTENDS_GENERIC l) {
   super(l);
   this.list = l;
  }

  @Override
  public KEY_GENERIC_TYPE GET_KEY(final long i) { return list.GET_KEY(i); }

  @Override
  public KEY_GENERIC_TYPE set(final long i, final KEY_GENERIC_TYPE k) { throw new
UnsupportedOperationException(); }

  @Override
  public void add(final long i, final KEY_GENERIC_TYPE k) { throw new UnsupportedOperationException(); }

  @Override
  public KEY_GENERIC_TYPE REMOVE_KEY(final long i) { throw new UnsupportedOperationException(); }

  @Override
```

```
  public long indexOf(final KEY_TYPE k) { return list.indexOf(k); }

  @Override
  public long lastIndexOf(final KEY_TYPE k) { return list.lastIndexOf(k); }

  @Override
  public boolean addAll(final long index, final Collection<? extends KEY_GENERIC_CLASS> c) { throw new
UnsupportedOperationException(); }

  @Override
  public void getElements(final long from, final KEY_TYPE a[][], final long offset, final long length) {
list.getElements(from, a, offset, length); }

  @Override
  public void removeElements(final long from, final long to) { throw new UnsupportedOperationException(); }

  @Override
  public void addElements(long index, final KEY_GENERIC_TYPE a[][], long offset, long length) { throw new
UnsupportedOperationException(); }

  @Override
  public void addElements(long index, final KEY_GENERIC_TYPE a[][]) { throw new
UnsupportedOperationException(); }

  /* {@inheritDoc}
   * @deprecated Use {@link #size64()} instead.
   */
  @Deprecated
  @Override
  public void size(final long size) { list.size(size); }

  @Override
  public long size64() { return list.size64(); }

  @Override
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC iterator() { return listIterator(); }

  @Override
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator() { return
BIG_LIST_ITERATORS.unmodifiable(list.listIterator()); }

  @Override
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator(final long i) { return
BIG_LIST_ITERATORS.unmodifiable(list.listIterator(i)); }

  @Override
  public BIG_LIST KEY_GENERIC subList(final long from, final long to) { return unmodifiable(list.subList(from,
to)); }
```

```
  @Override
  public boolean equals(final Object o) { if (o == this) return true; return list.equals(o); }

  @Override
  public int hashCode() { return list.hashCode(); }

#if ! KEYS_USE_REFERENCE_EQUALITY
  @Override
#if KEYS_PRIMITIVE
  public int compareTo(final BigList<? extends KEY_GENERIC_CLASS> o) { return list.compareTo(o); }
#else
  @SuppressWarnings("unchecked")
  public int compareTo(final BigList<? extends KEY_GENERIC_CLASS> o) { return ((BIG_LIST
KEY_GENERIC)list).compareTo(o); }
#endif
#endif

#if KEYS_PRIMITIVE
  @Override
  public boolean addAll(final long index, final COLLECTION c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean addAll(final BIG_LIST l) { throw new UnsupportedOperationException(); }

  @Override
  public boolean addAll(final long index, final BIG_LIST l) { throw new UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS get(final long i) { return list.get(i); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public void add(final long i, KEY_GENERIC_CLASS k) { throw new UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS set(final long index, KEY_GENERIC_CLASS k) { throw new
UnsupportedOperationException(); }

  /** {@inheritDoc}
```

```
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public KEY_GENERIC_CLASS remove(final long i) { throw new UnsupportedOperationException(); }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public long indexOf(final Object o) { return list.indexOf(o); }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public long lastIndexOf(final Object o) { return list.lastIndexOf(o); }
#endif
}


/** Returns an unmodifiable type-specific big list backed by the given type-specific big list.
 *
 * @param l the big list to be wrapped in an unmodifiable big list.
 * @return an unmodifiable view of the specified big list.
 * @see java.util.Collections#unmodifiableList(List)
 */
public static KEY_GENERIC BIG_LIST KEY_GENERIC unmodifiable(final BIG_LIST
KEY_EXTENDS_GENERIC l) { return new UnmodifiableBigList KEY_GENERIC_DIAMOND(l); }

/** A class exposing a list as a big list. */

public static class ListBigList KEY_GENERIC extends ABSTRACT_BIG_LIST KEY_GENERIC implements
java.io.Serializable {

 private static final long serialVersionUID = -7046029254386353129L;

 private final LIST KEY_GENERIC list;

 protected ListBigList(final LIST KEY_GENERIC list) {
  this.list = list;
 }

 private int intIndex(long index) {
  if (index >= Integer.MAX_VALUE) throw new IndexOutOfBoundsException("This big list is restricted to 32-bit
indices");
  return (int)index;
 }
```

```
  @Override
  public long size64() { return list.size(); }

  @Override
  public void size(final long size) { list.size(intIndex(size)); }

  @Override
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC iterator() { return
BIG_LIST_ITERATORS.asBigListIterator(list.iterator()); }

  @Override
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator() { return
BIG_LIST_ITERATORS.asBigListIterator(list.listIterator()); }

  @Override
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator(final long index) { return
BIG_LIST_ITERATORS.asBigListIterator(list.listIterator(intIndex(index))); }

  @Override
  public boolean addAll(final long index, final Collection<? extends KEY_GENERIC_CLASS> c) { return
list.addAll(intIndex(index), c); }

  @Override
  public BIG_LIST KEY_GENERIC subList(long from, long to) { return new ListBigList
KEY_GENERIC_DIAMOND(list.subList(intIndex(from), intIndex(to))); }

  @Override
  public boolean contains(final KEY_TYPE key) { return list.contains(key); }

  @Override
  public KEY_TYPE[] TO_KEY_ARRAY() { return list.TO_KEY_ARRAY(); }

  @Override
  public void removeElements(final long from, final long to) { list.removeElements(intIndex(from), intIndex(to)); }

#if KEYS_PRIMITIVE
  /* {@inheritDoc}
   * @deprecated Please use {@code toArray()} instead&mdash;this method is redundant and will be removed in the
future.
   */
  @Deprecated
  @Override
  public KEY_TYPE[] TO_KEY_ARRAY(KEY_TYPE[] a) { return list.toArray(a); }

  @Override
  public boolean addAll(long index, COLLECTION KEY_GENERIC c) { return list.addAll(intIndex(index), c); }

  @Override
```

```
  public boolean addAll(COLLECTION KEY_GENERIC c) { return list.addAll(c); }

  @Override
  public boolean addAll(long index, BIG_LIST KEY_GENERIC c) { return list.addAll(intIndex(index), c); }

  @Override
  public boolean addAll(BIG_LIST KEY_GENERIC c) { return list.addAll(c); }

  @Override
  public boolean containsAll(COLLECTION KEY_GENERIC c) { return list.containsAll(c); }

  @Override
  public boolean removeAll(COLLECTION KEY_GENERIC c) { return list.removeAll(c); }

  @Override
  public boolean retainAll(COLLECTION KEY_GENERIC c) { return list.retainAll(c); }
#endif
  @Override
  public void add(long index, KEY_GENERIC_TYPE key) { list.add(intIndex(index), key); }

  @Override
  public boolean add(KEY_GENERIC_TYPE key) { return list.add(key); }

  @Override
  public KEY_GENERIC_TYPE GET_KEY(long index) { return list.GET_KEY(intIndex(index)); }

  @Override
  public long indexOf(KEY_TYPE k) { return list.indexOf(k); }

  @Override
  public long lastIndexOf(KEY_TYPE k) { return list.lastIndexOf(k); }

  @Override
  public KEY_GENERIC_TYPE REMOVE_KEY(long index) { return list.REMOVE_KEY(intIndex(index)); }

  @Override
  public KEY_GENERIC_TYPE set(long index, KEY_GENERIC_TYPE k) { return list.set(intIndex(index), k); }

  @Override
  public boolean isEmpty() { return list.isEmpty(); }

  @Override
  public <T> T[] toArray(T[] a) { return list.toArray(a); }

  @Override
  public boolean containsAll(Collection<?> c) { return list.containsAll(c); }

  @Override
```

```
  public boolean addAll(Collection<? extends KEY_GENERIC_CLASS> c) { return list.addAll(c); }

  @Override
  public boolean removeAll(Collection<?> c) { return list.removeAll(c); }

  @Override
  public boolean retainAll(Collection<?> c) { return list.retainAll(c); }

  @Override
  public void clear() { list.clear(); }

  @Override
  public int hashCode() { return list.hashCode(); }
 }

 /** Returns a big list backed by the specified list.
  *
  * @param list a list.
  * @return a big list backed by the specified list.
  */
 public static KEY_GENERIC BIG_LIST KEY_GENERIC asBigList(final LIST KEY_GENERIC list) { return new
ListBigList KEY_GENERIC_DIAMOND(list); }




#ifdef TEST

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#elif KEY_CLASS_Object
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }


 private static void testLists(KEY_TYPE k, BIG_LIST m, BIG_LIST t, int level) throws Exception {
  int n = 100;
  int c;

  long ms;
  boolean mThrowsIllegal, tThrowsIllegal, mThrowsNoElement, tThrowsNoElement, mThrowsIndex, tThrowsIndex,
mThrowsUnsupp, tThrowsUnsupp;
```

```
  boolean rt = false, rm = false;
  Object Rt = null, Rm = null;

  if (level == 0) return;

  /* Now we check that m and t are equal. */
  if (!m.equals(t) || ! t.equals(m)) System.err.println("m: " + m + " t: " + t);

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) at start");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) at start");

  /* Now we check that m actually holds that data. */
  for(java.util.Iterator i=t.iterator(); i.hasNext();) {
   ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on
t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */
  for(java.util.Iterator i=m.listIterator(); i.hasNext();) {
   ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on
m)");
  }

  /* Now we check that inquiries about random data give the same answer in m and t. For
     m we use the polymorphic method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    m.contains(T);
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }

   try {
    t.contains(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): contains() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
```

```
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): contains() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): contains() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex) ensure(m.contains(KEY2OBJ(T)) ==
t.contains(KEY2OBJ(T)), "Error (" + level + ", " + seed + "): divergence in keys between t and m (polymorphic
method) " + m);
  }

  /* Again, we check that inquiries about random data give the same answer in m and t, but
     for m we use the standard method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    m.contains(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    t.contains(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): contains() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): contains() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): contains() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): contains() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp)
ensure(m.contains(KEY2OBJ(T)) ==  t.contains(KEY2OBJ(T)), "Error (" + level + ", " + seed + "): divergence
between t and m (standard method) " + m);
  }

  /* Now we add and remove random data in m and t, checking that the result is the same. */
```

```
 for(int i=0; i<20*n;  i++) {
  KEY_TYPE T = genKey();

  mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

  try {
   rm = m.add(KEY2OBJ(T));
  }
  catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
  catch (IllegalArgumentException e) { mThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
  catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

  try {
   rt = t.add(KEY2OBJ(T));
  }
  catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
  catch (IllegalArgumentException e) { tThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
  catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): add() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
  ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): add() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
  ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): add() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
  ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): add() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
  if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error
(" + level + ", " + seed + "): divergence in add() between t and m " + m);

  T = genKey();

  mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

  try {
   rm = m.remove(KEY2OBJ(T));
  }
  catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
  catch (IllegalArgumentException e) { mThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
  catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

  try {
```

```
   rt = t.remove(KEY2OBJ(T));
  }
  catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
  catch (IllegalArgumentException e) { tThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
  catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

  if (! KEY_EQUALS(T, k) && mThrowsUnsupp && ! tThrowsUnsupp) mThrowsUnsupp = true; // Stupid bug in
Collections.singleton()

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): remove() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
  ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): remove() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
  ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): remove() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
  ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): remove() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
  if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error
(" + level + ", " + seed + "): divergence in remove() between t and m " + m);
 }

 ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after removal " + m);
 ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after removal " + m);

 /* Now we add and remove random data in m and t at specific positions, checking that the result is the same. */

 for(int i=0; i<20*n;  i++) {
  KEY_TYPE T = genKey();

  mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

  int pos = r.nextInt(2);

  try {
   m.add(pos, KEY2OBJ(T));
  }
  catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
  catch (IllegalArgumentException e) { mThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
  catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

  try {
   t.add(pos, KEY2OBJ(T));
  }
  catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
  catch (IllegalArgumentException e) { tThrowsIllegal = true; }
```

catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): add() at " + pos + " divergence in java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): add() at " + pos + " divergence in IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): add() at " + pos + " divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): add() at " + pos + " divergence in UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);

T = genKey();

mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal = mThrowsUnsupp = tThrowsUnsupp = false;

pos = r.nextInt(2);

try {
Rm = m.remove(pos);
}
catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
catch (IllegalArgumentException e) { mThrowsIllegal = true; }
catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

try {
Rt = t.remove(pos);
}
catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
catch (IllegalArgumentException e) { tThrowsIllegal = true; }
catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): remove() at " + pos + " divergence in java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): remove() at " + pos + " divergence in IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): remove() at " + pos + " divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): remove() at " + pos + " divergence in UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(Rm == Rt || Rm != null && Rm.equals(Rt), "Error (" + level + ", " + seed + "): divergence in remove() at " + pos + " between t and

```
m " + m);
  }

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after removal " + m);
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after removal " + m);

  /* Now we add and remove random collections in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    rm = m.addAll(java.util.Collections.singleton(KEY2OBJ(T)));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    rt = t.addAll(java.util.Collections.singleton(KEY2OBJ(T)));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): addAll() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): addAll() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
   ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): addAll() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
   ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): addAll() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error
(" + level + ", " + seed + "): divergence in addAll() between t and m " + m);

   T = genKey();

   mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

   try {
    rm = m.removeAll(java.util.Collections.singleton(KEY2OBJ(T)));
```

```
  }
  catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
  catch (IllegalArgumentException e) { mThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
  catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

  try {
   rt = t.removeAll(java.util.Collections.singleton(KEY2OBJ(T)));
  }
  catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
  catch (IllegalArgumentException e) { tThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
  catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }


  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): removeAll() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
  ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): removeAll() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
  ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): removeAll() divergence in
IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
  ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): removeAll() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
  if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error
(" + level + ", " + seed + "): divergence in removeAll() between t and m " + m);
 }

 ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after set removal " + m);
 ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after set removal " + m);

 /* Now we add random collections at specific positions in m and t, checking that the result is the same. */

 for(int i=0; i<20*n;  i++) {
  KEY_TYPE T = genKey();

  mThrowsIndex = tThrowsIndex = mThrowsNoElement = tThrowsNoElement = mThrowsIllegal = tThrowsIllegal =
mThrowsUnsupp = tThrowsUnsupp = false;

  int pos = r.nextInt(2);

  try {
   rm = m.addAll(pos, java.util.Collections.singleton(KEY2OBJ(T)));
  }
  catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
  catch (IllegalArgumentException e) { mThrowsIllegal = true; }
  catch (IndexOutOfBoundsException e) { mThrowsIndex = true; }
  catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }
```

```
try {
 rt = t.addAll(pos, java.util.Collections.singleton(KEY2OBJ(T)));
}
catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
catch (IllegalArgumentException e) { tThrowsIllegal = true; }
catch (IndexOutOfBoundsException e) { tThrowsIndex = true; }
catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): addAll() at " + pos + " divergence in java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ") " + m);
ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): addAll() at " + pos + " divergence in IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ") " + m);
ensure(mThrowsIndex == tThrowsIndex, "Error (" + level + ", " + seed + "): addAll() at " + pos + " divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsIndex + ", " + tThrowsIndex + ") " + m);
ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): addAll() at " + pos + " divergence in UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsIndex && !mThrowsUnsupp) ensure(rm == rt, "Error (" + level + ", " + seed + "): divergence in addAll() at " + pos + " between t and m " + m);

}

ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after set removal " + m);
ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after set removal " + m);

/* Now we check that m actually holds the same data. */

for(java.util.Iterator i=t.iterator(); i.hasNext();) {
 ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after removal (iterating on t)");
}

/* Now we check that m actually holds that data, but iterating on m. */

for(java.util.Iterator i=m.listIterator(); i.hasNext();) {
 ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after removal (iterating on m)");
}

if (m instanceof Singleton) {
 ensure(m.equals(((Singleton)m).clone()), "Error (" + level + ", " + seed + "): m does not equal m.clone()");
 ensure(((Singleton)m).clone().equals(m), "Error (" + level + ", " + seed + "): m.clone() does not equal m");
}

int h = m.hashCode();

/* Now we save and read m. */
```

```
 BIG_LIST m2 = null;

 {
  java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
  java.io.OutputStream os = new java.io.FileOutputStream(ff);
  java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

  oos.writeObject(m);
  oos.close();

  java.io.InputStream is = new java.io.FileInputStream(ff);
  java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

  m2 = (BIG_LIST)ois.readObject();
  ois.close();
  ff.delete();
 }

#if ! KEYS_USE_REFERENCE_EQUALITY

 ensure(m2.hashCode() == h, "Error (" + level + ", " + seed + "): hashCode() changed after save/read");

 /* Now we check that m2 actually holds that data. */

 ensure(m2.equals(t), "Error (" + level + ", " + seed + "): ! m2.equals(t) after save/read");
 ensure(t.equals(m2), "Error (" + level + ", " + seed + "): ! t.equals(m2) after save/read");
#endif

 if (! m.isEmpty()) {
  long start = (r.nextLong() & 0x7FFFFFFFFFFFFFFFL) % m.size64();
  long end = start + (r.nextLong() & 0x7FFFFFFFFFFFFFFFL) % (m.size64() - start);
  //System.err.println("Checking subList from " + start + " to " + end + " (level=" + (level+1) + ")...");
  testLists(k, m.subList(start, end), t.subList(start, end), level - 1);

  ensure(m.equals(t), () -> "Error (" + level + ", " + seed + m + t + "): ! m.equals(t) after subList");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after subList");

 }

 return;
}

private static void test() throws Exception {
 KEY_TYPE k = genKey();
 BIG_LIST m = new Singleton(k);
 BIG_LIST u = BIG_LISTS.unmodifiable(BIG_LISTS.asBigList(LISTS.singleton(KEY2OBJ(k))));
 testLists(k, m, u, 3);
 System.out.println("Test OK");
```

```
 }

 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition fp = new java.text.FieldPosition(0);

 private static String format(double d) {
  StringBuffer s = new StringBuffer();
  return format.format(d, s, fp).toString();
 }

 private static void fatal(String msg) {
  throw new AssertionError(msg);
 }

 private static void ensure(boolean cond, String msg) {
  if (cond) return;
  fatal(msg);
 }

 private static void ensure(boolean cond, java.util.function.Supplier<String> msgSupplier) {
  if (cond) return;
  fatal(msgSupplier.get());
 }

 /** This method expects as first argument a lower-cased type (e.g., "int"),
  * and as second optional argument a seed. */

 public static void main(String arg[]) throws Exception {
  if (arg.length > 1) r = new java.util.Random(seed = Long.parseLong(arg[1]));

  try {
   test();
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif

}
```

Found in path(s):

* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/BigLists.drv

No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

import java.util.Arrays;
import java.util.Collection;
import java.util.Iterator;
import java.util.RandomAccess;
import java.util.NoSuchElementException;
#if KEYS_REFERENCE
import java.lang.reflect.Array;
import java.util.Comparator;
import java.util.stream.Collector;
import java.util.function.Consumer;
#endif

#if KEYS_PRIMITIVE

/** A type-specific array-based list; provides some additional methods that use polymorphism to avoid (un)boxing.
*
* <p>This class implements a lightweight, fast, open, optimized,
* reuse-oriented version of array-based lists. Instances of this class
* represent a list with an array that is enlarged as needed when new entries
* are created (by increasing its current length by 50%), but is
* <em>never</em> made smaller (even on a {@link #clear()}). A family of
* {@linkplain #trim() trimming methods} lets you control the size of the
* backing array; this is particularly useful if you reuse instances of this class.
* Range checks are equivalent to those of {@code java.util}'s classes, but
* they are delayed as much as possible. The backing array is exposed by the
* {@link #elements()} method.
*
```

* <p>This class implements the bulk methods {@code removeElements()},
* {@code addElements()} and {@code getElements()} using
* high-performance system calls (e.g., {@link
* System#arraycopy(Object,int,Object,int,int) System.arraycopy()}) instead of
* expensive loops.
*
* @see java.util.ArrayList
*/

public class ARRAY_LIST KEY_GENERIC extends ABSTRACT_LIST KEY_GENERIC implements RandomAccess, Cloneable, java.io.Serializable {
 private static final long serialVersionUID = -7046029254386353130L;

#else

/** A type-specific array-based list; provides some additional methods that use polymorphism to avoid (un)boxing.
*
* <p>This class implements a lightweight, fast, open, optimized,
* reuse-oriented version of array-based lists. Instances of this class
* represent a list with an array that is enlarged as needed when new entries
* are created (by increasing its current length by 50%), but is
* never made smaller (even on a {@link #clear()}). A family of
* {@linkplain #trim() trimming methods} lets you control the size of the
* backing array; this is particularly useful if you reuse instances of this class.
* Range checks are equivalent to those of {@link java.util}'s classes, but
* they are delayed as much as possible.
*
* <p>The backing array is exposed by the {@link #elements()} method. If an instance
* of this class was created {@linkplain #wrap(Object[],int) by wrapping},
* backing-array reallocations will be performed using reflection, so that
* {@link #elements()} can return an array of the same type of the original array: the comments
* about efficiency made in {@link it.unimi.dsi.fastutil.objects.ObjectArrays} apply here.
* Moreover, you must take into consideration that assignment to an array
* not of type {@code Object[]} is slower due to type checking.
*
* <p>This class implements the bulk methods {@code removeElements()},
* {@code addElements()} and {@code getElements()} using
* high-performance system calls (e.g., {@link
* System#arraycopy(Object,int,Object,int,int) System.arraycopy()}) instead of
* expensive loops.
*
* @see java.util.ArrayList
*/

public class ARRAY_LIST KEY_GENERIC extends ABSTRACT_LIST KEY_GENERIC implements RandomAccess, Cloneable, java.io.Serializable {
 private static final long serialVersionUID = -7046029254386353131L;

```
#endif

 /** The initial default capacity of an array list. */
 public static final int DEFAULT_INITIAL_CAPACITY = 10;

#if ! KEYS_PRIMITIVE
 /** Whether the backing array was passed to {@code wrap()}. In
  * this case, we must reallocate with the same type of array. */
 protected final boolean wrapped;
#endif

 /** The backing array. */
 protected transient KEY_GENERIC_TYPE a[];

 /** The current actual size of the list (never greater than the backing-array length). */
 protected int size;

 /** Ensures that the component type of the given array is the proper type.
  * This is irrelevant for primitive types, so it will just do a trivial copy.
  * But for Reference types, you can have a {@code String[]} masquerading as an {@code Object[]},
  * which is a case we need to prepare for because we let the user give an array to use directly
  * with {@link #wrap}.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private static final KEY_GENERIC KEY_GENERIC_TYPE[] copyArraySafe(KEY_GENERIC_TYPE[] a, int
length) {
  if (length == 0) return KEY_GENERIC_ARRAY_CAST ARRAYS.EMPTY_ARRAY;
#if KEYS_PRIMITIVE
  return java.util.Arrays.copyOf(a, length);
#else
  return (KEY_GENERIC_TYPE[])java.util.Arrays.copyOf(a, length, KEY_TYPE[].class);
#endif
 }

 private static final KEY_GENERIC KEY_GENERIC_TYPE[] copyArrayFromSafe(ARRAY_LIST
KEY_GENERIC l) {
  return copyArraySafe(l.a, l.size);
 }

 /** Creates a new array list using a given array.
  *
  * <p>This constructor is only meant to be used by the wrapping methods.
  *
  * @param a the array that will be used to back this array list.
  */
```

```
 protected ARRAY_LIST(final KEY_GENERIC_TYPE a[], @SuppressWarnings("unused") boolean wrapped) {
  this.a = a;
#if ! KEYS_PRIMITIVE
  this.wrapped = wrapped;
#endif
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private void initArrayFromCapacity(final int capacity) {
  if (capacity < 0) throw new IllegalArgumentException("Initial capacity (" + capacity + ") is negative");
  if (capacity == 0) a = KEY_GENERIC_ARRAY_CAST ARRAYS.EMPTY_ARRAY;
  else a = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[capacity];
 }

 /** Creates a new array list with given capacity.
  *
  * @param capacity the initial capacity of the array list (may be 0).
  */
 public ARRAY_LIST(final int capacity) {
  initArrayFromCapacity(capacity);
#if ! KEYS_PRIMITIVE
  this.wrapped = false;
#endif
 }

 /** Creates a new array list with {@link #DEFAULT_INITIAL_CAPACITY} capacity. */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public ARRAY_LIST() {
  a = KEY_GENERIC_ARRAY_CAST ARRAYS.DEFAULT_EMPTY_ARRAY; // We delay allocation
#if ! KEYS_PRIMITIVE
  wrapped = false;
#endif
 }

 /** Creates a new array list and fills it with a given collection.
  *
  * @param c a collection that will be used to fill the array list.
  */

 public ARRAY_LIST(final Collection<? extends KEY_GENERIC_CLASS> c) {
  if (c instanceof ARRAY_LIST) {
   a = copyArrayFromSafe((ARRAY_LIST KEY_EXTENDS_GENERIC)c);
   size = a.length;
  } else {
   initArrayFromCapacity(c.size());
   if (c instanceof LIST) {
    ((LIST KEY_EXTENDS_GENERIC)c).getElements(0, a, 0, size = c.size());
```

```
   } else {
#if KEYS_PRIMITIVE
    size = ITERATORS.unwrap(ITERATORS.AS_KEY_ITERATOR(c.iterator()), a);
#else
    size = ITERATORS.unwrap(c.iterator(), a);
#endif
   }
  }
#if ! KEYS_PRIMITIVE
  this.wrapped = false;
#endif
 }

 /** Creates a new array list and fills it with a given type-specific collection.
  *
  * @param c a type-specific collection that will be used to fill the array list.
  */

 public ARRAY_LIST(final COLLECTION KEY_EXTENDS_GENERIC c) {
  if (c instanceof ARRAY_LIST) {
   a = copyArrayFromSafe((ARRAY_LIST KEY_EXTENDS_GENERIC)c);
   size = a.length;
  } else {
   initArrayFromCapacity(c.size());
   if (c instanceof LIST) {
    ((LIST KEY_EXTENDS_GENERIC)c).getElements(0, a, 0, size = c.size());
   } else {
    size = ITERATORS.unwrap(c.iterator(), a);
   }
  }
#if ! KEYS_PRIMITIVE
  this.wrapped = false;
#endif
 }

 /** Creates a new array list and fills it with a given type-specific list.
  *
  * @param l a type-specific list that will be used to fill the array list.
  */

 public ARRAY_LIST(final LIST KEY_EXTENDS_GENERIC l) {
  if (l instanceof ARRAY_LIST) {
   a = copyArrayFromSafe((ARRAY_LIST KEY_EXTENDS_GENERIC)l);
   size = a.length;
  } else {
   initArrayFromCapacity(l.size());
   l.getElements(0, a, 0, size = l.size());
  }
```

```
#if ! KEYS_PRIMITIVE
  this.wrapped = false;
#endif
 }

 /** Creates a new array list and fills it with the elements of a given array.
  *
  * @param a an array whose elements will be used to fill the array list.
  */

 public ARRAY_LIST(final KEY_GENERIC_TYPE a[]) {
  this(a, 0, a.length);
 }

 /** Creates a new array list and fills it with the elements of a given array.
  *
  * @param a an array whose elements will be used to fill the array list.
  * @param offset the first element to use.
  * @param length the number of elements to use.
  */

 public ARRAY_LIST(final KEY_GENERIC_TYPE a[], final int offset, final int length) {
  this(length);
  System.arraycopy(a, offset, this.a, 0, length);
  size = length;
 }

 /** Creates a new array list and fills it with the elements returned by an iterator..
  *
  * @param i an iterator whose returned elements will fill the array list.
  */

 public ARRAY_LIST(final Iterator<? extends KEY_GENERIC_CLASS> i) {
  this();
  while(i.hasNext()) this.add(KEY_CLASS2TYPE(i.next()));
 }

 /** Creates a new array list and fills it with the elements returned by a type-specific iterator..
  *
  * @param i a type-specific iterator whose returned elements will fill the array list.
  */

 public ARRAY_LIST(final KEY_ITERATOR KEY_EXTENDS_GENERIC i) {
  this();
  while(i.hasNext()) this.add(i.NEXT_KEY());
 }

#if KEYS_PRIMITIVE
```

```
 /** Returns the backing array of this list.
  *
  * @return the backing array.
  */

 public KEY_GENERIC_TYPE[] elements() {
  return a;
 }
#else
 /** Returns the backing array of this list.
  *
  * <p>If this array list was created by wrapping a given array, it is guaranteed
  * that the type of the returned array will be the same. Otherwise, the returned
  * array will be of type {@link Object Object[]} (in spite of the declared return type).
  *
  * <p><strong>Warning</strong>: This behaviour may cause (unfathomable)
  * run-time errors if a method expects an array
  * actually of type {@code K[]}, but this methods returns an array
  * of type {@link Object Object[]}.
  *
  * @return the backing array.
  */

 public K[] elements() {
  return a;
 }
#endif

 /** Wraps a given array into an array list of given size.
  *
  * <p>Note it is guaranteed
  * that the type of the array returned by {@link #elements()} will be the same
  * (see the comments in the class documentation).
  *
  * @param a an array to wrap.
  * @param length the length of the resulting array list.
  * @return a new array list of the given size, wrapping the given array.
  */

 public static KEY_GENERIC ARRAY_LIST KEY_GENERIC wrap(final KEY_GENERIC_TYPE a[], final int
length) {
  if (length > a.length) throw new IllegalArgumentException("The specified length (" + length + ") is greater than the
array size (" + a.length + ")");
  final ARRAY_LIST KEY_GENERIC l = new ARRAY_LIST KEY_GENERIC_DIAMOND(a, true);
  l.size = length;
  return l;
 }
```

```
/** Wraps a given array into an array list.
 *
 * <p>Note it is guaranteed
 * that the type of the array returned by {@link #elements()} will be the same
 * (see the comments in the class documentation).
 *
 * @param a an array to wrap.
 * @return a new array list wrapping the given array.
 */

public static KEY_GENERIC ARRAY_LIST KEY_GENERIC wrap(final KEY_GENERIC_TYPE a[]) {
 return wrap(a, a.length);
}

/** Creates a new empty array list.
 *
 * @return a new empty array list.
 */
public static KEY_GENERIC ARRAY_LIST KEY_GENERIC of() {
 return new ARRAY_LIST KEY_GENERIC_DIAMOND();
}

/** Creates an array list using an array of elements.
 *
 * @param init a the array the will become the new backing array of the array list.
 * @return a new array list backed by the given array.
 * @see #wrap
 */
SAFE_VARARGS
public static KEY_GENERIC ARRAY_LIST KEY_GENERIC of(final KEY_GENERIC_TYPE... init) {
 return wrap(init);
}

#if KEYS_INT_LONG_DOUBLE
/** Collects the result of a primitive {@code Stream} into a new ArrayList.
 *
 * <p>This method performs a terminal operation on the given {@code Stream}
 *
 * @apiNote Taking a primitive stream instead of returning something like a
 * {@link java.util.stream.Collector Collector} is necessary because there is no
 * primitive {@code Collector} equivalent in the Java API.
 */
 public static KEY_GENERIC ARRAY_LIST KEY_GENERIC toList(JDK_PRIMITIVE_STREAM stream) {
  return stream.collect(
   ARRAY_LIST::new,
   ARRAY_LIST::add,
   ARRAY_LIST::addAll);
 }
```

```
/** Collects the result of a primitive {@code Stream} into a new ArrayList, potentially pre-allocated to handle the
given size.
 *
 * <p>This method performs a terminal operation on the given {@code Stream}
 *
 * @apiNote Taking a primitive stream instead returning something like a
 * {@link java.util.stream.Collector Collector} is necessary because there is no
 * primitive {@code Collector} equivalent in the Java API.
 */
public static KEY_GENERIC ARRAY_LIST KEY_GENERIC
toListWithExpectedSize(JDK_PRIMITIVE_STREAM stream, int expectedSize) {
 if (expectedSize <= DEFAULT_INITIAL_CAPACITY) {
  // Already below default capacity. Just use all default construction instead of fiddling with atomics in
SizeDecreasingSupplier
  return toList(stream);
 }
 return stream.collect(
  new COLLECTIONS.SizeDecreasingSupplier<
#if KEYS_REFERENCE
    K,
#endif
    ARRAY_LIST KEY_GENERIC>(
   expectedSize, (int size) ->
    size <= DEFAULT_INITIAL_CAPACITY ? new ARRAY_LIST KEY_GENERIC() : new ARRAY_LIST
KEY_GENERIC(size)),
  ARRAY_LIST::add,
  ARRAY_LIST::addAll);
}
#elif KEYS_REFERENCE
// Collector wants a function that returns the collection being added to.
ARRAY_LIST KEY_GENERIC combine(ARRAY_LIST KEY_EXTENDS_GENERIC toAddFrom) {
 addAll(toAddFrom);
 return this;
}

private static final Collector<KEY_TYPE, ?, ARRAY_LIST<KEY_TYPE>> TO_LIST_COLLECTOR =
 Collector.of(
  ARRAY_LIST::new,
  ARRAY_LIST::add,
  ARRAY_LIST::combine);

/** Returns a {@link Collector} that collects a {@code Stream}'s elements into a new ArrayList. */
SUPPRESS_WARNINGS_KEY_UNCHECKED_RAWTYPES
public static KEY_GENERIC Collector<KEY_GENERIC_TYPE, ?, ARRAY_LIST KEY_GENERIC> toList() {
 return (Collector) TO_LIST_COLLECTOR;
}
```

```
 /** Returns a {@link Collector} that collects a {@code Stream}'s elements into a new ArrayList, potentially pre-
allocated to handle the given size. */
 public static KEY_GENERIC Collector<KEY_GENERIC_TYPE, ?, ARRAY_LIST KEY_GENERIC>
toListWithExpectedSize(int expectedSize) {
  if (expectedSize <= DEFAULT_INITIAL_CAPACITY) {
   // Already below default capacity. Just use all default construction instead of fiddling with atomics in
SizeDecreasingSupplier
   return toList();
  }
  return Collector.of(
   new COLLECTIONS.SizeDecreasingSupplier<
#if KEYS_REFERENCE
    K,
#endif
    ARRAY_LIST KEY_GENERIC>(
   expectedSize, (int size) ->
    size <= DEFAULT_INITIAL_CAPACITY ? new ARRAY_LIST KEY_GENERIC() : new ARRAY_LIST
KEY_GENERIC(size)),
  ARRAY_LIST::add,
  ARRAY_LIST::combine);
 }
#endif

 /** Ensures that this array list can contain the given number of entries without resizing.
  *
  * @param capacity the new minimum capacity for this array list.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public void ensureCapacity(final int capacity) {
  if (capacity <= a.length || (a == ARRAYS.DEFAULT_EMPTY_ARRAY && capacity <=
DEFAULT_INITIAL_CAPACITY)) return;
#if KEYS_PRIMITIVE
  a = ARRAYS.ensureCapacity(a, capacity, size);
#else
  if (wrapped) a = ARRAYS.ensureCapacity(a, capacity, size);
  else {
   if (capacity > a.length) {
    final Object t[] = new Object[capacity];
    System.arraycopy(a, 0, t, 0, size);
    a = (KEY_GENERIC_TYPE[])t;
   }
  }
#endif
  assert size <= a.length;
 }

 /** Grows this array list, ensuring that it can contain the given number of entries without resizing,
  * and in case increasing the current capacity at least by a factor of 50%.
```

```
  *
  * @param capacity the new minimum capacity for this array list.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private void grow(int capacity) {
  if (capacity <= a.length) return;
  if (a != ARRAYS.DEFAULT_EMPTY_ARRAY)
   capacity = (int)Math.max(Math.min((long)a.length + (a.length >> 1),
it.unimi.dsi.fastutil.Arrays.MAX_ARRAY_SIZE), capacity);
  else if (capacity < DEFAULT_INITIAL_CAPACITY) capacity = DEFAULT_INITIAL_CAPACITY;
#if KEYS_PRIMITIVE
  a = ARRAYS.forceCapacity(a, capacity, size);
#else
  if (wrapped) a = ARRAYS.forceCapacity(a, capacity, size);
  else {
   final Object t[] = new Object[capacity];
   System.arraycopy(a, 0, t, 0, size);
   a = (KEY_GENERIC_TYPE[])t;
  }
#endif
  assert size <= a.length;
 }

 @Override
 public void add(final int index, final KEY_GENERIC_TYPE k) {
  ensureIndex(index);
  grow(size + 1);
  if (index != size) System.arraycopy(a, index, a, index + 1, size - index);
  a[index] = k;
  size++;
  assert size <= a.length;
 }

 @Override
 public boolean add(final KEY_GENERIC_TYPE k) {
  grow(size + 1);
  a[size++] = k;
  assert size <= a.length;
  return true;
 }

 @Override
 public KEY_GENERIC_TYPE GET_KEY(final int index) {
  if (index >= size) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than or equal to list size
(" + size + ")");
  return a[index];
 }
```

```
 @Override
 public int indexOf(final KEY_TYPE k) {
  for(int i = 0; i < size; i++) if (KEY_EQUALS(k, a[i])) return i;
  return -1;
 }


 @Override
 public int lastIndexOf(final KEY_TYPE k) {
  for(int i = size; i-- != 0;) if (KEY_EQUALS(k, a[i])) return i;
  return -1;
 }

 @Override
 public KEY_GENERIC_TYPE REMOVE_KEY(final int index) {
  if (index >= size) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than or equal to list size
(" + size + ")");
  final KEY_GENERIC_TYPE old = a[index];
  size--;
  if (index != size) System.arraycopy(a, index + 1, a, index, size - index);
#if KEYS_REFERENCE
  a[size] = null;
#endif
  assert size <= a.length;
  return old;
 }

 @Override
 public boolean REMOVE(final KEY_TYPE k) {
  int index = indexOf(k);
  if (index == -1) return false;
  REMOVE_KEY(index);
  assert size <= a.length;
  return true;
 }

 @Override
 public KEY_GENERIC_TYPE set(final int index, final KEY_GENERIC_TYPE k) {
  if (index >= size) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than or equal to list size
(" + size + ")");
  KEY_GENERIC_TYPE old = a[index];
  a[index] = k;
  return old;
 }

 @Override
 public void clear() {
#if KEYS_REFERENCE
```

```
  Arrays.fill(a, 0, size, null);
#endif
  size = 0;
  assert size <= a.length;
 }

 @Override
 public int size() {
  return size;
 }

 @Override
 public void size(final int size) {
  if (size > a.length) a = ARRAYS.forceCapacity(a, size, this.size);
  if (size > this.size) Arrays.fill(a, this.size, size, KEY_NULL);
#if KEYS_REFERENCE
  else Arrays.fill(a, size, this.size, KEY_NULL);
#endif
  this.size = size;
 }

 @Override
 public boolean isEmpty() {
  return size == 0;
 }

 /** Trims this array list so that the capacity is equal to the size.
  *
  * @see java.util.ArrayList#trimToSize()
  */
 public void trim() {
  trim(0);
 }

 /** Trims the backing array if it is too large.
  *
  * If the current array length is smaller than or equal to
  * {@code n}, this method does nothing. Otherwise, it trims the
  * array length to the maximum between {@code n} and {@link #size()}.
  *
  * <p>This method is useful when reusing lists.  {@linkplain #clear() Clearing a
  * list} leaves the array length untouched. If you are reusing a list
  * many times, you can call this method with a typical
  * size to avoid keeping around a very large array just
  * because of a few large transient lists.
  *
  * @param n the threshold for the trimming.
  */
```

```
SUPPRESS_WARNINGS_KEY_UNCHECKED
public void trim(final int n) {
 // TODO: use Arrays.trim() and preserve type only if necessary
 if (n >= a.length || size == a.length) return;
 final KEY_GENERIC_TYPE t[] = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[Math.max(n, size)];
 System.arraycopy(a, 0, t, 0, size);
 a = t;
 assert size <= a.length;
}

private class SubList extends ABSTRACT_LIST.SUBLIST_RANDOM_ACCESS KEY_GENERIC {
 private static final long serialVersionUID = -3185226345314976296L;

 protected SubList(int from, int to) {
  super(ARRAY_LIST.this, from, to);
 }

 // Most of the inherited methods should be fine, but we can override a few of them for performance.

 // Needed because we can't access the parent class' instance variables directly in a different instance of SubList.
 private KEY_GENERIC_TYPE[] getParentArray() {
  return a;
 }

 @Override
 public KEY_GENERIC_TYPE GET_KEY(int i) {
  ensureRestrictedIndex(i);
  return a[i + from];
 }

 private final class SubListIterator extends ITERATORS.AbstractIndexBasedListIterator KEY_GENERIC {

  // We are using pos == 0 to be 0 relative to SubList.from (meaning you need to do a[from + i] when accessing
array).
  SubListIterator(int index) {
   super(0, index);
  }

  @Override
  protected final KEY_GENERIC_TYPE get(int i) { return a[from + i]; }
  @Override
  protected final void add(int i, KEY_GENERIC_TYPE k) { SubList.this.add(i, k); }
  @Override
  protected final void set(int i, KEY_GENERIC_TYPE k) { SubList.this.set(i, k); }
  @Override
  protected final void remove(int i) { SubList.this.REMOVE_KEY(i); }
  @Override
```

```
   protected final int getMaxPos() { return to - from; }

   @Override
   public KEY_GENERIC_TYPE NEXT_KEY() { if (! hasNext()) throw new NoSuchElementException(); return
 a[from + (lastReturned = pos++)]; }
   @Override
   public KEY_GENERIC_TYPE PREV_KEY() { if (! hasPrevious()) throw new NoSuchElementException(); return
 a[from + (lastReturned = --pos)]; }

   @Override
   public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
    final int max = to - from;
    while(pos < max) {
     action.accept(a[from + (lastReturned = pos++)]);
    }
   }
  }

  @Override
  public KEY_LIST_ITERATOR KEY_GENERIC listIterator(int index) {
   return new SubListIterator(index);
  }

  private final class SubListSpliterator extends SPLITERATORS.LateBindingSizeIndexBasedSpliterator
 KEY_GENERIC {

   // We are using pos == 0 to be 0 relative to real array 0
   SubListSpliterator() {
    super(from);
   }

   private SubListSpliterator(int pos, int maxPos) {
    super(pos, maxPos);
   }

   @Override
   protected final int getMaxPosFromBackingStore() { return to; }

    @Override
   protected final KEY_GENERIC_TYPE get(int i) { return a[i]; }
   @Override
   protected final SubListSpliterator makeForSplit(int pos, int maxPos) {
    return new SubListSpliterator(pos, maxPos);
   }
   @Override
   public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
    if (pos >= getMaxPos()) return false;
    action.accept(a[pos++]);
```

```
   return true;
  }
  @Override
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
   final int max = getMaxPos();
   while(pos < max) {
    action.accept(a[pos++]);
   }
  }
 }

 @Override
 public KEY_SPLITERATOR KEY_GENERIC spliterator() {
  return new SubListSpliterator();
 }

 boolean contentsEquals(KEY_GENERIC_TYPE[] otherA, int otherAFrom, int otherATo) {
  if (a == otherA && from == otherAFrom && to == otherATo) return true;
  if (otherATo - otherAFrom != size()) {
   return false;
  }
  int pos = from, otherPos = otherAFrom;
  // We have already assured that the two ranges are the same size, so we only need to check one bound.
  // TODO When minimum version of Java becomes Java 9, use the Arrays.equals which takes bounds, which is
vectorized.
  // Make sure to split out the reference equality case when you do this.
#if KEY_CLASS_Object
  while(pos < to) if (!java.util.Objects.equals(a[pos++], otherA[otherPos++])) return false;
#else
  while(pos < to) if (a[pos++] != otherA[otherPos++]) return false;
#endif
  return true;
 }

 @Override
 public boolean equals(Object o) {
  if (o == this) return true;
  if (o == null) return false;
  if (!(o instanceof java.util.List)) return false;
  if (o instanceof ARRAY_LIST) {
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   ARRAY_LIST KEY_GENERIC other = (ARRAY_LIST KEY_GENERIC) o;
   return contentsEquals(other.a, 0, other.size());
  }
  if (o instanceof ARRAY_LIST.SubList) {
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   ARRAY_LIST KEY_GENERIC.SubList other = (ARRAY_LIST KEY_GENERIC.SubList) o;
   return contentsEquals(other.getParentArray(), other.from, other.to);
```

```
  }
  return super.equals(o);
 }

#if ! KEYS_USE_REFERENCE_EQUALITY
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 int contentsCompareTo(KEY_GENERIC_TYPE[] otherA, int otherAFrom, int otherATo) {
#if KEYS_PRIMITIVE // Can't make this assumption for reference types in case we have a goofy Comparable that doesn't compare itself equal
  if (a == otherA && from == otherAFrom && to == otherATo) return 0;
#endif
  // TODO When minimum version of Java becomes Java 9, use Arrays.compare, which vectorizes.
  KEY_GENERIC_TYPE e1, e2;
  int r, i, j;
  for(i = from, j = otherAFrom; i < to && i < otherATo; i++, j++) {
   e1 = a[i];
   e2 = otherA[j];
   if ((r = KEY_CMP(e1, e2)) != 0) return r;
  }
  return i < otherATo ? -1 : (i < to ? 1 : 0);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public int compareTo(final java.util.List <? extends KEY_GENERIC_CLASS> l) {
  if (l instanceof ARRAY_LIST) {
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   ARRAY_LIST KEY_GENERIC other = (ARRAY_LIST KEY_GENERIC) l;
   return contentsCompareTo(other.a, 0, other.size());
  }
  if (l instanceof ARRAY_LIST.SubList) {
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   ARRAY_LIST KEY_GENERIC.SubList other = (ARRAY_LIST KEY_GENERIC.SubList) l;
   return contentsCompareTo(other.getParentArray(), other.from, other.to);
  }
  return super.compareTo(l);
 }
#endif
 // We don't override subList as we want AbstractList's "sub-sublist" nesting handling,
 // which would be tricky to do here.
 // TODO Do override it so array access isn't sent through N indirections.
 // This will likely mean making this class static.
}

@Override
public LIST KEY_GENERIC subList(int from, int to) {
 if (from == 0 && to == size()) return this;
 ensureIndex(from);
```

```
 ensureIndex(to);
 if (from > to) throw new IndexOutOfBoundsException("Start index (" + from + ") is greater than end index (" + to +
")");
 return new SubList(from, to);
}

/** Copies element of this type-specific list into the given array using optimized system calls.
 *
 * @param from the start index (inclusive).
 * @param a the destination array.
 * @param offset the offset into the destination array where to store the first element copied.
 * @param length the number of elements to be copied.
 */
@Override
public void getElements(final int from, final KEY_TYPE[] a, final int offset, final int length) {
 ARRAYS.ensureOffsetLength(a, offset, length);
 System.arraycopy(this.a, from, a, offset, length);
}

/** Removes elements of this type-specific list using optimized system calls.
 *
 * @param from the start index (inclusive).
 * @param to the end index (exclusive).
 */
@Override
public void removeElements(final int from, final int to) {
 it.unimi.dsi.fastutil.Arrays.ensureFromTo(size, from, to);
 System.arraycopy(a, to, a, from, size - to);
 size -= (to - from);
#if KEYS_REFERENCE
 int i = to - from;
 while(i-- != 0) a[size + i] = null;
#endif
}


/** Adds elements to this type-specific list using optimized system calls.
 *
 * @param index the index at which to add elements.
 * @param a the array containing the elements.
 * @param offset the offset of the first element to add.
 * @param length the number of elements to add.
 */
@Override
public void addElements(final int index, final KEY_GENERIC_TYPE a[], final int offset, final int length) {
 ensureIndex(index);
 ARRAYS.ensureOffsetLength(a, offset, length);
 grow(size + length);
```

```
 System.arraycopy(this.a, index, this.a, index + length, size - index);
 System.arraycopy(a, offset, this.a, index, length);
 size += length;
}

/** Sets elements to this type-specific list using optimized system calls.
 *
 * @param index the index at which to start setting elements.
 * @param a the array containing the elements.
 * @param offset the offset of the first element to add.
 * @param length the number of elements to add.
 */
@Override
public void setElements(final int index, final KEY_GENERIC_TYPE a[], final int offset, final int length) {
 ensureIndex(index);
 ARRAYS.ensureOffsetLength(a, offset, length);
 if (index + length > size) throw new IndexOutOfBoundsException("End index (" + (index + length) + ") is greater
than list size (" + size + ")");
 System.arraycopy(a, offset, this.a, index, length);
}

@Override
public void forEach(final METHOD_ARG_KEY_CONSUMER action) {
 for (int i = 0; i < size; ++i) {
  action.accept(a[i]);
 }
}

@Override
public boolean addAll(int index, final STD_KEY_COLLECTION KEY_EXTENDS_GENERIC c) {
 if (c instanceof LIST) {
  return addAll(index, (LIST KEY_EXTENDS_GENERIC)c);
 }
 ensureIndex(index);
 int n = c.size();
 if (n == 0) return false;
 grow(size + n);
 System.arraycopy(a, index, a, index + n, size - index);
 final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i = c.iterator();
 size += n;
 while(n-- != 0) a[index++] = i.NEXT_KEY();
 assert size <= a.length;
 return true;
}

@Override
public boolean addAll(final int index, final LIST KEY_EXTENDS_GENERIC l) {
 ensureIndex(index);
```

```
  final int n = l.size();
  if (n == 0) return false;
  grow(size + n);
  System.arraycopy(a, index, a, index + n, size - index);
  l.getElements(0, a, index, n);
  size += n;
  assert size <= a.length;
  return true;
 }

 @Override
 public boolean removeAll(final STD_KEY_COLLECTION KEY_GENERIC_WILDCARD c) {
  final KEY_TYPE[] a = this.a;
  int j = 0;
  for(int i = 0; i < size; i++)
   if (! c.contains(a[i])) a[j++] = a[i];
#if KEYS_REFERENCE
  Arrays.fill(a, j, size, null);
#endif
  final boolean modified = size != j;
  size = j;
  return modified;
 }

#if KEYS_PRIMITIVE

 @Override
 public KEY_TYPE[] toArray(KEY_TYPE a[]) {
  if (a == null || a.length < size) a = java.util.Arrays.copyOf(a, size);
  System.arraycopy(this.a, 0, a, 0, size);
  return a;
 }

#else

 @Override
 public Object[] toArray() {
  // A subtle part of the spec says the returned array must be Object[] exactly.
  return Arrays.copyOf(a, size(), Object[].class);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public KEY_GENERIC KEY_GENERIC_TYPE[] toArray(KEY_GENERIC_TYPE a[]) {
  if (a == null) {
   a = KEY_GENERIC_ARRAY_CAST new Object[size()];
  } else if (a.length < size()) {
   a = KEY_GENERIC_ARRAY_CAST Array.newInstance(a.getClass().getComponentType(), size());
```

```
  }
  System.arraycopy(this.a, 0, a, 0, size());
  if (a.length > size()) {
   a[size()] = null;
  }
  return a;
 }
#endif

 @Override
 public KEY_LIST_ITERATOR KEY_GENERIC listIterator(final int index) {
  ensureIndex(index);

  return new KEY_LIST_ITERATOR KEY_GENERIC() {
    int pos = index, last = -1;

    @Override
    public boolean hasNext() { return pos < size; }
    @Override
    public boolean hasPrevious() { return pos > 0; }
    @Override
    public KEY_GENERIC_TYPE NEXT_KEY() { if (! hasNext()) throw new NoSuchElementException(); return
a[last = pos++]; }
    @Override
    public KEY_GENERIC_TYPE PREV_KEY() { if (! hasPrevious()) throw new NoSuchElementException(); return
a[last = --pos]; }
    @Override
    public int nextIndex() { return pos; }
    @Override
    public int previousIndex() { return pos - 1; }
    @Override
    public void add(KEY_GENERIC_TYPE k) {
     ARRAY_LIST.this.add(pos++, k);
     last = -1;
    }
    @Override
    public void set(KEY_GENERIC_TYPE k) {
     if (last == -1) throw new IllegalStateException();
     ARRAY_LIST.this.set(last, k);
    }
    @Override
    public void remove() {
     if (last == -1) throw new IllegalStateException();
     ARRAY_LIST.this.REMOVE_KEY(last);
     /* If the last operation was a next(), we are removing an element *before* us, and we must decrease pos
correspondingly. */
     if (last < pos) pos--;
     last = -1;
```

```
   }
   @Override
   public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
    while (pos < size) {
     action.accept(a[last = pos++]);
    }
   }
   @Override
   public int back(int n) {
    if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
    final int remaining = size - pos;
    if (n < remaining) {
     pos -= n;
    } else {
     n = remaining;
     pos = 0;
    }
    last = pos;
    return n;
   }
   @Override
   public int skip(int n) {
    if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
    final int remaining = size - pos;
    if (n < remaining) {
     pos += n;
    } else {
     n = remaining;
     pos = size;
    }
    last = pos - 1;
    return n;
   }
  };
 }

 // If you update this, you will probably want to update ArraySet as well
 private final class Spliterator implements KEY_SPLITERATOR KEY_GENERIC {
  // Until we split, we will track the size of the list.
  // Once we split, then we stop updating on structural modifications.
  // Aka, size is late-binding.
  boolean hasSplit = false;
  int pos, max;

#ifdef TEST
  // Sentinel to make sure we don't accidentally use size when we mean max
  @Deprecated
  private final Object size = null;
```

```
#endif

  public Spliterator() {
   this(0, ARRAY_LIST.this.size, false);
  }

  private Spliterator(int pos, int max, boolean hasSplit) {
   assert pos <= max : "pos " + pos + " must be <= max " + max;
   this.pos = pos;
   this.max = max;
   this.hasSplit = hasSplit;
  }

  private int getWorkingMax() {
   return hasSplit ? max : ARRAY_LIST.this.size;
  }

  @Override
  public int characteristics() { return SPLITERATORS.LIST_SPLITERATOR_CHARACTERISTICS; }

  @Override
  public long estimateSize() { return getWorkingMax() - pos; }

  @Override
  public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
   if (pos >= getWorkingMax()) return false;
   action.accept(a[pos++]);
   return true;
  }

  @Override
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
   for (final int max = getWorkingMax(); pos < max; ++pos) {
    action.accept(a[pos]);
   }
  }

  @Override
  public long skip(long n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   final int max = getWorkingMax();
   if (pos >= max) return 0;
   final int remaining = max - pos;
   if (n < remaining) {
    pos = it.unimi.dsi.fastutil.SafeMath.safeLongToInt(pos + n);
    return n;
   }
   n = remaining;
```

```
  pos = max;
  return n;
 }

 @Override
 public KEY_SPLITERATOR KEY_GENERIC trySplit() {
  final int max = getWorkingMax();
  int retLen = (max - pos) >> 1;
  if (retLen <= 1) return null;
  // Update instance max with the last seen list size (if needed) before continuing
  this.max = max;
  int myNewPos = pos + retLen;
  int retMax = myNewPos;
  int oldPos = pos;
  this.pos = myNewPos;
  this.hasSplit = true;
  return new Spliterator(oldPos, retMax, true);
 }
}

/** {@inheritDoc}
 *
 * <p>The returned spliterator is late-binding; it will track structural changes
 * after the current index, up until the first {@link java.util.Spliterator#trySplit() trySplit()},
 * at which point the maximum index will be fixed.
 * <br>Structural changes before the current index or after the first
 * {@link java.util.Spliterator#trySplit() trySplit()} will result in unspecified behavior.
 */
@Override
public KEY_SPLITERATOR KEY_GENERIC spliterator() {
 // If it wasn't for the possibility of the list being expanded or shrunk,
 // we could return SPLITERATORS.wrap(a, 0, size).
 return new Spliterator();
}

SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public void sort(final KEY_COMPARATOR KEY_SUPER_GENERIC comp) {
 if (comp == null) {
  ARRAYS.stableSort(a, 0, size);
 } else {
  ARRAYS.stableSort(a, 0, size, comp);
 }
}

@Override
public void unstableSort(final KEY_COMPARATOR KEY_SUPER_GENERIC comp) {
 if (comp == null) {
```

```
  ARRAYS.unstableSort(a, 0, size);
 } else {
  ARRAYS.unstableSort(a, 0, size, comp);
 }
}

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public ARRAY_LIST KEY_GENERIC clone() {
 ARRAY_LIST KEY_GENERIC cloned = null;
 // Test for fastpath we can do if exactly an ArrayList
 if (getClass() == ARRAY_LIST.class) {
  // Preserve backwards compatibility and make new list have Object[] even if it was wrapped from some subclass.
  cloned = new ARRAY_LIST KEY_GENERIC_DIAMOND(copyArraySafe(a, size), false);
  cloned.size = size;
 } else {
  try {
   cloned = (ARRAY_LIST KEY_GENERIC)super.clone();
  } catch (CloneNotSupportedException err) {
   // Can't happen
   throw new InternalError(err);
  }
  // Preserve backwards compatibility and make new list have Object[] even if it was wrapped from some subclass.
  cloned.a = copyArraySafe(a, size);
#if ! KEYS_PRIMITIVE
  // We can't clear cloned.wrapped because it is final.
#endif
 }
 return cloned;
}

/** Compares this type-specific array list to another one.
 *
 * @apiNote This method exists only for sake of efficiency. The implementation
 * inherited from the abstract implementation would already work.
 *
 * @param l a type-specific array list.
 * @return true if the argument contains the same elements of this type-specific array list.
 */
public boolean equals(final ARRAY_LIST KEY_GENERIC l) {
 // TODO When minimum version of Java becomes Java 9, use the Arrays.equals which takes bounds, which is
vectorized.
 if (l == this) return true;
 int s = size();
 if (s != l.size()) return false;
 final KEY_GENERIC_TYPE[] a1 = a;
 final KEY_GENERIC_TYPE[] a2 = l.a;
```

```
  if (a1 == a2 && s == l.size()) return true;

#if KEY_CLASS_Object
  while(s-- !=  0) if (! java.util.Objects.equals(a1[s], a2[s])) return false;
#else
  while(s-- !=  0) if (a1[s] != a2[s]) return false;
#endif
  return true;
 }

#if KEYS_REFERENCE
 @SuppressWarnings({"unchecked", "unlikely-arg-type"})
#else
 @SuppressWarnings("unlikely-arg-type")
#endif
 @Override
 public boolean equals(final Object o) {
  if (o == this) return true;
  if (o == null) return false;
  if (!(o instanceof java.util.List)) return false;
  if (o instanceof ARRAY_LIST) {
   // Safe cast because we are only going to take elements from other list, never give them
   return equals((ARRAY_LIST KEY_GENERIC) o);
  }
  if (o instanceof ARRAY_LIST.SubList) {
   // Safe cast because we are only going to take elements from other list, never give them
   // Sublist has an optimized sub-array based comparison, reuse that.
   return ((ARRAY_LIST KEY_GENERIC.SubList)o).equals(this);
  }
  return super.equals(o);
 }

#if ! KEYS_USE_REFERENCE_EQUALITY

 /** Compares this array list to another array list.
  *
  * @apiNote This method exists only for sake of efficiency. The implementation
  * inherited from the abstract implementation would already work.
  *
  * @param l an array list.
  * @return a negative integer,
  * zero, or a positive integer as this list is lexicographically less than, equal
  * to, or greater than the argument.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public int compareTo(final ARRAY_LIST KEY_EXTENDS_GENERIC l) {
  final int s1 = size(), s2 = l.size();
  final KEY_GENERIC_TYPE a1[] = a, a2[] = l.a;
```

```
#if KEYS_PRIMITIVE // Can't make this assumption for reference types in case we have a goofy Comparable that
doesn't compare itself equal
  if (a1 == a2 && s1 == s2) return 0;
#endif

  // TODO When minimum version of Java becomes Java 9, use Arrays.compare, which vectorizes.
  KEY_GENERIC_TYPE e1, e2;
  int r, i;

  for(i = 0; i < s1 && i < s2; i++) {
   e1 = a1[i];
   e2 = a2[i];
   if ((r = KEY_CMP(e1, e2)) != 0) return r;
  }

  return i < s2 ? -1 : (i < s1 ? 1 : 0);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public int compareTo(final java.util.List <? extends KEY_GENERIC_CLASS> l) {
  if (l instanceof ARRAY_LIST) {
   return compareTo((ARRAY_LIST KEY_EXTENDS_GENERIC)l);
  }
  if (l instanceof ARRAY_LIST.SubList) {
   // Must negate because we are inverting the order of the comparison.
   return -((ARRAY_LIST KEY_GENERIC.SubList) l).compareTo(this);
  }
  return super.compareTo(l);
 }
#endif

 private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
  s.defaultWriteObject();
  for(int i = 0; i < size; i++) s.WRITE_KEY(a[i]);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
  s.defaultReadObject();
  a = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[size];
  for(int i = 0; i < size; i++) a[i] = KEY_GENERIC_CAST s.READ_KEY();
 }


#ifdef TEST

 private static long seed = System.currentTimeMillis();
```

```
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#elif KEY_CLASS_Object
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }

 private static int genIndex(int size) {
  return size == 0 ? 0 : r.nextInt(size);
 }

 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition p = new java.text.FieldPosition(0);

 private static String format(double d) {
  StringBuffer s = new StringBuffer();
  return format.format(d, s, p).toString();
 }

 private static final int WARMUP_CYCLES = 12;
 private static final int NUM_RUNS = 25;
 private static final int GC_EVERY = 5;
 // TODO Use a ASSERTS like preprocessor variable?
 private static final boolean PARALLEL_STREAMS = Boolean.getBoolean("useParallelStreams");

 private static final int intDivRoundUp(int numerator, int denominator) {
  return (numerator + denominator - 1) / denominator;
 }

 // WARNING: This benchmark runs in amortized time O(n^(3/2)). Don't choose huge n values for this test (about
10,000,000 starts showing significant slowdown)
 private static void speedTest(final int n, boolean comp) {
  if (n < 0) throw new IllegalArgumentException("n: " + n + " must be >0 (overflow?)");
  java.util.ArrayList t;
  ARRAY_LIST m;

  int i;
  int j;
  KEY_TYPE k[] = new KEY_TYPE[n];
  KEY_TYPE nk[] = new KEY_TYPE[n];
  int randIndexes[] = new int[n];
```

```
  long ns;

  for(i = 0; i < n; i++) {
   k[i] = genKey();
   nk[i] = genKey();
   randIndexes[i] = genIndex(i);
  }

  final int nRandom = (int)Math.sqrt(n);
  final int nSequential = n - nRandom;

  double totAddEnd = 0, totAddRandom = 0, totYes = 0, totNo = 0, totIter = 0, totRemEnd = 0, totRemRandom = 0,
toStreamSum = 0, d;

  if (comp) { for(j = 0; j < NUM_RUNS; j++) {

   if ((j + 1) % GC_EVERY == 0) System.gc();

   t = new java.util.ArrayList(16);

   /* We add to t at a random position. */
   ns = System.nanoTime();
   for(i = 0; i < nRandom; i++) t.add(randIndexes[i], KEY2OBJ(k[i]));
   d = (System.nanoTime() - ns) / (double)nRandom;
   if (j >= WARMUP_CYCLES) totAddRandom += d;
   System.out.print("AddToRandom: " + format(d) + "ns ");

   /* We add to t at end. */
   ns = System.nanoTime();
   for(; i < n; i++) t.add(KEY2OBJ(k[i]));
   d = (System.nanoTime() - ns) / (double)nSequential;
   if (j >= WARMUP_CYCLES) totAddEnd += d;
   System.out.print("AddToEnd: " + format(d) + "ns ");

   /* We check things in t. */
   ns = System.nanoTime();
   for(i = 0; i < nRandom;  i++) t.contains(KEY2OBJ(k[i]));
   d = (System.nanoTime() - ns) / (double)nRandom;
   if (j >= WARMUP_CYCLES) totYes += d;
   System.out.print("Yes: " + format(d) + "ns ");

   /* We check for things likely not in t. */
   ns = System.nanoTime();
   for(i = 0; i < nRandom;  i++) t.contains(KEY2OBJ(nk[i]));
   d = (System.nanoTime() - ns) / (double)nRandom;
   if (j >= WARMUP_CYCLES) totNo += d;
   System.out.print("No: " + format(d) + "ns ");
```

```
  /* We iterate on t. */
  ns = System.nanoTime();
  for(java.util.Iterator it = t.iterator(); it.hasNext(); it.next());
  d = (System.nanoTime() - ns) / (double)n;
  if (j >= WARMUP_CYCLES) totIter += d;
  System.out.print("Iter: " + format(d) + "ns ");

#if KEYS_PRIMITIVE && ! KEY_CLASS_Boolean
  /* We sum on t. */
  ns = System.nanoTime();
#if KEYS_BYTE_CHAR_SHORT_FLOAT
  // Since the primitive stream has to upcast to a widened primitive, for fairness we will upcast here too
#endif
  java.util.stream.Stream<KEY_CLASS> tStream = ((java.util.List<KEY_CLASS>)t).stream();
  if (PARALLEL_STREAMS) tStream = tStream.parallel();
#if KEY_CLASS_Character
  tStream.MAP_TO_KEY_WIDENED(Character::charValue).sum();
#else
  tStream.MAP_TO_KEY_WIDENED(KEY_CLASS::KEY_WIDENED_VALUE).sum();
#endif
  d = (System.nanoTime() - ns) / (double)n;
  if (j >= WARMUP_CYCLES) toStreamSum += d;
  System.out.print("Stream sum: " + format(d) + "ns ");
#endif

  // Don't bother with remove(KEY); that is just going to be a contains + remove random.
  /* We remove from end */
  ns = System.nanoTime();
  for(i = 0; i < nSequential;  i++) t.remove(t.size() - 1);
  d = (System.nanoTime() - ns) / (double)nSequential;
  if (j >= WARMUP_CYCLES) totRemEnd += d;
  System.out.print("RemEnd: " + format(d) + "ns ");

  /* We remove randomly */
  ns = System.nanoTime();
  for(i = 0; i < nRandom;  i++) t.remove(randIndexes[t.size() - 1]);
  d = (System.nanoTime() - ns) / (double)nRandom;
  if (j >= WARMUP_CYCLES) totRemRandom += d;
  System.out.print("RemRandom: " + format(d) + "ns ");

  System.out.println();
 }

 System.out.println();
 System.out.println("java.util AddToRandom: " + format(totAddRandom/(j-WARMUP_CYCLES)) + " AddToEnd:
" + format(totAddEnd/(j-WARMUP_CYCLES)) + "ns Yes: " + format(totYes/(j-WARMUP_CYCLES)) + "ns No:
" + format(totNo/(j-WARMUP_CYCLES)) + "ns Iter: " + format(totIter/(j-WARMUP_CYCLES)) + "ns
StreamSum: " + format(toStreamSum/(j-WARMUP_CYCLES)) + "ns RemEnd: " + format(totRemEnd/(j-
```

```
WARMUP_CYCLES)) + "ns RemRandom: " + format(totRemRandom/(j-WARMUP_CYCLES)) + "ns");

 System.out.println();

 totAddEnd = totAddRandom = totYes = totNo = totIter = totRemEnd = totRemRandom = toStreamSum = 0;
 }

 for(j = 0; j < NUM_RUNS; j++) {

  if ((j + 1) % GC_EVERY == 0) System.gc();

  m = new ARRAY_LIST(16);

  /* We add to m at a random position. */
  ns = System.nanoTime();
  for(i = 0; i < nRandom; i++) m.add(randIndexes[i], k[i]);
  d = (System.nanoTime() - ns) / (double)nRandom;
  if (j >= WARMUP_CYCLES) totAddRandom += d;
  System.out.print("AddToRandom: " + format(d) + "ns ");

  /* We add to m at end. */
  ns = System.nanoTime();
  for(; i < n;  i++) m.add(k[i]);
  d = (System.nanoTime() - ns) / (double)nSequential;
  if (j >= WARMUP_CYCLES) totAddEnd += d;
  System.out.print("AddToEnd: " + format(d) + "ns ");

  /* We check things in m. */
  ns = System.nanoTime();
  for(i = 0; i < nRandom;  i++) m.contains(k[i]);
  d = (System.nanoTime() - ns) / (double)nRandom;
  if (j >= WARMUP_CYCLES) totYes += d;
  System.out.print("Yes: " + format(d) + "ns ");

  /* We check for things likely not in m. */
  ns = System.nanoTime();
  for(i = 0; i < nRandom;  i++) m.contains(nk[i]);
  d = (System.nanoTime() - ns) / (double)nRandom;
  if (j >= WARMUP_CYCLES) totNo += d;
  System.out.print("No: " + format(d) + "ns ");

  /* We iterate on m. */
  ns = System.nanoTime();
  for(KEY_ITERATOR it = (KEY_ITERATOR)m.iterator(); it.hasNext(); it.NEXT_KEY());
  d = (System.nanoTime() - ns) / (double)n;
  if (j >= WARMUP_CYCLES) totIter += d;
  System.out.print("Iter: " + format(d) + "ns ");
```

```
#if KEYS_PRIMITIVE && ! KEY_CLASS_Boolean
   /* We sum on m. */
   ns = System.nanoTime();
   JDK_PRIMITIVE_STREAM mStream = m.KEY_WIDENED_STREAM_METHOD();
   if (PARALLEL_STREAMS) mStream = mStream.parallel();
   mStream.sum();
   d = (System.nanoTime() - ns) / (double)n;
   if (j >= WARMUP_CYCLES) toStreamSum += d;
   System.out.print("Stream sum: " + format(d) + "ns ");
#endif

   // Don't bother with rem(KEY); that is just going to be a contains + remove random.
   /* We remove from end */
   ns = System.nanoTime();
   for(i = 0; i < nSequential;  i++) m.REMOVE_KEY(m.size() - 1);
   d = (System.nanoTime() - ns) / (double)nSequential;
   if (j >= WARMUP_CYCLES) totRemEnd += d;
   System.out.print("RemEnd: " + format(d) + "ns ");

   /* We remove randomly */
   ns = System.nanoTime();
   for(i = 0; i < nRandom;  i++) m.REMOVE_KEY(randIndexes[m.size() - 1]);
   d = (System.nanoTime() - ns) / (double)nRandom;
   if (j >= WARMUP_CYCLES) totRemRandom += d;
   System.out.print("RemRandom: " + format(d) + "ns ");

   System.out.println();
  }

  System.out.println();
  System.out.println("fastutil AddToRandom: " + format(totAddRandom/(j-WARMUP_CYCLES)) + " AddToEnd: "
+ format(totAddEnd/(j-WARMUP_CYCLES)) +  "ns Yes: " + format(totYes/(j-WARMUP_CYCLES)) + "ns No: "
+ format(totNo/(j-WARMUP_CYCLES)) + "ns Iter: " + format(totIter/(j-WARMUP_CYCLES)) + "ns StreamSum:
" + format(toStreamSum/(j-WARMUP_CYCLES)) + "ns RemEnd: " + format(totRemEnd/(j-
WARMUP_CYCLES)) + "ns RemRandom: " + format(totRemRandom/(j-WARMUP_CYCLES)) + "ns");

  System.out.println();
 }


 private static void fatal(String msg) {
  throw new AssertionError(msg);
 }

 private static void ensure(boolean cond, String msg) {
  if (cond) return;
  fatal(msg);
 }
```

```
private static void ensure(boolean cond, java.util.function.Supplier<String> msgSupplier) {
 if (cond) return;
 fatal(msgSupplier.get());
}

private static Object[] k, v, nk;
private static KEY_TYPE kt[];
private static KEY_TYPE nkt[];
private static ARRAY_LIST topList;

protected static void testLists(LIST m, java.util.List t, int n, int level) throws Exception {
 long ms;
 Exception mThrowsIllegal, tThrowsIllegal, mThrowsOutOfBounds, tThrowsOutOfBounds;
 Object rt = null;
 KEY_TYPE rm = KEY_NULL;

 if (level > 4) return;


 /* Now we check that both sets agree on random keys. For m we use the polymorphic method. */

 for(int i = 0; i < n; i++) {
  int p = r.nextInt() % (n * 2);

  KEY_TYPE T = genKey();
  mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

  try {
   m.set(p, T);
  }
  catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
  try {
   t.set(p, KEY2OBJ(T));
  }
  catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

  ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "):
set() divergence at start in IndexOutOfBoundsException for index " + p + "  (" + mThrowsOutOfBounds + ", " +
tThrowsOutOfBounds + ")");
  if (mThrowsOutOfBounds == null) ensure(t.get(p).equals(KEY2OBJ(m.GET_KEY(p))), "Error (" + level + ", " +
seed + "): m and t differ after set() on position " + p + " (" + m.GET_KEY(p) + ", " + t.get(p) + ")");

  p = r.nextInt() % (n * 2);
  mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

  try {
   m.GET_KEY(p);
```

```
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
   try {
    t.get(p);
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): get() divergence at start in IndexOutOfBoundsException for index " + p + "  (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
   if (mThrowsOutOfBounds == null) ensure(t.get(p).equals(KEY2OBJ(m.GET_KEY(p))), "Error (" + level + ", " + seed + "): m and t differ aftre get() on position " + p + " (" + m.GET_KEY(p) + ", " + t.get(p) + ")");

  }

  /* Now we check that both sets agree on random keys. For m we use the standard method. */

  for(int i = 0; i < n; i++) {
   int p = r.nextInt() % (n * 2);

   mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

   try {
    m.get(p);
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
   try {
    t.get(p);
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): get() divergence at start in IndexOutOfBoundsException for index " + p + "  (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
   if (mThrowsOutOfBounds == null) ensure(t.get(p).equals(m.get(p)), "Error (" + level + ", " + seed + "): m and t differ at start on position " + p + " (" + m.get(p) + ", " + t.get(p) + ")");

  }

  /* Now we check that m and t are equal. */
  if (!m.equals(t) || ! t.equals(m)) System.err.println("m: " + m + " t: " + t);

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) at start");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) at start");



  /* Now we check that m actually holds that data. */
```

```
for(Iterator i=t.iterator(); i.hasNext();) {
 ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on t)");
}

/* Now we check that m actually holds that data, but iterating on m. */
for(Iterator i=m.listIterator(); i.hasNext();) {
 ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on m)");
}

/* Now we check that inquiries about random data give the same answer in m and t. For
   m we use the polymorphic method. */

for(int i=0; i<n;  i++) {
 KEY_TYPE T = genKey();
 ensure(m.contains(T) == t.contains(KEY2OBJ(T)), "Error (" + level + ", " + seed + "): divergence in content between t and m (polymorphic method)");
}

/* Again, we check that inquiries about random data give the same answer in m and t, but
   for m we use the standard method. */

for(int i=0; i<n;  i++) {
 KEY_TYPE T = genKey();
 ensure(m.contains(KEY2OBJ(T)) == t.contains(KEY2OBJ(T)), "Error (" + level + ", " + seed + "): divergence in content between t and m (polymorphic method)");
}

/* Now we add and remove random data in m and t, checking that the result is the same. */

for(int i=0; i<2*n;  i++) {
 KEY_TYPE T = genKey();

 try {
  m.add(T);
 }
 catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

 try {
  t.add(KEY2OBJ(T));
 }
 catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

 T = genKey();
 int p = r.nextInt() % (2 * n + 1);

 mThrowsOutOfBounds = tThrowsOutOfBounds  = null;
```

```
    try {
     m.add(p, T);
    }
    catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

    try {
     t.add(p, KEY2OBJ(T));
    }
    catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }


    ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): add() divergence in IndexOutOfBoundsException for index " + p + " for " + T + " (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");

    p = r.nextInt() % (2 * n + 1);

    mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

    try {
     rm = m.REMOVE_KEY(p);
    }
    catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

    try {
     rt = t.remove(p);
    }
    catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }


    ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): remove() divergence in IndexOutOfBoundsException for index " + p + " (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
    if (mThrowsOutOfBounds == null) ensure(rt.equals(KEY2OBJ(rm)), "Error (" + level + ", " + seed + "): divergence in remove() between t and m (" + rt + ", " + rm + ")");
   }

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after add/remove");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after add/remove");

#if KEYS_PRIMITIVE
  /* Now we sort the data and make sure the results is the same. */
  m.sort(null);
  t.sort(null);
  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after sort");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after sort");
#endif
```

/* Now we add random data in m and t using addAll on a collection, checking that the result is the same. */

```
for(int i=0; i<n;  i++) {
 int p = r.nextInt() % (2 * n + 1);
 Collection m1 = new java.util.ArrayList();
 int s = r.nextInt(n / 2 + 1);
 for(int j = 0; j < s; j++) m1.add(KEY2OBJ(genKey()));

 mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

 try {
  m.addAll(p, m1);
 }
 catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

 try {
  t.addAll(p, m1);
 }
 catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

 ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): addAll() divergence in IndexOutOfBoundsException for index " + p + " for " + m1 + " (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");

 ensure(m.equals(t), () -> "Error (" + level + ", " + seed + m + t + "): ! m.equals(t) after addAll");
 ensure(t.equals(m), () -> "Error (" + level + ", " + seed + m + t + "): ! t.equals(m) after addAll");
}

if (m.size() > n) {
 m.size(n);
 while(t.size() != n) t.remove(t.size() -1);
}
```

/* Now we add random data in m and t using addAll on a type-specific collection, checking that the result is the same. */

```
for(int i=0; i<n;  i++) {
 int p = r.nextInt() % (2 * n + 1);
 COLLECTION m1 = new ARRAY_LIST();
 Collection t1 = new java.util.ArrayList();
 int s = r.nextInt(n / 2 + 1);
 for(int j = 0; j < s; j++) {
  KEY_TYPE x = genKey();
  m1.add(x);
  t1.add(KEY2OBJ(x));
 }
```

```
mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

try {
 m.addAll(p, m1);
}
catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

try {
 t.addAll(p, t1);
}
catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "):
polymorphic addAll() divergence in IndexOutOfBoundsException for index " + p + " for " + m1 + " (" +
mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");

ensure(m.equals(t), () -> "Error (" + level + ", " + seed + m + t + "): ! m.equals(t) after polymorphic addAll");
ensure(t.equals(m), () -> "Error (" + level + ", " + seed + m + t + "): ! t.equals(m) after polymorphic addAll");
}

if (m.size() > n) {
m.size(n);
while(t.size() != n) t.remove(t.size() -1);
}

/* Now we add random data in m and t using addAll on a list, checking that the result is the same. */

for(int i=0; i<n;  i++) {
int p = r.nextInt() % (2 * n + 1);
LIST m1 = new ARRAY_LIST();
Collection t1 = new java.util.ArrayList();
int s = r.nextInt(n / 2 + 1);
for(int j = 0; j < s; j++) {
 KEY_TYPE x = genKey();
 m1.add(x);
 t1.add(KEY2OBJ(x));
}

mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

try {
 m.addAll(p, m1);
}
catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

try {
 t.addAll(p, t1);
}
```

```
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): list
addAll() divergence in IndexOutOfBoundsException for index " + p + " for " + m1 + " (" + mThrowsOutOfBounds
+ ", " + tThrowsOutOfBounds + ")");

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after list addAll");
   ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after list addAll");
  }

  /* Now we add random data in m and t using addElements, checking that the result is the same. */

  for(int i=0; i<n;  i++) {
   int p = r.nextInt() % (2 * n + 1);
   Collection t1 = new java.util.ArrayList();
   int s = r.nextInt(n / 2 + 1);
   KEY_TYPE a[] = new KEY_TYPE [s];
   for(int j = 0; j < s; j++) {
    KEY_TYPE x = genKey();
    t1.add(KEY2OBJ(x));
    a[j] = x;
   }

   mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

   try {
    m.addElements(p, a);
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

   try {
    t.addAll(p, t1);
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): list
addElements() divergence in IndexOutOfBoundsException for index " + p + " for " + t1 + " (" +
mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after list addElements");
   ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after list addElements");
  }

  if (m.size() > n) {
   m.size(n);
   while(t.size() != n) t.remove(t.size() -1);
  }
```

```
/* Now we check that m actually holds the same data. */

for(Iterator i=t.iterator(); i.hasNext();) {
 ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after removal (iterating on t)");
}

/* Now we check that m actually holds that data, but iterating on m. */

for(Iterator i=m.listIterator(); i.hasNext();) {
 ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after removal (iterating on m)");
}

/* Now we check that both sets agree on random keys. For m we use the standard method. */

for(int i = 0; i < n; i++) {
 int p = r.nextInt() % (n * 2);

 mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

 try {
  m.get(p);
 }
 catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
 try {
  t.get(p);
 }
 catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

 ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): get() divergence in IndexOutOfBoundsException for index " + p + "  (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
 if (mThrowsOutOfBounds == null) ensure(t.get(p).equals(m.get(p)), "Error (" + level + ", " + seed + "): m and t differ on position " + p + " (" + m.get(p) + ", " + t.get(p) +")");

}

/* Now we inquiry about the content with indexOf()/lastIndexOf(). */

for(int i=0; i<10*n;  i++) {
 KEY_TYPE T = genKey();
 ensure(m.indexOf(KEY2OBJ(T)) == t.indexOf(KEY2OBJ(T)),
   "Error (" + level + ", " + seed + "): indexOf() divergence for " + T + "  (" + m.indexOf(KEY2OBJ(T)) + ", " + t.indexOf(KEY2OBJ(T)) + ")");
 ensure(m.lastIndexOf(KEY2OBJ(T)) == t.lastIndexOf(KEY2OBJ(T)),
   "Error (" + level + ", " + seed + "): lastIndexOf() divergence for " + T + "  (" + m.lastIndexOf(KEY2OBJ(T)) + ", " + t.lastIndexOf(KEY2OBJ(T)) + ")");
```

```
   ensure(m.indexOf(T) == t.indexOf(KEY2OBJ(T)),
     "Error (" + level + ", " + seed + "): polymorphic indexOf() divergence for " + T + "  (" + m.indexOf(T) + ", " +
t.indexOf(KEY2OBJ(T)) + ")");
   ensure(m.lastIndexOf(T) == t.lastIndexOf(KEY2OBJ(T)),
     "Error (" + level + ", " + seed + "): polymorphic lastIndexOf() divergence for " + T + "  (" + m.lastIndexOf(T) + ", "
+ t.lastIndexOf(KEY2OBJ(T)) + ")");
  }

  /* Now we check cloning. */

  if (level == 0) {
   ensure(m.equals(((ARRAY_LIST)m).clone()), "Error (" + level + ", " + seed + "): m does not equal m.clone()");
   ensure(((ARRAY_LIST)m).clone().equals(m), "Error (" + level + ", " + seed + "): m.clone() does not equal m");
  }

  /* Now we play with constructors. */
  ensure(m.equals(new ARRAY_LIST((Collection)m)), "Error (" + level + ", " + seed + "): m does not equal new
(Collection m)");
  ensure((new ARRAY_LIST((Collection)m)).equals(m), "Error (" + level + ", " + seed + "): new (Collection m)does
not equal m");
  ensure(m.equals(new ARRAY_LIST(new java.util.ArrayList(m))), "Error (" + level + ", " + seed + "): m does not
equal new (Collection m)");
  ensure((new ARRAY_LIST(new java.util.ArrayList(m)).equals(m)), "Error (" + level + ", " + seed + "): new
(Collection m)does not equal m");
  ensure(m.equals(new ARRAY_LIST((COLLECTION)m)), "Error (" + level + ", " + seed + "): m does not equal
new (type-specific Collection m)");
  ensure((new ARRAY_LIST((COLLECTION)m)).equals(m), "Error (" + level + ", " + seed + "): new (type-specific
Collection m) does not equal m");
  ensure(m.equals(new ARRAY_LIST((LIST)m)), "Error (" + level + ", " + seed + "): m does not equal new (type-
specific List m)");
  ensure((new ARRAY_LIST((LIST)m)).equals(m), "Error (" + level + ", " + seed + "): new (type-specific List m)
does not equal m");
  ensure(m.equals(new ARRAY_LIST(m.listIterator())), "Error (" + level + ", " + seed + "): m does not equal new
(m.listIterator())");
  ensure((new ARRAY_LIST(m.listIterator())).equals(m), "Error (" + level + ", " + seed + "): new (m.listIterator())
does not equal m");
  ensure(m.equals(new ARRAY_LIST(m.iterator())), "Error (" + level + ", " + seed + "): m does not equal new
(m.type_specific_iterator())");
  ensure((new ARRAY_LIST(m.iterator())).equals(m), "Error (" + level + ", " + seed + "): new
(m.type_specific_iterator()) does not equal m");

  /* Now we play with conversion to array, wrapping and copying. */
  ensure(m.equals(new ARRAY_LIST(m.TO_KEY_ARRAY())), "Error (" + level + ", " + seed + "): m does not
equal new (toArray(m))");
  ensure((new ARRAY_LIST(m.TO_KEY_ARRAY())).equals(m), "Error (" + level + ", " + seed + "): new
(toArray(m)) does not equal m");
  ensure(m.equals(wrap(m.TO_KEY_ARRAY())), "Error (" + level + ", " + seed + "): m does not equal wrap
(toArray(m))");
```

```
  ensure((wrap(m.TO_KEY_ARRAY())).equals(m), "Error (" + level + ", " + seed + "): wrap (toArray(m)) does not
equal m");


  int h = m.hashCode();

  /* Now we save and read m. */

  LIST m2 = null;

  {
   java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
   java.io.OutputStream os = new java.io.FileOutputStream(ff);
   java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

   oos.writeObject(m);
   oos.close();

   java.io.InputStream is = new java.io.FileInputStream(ff);
   java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

   m2 = (LIST)ois.readObject();
   ois.close();
   ff.delete();
  }

#if ! KEYS_USE_REFERENCE_EQUALITY
  ensure(m2.hashCode() == h, "Error (" + level + ", " + seed + "): hashCode() changed after save/read");

  /* Now we check that m2 actually holds that data. */

  ensure(m2.equals(t), "Error (" + level + ", " + seed + "): ! m2.equals(t) after save/read");
  ensure(t.equals(m2), "Error (" + level + ", " + seed + "): ! t.equals(m2) after save/read");
  /* Now we take out of m everything, and check that it is empty. */

  for(Iterator i=t.iterator(); i.hasNext();) m2.remove(i.next());

  ensure(m2.isEmpty(), "Error (" + level + ", " + seed + "): m2 is not empty (as it should be)");
#endif

  /* Now we play with iterators. */

  {
   KEY_LIST_ITERATOR i;
   java.util.ListIterator j;
   Object J;
   i = m.listIterator();
   j = t.listIterator();
```

```
for(int k = 0; k < 2*n; k++) {
 ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext()");
 ensure(i.hasPrevious() == j.hasPrevious(), "Error (" + level + ", " + seed + "): divergence in hasPrevious()");

 if (r.nextFloat() < .8 && i.hasNext()) {
  ensure(i.next().equals(J = j.next()), "Error (" + level + ", " + seed + "): divergence in next()");

  if (r.nextFloat() < 0.2) {
   i.remove();
   j.remove();
  }
  else if (r.nextFloat() < 0.2) {
   KEY_TYPE T = genKey();
   i.set(T);
   j.set(KEY2OBJ(T));
  }
  else if (r.nextFloat() < 0.2) {
   KEY_TYPE T = genKey();
   i.add(T);
   j.add(KEY2OBJ(T));
  }
 }
 else if (r.nextFloat() < .2 && i.hasPrevious()) {
  ensure(i.previous().equals(J = j.previous()), "Error (" + level + ", " + seed + "): divergence in previous()");

  if (r.nextFloat() < 0.2) {
   i.remove();
   j.remove();
  }
  else if (r.nextFloat() < 0.2) {
   KEY_TYPE T = genKey();
   i.set(T);
   j.set(KEY2OBJ(T));
  }
  else if (r.nextFloat() < 0.2) {
   KEY_TYPE T = genKey();
   i.add(T);
   j.add(KEY2OBJ(T));
  }
 }

 ensure(i.nextIndex() == j.nextIndex(), "Error (" + level + ", " + seed + "): divergence in nextIndex()");
 ensure(i.previousIndex() == j.previousIndex(), "Error (" + level + ", " + seed + "): divergence in previousIndex()");

}

}
```

```
  /* Now we play with spliterators.
   *
   * Or rather we would, except comparing results of spliterators directly is a bit painful.
   * However, there is an easy workaround; use streams, which are built on Spliterators.
   */
  {
#if KEYS_REFERENCE
   java.util.stream.Stream<KEY_TYPE> i = m.stream();
   java.util.stream.Stream<KEY_TYPE> j = t.stream();
#elif KEY_CLASS_Boolean
   java.util.stream.Stream<KEY_CLASS> i = m.stream();
   java.util.stream.Stream<KEY_CLASS> j = t.stream();
#else
   JDK_PRIMITIVE_STREAM i = m.KEY_WIDENED_STREAM_METHOD();
   java.util.stream.Stream<KEY_CLASS> j = t.stream();
#endif

   if (PARALLEL_STREAMS) {
    i = i.parallel();
    j = j.parallel();
   }

#if KEYS_REFERENCE || KEY_CLASS_Boolean
   Object[] iArray = i.toArray();
   Object[] jArray = j.toArray();
#elif KEY_CLASS_Character
   KEY_TYPE_WIDENED[] iArray = i.toArray();
   KEY_TYPE_WIDENED[] jArray = j.MAP_TO_KEY_WIDENED(c -> (int)c.charValue()).toArray();
#else
   KEY_TYPE_WIDENED[] iArray = i.toArray();
   KEY_TYPE_WIDENED[] jArray =
j.MAP_TO_KEY_WIDENED(Number::KEY_WIDENED_VALUE).toArray();
#endif
   ensure(java.util.Arrays.equals(iArray, jArray), "Error (" + level + ", " + seed + "): divergence in toArray() from
streams (" + java.util.Arrays.toString(iArray) + " != " + java.util.Arrays.toString(jArray) + ")");
  }

  {
   Object previous = null;
   Object I, J;
   int from = r.nextInt(m.size() +1);
   KEY_LIST_ITERATOR i;
   java.util.ListIterator j;
   i = m.listIterator(from);
   j = t.listIterator(from);

   for(int k = 0; k < 2*n; k++) {
```

```
    ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext() (iterator with starting point " + from + ")");
    ensure(i.hasPrevious() == j.hasPrevious() , "Error (" + level + ", " + seed + "): divergence in hasPrevious() (iterator with starting point " + from + ")");

    if (r.nextFloat() < .8 && i.hasNext()) {
     ensure((I = i.next()).equals(J = j.next()), "Error (" + level + ", " + seed + "): divergence in next() (" + I + ", " + J + ", iterator with starting point " + from + ")");
     //System.err.println("Done next " + I + " " + J + "  " + badPrevious);

     if (r.nextFloat() < 0.2) {
      //System.err.println("Removing in next");
      i.remove();
      j.remove();
     }
     else if (r.nextFloat() < 0.2) {
      KEY_TYPE T = genKey();
      i.set(T);
      j.set(KEY2OBJ(T));
     }
     else if (r.nextFloat() < 0.2) {
      KEY_TYPE T = genKey();
      i.add(T);
      j.add(KEY2OBJ(T));
     }
    }
    else if (r.nextFloat() < .2 && i.hasPrevious()) {
     ensure((I = i.previous()).equals(J = j.previous()), "Error (" + level + ", " + seed + "): divergence in previous() (" + I + ", " + J + ", iterator with starting point " + from + ")");

     if (r.nextFloat() < 0.2) {
      //System.err.println("Removing in prev");
      i.remove();
      j.remove();
     }
     else if (r.nextFloat() < 0.2) {
      KEY_TYPE T = genKey();
      i.set(T);
      j.set(KEY2OBJ(T));
     }
     else if (r.nextFloat() < 0.2) {
      KEY_TYPE T = genKey();
      i.add(T);
      j.add(KEY2OBJ(T));
     }
    }
   }
```

```
  }

  /* Now we check that m actually holds that data. */

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after iteration");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after iteration");

  /* Now we select a pair of keys and create a subset. */

  if (! m.isEmpty()) {
   int start = r.nextInt(m.size());
   int end = start + r.nextInt(m.size() - start);
   //System.err.println("Checking subList from " + start + " to " + end + " (level=" + (level+1) + ")...");
   testLists(m.subList(start, end), t.subList(start, end), n, level + 1);

   ensure(m.equals(t), () -> "Error (" + level + ", " + seed + m + t + "): ! m.equals(t) after subList");
   ensure(t.equals(m), () -> "Error (" + level + ", " + seed + "): ! t.equals(m) after subList");

  }

  m.clear();
  t.clear();
  ensure(m.isEmpty(), "Error (" + level + ", " + seed + "): m is not empty after clear()");
 }


 protected static void runTest(int n) throws Exception {
  ARRAY_LIST m = new ARRAY_LIST();
  java.util.ArrayList t = new java.util.ArrayList();
  topList = m;
  k = new Object[n];
  nk = new Object[n];
  kt = new KEY_TYPE[n];
  nkt = new KEY_TYPE[n];

  for(int i = 0; i < n; i++) {
#if KEYS_REFERENCE
   k[i] = kt[i] = genKey();
   nk[i] = nkt[i] = genKey();
#else
   k[i] = new KEY_CLASS(kt[i] = genKey());
   nk[i] = new KEY_CLASS(nkt[i] = genKey());
#endif
  }

  /* We add pairs to t. */
  for(int i = 0; i < n;  i++) t.add(k[i]);
```

```
 /* We add to m the same data */
 m.addAll(t);

 testLists(m, t, n, 0);

 System.out.println("Test OK");
 return;
}


public static void main(String args[]) throws Exception {
 int n  = Integer.parseInt(args[1]);
 if (args.length > 2) r = new java.util.Random(seed = Long.parseLong(args[2]));


 try {
  if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, "speedComp".equals(args[0]));
  else if ("test".equals(args[0])) runTest(n);
 } catch(Throwable e) {
  e.printStackTrace(System.err);
  System.err.println("seed: " + seed);
  throw e;
 }
}

#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/ArrayList.drv
No license file was found, but licenses were detected in source scan.

```
package PACKAGE;

#if ! KEYS_REFERENCE
import it.unimi.dsi.fastutil.objects.AbstractObjectSortedSet;
import it.unimi.dsi.fastutil.objects.ObjectBidirectionalIterator;
import it.unimi.dsi.fastutil.objects.ObjectListIterator;
import it.unimi.dsi.fastutil.objects.ObjectSortedSet;
#endif

#if KEY_INDEX != VALUE_INDEX && !(KEYS_REFERENCE && VALUES_REFERENCE)
import VALUE_PACKAGE.VALUE_COLLECTION;
import VALUE_PACKAGE.VALUE_ABSTRACT_COLLECTION;
import VALUE_PACKAGE.VALUE_ITERATOR;
#if VALUES_PRIMITIVE
import VALUE_PACKAGE.VALUE_LIST_ITERATOR;
#endif
#endif

import java.util.Comparator;
import java.util.Iterator;
import java.util.Map;
import java.util.SortedMap;
import java.util.NoSuchElementException;


/** A type-specific AVL tree map with a fast, small-footprint implementation.
*
* <p>The iterators provided by the views of this class are type-specific {@linkplain
* it.unimi.dsi.fastutil.BidirectionalIterator bidirectional iterators}.
* Moreover, the iterator returned by {@code iterator()} can be safely cast
* to a type-specific {@linkplain java.util.ListIterator list iterator}.
*/

public class AVL_TREE_MAP KEY_VALUE_GENERIC extends ABSTRACT_SORTED_MAP
KEY_VALUE_GENERIC implements java.io.Serializable, Cloneable {

 /** A reference to the root entry. */
 protected transient Entry KEY_VALUE_GENERIC tree;

 /** Number of entries in this map. */
 protected int count;

 /** The first key in this map. */
 protected transient Entry KEY_VALUE_GENERIC firstEntry;

 /** The last key in this map. */
 protected transient Entry KEY_VALUE_GENERIC lastEntry;
```

```
/** Cached set of entries. */
protected transient ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> entries;

/** Cached set of keys. */
protected transient SORTED_SET KEY_GENERIC keys;

/** Cached collection of values. */
protected transient VALUE_COLLECTION VALUE_GENERIC values;

/** The value of this variable remembers, after a {@code put()}
 * or a {@code remove()}, whether the <em>domain</em> of the map
 * has been modified. */
protected transient boolean modified;

/** This map's comparator, as provided in the constructor. */
protected Comparator<? super KEY_GENERIC_CLASS> storedComparator;

/** This map's actual comparator; it may differ from {@link #storedComparator} because it is
 always a type-specific comparator, so it could be derived from the former by wrapping. */
protected transient KEY_COMPARATOR KEY_SUPER_GENERIC actualComparator;

private static final long serialVersionUID = -7046029254386353129L;

{
 allocatePaths();
}

/** Creates a new empty tree map.
 */

public AVL_TREE_MAP() {
 tree = null;
 count = 0;
}

/** Generates the comparator that will be actually used.
 *
 * <p>When a given {@link Comparator} is specified and stored in {@link
 * #storedComparator}, we must check whether it is type-specific.  If it is
 * so, we can used directly, and we store it in {@link #actualComparator}. Otherwise,
 * we adapt it using a helper static method.
 */
private void setActualComparator() {
#if KEY_CLASS_Object
 actualComparator = storedComparator;
#else
 actualComparator = COMPARATORS.AS_KEY_COMPARATOR(storedComparator);
```

```
#endif
 }


 /** Creates a new empty tree map with the given comparator.
  *
  * @param c a (possibly type-specific) comparator.
  */

 public AVL_TREE_MAP(final Comparator<? super KEY_GENERIC_CLASS> c) {
  this();
  storedComparator = c;
  setActualComparator();
 }


 /** Creates a new tree map copying a given map.
  *
  * @param m a {@link Map} to be copied into the new tree map.
  */

 public AVL_TREE_MAP(final Map<? extends KEY_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS>
m) {
  this();
  putAll(m);
 }

 /** Creates a new tree map copying a given sorted map (and its {@link Comparator}).
  *
  * @param m a {@link SortedMap} to be copied into the new tree map.
  */

 public AVL_TREE_MAP(final SortedMap<KEY_GENERIC_CLASS,VALUE_GENERIC_CLASS> m) {
  this(m.comparator());
  putAll(m);
 }

 /** Creates a new tree map copying a given map.
  *
  * @param m a type-specific map to be copied into the new tree map.
  */

 public AVL_TREE_MAP(final MAP KEY_VALUE_EXTENDS_GENERIC m) {
  this();
  putAll(m);
 }

 /** Creates a new tree map copying a given sorted map (and its {@link Comparator}).
```

```
 *
 * @param m a type-specific sorted map to be copied into the new tree map.
 */

public AVL_TREE_MAP(final SORTED_MAP KEY_VALUE_GENERIC m) {
 this(m.comparator());
 putAll(m);
}

/** Creates a new tree map using the elements of two parallel arrays and the given comparator.
 *
 * @param k the array of keys of the new tree map.
 * @param v the array of corresponding values in the new tree map.
 * @param c a (possibly type-specific) comparator.
 * @throws IllegalArgumentException if {@code k} and {@code v} have different lengths.
 */

public AVL_TREE_MAP(final KEY_GENERIC_TYPE[] k, final VALUE_GENERIC_TYPE v[], final
Comparator<? super KEY_GENERIC_CLASS> c) {
 this(c);
 if (k.length != v.length) throw new IllegalArgumentException("The key array and the value array have different
lengths (" + k.length + " and " + v.length + ")");
 for(int i = 0; i < k.length; i++) this.put(k[i], v[i]);
}

/** Creates a new tree map using the elements of two parallel arrays.
 *
 * @param k the array of keys of the new tree map.
 * @param v the array of corresponding values in the new tree map.
 * @throws IllegalArgumentException if {@code k} and {@code v} have different lengths.
 */

public AVL_TREE_MAP(final KEY_GENERIC_TYPE[] k, final VALUE_GENERIC_TYPE v[]) {
 this(k, v, null);
}

/*
 * The following methods implements some basic building blocks used by
 * all accessors.  They are (and should be maintained) identical to those used in AVLTreeSet.drv.
 *
 * The put()/remove() code is derived from Ben Pfaff's GNU libavl
 * (https://adtinfo.org/). If you want to understand what's
 * going on, you should have a look at the literate code contained therein
 * first.
 */


/** Compares two keys in the right way.
```

```
 *
 * <p>This method uses the {@link #actualComparator} if it is non-{@code null}.
 * Otherwise, it resorts to primitive type comparisons or to {@link Comparable#compareTo(Object) compareTo()}.
 *
 * @param k1 the first key.
 * @param k2 the second key.
 * @return a number smaller than, equal to or greater than 0, as usual
 * (i.e., when k1 &lt; k2, k1 = k2 or k1 &gt; k2, respectively).
 */

SUPPRESS_WARNINGS_KEY_UNCHECKED
final int compare(final KEY_GENERIC_TYPE k1, final KEY_GENERIC_TYPE k2) {
 return actualComparator == null ? KEY_CMP(k1, k2) : actualComparator.compare(k1, k2);
}



/** Returns the entry corresponding to the given key, if it is in the tree; {@code null}, otherwise.
 *
 * @param k the key to search for.
 * @return the corresponding entry, or {@code null} if no entry with the given key exists.
 */

final Entry KEY_VALUE_GENERIC findKey(final KEY_GENERIC_TYPE k) {
 Entry KEY_VALUE_GENERIC e = tree;
 int cmp;

 while (e != null && (cmp = compare(k, e.key)) != 0) e = cmp < 0 ? e.left() : e.right();

 return e;
}

/** Locates a key.
 *
 * @param k a key.
 * @return the last entry on a search for the given key; this will be
 * the given key, if it present; otherwise, it will be either the smallest greater key or the greatest smaller key.
 */

final Entry KEY_VALUE_GENERIC locateKey(final KEY_GENERIC_TYPE k) {
 Entry KEY_VALUE_GENERIC e = tree, last = tree;
 int cmp = 0;

 while (e != null && (cmp = compare(k, e.key)) != 0) {
  last = e;
  e = cmp < 0 ? e.left() : e.right();
 }
```

```
 return cmp == 0 ? e : last;
}

/** This vector remembers the directions followed during
 * the current insertion. It suffices for about 2<sup>32</sup> entries. */
private transient boolean dirPath[];

private void allocatePaths() {
 dirPath = new boolean[48];
}

#if VALUES_PRIMITIVE && !VALUE_CLASS_Boolean
/** Adds an increment to value currently associated with a key.
*
* <p>Note that this method respects the {@linkplain #defaultReturnValue() default return value} semantics: when
* called with a key that does not currently appears in the map, the key
* will be associated with the default return value plus
* the given increment.
*
* @param k the key.
* @param incr the increment.
* @return the old value, or the {@linkplain #defaultReturnValue() default return value} if no value was present for
the given key.
*/
public VALUE_GENERIC_TYPE addTo(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE incr) {
 Entry KEY_VALUE_GENERIC e = add(k);
 final VALUE_GENERIC_TYPE oldValue = e.value;
 e.value += incr;
 return oldValue;
}
#endif

@Override
public VALUE_GENERIC_TYPE put(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v) {
 Entry KEY_VALUE_GENERIC e = add(k);
 final VALUE_GENERIC_TYPE oldValue = e.value;
 e.value = v;
 return oldValue;
}

/** Returns a node with key k in the balanced tree, creating one with defRetValue if necessary.
*
* @param k the key
* @return a node with key k. If a node with key k already exists, then that node is returned,
*     otherwise a new node with defRetValue is created ensuring that the tree is balanced
*    after creation of the node.
*/
private Entry KEY_VALUE_GENERIC add(final KEY_GENERIC_TYPE k) {
```

```
REQUIRE_KEY_NON_NULL(k)
/* After execution of this method, modified is true iff a new entry has been inserted. */
modified = false;

Entry KEY_VALUE_GENERIC e = null;
if (tree == null) { // The case of the empty tree is treated separately.
 count++;
 e = tree = lastEntry = firstEntry = new Entry KEY_VALUE_GENERIC_DIAMOND(k, defRetValue);
 modified = true;
}
else {
 Entry KEY_VALUE_GENERIC p = tree, q = null, y = tree, z = null, w = null;
 int cmp, i = 0;

 while(true) {
  if ((cmp = compare(k, p.key)) == 0) {
   return p;
  }

  if (p.balance() != 0) {
   i = 0;
   z = q;
   y = p;
  }

  if (dirPath[i++] = cmp > 0) {
   if (p.succ()) {
    count++;
    e = new Entry KEY_VALUE_GENERIC_DIAMOND(k, defRetValue);

    modified = true;
    if (p.right == null) lastEntry = e;

    e.left = p;
    e.right = p.right;

    p.right(e);

    break;
   }

   q = p;
   p = p.right;
  }
  else {
   if (p.pred()) {
    count++;
    e = new Entry KEY_VALUE_GENERIC_DIAMOND(k, defRetValue);
```

```
    modified = true;
    if (p.left == null) firstEntry = e;

    e.right = p;
    e.left = p.left;

    p.left(e);

    break;
   }

  q = p;
  p = p.left;
 }
}

p = y;
i = 0;

while(p != e) {
 if (dirPath[i]) p.incBalance();
 else p.decBalance();

 p = dirPath[i++] ? p.right : p.left;
}

if (y.balance() == -2) {
 Entry KEY_VALUE_GENERIC x = y.left;

 if (x.balance() == -1) {
  w = x;
  if (x.succ()) {
   x.succ(false);
   y.pred(x);
  }
  else y.left = x.right;

  x.right = y;
  x.balance(0);
  y.balance(0);
 }
 else {
  assert x.balance() == 1;

  w = x.right;
  x.right = w.left;
  w.left = x;
```

```
  y.left = w.right;
  w.right = y;
  if (w.balance() == -1) {
   x.balance(0);
   y.balance(1);
  }
  else if (w.balance() == 0) {
   x.balance(0);
   y.balance(0);
  }
  else {
   x.balance(-1);
   y.balance(0);
  }
  w.balance(0);


  if (w.pred()) {
   x.succ(w);
   w.pred(false);
  }
  if (w.succ()) {
   y.pred(w);
   w.succ(false);
  }

 }
}
else if (y.balance() == +2) {
 Entry KEY_VALUE_GENERIC x = y.right;

 if (x.balance() == 1) {
  w = x;
  if (x.pred()) {
   x.pred(false);
   y.succ(x);
  }
  else y.right = x.left;

  x.left = y;
  x.balance(0);
  y.balance(0);
 }
 else {
  assert x.balance() == -1;

  w = x.left;
  x.left = w.right;
```

```
    w.right = x;
    y.right = w.left;
    w.left = y;
    if (w.balance() == 1) {
     x.balance(0);
     y.balance(-1);
    }
    else if (w.balance() == 0) {
     x.balance(0);
     y.balance(0);
    }
    else {
     x.balance(1);
     y.balance(0);
    }
    w.balance(0);


    if (w.pred()) {
     y.succ(w);
     w.pred(false);
    }
    if (w.succ()) {
     x.pred(w);
     w.succ(false);
    }

   }
  }
  else return e;

  if (z == null) tree = w;
  else {
   if (z.left == y) z.left = w;
   else z.right = w;
  }
 }

 return e;
}

/** Finds the parent of an entry.
 *
 * @param e a node of the tree.
 * @return the parent of the given node, or {@code null} for the root.
 */

private Entry KEY_VALUE_GENERIC parent(final Entry KEY_VALUE_GENERIC e) {
```

```
 if (e == tree) return null;

 Entry KEY_VALUE_GENERIC x, y, p;
 x = y = e;

 while(true) {
  if (y.succ()) {
   p = y.right;
   if (p == null || p.left != e) {
    while(! x.pred()) x = x.left;
    p = x.left;
   }
   return p;
  }
  else if (x.pred()) {
   p = x.left;
   if (p == null || p.right != e) {
    while(! y.succ()) y = y.right;
    p = y.right;
   }
   return p;
  }

  x = x.left;
  y = y.right;
 }
}


/* After execution of this method, {@link #modified} is true iff an entry
has been deleted. */

SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public VALUE_GENERIC_TYPE REMOVE_VALUE(final KEY_TYPE k) {
 modified = false;

 if (tree == null) return defRetValue;

 int cmp;
 Entry KEY_VALUE_GENERIC p = tree, q = null;
 boolean dir = false;
 final KEY_GENERIC_TYPE kk = KEY_GENERIC_CAST k;

 while(true) {
  if ((cmp = compare(kk, p.key)) == 0) break;
  else if (dir = cmp > 0) {
   q = p;
```

```
  if ((p = p.right()) == null) return defRetValue;
 }
 else {
  q = p;
  if ((p = p.left()) == null) return defRetValue;
 }
}

if (p.left == null) firstEntry = p.next();
if (p.right == null) lastEntry = p.prev();

if (p.succ()) {
 if (p.pred()) {
  if (q != null) {
   if (dir) q.succ(p.right);
   else q.pred(p.left);
  }
  else tree = dir ? p.right : p.left;
 }
 else {
  p.prev().right = p.right;

  if (q != null) {
   if (dir) q.right = p.left;
   else q.left = p.left;
  }
  else tree = p.left;
 }
}
else {
 Entry KEY_VALUE_GENERIC r = p.right;

 if (r.pred()) {
  r.left = p.left;
  r.pred(p.pred());
  if (! r.pred()) r.prev().right = r;
  if (q != null) {
   if (dir) q.right = r;
   else q.left = r;
  }
  else tree = r;

  r.balance(p.balance());
  q = r;
  dir = true;

 }
 else {
```

```
  Entry KEY_VALUE_GENERIC s;

  while(true) {
   s = r.left;
   if (s.pred()) break;
   r = s;
  }

  if (s.succ()) r.pred(s);
  else r.left = s.right;

  s.left = p.left;

  if (! p.pred()) {
   p.prev().right = s;
   s.pred(false);
  }

  s.right = p.right;
  s.succ(false);

  if (q != null) {
   if (dir) q.right = s;
   else q.left = s;
  }
  else tree = s;

  s.balance(p.balance());
  q = r;
  dir = false;
 }
}

Entry KEY_VALUE_GENERIC y;

while(q != null) {
 y = q;
 q = parent(y);

 if (! dir) {
  dir = q != null && q.left != y;
  y.incBalance();

  if (y.balance() == 1) break;
  else if (y.balance() == 2) {

   Entry KEY_VALUE_GENERIC x = y.right;
   assert x != null;
```

```
if (x.balance() == -1) {
 Entry KEY_VALUE_GENERIC w;

 assert x.balance() == -1;

 w = x.left;
 x.left = w.right;
 w.right = x;
 y.right = w.left;
 w.left = y;

 if (w.balance() == 1) {
  x.balance(0);
  y.balance(-1);
 }
 else if (w.balance() == 0) {
  x.balance(0);
  y.balance(0);
 }
 else {
  assert w.balance() == -1;

  x.balance(1);
  y.balance(0);
 }

 w.balance(0);

 if (w.pred()) {
  y.succ(w);
  w.pred(false);
 }
 if (w.succ()) {
  x.pred(w);
  w.succ(false);
 }

 if (q != null) {
  if (dir) q.right = w;
  else q.left = w;
 }
 else tree = w;
}
else {
 if (q != null) {
  if (dir) q.right = x;
  else q.left = x;
```

```
     }
     else tree = x;

     if (x.balance() == 0) {
      y.right = x.left;
      x.left = y;
      x.balance(-1);
      y.balance(+1);
      break;
     }
     assert x.balance() == 1;

     if (x.pred()) {
      y.succ(true);
      x.pred(false);
     }
     else y.right = x.left;

     x.left = y;
     y.balance(0);
     x.balance(0);
    }
   }
  }
  else {
   dir = q != null && q.left != y;
   y.decBalance();

   if (y.balance() == -1) break;
   else if (y.balance() == -2) {

    Entry KEY_VALUE_GENERIC x = y.left;
    assert x != null;

    if (x.balance() == 1) {
     Entry KEY_VALUE_GENERIC w;

     assert x.balance() == 1;

     w = x.right;
     x.right = w.left;
     w.left = x;
     y.left = w.right;
     w.right = y;

     if (w.balance() == -1) {
      x.balance(0);
      y.balance(1);
```

```
}
else if (w.balance() == 0) {
 x.balance(0);
 y.balance(0);
}
else {
 assert w.balance() == 1;

 x.balance(-1);
 y.balance(0);
}

w.balance(0);

if (w.pred()) {
 x.succ(w);
 w.pred(false);
}
if (w.succ()) {
 y.pred(w);
 w.succ(false);
}

if (q != null) {
 if (dir) q.right = w;
 else q.left = w;
}
else tree = w;
}
else {
if (q != null) {
 if (dir) q.right = x;
 else q.left = x;
}
else tree = x;

if (x.balance() == 0) {
 y.left = x.right;
 x.right = y;
 x.balance(+1);
 y.balance(-1);
 break;
}
assert x.balance() == -1;

if (x.succ()) {
 y.pred(true);
 x.succ(false);
```

```
    }
    else y.left = x.right;

    x.right = y;
    y.balance(0);
    x.balance(0);
   }
  }
 }
}

modified = true;
count--;
return p.value;
}


@Override
public boolean containsValue(final VALUE_TYPE v) {
 final ValueIterator i = new ValueIterator();
 VALUE_GENERIC_TYPE ev;

 int j = count;
 while(j-- != 0) {
  ev = i.NEXT_VALUE();
  if (VALUE_EQUALS(ev, v)) return true;
 }

 return false;
}

@Override
public void clear() {
 count = 0;
 tree = null;
 entries = null;
 values = null;
 keys = null;
 firstEntry = lastEntry = null;
}


/** This class represent an entry in a tree map.
 *
 * <p>We use the only "metadata", i.e., {@link Entry#info}, to store
 * information about balance, predecessor status and successor status.
 *
 * <p>Note that since the class is recursive, it can be
```

```
 * considered equivalently a tree.
 */

private static final class Entry KEY_VALUE_GENERIC extends ABSTRACT_MAP.BasicEntry
KEY_VALUE_GENERIC implements Cloneable {
 /** If the bit in this mask is true, {@link #right} points to a successor. */
 private static final int SUCC_MASK = 1 << 31;
 /** If the bit in this mask is true, {@link #left} points to a predecessor. */
 private static final int PRED_MASK = 1 << 30;
 /** The bits in this mask hold the node balance info. You can get it just by casting to byte. */
 private static final int BALANCE_MASK = 0xFF;
 /** The pointers to the left and right subtrees. */
 Entry KEY_VALUE_GENERIC left, right;
 /** This integers holds different information in different bits (see {@link #SUCC_MASK}, {@link
#PRED_MASK} and {@link #BALANCE_MASK}). */
 int info;

 Entry() {
  super(KEY_NULL, VALUE_NULL);
 }

 /** Creates a new entry with the given key and value.
  *
  * @param k a key.
  * @param v a value.
  */
 Entry(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v) {
  super(k, v);
  info = SUCC_MASK | PRED_MASK;
 }

 /** Returns the left subtree.
  *
  * @return the left subtree ({@code null} if the left
  * subtree is empty).
  */
 Entry KEY_VALUE_GENERIC left() {
  return (info & PRED_MASK) != 0 ? null : left;
 }

 /** Returns the right subtree.
  *
  * @return the right subtree ({@code null} if the right
  * subtree is empty).
  */
 Entry KEY_VALUE_GENERIC right() {
  return (info & SUCC_MASK) != 0 ? null : right;
 }
```

```
/** Checks whether the left pointer is really a predecessor.
 * @return true if the left pointer is a predecessor.
 */
boolean pred() {
 return (info & PRED_MASK) != 0;
}

/** Checks whether the right pointer is really a successor.
 * @return true if the right pointer is a successor.
 */
boolean succ() {
 return (info & SUCC_MASK) != 0;
}

/** Sets whether the left pointer is really a predecessor.
 * @param pred if true then the left pointer will be considered a predecessor.
 */
void pred(final boolean pred) {
 if (pred) info |= PRED_MASK;
 else info &= ~PRED_MASK;
}

/** Sets whether the right pointer is really a successor.
 * @param succ if true then the right pointer will be considered a successor.
 */
void succ(final boolean succ) {
 if (succ) info |= SUCC_MASK;
 else info &= ~SUCC_MASK;
}

/** Sets the left pointer to a predecessor.
 * @param pred the predecessr.
 */
void pred(final Entry KEY_VALUE_GENERIC pred) {
 info |= PRED_MASK;
 left = pred;
}

/** Sets the right pointer to a successor.
 * @param succ the successor.
 */
void succ(final Entry KEY_VALUE_GENERIC succ) {
 info |= SUCC_MASK;
 right = succ;
}

/** Sets the left pointer to the given subtree.
```

```
 * @param left the new left subtree.
 */
void left(final Entry KEY_VALUE_GENERIC left) {
 info &= ~PRED_MASK;
 this.left = left;
}

/** Sets the right pointer to the given subtree.
 * @param right the new right subtree.
 */
void right(final Entry KEY_VALUE_GENERIC right) {
 info &= ~SUCC_MASK;
 this.right = right;
}

/** Returns the current level of the node.
 * @return the current level of this node.
 */
int balance() {
 return (byte)info;
}

/** Sets the level of this node.
 * @param level the new level of this node.
 */
void balance(int level) {
 info &= ~BALANCE_MASK;
 info |= (level & BALANCE_MASK);
}

/** Increments the level of this node. */
void incBalance() {
 info = info & ~BALANCE_MASK | ((byte)info + 1) & 0xFF;
}

/** Decrements the level of this node. */
protected void decBalance() {
 info = info & ~BALANCE_MASK | ((byte)info - 1) & 0xFF;
}

/** Computes the next entry in the set order.
 *
 * @return the next entry ({@code null}) if this is the last entry).
 */

Entry KEY_VALUE_GENERIC next() {
 Entry KEY_VALUE_GENERIC next = this.right;
 if ((info & SUCC_MASK) == 0) while ((next.info & PRED_MASK) == 0) next = next.left;
```

```
 return next;
}

/** Computes the previous entry in the set order.
 *
 * @return the previous entry ({@code null}) if this is the first entry).
 */

Entry KEY_VALUE_GENERIC prev() {
 Entry KEY_VALUE_GENERIC prev = this.left;
 if ((info & PRED_MASK) == 0) while ((prev.info & SUCC_MASK) == 0) prev = prev.right;
 return prev;
}

@Override
public VALUE_GENERIC_TYPE setValue(final VALUE_GENERIC_TYPE value) {
 final VALUE_GENERIC_TYPE oldValue = this.value;
 this.value = value;
 return oldValue;
}

@Override
SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
public Entry KEY_VALUE_GENERIC clone() {
 Entry KEY_VALUE_GENERIC c;
 try {
  c = (Entry KEY_VALUE_GENERIC)super.clone();
 }
 catch(CloneNotSupportedException cantHappen) {
  throw new InternalError();
 }

 c.key = key;
 c.value = value;
 c.info = info;

 return c;
}

@Override
@SuppressWarnings("unchecked")
public boolean equals(final Object o) {
 if (!(o instanceof Map.Entry)) return false;
 Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS> e = (Map.Entry<KEY_GENERIC_CLASS,
VALUE_GENERIC_CLASS>)o;

 return KEY_EQUALS(key, KEY_CLASS2TYPE(e.getKey())) && VALUE_EQUALS(value,
VALUE_CLASS2TYPE(e.getValue()));
```

```
 }

 @Override
 public int hashCode() {
  return KEY2JAVAHASH_NOT_NULL(key) ^ VALUE2JAVAHASH(value);
 }


 @Override
 public String toString() {
  return key + "=>" + value;
 }


 /*
 public void prettyPrint() {
  prettyPrint(0);
 }

 public void prettyPrint(int level) {
  if (pred()) {
   for (int i = 0; i < level; i++)
    System.err.print("  ");
   System.err.println("pred: " + left);
  }
  else if (left != null)
   left.prettyPrint(level +1);
  for (int i = 0; i < level; i++)
   System.err.print("  ");
  System.err.println(key + "=" + value + " (" + balance() + ")");
  if (succ()) {
   for (int i = 0; i < level; i++)
    System.err.print("  ");
   System.err.println("succ: " + right);
  }
  else if (right != null)
   right.prettyPrint(level + 1);
 }
 */
}

/*
public void prettyPrint() {
 System.err.println("size: " + count);
 if (tree != null) tree.prettyPrint();
}
*/
```

```
SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public boolean containsKey(final KEY_TYPE k) {
 RETURN_FALSE_IF_KEY_NULL(k)
 return findKey(KEY_GENERIC_CAST k) != null;
}

@Override
public int size() {
 return count;
}

@Override
public boolean isEmpty() {
 return count == 0;
}

SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public VALUE_GENERIC_TYPE GET_VALUE(final KEY_TYPE k) {
 final Entry KEY_VALUE_GENERIC e = findKey(KEY_GENERIC_CAST k);
 return e == null ? defRetValue : e.value;
}

@Override
public KEY_GENERIC_TYPE FIRST_KEY() {
 if (tree == null) throw new NoSuchElementException();
 return firstEntry.key;
}

@Override
public KEY_GENERIC_TYPE LAST_KEY() {
 if (tree == null) throw new NoSuchElementException();
 return lastEntry.key;
}


/** An abstract iterator on the whole range.
 *
 * <p>This class can iterate in both directions on a threaded tree.
 */

private class TreeIterator {
 /** The entry that will be returned by the next call to {@link java.util.ListIterator#previous()} (or {@code null} if
no previous entry exists). */
 Entry KEY_VALUE_GENERIC prev;
 /** The entry that will be returned by the next call to {@link java.util.ListIterator#next()} (or {@code null} if no
next entry exists). */
```

```
 Entry KEY_VALUE_GENERIC next;
 /** The last entry that was returned (or {@code null} if we did not iterate or used {@link #remove()}). */
 Entry KEY_VALUE_GENERIC curr;
 /** The current index (in the sense of a {@link java.util.ListIterator}). Note that this value is not meaningful when
this {@link TreeIterator} has been created using the nonempty constructor.*/
 int index = 0;

 TreeIterator() {
  next = firstEntry;
 }

 TreeIterator(final KEY_GENERIC_TYPE k) {
  if ((next = locateKey(k)) != null) {
   if (compare(next.key, k) <= 0) {
    prev = next;
    next = next.next();
   }
   else prev = next.prev();
  }
 }

 public boolean hasNext() { return next != null; }

 public boolean hasPrevious() { return prev != null; }

 void updateNext() {
  next = next.next();
 }

 Entry KEY_VALUE_GENERIC nextEntry() {
  if (! hasNext()) throw new NoSuchElementException();
  curr = prev = next;
  index++;
  updateNext();
  return curr;
 }

 void updatePrevious() {
  prev = prev.prev();
 }

 Entry KEY_VALUE_GENERIC previousEntry() {
  if (! hasPrevious()) throw new NoSuchElementException();
  curr = next = prev;
  index--;
  updatePrevious();
  return curr;
 }
```

```
  public int nextIndex() {
   return index;
  }

  public int previousIndex() {
   return index - 1;
  }

  public void remove() {
   if (curr == null) throw new IllegalStateException();
   /* If the last operation was a next(), we are removing an entry that preceeds
      the current index, and thus we must decrement it. */
   if (curr == prev) index--;
   next = prev = curr;
   updatePrevious();
   updateNext();
   AVL_TREE_MAP.this.REMOVE_VALUE(curr.key);
   curr = null;
  }

  public int skip(final int n) {
   int i = n;
   while(i-- != 0 && hasNext()) nextEntry();
   return n - i - 1;
  }

  public int back(final int n) {
   int i = n;
   while(i-- != 0 && hasPrevious()) previousEntry();
   return n - i - 1;
  }
 }


 /** An iterator on the whole range.
  *
  * <p>This class can iterate in both directions on a threaded tree.
  */

 private class EntryIterator extends TreeIterator implements ObjectListIterator<MAP.Entry
KEY_VALUE_GENERIC> {
  EntryIterator() {}

  EntryIterator(final KEY_GENERIC_TYPE k) {
   super(k);
  }
```

```
  @Override
  public MAP.Entry KEY_VALUE_GENERIC next() { return nextEntry(); }

  @Override
  public MAP.Entry KEY_VALUE_GENERIC previous() { return previousEntry(); }

  @Override
  public void set(MAP.Entry KEY_VALUE_GENERIC ok) { throw new UnsupportedOperationException(); }

  @Override
  public void add(MAP.Entry KEY_VALUE_GENERIC ok) { throw new UnsupportedOperationException(); }
 }


 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET() {
  if (entries == null) entries = new AbstractObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC>() {
   final Comparator<? super MAP.Entry KEY_VALUE_GENERIC> comparator =
(AVL_TREE_MAP.this.actualComparator == null ?
    (Comparator<MAP.Entry KEY_VALUE_GENERIC>) (x, y) -> KEY_CMP(x.ENTRY_GET_KEY(),
y.ENTRY_GET_KEY()) :
    (Comparator<MAP.Entry KEY_VALUE_GENERIC>) (x, y) ->
AVL_TREE_MAP.this.actualComparator.compare(x.ENTRY_GET_KEY(), y.ENTRY_GET_KEY())
   );

   @Override
   public Comparator<? super MAP.Entry KEY_VALUE_GENERIC> comparator() { return comparator; }

   @Override
   public ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> iterator() { return new EntryIterator(); }

   @Override
   public ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> iterator(final MAP.Entry
KEY_VALUE_GENERIC from) { return new EntryIterator(from.ENTRY_GET_KEY()); }

   @Override
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   public boolean contains(final Object o) {
    if (o == null || !(o instanceof Map.Entry)) return false;
    final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
    if (e.getKey() == null) return false;
#if KEYS_PRIMITIVE
    if (! (e.getKey() instanceof KEY_CLASS)) return false;
#endif
#if VALUES_PRIMITIVE
    if (e.getValue() == null || ! (e.getValue() instanceof VALUE_CLASS)) return false;
#endif
```

```
   final Entry KEY_VALUE_GENERIC f = findKey(KEY_OBJ2TYPE(KEY_GENERIC_CAST e.getKey()));
   return e.equals(f);
  }

  @Override
  SUPPRESS_WARNINGS_KEY_UNCHECKED
  public boolean remove(final Object o) {
   if (!(o instanceof Map.Entry)) return false;
   final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
   if (e.getKey() == null) return false;
#if KEYS_PRIMITIVE
   if (e.getKey() == null || ! (e.getKey() instanceof KEY_CLASS)) return false;
#endif
#if VALUES_PRIMITIVE
   if (! (e.getValue() instanceof VALUE_CLASS)) return false;
#endif
   final Entry KEY_VALUE_GENERIC f = findKey(KEY_OBJ2TYPE(KEY_GENERIC_CAST e.getKey()));
   if (f == null || ! VALUE_EQUALS(f.ENTRY_GET_VALUE(), VALUE_OBJ2TYPE(e.getValue()))) return false;
   AVL_TREE_MAP.this.REMOVE_VALUE(f.key);
   return true;
  }

  @Override
  public int size() { return count; }

  @Override
  public void clear() { AVL_TREE_MAP.this.clear(); }

  @Override
  public MAP.Entry KEY_VALUE_GENERIC first() { return firstEntry; }

  @Override
  public MAP.Entry KEY_VALUE_GENERIC last() { return lastEntry; }

  @Override
  public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> subSet(MAP.Entry KEY_VALUE_GENERIC
from, MAP.Entry KEY_VALUE_GENERIC to) { return subMap(from.ENTRY_GET_KEY(),
to.ENTRY_GET_KEY()).ENTRYSET(); }

  @Override
  public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> headSet(MAP.Entry KEY_VALUE_GENERIC
to) { return headMap(to.ENTRY_GET_KEY()).ENTRYSET(); }

  @Override
  public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> tailSet(MAP.Entry KEY_VALUE_GENERIC
from) { return tailMap(from.ENTRY_GET_KEY()).ENTRYSET(); }
 };
```

```
 return entries;
 }

/** An iterator on the whole range of keys.
 *
 * <p>This class can iterate in both directions on the keys of a threaded tree. We
 * simply override the {@link java.util.ListIterator#next()}/{@link java.util.ListIterator#previous()} methods (and
possibly
 * their type-specific counterparts) so that they return keys instead of entries.
 */
private final class KeyIterator extends TreeIterator implements KEY_LIST_ITERATOR KEY_GENERIC {
 public KeyIterator() {}
 public KeyIterator(final KEY_GENERIC_TYPE k) { super(k); }
 @Override
 public KEY_GENERIC_TYPE NEXT_KEY() { return nextEntry().key; }
 @Override
 public KEY_GENERIC_TYPE PREV_KEY() { return previousEntry().key; }
 }

/** A keyset implementation using a more direct implementation for iterators. */
private class KeySet extends ABSTRACT_SORTED_MAP KEY_VALUE_GENERIC.KeySet {
 @Override
 public KEY_BIDI_ITERATOR KEY_GENERIC iterator() { return new KeyIterator(); }
 @Override
 public KEY_BIDI_ITERATOR KEY_GENERIC iterator(final KEY_GENERIC_TYPE from) { return new
KeyIterator(from); }
 }

/** Returns a type-specific sorted set view of the keys contained in this map.
 *
 * <p>In addition to the semantics of {@link java.util.Map#keySet()}, you can
 * safely cast the set returned by this call to a type-specific sorted
 * set interface.
 *
 * @return a type-specific sorted set view of the keys contained in this map.
 */
@Override
public SORTED_SET KEY_GENERIC keySet() {
 if (keys == null) keys = new KeySet();
 return keys;
 }

/** An iterator on the whole range of values.
 *
 * <p>This class can iterate in both directions on the values of a threaded tree. We
 * simply override the {@link java.util.ListIterator#next()}/{@link java.util.ListIterator#previous()} methods (and
possibly
 * their type-specific counterparts) so that they return values instead of entries.
```

```
 */
private final class ValueIterator extends TreeIterator implements VALUE_LIST_ITERATOR VALUE_GENERIC {
 @Override
 public VALUE_GENERIC_TYPE NEXT_VALUE() { return nextEntry().value; }
 @Override
 public VALUE_GENERIC_TYPE PREV_VALUE() { return previousEntry().value; }
}

/** Returns a type-specific collection view of the values contained in this map.
 *
 * <p>In addition to the semantics of {@link java.util.Map#values()}, you can
 * safely cast the collection returned by this call to a type-specific collection
 * interface.
 *
 * @return a type-specific collection view of the values contained in this map.
 */
@Override
public VALUE_COLLECTION VALUE_GENERIC values() {
 if (values == null) values = new VALUE_ABSTRACT_COLLECTION VALUE_GENERIC() {
   @Override
   public VALUE_ITERATOR VALUE_GENERIC iterator() { return new ValueIterator(); }
   @Override
   public boolean contains(final VALUE_TYPE k) { return containsValue(k); }
   @Override
   public int size() { return count; }
   @Override
   public void clear() { AVL_TREE_MAP.this.clear(); }
  };

 return values;
}

@Override
public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return actualComparator; }

@Override
public SORTED_MAP KEY_VALUE_GENERIC headMap(KEY_GENERIC_TYPE to) { return new
Submap(KEY_NULL, true, to, false); }

@Override
public SORTED_MAP KEY_VALUE_GENERIC tailMap(KEY_GENERIC_TYPE from) { return new
Submap(from, false, KEY_NULL, true); }

@Override
public SORTED_MAP KEY_VALUE_GENERIC subMap(KEY_GENERIC_TYPE from, KEY_GENERIC_TYPE
to) { return new Submap(from, false, to, false); }

/** A submap with given range.
```

```
 *
 * <p>This class represents a submap. One has to specify the left/right
 * limits (which can be set to -&infin; or &infin;). Since the submap is a
 * view on the map, at a given moment it could happen that the limits of
 * the range are not any longer in the main map. Thus, things such as
 * {@link java.util.SortedMap#firstKey()} or {@link java.util.Collection#size()} must be always computed
 * on-the-fly.
 */
private final class Submap extends ABSTRACT_SORTED_MAP KEY_VALUE_GENERIC implements
java.io.Serializable {
 private static final long serialVersionUID = -7046029254386353129L;

 /** The start of the submap range, unless {@link #bottom} is true. */
 KEY_GENERIC_TYPE from;
 /** The end of the submap range, unless {@link #top} is true. */
 KEY_GENERIC_TYPE to;
 /** If true, the submap range starts from -&infin;. */
 boolean bottom;
 /** If true, the submap range goes to &infin;. */
 boolean top;
 /** Cached set of entries. */
 protected transient ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> entries;
 /** Cached set of keys. */
 protected transient SORTED_SET KEY_GENERIC keys;
 /** Cached collection of values. */
 protected transient VALUE_COLLECTION VALUE_GENERIC values;

 /** Creates a new submap with given key range.
  *
  * @param from the start of the submap range.
  * @param bottom if true, the first parameter is ignored and the range starts from -&infin;.
  * @param to the end of the submap range.
  * @param top if true, the third parameter is ignored and the range goes to &infin;.
  */
 public Submap(final KEY_GENERIC_TYPE from, final boolean bottom, final KEY_GENERIC_TYPE to, final
boolean top) {
  if (! bottom && ! top && AVL_TREE_MAP.this.compare(from, to) > 0) throw new
IllegalArgumentException("Start key (" + from  + ") is larger than end key (" + to + ")");

  this.from = from;
  this.bottom = bottom;
  this.to = to;
  this.top = top;
  this.defRetValue = AVL_TREE_MAP.this.defRetValue;
 }

 @Override
 public void clear() {
```

```
   final SubmapIterator i = new SubmapIterator();
   while(i.hasNext()) {
    i.nextEntry();
    i.remove();
   }
  }

  /** Checks whether a key is in the submap range.
   * @param k a key.
   * @return true if is the key is in the submap range.
   */
  final boolean in(final KEY_GENERIC_TYPE k) {
   return (bottom || AVL_TREE_MAP.this.compare(k, from) >= 0) &&
    (top || AVL_TREE_MAP.this.compare(k, to) < 0);
  }

  @Override
  public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET() {
   if (entries == null) entries = new AbstractObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC>() {
     @Override
     public ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> iterator() { return new
SubmapEntryIterator(); }
     @Override
     public ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> iterator(final MAP.Entry
KEY_VALUE_GENERIC from) { return new SubmapEntryIterator(from.ENTRY_GET_KEY()); }
     @Override
     public Comparator<? super MAP.Entry KEY_VALUE_GENERIC> comparator() { return
AVL_TREE_MAP.this.ENTRYSET().comparator(); }
     @Override
     SUPPRESS_WARNINGS_KEY_UNCHECKED
     public boolean contains(final Object o) {
      if (!(o instanceof Map.Entry)) return false;
      final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
#if KEYS_PRIMITIVE
      if (e.getKey() == null || ! (e.getKey() instanceof KEY_CLASS)) return false;
#endif
#if VALUES_PRIMITIVE
      if (e.getValue() == null || ! (e.getValue() instanceof VALUE_CLASS)) return false;
#endif
      final AVL_TREE_MAP.Entry KEY_VALUE_GENERIC f = findKey(KEY_OBJ2TYPE(KEY_GENERIC_CAST
e.getKey()));
      return f != null && in(f.key) && e.equals(f);
     }
     @Override
     SUPPRESS_WARNINGS_KEY_UNCHECKED
     public boolean remove(final Object o) {
      if (!(o instanceof Map.Entry)) return false;
      final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
```

```
#if KEYS_PRIMITIVE
      if (e.getKey() == null || ! (e.getKey() instanceof KEY_CLASS)) return false;
#endif
#if VALUES_PRIMITIVE
      if (e.getValue() == null || ! (e.getValue() instanceof VALUE_CLASS)) return false;
#endif
      final AVL_TREE_MAP.Entry KEY_VALUE_GENERIC f = findKey(KEY_OBJ2TYPE(KEY_GENERIC_CAST
e.getKey()));
      if (f != null && in(f.key)) Submap.this.REMOVE_VALUE(f.key);
      return f != null;
     }
     @Override
     public int size() {
      int c = 0;
      for(Iterator<?> i = iterator(); i.hasNext(); i.next()) c++;
      return c;
     }
     @Override
     public boolean isEmpty() { return ! new SubmapIterator().hasNext(); }
     @Override
     public void clear() { Submap.this.clear(); }
     @Override
     public MAP.Entry KEY_VALUE_GENERIC first() { return firstEntry(); }
     @Override
     public MAP.Entry KEY_VALUE_GENERIC last() { return lastEntry(); }
     @Override
     public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> subSet(MAP.Entry KEY_VALUE_GENERIC
from, MAP.Entry KEY_VALUE_GENERIC to) { return subMap(from.ENTRY_GET_KEY(),
to.ENTRY_GET_KEY()).ENTRYSET(); }
     @Override
     public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> headSet(MAP.Entry KEY_VALUE_GENERIC
to) { return headMap(to.ENTRY_GET_KEY()).ENTRYSET(); }
     @Override
     public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> tailSet(MAP.Entry KEY_VALUE_GENERIC
from) { return tailMap(from.ENTRY_GET_KEY()).ENTRYSET(); }
    };

   return entries;
  }

  private class KeySet extends ABSTRACT_SORTED_MAP KEY_VALUE_GENERIC.KeySet {
   @Override
   public KEY_BIDI_ITERATOR KEY_GENERIC iterator() { return new SubmapKeyIterator(); }
   @Override
   public KEY_BIDI_ITERATOR KEY_GENERIC iterator(final KEY_GENERIC_TYPE from) { return new
SubmapKeyIterator(from); }
  }
```

```
@Override
public SORTED_SET KEY_GENERIC keySet() {
 if (keys == null) keys = new KeySet();
 return keys;
}

@Override
public VALUE_COLLECTION VALUE_GENERIC values() {
 if (values == null) values = new VALUE_ABSTRACT_COLLECTION VALUE_GENERIC() {
   @Override
   public VALUE_ITERATOR VALUE_GENERIC iterator() { return new SubmapValueIterator(); }
   @Override
   public boolean contains(final VALUE_TYPE k) { return containsValue(k); }
   @Override
   public int size() { return Submap.this.size();}
   @Override
   public void clear() { Submap.this.clear(); }
  };

 return values;
}

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public boolean containsKey(final KEY_TYPE k) {
 RETURN_FALSE_IF_KEY_NULL(k)
 return in(KEY_GENERIC_CAST k) && AVL_TREE_MAP.this.containsKey(k);
}

@Override
public boolean containsValue(final VALUE_TYPE v) {
 final SubmapIterator i = new SubmapIterator();
 VALUE_TYPE ev;

 while(i.hasNext()) {
  ev = i.nextEntry().value;
  if (VALUE_EQUALS(ev, v)) return true;
 }

 return false;
}

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public VALUE_GENERIC_TYPE GET_VALUE(final KEY_TYPE k) {
 final AVL_TREE_MAP.Entry KEY_VALUE_GENERIC e;
 final KEY_GENERIC_TYPE kk = KEY_GENERIC_CAST k;
 return in(kk) && (e = findKey(kk)) != null ? e.value : this.defRetValue;
```

```
}

@Override
public VALUE_GENERIC_TYPE put(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v) {
 modified = false;
 if (! in(k)) throw new IllegalArgumentException("Key (" + k + ") out of range [" + (bottom ? "-" :
String.valueOf(from)) + ", " + (top ? "-" : String.valueOf(to)) + ")");
 final VALUE_GENERIC_TYPE oldValue = AVL_TREE_MAP.this.put(k, v);
 return modified ? this.defRetValue : oldValue;
}

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public VALUE_GENERIC_TYPE REMOVE_VALUE(final KEY_TYPE k) {
 modified = false;
 if (! in(KEY_GENERIC_CAST k)) return this.defRetValue;
 final VALUE_GENERIC_TYPE oldValue = AVL_TREE_MAP.this.REMOVE_VALUE(k);
 return modified ? oldValue : this.defRetValue;
}

@Override
public int size() {
 final SubmapIterator i = new SubmapIterator();
 int n = 0;

 while(i.hasNext()) {
  n++;
  i.nextEntry();
 }

 return n;
}

@Override
public boolean isEmpty() { return ! new SubmapIterator().hasNext(); }

@Override
public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return actualComparator; }

@Override
public SORTED_MAP KEY_VALUE_GENERIC headMap(final KEY_GENERIC_TYPE to) {
 if (top) return new Submap(from, bottom, to, false);
 return compare(to, this.to) < 0 ? new Submap(from, bottom, to, false) : this;
}

@Override
public SORTED_MAP KEY_VALUE_GENERIC tailMap(final KEY_GENERIC_TYPE from) {
 if (bottom) return new Submap(from, false, to, top);
```

```
  return compare(from, this.from) > 0 ? new Submap(from, false, to, top) : this;
 }

 @Override
 public SORTED_MAP KEY_VALUE_GENERIC subMap(KEY_GENERIC_TYPE from, KEY_GENERIC_TYPE
to) {
  if (top && bottom) return new Submap(from, false, to, false);
  if (! top) to = compare(to, this.to) < 0 ? to : this.to;
  if (! bottom) from = compare(from, this.from) > 0 ? from : this.from;
   if (! top && ! bottom && from == this.from && to == this.to) return this;
  return new Submap(from, false, to, false);
 }

 /** Locates the first entry.
  *
  * @return the first entry of this submap, or {@code null} if the submap is empty.
  */
 public AVL_TREE_MAP.Entry KEY_VALUE_GENERIC firstEntry() {
  if (tree == null) return null;
  // If this submap goes to -infinity, we return the main map first entry; otherwise, we locate the start of the map.
  AVL_TREE_MAP.Entry KEY_VALUE_GENERIC e;
  if (bottom) e = firstEntry;
  else {
   e = locateKey(from);
   // If we find either the start or something greater we're OK.
   if (compare(e.key, from) < 0) e = e.next();
  }
  // Finally, if this subset doesn't go to infinity, we check that the resulting key isn't greater than the end.
  if (e == null || ! top && compare(e.key, to) >= 0) return null;
  return e;
 }

 /** Locates the last entry.
  *
  * @return the last entry of this submap, or {@code null} if the submap is empty.
  */
 public AVL_TREE_MAP.Entry KEY_VALUE_GENERIC lastEntry() {
  if (tree == null) return null;
  // If this submap goes to infinity, we return the main map last entry; otherwise, we locate the end of the map.
  AVL_TREE_MAP.Entry KEY_VALUE_GENERIC e;
  if (top) e = lastEntry;
  else {
   e = locateKey(to);
   // If we find something smaller than the end we're OK.
   if (compare(e.key, to) >= 0) e = e.prev();
  }
  // Finally, if this subset doesn't go to -infinity, we check that the resulting key isn't smaller than the start.
  if (e == null || ! bottom && compare(e.key, from) < 0) return null;
```

```
  return e;
 }

 @Override
 public KEY_GENERIC_TYPE FIRST_KEY() {
  AVL_TREE_MAP.Entry KEY_VALUE_GENERIC e = firstEntry();
  if (e == null) throw new NoSuchElementException();
  return e.key;
 }

 @Override
 public KEY_GENERIC_TYPE LAST_KEY() {
  AVL_TREE_MAP.Entry KEY_VALUE_GENERIC e = lastEntry();
  if (e == null) throw new NoSuchElementException();
  return e.key;
 }

 /** An iterator for subranges.
  *
  * <p>This class inherits from {@link TreeIterator}, but overrides the methods that
  * update the pointer after a {@link java.util.ListIterator#next()} or {@link java.util.ListIterator#previous()}. If we
would
  * move out of the range of the submap we just overwrite the next or previous
  * entry with {@code null}.
  */
 private class SubmapIterator extends TreeIterator {
  SubmapIterator() { next = firstEntry(); }
  SubmapIterator(final KEY_GENERIC_TYPE k) {
   this();

   if (next != null) {
    if (! bottom && compare(k, next.key) < 0) prev = null;
    else if (! top && compare(k, (prev = lastEntry()).key) >= 0) next = null;
    else {
     next = locateKey(k);

     if (compare(next.key, k) <= 0) {
      prev = next;
      next = next.next();
     }
     else prev = next.prev();
    }
   }
  }

  @Override
  void updatePrevious() {
   prev = prev.prev();
```

```
    if (! bottom && prev != null && AVL_TREE_MAP.this.compare(prev.key, from) < 0) prev = null;
   }

   @Override
   void updateNext() {
    next = next.next();
    if (! top && next != null && AVL_TREE_MAP.this.compare(next.key, to) >= 0) next = null;
   }
  }

  private class SubmapEntryIterator extends SubmapIterator implements ObjectListIterator<MAP.Entry
KEY_VALUE_GENERIC>  {
   SubmapEntryIterator() {}
   SubmapEntryIterator(final KEY_GENERIC_TYPE k) { super(k); }

   @Override
   public MAP.Entry KEY_VALUE_GENERIC next() { return nextEntry(); }
   @Override
   public MAP.Entry KEY_VALUE_GENERIC previous() { return previousEntry(); }
  }


  /** An iterator on a subrange of keys.
   *
   * <p>This class can iterate in both directions on a subrange of the
   * keys of a threaded tree. We simply override the {@link
   * java.util.ListIterator#next()}/{@link java.util.ListIterator#previous()} methods (and possibly their
   * type-specific counterparts) so that they return keys instead of
   * entries.
   */
  private final class SubmapKeyIterator extends SubmapIterator implements KEY_LIST_ITERATOR
KEY_GENERIC {
   public SubmapKeyIterator() { super(); }
   public SubmapKeyIterator(KEY_GENERIC_TYPE from) { super(from); }

   @Override
   public KEY_GENERIC_TYPE NEXT_KEY() { return nextEntry().key; }
   @Override
   public KEY_GENERIC_TYPE PREV_KEY() { return previousEntry().key; }
  };

  /** An iterator on a subrange of values.
   *
   * <p>This class can iterate in both directions on the values of a
   * subrange of the keys of a threaded tree. We simply override the
   * {@link java.util.ListIterator#next()}/{@link java.util.ListIterator#previous()} methods (and possibly their
   * type-specific counterparts) so that they return values instead of
   * entries.
```

```
   */
  private final class SubmapValueIterator extends SubmapIterator implements VALUE_LIST_ITERATOR
VALUE_GENERIC {
   @Override
   public VALUE_GENERIC_TYPE NEXT_VALUE() { return nextEntry().value; }
   @Override
   public VALUE_GENERIC_TYPE PREV_VALUE() { return previousEntry().value; }
  };
 }

 /** Returns a deep copy of this tree map.
  *
  * <p>This method performs a deep copy of this tree map; the data stored in the
  * set, however, is not cloned. Note that this makes a difference only for object keys.
  *
  * @return a deep copy of this tree map.
  */

 @Override
 SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
 public AVL_TREE_MAP KEY_VALUE_GENERIC clone() {
  AVL_TREE_MAP KEY_VALUE_GENERIC c;
  try {
   c = (AVL_TREE_MAP KEY_VALUE_GENERIC)super.clone();
  }
  catch(CloneNotSupportedException cantHappen) {
   throw new InternalError();
  }

  c.keys = null;
  c.values = null;
  c.entries = null;
  c.allocatePaths();

  if (count != 0) {
   // Also this apparently unfathomable code is derived from GNU libavl.
   Entry KEY_VALUE_GENERIC e, p, q, rp = new Entry KEY_VALUE_GENERIC_DIAMOND(), rq = new Entry
KEY_VALUE_GENERIC_DIAMOND();

   p = rp;
   rp.left(tree);

   q = rq;
   rq.pred(null);

   while(true) {
    if (! p.pred()) {
     e = p.left.clone();
```

```
     e.pred(q.left);
     e.succ(q);
     q.left(e);

     p = p.left;
     q = q.left;
    }
    else {
     while(p.succ()) {
      p = p.right;

      if (p == null) {
       q.right = null;
       c.tree = rq.left;

       c.firstEntry = c.tree;
       while(c.firstEntry.left != null) c.firstEntry = c.firstEntry.left;
       c.lastEntry = c.tree;
       while(c.lastEntry.right != null) c.lastEntry = c.lastEntry.right;

       return c;
      }
      q = q.right;
     }

     p = p.right;
     q = q.right;
    }

    if (! p.succ()) {
     e = p.right.clone();
     e.succ(q.right);
     e.pred(q);
     q.right(e);
    }
   }
  }

  return c;
 }


 private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
  int n = count;
  EntryIterator i = new EntryIterator();
  Entry KEY_VALUE_GENERIC e;

  s.defaultWriteObject();
```

```
  while(n-- != 0) {
   e = i.nextEntry();
   s.WRITE_KEY(e.key);
   s.WRITE_VALUE(e.value);
  }
 }


 /** Reads the given number of entries from the input stream, returning the corresponding tree.
  *
  * @param s the input stream.
  * @param n the (positive) number of entries to read.
  * @param pred the entry containing the key that preceeds the first key in the tree.
  * @param succ the entry containing the key that follows the last key in the tree.
  */
 SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
 private Entry KEY_VALUE_GENERIC readTree(final java.io.ObjectInputStream s, final int n, final Entry
KEY_VALUE_GENERIC pred, final Entry KEY_VALUE_GENERIC succ) throws java.io.IOException,
ClassNotFoundException {
  if (n == 1) {
   final Entry KEY_VALUE_GENERIC top = new Entry
KEY_VALUE_GENERIC_DIAMOND(KEY_GENERIC_CAST s.READ_KEY(), VALUE_GENERIC_CAST
s.READ_VALUE());
   top.pred(pred);
   top.succ(succ);

   return top;
  }

  if (n == 2) {
   /* We handle separately this case so that recursion will
    *always* be on nonempty subtrees. */
   final Entry KEY_VALUE_GENERIC top = new Entry
KEY_VALUE_GENERIC_DIAMOND(KEY_GENERIC_CAST s.READ_KEY(), VALUE_GENERIC_CAST
s.READ_VALUE());
   top.right(new Entry KEY_VALUE_GENERIC_DIAMOND(KEY_GENERIC_CAST s.READ_KEY(),
VALUE_GENERIC_CAST s.READ_VALUE()));
   top.right.pred(top);
   top.balance(1);
   top.pred(pred);
   top.right.succ(succ);

   return top;
  }

  // The right subtree is the largest one.
  final int rightN = n / 2, leftN = n - rightN - 1;
```

```
 final Entry KEY_VALUE_GENERIC top = new Entry KEY_VALUE_GENERIC_DIAMOND();

 top.left(readTree(s, leftN, pred, top));

 top.key = KEY_GENERIC_CAST s.READ_KEY();
 top.value = VALUE_GENERIC_CAST s.READ_VALUE();

 top.right(readTree(s, rightN, top, succ));

 if (n == (n & -n)) top.balance(1); // Quick test for determining whether n is a power of 2.

 return top;
}



private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
 s.defaultReadObject();
 /* The storedComparator is now correctly set, but we must restore
    on-the-fly the actualComparator. */
 setActualComparator();
 allocatePaths();

 if (count != 0) {
  tree = readTree(s, count, null, null);
  Entry KEY_VALUE_GENERIC e;

  e = tree;
  while(e.left() != null) e = e.left();
  firstEntry = e;

  e = tree;
  while(e.right() != null) e = e.right();
  lastEntry = e;
 }
}


#ifdef ASSERTS_CODE
private static KEY_VALUE_GENERIC int checkTree(Entry KEY_VALUE_GENERIC e) {
 if (e == null) return 0;

 final int leftN = checkTree(e.left()), rightN = checkTree(e.right());
 if (leftN + e.balance() != rightN)
  throw new AssertionError("Mismatch between left tree size (" + leftN + "), right tree size (" + rightN + ") and
balance (" + e.balance() + ")");
```

```
  return Math.max(leftN , rightN) + 1;
 }
#endif

#ifdef TEST

 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#else
  return Integer.toBinaryString(r.nextInt());
#endif
 }

 private static VALUE_TYPE genValue() {
#if VALUE_CLASS_Byte || VALUE_CLASS_Short || VALUE_CLASS_Character
  return (VALUE_TYPE)(r.nextInt());
#elif VALUES_PRIMITIVE
  return r.NEXT_VALUE();
#elif !VALUES_USE_REFERENCE_EQUALITY || KEYS_USE_REFERENCE_EQUALITY
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }


 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition p = new java.text.FieldPosition(0);

 private static String format(double d) {
  StringBuffer s = new StringBuffer();
  return format.format(d, s, p).toString();
 }

 private static void speedTest(int n, boolean comp) {
  int i, j;
  AVL_TREE_MAP m;
  java.util.TreeMap t;
  KEY_TYPE k[] = new KEY_TYPE[n];
  KEY_TYPE nk[] = new KEY_TYPE[n];
  VALUE_TYPE v[] = new VALUE_TYPE[n];
  long ms;
```

```
for(i = 0; i < n; i++) {
 k[i] = genKey();
 nk[i] = genKey();
 v[i] = genValue();
}

double totPut = 0, totYes = 0, totNo = 0, totAddTo = 0, totIterFor = 0, totIterBack = 0, totRemYes = 0, d, dd, ddd;

if (comp) { for(j = 0; j < 20; j++) {

 t = new java.util.TreeMap();

 /* We first add all pairs to t. */
 for(i = 0; i < n;  i++) t.put(KEY2OBJ(k[i]), VALUE2OBJ(v[i]));

 /* Then we remove the first half and put it back. */
 for(i = 0; i < n/2;  i++) t.remove(KEY2OBJ(k[i]));

 ms = System.currentTimeMillis();
 for(i = 0; i < n/2;  i++) t.put(KEY2OBJ(k[i]), VALUE2OBJ(v[i]));
 d = System.currentTimeMillis() - ms;

 /* Then we remove the other half and put it back again. */
 ms = System.currentTimeMillis();
 for(i = n/2; i < n;  i++) t.remove(KEY2OBJ(k[i]));
 dd = System.currentTimeMillis() - ms ;

 ms = System.currentTimeMillis();
 for(i = n/2; i < n;  i++) t.put(KEY2OBJ(k[i]), VALUE2OBJ(v[i]));
 d += System.currentTimeMillis() - ms;
 if (j > 2) totPut += n/d;
 System.out.print("Add: " + format(n/d) +" K/s ");

 /* Then we remove again the first half. */
 ms = System.currentTimeMillis();
 for(i = 0; i < n/2;  i++) t.remove(KEY2OBJ(k[i]));
 dd += System.currentTimeMillis() - ms ;
 if (j > 2) totRemYes += n/dd;
 System.out.print("RemYes: " + format(n/dd) +" K/s ");

 /* And then we put it back. */
 for(i = 0; i < n/2;  i++) t.put(KEY2OBJ(k[i]), VALUE2OBJ(v[i]));

 #if VALUES_PRIMITIVE && !VALUE_CLASS_Boolean
 /* we perform n/2 addTo() operations with get then put */
 ms = System.currentTimeMillis();
 for(i = 0; i < n/2; i++) t.put(KEY2OBJ(k[i]), (VALUE_TYPE) ((VALUE_CLASS) t.get(KEY2OBJ(k[i])) + i));
```

```
  ddd = System.currentTimeMillis() - ms;
  if (j > 2) totAddTo += n/ddd;
  System.out.print("AddTo: " + format(n/ddd) +" K/s ");
  #endif

  /* We check for pairs in t. */
  ms = System.currentTimeMillis();
  for(i = 0; i < n;  i++) t.containsKey(KEY2OBJ(k[i]));
  d = 1.0 * n / (System.currentTimeMillis() - ms);
  if (j > 2) totYes += d;
  System.out.print("Yes: " + format(d) +" K/s ");

  /* We check for pairs not in t. */
  ms = System.currentTimeMillis();
  for(i = 0; i < n;  i++) t.containsKey(KEY2OBJ(nk[i]));
  d = 1.0 * n / (System.currentTimeMillis() - ms);
  if (j > 2) totNo += d;
  System.out.print("No: " + format(d) +" K/s ");

  /* We iterate on t. */
  ms = System.currentTimeMillis();
  for(Iterator it = t.entrySet().iterator(); it.hasNext(); it.next());
  d = 1.0 * n / (System.currentTimeMillis() - ms);
  if (j > 2) totIterFor += d;
  System.out.print("IterFor: " + format(d) +" K/s ");

  System.out.println();
 }

 System.out.println();
 System.out.println("java.util Put: " + format(totPut/(j-3)) + " K/s RemYes: " + format(totRemYes/(j-3)) + " K/s Yes:
" + format(totYes/(j-3)) + " K/s No: " + format(totNo/(j-3))+ "K/s AddTo: " + format(totAddTo/(j-3)) + " K/s
IterFor: " + format(totIterFor/(j-3))  + " K/s");

 System.out.println();

 t = null;
 totPut = totYes = totNo = totIterFor = totIterBack = totRemYes = totAddTo = 0;

 }

 for(j = 0; j < 20; j++) {

  m = new AVL_TREE_MAP();

  /* We first add all pairs to m. */
  for(i = 0; i < n;  i++) m.put(k[i], v[i]);
```

```
/* Then we remove the first half and put it back. */
for(i = 0; i < n/2;  i++) m.remove(k[i]);

ms = System.currentTimeMillis();
for(i = 0; i < n/2;  i++) m.put(k[i], v[i]);
d = System.currentTimeMillis() - ms;

/* Then we remove the other half and put it back again. */
ms = System.currentTimeMillis();
for(i = n/2; i < n;  i++) m.remove(k[i]);
dd = System.currentTimeMillis() - ms ;

ms = System.currentTimeMillis();
for(i = n/2; i < n;  i++) m.put(k[i], v[i]);
d += System.currentTimeMillis() - ms;
if (j > 2) totPut += n/d;
System.out.print("Add: " + format(n/d) +" K/s ");

/* Then we remove again the first half. */
ms = System.currentTimeMillis();
for(i = 0; i < n/2;  i++) m.remove(k[i]);
dd += System.currentTimeMillis() - ms ;
if (j > 2) totRemYes += n/dd;
System.out.print("RemYes: " + format(n/dd) +" K/s ");

/* And then we put it back. */
for(i = 0; i < n/2;  i++) m.put(k[i], v[i]);

#if VALUES_PRIMITIVE && !VALUE_CLASS_Boolean
/* we perform n/2 addTo() operations with get then put */
ms = System.currentTimeMillis();
for(i = 0; i < n/2; i++) m.addTo(k[i], (VALUE_TYPE) i);
ddd = System.currentTimeMillis() - ms;
if (j > 2) totAddTo += n/ddd;
System.out.print("AddTo: " + format(n/ddd) +" K/s ");
#endif

/* We check for pairs in m. */
ms = System.currentTimeMillis();
for(i = 0; i < n;  i++) m.containsKey(k[i]);
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totYes += d;
System.out.print("Yes: " + format(d) +" K/s ");

/* We check for pairs not in m. */
ms = System.currentTimeMillis();
for(i = 0; i < n;  i++) m.containsKey(nk[i]);
d = 1.0 * n / (System.currentTimeMillis() - ms);
```

```
   if (j > 2) totNo += d;
   System.out.print("No: " + format(d) +" K/s ");


   /* We iterate on m. */
   java.util.ListIterator it = (java.util.ListIterator)m.entrySet().iterator();
   ms = System.currentTimeMillis();
   for(it = (java.util.ListIterator)m.entrySet().iterator(); it.hasNext(); it.next());
   d = 1.0 * n / (System.currentTimeMillis() - ms);
   if (j > 2) totIterFor += d;
   System.out.print("IterFor: " + format(d) +" K/s ");

   /* We iterate back on m. */
   ms = System.currentTimeMillis();
   for(; it.hasPrevious(); it.previous());
   d = 1.0 * n / (System.currentTimeMillis() - ms);
   if (j > 2) totIterBack += d;
   System.out.print("IterBack: " + format(d) +" K/s ");

   System.out.println();
  }


  System.out.println();
  System.out.println("fastutil Put: " + format(totPut/(j-3)) + " K/s RemYes: " + format(totRemYes/(j-3)) + " K/s Yes:
" + format(totYes/(j-3)) + " K/s No: " + format(totNo/(j-3))+ "K/s AddTo: " + format(totAddTo/(j-3)) + " K/s
IterFor: " + format(totIterFor/(j-3))  + " K/s");

  System.out.println();

 }


 private static void fatal(String msg) {
  throw new AssertionError(msg);
 }

 private static void ensure(boolean cond, String msg) {
  if (cond) return;
  fatal(msg);
 }

 private static void compareMT(SORTED_MAP m, SortedMap t, int level, long seed) {
  /* Now we check that m and t are equal. */
  if (!m.equals(t) || ! t.equals(m)) System.err.println("m: " + m + " t: " + t);

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) at start");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) at start");
```

```
  /* Now we check that m actually holds that data. */
  for(Iterator i=t.entrySet().iterator(); i.hasNext();) {
   java.util.Map.Entry e = (java.util.Map.Entry)i.next();
   ensure(java.util.Objects.equals(e.getValue(), m.get(e.getKey())), "Error (" + level + ", " + seed + "): m and t differ
on an entry ("+e+") after insertion (iterating on t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */
  for(Iterator i=m.entrySet().iterator(); i.hasNext();) {
   Entry e = (Entry)i.next();
   ensure(java.util.Objects.equals(e.getValue(), t.get(e.getKey())), "Error (" + level + ", " + seed + "): m and t differ on
an entry ("+e+") after insertion (iterating on m)");
  }

  /* Now we check that m actually holds the same keys. */
  for(Iterator i=t.keySet().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(m.containsKey(o), "Error (" + level + ", " + seed + "): m and t differ on a key ("+o+") after insertion
(iterating on t)");
   ensure(m.keySet().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a key ("+o+", in keySet()) after
insertion (iterating on t)");
  }

  /* Now we check that m actually holds the same keys, but iterating on m. */
  for(Iterator i=m.keySet().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsKey(o), "Error (" + level + ", " + seed + "): m and t differ on a key after insertion (iterating on m)");
   ensure(t.keySet().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a key (in keySet()) after insertion
(iterating on m)");
  }


  /* Now we check that m actually hold the same values. */
  for(Iterator i=t.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(m.containsValue(o), "Error (" + level + ", " + seed + "): m and t differ on a value after insertion (iterating on
t)");
   ensure(m.values().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a value (in values()) after
insertion (iterating on t)");
  }

  /* Now we check that m actually hold the same values, but iterating on m. */
  for(Iterator i=m.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsValue(o), "Error (" + level + ", " + seed + "): m and t differ on a value after insertion (iterating on
```

```
m)");
   ensure(t.values().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a value (in values()) after
insertion (iterating on m)");
  }

 }

 private static Object[] k, v, nk;
 private static KEY_TYPE kt[];
 private static KEY_TYPE nkt[];
 private static VALUE_TYPE vt[];
 private static AVL_TREE_MAP topMap;

 protected static void testMaps(SORTED_MAP m, SortedMap t, int n, int level) throws Exception {
  long ms;
  boolean mThrowsIllegal, tThrowsIllegal, mThrowsNoElement, tThrowsNoElement;
  Object rt = null, rm = null;

  if (level > 4) return;


  /* Now we check that both maps agree on first/last keys. */

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.firstKey();
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.firstKey();
  }
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): firstKey() divergence at
start in NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
  if (! mThrowsNoElement) ensure(t.firstKey().equals(m.firstKey()), "Error (" + level + ", " + seed + "): m and t differ
at start on their first key (" + m.firstKey() + ", " + t.firstKey() +")");

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.lastKey();
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.lastKey();
  }
```

```
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): lastKey() divergence at start
in NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");


  if (! mThrowsNoElement) ensure(t.lastKey().equals(m.lastKey()), "Error (" + level + ", " + seed + "): m and t differ
at start on their last key (" + m.lastKey() + ", " + t.lastKey() +")");

  compareMT(m, t, level, seed);

  /* Now we check that inquiries about random data give the same answer in m and t. For
     m we use the polymorphic method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

   try {
    m.containsKey(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    t.containsKey(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): containsKey() divergence in
NoSuchElementException (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): containsKey() divergence in
IllegalArgumentException (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) {
    ensure(m.containsKey(KEY2OBJ(T)) == t.containsKey(KEY2OBJ(T)), "Error (" + level + ", " + seed + "):
divergence in keys between t and m (polymorphic method)");

#if KEY_CLASS_Object && ! (VALUES_REFERENCE)
    if ((m.GET_VALUE(T) != VALUE_NULL) != ((t.get(KEY2OBJ(T)) == null ? VALUE_NULL :
VALUE_OBJ2TYPE(t.get(KEY2OBJ(T)))) != VALUE_NULL) ||
     t.get(KEY2OBJ(T)) != null &&
     ! VALUE2OBJ(m.GET_VALUE(T)).equals(t.get(KEY2OBJ(T))))
#else
     if ((m.get(T) != VALUE_NULL) != ((t.get(KEY2OBJ(T)) == null ? VALUE_NULL :
VALUE_OBJ2TYPE(t.get(KEY2OBJ(T)))) != VALUE_NULL) ||
      t.get(KEY2OBJ(T)) != null &&
```

```
    ! m.get(KEY2OBJ(T)).equals(t.get(KEY2OBJ(T))))
#endif
    {
     ensure(false, "Error (" + level + ", " + seed + "): divergence between t and m (polymorphic method)");
    }
   }
  }

  /* Again, we check that inquiries about random data give the same answer in m and t, but
     for m we use the standard method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();
   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

   try {
    m.get(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    t.get(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): get() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): get() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(java.util.Objects.equals(m.get(KEY2OBJ(T)),
t.get(KEY2OBJ(T))), "Error (" + level + ", " + seed + "): divergence between t and m (standard method)");
  }

  /* Now we put and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();
   VALUE_TYPE U = genValue();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

   try {
    rm = m.put(KEY2OBJ(T), VALUE2OBJ(U));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
```

```
   try {
    rt = t.put(KEY2OBJ(T), VALUE2OBJ(U));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }


   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): put() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): put() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(java.util.Objects.equals(rm, rt), "Error (" + level + ", " + seed
+ "): divergence in put() between t and m (" + rt + ", " + rm + ")");

   T = genKey();


   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

   try {
    rm = m.remove(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    rt = t.remove(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }


   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): remove() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): remove() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(java.util.Objects.equals(rm, rt), "Error (" + level + ", " + seed
+ "): divergence in remove() between t and m (" + rt + ", " + rm + ")");
  }

  compareMT(m, t, level, seed);

  #if VALUES_PRIMITIVE && !VALUE_CLASS_Boolean
  /* Now we check that addTo results in the same values as get/put */
  if (m instanceof AVL_TREE_MAP) {
   for (Iterator i=m.entrySet().iterator(); i.hasNext();) {
    Entry e = (Entry)i.next();
```

```
  VALUE_TYPE incr = genValue();
  ((AVL_TREE_MAP) m).addTo(e.key, incr);
  t.put(e.key, (VALUE_TYPE) ((VALUE_CLASS) t.get(e.key) + incr));
 }
 compareMT(m, t, level, seed);

 /* Now we make sure that addTo works with a key that did not previously exist (with special default return value)*/
 KEY_TYPE newKey;

 do {
  newKey = genKey();
 } while (m.containsKey(newKey));

 VALUE_TYPE newValue, drv;
 drv = m.defaultReturnValue();
 newValue = genValue();
 m.defaultReturnValue(genValue());

 ((AVL_TREE_MAP) m).addTo(newKey, newValue);
 t.put(newKey, (VALUE_TYPE) (newValue + m.defaultReturnValue()));

 compareMT(m, t, level, seed);
 m.defaultReturnValue(drv); // set the default value back to the old drv
}
#endif

/* Now we check that both maps agree on first/last keys. */

mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

try {
 m.firstKey();
}
catch (NoSuchElementException e) { mThrowsNoElement = true; }
try {
 t.firstKey();
}
catch (NoSuchElementException e) { tThrowsNoElement = true; }

ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): firstKey() divergence in
NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
if (! mThrowsNoElement) ensure(t.firstKey().equals(m.firstKey()), "Error (" + level + ", " + seed + "): m and t differ
on their first key (" + m.firstKey() + ", " + t.firstKey() +")");

mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

try {
 m.lastKey();
```

```
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.lastKey();
  }
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): lastKey() divergence in
NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");

  if (! mThrowsNoElement) ensure(t.lastKey().equals(m.lastKey()), "Error (" + level + ", " + seed + "): m and t differ
on their last key (" + m.lastKey() + ", " + t.lastKey() +")");

  /* Now we check cloning. */

  if (level == 0) {
   ensure(m.equals(((AVL_TREE_MAP)m).clone()), "Error (" + level + ", " + seed + "): m does not equal m.clone()");
   ensure(((AVL_TREE_MAP)m).clone().equals(m), "Error (" + level + ", " + seed + "): m.clone() does not equal m");
  }

  int h = m.hashCode();


  /* Now we save and read m. */

  SORTED_MAP m2 = null;

  {
   java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
   java.io.OutputStream os = new java.io.FileOutputStream(ff);
   java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

   oos.writeObject(m);
   oos.close();

   java.io.InputStream is = new java.io.FileInputStream(ff);
   java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

   m2 = (SORTED_MAP)ois.readObject();
   ois.close();
   ff.delete();
  }

#if !VALUES_USE_REFERENCE_EQUALITY
  ensure(m2.hashCode() == h, "Error (" + level + ", " + seed + "): hashCode() changed after save/read");

  /* Now we check that m2 actually holds that data. */
```

```
  ensure(m2.equals(t), "Error (" + level + ", " + seed + "): ! m2.equals(t) after save/read");
  ensure(t.equals(m2), "Error (" + level + ", " + seed + "): ! t.equals(m2) after save/read");
#else
  m2.clear();
  m2.putAll(m);
#endif

  /* Now we take out of m everything, and check that it is empty. */

  for(Iterator i=t.keySet().iterator(); i.hasNext();) m2.remove(i.next());

  ensure(m2.isEmpty(), "Error (" + level + ", " + seed + "): m2 is not empty (as it should be)");

  /* Now we play with iterators. */

  {
   java.util.ListIterator i, j;
   Map.Entry E, F;
   Object J;
   i = (java.util.ListIterator)m.entrySet().iterator();
   j = new java.util.LinkedList(t.entrySet()).listIterator();

   for(int k = 0; k < 2*n; k++) {
    ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext()");
    ensure(i.hasPrevious() == j.hasPrevious(), "Error (" + level + ", " + seed + "): divergence in hasPrevious()");

    if (r.nextFloat() < .8 && i.hasNext()) {
     ensure((E=(Entry)i.next()).getKey().equals(J = (F=(Map.Entry)j.next()).getKey()), "Error (" + level + ", " + seed +
"): divergence in next()");

     if (r.nextFloat() < 0.3) {
      i.remove();
      j.remove();
      t.remove(J);
     }
     else if (r.nextFloat() < 0.3) {
      Object U = VALUE2OBJ(genValue());
      E.setValue(U);
		t.put(F.getKey(), U);
     }
    }
    else if (r.nextFloat() < .2 && i.hasPrevious()) {
     ensure((E=(Entry)i.previous()).getKey().equals(J = (F=(Map.Entry)j.previous()).getKey()), "Error (" + level + ", " +
seed + "): divergence in previous()");

     if (r.nextFloat() < 0.3) {
      i.remove();
      j.remove();
```

```
     t.remove(J);
    }
    else if (r.nextFloat() < 0.3) {
     Object U = VALUE2OBJ(genValue());
     E.setValue(U);
                t.put(F.getKey(), U);
    }
   }

   ensure(i.nextIndex() == j.nextIndex(), "Error (" + level + ", " + seed + "): divergence in nextIndex()");
   ensure(i.previousIndex() == j.previousIndex(), "Error (" + level + ", " + seed + "): divergence in previousIndex()");

  }

 }


 {
  boolean badPrevious = false;
  Object previous = null;
  it.unimi.dsi.fastutil.BidirectionalIterator i;
  java.util.ListIterator j;
  Object I, J;
  KEY_TYPE from = genKey();
  j = new java.util.LinkedList(t.keySet()).listIterator();
  while(j.hasNext()) {
   Object k = j.next();
   if (((Comparable)k).compareTo(KEY2OBJ(from)) > 0) {
    badPrevious = true;
    j.previous();
    break;
   }
   previous = k;
  }

  i = (it.unimi.dsi.fastutil.BidirectionalIterator)((SORTED_SET)m.keySet()).iterator(from);

  for(int k = 0; k < 2*n; k++) {
   ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext() (iterator with starting
point " + from + ")");
   ensure(i.hasPrevious() == j.hasPrevious() || badPrevious && (i.hasPrevious() == (previous != null)), "Error (" +
level + ", " + seed + "): divergence in hasPrevious() (iterator with starting point " + from + ")" + badPrevious);

   if (r.nextFloat() < .8 && i.hasNext()) {
    ensure((I = i.next()).equals(J = j.next()), "Error (" + level + ", " + seed + "): divergence in next() (" + I + ", " + J + ",
iterator with starting point " + from + ")");
    //System.err.println("Done next " + I + " " + J + "  " + badPrevious);
```

```
  badPrevious = false;

  if (r.nextFloat() < 0.5) {
   //System.err.println("Removing in next");
   i.remove();
   j.remove();
   t.remove(J);
  }
 }
 else if (!badPrevious && r.nextFloat() < .2 && i.hasPrevious()) {
  ensure((I = i.previous()).equals(J = j.previous()), "Error (" + level + ", " + seed + "): divergence in previous() (" + I +
", " + J + ", iterator with starting point " + from + ")");

  if (r.nextFloat() < 0.5) {
   //System.err.println("Removing in prev");
   i.remove();
   j.remove();
   t.remove(J);
  }
 }
}

}

/* Now we check that m actually holds that data. */

ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after iteration");
ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after iteration");

/* Now we select a pair of keys and create a submap. */

if (! m.isEmpty()) {
 java.util.ListIterator i;
 Object start = m.firstKey(), end = m.firstKey();
 for(i = (java.util.ListIterator)m.keySet().iterator(); i.hasNext() && r.nextFloat() < .3; start = end = i.next());
 for(; i.hasNext() && r.nextFloat() < .95; end = i.next());

 //System.err.println("Checking subMap from " + start + " to " + end + " (level=" + (level+1) + ")...");
 testMaps((SORTED_MAP)m.subMap((KEY_CLASS)start, (KEY_CLASS)end), t.subMap(start, end), n, level + 1);

 ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after subMap");
 ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after subMap");

 //System.err.println("Checking headMap to " + end + " (level=" + (level+1) + ")...");
 testMaps((SORTED_MAP)m.headMap((KEY_CLASS)end), t.headMap(end), n, level + 1);

 ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after headMap");
 ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after headMap");
```

```
  //System.err.println("Checking tailMap from " + start + " (level=" + (level+1) + ")...");
  testMaps((SORTED_MAP)m.tailMap((KEY_CLASS)start), t.tailMap(start), n, level + 1);

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after tailMap");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after tailMap");
 }


}



private static void runTest(int n) throws Exception {
 AVL_TREE_MAP m = new AVL_TREE_MAP();
 SortedMap t = new java.util.TreeMap();
 topMap = m;
 k = new Object[n];
 v = new Object[n];
 nk = new Object[n];
 kt = new KEY_TYPE[n];
 nkt = new KEY_TYPE[n];
 vt = new VALUE_TYPE[n];

 for(int i = 0; i < n; i++) {
#if KEY_CLASS_Object
  k[i] = kt[i] = genKey();
  nk[i] = nkt[i] = genKey();
#else
  k[i] = new KEY_CLASS(kt[i] = genKey());
  nk[i] = new KEY_CLASS(nkt[i] = genKey());
#endif
#if VALUES_REFERENCE
  v[i] = vt[i] = genValue();
#else
  v[i] = new VALUE_CLASS(vt[i] = genValue());
#endif
 }

 /* We add pairs to t. */
 for(int i = 0; i < n;  i++) t.put(k[i], v[i]);

 /* We add to m the same data */
 m.putAll(t);

 testMaps(m, t, n, 0);

 System.out.println("Test OK");
 return;
```

```
 }


 public static void main(String args[]) throws Exception {
  int n  = Integer.parseInt(args[1]);
  if (args.length > 2) r = new java.util.Random(seed = Long.parseLong(args[2]));

  try {
   if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, "speedComp".equals(args[0]));
   else if ("test".equals(args[0])) runTest(n);
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif



}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AVLTreeMap.drv
No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

#if KEY_CLASS_Object
import java.util.Comparator;
#endif
```

```
/** A class providing static methods and objects that do useful things with heaps.
*
* <p>The static methods of this class allow to treat arrays as 0-based heaps. They
* are used in the implementation of heap-based queues, but they may be also used
* directly.
*
*/

public final class HEAPS {

 private HEAPS() {}

 /** Moves the given element down into the heap until it reaches the lowest possible position.
  *
  * @param heap the heap (starting at 0).
  * @param size the number of elements in the heap.
  * @param i the index of the element that must be moved down.
  * @param c a type-specific comparator, or {@code null} for the natural order.
  * @return the new position of the element of index {@code i}.
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static KEY_GENERIC int downHeap(final KEY_GENERIC_TYPE[] heap, final int size, int i, final
KEY_COMPARATOR KEY_SUPER_GENERIC c) {
  assert i < size;

  final KEY_GENERIC_TYPE e = heap[i];
  int child;

  if (c == null)
   while ((child = (i << 1) + 1) < size) {
    KEY_GENERIC_TYPE t = heap[child];
    final int right = child + 1;
    if (right < size && KEY_LESS(heap[right], t)) t = heap[child = right];
    if (KEY_LESSEQ(e, t)) break;
    heap[i] = t;
    i = child;
   }
  else
   while ((child = (i << 1) + 1) < size) {
    KEY_GENERIC_TYPE t = heap[child];
    final int right = child + 1;
    if (right < size && c.compare(heap[right], t) < 0) t = heap[child = right];
    if (c.compare(e, t) <= 0) break;
    heap[i] = t;
    i = child;
   }
```

```
 heap[i] = e;

 return i;
}

/** Moves the given element up in the heap until it reaches the highest possible position.
 *
 * @param heap the heap (starting at 0).
 * @param size the number of elements in the heap.
 * @param i the index of the element that must be moved up.
 * @param c a type-specific comparator, or {@code null} for the natural order.
 * @return the new position of the element of index {@code i}.
 */

SUPPRESS_WARNINGS_KEY_UNCHECKED
public static KEY_GENERIC int upHeap(final KEY_GENERIC_TYPE[] heap, final int size, int i, final
KEY_COMPARATOR KEY_GENERIC c) {
 assert i < size;

 final KEY_GENERIC_TYPE e = heap[i];

 if (c == null)
  while (i != 0) {
   final int parent = (i - 1) >>> 1;
   final KEY_GENERIC_TYPE t = heap[parent];
   if (KEY_LESSEQ(t, e)) break;
   heap[i] = t;
   i = parent;
  }
 else
  while (i != 0) {
   final int parent = (i - 1) >>> 1;
   final KEY_GENERIC_TYPE t = heap[parent];
   if (c.compare(t, e) <= 0) break;
   heap[i] = t;
   i = parent;
  }

 heap[i] = e;

 return i;
}

/** Makes an array into a heap.
 *
 * @param heap the heap (starting at 0).
 * @param size the number of elements in the heap.
```

```
 * @param c a type-specific comparator, or {@code null} for the natural order.
 */

public static KEY_GENERIC void makeHeap(final KEY_GENERIC_TYPE[] heap, final int size, final
KEY_COMPARATOR KEY_GENERIC c) {
  int i = size >>> 1;
  while(i-- != 0) downHeap(heap, size, i, c);
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Heaps.drv
No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

import java.util.Iterator;
#if KEYS_PRIMITIVE
import java.util.PrimitiveIterator;
#endif
#if KEYS_PRIMITIVE && !KEYS_INT_LONG_DOUBLE
import java.util.Objects;
#endif
#ifdef KEYS_PRIMITIVE
import java.util.function.Consumer;
#endif

/** A type-specific {@link Iterator}; provides an additional method to avoid (un)boxing, and
* the possibility to skip elements.
*
* @see Iterator
```

```
*/
#if KEYS_INT_LONG_DOUBLE
public interface KEY_ITERATOR KEY_GENERIC extends JDK_PRIMITIVE_ITERATOR {
#elif KEYS_PRIMITIVE
public interface KEY_ITERATOR KEY_GENERIC extends PrimitiveIterator<KEY_GENERIC_CLASS,
KEY_CONSUMER> {
#else
public interface KEY_ITERATOR KEY_GENERIC extends Iterator<KEY_GENERIC_CLASS> {
#endif

#if KEYS_PRIMITIVE
 /**
  * Returns the next element as a primitive type.
  *
  * @return the next element in the iteration.
  * @see Iterator#next()
  */
#if KEYS_INT_LONG_DOUBLE
 @Override
#endif
 KEY_TYPE NEXT_KEY();

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default KEY_CLASS next() {
  return KEY_CLASS.valueOf(NEXT_KEY());
 }

#if KEYS_INT_LONG_DOUBLE
 // We inherit the canonical primitive forEachRemaining overload.

 // Because our primitive Consumer interface extends both the JDK's primitive
 // and object Consumer interfaces, calling this method with it would be ambiguous.
 // This overload exists to pass it to the proper primitive overload.
 /**
  * Performs the given action for each remaining element until all elements
  * have been processed or the action throws an exception.
  *
  * <p><b>WARNING</b>: Overriding this method is almost always a mistake, as this
  * overload only exists to disambiguate. Instead, override the {@code forEachRemaining()} overload
  * that uses the JDK's primitive consumer type (e.g. {@link java.util.function.IntConsumer}).
  *
  * <p>If Java supported final default methods, this would be one, but sadly it does not.
  *
  * <p>If you checked and are overriding the version with {@code java.util.function.XConsumer}, and
  * still see this warning, then your IDE is incorrectly conflating this method with the proper
```

```
  * method to override, and you can safely ignore this message.
  *
  * @param action the action to be performed for each element.
  * @see java.util.Iterator#forEachRemaining(java.util.function.Consumer)
  * @since 8.5.0
  */
 default void forEachRemaining(final KEY_CONSUMER action) {
  forEachRemaining((JDK_PRIMITIVE_KEY_CONSUMER) action);
 }
#else
 /**
  * Performs the given action for each remaining element until all elements
  * have been processed or the action throws an exception.
  *
  * @param action the action to be performed for each element.
  * @see java.util.Iterator#forEachRemaining(java.util.function.Consumer)
  * @since 8.0.0
  * @apiNote Implementing classes should generally override this method, and take the default
  *   implementation of the other overloads which will delegate to this method (after proper
  *   conversions).
  */
 @Override
 default void forEachRemaining(final KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  while (hasNext()) {
   action.accept(NEXT_KEY());
  }
 }

#if !KEY_CLASS_Boolean
 /**
  * Performs the given action for each remaining element, performing widening primitive casts,
  * until all elements have been processed or the action throws an exception.
  * @param action the action to be performed for each element.
  * @see java.util.Iterator#forEachRemaining(java.util.function.Consumer)
  * @since 8.5.0
  * @implNote Unless the argument is type-specific, this method will introduce an intermediary
  *   lambda to perform widening casts. Please use the type-specific overload to avoid this overhead.
  */
 default void forEachRemaining(final JDK_PRIMITIVE_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  forEachRemaining(action instanceof KEY_CONSUMER ? (KEY_CONSUMER)action :
(KEY_CONSUMER)action::accept);
 }
#endif

#endif
```

```
 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
  // The instanceof and cast is required for performance. Without it, calls routed through this
  // overload using a primitive consumer would go through the slow lambda.
  forEachRemaining(action instanceof METHOD_ARG_KEY_CONSUMER ?
(METHOD_ARG_KEY_CONSUMER)action : (METHOD_ARG_KEY_CONSUMER) action::accept);
 }

#endif

 /** Skips the given number of elements.
  *
  * <p>The effect of this call is exactly the same as that of calling {@link #next()} for {@code n} times (possibly
stopping if {@link #hasNext()} becomes false).
  *
  * @param n the number of elements to skip.
  * @return the number of elements actually skipped.
  * @see Iterator#next()
  */

 default int skip(final int n) {
  if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
  int i = n;
  while(i-- != 0 && hasNext()) NEXT_KEY();
  return n - i - 1;
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Iterator.drv
No license file was found, but licenses were detected in source scan.

* limitations under the License.
*/

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/IndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/AbstractIndirectPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/PriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/AbstractPriorityQueue.java
No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

import java.util.Collection;
import java.util.RandomAccess;
import java.util.NoSuchElementException;
#if KEYS_REFERENCE
import java.lang.reflect.Array;
import java.util.function.Consumer;
import java.util.stream.Collector;
#endif

/** A type-specific array-based immutable list; provides some additional methods that use polymorphism to avoid (un)boxing.
*
* <p>Instances of this class are immutable
* and (contrarily to mutable array-based list implementations) the backing array is not exposed.
* Instances can be built using a variety of methods, but note that constructors using
```

```
* an array will not make a defensive copy.
*
* <p>This class implements the bulk method {@code getElements()} using
* high-performance system calls (e.g., {@link
* System#arraycopy(Object,int,Object,int,int) System.arraycopy()}) instead of
* expensive loops.
*/

public class IMMUTABLE_LIST KEY_GENERIC extends LISTS.ImmutableListBase KEY_GENERIC
implements LIST KEY_GENERIC, RandomAccess, Cloneable, java.io.Serializable {
 private static final long serialVersionUID = 0L;

 SUPPRESS_WARNINGS_KEY_UNCHECKED_RAWTYPES
 static final IMMUTABLE_LIST EMPTY = new IMMUTABLE_LIST(ARRAYS.EMPTY_ARRAY);

#if KEYS_PRIMITIVE
#define _EMPTY_ARRAY ARRAYS.EMPTY_ARRAY
#else
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private static final KEY_GENERIC KEY_GENERIC_TYPE[] emptyArray() {
  return KEY_GENERIC_ARRAY_CAST ARRAYS.EMPTY_ARRAY;
 }
#define _EMPTY_ARRAY emptyArray()
#endif

 /** The backing array; all elements are part of this list. */
 private final KEY_GENERIC_TYPE a[];

 /** Creates a new immutable list using a given array.
  *
  * <p>Note that this constructor does not perform a defensive copy.
  *
  * @param a the array that will be used to back this immutable list.
  */

 public IMMUTABLE_LIST(final KEY_GENERIC_TYPE a[]) {
  this.a = a;
 }

 /** Creates a new immutable list and fills it with a given collection.
  *
  * @param c a collection that will be used to fill the immutable list.
  */

 public IMMUTABLE_LIST(final Collection<? extends KEY_GENERIC_CLASS> c) {
#if KEYS_PRIMITIVE
  this(c.isEmpty() ? _EMPTY_ARRAY : ITERATORS.unwrap( ITERATORS.AS_KEY_ITERATOR(c.iterator())));
#else
```

```
 this(c.isEmpty() ? _EMPTY_ARRAY : ITERATORS.unwrap(c.iterator()));
#endif
 }

/** Creates a new immutable list and fills it with a given type-specific collection.
 *
 * @param c a type-specific collection that will be used to fill the immutable list.
 */
public IMMUTABLE_LIST(final COLLECTION KEY_EXTENDS_GENERIC c) {
 this(c.isEmpty() ? _EMPTY_ARRAY : ITERATORS.unwrap(c.iterator()));
}

/** Creates a new immutable list and fills it with a given type-specific list.
 *
 * @param l a type-specific list that will be used to fill the immutable list.
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
public IMMUTABLE_LIST(final LIST KEY_EXTENDS_GENERIC l) {
 this(l.isEmpty() ? _EMPTY_ARRAY : KEY_GENERIC_ARRAY_CAST new KEY_TYPE[l.size()]);
 l.getElements(0, a, 0, l.size());
}

/** Creates a new immutable list and fills it with the elements of a given array.
 *
 * @param a an array whose elements will be used to fill the immutable list.
 * @param offset the first element to use.
 * @param length the number of elements to use.
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
public IMMUTABLE_LIST(final KEY_GENERIC_TYPE a[], final int offset, final int length) {
 this(length == 0 ? _EMPTY_ARRAY : KEY_GENERIC_ARRAY_CAST new KEY_TYPE[length]);
 System.arraycopy(a, offset, this.a, 0, length);
}

/** Creates a new immutable list and fills it with the elements returned by a type-specific iterator..
 *
 * @param i a type-specific iterator whose returned elements will fill the immutable list.
 */
public IMMUTABLE_LIST(final KEY_ITERATOR KEY_EXTENDS_GENERIC i) {
 this(i.hasNext() ? ITERATORS.unwrap(i) : _EMPTY_ARRAY);
}

/**
 * Returns an empty immutable list.
 * @return an immutable list (possibly shared) that is empty.
 */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static KEY_GENERIC IMMUTABLE_LIST KEY_GENERIC of() {
```

```
  return EMPTY;
  }

 /** Creates an immutable list using a list of elements.
  *
  * <p>Note that this method does not perform a defensive copy.
  *
  * @param init a list of elements that will be used to initialize the list.
  * @return a new immutable list containing the given elements.
  */
 SAFE_VARARGS
 public static KEY_GENERIC IMMUTABLE_LIST KEY_GENERIC of(final KEY_GENERIC_TYPE... init) {
  return init.length == 0 ? of() : new IMMUTABLE_LIST KEY_GENERIC(init);
 }

#if KEYS_INT_LONG_DOUBLE || KEYS_REFERENCE
 private static KEY_GENERIC IMMUTABLE_LIST KEY_GENERIC
convertTrustedToImmutableList(ARRAY_LIST KEY_GENERIC arrayList) {
  if (arrayList.isEmpty()) {
   return of();
  }
  KEY_GENERIC_TYPE backingArray[] = arrayList.elements();
  if (arrayList.size() != backingArray.length) {
   backingArray = java.util.Arrays.copyOf(backingArray, arrayList.size());
  }
  return new IMMUTABLE_LIST KEY_GENERIC_DIAMOND (backingArray);
 }
#endif

#if KEYS_INT_LONG_DOUBLE
 /** Collects the result of a primitive {@code Stream} into a new ImmutableList.
  *
  * <p>This method performs a terminal operation on the given {@code Stream}
  *
  * @apiNote Taking a primitive stream instead of returning something like a
  * {@link java.util.stream.Collector Collector} is necessary because there is no
  * primitive {@code Collector} equivalent in the Java API.
  */
 public static KEY_GENERIC IMMUTABLE_LIST KEY_GENERIC toList(JDK_PRIMITIVE_STREAM stream)
{
  return convertTrustedToImmutableList(ARRAY_LIST.toList(stream));
 }

 /** Collects the result of a primitive {@code Stream} into a new ImmutableList, potentially pre-allocated to handle
the given size.
  *
  * <p>This method performs a terminal operation on the given {@code Stream}
  *
```

```
  * @apiNote Taking a primitive stream instead returning something like a
  * {@link java.util.stream.Collector Collector} is necessary because there is no
  * primitive {@code Collector} equivalent in the Java API.
  */
 public static KEY_GENERIC IMMUTABLE_LIST KEY_GENERIC
toListWithExpectedSize(JDK_PRIMITIVE_STREAM stream, int expectedSize) {
  return convertTrustedToImmutableList(ARRAY_LIST.toListWithExpectedSize(stream, expectedSize));
 }
#elif KEYS_REFERENCE
 private static final Collector<KEY_TYPE, ?, IMMUTABLE_LIST<KEY_TYPE>> TO_LIST_COLLECTOR =
  Collector.of(
   ARRAY_LIST::new,
   ARRAY_LIST::add,
   ARRAY_LIST::combine,
   IMMUTABLE_LIST::convertTrustedToImmutableList);

 /** Returns a {@link Collector} that collects a {@code Stream}'s elements into a new ImmutableList. */
 SUPPRESS_WARNINGS_KEY_UNCHECKED_RAWTYPES
 public static KEY_GENERIC Collector<KEY_GENERIC_TYPE, ?, IMMUTABLE_LIST KEY_GENERIC>
toList() {
  return (Collector) TO_LIST_COLLECTOR;
 }

 /** Returns a {@link Collector} that collects a {@code Stream}'s elements into a new ImmutableList, potentially
pre-allocated to handle the given size. */
 public static KEY_GENERIC Collector<KEY_GENERIC_TYPE, ?, IMMUTABLE_LIST KEY_GENERIC>
toListWithExpectedSize(int expectedSize) {
  if (expectedSize <= ARRAY_LIST.DEFAULT_INITIAL_CAPACITY) {
   // Already below default capacity. Just use all default construction instead of fiddling with atomics in
SizeDecreasingSupplier
   return toList();
  }
  return Collector.<KEY_GENERIC_TYPE, ARRAY_LIST KEY_GENERIC, IMMUTABLE_LIST
KEY_GENERIC>of(
   new COLLECTIONS.SizeDecreasingSupplier<
#if KEYS_REFERENCE
     K,
#endif
     ARRAY_LIST KEY_GENERIC>(
    expectedSize, (int size) ->
     size <= ARRAY_LIST.DEFAULT_INITIAL_CAPACITY ? new ARRAY_LIST KEY_GENERIC() : new
ARRAY_LIST KEY_GENERIC(size)),
   ARRAY_LIST::add,
   ARRAY_LIST::combine,
   IMMUTABLE_LIST::convertTrustedToImmutableList);
 }
#endif
```

```
@Override
public KEY_GENERIC_TYPE GET_KEY(final int index) {
 if (index >= a.length) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than or equal to list
size (" + a.length + ")");
 return a[index];
}

@Override
public int indexOf(final KEY_TYPE k) {
 for(int i = 0, size = a.length; i < size; i++) if (KEY_EQUALS(k, a[i])) return i;
 return -1;
}



@Override
public int lastIndexOf(final KEY_TYPE k) {
 for(int i = a.length; i-- != 0;) if (KEY_EQUALS(k, a[i])) return i;
 return -1;
}

@Override
public int size() {
 return a.length;
}

@Override
public boolean isEmpty() {
 return a.length == 0;
}

 /** Copies element of this type-specific list into the given array using optimized system calls.
 *
 * @param from the start index (inclusive).
 * @param a the destination array.
 * @param offset the offset into the destination array where to store the first element copied.
 * @param length the number of elements to be copied.
 */
@Override
public void getElements(final int from, final KEY_TYPE[] a, final int offset, final int length) {
 ARRAYS.ensureOffsetLength(a, offset, length);
 System.arraycopy(this.a, from, a, offset, length);
}

@Override
public void forEach(final METHOD_ARG_KEY_CONSUMER action) {
 for (int i = 0; i < a.length; ++i) {
  action.accept(a[i]);
 }
```

```
 }

#if KEYS_PRIMITIVE
 @Override
 public KEY_TYPE[] TO_KEY_ARRAY() {
  return a.clone();
 }

 @Override
 public KEY_TYPE[] toArray(KEY_TYPE a[]) {
  if (a == null || a.length < size()) a = new KEY_TYPE[this.a.length];
  System.arraycopy(this.a, 0, a, 0, a.length);
  return a;
 }
#else // KEYS_REFERENCE
 @Override
 public Object[] toArray() {
  // A subtle part of the spec says the returned array must be Object[] exactly.
  if (a.getClass().equals(Object[].class)) {
   return a.clone();
  }
  return java.util.Arrays.copyOf(a, a.length, Object[].class);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public KEY_GENERIC KEY_GENERIC_TYPE[] toArray(KEY_GENERIC_TYPE a[]) {
  if (a == null) {
   a = KEY_GENERIC_ARRAY_CAST new Object[size()];
  } else if (a.length < size()) {
   a = KEY_GENERIC_ARRAY_CAST Array.newInstance(a.getClass().getComponentType(), size());
  }
  System.arraycopy(this.a, 0, a, 0, size());
  if (a.length > size()) {
   a[size()] = null;
  }
  return a;
 }
#endif

 @Override
 public KEY_LIST_ITERATOR KEY_GENERIC listIterator(final int index) {
  ensureIndex(index);

  return new KEY_LIST_ITERATOR KEY_GENERIC() {
    int pos = index;

    @Override
```

```
   public boolean hasNext() { return pos < a.length; }
   @Override
   public boolean hasPrevious() { return pos > 0; }
   @Override
   public KEY_GENERIC_TYPE NEXT_KEY() { if (! hasNext()) throw new NoSuchElementException(); return
a[pos++]; }
   @Override
   public KEY_GENERIC_TYPE PREV_KEY() { if (! hasPrevious()) throw new NoSuchElementException(); return
a[--pos]; }
   @Override
   public int nextIndex() { return pos; }
   @Override
   public int previousIndex() { return pos - 1; }
   @Override
   public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
    while (pos < a.length) {
     action.accept(a[pos++]);
    }
   }
   @Override
   public void add(KEY_GENERIC_TYPE k) {
    throw new UnsupportedOperationException();
   }
   @Override
   public void set(KEY_GENERIC_TYPE k) {
    throw new UnsupportedOperationException();
   }
   @Override
   public void remove() {
    throw new UnsupportedOperationException();
   }
   @Override
   public int back(int n) {
    if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
    final int remaining = a.length - pos;
    if (n < remaining) {
     pos -= n;
    } else {
     n = remaining;
     pos = 0;
    }
    return n;
   }
   @Override
   public int skip(int n) {
    if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
    final int remaining = a.length - pos;
    if (n < remaining) {
```

```
     pos += n;
    } else {
     n = remaining;
     pos = a.length;
    }
   return n;
  }
 };
}

private final class Spliterator implements KEY_SPLITERATOR KEY_GENERIC {
 int pos, max;

#ifdef TEST
 // Sentinel to make sure we don't accidentally use size when we mean max
 @Deprecated
 private final Object size = null;
#endif

 public Spliterator() {
  this(0, a.length);
 }

 private Spliterator(int pos, int max) {
  assert pos <= max : "pos " + pos + " must be <= max " + max;
  this.pos = pos;
  this.max = max;
 }

 @Override
 public int characteristics() { return SPLITERATORS.LIST_SPLITERATOR_CHARACTERISTICS |
java.util.Spliterator.IMMUTABLE; }

 @Override
 public long estimateSize() { return max - pos; }

 @Override
 public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
  if (pos >= max) return false;
  action.accept(a[pos++]);
  return true;
 }

 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  for (; pos < max; ++pos) {
   action.accept(a[pos]);
  }
```

```
   }

   @Override
   public long skip(long n) {
    if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
    if (pos >= max) return 0;
    final int remaining = max - pos;
    if (n < remaining) {
     pos = it.unimi.dsi.fastutil.SafeMath.safeLongToInt(pos + n);
     return n;
    }
    n = remaining;
    pos = max;
    return n;
   }

   @Override
   public KEY_SPLITERATOR KEY_GENERIC trySplit() {
    int retLen = (max - pos) >> 1;
    if (retLen <= 1) return null;
    int myNewPos = pos + retLen;
    int retMax = myNewPos;
    int oldPos = pos;
    this.pos = myNewPos;
    return new Spliterator(oldPos, retMax);
   }
  }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC spliterator() {
   return new Spliterator();
  }

  private final static class ImmutableSubList KEY_GENERIC extends LISTS.ImmutableListBase KEY_GENERIC
 implements java.util.RandomAccess, java.io.Serializable {
   private static final long serialVersionUID = 7054639518438982401L;
   final IMMUTABLE_LIST KEY_GENERIC innerList;
   final int from;
   final int to;
   /**
    * An alias to {@code innerList}'s array to save some typing. Note that 0 in this array is actually
    * the first element of the {@code innerList}, not this sublist. {@code a[from]} is the
    * first element of this sublist.
    */
   final transient KEY_GENERIC_TYPE a[];

   /** No validation; callers must validate arguments. */
   ImmutableSubList(IMMUTABLE_LIST KEY_GENERIC innerList, int from, int to) {
```

```
 this.innerList = innerList;
 this.from = from;
 this.to = to;
 this.a = innerList.a;
}

@Override
public KEY_GENERIC_TYPE GET_KEY(final int index) {
 ensureRestrictedIndex(index);
 return a[index + from];
}

@Override
public int indexOf(final KEY_TYPE k) {
 for(int i = from; i < to; i++) if (KEY_EQUALS(k, a[i])) return i - from;
 return -1;
}

@Override
public int lastIndexOf(final KEY_TYPE k) {
 for(int i = to; i-- != from;) if (KEY_EQUALS(k, a[i])) return i - from;
 return -1;
}

@Override
public int size() {
 return to - from;
}

@Override
public boolean isEmpty() {
 return to <= from;
}

@Override
public void getElements(final int fromSublistIndex, final KEY_TYPE[] a, final int offset, final int length) {
 ARRAYS.ensureOffsetLength(a, offset, length);
 ensureRestrictedIndex(fromSublistIndex);
 if (from + length > to)
  throw new IndexOutOfBoundsException("Final index " + (from + length) + " (startingIndex: " + from + " + length:
" + length + ") is greater then list length " + size());
 System.arraycopy(this.a, fromSublistIndex + from, a, offset, length);
}

@Override
public void forEach(final METHOD_ARG_KEY_CONSUMER action) {
 for (int i = from; i < to; ++i) {
  action.accept(a[i]);
```

```
  }
 }

#if KEYS_PRIMITIVE
 @Override
 public KEY_TYPE[] TO_KEY_ARRAY() {
  return java.util.Arrays.copyOfRange(a, from, to);
 }

 @Override
 public KEY_TYPE[] toArray(KEY_TYPE a[]) {
  if (a == null || a.length < size()) a = new KEY_TYPE[size()];
  System.arraycopy(this.a, from, a, 0, size());
  return a;
 }
#else // KEYS_REFERENCE
 @Override
 public Object[] toArray() {
  // A subtle part of the spec says the returned array must be Object[] exactly.
  return java.util.Arrays.copyOfRange(a, from, to, Object[].class);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public KEY_GENERIC KEY_GENERIC_TYPE[] toArray(KEY_GENERIC_TYPE a[]) {
  final int size = size();
  if (a == null) {
   a = KEY_GENERIC_ARRAY_CAST new Object[size];
  } else if (a.length < size) {
   a = KEY_GENERIC_ARRAY_CAST Array.newInstance(a.getClass().getComponentType(), size);
  }
  System.arraycopy(this.a, from, a, 0, size);
  if (a.length > size) {
   a[size] = null;
  }
  return a;
 }
#endif

 @Override
 public KEY_LIST_ITERATOR KEY_GENERIC listIterator(final int index) {
  ensureIndex(index);

  return new KEY_LIST_ITERATOR KEY_GENERIC() {
    int pos = index;

    @Override
    public boolean hasNext() { return pos < to; }
```

```
   @Override
   public boolean hasPrevious() { return pos > from; }
   @Override
   public KEY_GENERIC_TYPE NEXT_KEY() { if (! hasNext()) throw new NoSuchElementException(); return
a[pos++ + from]; }
   @Override
   public KEY_GENERIC_TYPE PREV_KEY() { if (! hasPrevious()) throw new NoSuchElementException(); return
a[--pos + from]; }
   @Override
   public int nextIndex() { return pos; }
   @Override
   public int previousIndex() { return pos - 1; }
   @Override
   public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
    while (pos < to) {
     action.accept(a[pos++ + from]);
    }
   }
   @Override
   public void add(KEY_GENERIC_TYPE k) {
    throw new UnsupportedOperationException();
   }
   @Override
   public void set(KEY_GENERIC_TYPE k) {
    throw new UnsupportedOperationException();
   }
   @Override
   public void remove() {
    throw new UnsupportedOperationException();
   }
   @Override
   public int back(int n) {
    if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
    final int remaining = to - pos;
    if (n < remaining) {
     pos -= n;
    } else {
     n = remaining;
     pos = 0;
    }
    return n;
   }
   @Override
   public int skip(int n) {
    if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
    final int remaining = to - pos;
    if (n < remaining) {
     pos += n;
```

```
      } else {
       n = remaining;
       pos = to;
      }
     return n;
    }
   };
  }

  private final class SubListSpliterator extends SPLITERATORS.EarlyBindingSizeIndexBasedSpliterator
KEY_GENERIC {

   // We are using pos == 0 to be 0 relative to real array 0
   SubListSpliterator() {
    super(from, to);
   }

   /** No validation; callers must validate arguments. */
   private SubListSpliterator(int pos, int maxPos) {
    super(pos, maxPos);
   }

   // Remember, the indexes we are getting is the real array's index, not our sublist relative index.
    @Override
   protected final KEY_GENERIC_TYPE get(int i) { return a[i]; }
   @Override
   protected final SubListSpliterator makeForSplit(int pos, int maxPos) {
    return new SubListSpliterator(pos, maxPos);
   }
   @Override
   public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
    if (pos >= maxPos) return false;
    action.accept(a[pos++]);
    return true;
   }
   @Override
   public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
    final int max = maxPos;
    while(pos < max) {
     action.accept(a[pos++]);
    }
   }
   @Override
   public int characteristics() { return SPLITERATORS.LIST_SPLITERATOR_CHARACTERISTICS |
java.util.Spliterator.IMMUTABLE; }
  }

  @Override
```

```
  public KEY_SPLITERATOR KEY_GENERIC spliterator() {
   return new SubListSpliterator();
  }

  boolean contentsEquals(KEY_GENERIC_TYPE[] otherA, int otherAFrom, int otherATo) {
   if (a == otherA && from == otherAFrom && to == otherATo) {
    return true;
   }
   if (otherATo - otherAFrom != size()) {
    return false;
   }
   int pos = from, otherPos = otherAFrom;
   // We have already assured that the two ranges are the same size, so we only need to check one bound.
   // TODO When minimum version of Java becomes Java 9, use the Arrays.equals which takes bounds, which is
vectorized.
   // Make sure to split out the reference equality case when you do this.
#if KEY_CLASS_Object
   while(pos < to) if (!java.util.Objects.equals(a[pos++], otherA[otherPos++])) return false;
#else
   while(pos < to) if (a[pos++] != otherA[otherPos++]) return false;
#endif
   return true;
  }

  @Override
  public boolean equals(Object o) {
   if (o == this) return true;
   if (o == null) return false;
   if (!(o instanceof java.util.List)) return false;
   if (o instanceof IMMUTABLE_LIST) {
    SUPPRESS_WARNINGS_KEY_UNCHECKED
    IMMUTABLE_LIST KEY_GENERIC other = (IMMUTABLE_LIST KEY_GENERIC) o;
    return contentsEquals(other.a, 0, other.size());
   }
   if (o instanceof ImmutableSubList) {
    SUPPRESS_WARNINGS_KEY_UNCHECKED
    ImmutableSubList KEY_GENERIC other = (ImmutableSubList KEY_GENERIC) o;
    return contentsEquals(other.a, other.from, other.to);
   }
   return super.equals(o);
  }

#if ! KEYS_USE_REFERENCE_EQUALITY
  SUPPRESS_WARNINGS_KEY_UNCHECKED
  int contentsCompareTo(KEY_GENERIC_TYPE[] otherA, int otherAFrom, int otherATo) {
#if KEYS_PRIMITIVE // Can't make this assumption for reference types in case we have a goofy Comparable that
doesn't compare itself equal
   if (a == otherA && from == otherAFrom && to == otherATo) return 0;
```

```
#endif
  // TODO When minimum version of Java becomes Java 9, use Arrays.compare, which vectorizes.
  KEY_GENERIC_TYPE e1, e2;
  int r, i, j;
  for(i = from, j = otherAFrom; i < to && i < otherATo; i++, j++) {
   e1 = a[i];
   e2 = otherA[j];
   if ((r = KEY_CMP(e1, e2)) != 0) return r;
  }
  return i < otherATo ? -1 : (i < to ? 1 : 0);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public int compareTo(final java.util.List <? extends KEY_GENERIC_CLASS> l) {
  if (l instanceof IMMUTABLE_LIST) {
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   IMMUTABLE_LIST KEY_GENERIC other = (IMMUTABLE_LIST KEY_GENERIC) l;
   return contentsCompareTo(other.a, 0, other.size());
  }
  if (l instanceof ImmutableSubList) {
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   ImmutableSubList KEY_GENERIC other = (ImmutableSubList KEY_GENERIC) l;
   return contentsCompareTo(other.a, other.from, other.to);
  }
  return super.compareTo(l);
 }

#endif

 private Object readResolve() throws java.io.ObjectStreamException {
  // We need to recheck the invariants of the subList and reestablish our "a" array alias.
  // Easiest way to do this is to just make a subList anew.
  // This will not cause a recopy of contents as subLists are a view, so this is all constant time.
  try {
   return innerList.subList(from, to);
  } catch (IllegalArgumentException | IndexOutOfBoundsException ex) {
   throw (java.io.InvalidObjectException) (new java.io.InvalidObjectException(ex.getMessage()).initCause(ex));
  }
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public LIST KEY_GENERIC subList(int from, int to) {
  // We don't need to worry about keeping all nested sublists up to date with bounds as we are immutable.
  // So don't even nest; just return a sublist with the immediate parent of the root list.
  ensureIndex(from);
  ensureIndex(to);
```

```
  if (from == to) return EMPTY;
  if (from > to) throw new IllegalArgumentException("Start index (" + from + ") is greater than end index (" + to +
")");
  return new ImmutableSubList KEY_GENERIC_DIAMOND(innerList, from + this.from, to + this.from);
 }
}

/**
 * {@inheritDoc}
 *
 * @apiNote The returned list will be immutable, but is currently not declared to return an
 * instance of {@code ImmutableList} due to complications of implementation details.
 * This may change in a future version (in other words, do not consider the return type of
 * this method to be stable if making a subclass of {@code ImmutableList}).
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public LIST KEY_GENERIC subList(int from, int to) {
 if (from == 0 && to == size()) return this;
 ensureIndex(from);
 ensureIndex(to);
 if (from == to) return EMPTY;
 if (from > to) throw new IllegalArgumentException("Start index (" + from + ") is greater than end index (" + to +
")");
 return new ImmutableSubList KEY_GENERIC_DIAMOND(this, from, to);
}


@Override
public IMMUTABLE_LIST KEY_GENERIC clone() {
 return this;
}

/** Compares this type-specific immutable list to another one.
 *
 * @apiNote This method exists only for sake of efficiency. The implementation
 * inherited from the abstract implementation would already work.
 *
 * @param l a type-specific immutable list.
 * @return true if the argument contains the same elements of this type-specific immutable list.
 */
public boolean equals(final IMMUTABLE_LIST KEY_GENERIC l) {
 if (l == this) return true;
 if (a == l.a) return true;
 int s = size();
 if (s != l.size()) return false;
 final KEY_GENERIC_TYPE[] a1 = a;
 final KEY_GENERIC_TYPE[] a2 = l.a;
```

```
#if KEYS_USE_REFERENCE_EQUALITY
  while(s-- !=  0) if (a1[s] != a2[s]) return false;
  return true;
#else
  return java.util.Arrays.equals(a1, a2);
#endif
 }

#if KEYS_REFERENCE
 @SuppressWarnings({"unchecked", "unlikely-arg-type"})
#else
 @SuppressWarnings("unlikely-arg-type")
#endif
 @Override
 public boolean equals(final Object o) {
  if (o == this) return true;
  if (o == null) return false;
  if (!(o instanceof java.util.List)) return false;
  if (o instanceof IMMUTABLE_LIST) {
   return equals((IMMUTABLE_LIST KEY_GENERIC) o);
  }
  if (o instanceof ImmutableSubList) {
   // Sublist has an optimized sub-array based comparison, reuse that.
   return ((ImmutableSubList KEY_GENERIC)o).equals(this);
  }
  return super.equals(o);
 }

#if ! KEYS_USE_REFERENCE_EQUALITY
 /** Compares this immutable list to another immutable list.
  *
  * @apiNote This method exists only for sake of efficiency. The implementation
  * inherited from the abstract implementation would already work.
  *
  * @param l an immutable list.
  * @return a negative integer,
  * zero, or a positive integer as this list is lexicographically less than, equal
  * to, or greater than the argument.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public int compareTo(final IMMUTABLE_LIST KEY_EXTENDS_GENERIC l) {
#if KEYS_PRIMITIVE // Can't make this assumption for reference types in case we have a goofy Comparable that
doesn't compare itself equal
  if (a == l.a) return 0;
#endif
  // TODO When minimum version of Java becomes Java 9, use Arrays.compare, which vectorizes.
  final int s1 = size(), s2 = l.size();
```

```
  final KEY_GENERIC_TYPE a1[] = a, a2[] = l.a;
  KEY_GENERIC_TYPE e1, e2;
  int r, i;

  for(i = 0; i < s1 && i < s2; i++) {
   e1 = a1[i];
   e2 = a2[i];
   if ((r = KEY_CMP(e1, e2)) != 0) return r;
  }

  return i < s2 ? -1 : (i < s1 ? 1 : 0);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public int compareTo(final java.util.List <? extends KEY_GENERIC_CLASS> l) {
  if (l instanceof IMMUTABLE_LIST) {
   return compareTo((IMMUTABLE_LIST KEY_EXTENDS_GENERIC)l);
  }
  if (l instanceof ImmutableSubList) {
   // Safe to strip the "extends" because we will only ever take elements, never modify them (especially because it is immutable).
   ImmutableSubList KEY_GENERIC other = (ImmutableSubList KEY_GENERIC)l;
   // Must negate because we are inverting the order of the comparison.
   return -other.compareTo(this);
  }
  return super.compareTo(l);
 }
#endif
}

#undef _EMPTY_ARRAY
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/ImmutableList.drv
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```
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* limitations under the License.
*/

package PACKAGE;

import java.util.Spliterator;
#if KEYS_PRIMITIVE
import java.util.function.Consumer;
#endif

/** A type-specific {@link Spliterator}; provides an additional methods to avoid (un)boxing, and
* the possibility to skip elements.
*
* @author C. Sean Young &lt;csyoung@google.com&gt;
* @see Spliterator
* @since 8.5.0
*/

#if KEYS_INT_LONG_DOUBLE
public interface KEY_SPLITERATOR KEY_GENERIC extends JDK_PRIMITIVE_SPLITERATOR {
#elif KEYS_PRIMITIVE
public interface KEY_SPLITERATOR KEY_GENERIC extends
Spliterator.OfPrimitive<KEY_GENERIC_CLASS, KEY_CONSUMER, KEY_SPLITERATOR KEY_GENERIC>
{
#else
public interface KEY_SPLITERATOR KEY_GENERIC extends Spliterator<KEY_GENERIC_CLASS> {
#endif

#if KEYS_PRIMITIVE

 // tryAdvance(KEY_CONSUMER action) declaration inherited from super interface.

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default boolean tryAdvance(final Consumer<? super KEY_GENERIC_CLASS> action) {
  // The instanceof and cast is required for performance. Without it, calls routed through this
  // overload using a primitive consumer would go through the slow lambda.
  return tryAdvance(action instanceof METHOD_ARG_KEY_CONSUMER ?
(METHOD_ARG_KEY_CONSUMER)action : (METHOD_ARG_KEY_CONSUMER) action::accept);
 }

#if KEYS_INT_LONG_DOUBLE
 // Because our primitive Consumer interface extends both the JDK's primitive
 // and object Consumer interfaces, calling this method with it would be ambiguous.
```

```
 // This overload exists to pass it to the proper primitive overload.
 /**
  * Attempts to perform the action on the next element, or do nothing
  * but return {@code false} if there are no remaining elements.
  *
  * <p><b>WARNING</b>: Overriding this method is almost always a mistake, as this
  * overload only exists to disambiguate. Instead, override the {@code tryAdvance()} overload
  * that uses the JDK's primitive consumer type (e.g., {@link java.util.function.IntConsumer}).
  *
  * <br>If Java supported final default methods, this would be one, but sadly it does not.
  *
  * <p>If you checked and are overriding the version with {@code java.util.function.XConsumer}, and
  * still see this warning, then your IDE is incorrectly conflating this method with the proper
  * method to override, and you can safely ignore this message.
  *
  * @param action the action to be performed on the next element.
  * @return whether there was a next element the action was performed on
  * @see java.util.Spliterator#tryAdvance(java.util.function.Consumer)
  */
 default boolean tryAdvance(final KEY_CONSUMER action) {
  return tryAdvance((JDK_PRIMITIVE_KEY_CONSUMER) action);
 }
#endif

 // forEachRemaining(KEY_CONSUMER action) default impl inherited from super interface.

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
  // The instanceof and cast is required for performance. Without it, calls routed through this
  // overload using a primitive consumer would go through the slow lambda.
  // This is not just theoretical; Oracle's Stream implementation (Pipeline) routes primitive
  // consumer calls through this overload, and the difference in performance is an order
  // of magnitude.
  forEachRemaining(action instanceof METHOD_ARG_KEY_CONSUMER ?
(METHOD_ARG_KEY_CONSUMER)action : (METHOD_ARG_KEY_CONSUMER) action::accept);
 }

#endif

#if KEYS_INT_LONG_DOUBLE
 // Because our primitive Consumer interface extends both the JDK's primitive
 // and object Consumer interfaces, calling this method with it would be ambiguous.
 // This overload exists to pass it to the proper primitive overload.
 /**
  * Performs the given action for each remaining element until all elements
```

```
 * have been processed or the action throws an exception.
 *
 * <p><b>WARNING</b>: Overriding this method is almost always a mistake, as this
 * overload only exists to disambiguate. Instead, override the {@code forEachRemaining()} overload
 * that uses the JDK's primitive consumer type (e.g. {@link java.util.function.IntConsumer}).
 *
 * <p>If Java supported final default methods, this would be one, but sadly it does not.
 *
 * <p>If you checked and are overriding the version with {@code java.util.function.XConsumer}, and
 * still see this warning, then your IDE is incorrectly conflating this method with the proper
 * method to override, and you can safely ignore this message.
 *
 * @param action the action to be performed for each element.
 * @see java.util.Spliterator#forEachRemaining(java.util.function.Consumer)
 */
default void forEachRemaining(final KEY_CONSUMER action) {
 forEachRemaining((JDK_PRIMITIVE_KEY_CONSUMER) action);
}
#endif

/** Skips the given number of elements.
 *
 * <p>The effect of this call is exactly the same as that of calling {@link #tryAdvance} for
 * {@code n} times (possibly stopping if {@link #tryAdvance} returns false).
 * The action called will do nothing; elements will be discarded.
 *
 * @implSpec This default implementation is linear in n. It is expected concrete implementations
 * that are capable of it will override it to run lower time, but be prepared for linear time.
 *
 * @param n the number of elements to skip.
 * @return the number of elements actually skipped.
 * @see Spliterator#tryAdvance
 */
default long skip(final long n) {
 if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
 long i = n;
 while(i-- != 0 && tryAdvance((KEY_GENERIC_TYPE unused) -> {})) {}  // No loop body; logic all happens in
conditional
 return n - i - 1;
}

/**
  * {@inheritDoc}
  *
  * @apiNote Note that this specification strengthens the one given in {@link Spliterator#trySplit()}.
  */
@Override
KEY_SPLITERATOR KEY_GENERIC trySplit();
```

```
#if KEYS_PRIMITIVE
 /**
  * {@inheritDoc}
  *
  * @apiNote Note that this specification strengthens the one given in {@link Spliterator#getComparator()}.
  */
 @Override
 default KEY_COMPARATOR KEY_SUPER_GENERIC getComparator() {
  throw new IllegalStateException();
 }
#endif
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Spliterator.drv
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```
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 */
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/floats/FloatArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/booleans/BooleanArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/bytes/ByteArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/chars/CharArrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/ShortArrays.java
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```
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* limitations under the License.
*/


package PACKAGE;

#if KEYS_REFERENCE
import java.util.function.Consumer;
#endif

/** A class providing static methods and objects that do useful things with type-specific spliterators on
* big (potentially greater then {@link Integer#MAX_VALUE} items long).
*
* Since the {@link java.util.Spliterator} interface already natively works in long indexes, most of the
```

```
* utility methods reside in the regular {@code Spliterators} class.
*
* @author C. Sean Young &lt;csyoung@google.com&gt;
*
* @since 8.5.0
*/
public final class BIG_SPLITERATORS {

 /**
  * A skeletal implementation for a spliterator backed by an index based data store. High performance
  * concrete implementations (like the main Spliterator of BigArrayBigList) generally should avoid using this
  * and just implement the interface directly, but should be decent for less
  * performance critical implementations.
  *
  * <p>As the abstract methods in this class are used in inner loops, it is generally a
  * good idea to override the class as {@code final} as to encourage the JVM to inline
  * them (or alternatively, override the abstract methods as final).
  */
 public static abstract class AbstractIndexBasedSpliterator KEY_GENERIC extends
KEY_ABSTRACT_SPLITERATOR KEY_GENERIC {

  /** The current position index, the index of the item to be given after the next call to {@link #tryAdvance}.
   *
   * <p>This value will be between {@code minPos} and {@link #getMaxPos()} (exclusive) (on a best effort, so
concurrent
   * structural modifications may cause this to be violated, but that usually invalidates spliterators anyways).
   * Thus {@code pos} being {@code minPos + 2} would mean {@link #tryAdvance}
   * was called twice and the next call will give the third element of this spliterator.
   */
  protected long pos;

  protected AbstractIndexBasedSpliterator(long initialPos) {
   this.pos = initialPos;
  }

  // When you implement these, you should probably declare them final to encourage the JVM to inline them.

  /** Get the item corresponding to the given index location.
   *
   * <p>Do <em>not</em> advance {@link #pos} in this method; the default {@link #tryAdvance} and
   * {@link #forEachRemaining} methods takes care of this.
   *
   * <p>The {@code location} given will be between {@code minPos} and {@link #getMaxPos()} (exclusive).
   * Thus, a {@code location} of {@code minPos + 2} would mean {@link #tryAdvance} was called twice
   * and this method should return what the next call to {@link #tryAdvance()} should give.
   */
  protected abstract KEY_GENERIC_TYPE get(long location);
```

```
  /** The maximum pos can be, and is the logical end (exclusive) of the "range".
   *
   * <p>If pos is equal to the return of this method, this means the last element has been returned and the next call to
{@link #tryAdvance} will return {@code false}.
   *
   * <p>Usually set return the parent {@linkplain java.util.Collection#size() collection's size}, but does not have to be
   * (for example, sublists and subranges).
   *
   * <p>This method allows the implementation to decide how it binds on the size (late or early).
   * However, {@link EarlyBindingSizeIndexBasedSpliterator} and {@link LateBindingSizeIndexBasedSpliterator}
give
   * an implementation of this method for the two most common strategies.
   */
  protected abstract long getMaxPos();

  /** Make a new spliterator to {@link #trySplit()} starting with the given {@code pos}
   * and ending at the given {@code maxPos}.
   *
   * <p>An implementation is free to look at the range given, and if it deems it too small
   * to split further, return {@code null}. In which case, {@link #trySplit()} will not
   * modify the state of this spliterator.
   *
   * <p>Do <em>not</em> modify {@link #pos} in this method; the default {@link #trySplit()}
   * method takes care of this.
   *
   * <p>To comply with the spec of {@link java.util.Spliterator#ORDERED}, this will
   * only be called to create prefixes of the current sequence this spliterator is over,
   * and this instance will start at the end of the returned sequence and have the same
   * end point.
   * As such, this method should also not change what {@link #getMaxPos()} returns.
   */
  protected abstract KEY_SPLITERATOR KEY_GENERIC makeForSplit(long pos, long maxPos);

  /** Compute where to split on the next {@link #trySplit()}, given the current pos and
   * {@link #getMaxPos()} (or any other metric the implementation wishes to use).
   *
   * <p>If a value {@code == pos} or {@code == getMaxPos()} is returned, the
   * {@link #trySplit()} method will assume a split of size 0 was computed,
   * and thus won't split or change state. If a value outside that range is
   * returned, then {@link #trySplit()} will throw {@link IndexOutOfBoundsException}.
   * In particular, this means that no handling of overflow or underflow
   * is performed.
   *
   * @apiNote The reasoning behind the throwing if out of range behavior is that, even
   * though it can significantly slow the process of splitting, it is much better then
   * risking a buggy implementation causing splits to stop happening much earlier then
   * intended. Also, splitting is not usually in the "inner loop" of stream operations,
   * so this slowness isn't in the bottleneck. That and we have already warned that
```

```
 * high performance spliterators should prefer implementing all the methods themselves
 * instead of through this interface.
 *
 * @implSpec This default implementation is a simple split-by-2 strategy, dividing
 * in the middle of pos and {@link #getMaxPos()}. It is unspecified whether
 * the first range or the second range will be larger in the case of an odd length range.
 */
protected long computeSplitPoint() {
 // Overflow safe midpoint computation.
 return pos + ((getMaxPos() - pos) / 2);
}

private void splitPointCheck(final long splitPoint, final long observedMax) {
 // TODO When minimum Java version becomes Java 9, use Objects.checkFromToIndex (after first letting == max
case pass through)
 if (splitPoint < pos || splitPoint > observedMax) {
  throw new IndexOutOfBoundsException("splitPoint " + splitPoint + " outside of range of current position " + pos +
" and range end " + observedMax);
 }
}

// Since this is an index based spliterator, list characteristics make sense.
@Override
public int characteristics() { return SPLITERATORS.LIST_SPLITERATOR_CHARACTERISTICS; }

@Override
public long estimateSize() { return getMaxPos() - pos; }

@Override
public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
 if (pos >= getMaxPos()) return false;
 action.accept(get(pos++));
 return true;
}

@Override
public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
 for (final long max = getMaxPos(); pos < max; ++pos) {
  action.accept(get(pos));
 }
}

@Override
public long skip(long n) {
 if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
 final long max = getMaxPos();
 if (pos >= max) return 0;
 final long remaining = max - pos;
```

```
  if (n < remaining) {
   pos += n;
   return n;
  }
  n = remaining;
  pos = max;
  return n;
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation always returns a prefix of the elements, in order to comply with
  * the {@link java.util.Spliterator#ORDERED} property. This means this current iterator does not need to
  * to update what {@link #getMaxPos()} returns in response to this method (but it may do
  * "book-keeping" on it based on binding strategy).
  *
  * <p>The split point is computed by {@link #computeSplitPoint()}; see that method for details.
  *
  * @throws IndexOutOfBoundsException if the return of {@link #computeSplitPoint()} was
  *  {@code < pos} or {@code > {@link #getMaxPos()}}.
  */
 @Override
 public KEY_SPLITERATOR KEY_GENERIC trySplit() {
  final long max = getMaxPos();
  final long splitPoint = computeSplitPoint();
  if (splitPoint == pos || splitPoint == max) return null;
  splitPointCheck(splitPoint, max);
  long oldPos = pos;
  KEY_SPLITERATOR KEY_GENERIC maybeSplit = makeForSplit(oldPos, splitPoint);
  if (maybeSplit != null) this.pos = splitPoint;
  return maybeSplit;
 }
}

/**
 * A skeletal implementation for a spliterator backed by an index based data store. High performance
 * concrete implementations (like the main Spliterator of ArrayList) generally should avoid using this
 * and just implement the interface directly, but should be decent for less
 * performance critical implementations.
 *
 * <p>This class implements an early binding strategy for {@link #getMaxPos()}. The last index
 * this spliterator covers is fixed at construction time and does not vary on changes to the
 * backing data store. This should usually be the {@linkplain java.util.Collection#size() size} of the
 * backing data store (until a split at least), hence the class' name, but this is not required.
 *
 * <p>As the abstract methods in this class are used in inner loops, it is generally a
 * good idea to override the class as {@code final} as to encourage the JVM to inline
 * them (or alternatively, override the abstract methods as final).
```

```
 */
 public static abstract class EarlyBindingSizeIndexBasedSpliterator KEY_GENERIC extends
AbstractIndexBasedSpliterator KEY_GENERIC {
  /** The maximum {@link #pos} can be */
  protected final long maxPos;

 protected EarlyBindingSizeIndexBasedSpliterator(long initialPos, long maxPos) {
  super(initialPos);
  this.maxPos = maxPos;
 }

 @Override
 protected final long getMaxPos() { return maxPos; }
}

/**
 * A skeletal implementation for a spliterator backed by an index based data store. High performance
 * concrete implementations (like the main Spliterator of ArrayList) generally should avoid using this
 * and just implement the interface directly, but should be decent for less
 * performance critical implementations.
 *
 * <p>This class implements a late binding strategy. On a new, non-split instance, the
 * {@link #getMaxPos() max pos} will track the given data store (usually it's
 * {@linkplain java.util.Collection#size() size}, hence the class' name). On the first
 * {@linkplain #trySplit() split}, the last index will be read from the backing data store one
 * last time and then be fixed for the remaining duration of this instance.<br>
 * The returned split <em>should</em> should also be have a constant {@code maxPos}.
 *
 * <p>As the abstract methods in this class are used in inner loops, it is generally a
 * good idea to override the class as {@code final} as to encourage the JVM to inline
 * them (or alternatively, override the abstract methods as final).
 */
 public static abstract class LateBindingSizeIndexBasedSpliterator KEY_GENERIC extends
AbstractIndexBasedSpliterator KEY_GENERIC {
  /** The maximum {@link #pos} can be, or -1 if it hasn't been fixed yet. */
  protected long maxPos = -1;
  private boolean maxPosFixed;

 protected LateBindingSizeIndexBasedSpliterator(long initialPos) {
  super(initialPos);
  this.maxPosFixed = false;
 }

 protected LateBindingSizeIndexBasedSpliterator(long initialPos, long fixedMaxPos) {
  super(initialPos);
  this.maxPos = fixedMaxPos;
  this.maxPosFixed = true;
 }
```

```
  /** Return the maximum pos can be dynamically tracking the backing data store.
   *
   * <p>This method will be the return value of {@link #getMaxPos()} until this spliterator
   * is {@linkplain #trySplit()} split, in which case its final return value will be saved
   * and remain constant for the rest of the duration of this instance.
   */
  protected abstract long getMaxPosFromBackingStore();

  @Override
  protected final long getMaxPos() { return maxPosFixed ? maxPos : getMaxPosFromBackingStore(); }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC trySplit() {
   KEY_SPLITERATOR KEY_GENERIC maybeSplit = super.trySplit();
   if (!maxPosFixed && maybeSplit != null) {
    maxPos = getMaxPosFromBackingStore();
    maxPosFixed = true;
   }
   return maybeSplit;
  }
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/BigSpliterators.drv
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```
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* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
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* limitations under the License.
*/



package PACKAGE;

#if KEY_CLASS_Object
```

```
import java.util.Comparator;
import it.unimi.dsi.fastutil.IndirectPriorityQueue;
#endif

import java.util.NoSuchElementException;

#if ! KEY_CLASS_Integer
import it.unimi.dsi.fastutil.ints.IntArrays;
#endif

/** A type-specific heap-based semi-indirect priority queue.
*
* <p>Instances of this class use as reference list a <em>reference array</em>,
* which must be provided to each constructor. The priority queue is
* represented using a heap. The heap is enlarged as needed, but it is never
* shrunk. Use the {@link #trim()} method to reduce its size, if necessary.
*
* @implSpec This implementation allows one to enqueue several time the same index, but
* you must be careful when calling {@link #changed()}.
*/

public class HEAP_SEMI_INDIRECT_PRIORITY_QUEUE KEY_GENERIC implements
INDIRECT_PRIORITY_QUEUE KEY_GENERIC {

 /** The reference array. */
 protected final KEY_GENERIC_TYPE refArray[];

 /** The semi-indirect heap. */
 protected int heap[] = IntArrays.EMPTY_ARRAY;

 /** The number of elements in this queue. */
 protected int size;

 /** The type-specific comparator used in this queue. */
 protected KEY_COMPARATOR KEY_SUPER_GENERIC c;

 /** Creates a new empty queue without elements with a given capacity and comparator.
  *
  * @param refArray the reference array.
  * @param capacity the initial capacity of this queue.
  * @param c the comparator used in this queue, or {@code null} for the natural order.
  */
 public HEAP_SEMI_INDIRECT_PRIORITY_QUEUE(KEY_GENERIC_TYPE[] refArray, int capacity,
KEY_COMPARATOR KEY_SUPER_GENERIC c) {
  if (capacity > 0) this.heap = new int[capacity];
  this.refArray = refArray;
  this.c = c;
 }
```

```
/** Creates a new empty queue with given capacity and using the natural order.
 *
 * @param refArray the reference array.
 * @param capacity the initial capacity of this queue.
 */
public HEAP_SEMI_INDIRECT_PRIORITY_QUEUE(KEY_GENERIC_TYPE[] refArray, int capacity) {
 this(refArray, capacity, null);
}

/** Creates a new empty queue with capacity equal to the length of the reference array and a given comparator.
 *
 * @param refArray the reference array.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public HEAP_SEMI_INDIRECT_PRIORITY_QUEUE(KEY_GENERIC_TYPE[] refArray,
KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 this(refArray, refArray.length, c);
}

/** Creates a new empty queue with capacity equal to the length of the reference array and using the natural order.
 * @param refArray the reference array.
 */
public HEAP_SEMI_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray) {
 this(refArray, refArray.length, null);
}


/** Wraps a given array in a queue using a given comparator.
 *
 * <p>The queue returned by this method will be backed by the given array.
 * The first {@code size} element of the array will be rearranged so to form a heap (this is
 * more efficient than enqueing the elements of {@code a} one by one).
 *
 * @param refArray the reference array.
 * @param a an array of indices into {@code refArray}.
 * @param size the number of elements to be included in the queue.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public HEAP_SEMI_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray, final int[] a, int
size, final KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 this(refArray, 0, c);
 this.heap = a;
 this.size = size;
 SEMI_INDIRECT_HEAPS.makeHeap(refArray, a, size, c);
}
```

```
/** Wraps a given array in a queue using a given comparator.
 *
 * <p>The queue returned by this method will be backed by the given array.
 * The elements of the array will be rearranged so to form a heap (this is
 * more efficient than enqueing the elements of {@code a} one by one).
 *
 * @param refArray the reference array.
 * @param a an array of indices into {@code refArray}.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public HEAP_SEMI_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray, final int[] a, final
KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 this(refArray, a, a.length, c);
}

/** Wraps a given array in a queue using the natural order.
 *
 * <p>The queue returned by this method will be backed by the given array.
 * The first {@code size} element of the array will be rearranged so to form a heap (this is
 * more efficient than enqueing the elements of {@code a} one by one).
 *
 * @param refArray the reference array.
 * @param a an array of indices into {@code refArray}.
 * @param size the number of elements to be included in the queue.
 */
public HEAP_SEMI_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray, final int[] a, int
size) {
 this(refArray, a, size, null);
}


/** Wraps a given array in a queue using the natural order.
 *
 * <p>The queue returned by this method will be backed by the given array.
 * The elements of the array will be rearranged so to form a heap (this is
 * more efficient than enqueing the elements of {@code a} one by one).
 *
 * @param refArray the reference array.
 * @param a an array of indices into {@code refArray}.
 */
public HEAP_SEMI_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray, final int[] a) {
 this(refArray, a, a.length);
}

/** Ensures that the given index is a valid reference.
 *
 * @param index an index in the reference array.
 * @throws IndexOutOfBoundsException if the given index is negative or larger than the reference array length.
```

```
 */
protected void ensureElement(final int index) {
 if (index < 0)  throw new IndexOutOfBoundsException("Index (" + index + ") is negative");
 if (index >= refArray.length) throw new IndexOutOfBoundsException("Index (" + index + ") is larger than or equal
to reference array size (" + refArray.length + ")");
}

@Override
public void enqueue(int x) {
 ensureElement(x);

 if (size == heap.length) heap = IntArrays.grow(heap, size + 1);

 heap[size++] = x;
 SEMI_INDIRECT_HEAPS.upHeap(refArray, heap, size, size - 1, c);
}

@Override
public int dequeue() {
 if (size == 0) throw new NoSuchElementException();
 final int result = heap[0];
 heap[0] = heap[--size];
 if (size != 0) SEMI_INDIRECT_HEAPS.downHeap(refArray, heap, size, 0, c);
 return result;
}

@Override
public int first() {
 if (size == 0) throw new NoSuchElementException();
 return heap[0];
}

/** {@inheritDoc}
 *
 * <p>The caller <strong>must</strong> guarantee that when this method is called the
 * index of the first element appears just once in the queue. Failure to do so
 * will bring the queue in an inconsistent state, and will cause
 * unpredictable behaviour.
 */
@Override
public void changed() {
 SEMI_INDIRECT_HEAPS.downHeap(refArray, heap, size, 0, c);
}

/** Rebuilds this heap in a bottom-up fashion (in linear time). */

@Override
public void allChanged() { SEMI_INDIRECT_HEAPS.makeHeap(refArray, heap, size, c); }
```

```
 @Override
 public int size() { return size; }

 @Override
 public void clear() { size = 0; }

 /** Trims the backing array so that it has exactly {@link #size()} elements. */

 public void trim() {
  heap = IntArrays.trim(heap, size);
 }

 @Override
 public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return c; }

 /** Writes in the provided array the <em>front</em> of the queue, that is, the set of indices
  * whose elements have the same priority as the top.
  * @param a an array whose initial part will be filled with the frnot (must be sized as least as the heap size).
  * @return the number of elements of the front.
  */
 @Override
 public int front(final int[] a) { return c == null ? SEMI_INDIRECT_HEAPS.front(refArray, heap, size, a) :
SEMI_INDIRECT_HEAPS.front(refArray, heap, size, a, c); }

 @Override
 public String toString() {
  StringBuffer s = new StringBuffer();
  s.append("[");
  for (int i = 0; i < size; i++) {
   if (i != 0) s.append(", ");
   s.append(refArray[heap [i]]);
  }
  s.append("]");
  return s.toString();
 }

#ifdef TEST

 /** The original class, now just used for testing. */

 private static class TestQueue {

  /** The reference array */
  private KEY_TYPE refArray[];
  /** Its length */
  private int N;
  /** The number of elements in the heaps */
```

```
private int n;
/** The two comparators */
private KEY_COMPARATOR primaryComp, secondaryComp;
/** Two indirect heaps are used, called {@code primary} and {@code secondary}. Each of them contains
 a permutation of {@code n} among the indices 0, 1, ..., {@code N}-1 in such a way that the corresponding
 objects be sorted with respect to the two comparators.
 We also need an array {@code inSec[]} so that {@code inSec[k]} is the index of {@code secondary}
 containing {@code k}.
*/
private int primary[], secondary[], inSec[];

/** Builds a double indirect priority queue.
 *  @param refArray The reference array.
 *  @param primaryComp The primary comparator.
 *  @param secondaryComp The secondary comparator.
 */
public TestQueue(KEY_TYPE refArray[], KEY_COMPARATOR primaryComp, KEY_COMPARATOR
secondaryComp) {
 this.refArray = refArray;
 this.N = refArray.length;
 assert this.N != 0;
 this.n = 0;
 this.primaryComp = primaryComp;
 this.secondaryComp = secondaryComp;
 this.primary = new int[N];
 this.secondary = new int[N];
 this.inSec = new int[N];
 java.util.Arrays.fill(inSec, -1);
}

/** Adds an index to the queue. Notice that the index should not be already present in the queue.
 *  @param i The index to be added
 */
public void add(int i) {
 if (i < 0 || i >= refArray.length) throw new IndexOutOfBoundsException();
 //if (inSec[i] >= 0) throw new IllegalArgumentException();
 primary[n] = i;
 n++;
 swimPrimary(n-1);
}

/** Heapify the primary heap.
 *  @param i The index of the heap to be heapified.
 */
private void heapifyPrimary(int i) {
 int dep = primary[i];
 int child;
```

```
  while ((child = 2*i+1) < n) {
   if (child+1 < n && primaryComp.compare(refArray[primary[child+1]], refArray[primary[child]]) < 0) child++;
   if (primaryComp.compare(refArray[dep], refArray[primary[child]]) <= 0) break;
   primary[i] = primary[child];
   i = child;
  }
  primary[i] = dep;
 }

 /** Heapify the secondary heap.
  *  @param i The index of the heap to be heapified.
  */
 private void heapifySecondary(int i) {
  int dep = secondary[i];
  int child;

  while ((child = 2*i+1) < n) {
   if (child+1 < n && secondaryComp.compare(refArray[secondary[child+1]], refArray[secondary[child]]) < 0)
child++;
   if (secondaryComp.compare(refArray[dep], refArray[secondary[child]]) <= 0) break;
   secondary[i] = secondary[child]; inSec[secondary[i]] = i;
   i = child;
  }
  secondary[i] = dep; inSec[secondary[i]] = i;
 }

 /** Swim and heapify the primary heap.
  *  @param i The index to be moved.
  */
 private void swimPrimary(int i) {
  int dep = primary[i];
  int parent;

  while (i != 0 && (parent = (i - 1) / 2) >= 0) {
   if (primaryComp.compare(refArray[primary[parent]], refArray[dep]) <= 0) break;
   primary[i] = primary[parent];
   i = parent;
  }
  primary[i] = dep;
  heapifyPrimary(i);
 }

 /** Swim and heapify the secondary heap.
  *  @param i The index to be moved.
  */
 private void swimSecondary(int i) {
  int dep = secondary[i];
  int parent;
```

```
 while (i != 0 && (parent = (i - 1) / 2) >= 0) {
  if (secondaryComp.compare(refArray[secondary[parent]], refArray[dep]) <= 0) break;
  secondary[i] = secondary[parent]; inSec[secondary[i]] = i;
  i = parent;
 }
 secondary[i] = dep; inSec[secondary[i]] = i;
 heapifySecondary(i);
}

/** Returns the minimum element with respect to the primary comparator.
 @return the minimum element.
*/
public int top() {
 if (n == 0) throw new NoSuchElementException();
 return primary[0];
}

/** Returns the minimum element with respect to the secondary comparator.
 @return the minimum element.
*/
public int secTop() {
 if (n == 0) throw new NoSuchElementException();
 return secondary[0];
}

/** Removes the minimum element with respect to the primary comparator.
 *  @return the removed element.
 */
public void remove() {
 if (n == 0) throw new NoSuchElementException();
 int result = primary[0];
 // Copy a leaf
 primary[0] = primary[n-1];
 n--;
 heapifyPrimary(0);
 return;
}

public void clear() {
 while(size() != 0) remove();
}

/** Signals that the minimum element with respect to the comparator has changed.
 */
public void change() {
 heapifyPrimary(0);
}
```

```
 /** Returns the number of elements in the queue.
  *  @return the size of the queue
  */
 public int size() {
  return n;
 }

 public String toString() {
  String s = "[";
  for (int i = 0; i < n; i++)
   s += refArray[primary[i]]+", ";
  return s+ "]";
 }
}

private static long seed = System.currentTimeMillis();
private static java.util.Random r = new java.util.Random(seed);

private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
 return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
 return r.NEXT_KEY();
#elif KEY_CLASS_Object
 return Integer.toBinaryString(r.nextInt());
#else
 return new java.io.Serializable() {};
#endif
}

private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
private static java.text.FieldPosition p = new java.text.FieldPosition(0);

private static String format(double d) {
 StringBuffer s = new StringBuffer();
 return format.format(d, s, p).toString();
}

private static void speedTest(int n, boolean comp) {
 System.out.println("There are presently no speed tests for this class.");
}



private static void fatal(String msg) {
 throw new AssertionError(msg);
}
```

```
private static void ensure(boolean cond, String msg) {
 if (cond) return;
 fatal(msg);
}

private static boolean heapEqual(int[] a, int[] b, int sizea, int sizeb) {
 if (sizea != sizeb) return false;
 while(sizea-- != 0) if (a[sizea] != b[sizea]) return false;
 return true;
}

protected static void runTest(int n) {
 long ms;
 Exception mThrowsIllegal, tThrowsIllegal, mThrowsOutOfBounds, tThrowsOutOfBounds, mThrowsNoElement,
tThrowsNoElement;
 int rm = 0, rt = 0;
 KEY_TYPE[] refArray = new KEY_TYPE[n];

 for(int i = 0; i < n; i++) refArray[i] = genKey();

 HEAP_SEMI_INDIRECT_PRIORITY_QUEUE m = new
HEAP_SEMI_INDIRECT_PRIORITY_QUEUE(refArray, COMPARATORS.NATURAL_COMPARATOR);
 TestQueue t = new TestQueue(refArray, COMPARATORS.NATURAL_COMPARATOR,
COMPARATORS.OPPOSITE_COMPARATOR);

 /* We add pairs to t. */
 for(int i = 0; i < n / 2;  i++) {
  t.add(i);
  m.enqueue(i);
 }

 ensure(heapEqual(m.heap, t.primary, m.size(), t.size()), "Error (" + seed + "): m and t differ after creation (" + m + ",
" + t + ")");

 /* Now we add and remove random data in m and t, checking that the result is the same. */

 for(int i=0; i<2*n;  i++) {
  if (r.nextDouble() < 0.01) {
   t.clear();
   m.clear();
   for(int j = 0; j < n / 2;  j++) {
    t.add(j);
    m.enqueue(j);
   }
  }

  int T = r.nextInt(2 * n);
```

```
  mThrowsNoElement = tThrowsNoElement = mThrowsOutOfBounds = tThrowsOutOfBounds = mThrowsIllegal =
tThrowsIllegal = null;

  try {
   m.enqueue(T);
  }
  catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
  catch (IllegalArgumentException e) { mThrowsIllegal = e; }

  try {
   t.add(T);
  }
  catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }
  catch (IllegalArgumentException e) { tThrowsIllegal = e; }

  ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + seed + "): enqueue()
divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds
+ ")");
  ensure((mThrowsIllegal == null) == (tThrowsIllegal == null), "Error (" + seed + "): enqueue() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");

  ensure(heapEqual(m.heap, t.primary, m.size(), t.size()), "Error (" + seed + "): m and t differ after enqueue (" + m +
", " + t + ")");

  if (m.size() != 0) {
   ensure(m.first() == t.top(), "Error (" + seed + "): m and t differ in first element after enqueue (" + m.first() + ", " +
t.top() + ")");
  }

  mThrowsNoElement = tThrowsNoElement = mThrowsOutOfBounds = tThrowsOutOfBounds = mThrowsIllegal =
tThrowsIllegal = null;

  try {
   rm = m.dequeue();
  }
  catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
  catch (IllegalArgumentException e) { mThrowsIllegal = e; }
  catch (NoSuchElementException e) { mThrowsNoElement = e; }

  try {
   rt = t.top();
   t.remove();
  }
  catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }
  catch (IllegalArgumentException e) { tThrowsIllegal = e; }
  catch (NoSuchElementException e) { tThrowsNoElement = e; }

  ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + seed + "): dequeue()
```

```
divergence in IndexOutOfBoundsException (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
   ensure((mThrowsIllegal == null) == (tThrowsIllegal == null), "Error (" + seed + "): dequeue() divergence in
IllegalArgumentException  (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   ensure((mThrowsNoElement == null) == (tThrowsNoElement == null), "Error (" + seed + "): dequeue() divergence
in NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   if (mThrowsOutOfBounds == null) ensure(rt == rm , "Error (" + seed + "): divergence in dequeue() between t and m
(" + rt + ", " + rm + ")");


   ensure(heapEqual(m.heap, t.primary, m.size(), t.size()), "Error (" + seed + "): m and t differ after dequeue (" + m +
", " + t + ")");

   if (m.size() != 0) {
    ensure(m.first() == t.top(), "Error (" + seed + "): m and t differ in first element after dequeue (" + m.first() + ", " +
t.top() + ")");
   }

   if (m.size() != 0 && ((new it.unimi.dsi.fastutil.ints.IntOpenHashSet(m.heap, 0, m.size)).size() == m.size())) {

    refArray[m.first()] = genKey();

    m.changed();
    t.change();

    ensure(heapEqual(m.heap, t.primary, m.size(), t.size()), "Error (" + seed + "): m and t differ after change (" + m + ",
" + t + ")");

    if (m.size() != 0) {
     ensure(m.first() == t.top(), "Error (" + seed + "): m and t differ in first element after change (" + m.first() + ", " +
t.top() + ")");
    }
   }
  }


  /* Now we check that m actually holds the same data. */

  m.clear();
  ensure(m.isEmpty(), "Error (" + seed + "): m is not empty after clear()");

  System.out.println("Test OK");
 }



 public static void main(String args[]) throws Exception {
  int n  = Integer.parseInt(args[1]);
  if (args.length > 2) r = new java.util.Random(seed = Long.parseLong(args[2]));
```

```
  try {
   if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, "speedComp".equals(args[0]));
   else if ("test".equals(args[0])) runTest(n);
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/HeapSemiIndirectPriorityQueue.drv
No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

#if KEY_CLASS_Object
import java.util.Comparator;
#endif

#if ! KEY_CLASS_Integer
import it.unimi.dsi.fastutil.ints.IntArrays;
#endif
```

```
/** A class providing static methods and objects that do useful things with semi-indirect heaps.
*
* <p>A semi-indirect heap is based on a <em>reference array</em>. Elements of
* a semi-indirect heap are integers that index the reference array (note that
* in an <em>indirect</em> heap you can also map elements of the reference
* array to heap positions).
*/

public final class SEMI_INDIRECT_HEAPS {

 private SEMI_INDIRECT_HEAPS() {}

 /** Moves the given element down into the semi-indirect heap until it reaches the lowest possible position.
  *
  * @param refArray the reference array.
  * @param heap the semi-indirect heap (starting at 0).
  * @param size the number of elements in the heap.
  * @param i the index in the heap of the element to be moved down.
  * @param c a type-specific comparator, or {@code null} for the natural order.
  * @return the new position in the heap of the element of heap index {@code i}.
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static KEY_GENERIC int downHeap(final KEY_GENERIC_TYPE[] refArray, final int[] heap, final int size,
int i, final KEY_COMPARATOR KEY_GENERIC c) {
  assert i < size;

  final int e = heap[i];
  final KEY_GENERIC_TYPE E = refArray[e];
  int child;

  if (c == null)
   while ((child = (i << 1) + 1) < size) {
    int t = heap[child];
    final int right = child + 1;
    if (right < size && KEY_LESS(refArray[heap[right]], refArray[t])) t = heap[child = right];
    if (KEY_LESSEQ(E, refArray[t])) break;
    heap[i] = t;
    i = child;
   }
  else
   while ((child = (i << 1) + 1) < size) {
    int t = heap[child];
    final int right = child + 1;
    if (right < size && c.compare(refArray[heap[right]], refArray[t]) < 0) t = heap[child = right];
    if (c.compare(E, refArray[t]) <= 0) break;
    heap[i] = t;
    i = child;
```

```
  }

 heap[i] = e;

 return i;
}

/** Moves the given element up in the semi-indirect heap until it reaches the highest possible position.
 *
 * @param refArray the reference array.
 * @param heap the semi-indirect heap (starting at 0).
 * @param size the number of elements in the heap.
 * @param i the index in the heap of the element to be moved up.
 * @param c a type-specific comparator, or {@code null} for the natural order.
 * @return the new position in the heap of the element of heap index {@code i}.
 */

SUPPRESS_WARNINGS_KEY_UNCHECKED
public static KEY_GENERIC int upHeap(final KEY_GENERIC_TYPE[] refArray, final int[] heap, final int size, int
i, final KEY_COMPARATOR KEY_GENERIC c) {
 assert i < size;

 final int e = heap[i];
 final KEY_GENERIC_TYPE E = refArray[e];

 if (c == null)
  while (i != 0) {
   final int parent = (i - 1) >>> 1;
   final int t = heap[parent];
   if (KEY_LESSEQ(refArray[t], E)) break;
   heap[i] = t;
   i = parent;
  }
 else
  while (i != 0) {
   final int parent = (i - 1) >>> 1;
   final int t = heap[parent];
   if (c.compare(refArray[t], E) <= 0) break;
   heap[i] = t;
   i = parent;
  }

 heap[i] = e;

 return i;
}

/** Creates a semi-indirect heap in the given array.
```

```
 *
 * @param refArray the reference array.
 * @param offset the first element of the reference array to be put in the heap.
 * @param length the number of elements to be put in the heap.
 * @param heap the array where the heap is to be created.
 * @param c a type-specific comparator, or {@code null} for the natural order.
 */

public static KEY_GENERIC void makeHeap(final KEY_GENERIC_TYPE[] refArray, final int offset, final int length, final int[] heap, final KEY_COMPARATOR KEY_GENERIC c) {
 ARRAYS.ensureOffsetLength(refArray, offset, length);
 if (heap.length < length) throw new IllegalArgumentException("The heap length (" + heap.length + ") is smaller than the number of elements (" + length + ")");

 int i = length;
 while(i-- != 0) heap[i] = offset + i;

 i = length >>> 1;
 while(i-- != 0) downHeap(refArray, heap, length, i, c);
}

/** Creates a semi-indirect heap, allocating its heap array.
 *
 * @param refArray the reference array.
 * @param offset the first element of the reference array to be put in the heap.
 * @param length the number of elements to be put in the heap.
 * @param c a type-specific comparator, or {@code null} for the natural order.
 * @return the heap array.
 */

public static KEY_GENERIC int[] makeHeap(final KEY_GENERIC_TYPE[] refArray, final int offset, final int length, final KEY_COMPARATOR KEY_GENERIC c) {
 final int[] heap = length <= 0 ? IntArrays.EMPTY_ARRAY : new int[length];
 makeHeap(refArray, offset, length, heap, c);
 return heap;
}



/** Creates a semi-indirect heap from a given index array.
 *
 * @param refArray the reference array.
 * @param heap an array containing indices into {@code refArray}.
 * @param size the number of elements in the heap.
 * @param c a type-specific comparator, or {@code null} for the natural order.
 */

public static KEY_GENERIC void makeHeap(final KEY_GENERIC_TYPE[] refArray, final int[] heap, final int
```

```
size, final KEY_COMPARATOR KEY_GENERIC c) {
  int i = size >>> 1;
  while(i-- != 0) downHeap(refArray, heap, size, i, c);
 }

 /** Retrieves the front of a heap in a given array.
  *
  * <p>The <em>front</em> of a semi-indirect heap is the set of indices whose associated elements in the reference
array
  * are equal to the element associated to the first index.
  *
  * <p>In several circumstances you need to know the front, and scanning linearly the entire heap is not
  * the best strategy. This method simulates (using a partial linear scan) a breadth-first visit that
  * terminates when all visited nodes are larger than the element associated
  * to the top index, which implies that no elements of the front can be found later.
  * In most cases this trick yields a significant improvement.
  *
  * @param refArray the reference array.
  * @param heap an array containing indices into {@code refArray}.
  * @param size the number of elements in the heap.
  * @param a an array large enough to hold the front (e.g., at least long as {@code refArray}).
  * @return the number of elements actually written (starting from the first position of {@code a}).
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static KEY_GENERIC int front(final KEY_GENERIC_TYPE[] refArray, final int[] heap, final int size, final
int[] a) {
  final KEY_GENERIC_TYPE top = refArray[heap[0]];
  int j = 0, // The current position in a
   l = 0, // The first position to visit in the next level (inclusive)
   r = 1, // The last position to visit in the next level (exclusive)
   f = 0; // The first position (in the heap array) of the next level
  for(int i = 0; i < r; i++) {
   if (i == f) { // New level
    if (l >= r) break; // If we are crossing the two bounds, we're over
    f = (f << 1) + 1; // Update the first position of the next level...
    i = l; // ...and jump directly to position l
    l = -1; // Invalidate l
   }
   if (KEY_CMP_EQ(top, refArray[heap[i]])) {
    a[j++] = heap[i];
    if (l == -1) l = i * 2 + 1; // If this is the first time in this level, set l
    r = Math.min(size, i * 2 + 3); // Update r, but do not go beyond size
   }
  }

  return j;
 }
```

```
/** Retrieves the front of a heap in a given array using a given comparator.
 *
 * <p>The <em>front</em> of a semi-indirect heap is the set of indices whose associated elements in the reference array
 * are equal to the element associated to the first index.
 *
 * <p>In several circumstances you need to know the front, and scanning linearly the entire heap is not
 * the best strategy. This method simulates (using a partial linear scan) a breadth-first visit that
 * terminates when all visited nodes are larger than the element associated
 * to the top index, which implies that no elements of the front can be found later.
 * In most cases this trick yields a significant improvement.
 *
 * @param refArray the reference array.
 * @param heap an array containing indices into {@code refArray}.
 * @param size the number of elements in the heap.
 * @param a an array large enough to hold the front (e.g., at least long as {@code refArray}).
 * @param c a type-specific comparator.
 * @return the number of elements actually written (starting from the first position of {@code a}).
 */
public static KEY_GENERIC int front(final KEY_GENERIC_TYPE[] refArray, final int[] heap, final int size, final int[] a, final KEY_COMPARATOR KEY_GENERIC c) {
 final KEY_GENERIC_TYPE top = refArray[heap[0]];
 int j = 0, // The current position in a
  l = 0, // The first position to visit in the next level (inclusive)
  r = 1, // The last position to visit in the next level (exclusive)
  f = 0; // The first position (in the heap array) of the next level
 for(int i = 0; i < r; i++) {
  if (i == f) { // New level
   if (l >= r) break; // If we are crossing the two bounds, we're over
   f = (f << 1) + 1; // Update the first position of the next level...
   i = l; // ...and jump directly to position l
   l = -1; // Invalidate l
  }
  if (c.compare(top, refArray[heap[i]]) == 0) {
   a[j++] = heap[i];
   if (l == -1) l = i * 2 + 1; // If this is the first time in this level, set l
   r = Math.min(size, i * 2 + 3); // Update r, but do not go beyond size
  }
 }

 return j;
}
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/SemiIndirectHeaps.drv
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```
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*/


package PACKAGE;

import static it.unimi.dsi.fastutil.BigArrays.copyFromBig;
import static it.unimi.dsi.fastutil.BigArrays.copyToBig;
import static it.unimi.dsi.fastutil.BigArrays.grow;
import static it.unimi.dsi.fastutil.BigArrays.trim;


import it.unimi.dsi.fastutil.BigArrays;
import it.unimi.dsi.fastutil.objects.AbstractObjectList;
import it.unimi.dsi.fastutil.objects.ObjectListIterator;
#if ! KEY_CLASS_Long
import it.unimi.dsi.fastutil.longs.LongArrays;
#endif

import java.io.Serializable;
import java.util.Iterator;
import java.util.Collection;
import java.util.NoSuchElementException;
import java.util.RandomAccess;

/** Compact storage of lists of arrays using front-coding (also known as prefix-omission) compression.
*
* <p>This class stores immutably a list of arrays in a single {@linkplain it.unimi.dsi.fastutil.BigArrays big array}
* using front coding (of course, the compression will be reasonable only if
* the list is sorted lexicographically&mdash;see below). It implements an
* immutable type-specific list that returns the <var>i</var>-th array when
* calling {@link #get(int) get(<var>i</var>)}. The returned array may be
* freely modified.
*
* <p>Front-coding (also known as prefix-omission) compression
```

```
* is based on the idea that if the <var>i</var>-th and the
* (<var>i</var>+1)-th array have a common prefix, we might store the length
* of the common prefix, and then the rest of the second array.
*
* <p>This approach, of course, requires that once in a while an array is
* stored entirely.  The <em>ratio</em> of a front-coded list defines how
* often this happens (once every {@link #ratio()} arrays). A higher ratio
* means more compression, but means also a longer access time, as more arrays
* have to be probed to build the result. Note that we must build an array
* every time {@link #get(int)} is called, but this class provides also methods
* that extract one of the stored arrays in a given array, reducing garbage
* collection. See the documentation of the family of {@code get()}
* methods.
*
* <p>By setting the ratio to 1 we actually disable front coding: however, we
* still have a data structure storing large list of arrays with a reduced
* overhead (just one integer per array, plus the space required for lengths).
*
* <p>Note that the typical usage of front-coded lists is under the form of
* serialized objects; usually, the data that has to be compacted is processed
* offline, and the resulting structure is stored permanently. Since the
* pointer array is not stored, the serialized format is very small.
*
* <H2>Implementation Details</H2>
*
* <p>All arrays are stored in a {@linkplain it.unimi.dsi.fastutil.BigArrays big array}. A separate array of pointers
* indexes arrays whose position is a multiple of the ratio: thus, a higher ratio
* means also less pointers.
*
* <p>More in detail, an array whose position is a multiple of the ratio is
* stored as the array length, followed by the elements of the array. The array
* length is coded by a simple variable-length list of <var>k</var>-1 bit
* blocks, where <var>k</var> is the number of bits of the underlying primitive
* type.  All other arrays are stored as follows: let {@code common} the
* length of the maximum common prefix between the array and its predecessor.
* Then we store the array length decremented by {@code common}, followed
* by {@code common}, followed by the array elements whose index is
* greater than or equal to {@code common}. For instance, if we store
* {@code foo}, {@code foobar}, {@code football} and
* {@code fool} in a front-coded character-array list with ratio 3, the
* character array will contain
*
* <pre>
* <b>3</b> f o o <b>3</b> <b>3</b> b a r <b>5</b> <b>3</b> t b a l l <b>4</b> f o o l
* </pre>
*/

public class ARRAY_FRONT_CODED_LIST extends AbstractObjectList<KEY_TYPE[]> implements
```

```
Serializable, Cloneable, RandomAccess {

 private static final long serialVersionUID = 1L;

 /** The number of arrays in the list. */
 protected final int n;
 /** The ratio of this front-coded list. */
 protected final int ratio;
 /** The big array containing the compressed arrays. */
 protected final KEY_TYPE[][] array;
 /** The pointers to entire arrays in the list. */
 protected transient long[] p;

 /** Creates a new front-coded list containing the arrays returned by the given iterator.
  *
  * @param arrays an iterator returning arrays.
  * @param ratio the desired ratio.
  */

 public ARRAY_FRONT_CODED_LIST(final Iterator<KEY_TYPE[]> arrays, final int ratio) {

  if (ratio < 1) throw new IllegalArgumentException("Illegal ratio (" + ratio + ")");

  KEY_TYPE[][] array = BIG_ARRAYS.EMPTY_BIG_ARRAY;
  long[] p = LongArrays.EMPTY_ARRAY;

  KEY_TYPE[][] a = new KEY_TYPE[2][];
  long curSize = 0;
  int n = 0, b = 0, length;

  while(arrays.hasNext()) {
   a[b] = arrays.next();
   length = a[b].length;

   if (n % ratio == 0) {
    p = LongArrays.grow(p, n / ratio + 1);
    p[n / ratio] = curSize;

    array = grow(array, curSize + count(length) + length, curSize);
    curSize += writeInt(array, length, curSize);
    copyToBig(a[b], 0, array, curSize, length);
    curSize += length;
   }
   else {
    final int minLength = Math.min(a[1 - b].length, length);
    int common;
    for(common = 0; common < minLength; common++) if (a[0][common] != a[1][common]) break;
    length -= common;
```

```
    array = grow(array, curSize + count(length) + count(common) + length, curSize);
    curSize += writeInt(array, length, curSize);
    curSize += writeInt(array, common, curSize);
    copyToBig(a[b], common, array, curSize, length);
    curSize += length;
   }

   b = 1 - b;
   n++;
  }

  this.n = n;
  this.ratio = ratio;
  this.array = trim(array, curSize);
  this.p = LongArrays.trim(p, (n + ratio - 1) / ratio);

 }

 /** Creates a new front-coded list containing the arrays in the given collection.
  *
  * @param c a collection containing arrays.
  * @param ratio the desired ratio.
  */

 public ARRAY_FRONT_CODED_LIST(final Collection<KEY_TYPE[]> c, final int ratio) {
  this(c.iterator(), ratio);
 }



 /* The following (rather messy) methods implements the encoding of arbitrary integers inside a big array.
  * Unfortunately, we have to specify different codes for almost every type. */

 /** Reads a coded length.
  * @param a the data big array.
  * @param pos the starting position.
  * @return the length coded at {@code pos}.
  */
 static int readInt(final KEY_TYPE a[][], long pos) {
#if KEY_CLASS_Integer
  return BigArrays.get(a, pos);
#elif KEY_CLASS_Long
  return (int)BigArrays.get(a, pos);
#elif KEY_CLASS_Character
  final char c0 = BigArrays.get(a, pos);
  return c0  < 0x8000 ? c0 : (c0 & 0x7FFF) << 16 | BigArrays.get(a, pos + 1);
#elif KEY_CLASS_Short
```

```
  final short s0 = BigArrays.get(a, pos);
  return s0 >= 0 ? s0 : s0 << 16 | (BigArrays.get(a, pos + 1) & 0xFFFF);
#else
  final byte b0 = BigArrays.get(a, pos);
  if (b0  >= 0) return b0;
  final byte b1 = BigArrays.get(a, pos + 1);
  if (b1 >= 0) return (- b0 - 1) << 7 | b1;
  final byte b2 = BigArrays.get(a, pos + 2);
  if (b2 >= 0) return (- b0 - 1) << 14 | (- b1 - 1) << 7 | b2;
  final byte b3 = BigArrays.get(a, pos + 3);
  if (b3 >= 0) return (- b0 - 1) << 21 | (- b1 - 1) << 14 | (- b2 - 1) << 7 | b3;
  return (- b0 - 1) << 28 | (- b1 - 1) << 21 | (- b2 - 1) << 14 | (- b3 - 1) << 7 | BigArrays.get(a, pos + 4);
#endif
 }

 /** Computes the number of elements coding a given length.
  * @param length the length to be coded.
  * @return the number of elements coding {@code length}.
  */
 static int count(final int length) {
#if KEY_CLASS_Integer || KEY_CLASS_Long
  return 1;
#elif KEY_CLASS_Character || KEY_CLASS_Short
  return length < (1 << 15) ? 1 : 2;
#else
  if (length < (1 << 7)) return 1;
  if (length < (1 << 14)) return 2;
  if (length < (1 << 21)) return 3;
  if (length < (1 << 28)) return 4;
  return 5;
#endif
 }

 /** Writes a length.
  * @param a the data array.
  * @param length the length to be written.
  * @param pos the starting position.
  * @return the number of elements coding {@code length}.
  */
 static int writeInt(final KEY_TYPE a[][], int length, long pos) {
#if KEY_CLASS_Long
  BigArrays.set(a, pos, length);
  return 1;
#elif KEY_CLASS_Integer
  BigArrays.set(a, pos, length);
  return 1;
#elif KEY_CLASS_Character
  if (length < (1 << 15)) {
```

```
  BigArrays.set(a, pos, (char)length);
  return 1;
 }
 BigArrays.set(a, pos++, (char)(length >>> 16 | 0x8000));
 BigArrays.set(a, pos, (char)(length & 0xFFFF));
 return 2;
#elif KEY_CLASS_Short
 if (length < (1 << 15)) {
  BigArrays.set(a, pos, (short)length);
  return 1;
 }
 BigArrays.set(a, pos++, (short)(- (length >>> 16) - 1));
 BigArrays.set(a, pos, (short)(length & 0xFFFF));
 return 2;
#else
 final int count = count(length);
 BigArrays.set(a, pos + count - 1, (byte)(length & 0x7F));

 for(int i = count -1; i-- != 0;) {
  length >>>= 7;
  BigArrays.set(a, pos + i, (byte)(- (length  & 0x7F) - 1));
 }

 return count;
#endif
}



/** Returns the ratio of this list.
 *
 * @return the ratio of this list.
 */

public int ratio() {
 return ratio;
}



/** Computes the length of the array at the given index.
 *
 * <p>This private version of {@link #arrayLength(int)} does not check its argument.
 *
 * @param array the data array.
 * @param index an index.
 * @return the length of the {@code index}-th array.
 */
private int length(final int index) {
```

```
 final KEY_TYPE[][] array = this.array;
 final int delta = index % ratio; // The index into the p array, and the delta inside the block.

 long pos = p[index / ratio]; // The position into the array of the first entire word before the index-th.
 int length = readInt(array, pos);

 if (delta == 0) return length;

 // First of all, we recover the array length and the maximum amount of copied elements.
 int common;
 pos += count(length) + length;
 length = readInt(array, pos);
 common = readInt(array, pos + count(length));

 for(int i = 0; i < delta - 1; i++) {
  pos += count(length) + count(common) + length;
  length = readInt(array, pos);
  common = readInt(array, pos + count(length));
 }

 return length + common;
}


/** Computes the length of the array at the given index.
 *
 * @param index an index.
 * @return the length of the {@code index}-th array.
 */
public int arrayLength(final int index) {
 ensureRestrictedIndex(index);
 return length(index);
}

/** Extracts the array at the given index.
 *
 * @param index an index.
 * @param a the array that will store the result (we assume that it can hold the result).
 * @param offset an offset into {@code a} where elements will be store.
 * @param length a maximum number of elements to store in {@code a}.
 * @return the length of the extracted array.
 */
private int extract(final int index, final KEY_TYPE a[], final int offset, final int length) {
 final int delta = index % ratio; // The delta inside the block.
 final long startPos = p[index / ratio]; // The position into the array of the first entire word before the index-th.
 long pos, prevArrayPos;
 int arrayLength = readInt(array, pos = startPos), currLen = 0, actualCommon;
```

```
 if (delta == 0) {
  pos = p[index / ratio] + count(arrayLength);
  copyFromBig(array, pos, a, offset, Math.min(length, arrayLength));
  return arrayLength;
 }

 int common = 0;

 for(int i = 0; i < delta; i++) {
  prevArrayPos = pos + count(arrayLength) + (i != 0 ? count(common) : 0);
  pos = prevArrayPos + arrayLength;

  arrayLength = readInt(array, pos);
  common = readInt(array, pos + count(arrayLength));

  actualCommon = Math.min(common, length);
  if (actualCommon <= currLen) currLen = actualCommon;
  else {
   copyFromBig(array, prevArrayPos, a, currLen + offset, actualCommon - currLen);
   currLen = actualCommon;
  }
 }

 if (currLen < length) copyFromBig(array, pos + count(arrayLength) + count(common), a, currLen + offset,
Math.min(arrayLength, length - currLen));

 return arrayLength + common;
}

/** {@inheritDoc}
 * @implSpec This implementation delegates to {@link #getArray(int)}. */
@Override
public KEY_TYPE[] get(final int index) {
 return getArray(index);
}

/** Returns an array stored in this front-coded list.
 *
 * @param index an index.
 * @return the corresponding array stored in this front-coded list.
 */
public KEY_TYPE[] getArray(final int index) {
 ensureRestrictedIndex(index);
 final int length = length(index);
 final KEY_TYPE a[] = new KEY_TYPE[length];
 extract(index, a, 0, length);
 return a;
}
```

```
/** Stores in the given array elements from an array stored in this front-coded list.
 *
 * @param index an index.
 * @param a the array that will store the result.
 * @param offset an offset into {@code a} where elements will be store.
 * @param length a maximum number of elements to store in {@code a}.
 * @return if {@code a} can hold the extracted elements, the number of extracted elements;
 * otherwise, the number of remaining elements with the sign changed.
 */
public int get(final int index, final KEY_TYPE[] a, final int offset, final int length) {
 ensureRestrictedIndex(index);
 ARRAYS.ensureOffsetLength(a, offset, length);

 final int arrayLength = extract(index, a, offset, length);
 if (length >= arrayLength) return arrayLength;
 return length - arrayLength;
}

/** Stores in the given array an array stored in this front-coded list.
 *
 * @param index an index.
 * @param a the array that will store the content of the result (we assume that it can hold the result).
 * @return if {@code a} can hold the extracted elements, the number of extracted elements;
 * otherwise, the number of remaining elements with the sign changed.
 */
public int get(final int index, final KEY_TYPE[] a) {
 return get(index, a, 0, a.length);
}

@Override
public int size() {
 return n;
}

@Override
public ObjectListIterator<KEY_TYPE[]> listIterator(final int start) {
 ensureIndex(start);

 return new ObjectListIterator<KEY_TYPE[]>() {
   KEY_TYPE s[] = ARRAYS.EMPTY_ARRAY;
   int i = 0;
   long pos = 0;
   boolean inSync; // Whether the current value in a is the string just before the next to be produced.

   {
    if (start != 0) {
     if (start == n) i = start; // If we start at the end, we do nothing.
```

```
   else {
    pos = p[start / ratio];
    int j = start % ratio;
    i = start - j;
    while(j-- != 0) next();
   }
  }
 }

 @Override
 public boolean hasNext() {
  return i < n;
 }

 @Override
 public boolean hasPrevious() {
  return i > 0;
 }

 @Override
 public int previousIndex() {
  return i - 1;
 }

 @Override
 public int nextIndex() {
  return i;
 }

 @Override
 public KEY_TYPE[] next() {
  int length, common;

  if (! hasNext()) throw new NoSuchElementException();

  if (i % ratio == 0) {
   pos = p[i / ratio];
   length = readInt(array, pos);
   s = ARRAYS.ensureCapacity(s, length, 0);
   copyFromBig(array, pos + count(length), s, 0, length);
   pos += length + count(length);
   inSync = true;
  }
  else {
   if (inSync) {
    length = readInt(array, pos);
    common = readInt(array, pos + count(length));
    s = ARRAYS.ensureCapacity(s, length + common, common);
```

```
      copyFromBig(array, pos + count(length) + count (common), s, common, length);
      pos += count(length) + count(common) + length;
      length += common;
     }
     else {
      s = ARRAYS.ensureCapacity(s, length = length(i), 0);
      extract(i, s, 0, length);
     }
    }
    i++;
    return ARRAYS.copy(s, 0, length);
   }

   @Override
   public KEY_TYPE[] previous() {
    if (! hasPrevious()) throw new NoSuchElementException();
    inSync = false;
    return getArray(--i);
   }
  };
}


/** Returns a copy of this list.
 *
 *  @return a copy of this list.
 */
@Override
public ARRAY_FRONT_CODED_LIST clone() {
 return this;
}

@Override
public String toString() {
 final StringBuffer s = new StringBuffer();
 s.append("[");
 for(int i = 0; i < n; i++) {
  if (i != 0) s.append(", ");
  s.append(ARRAY_LIST.wrap(getArray(i)).toString());
 }
 s.append("]");
 return s.toString();
}

/** Computes the pointer array using the currently set ratio, number of elements and underlying array.
 *
 * @return the computed pointer array.
 */
```

```
 protected long[] rebuildPointerArray() {
  final long[] p = new long[(n + ratio - 1) / ratio];
  final KEY_TYPE a[][] = array;
  int length, count;
  long pos = 0;

  for(int i = 0, j = 0, skip = ratio - 1; i < n; i++) {
   length = readInt(a, pos);
   count = count(length);
   if (++skip == ratio) {
    skip = 0;
    p[j++] = pos;
    pos += count + length;
   }
   else pos += count + count(readInt(a, pos + count)) + length;
  }

  return p;
 }


 private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
  s.defaultReadObject();

  // Rebuild pointer array
  p = rebuildPointerArray();
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/ArrayFrontCodedList.drv
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*/

package PACKAGE;

import static it.unimi.dsi.fastutil.Size64.sizeOf;
#if KEY_INDEX != VALUE_INDEX && !(KEYS_REFERENCE && VALUES_REFERENCE)
import VALUE_PACKAGE.VALUE_COLLECTION;
import VALUE_PACKAGE.VALUE_ABSTRACT_COLLECTION;

```
import VALUE_PACKAGE.VALUE_ITERATOR;
import VALUE_PACKAGE.VALUE_SPLITERATOR;
import VALUE_PACKAGE.VALUE_SPLITERATORS;
#if VALUES_BYTE_CHAR_SHORT_FLOAT || VALUE_CLASS_Boolean
import VALUE_PACKAGE.VALUE_CONSUMER;
#endif
#endif

#if KEYS_PRIMITIVE && VALUES_PRIMITIVE
import it.unimi.dsi.fastutil.objects.ObjectIterator;
import it.unimi.dsi.fastutil.objects.ObjectSpliterator;
import it.unimi.dsi.fastutil.objects.ObjectSpliterators;
#else
import java.util.function.Consumer;
#endif

#if KEYS_PRIMITIVE
import it.unimi.dsi.fastutil.objects.AbstractObjectSet;
#endif

import java.util.Iterator;
import java.util.Map;

/** An abstract class providing basic methods for maps implementing a type-specific interface.
*
* <p>Optional operations just throw an {@link
* UnsupportedOperationException}. Generic versions of accessors delegate to
* the corresponding type-specific counterparts following the interface rules
* (they take care of returning {@code null} on a missing key).
*
* <p>As a further help, this class provides a {@link BasicEntry BasicEntry} inner class
* that implements a type-specific version of {@link java.util.Map.Entry}; it
* is particularly useful for those classes that do not implement their own
* entries (e.g., most immutable maps).
*/

public abstract class ABSTRACT_MAP KEY_VALUE_GENERIC extends ABSTRACT_FUNCTION
KEY_VALUE_GENERIC implements MAP KEY_VALUE_GENERIC, java.io.Serializable {

 private static final long serialVersionUID = -4940583368468432370L;

 protected ABSTRACT_MAP() {}

 /**
  * {@inheritDoc}
  * @implSpec This implementation does a linear search over the entry set, finding an entry that has the key
specified.
  *   <p>If you override {@link #keySet()}, you should probably override this method too
```

```
  *   to take advantage of the (presumably) faster {@linkplain java.util.Set#contains key membership test} your
{@link #keySet()} provides.
  *   <p>If you override this method but not {@link #keySet()}, then the returned key set will take advantage of this
method.
  */
 @Override
 public boolean containsKey(final KEY_TYPE k) {
  final ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> i = ENTRYSET().iterator();
  while(i.hasNext())
   if (i.next().ENTRY_GET_KEY() == k)
    return true;

  return false;
 }

 /**
  * {@inheritDoc}
  * @implSpec This implementation does a linear search over the entry set, finding an entry that has the value
specified.
  *   <p>If you override {@link #values()}, you should probably override this method too
  *   to take advantage of the (presumably) faster {@linkplain java.util.Collection#contains value membership test}
your {@link #values()} provides.
  *   <p>If you override this method but not {@link #values()}, then the returned values collection will take
advantage of this method.
  */
 @Override
 public boolean containsValue(final VALUE_TYPE v) {
  final ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> i = ENTRYSET().iterator();
  while(i.hasNext())
   if (i.next().ENTRY_GET_VALUE() == v)
    return true;

  return false;
 }

 @Override
 public boolean isEmpty() {
  return size() == 0;
 }

#if VALUES_INT_LONG_DOUBLE
 /** {@inheritDoc}
  * @implSpec This method just delegates to the interface default method,
  * as the default method, but it is final, so it cannot be overridden.
  */
 @Override
 public final VALUE_TYPE MERGE_VALUE(final KEY_GENERIC_TYPE key, final VALUE_TYPE value, final
VALUE_PACKAGE.VALUE_BINARY_OPERATOR remappingFunction) {
```

```
  return MERGE_VALUE(key, value, (JDK_PRIMITIVE_VALUE_BINARY_OPERATOR)remappingFunction);
 }
#endif

 /** This class provides a basic but complete type-specific entry class for all those maps implementations
  * that do not have entries on their own (e.g., most immutable maps).
  *
  * <p>This class does not implement {@link java.util.Map.Entry#setValue(Object) setValue()}, as the modification
  * would not be reflected in the base map.
  */

 public static class BasicEntry KEY_VALUE_GENERIC implements MAP.Entry KEY_VALUE_GENERIC {
  protected KEY_GENERIC_TYPE key;
  protected VALUE_GENERIC_TYPE value;

  public BasicEntry() {}

  public BasicEntry(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS value) {
   this.key = KEY_CLASS2TYPE(key);
   this.value = VALUE_CLASS2TYPE(value);
  }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE

  public BasicEntry(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE value) {
   this.key = key;
   this.value = value;
  }

#endif

  @Override
  public KEY_GENERIC_TYPE ENTRY_GET_KEY() {
   return key;
  }

  @Override
  public VALUE_GENERIC_TYPE ENTRY_GET_VALUE() {
   return value;
  }

  @Override
  public VALUE_GENERIC_TYPE setValue(final VALUE_GENERIC_TYPE value) {
   throw new UnsupportedOperationException();
  }

  SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
  @Override
```

```
  public boolean equals(final Object o) {
   if (!(o instanceof Map.Entry)) return false;
   if (o instanceof MAP.Entry) {
    final MAP.Entry KEY_VALUE_GENERIC e = (MAP.Entry KEY_VALUE_GENERIC) o;
    return KEY_EQUALS(key, e.ENTRY_GET_KEY()) && VALUE_EQUALS(value, e.ENTRY_GET_VALUE());
   }

   final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
   final Object key = e.getKey();
#if KEYS_PRIMITIVE
   if (key == null || !(key instanceof KEY_CLASS)) return false;
#endif
   final Object value = e.getValue();
#if VALUES_PRIMITIVE
   if (value == null || !(value instanceof VALUE_CLASS)) return false;
#endif
   return KEY_EQUALS(this.key, KEY_OBJ2TYPE(key)) && VALUE_EQUALS(this.value,
VALUE_OBJ2TYPE(value));
  }

  @Override
  public int hashCode() {
   return KEY2JAVAHASH(key) ^ VALUE2JAVAHASH(value);
  }

  @Override
  public String toString() {
   return key + "->" + value;
  }
 }

 /** This class provides a basic implementation for an Entry set which forwards some queries to the map.
  */

 public abstract static class BasicEntrySet KEY_VALUE_GENERIC extends AbstractObjectSet<Entry
KEY_VALUE_GENERIC> {
  protected final MAP KEY_VALUE_GENERIC map;

  public BasicEntrySet(final MAP KEY_VALUE_GENERIC map) {
   this.map = map;
  }

  SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
  @Override
  public boolean contains(final Object o) {
   if (!(o instanceof Map.Entry)) return false;

   if (o instanceof MAP.Entry) {
```

```
    final MAP.Entry KEY_VALUE_GENERIC e = (MAP.Entry KEY_VALUE_GENERIC) o;
    final KEY_GENERIC_TYPE k = e.ENTRY_GET_KEY();
    return map.containsKey(k) && VALUE_EQUALS(map.GET_VALUE(k), e.ENTRY_GET_VALUE());
   }

   final Map.Entry<?, ?> e = (Map.Entry<?, ?>) o;

#if KEYS_PRIMITIVE
   final Object key = e.getKey();
   if (key == null || !(key instanceof KEY_GENERIC_CLASS)) return false;
   final KEY_TYPE k = KEY_OBJ2TYPE(key);
#else
   final Object k = e.getKey();
#endif
   final Object value = e.getValue();
#if VALUES_PRIMITIVE
   if (value == null || !(value instanceof VALUE_GENERIC_CLASS)) return false;
#endif

   return map.containsKey(k) && VALUE_EQUALS(map.GET_VALUE(k), VALUE_OBJ2TYPE(value));
  }

  SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
  @Override
  public boolean remove(final Object o) {
   if (!(o instanceof Map.Entry)) return false;

   if (o instanceof MAP.Entry) {
    final MAP.Entry KEY_VALUE_GENERIC e = (MAP.Entry KEY_VALUE_GENERIC) o;
    return map.remove(e.ENTRY_GET_KEY(), e.ENTRY_GET_VALUE());
   }

   Map.Entry<?, ?> e = (Map.Entry<?, ?>) o;

#if KEYS_PRIMITIVE
   final Object key = e.getKey();
   if (key == null || !(key instanceof KEY_GENERIC_CLASS)) return false;
   final KEY_TYPE k = KEY_OBJ2TYPE(key);
#else
   final Object k = e.getKey();
#endif
#if VALUES_PRIMITIVE
   final Object value = e.getValue();
   if (value == null || !(value instanceof VALUE_GENERIC_CLASS)) return false;
   final VALUE_TYPE v = VALUE_OBJ2TYPE(value);
#else
   final Object v = e.getValue();
#endif
```

```
 return map.remove(k, v);
 }

 @Override
 public int size() {
  return map.size();
 }

 @Override
 public ObjectSpliterator<Entry KEY_VALUE_GENERIC> spliterator() {
  return ObjectSpliterators.asSpliterator(
   iterator(), sizeOf(map), ObjectSpliterators.SET_SPLITERATOR_CHARACTERISTICS);
 }
}


/** Returns a type-specific-set view of the keys of this map.
 *
 * <p>The view is backed by the set returned by {@link Map#entrySet()}. Note that
 * <em>no attempt is made at caching the result of this method</em>, as this would
 * require adding some attributes that lightweight implementations would
 * not need. Subclasses may easily override this policy by calling
 * this method and caching the result, but implementors are encouraged to
 * write more efficient ad-hoc implementations.
 *
 * @return a set view of the keys of this map; it may be safely cast to a type-specific interface.
 */
@Override
public SET KEY_GENERIC keySet() {
 return new ABSTRACT_SET KEY_GENERIC() {
   @Override
   public boolean contains(final KEY_TYPE k) { return containsKey(k); }
   @Override
   public int size() { return ABSTRACT_MAP.this.size(); }
   @Override
   public void clear() { ABSTRACT_MAP.this.clear(); }
   @Override
   public KEY_ITERATOR KEY_GENERIC iterator() {
    return new KEY_ITERATOR KEY_GENERIC() {
      private final ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> i =
MAPS.fastIterator(ABSTRACT_MAP.this);
      @Override
      public KEY_GENERIC_TYPE NEXT_KEY() { return i.next().ENTRY_GET_KEY(); }
      @Override
      public boolean hasNext() { return i.hasNext(); }
      @Override
      public void remove() { i.remove(); }
```

```
      @Override
      public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
       i.forEachRemaining(entry -> action.accept(entry.ENTRY_GET_KEY()));
      }
     };
    }
    @Override
    public KEY_SPLITERATOR KEY_GENERIC spliterator() {
     return SPLITERATORS.asSpliterator(
      iterator(), sizeOf(ABSTRACT_MAP.this), SPLITERATORS.SET_SPLITERATOR_CHARACTERISTICS);
    }
   };
  }

  /** Returns a type-specific-set view of the values of this map.
   *
   * <p>The view is backed by the set returned by {@link Map#entrySet()}. Note that
   * <em>no attempt is made at caching the result of this method</em>, as this would
   * require adding some attributes that lightweight implementations would
   * not need. Subclasses may easily override this policy by calling
   * this method and caching the result, but implementors are encouraged to
   * write more efficient ad-hoc implementations.
   *
   * @return a set view of the values of this map; it may be safely cast to a type-specific interface.
   */
  @Override
  public VALUE_COLLECTION VALUE_GENERIC values() {
   return new VALUE_ABSTRACT_COLLECTION VALUE_GENERIC() {
    @Override
    public boolean contains(final VALUE_TYPE k) { return containsValue(k); }
    @Override
    public int size() { return ABSTRACT_MAP.this.size(); }
    @Override
    public void clear() { ABSTRACT_MAP.this.clear(); }

    @Override
    public VALUE_ITERATOR VALUE_GENERIC iterator() {
     return new VALUE_ITERATOR VALUE_GENERIC() {
      private final ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> i =
MAPS.fastIterator(ABSTRACT_MAP.this);
      @Override
      public VALUE_GENERIC_TYPE NEXT_VALUE() { return i.next().ENTRY_GET_VALUE(); }
      @Override
      public boolean hasNext() { return i.hasNext(); }
      @Override
      public void remove() { i.remove(); }
      @Override
      public void forEachRemaining(final METHOD_ARG_VALUE_CONSUMER action) {
```

```
      i.forEachRemaining(entry -> action.accept(entry.ENTRY_GET_VALUE()));
     }
    };
   }
   @Override
   public VALUE_SPLITERATOR VALUE_GENERIC spliterator() {
    return VALUE_SPLITERATORS.asSpliterator(
     iterator(), sizeOf(ABSTRACT_MAP.this),
VALUE_SPLITERATORS.COLLECTION_SPLITERATOR_CHARACTERISTICS);
   }
  };
 }

 /** {@inheritDoc} */
 @SuppressWarnings({"unchecked", "deprecation"})
 @Override
 public void putAll(final Map<? extends KEY_GENERIC_CLASS,? extends VALUE_GENERIC_CLASS> m) {
  if (m instanceof MAP) {
   ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> i = MAPS.fastIterator((MAP KEY_VALUE_GENERIC)
m);

   while (i.hasNext()) {
    final MAP.Entry KEY_VALUE_EXTENDS_GENERIC e = i.next();
    put(e.ENTRY_GET_KEY(), e.ENTRY_GET_VALUE());
   }
  } else {
   int n = m.size();
   final Iterator<? extends Map.Entry<? extends KEY_GENERIC_CLASS,? extends VALUE_GENERIC_CLASS>> i
= m.entrySet().iterator();
   Map.Entry<? extends KEY_GENERIC_CLASS,? extends VALUE_GENERIC_CLASS> e;
   while (n-- != 0) {
    e = i.next();
    put(e.getKey(), e.getValue());
   }
  }
 }

 /** Returns a hash code for this map.
  *
  * The hash code of a map is computed by summing the hash codes of its entries.
  *
  * @return a hash code for this map.
  */
 @Override
 public int hashCode() {
  int h = 0, n = size();
  final ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> i = MAPS.fastIterator(this);
```

```
  while(n-- != 0) h += i.next().hashCode();
  return h;
 }

 @Override
 public boolean equals(Object o) {
  if (o == this) return true;
  if (! (o instanceof Map)) return false;

  final Map<?,?> m = (Map<?,?>)o;
  if (m.size() != size()) return false;
  return ENTRYSET().containsAll(m.entrySet());
 }

 @Override
 public String toString() {
  final StringBuilder s = new StringBuilder();
  final ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> i = MAPS.fastIterator(this);
  int n = size();
  MAP.Entry KEY_VALUE_GENERIC e;
  boolean first = true;

  s.append("{");

  while(n-- != 0) {
   if (first) first = false;
   else s.append(", ");

   e = i.next();

#if KEYS_REFERENCE
   if (this == e.getKey()) s.append("(this map)"); else
#endif
    s.append(String.valueOf(e.ENTRY_GET_KEY()));
   s.append("=>");
#if VALUES_REFERENCE
   if (this == e.getValue()) s.append("(this map)"); else
#endif
    s.append(String.valueOf(e.ENTRY_GET_VALUE()));
  }

  s.append("}");
  return s.toString();
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractMap.drv

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```
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*
*
*
* For the sorting and binary search code:
*
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*/

package PACKAGE;

import it.unimi.dsi.fastutil.Arrays;
import it.unimi.dsi.fastutil.Hash;
import java.util.Random;
import java.util.concurrent.ForkJoinPool;
import java.util.concurrent.ForkJoinTask;
import java.util.concurrent.RecursiveAction;

#if ! KEY_CLASS_Integer
import it.unimi.dsi.fastutil.ints.IntArrays;
#endif

#if KEYS_PRIMITIVE

#if ! KEY_CLASS_Boolean
```

```
import java.util.concurrent.ExecutorCompletionService;
import java.util.concurrent.LinkedBlockingQueue;
import java.util.concurrent.atomic.AtomicInteger;
#endif

/** A class providing static methods and objects that do useful things with type-specific arrays.
*
* <p>In particular, the {@code forceCapacity()}, {@code ensureCapacity()}, {@code grow()},
* {@code trim()} and {@code setLength()} methods allow to handle
* arrays much like array lists. This can be very useful when efficiency (or
* syntactic simplicity) reasons make array lists unsuitable.
*
* <p>Note that {@link it.unimi.dsi.fastutil.io.BinIO} and {@link it.unimi.dsi.fastutil.io.TextIO}
* contain several methods make it possible to load and save arrays of primitive types as sequences
* of elements in {@link java.io.DataInput} format (i.e., not as objects) or as sequences of lines of text.
*
* <h2>Sorting</h2>
*
* <p>There are several sorting methods available. The main theme is that of letting you choose
* the sorting algorithm you prefer (i.e., trading stability of mergesort for no memory allocation in quicksort).
*
* <h3>Parallel operations</h3>
* Some algorithms provide a parallel version that will by default use the
* {@linkplain ForkJoinPool#commonPool() common pool}, but this can be overridden by calling the
* function in a task already in the {@link ForkJoinPool} that the operation should run in. For example,
* something along the lines of "{@code poolToParallelSortIn.invoke(() -> parallelQuickSort(arrayToSort))}"
* will run the parallel sort in {@code poolToParallelSortIn} instead of the default pool.
*
* Some algorithms also provide an explicit <em>indirect</em> sorting facility, which makes it possible
* to sort an array using the values in another array as comparator.
*
* <p>However, if you wish to let the implementation choose an algorithm for you, both
* {@link #stableSort} and {@link #unstableSort} methods are available, which dynamically
* chooses an algorithm based on unspecified criteria (but most likely stability, array size, and array element type).
*
* <p>All comparison-based algorithm have an implementation based on a type-specific comparator.
*
* <p>As a general rule, sequential radix sort is significantly faster than quicksort or mergesort, in particular
* on random-looking data. In
* the parallel case, up to a few cores parallel radix sort is still the fastest, but at some point quicksort
* exploits parallelism better.
*
* <p>If you are fine with not knowing exactly which algorithm will be run (in particular, not knowing exactly
whether a support array will be allocated),
* the dual-pivot parallel sorts in {@link java.util.Arrays}
* are about 50% faster than the classical single-pivot implementation used here.
*
* <p>In any case, if sorting time is important I suggest that you benchmark your sorting load
```

```
* with your data distribution and on your architecture.
*
* @see java.util.Arrays
*/

public final class ARRAYS {

#else

import java.util.Comparator;

/** A class providing static methods and objects that do useful things with type-specific arrays.
*
* In particular, the {@code ensureCapacity()}, {@code grow()},
* {@code trim()} and {@code setLength()} methods allow to handle
* arrays much like array lists. This can be very useful when efficiency (or
* syntactic simplicity) reasons make array lists unsuitable.
*
* <p><strong>Warning:</strong> if your array is not of type {@code Object[]},
* {@link #ensureCapacity(Object[],int,int)} and {@link #grow(Object[],int,int)}
* will use {@linkplain java.lang.reflect.Array#newInstance(Class,int) reflection}
* to preserve your array type. Reflection is <em>significantly slower</em> than using {@code new}.
* This phenomenon is particularly
* evident in the first growth phases of an array reallocated with doubling (or similar) logic.
*
* <h2>Sorting</h2>
*
* <p>There are several sorting methods available. The main theme is that of letting you choose
* the sorting algorithm you prefer (i.e., trading stability of mergesort for no memory allocation in quicksort).
*
* <h3>Parallel operations</h3>
* Some algorithms provide a parallel version that will by default use the
* {@linkplain ForkJoinPool#commonPool() common pool}, but this can be overridden by calling the
* function in a task already in the {@link ForkJoinPool} that the operation should run in. For example,
* something along the lines of "{@code poolToParallelSortIn.invoke(() -> parallelQuickSort(arrayToSort))}"
* will run the parallel sort in {@code poolToParallelSortIn} instead of the default pool.
*
* <p>All comparison-based algorithm have an implementation based on a type-specific comparator.
*
* <p>If you are fine with not knowing exactly which algorithm will be run (in particular, not knowing exactly
whether a support array will be allocated),
* the dual-pivot parallel sorts in {@link java.util.Arrays}
* are about 50% faster than the classical single-pivot implementation used here.
*
* <p>In any case, if sorting time is important I suggest that you benchmark your sorting load
* with your data distribution and on your architecture.
*
* @see java.util.Arrays
```

```
*/

public final class ARRAYS {

#endif
 private ARRAYS() {}

 /** A static, final, empty array. */
 public static final KEY_TYPE[] EMPTY_ARRAY = {};

 /** A static, final, empty array to be used as default array in allocations. An
   * object distinct from {@link #EMPTY_ARRAY} makes it possible to have different
   * behaviors depending on whether the user required an empty allocation, or we are
   * just lazily delaying allocation.
   *
   * @see java.util.ArrayList
   */
 public static final KEY_TYPE[] DEFAULT_EMPTY_ARRAY = {};


#if KEY_CLASS_Object
 /** Creates a new array using a the given one as prototype.
  *
  * <p>This method returns a new array of the given length whose element
  * are of the same class as of those of {@code prototype}. In case
  * of an empty array, it tries to return {@link #EMPTY_ARRAY}, if possible.
  *
  * @param prototype an array that will be used to type the new one.
  * @param length the length of the new array.
  * @return a new array of given type and length.
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private static <K> K[] newArray(final K[] prototype, final int length) {
  final Class<?> klass = prototype.getClass();
  if (klass == Object[].class) return (K[])(length == 0 ? EMPTY_ARRAY : new Object[length]);
  return (K[])java.lang.reflect.Array.newInstance(klass.getComponentType(), length);
 }
#endif

 /** Forces an array to contain the given number of entries, preserving just a part of the array.
  *
  * @param array an array.
  * @param length the new minimum length for this array.
  * @param preserve the number of elements of the array that must be preserved in case a new allocation is
necessary.
  * @return an array with {@code length} entries whose first {@code preserve}
  * entries are the same as those of {@code array}.
```

```
 */
 public static KEY_GENERIC KEY_GENERIC_TYPE[] forceCapacity(final KEY_GENERIC_TYPE[] array, final
int length, final int preserve) {
  final KEY_GENERIC_TYPE t[] =
#if KEY_CLASS_Object
   newArray(array, length);
#else
   new KEY_TYPE[length];
#endif
  System.arraycopy(array, 0, t, 0, preserve);
  return t;
 }

 /** Ensures that an array can contain the given number of entries.
  *
  * <p>If you cannot foresee whether this array will need again to be
  * enlarged, you should probably use {@code grow()} instead.
  *
  * @param array an array.
  * @param length the new minimum length for this array.
  * @return {@code array}, if it contains {@code length} entries or more; otherwise,
  * an array with {@code length} entries whose first {@code array.length}
  * entries are the same as those of {@code array}.
  */
 public static KEY_GENERIC KEY_GENERIC_TYPE[] ensureCapacity(final KEY_GENERIC_TYPE[] array,
final int length) {
  return ensureCapacity(array, length, array.length);
 }

 /** Ensures that an array can contain the given number of entries, preserving just a part of the array.
  *
  * @param array an array.
  * @param length the new minimum length for this array.
  * @param preserve the number of elements of the array that must be preserved in case a new allocation is
necessary.
  * @return {@code array}, if it can contain {@code length} entries or more; otherwise,
  * an array with {@code length} entries whose first {@code preserve}
  * entries are the same as those of {@code array}.
  */
 public static KEY_GENERIC KEY_GENERIC_TYPE[] ensureCapacity(final KEY_GENERIC_TYPE[] array,
final int length, final int preserve) {
  return length > array.length ? forceCapacity(array, length, preserve) : array;
 }

 /** Grows the given array to the maximum between the given length and
  * the current length increased by 50%, provided that the given
  * length is larger than the current length.
  *
```

```
 * <p>If you want complete control on the array growth, you
 * should probably use {@code ensureCapacity()} instead.
 *
 * @param array an array.
 * @param length the new minimum length for this array.
 * @return {@code array}, if it can contain {@code length}
 * entries; otherwise, an array with
 * max({@code length},{@code array.length}/&phi;) entries whose first
 * {@code array.length} entries are the same as those of {@code array}.
 * */

public static KEY_GENERIC KEY_GENERIC_TYPE[] grow(final KEY_GENERIC_TYPE[] array, final int
length) {
 return grow(array, length, array.length);
}

/** Grows the given array to the maximum between the given length and
 * the current length increased by 50%, provided that the given
 * length is larger than the current length, preserving just a part of the array.
 *
 * <p>If you want complete control on the array growth, you
 * should probably use {@code ensureCapacity()} instead.
 *
 * @param array an array.
 * @param length the new minimum length for this array.
 * @param preserve the number of elements of the array that must be preserved in case a new allocation is
necessary.
 * @return {@code array}, if it can contain {@code length}
 * entries; otherwise, an array with
 * max({@code length},{@code array.length}/&phi;) entries whose first
 * {@code preserve} entries are the same as those of {@code array}.
 * */

public static KEY_GENERIC KEY_GENERIC_TYPE[] grow(final KEY_GENERIC_TYPE[] array, final int
length, final int preserve) {
 if (length > array.length) {
  final int newLength = (int)Math.max(Math.min((long)array.length + (array.length >> 1),
Arrays.MAX_ARRAY_SIZE), length);

  final KEY_GENERIC_TYPE t[] =
#if KEY_CLASS_Object
   newArray(array, newLength);
#else
   new KEY_TYPE[newLength];
#endif
  System.arraycopy(array, 0, t, 0, preserve);

  return t;
```

```
 }
 return array;

}

/** Trims the given array to the given length.
 *
 * @param array an array.
 * @param length the new maximum length for the array.
 * @return {@code array}, if it contains {@code length}
 * entries or less; otherwise, an array with
 * {@code length} entries whose entries are the same as
 * the first {@code length} entries of {@code array}.
 *
 */

public static KEY_GENERIC KEY_GENERIC_TYPE[] trim(final KEY_GENERIC_TYPE[] array, final int length)
{
 if (length >= array.length) return array;
 final KEY_GENERIC_TYPE t[] =
#if KEY_CLASS_Object
  newArray(array, length);
#else
  length == 0 ? EMPTY_ARRAY : new KEY_TYPE[length];
#endif
 System.arraycopy(array, 0, t, 0, length);
 return t;
}

/** Sets the length of the given array.
 *
 * @param array an array.
 * @param length the new length for the array.
 * @return {@code array}, if it contains exactly {@code length}
 * entries; otherwise, if it contains <em>more</em> than
 * {@code length} entries, an array with {@code length} entries
 * whose entries are the same as the first {@code length} entries of
 * {@code array}; otherwise, an array with {@code length} entries
 * whose first {@code array.length} entries are the same as those of
 * {@code array}.
 *
 */

public static KEY_GENERIC KEY_GENERIC_TYPE[] setLength(final KEY_GENERIC_TYPE[] array, final int
length) {
 if (length == array.length) return array;
 if (length < array.length) return trim(array, length);
 return ensureCapacity(array, length);
```

```
}

/** Returns a copy of a portion of an array.
 *
 * @param array an array.
 * @param offset the first element to copy.
 * @param length the number of elements to copy.
 * @return a new array containing {@code length} elements of {@code array} starting at {@code offset}.
 */

public static KEY_GENERIC KEY_GENERIC_TYPE[] copy(final KEY_GENERIC_TYPE[] array, final int offset,
final int length) {
 ensureOffsetLength(array, offset, length);
 final KEY_GENERIC_TYPE[] a =
#if KEY_CLASS_Object
  newArray(array, length);
#else
  length == 0 ? EMPTY_ARRAY : new KEY_TYPE[length];
#endif
 System.arraycopy(array, offset, a, 0, length);
 return a;
}

/** Returns a copy of an array.
 *
 * @param array an array.
 * @return a copy of {@code array}.
 */

public static KEY_GENERIC KEY_GENERIC_TYPE[] copy(final KEY_GENERIC_TYPE[] array) {
 return array.clone();
}

/** Fills the given array with the given value.
 *
 * @param array an array.
 * @param value the new value for all elements of the array.
 * @deprecated Please use the corresponding {@link java.util.Arrays} method.
 */

@Deprecated
public static KEY_GENERIC void fill(final KEY_GENERIC_TYPE[] array, final KEY_GENERIC_TYPE value) {
 int i = array.length;
 while(i-- != 0) array[i] = value;
}

/** Fills a portion of the given array with the given value.
 *
```

```
 * @param array an array.
 * @param from the starting index of the portion to fill (inclusive).
 * @param to the end index of the portion to fill (exclusive).
 * @param value the new value for all elements of the specified portion of the array.
 * @deprecated Please use the corresponding {@link java.util.Arrays} method.
 */

@Deprecated
public static KEY_GENERIC void fill(final KEY_GENERIC_TYPE[] array, final int from, int to, final
KEY_GENERIC_TYPE value) {
 ensureFromTo(array, from, to);
 if (from == 0) while(to-- != 0) array[to] = value;
 else for(int i = from; i < to; i++) array[i] = value;
}



/** Returns true if the two arrays are elementwise equal.
 *
 * @param a1 an array.
 * @param a2 another array.
 * @return true if the two arrays are of the same length, and their elements are equal.
 * @deprecated Please use the corresponding {@link java.util.Arrays} method, which is intrinsified in recent JVMs.
 */

@Deprecated
public static KEY_GENERIC boolean equals(final KEY_GENERIC_TYPE[] a1, final KEY_GENERIC_TYPE
a2[]) {
 int i = a1.length;
 if (i != a2.length) return false;
 while(i-- != 0) if (! KEY_EQUALS(a1[i], a2[i])) return false;
 return true;
}




/** Ensures that a range given by its first (inclusive) and last (exclusive) elements fits an array.
 *
 * <p>This method may be used whenever an array range check is needed.
 *
 * <p>In Java 9 and up, this method should be considered deprecated in favor of the
 * {@link java.util.Objects#checkFromToIndex(int, int, int)} method, which may be intrinsified in recent JVMs.
 *
 * @param a an array.
 * @param from a start index (inclusive).
 * @param to an end index (exclusive).
 * @throws IllegalArgumentException if {@code from} is greater than {@code to}.
```

```
 * @throws ArrayIndexOutOfBoundsException if {@code from} or {@code to} are greater than the array length or negative.
 */
public static KEY_GENERIC void ensureFromTo(final KEY_GENERIC_TYPE[] a, final int from, final int to) {
 Arrays.ensureFromTo(a.length, from, to);
}

/** Ensures that a range given by an offset and a length fits an array.
 *
 * <p>This method may be used whenever an array range check is needed.
 *
 * <p>In Java 9 and up, this method should be considered deprecated in favor of the
 * {@link java.util.Objects#checkFromIndexSize(int, int, int)} method, which may be intrinsified in recent JVMs.
 *
 * @param a an array.
 * @param offset a start index.
 * @param length a length (the number of elements in the range).
 * @throws IllegalArgumentException if {@code length} is negative.
 * @throws ArrayIndexOutOfBoundsException if {@code offset} is negative or {@code offset}+{@code length} is greater than the array length.
 */
public static KEY_GENERIC void ensureOffsetLength(final KEY_GENERIC_TYPE[] a, final int offset, final int length) {
 Arrays.ensureOffsetLength(a.length, offset, length);
}

/** Ensures that two arrays are of the same length.
 *
 * @param a an array.
 * @param b another array.
 * @throws IllegalArgumentException if the two argument arrays are not of the same length.
 */
public static KEY_GENERIC void ensureSameLength(final KEY_GENERIC_TYPE[] a, final KEY_GENERIC_TYPE[] b) {
 if (a.length != b.length) throw new IllegalArgumentException("Array size mismatch: " + a.length + " != " + b.length);
}

private static final int QUICKSORT_NO_REC = 16;
private static final int PARALLEL_QUICKSORT_NO_FORK = 8192;
private static final int QUICKSORT_MEDIAN_OF_9 = 128;
private static final int MERGESORT_NO_REC = 16;

private static ForkJoinPool getPool() {
 // Make sure to update Arrays.drv, BigArrays.drv, and src/it/unimi/dsi/fastutil/Arrays.java as well
 ForkJoinPool current = ForkJoinTask.getPool();
 return current == null ? ForkJoinPool.commonPool() : current;
}
```

```
/** Swaps two elements of an anrray.
 *
 * @param x an array.
 * @param a a position in {@code x}.
 * @param b another position in {@code x}.
 */
public static KEY_GENERIC void swap(final KEY_GENERIC_TYPE x[], final int a, final int b) {
 final KEY_GENERIC_TYPE t = x[a];
 x[a] = x[b];
 x[b] = t;
}

/** Swaps two sequences of elements of an array.
 *
 * @param x an array.
 * @param a a position in {@code x}.
 * @param b another position in {@code x}.
 * @param n the number of elements to exchange starting at {@code a} and {@code b}.
 */
public static KEY_GENERIC void swap(final KEY_GENERIC_TYPE[] x, int a, int b, final int n) {
 for(int i = 0; i < n; i++, a++, b++) swap(x, a, b);
}

private static KEY_GENERIC int med3(final KEY_GENERIC_TYPE x[], final int a, final int b, final int c,
KEY_COMPARATOR KEY_GENERIC comp) {
 final int ab = comp.compare(x[a], x[b]);
 final int ac = comp.compare(x[a], x[c]);
 final int bc = comp.compare(x[b], x[c]);
 return (ab < 0 ?
  (bc < 0 ? b : ac < 0 ? c : a) :
  (bc > 0 ? b : ac > 0 ? c : a));
}

private static KEY_GENERIC void selectionSort(final KEY_GENERIC_TYPE[] a, final int from, final int to, final
KEY_COMPARATOR KEY_GENERIC comp) {
 for(int i = from; i < to - 1; i++) {
  int m = i;
  for(int j = i + 1; j < to; j++) if (comp.compare(a[j], a[m]) < 0) m = j;
  if (m != i) {
   final KEY_GENERIC_TYPE u = a[i];
   a[i] = a[m];
   a[m] = u;
  }
 }
}

private static KEY_GENERIC void insertionSort(final KEY_GENERIC_TYPE[] a, final int from, final int to, final
```

```
KEY_COMPARATOR KEY_GENERIC comp) {
  for (int i = from; ++i < to;) {
   KEY_GENERIC_TYPE t = a[i];
   int j = i;
   for (KEY_GENERIC_TYPE u = a[j - 1]; comp.compare(t, u) < 0; u = a[--j - 1]) {
    a[j] = u;
    if (from == j - 1) {
     --j;
     break;
    }
   }
   a[j] = t;
  }
 }



 /** Sorts the specified range of elements according to the order induced by the specified
  * comparator using quicksort.
  *
  * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
  * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
  * 1249&minus;1265, 1993.
  *
  * <p>Note that this implementation does not allocate any object, contrarily to the implementation
  * used to sort primitive types in {@link java.util.Arrays}, which switches to mergesort on large inputs.
  *
  * @param x the array to be sorted.
  * @param from the index of the first element (inclusive) to be sorted.
  * @param to the index of the last element (exclusive) to be sorted.
  * @param comp the comparator to determine the sorting order.
  *
  */
 public static KEY_GENERIC void quickSort(final KEY_GENERIC_TYPE[] x, final int from, final int to, final
KEY_COMPARATOR KEY_GENERIC comp) {
  final int len = to - from;
  // Selection sort on smallest arrays
  if (len < QUICKSORT_NO_REC) {
   selectionSort(x, from, to, comp);
   return;
  }

  // Choose a partition element, v
  int m = from + len / 2;
  int l = from;
  int n = to - 1;
  if (len > QUICKSORT_MEDIAN_OF_9) {  // Big arrays, pseudomedian of 9
   int s = len / 8;
```

```
 l = med3(x, l, l + s, l + 2 * s, comp);
 m = med3(x, m - s, m, m + s, comp);
 n = med3(x, n - 2 * s, n - s, n, comp);
}
m = med3(x, l, m, n, comp); // Mid-size, med of 3

final KEY_GENERIC_TYPE v = x[m];

// Establish Invariant: v* (<v)* (>v)* v*
int a = from, b = a, c = to - 1, d = c;
while(true) {
 int comparison;
 while (b <= c && (comparison = comp.compare(x[b], v)) <= 0) {
  if (comparison == 0) swap(x, a++, b);
  b++;
 }
 while (c >= b && (comparison = comp.compare(x[c], v)) >=0) {
  if (comparison == 0) swap(x, c, d--);
  c--;
 }
 if (b > c) break;
 swap(x, b++, c--);
}

// Swap partition elements back to middle
int s;
s = Math.min(a - from, b - a);
swap(x, from, b - s, s);
s = Math.min(d - c, to - d - 1);
swap(x, b, to - s, s);

// Recursively sort non-partition-elements
if ((s = b - a) > 1) quickSort(x, from, from + s, comp);
if ((s = d - c) > 1) quickSort(x, to - s, to, comp);
}

/** Sorts an array according to the order induced by the specified
 * comparator using quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * <p>Note that this implementation does not allocate any object, contrarily to the implementation
 * used to sort primitive types in {@link java.util.Arrays}, which switches to mergesort on large inputs.
 *
 * @param x the array to be sorted.
 * @param comp the comparator to determine the sorting order.
```

```
 *
 */
public static KEY_GENERIC void quickSort(final KEY_GENERIC_TYPE[] x, final KEY_COMPARATOR
KEY_GENERIC comp) {
 quickSort(x, 0, x.length, comp);
}


protected static class ForkJoinQuickSortComp KEY_GENERIC extends RecursiveAction {
 private static final long serialVersionUID = 1L;
 private final int from;
 private final int to;
 private final KEY_GENERIC_TYPE[] x;
 private final KEY_COMPARATOR KEY_GENERIC comp;

 public ForkJoinQuickSortComp(final KEY_GENERIC_TYPE[] x , final int from , final int to, final
KEY_COMPARATOR KEY_GENERIC comp) {
  this.from = from;
  this.to = to;
  this.x = x;
  this.comp = comp;
 }

 @Override
 protected void compute() {
  final KEY_GENERIC_TYPE[] x = this.x;
  final int len = to - from;
  if (len < PARALLEL_QUICKSORT_NO_FORK) {
   quickSort(x, from, to, comp);
   return;
  }
  // Choose a partition element, v
  int m = from + len / 2;
  int l = from;
  int n = to - 1;
  int s = len / 8;
  l = med3(x, l, l + s, l + 2 * s, comp);
  m = med3(x, m - s, m, m + s, comp);
  n = med3(x, n - 2 * s, n - s, n, comp);
  m = med3(x, l, m, n, comp);
  final KEY_GENERIC_TYPE v = x[m];
  // Establish Invariant: v* (<v)* (>v)* v*
  int a = from, b = a, c = to - 1, d = c;
  while (true) {
   int comparison;
   while (b <= c && (comparison = comp.compare(x[b], v)) <= 0) {
    if (comparison == 0) swap(x, a++, b);
    b++;
```

```
   }
   while (c >= b && (comparison = comp.compare(x[c], v)) >= 0) {
    if (comparison == 0) swap(x, c, d--);
    c--;
   }
   if (b > c) break;
   swap(x, b++, c--);
  }
  // Swap partition elements back to middle
  int t;
  s = Math.min(a - from, b - a);
  swap(x, from, b - s, s);
  s = Math.min(d - c, to - d - 1);
  swap(x, b, to - s, s);
  // Recursively sort non-partition-elements
  s = b - a;
  t = d - c;
  if (s > 1 && t > 1) invokeAll(new ForkJoinQuickSortComp KEY_GENERIC_DIAMOND(x, from, from + s,
comp), new ForkJoinQuickSortComp KEY_GENERIC_DIAMOND(x, to - t, to, comp));
  else if (s > 1) invokeAll(new ForkJoinQuickSortComp KEY_GENERIC_DIAMOND(x, from, from + s, comp));
  else invokeAll(new ForkJoinQuickSortComp KEY_GENERIC_DIAMOND(x, to - t, to, comp));
 }
}

/** Sorts the specified range of elements according to the order induced by the specified
 * comparator using a parallel quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * @param x the array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 * @param comp the comparator to determine the sorting order.
 */
public static KEY_GENERIC void parallelQuickSort(final KEY_GENERIC_TYPE[] x, final int from, final int to,
final KEY_COMPARATOR KEY_GENERIC comp) {
 ForkJoinPool pool = getPool();
 if (to - from < PARALLEL_QUICKSORT_NO_FORK || pool.getParallelism() == 1) quickSort(x, from, to, comp);
 else {
  pool.invoke(new ForkJoinQuickSortComp KEY_GENERIC_DIAMOND(x, from, to, comp));
 }
}

/** Sorts an array according to the order induced by the specified
 * comparator using a parallel quicksort.
 *
```

```
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * @param x the array to be sorted.
 * @param comp the comparator to determine the sorting order.
 */
public static KEY_GENERIC void parallelQuickSort(final KEY_GENERIC_TYPE[] x, final
KEY_COMPARATOR KEY_GENERIC comp) {
 parallelQuickSort(x, 0, x.length, comp);
}


SUPPRESS_WARNINGS_KEY_UNCHECKED
private static KEY_GENERIC int med3(final KEY_GENERIC_TYPE x[], final int a, final int b, final int c) {
 final int ab = KEY_CMP(x[a], x[b]);
 final int ac = KEY_CMP(x[a], x[c]);
 final int bc = KEY_CMP(x[b], x[c]);
 return (ab < 0 ?
  (bc < 0 ? b : ac < 0 ? c : a) :
  (bc > 0 ? b : ac > 0 ? c : a));
}

SUPPRESS_WARNINGS_KEY_UNCHECKED
private static KEY_GENERIC void selectionSort(final KEY_GENERIC_TYPE[] a, final int from, final int to) {
 for(int i = from; i < to - 1; i++) {
  int m = i;
  for(int j = i + 1; j < to; j++) if (KEY_LESS(a[j], a[m])) m = j;
  if (m != i) {
   final KEY_GENERIC_TYPE u = a[i];
   a[i] = a[m];
   a[m] = u;
  }
 }
}

SUPPRESS_WARNINGS_KEY_UNCHECKED
private static KEY_GENERIC void insertionSort(final KEY_GENERIC_TYPE[] a, final int from, final int to) {
 for (int i = from; ++i < to;) {
  KEY_GENERIC_TYPE t = a[i];
  int j = i;
  for (KEY_GENERIC_TYPE u = a[j - 1]; KEY_LESS(t, u); u = a[--j - 1]) {
   a[j] = u;
   if (from == j - 1) {
    --j;
    break;
   }
  }
```

```
  a[j] = t;
 }
}

/** Sorts the specified range of elements according to the natural ascending order using quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * <p>Note that this implementation does not allocate any object, contrarily to the implementation
 * used to sort primitive types in {@link java.util.Arrays}, which switches to mergesort on large inputs.
 *
 * @param x the array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 */

SUPPRESS_WARNINGS_KEY_UNCHECKED
public static KEY_GENERIC void quickSort(final KEY_GENERIC_TYPE[] x, final int from, final int to) {
 final int len = to - from;
 // Selection sort on smallest arrays
 if (len < QUICKSORT_NO_REC) {
  selectionSort(x, from, to);
  return;
 }

 // Choose a partition element, v
 int m = from + len / 2;
 int l = from;
 int n = to - 1;
 if (len > QUICKSORT_MEDIAN_OF_9) {  // Big arrays, pseudomedian of 9
  int s = len / 8;
  l = med3(x, l, l + s, l + 2 * s);
  m = med3(x, m - s, m, m + s);
  n = med3(x, n - 2 * s, n - s, n);
 }
 m = med3(x, l, m, n); // Mid-size, med of 3

 final KEY_GENERIC_TYPE v = x[m];

 // Establish Invariant: v* (<v)* (>v)* v*
 int a = from, b = a, c = to - 1, d = c;
 while(true) {
  int comparison;
  while (b <= c && (comparison = KEY_CMP(x[b], v)) <= 0) {
   if (comparison == 0) swap(x, a++, b);
   b++;
```

```
  }
  while (c >= b && (comparison = KEY_CMP(x[c], v)) >=0) {
   if (comparison == 0) swap(x, c, d--);
   c--;
  }
  if (b > c) break;
  swap(x, b++, c--);
 }

 // Swap partition elements back to middle
 int s;
 s = Math.min(a - from, b - a);
 swap(x, from, b - s, s);
 s = Math.min(d - c, to - d - 1);
 swap(x, b, to - s, s);

 // Recursively sort non-partition-elements
 if ((s = b - a) > 1) quickSort(x, from, from + s);
 if ((s = d - c) > 1) quickSort(x, to - s, to);
}

/** Sorts an array according to the natural ascending order using quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * <p>Note that this implementation does not allocate any object, contrarily to the implementation
 * used to sort primitive types in {@link java.util.Arrays}, which switches to mergesort on large inputs.
 *
 * @param x the array to be sorted.
 *
 */
public static KEY_GENERIC void quickSort(final KEY_GENERIC_TYPE[] x) {
 quickSort(x, 0, x.length);
}

protected static class ForkJoinQuickSort KEY_GENERIC extends RecursiveAction {
 private static final long serialVersionUID = 1L;
 private final int from;
 private final int to;
 private final KEY_GENERIC_TYPE[] x;

 public ForkJoinQuickSort(final KEY_GENERIC_TYPE[] x , final int from , final int to) {
  this.from = from;
  this.to = to;
  this.x = x;
 }
```

```
 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 protected void compute() {
  final KEY_GENERIC_TYPE[] x = this.x;
  final int len = to - from;
  if (len < PARALLEL_QUICKSORT_NO_FORK) {
   quickSort(x, from, to);
   return;
  }
  // Choose a partition element, v
  int m = from + len / 2;
  int l = from;
  int n = to - 1;
  int s = len / 8;
  l = med3(x, l, l + s, l + 2 * s);
  m = med3(x, m - s, m, m + s);
  n = med3(x, n - 2 * s, n - s, n);
  m = med3(x, l, m, n);
  final KEY_GENERIC_TYPE v = x[m];
  // Establish Invariant: v* (<v)* (>v)* v*
  int a = from, b = a, c = to - 1, d = c;
  while (true) {
   int comparison;
   while (b <= c && (comparison = KEY_CMP(x[b], v)) <= 0) {
    if (comparison == 0) swap(x, a++, b);
    b++;
   }
   while (c >= b && (comparison = KEY_CMP(x[c], v)) >= 0) {
    if (comparison == 0) swap(x, c, d--);
    c--;
   }
   if (b > c) break;
   swap(x, b++, c--);
  }
  // Swap partition elements back to middle
  int t;
  s = Math.min(a - from, b - a);
  swap(x, from, b - s, s);
  s = Math.min(d - c, to - d - 1);
  swap(x, b, to - s, s);
  // Recursively sort non-partition-elements
  s = b - a;
  t = d - c;
  if (s > 1 && t > 1) invokeAll(new ForkJoinQuickSort KEY_GENERIC_DIAMOND(x, from, from + s), new
ForkJoinQuickSort KEY_GENERIC_DIAMOND(x, to - t, to));
  else if (s > 1) invokeAll(new ForkJoinQuickSort KEY_GENERIC_DIAMOND(x, from, from + s));
  else invokeAll(new ForkJoinQuickSort KEY_GENERIC_DIAMOND(x, to - t, to));
```

```
 }
}

/**  Sorts the specified range of elements according to the natural ascending order using a parallel quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * @param x the array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 */
public static KEY_GENERIC void parallelQuickSort(final KEY_GENERIC_TYPE[] x, final int from, final int to) {
 ForkJoinPool pool = getPool();
 if (to - from < PARALLEL_QUICKSORT_NO_FORK || pool.getParallelism() == 1) quickSort(x, from, to);
 else {
  pool.invoke(new ForkJoinQuickSort KEY_GENERIC_DIAMOND(x, from, to));
 }
}

/** Sorts an array according to the natural ascending order using a parallel quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * @param x the array to be sorted.
 *
 */
public static KEY_GENERIC void parallelQuickSort(final KEY_GENERIC_TYPE[] x) {
 parallelQuickSort(x, 0, x.length);
}


SUPPRESS_WARNINGS_KEY_UNCHECKED
private static KEY_GENERIC int med3Indirect(final int perm[], final KEY_GENERIC_TYPE x[], final int a, final
int b, final int c) {
 final KEY_GENERIC_TYPE aa = x[perm[a]];
 final KEY_GENERIC_TYPE bb = x[perm[b]];
 final KEY_GENERIC_TYPE cc = x[perm[c]];
 final int ab = KEY_CMP(aa, bb);
 final int ac = KEY_CMP(aa, cc);
 final int bc = KEY_CMP(bb, cc);
 return (ab < 0 ?
  (bc < 0 ? b : ac < 0 ? c : a) :
  (bc > 0 ? b : ac > 0 ? c : a));
}
```

```
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private static KEY_GENERIC void insertionSortIndirect(final int[] perm, final KEY_GENERIC_TYPE[] a, final int
from, final int to) {
  for (int i = from; ++i < to;) {
   int t = perm[i];
   int j = i;
   for (int u = perm[j - 1]; KEY_LESS(a[t], a[u]); u = perm[--j - 1]) {
    perm[j] = u;
    if (from == j - 1) {
     --j;
     break;
    }
   }
   perm[j] = t;
  }
 }

 /** Sorts the specified range of elements according to the natural ascending order using indirect quicksort.
  *
  * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
  * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
  * 1249&minus;1265, 1993.
  *
  * <p>This method implement an <em>indirect</em> sort. The elements of {@code perm} (which must
  * be exactly the numbers in the interval {@code [0..perm.length)}) will be permuted so that
  * {@code x[perm[i]] &le; x[perm[i + 1]]}.
  *
  * <p>Note that this implementation does not allocate any object, contrarily to the implementation
  * used to sort primitive types in {@link java.util.Arrays}, which switches to mergesort on large inputs.
  *
  * @param perm a permutation array indexing {@code x}.
  * @param x the array to be sorted.
  * @param from the index of the first element (inclusive) to be sorted.
  * @param to the index of the last element (exclusive) to be sorted.
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static KEY_GENERIC void quickSortIndirect(final int[] perm, final KEY_GENERIC_TYPE[] x, final int
from, final int to) {
  final int len = to - from;
  // Selection sort on smallest arrays
  if (len < QUICKSORT_NO_REC) {
   insertionSortIndirect(perm, x, from, to);
   return;
  }

  // Choose a partition element, v
```

```
 int m = from + len / 2;
 int l = from;
 int n = to - 1;
 if (len > QUICKSORT_MEDIAN_OF_9) {  // Big arrays, pseudomedian of 9
  int s = len / 8;
  l = med3Indirect(perm, x, l, l + s, l + 2 * s);
  m = med3Indirect(perm, x, m - s, m, m + s);
  n = med3Indirect(perm, x, n - 2 * s, n - s, n);
 }
 m = med3Indirect(perm, x, l, m, n); // Mid-size, med of 3

 final KEY_GENERIC_TYPE v = x[perm[m]];

 // Establish Invariant: v* (<v)* (>v)* v*
 int a = from, b = a, c = to - 1, d = c;
 while(true) {
  int comparison;
  while (b <= c && (comparison = KEY_CMP(x[perm[b]], v)) <= 0) {
   if (comparison == 0) IntArrays.swap(perm, a++, b);
   b++;
  }
  while (c >= b && (comparison = KEY_CMP(x[perm[c]], v)) >=0) {
   if (comparison == 0) IntArrays.swap(perm, c, d--);
   c--;
  }
  if (b > c) break;
  IntArrays.swap(perm, b++, c--);
 }

 // Swap partition elements back to middle
 int s;
 s = Math.min(a - from, b - a);
 IntArrays.swap(perm, from, b - s, s);
 s = Math.min(d - c, to - d - 1);
 IntArrays.swap(perm, b, to - s, s);

 // Recursively sort non-partition-elements
 if ((s = b - a) > 1) quickSortIndirect(perm, x, from, from + s);
 if ((s = d - c) > 1) quickSortIndirect(perm, x, to - s, to);
}

/** Sorts an array according to the natural ascending order using indirect quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * <p>This method implement an <em>indirect</em> sort. The elements of {@code perm} (which must
```

```
 * be exactly the numbers in the interval {@code [0..perm.length)}) will be permuted so that
 * {@code x[perm[i]] &le; x[perm[i + 1]]}.
 *
 * <p>Note that this implementation does not allocate any object, contrarily to the implementation
 * used to sort primitive types in {@link java.util.Arrays}, which switches to mergesort on large inputs.
 *
 * @param perm a permutation array indexing {@code x}.
 * @param x the array to be sorted.
 */
public static KEY_GENERIC void quickSortIndirect(final int perm[], final KEY_GENERIC_TYPE[] x) {
 quickSortIndirect(perm, x, 0, x.length);
}

protected static class ForkJoinQuickSortIndirect KEY_GENERIC extends RecursiveAction {
 private static final long serialVersionUID = 1L;
 private final int from;
 private final int to;
 private final int[] perm;
 private final KEY_GENERIC_TYPE[] x;

 public ForkJoinQuickSortIndirect(final int perm[], final KEY_GENERIC_TYPE[] x , final int from , final int to) {
  this.from = from;
  this.to = to;
  this.x = x;
  this.perm = perm;
 }

 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 protected void compute() {
  final KEY_GENERIC_TYPE[] x = this.x;
  final int len = to - from;
  if (len < PARALLEL_QUICKSORT_NO_FORK) {
   quickSortIndirect(perm, x, from, to);
   return;
  }
  // Choose a partition element, v
  int m = from + len / 2;
  int l = from;
  int n = to - 1;
  int s = len / 8;
  l = med3Indirect(perm, x, l, l + s, l + 2 * s);
  m = med3Indirect(perm, x, m - s, m, m + s);
  n = med3Indirect(perm, x, n - 2 * s, n - s, n);
  m = med3Indirect(perm, x, l, m, n);
  final KEY_GENERIC_TYPE v = x[perm[m]];
  // Establish Invariant: v* (<v)* (>v)* v*
  int a = from, b = a, c = to - 1, d = c;
```

```
  while (true) {
   int comparison;
   while (b <= c && (comparison = KEY_CMP(x[perm[b]], v)) <= 0) {
    if (comparison == 0) IntArrays.swap(perm, a++, b);
    b++;
   }
   while (c >= b && (comparison = KEY_CMP(x[perm[c]], v)) >= 0) {
    if (comparison == 0) IntArrays.swap(perm, c, d--);
    c--;
   }
   if (b > c) break;
   IntArrays.swap(perm, b++, c--);
  }
  // Swap partition elements back to middle
  int t;
  s = Math.min(a - from, b - a);
  IntArrays.swap(perm, from, b - s, s);
  s = Math.min(d - c, to - d - 1);
  IntArrays.swap(perm, b, to - s, s);
  // Recursively sort non-partition-elements
  s = b - a;
  t = d - c;
  if (s > 1 && t > 1) invokeAll(new ForkJoinQuickSortIndirect KEY_GENERIC_DIAMOND(perm, x, from, from +
s), new ForkJoinQuickSortIndirect KEY_GENERIC_DIAMOND(perm, x, to - t, to));
  else if (s > 1) invokeAll(new ForkJoinQuickSortIndirect KEY_GENERIC_DIAMOND(perm, x, from, from + s));
  else invokeAll(new ForkJoinQuickSortIndirect KEY_GENERIC_DIAMOND(perm, x, to - t, to));
 }
}

/**  Sorts the specified range of elements according to the natural ascending order using a parallel indirect quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * <p>This method implement an <em>indirect</em> sort. The elements of {@code perm} (which must
 * be exactly the numbers in the interval {@code [0..perm.length)}) will be permuted so that
 * {@code x[perm[i]] &le; x[perm[i + 1]]}.
 *
 * @param perm a permutation array indexing {@code x}.
 * @param x the array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 */
public static KEY_GENERIC void parallelQuickSortIndirect(final int[] perm, final KEY_GENERIC_TYPE[] x,
final int from, final int to) {
 ForkJoinPool pool = getPool();
 if (to - from < PARALLEL_QUICKSORT_NO_FORK || pool.getParallelism() == 1) quickSortIndirect(perm, x,
```

```
from, to);
  else {
   pool.invoke(new ForkJoinQuickSortIndirect KEY_GENERIC_DIAMOND(perm, x, from, to));
  }
 }

 /** Sorts an array according to the natural ascending order using a parallel indirect quicksort.
  *
  * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
  * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
  * 1249&minus;1265, 1993.
  *
  * <p>This method implement an <em>indirect</em> sort. The elements of {@code perm} (which must
  * be exactly the numbers in the interval {@code [0..perm.length)}) will be permuted so that
  * {@code x[perm[i]] &le; x[perm[i + 1]]}.
  *
  * @param perm a permutation array indexing {@code x}.
  * @param x the array to be sorted.
  *
  */
 public static KEY_GENERIC void parallelQuickSortIndirect(final int perm[], final KEY_GENERIC_TYPE[] x) {
  parallelQuickSortIndirect(perm, x, 0, x.length);
 }

 /** Stabilizes a permutation.
  *
  * <p>This method can be used to stabilize the permutation generated by an indirect sorting, assuming that
  * initially the permutation array was in ascending order (e.g., the identity, as usually happens). This method
  * scans the permutation, and for each non-singleton block of elements with the same associated values in {@code
x},
  * permutes them in ascending order. The resulting permutation corresponds to a stable sort.
  *
  * <p>Usually combining an unstable indirect sort and this method is more efficient than using a stable sort,
  * as most stable sort algorithms require a support array.
  *
  * <p>More precisely, assuming that {@code x[perm[i]] &le; x[perm[i + 1]]}, after
  * stabilization we will also have that {@code x[perm[i]] = x[perm[i + 1]]} implies
  * {@code perm[i] &le; perm[i + 1]}.
  *
  * @param perm a permutation array indexing {@code x} so that it is sorted.
  * @param x the sorted array to be stabilized.
  * @param from the index of the first element (inclusive) to be stabilized.
  * @param to the index of the last element (exclusive) to be stabilized.
  */
 public static KEY_GENERIC void stabilize(final int perm[], final KEY_GENERIC_TYPE[] x, final int from, final
int to) {
  int curr = from;
  for(int i = from + 1; i < to; i++) {
```

```
  if (x[perm[i]] != x[perm[curr]]) {
   if (i - curr > 1) IntArrays.parallelQuickSort(perm, curr, i);
   curr = i;
  }
 }
 if (to - curr > 1) IntArrays.parallelQuickSort(perm, curr, to);
}

/** Stabilizes a permutation.
 *
 * <p>This method can be used to stabilize the permutation generated by an indirect sorting, assuming that
 * initially the permutation array was in ascending order (e.g., the identity, as usually happens). This method
 * scans the permutation, and for each non-singleton block of elements with the same associated values in {@code
x},
 * permutes them in ascending order. The resulting permutation corresponds to a stable sort.
 *
 * <p>Usually combining an unstable indirect sort and this method is more efficient than using a stable sort,
 * as most stable sort algorithms require a support array.
 *
 * <p>More precisely, assuming that {@code x[perm[i]] &le; x[perm[i + 1]]}, after
 * stabilization we will also have that {@code x[perm[i]] = x[perm[i + 1]]} implies
 * {@code perm[i] &le; perm[i + 1]}.
 *
 * @param perm a permutation array indexing {@code x} so that it is sorted.
 * @param x the sorted array to be stabilized.
 */
public static KEY_GENERIC void stabilize(final int perm[], final KEY_GENERIC_TYPE[] x) {
 stabilize(perm, x, 0, perm.length);
}

SUPPRESS_WARNINGS_KEY_UNCHECKED
private static KEY_GENERIC int med3(final KEY_GENERIC_TYPE x[], final KEY_GENERIC_TYPE[] y, final
int a, final int b, final int c) {
 int t;
 final int ab = (t = KEY_CMP(x[a], x[b])) == 0 ? KEY_CMP(y[a], y[b]) : t;
 final int ac = (t = KEY_CMP(x[a], x[c])) == 0 ? KEY_CMP(y[a], y[c]) : t;
 final int bc = (t = KEY_CMP(x[b], x[c])) == 0 ? KEY_CMP(y[b], y[c]) : t;
 return (ab < 0 ?
   (bc < 0 ? b : ac < 0 ? c : a) :
   (bc > 0 ? b : ac > 0 ? c : a));
}

private static KEY_GENERIC void swap(final KEY_GENERIC_TYPE x[], final KEY_GENERIC_TYPE[] y, final
int a, final int b) {
 final KEY_GENERIC_TYPE t = x[a];
 final KEY_GENERIC_TYPE u = y[a];
 x[a] = x[b];
 y[a] = y[b];
```

```
  x[b] = t;
  y[b] = u;
 }

 private static KEY_GENERIC void swap(final KEY_GENERIC_TYPE[] x, final KEY_GENERIC_TYPE[] y, int a,
int b, final int n) {
  for (int i = 0; i < n; i++, a++, b++) swap(x, y, a, b);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private static KEY_GENERIC void selectionSort(final KEY_GENERIC_TYPE[] a, final KEY_GENERIC_TYPE[]
b, final int from, final int to) {
  for(int i = from; i < to - 1; i++) {
   int m = i, u;
   for(int j = i + 1; j < to; j++)
    if ((u = KEY_CMP(a[j], a[m])) < 0 || u == 0 && KEY_LESS(b[j], b[m])) m = j;

   if (m != i) {
    KEY_GENERIC_TYPE t = a[i];
    a[i] = a[m];
    a[m] = t;
    t = b[i];
    b[i] = b[m];
    b[m] = t;
   }
  }
 }

 /** Sorts the specified range of elements of two arrays according to the natural lexicographical
  *  ascending order using quicksort.
  *
  * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
  * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
  * 1249&minus;1265, 1993.
  *
  * <p>This method implements a <em>lexicographical</em> sorting of the arguments. Pairs of
  * elements in the same position in the two provided arrays will be considered a single key, and
  * permuted accordingly. In the end, either {@code x[i] &lt; x[i + 1]} or {@code x[i]
  * == x[i + 1]} and {@code y[i] &le; y[i + 1]}.
  *
  * @param x the first array to be sorted.
  * @param y the second array to be sorted.
  * @param from the index of the first element (inclusive) to be sorted.
  * @param to the index of the last element (exclusive) to be sorted.
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static KEY_GENERIC void quickSort(final KEY_GENERIC_TYPE[] x, final KEY_GENERIC_TYPE[] y,
```

```
final int from, final int to) {
  final int len = to - from;
  if (len < QUICKSORT_NO_REC) {
   selectionSort(x, y, from, to);
   return;
  }
  // Choose a partition element, v
  int m = from + len / 2;
  int l = from;
  int n = to - 1;
  if (len > QUICKSORT_MEDIAN_OF_9) { // Big arrays, pseudomedian of 9
   int s = len / 8;
   l = med3(x, y, l, l + s, l + 2 * s);
   m = med3(x, y, m - s, m, m + s);
   n = med3(x, y, n - 2 * s, n - s, n);
  }
  m = med3(x, y, l, m, n); // Mid-size, med of 3
  final KEY_GENERIC_TYPE v = x[m], w = y[m];
  // Establish Invariant: v* (<v)* (>v)* v*
  int a = from, b = a, c = to - 1, d = c;
  while (true) {
   int comparison, t;
   while (b <= c && (comparison = (t = KEY_CMP(x[b], v)) == 0 ? KEY_CMP(y[b], w) : t) <= 0) {
    if (comparison == 0) swap(x, y, a++, b);
    b++;
   }
   while (c >= b && (comparison = (t = KEY_CMP(x[c], v)) == 0 ? KEY_CMP(y[c], w) : t) >= 0) {
    if (comparison == 0) swap(x, y, c, d--);
    c--;
   }
   if (b > c) break;
   swap(x, y, b++, c--);
  }
  // Swap partition elements back to middle
  int s;
  s = Math.min(a - from, b - a);
  swap(x, y, from, b - s, s);
  s = Math.min(d - c, to - d - 1);
  swap(x, y, b, to - s, s);
  // Recursively sort non-partition-elements
  if ((s = b - a) > 1) quickSort(x, y, from, from + s);
  if ((s = d - c) > 1) quickSort(x, y, to - s, to);
 }

 /** Sorts two arrays according to the natural lexicographical ascending order using quicksort.
  *
  * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
  * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
```

```
 * 1249&minus;1265, 1993.
 *
 * <p>This method implements a <em>lexicographical</em> sorting of the arguments. Pairs of
 * elements in the same position in the two provided arrays will be considered a single key, and
 * permuted accordingly. In the end, either {@code x[i] &lt; x[i + 1]} or {@code x[i]
 * == x[i + 1]} and {@code y[i] &le; y[i + 1]}.
 *
 * @param x the first array to be sorted.
 * @param y the second array to be sorted.
 */
public static KEY_GENERIC void quickSort(final KEY_GENERIC_TYPE[] x, final KEY_GENERIC_TYPE[] y)
{
 ensureSameLength(x, y);
 quickSort(x, y, 0, x.length);
}

protected static class ForkJoinQuickSort2 KEY_GENERIC extends RecursiveAction {
 private static final long serialVersionUID = 1L;
 private final int from;
 private final int to;
 private final KEY_GENERIC_TYPE[] x, y;

 public ForkJoinQuickSort2(final KEY_GENERIC_TYPE[] x, final KEY_GENERIC_TYPE[] y, final int from ,
final int to) {
  this.from = from;
  this.to = to;
  this.x = x;
  this.y = y;
 }

 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 protected void compute() {
  final KEY_GENERIC_TYPE[] x = this.x;
  final KEY_GENERIC_TYPE[] y = this.y;
  final int len = to - from;
  if (len < PARALLEL_QUICKSORT_NO_FORK) {
   quickSort(x, y, from, to);
   return;
  }
  // Choose a partition element, v
  int m = from + len / 2;
  int l = from;
  int n = to - 1;
  int s = len / 8;
  l = med3(x, y, l, l + s, l + 2 * s);
  m = med3(x, y, m - s, m, m + s);
  n = med3(x, y, n - 2 * s, n - s, n);
```

```
  m = med3(x, y, l, m, n);
  final KEY_GENERIC_TYPE v = x[m], w = y[m];
  // Establish Invariant: v* (<v)* (>v)* v*
  int a = from, b = a, c = to - 1, d = c;
  while (true) {
   int comparison, t;
   while (b <= c && (comparison = (t = KEY_CMP(x[b], v)) == 0 ? KEY_CMP(y[b], w) : t) <= 0) {
    if (comparison == 0) swap(x, y, a++, b);
    b++;
   }
   while (c >= b && (comparison = (t = KEY_CMP(x[c], v)) == 0 ? KEY_CMP(y[c], w) : t) >= 0) {
    if (comparison == 0) swap(x, y, c, d--);
    c--;
   }
   if (b > c) break;
   swap(x, y, b++, c--);
  }
  // Swap partition elements back to middle
  int t;
  s = Math.min(a - from, b - a);
  swap(x, y, from, b - s, s);
  s = Math.min(d - c, to - d - 1);
  swap(x, y, b, to - s, s);
  s = b - a;
  t = d - c;
  // Recursively sort non-partition-elements
  if (s > 1 && t > 1) invokeAll(new ForkJoinQuickSort2 KEY_GENERIC_DIAMOND(x, y, from, from + s), new
ForkJoinQuickSort2 KEY_GENERIC_DIAMOND(x, y, to - t, to));
  else if (s > 1) invokeAll(new ForkJoinQuickSort2 KEY_GENERIC_DIAMOND(x, y, from, from + s));
  else invokeAll(new ForkJoinQuickSort2 KEY_GENERIC_DIAMOND(x, y, to - t, to));
 }
}

/** Sorts the specified range of elements of two arrays according to the natural lexicographical
 *  ascending order using a parallel quicksort.
 *
 * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
 * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
 * 1249&minus;1265, 1993.
 *
 * <p>This method implements a <em>lexicographical</em> sorting of the arguments. Pairs of
 * elements in the same position in the two provided arrays will be considered a single key, and
 * permuted accordingly. In the end, either {@code x[i] &lt; x[i + 1]} or {@code x[i]
 * == x[i + 1]} and {@code y[i] &le; y[i + 1]}.
 *
 * @param x the first array to be sorted.
 * @param y the second array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
```

```
  * @param to the index of the last element (exclusive) to be sorted.
  */
 public static KEY_GENERIC void parallelQuickSort(final KEY_GENERIC_TYPE[] x, final
KEY_GENERIC_TYPE[] y, final int from, final int to) {
  ForkJoinPool pool = getPool();
  if (to - from < PARALLEL_QUICKSORT_NO_FORK || pool.getParallelism() == 1) quickSort(x, y, from, to);
  else {
   pool.invoke(new ForkJoinQuickSort2 KEY_GENERIC_DIAMOND(x, y, from, to));
  }
 }

 /** Sorts two arrays according to the natural lexicographical
  *  ascending order using a parallel quicksort.
  *
  * <p>The sorting algorithm is a tuned quicksort adapted from Jon L. Bentley and M. Douglas
  * McIlroy, &ldquo;Engineering a Sort Function&rdquo;, <i>Software: Practice and Experience</i>, 23(11), pages
  * 1249&minus;1265, 1993.
  *
  * <p>This method implements a <em>lexicographical</em> sorting of the arguments. Pairs of
  * elements in the same position in the two provided arrays will be considered a single key, and
  * permuted accordingly. In the end, either {@code x[i] &lt; x[i + 1]} or {@code x[i]
  * == x[i + 1]} and {@code y[i] &le; y[i + 1]}.
  *
  * @param x the first array to be sorted.
  * @param y the second array to be sorted.
  */
 public static KEY_GENERIC void parallelQuickSort(final KEY_GENERIC_TYPE[] x, final
KEY_GENERIC_TYPE[] y) {
  ensureSameLength(x, y);
  parallelQuickSort(x, y, 0, x.length);
 }

 /** Sorts an array according to the natural ascending order,
  * potentially dynamically choosing an appropriate algorithm given the type and size of the array. The
  * sort will be stable unless it is provable that it would be impossible for there to be any difference
  * between a stable and unstable sort for the given type, in which case stability is meaningless and thus
  * unspecified.
  *
  * @param a the array to be sorted.
  * @param from the index of the first element (inclusive) to be sorted.
  * @param to the index of the last element (exclusive) to be sorted.
  * @since 8.3.0
  */
 public static KEY_GENERIC void unstableSort(final KEY_GENERIC_TYPE a[], final int from, final int to) {
#if KEYS_PRIMITIVE && !KEY_CLASS_Boolean
#if KEY_CLASS_Byte
   // JDK's sort for bytes uses bucket sort; not even radix sort can beat that.
   java.util.Arrays.sort(a, from, to);
```

```
#else
   // TODO For some TBD threshold, delegate to java.util.Arrays.sort if under it.
   if (to - from >= RADIX_SORT_MIN_THRESHOLD) {
    radixSort(a, from, to);
   } else {
    quickSort(a, from, to);
   }
#endif
#else
   quickSort(a, from, to);
#endif
 }

 /** Sorts the specified range of elements according to the natural ascending order
  * potentially dynamically choosing an appropriate algorithm given the type and size of the array.
  * No assurance is made of the stability of the sort.
  *
  * @param a the array to be sorted.
  * @since 8.3.0
  */
 public static KEY_GENERIC void unstableSort(final KEY_GENERIC_TYPE a[]) {
  unstableSort(a, 0, a.length);
 }

 /** Sorts the specified range of elements according to the order induced by the specified comparator,
  * potentially dynamically choosing an appropriate algorithm given the type and size of the array.
  * No assurance is made of the stability of the sort.
  *
  * @param a the array to be sorted.
  * @param from the index of the first element (inclusive) to be sorted.
  * @param to the index of the last element (exclusive) to be sorted.
  * @param comp the comparator to determine the sorting order.
  * @since 8.3.0
  */
 public static KEY_GENERIC void unstableSort(final KEY_GENERIC_TYPE a[], final int from, final int to,
KEY_COMPARATOR KEY_GENERIC comp) {
  quickSort(a, from, to, comp);
 }

 /** Sorts an array according to the order induced by the specified comparator,
  * potentially dynamically choosing an appropriate algorithm given the type and size of the array.
  * No assurance is made of the stability of the sort.
  *
  * @param a the array to be sorted.
  * @param comp the comparator to determine the sorting order.
  * @since 8.3.0
  */
 public static KEY_GENERIC void unstableSort(final KEY_GENERIC_TYPE a[], KEY_COMPARATOR
```

```
KEY_GENERIC comp) {
  unstableSort(a, 0, a.length, comp);
 }

 /** Sorts the specified range of elements according to the natural ascending order using mergesort, using a given
pre-filled support array.
  *
  * <p>This sort is guaranteed to be <i>stable</i>: equal elements will not be reordered as a result
  * of the sort. Moreover, no support arrays will be allocated.
  *
  * @param a the array to be sorted.
  * @param from the index of the first element (inclusive) to be sorted.
  * @param to the index of the last element (exclusive) to be sorted.
  * @param supp a support array containing at least {@code to} elements, and whose entries are identical to those
  * of {@code a} in the specified range. It can be {@code null}, in which case {@code a} will be cloned.
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static KEY_GENERIC void mergeSort(final KEY_GENERIC_TYPE a[], final int from, final int to,
KEY_GENERIC_TYPE supp[]) {
  int len = to - from;

  // Insertion sort on smallest arrays
  if (len < MERGESORT_NO_REC) {
   insertionSort(a, from, to);
   return;
  }

  if (supp == null) supp = java.util.Arrays.copyOf(a, to);

  // Recursively sort halves of a into supp
  final int mid = (from + to) >>> 1;
  mergeSort(supp, from, mid, a);
  mergeSort(supp, mid, to, a);

  // If list is already sorted, just copy from supp to a.  This is an
  // optimization that results in faster sorts for nearly ordered lists.
  if (KEY_LESSEQ(supp[mid - 1], supp[mid])) {
   System.arraycopy(supp, from, a, from, len);
   return;
  }

  // Merge sorted halves (now in supp) into a
  for(int i = from, p = from, q = mid; i < to; i++) {
   if (q >= to || p < mid && KEY_LESSEQ(supp[p], supp[q])) a[i] = supp[p++];
   else a[i] = supp[q++];
  }
 }
```

```
/** Sorts the specified range of elements according to the natural ascending order using mergesort.
 *
 * <p>This sort is guaranteed to be <i>stable</i>: equal elements will not be reordered as a result
 * of the sort. An array as large as {@code a} will be allocated by this method.

 * @param a the array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 */
public static KEY_GENERIC void mergeSort(final KEY_GENERIC_TYPE a[], final int from, final int to) {
 mergeSort(a, from, to, (KEY_GENERIC_TYPE[])null);
}

/** Sorts an array according to the natural ascending order using mergesort.
 *
 * <p>This sort is guaranteed to be <i>stable</i>: equal elements will not be reordered as a result
 * of the sort. An array as large as {@code a} will be allocated by this method.

 * @param a the array to be sorted.
 */
public static KEY_GENERIC void mergeSort(final KEY_GENERIC_TYPE a[]) {
 mergeSort(a, 0, a.length);
}

/** Sorts the specified range of elements according to the order induced by the specified
 * comparator using mergesort, using a given pre-filled support array.
 *
 * <p>This sort is guaranteed to be <i>stable</i>: equal elements will not be reordered as a result
 * of the sort. Moreover, no support arrays will be allocated.

 * @param a the array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 * @param comp the comparator to determine the sorting order.
 * @param supp a support array containing at least {@code to} elements, and whose entries are identical to those
 * of {@code a} in the specified range. It can be {@code null}, in which case {@code a} will be cloned.
 */
public static KEY_GENERIC void mergeSort(final KEY_GENERIC_TYPE a[], final int from, final int to,
KEY_COMPARATOR KEY_GENERIC comp, KEY_GENERIC_TYPE supp[]) {
 int len = to - from;

 // Insertion sort on smallest arrays
 if (len < MERGESORT_NO_REC) {
  insertionSort(a, from, to, comp);
  return;
 }
```

```
 if (supp == null) supp = java.util.Arrays.copyOf(a, to);

 // Recursively sort halves of a into supp
 final int mid = (from + to) >>> 1;
 mergeSort(supp, from, mid, comp, a);
 mergeSort(supp, mid, to, comp, a);

 // If list is already sorted, just copy from supp to a.  This is an
 // optimization that results in faster sorts for nearly ordered lists.
 if (comp.compare(supp[mid - 1], supp[mid]) <= 0) {
  System.arraycopy(supp, from, a, from, len);
  return;
 }

 // Merge sorted halves (now in supp) into a
 for(int i = from, p = from, q = mid; i < to; i++) {
  if (q >= to || p < mid && comp.compare(supp[p], supp[q]) <= 0) a[i] = supp[p++];
  else a[i] = supp[q++];
 }
}

/** Sorts the specified range of elements according to the order induced by the specified
 * comparator using mergesort.
 *
 * <p>This sort is guaranteed to be <i>stable</i>: equal elements will not be reordered as a result
 * of the sort. An array as large as {@code a} will be allocated by this method.
 *
 * @param a the array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 * @param comp the comparator to determine the sorting order.
 */
public static KEY_GENERIC void mergeSort(final KEY_GENERIC_TYPE a[], final int from, final int to,
KEY_COMPARATOR KEY_GENERIC comp) {
 mergeSort(a, from, to, comp, (KEY_GENERIC_TYPE[])null);
}

/** Sorts an array according to the order induced by the specified
 * comparator using mergesort.
 *
 * <p>This sort is guaranteed to be <i>stable</i>: equal elements will not be reordered as a result
 * of the sort.  An array as large as {@code a} will be allocated by this method.

 * @param a the array to be sorted.
 * @param comp the comparator to determine the sorting order.
 */
public static KEY_GENERIC void mergeSort(final KEY_GENERIC_TYPE a[], KEY_COMPARATOR
KEY_GENERIC comp) {
```

```
 mergeSort(a, 0, a.length, comp);
 }

/** Sorts an array according to the natural ascending order,
 * potentially dynamically choosing an appropriate algorithm given the type and size of the array. The
 * sort will be stable unless it is provable that it would be impossible for there to be any difference
 * between a stable and unstable sort for the given type, in which case stability is meaningless and thus
 * unspecified.
 *
 * <p>An array as large as {@code a} may be allocated by this method.
 *
 * @param a the array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 * @since 8.3.0
 */
public static KEY_GENERIC void stableSort(final KEY_GENERIC_TYPE a[], final int from, final int to) {
#if KEYS_REFERENCE
 // Use JDK's sort, which is likely to be adaptive and still be stable.
 java.util.Arrays.sort(a, from, to);
#elif KEYS_PRIMITIVE && !(KEY_CLASS_Float || KEY_CLASS_Double)
 // For non-floating point primitive types, when comparing naturally,
 // it is impossible to tell the difference between a stable and not-stable sort.
 // So just use the probably faster unstable sort.
 unstableSort(a, from, to);
#else
 // Due to subtle differences between Float/Double.compare and operator compare, it is
 // not safe to delegate this to java.util.Arrays.sort(double[], int, int)
 mergeSort(a, from, to);
#endif
 }

/** Sorts the specified range of elements according to the natural ascending order
 * potentially dynamically choosing an appropriate algorithm given the type and size of the array. The
 * sort will be stable unless it is provable that it would be impossible for there to be any difference
 * between a stable and unstable sort for the given type, in which case stability is meaningless and thus
 * unspecified.
 *
 * <p>An array as large as {@code a} may be allocated by this method.
 *
 * @param a the array to be sorted.
 * @since 8.3.0
 */
public static KEY_GENERIC void stableSort(final KEY_GENERIC_TYPE a[]) {
 stableSort(a, 0, a.length);
 }

/** Sorts the specified range of elements according to the order induced by the specified comparator,
```

```
 * potentially dynamically choosing an appropriate algorithm given the type and size of the array. The
 * sort will be stable unless it is provable that it would be impossible for there to be any difference
 * between a stable and unstable sort for the given type, in which case stability is meaningless and thus
 * unspecified.
 *
 * <p>An array as large as {@code a} may be allocated by this method.
 *
 * @param a the array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 * @param comp the comparator to determine the sorting order.
 * @since 8.3.0
 */
public static KEY_GENERIC void stableSort(final KEY_GENERIC_TYPE a[], final int from, final int to,
KEY_COMPARATOR KEY_GENERIC comp) {
#if KEYS_REFERENCE
 // Use JDK's sort, which is likely to be adaptive and still be stable.
 java.util.Arrays.sort(a, from, to, comp);
#else
 mergeSort(a, from, to, comp);
#endif
}

/** Sorts an array according to the order induced by the specified comparator,
 * potentially dynamically choosing an appropriate algorithm given the type and size of the array. The
 * sort will be stable unless it is provable that it would be impossible for there to be any difference
 * between a stable and unstable sort for the given type, in which case stability is meaningless and thus
 * unspecified.
 *
 * <p>An array as large as {@code a} may be allocated by this method.
 *
 * @param a the array to be sorted.
 * @param comp the comparator to determine the sorting order.
 * @since 8.3.0
 */
public static KEY_GENERIC void stableSort(final KEY_GENERIC_TYPE a[], KEY_COMPARATOR
KEY_GENERIC comp) {
 stableSort(a, 0, a.length, comp);
}

#if ! KEY_CLASS_Boolean

/**
 * Searches a range of the specified array for the specified value using
 * the binary search algorithm. The range must be sorted prior to making this call.
 * If it is not sorted, the results are undefined. If the range contains multiple elements with
 * the specified value, there is no guarantee which one will be found.
 *
```

```
 * @param a the array to be searched.
 * @param from  the index of the first element (inclusive) to be searched.
 * @param to  the index of the last element (exclusive) to be searched.
 * @param key the value to be searched for.
 * @return index of the search key, if it is contained in the array;
 *             otherwise, {@code (-(<i>insertion point</i>) - 1)}.  The <i>insertion
 *             point</i> is defined as the the point at which the value would
 *             be inserted into the array: the index of the first
 *             element greater than the key, or the length of the array, if all
 *             elements in the array are less than the specified key.  Note
 *             that this guarantees that the return value will be &ge; 0 if
 *             and only if the key is found.
 * @see java.util.Arrays
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
public static KEY_GENERIC int binarySearch(final KEY_GENERIC_TYPE[] a, int from, int to, final
KEY_GENERIC_TYPE key) {
 KEY_GENERIC_TYPE midVal;
 to--;
 while (from <= to) {
  final int mid = (from + to) >>> 1;
  midVal = a[mid];
#if KEYS_PRIMITIVE
  if (midVal < key) from = mid + 1;
  else if (midVal > key) to = mid - 1;
  else return mid;
#else
  final int cmp = ((Comparable KEY_SUPER_GENERIC)midVal).compareTo(key);
  if (cmp < 0) from = mid + 1;
  else if (cmp > 0) to = mid - 1;
  else return mid;
#endif
 }
 return -(from + 1);
}

/**
 * Searches an array for the specified value using
 * the binary search algorithm. The range must be sorted prior to making this call.
 * If it is not sorted, the results are undefined. If the range contains multiple elements with
 * the specified value, there is no guarantee which one will be found.
 *
 * @param a the array to be searched.
 * @param key the value to be searched for.
 * @return index of the search key, if it is contained in the array;
 *             otherwise, {@code (-(<i>insertion point</i>) - 1)}.  The <i>insertion
 *             point</i> is defined as the the point at which the value would
 *             be inserted into the array: the index of the first
```

```
 *            element greater than the key, or the length of the array, if all
 *            elements in the array are less than the specified key.  Note
 *            that this guarantees that the return value will be &ge; 0 if
 *            and only if the key is found.
 * @see java.util.Arrays
 */
public static KEY_GENERIC int binarySearch(final KEY_GENERIC_TYPE[] a, final KEY_GENERIC_TYPE
key) {
 return binarySearch(a, 0, a.length, key);
}

/**
 * Searches a range of the specified array for the specified value using
 * the binary search algorithm and a specified comparator. The range must be sorted following the comparator prior
to making this call.
 * If it is not sorted, the results are undefined. If the range contains multiple elements with
 * the specified value, there is no guarantee which one will be found.
 *
 * @param a the array to be searched.
 * @param from  the index of the first element (inclusive) to be searched.
 * @param to  the index of the last element (exclusive) to be searched.
 * @param key the value to be searched for.
 * @param c a comparator.
 * @return index of the search key, if it is contained in the array;
 *            otherwise, {@code (-(<i>insertion point</i>) - 1)}.  The <i>insertion
 *            point</i> is defined as the the point at which the value would
 *            be inserted into the array: the index of the first
 *            element greater than the key, or the length of the array, if all
 *            elements in the array are less than the specified key.  Note
 *            that this guarantees that the return value will be &ge; 0 if
 *            and only if the key is found.
 * @see java.util.Arrays
 */
public static KEY_GENERIC int binarySearch(final KEY_GENERIC_TYPE[] a, int from, int to, final
KEY_GENERIC_TYPE key, final KEY_COMPARATOR KEY_GENERIC c) {
 KEY_GENERIC_TYPE midVal;
 to--;
 while (from <= to) {
  final int mid = (from + to) >>> 1;
  midVal = a[mid];
  final int cmp = c.compare(midVal, key);
  if (cmp < 0) from = mid + 1;
  else if (cmp > 0) to = mid - 1;
  else return mid; // key found
 }
 return -(from + 1);
}
```

```
/**
 * Searches an array for the specified value using
 * the binary search algorithm and a specified comparator. The range must be sorted following the comparator prior
to making this call.
 * If it is not sorted, the results are undefined. If the range contains multiple elements with
 * the specified value, there is no guarantee which one will be found.
 *
 * @param a the array to be searched.
 * @param key the value to be searched for.
 * @param c a comparator.
 * @return index of the search key, if it is contained in the array;
 *         otherwise, {@code (-(<i>insertion point</i>) - 1)}.  The <i>insertion
 *         point</i> is defined as the the point at which the value would
 *         be inserted into the array: the index of the first
 *         element greater than the key, or the length of the array, if all
 *         elements in the array are less than the specified key.  Note
 *         that this guarantees that the return value will be &ge; 0 if
 *         and only if the key is found.
 * @see java.util.Arrays
 */
public static KEY_GENERIC int binarySearch(final KEY_GENERIC_TYPE[] a, final KEY_GENERIC_TYPE
key, final KEY_COMPARATOR KEY_GENERIC c) {
 return binarySearch(a, 0, a.length, key, c);
}


#if KEYS_PRIMITIVE
/** The size of a digit used during radix sort (must be a power of 2). */
private static final int DIGIT_BITS = 8;
/** The mask to extract a digit of {@link #DIGIT_BITS} bits. */
private static final int DIGIT_MASK = (1 << DIGIT_BITS) - 1;
/** The number of digits per element. */
private static final int DIGITS_PER_ELEMENT = KEY_CLASS.SIZE / DIGIT_BITS;
private static final int RADIXSORT_NO_REC = 1024;
private static final int RADIXSORT_NO_REC_SMALL = 64;
private static final int PARALLEL_RADIXSORT_NO_FORK = 1024;

// The thresholds were determined on an Intel i7 8700K.
/** Threshold <em>hint</em> for using a radix sort vs a comparison based sort. */
#if KEY_CLASS_Byte || KEY_CLASS_Short
static final int RADIX_SORT_MIN_THRESHOLD = 1000;
#elif KEY_CLASS_Long || KEY_CLASS_Double
static final int RADIX_SORT_MIN_THRESHOLD = 4000;
#else
static final int RADIX_SORT_MIN_THRESHOLD = 2000;
#endif

/** This method fixes negative numbers so that the combination exponent/significand is lexicographically sorted. */
```

```
#if KEY_CLASS_Double
 private static final long fixDouble(final double d) {
  final long l = Double.doubleToLongBits(d);
  return l >= 0 ? l : l ^ 0x7FFFFFFFFFFFFFFFL;
 }
#elif KEY_CLASS_Float
 private static final int fixFloat(final float f) {
  final int i = Float.floatToIntBits(f);
  return i >= 0 ? i : i ^ 0x7FFFFFFF;
 }
#endif


 /** Sorts the specified array using radix sort.
  *
  * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
  * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
  *
  * @implSpec This implementation is significantly faster than quicksort
  * already at small sizes (say, more than 5000 elements), but it can only
  * sort in ascending order.
  *
  * @param a the array to be sorted.
  */
 public static void radixSort(final KEY_TYPE[] a) {
  radixSort(a, 0, a.length);
 }

 /** Sorts the specified range of an array using radix sort.
  *
  * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
  * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
  *
  * @implSpec This implementation is significantly faster than quicksort
  * already at small sizes (say, more than 5000 elements), but it can only
  * sort in ascending order.
  *
  * @param a the array to be sorted.
  * @param from the index of the first element (inclusive) to be sorted.
  * @param to the index of the last element (exclusive) to be sorted.
  */
 public static void radixSort(final KEY_TYPE[] a, final int from, final int to) {
  if (to - from < RADIXSORT_NO_REC) {
   quickSort(a, from, to);
   return;
  }

  final int maxLevel = DIGITS_PER_ELEMENT - 1;
```

```
 final int stackSize = ((1 << DIGIT_BITS) - 1) * (DIGITS_PER_ELEMENT - 1) + 1;
 int stackPos = 0;
 final int[] offsetStack = new int[stackSize];
 final int[] lengthStack = new int[stackSize];
 final int[] levelStack = new int[stackSize];

 offsetStack[stackPos] = from;
 lengthStack[stackPos] = to - from;
 levelStack[stackPos++] = 0;

 final int[] count = new int[1 << DIGIT_BITS];
 final int[] pos = new int[1 << DIGIT_BITS];

 while(stackPos > 0) {
  final int first = offsetStack[--stackPos];
  final int length = lengthStack[stackPos];
  final int level = levelStack[stackPos];
#if KEY_CLASS_Character
  final int signMask = 0;
#else
  final int signMask = level % DIGITS_PER_ELEMENT == 0 ? 1 << DIGIT_BITS - 1 : 0;
#endif
  final int shift = (DIGITS_PER_ELEMENT - 1 - level % DIGITS_PER_ELEMENT) * DIGIT_BITS; // This is the
shift that extract the right byte from a key

  // Count keys.
  for(int i = first + length; i-- != first;) count[INT(KEY2LEXINT(a[i]) >>> shift & DIGIT_MASK ^ signMask)]++;
  // Compute cumulative distribution
  int lastUsed = -1;
  for (int i = 0, p = first; i < 1 << DIGIT_BITS; i++) {
   if (count[i] != 0) lastUsed = i;
   pos[i] = (p += count[i]);
  }

  final int end = first + length - count[lastUsed];
  // i moves through the start of each block
  for(int i = first, c = -1, d; i <= end; i += count[c], count[c] = 0) {
   KEY_TYPE t = a[i];
   c = INT(KEY2LEXINT(t) >>> shift & DIGIT_MASK ^ signMask);

   if (i < end) { // When all slots are OK, the last slot is necessarily OK.
    while ((d = --pos[c]) > i) {
     final KEY_TYPE z = t;
     t = a[d];
     a[d] = z;
     c = INT(KEY2LEXINT(t) >>> shift & DIGIT_MASK ^ signMask);
    }
```

```
   a[i] = t;
  }

  if (level < maxLevel && count[c] > 1) {
   if (count[c] < RADIXSORT_NO_REC) quickSort(a, i, i + count[c]);
   else {
    offsetStack[stackPos] = i;
    lengthStack[stackPos] = count[c];
    levelStack[stackPos++] = level + 1;
   }
  }
 }
}
}

protected static final class Segment {
 protected final int offset, length, level;
 protected Segment(final int offset, final int length, final int level) {
  this.offset = offset;
  this.length = length;
  this.level = level;
 }

 @Override
 public String toString() { return "Segment [offset=" + offset + ", length=" + length + ", level=" + level + "]"; }
}

protected static final Segment POISON_PILL = new Segment(-1, -1, -1);


/** Sorts the specified range of an array using parallel radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
 *
 * @param a the array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 */
public static void parallelRadixSort(final KEY_TYPE[] a, final int from, final int to) {
 ForkJoinPool pool = getPool();
 if (to - from < PARALLEL_RADIXSORT_NO_FORK || pool.getParallelism() == 1) {
  quickSort(a, from, to);
  return;
 }
 final int maxLevel = DIGITS_PER_ELEMENT - 1;
 final LinkedBlockingQueue&lt;Segment&gt; queue = new LinkedBlockingQueue<>();
 queue.add(new Segment(from, to - from, 0));
```

```
  final AtomicInteger queueSize = new AtomicInteger(1);
  final int numberOfThreads = pool.getParallelism();
  final ExecutorCompletionService<Void> executorCompletionService = new ExecutorCompletionService<>(pool);

  for(int j = numberOfThreads; j-- != 0;) executorCompletionService.submit(() -> {
   final int[] count = new int[1 << DIGIT_BITS];
   final int[] pos = new int[1 << DIGIT_BITS];

   for(;;) {
    if (queueSize.get() == 0) for(int i = numberOfThreads; i-- != 0;) queue.add(POISON_PILL);
    final Segment segment = queue.take();
    if (segment == POISON_PILL) return null;

    final int first = segment.offset;
    final int length = segment.length;
    final int level = segment.level;

#if KEY_CLASS_Character
    final int signMask = 0;
#else
    final int signMask = level % DIGITS_PER_ELEMENT == 0 ? 1 << DIGIT_BITS - 1 : 0;
#endif
    final int shift = (DIGITS_PER_ELEMENT - 1 - level % DIGITS_PER_ELEMENT) * DIGIT_BITS; // This is the
shift that extract the right byte from a key

    // Count keys.
    for(int i = first + length; i-- != first;) count[INT(KEY2LEXINT(a[i]) >>> shift & DIGIT_MASK ^ signMask)]++;
    // Compute cumulative distribution
    int lastUsed = -1;
    for(int i = 0, p = first; i < 1 << DIGIT_BITS; i++) {
     if (count[i] != 0) lastUsed = i;
     pos[i] = (p += count[i]);
    }

    final int end = first + length - count[lastUsed];
    // i moves through the start of each block
    for(int i = first, c = -1, d; i <= end; i += count[c], count[c] = 0) {
     KEY_TYPE t = a[i];
     c = INT(KEY2LEXINT(t) >>> shift & DIGIT_MASK ^ signMask);
     if (i < end) {
      while((d = --pos[c]) > i) {
       final KEY_TYPE z = t;
       t = a[d];
       a[d] = z;
       c = INT(KEY2LEXINT(t) >>> shift & DIGIT_MASK ^ signMask);
      }
      a[i] = t;
     }
```

```
     if (level < maxLevel && count[c] > 1) {
      if (count[c] < PARALLEL_RADIXSORT_NO_FORK) quickSort(a, i, i + count[c]);
      else {
       queueSize.incrementAndGet();
       queue.add(new Segment(i, count[c], level + 1));
      }
     }
    }
    queueSize.decrementAndGet();
   }
  });

  Throwable problem = null;
  for(int i = numberOfThreads; i-- != 0;)
   try {
    executorCompletionService.take().get();
   }
   catch(Exception e) {
    problem = e.getCause(); // We keep only the last one. They will be logged anyway.
   }

  if (problem != null) throw (problem instanceof RuntimeException) ? (RuntimeException)problem : new
RuntimeException(problem);
 }

 /** Sorts the specified array using parallel radix sort.
  *
  * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
  * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
  *
  * @param a the array to be sorted.
  */
 public static void parallelRadixSort(final KEY_TYPE[] a) {
  parallelRadixSort(a, 0, a.length);
 }

 /** Sorts the specified array using indirect radix sort.
  *
  * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
  * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
  *
  * <p>This method implement an <em>indirect</em> sort. The elements of {@code perm} (which must
  * be exactly the numbers in the interval {@code [0..perm.length)}) will be permuted so that
  * {@code a[perm[i]] &le; a[perm[i + 1]]}.
  *
  * @implSpec This implementation will allocate, in the stable case, a support array as large as {@code perm} (note
that the stable
```

```
 * version is slightly faster).
 *
 * @param perm a permutation array indexing {@code a}.
 * @param a the array to be sorted.
 * @param stable whether the sorting algorithm should be stable.
 */
public static void radixSortIndirect(final int[] perm, final KEY_TYPE[] a, final boolean stable) {
 radixSortIndirect(perm, a, 0, perm.length, stable);
}

/** Sorts the specified array using indirect radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
 *
 * <p>This method implement an <em>indirect</em> sort. The elements of {@code perm} (which must
 * be exactly the numbers in the interval {@code [0..perm.length)}) will be permuted so that
 * {@code a[perm[i]] &le; a[perm[i + 1]]}.
 *
 * @implSpec This implementation will allocate, in the stable case, a support array as large as {@code perm} (note
that the stable
 * version is slightly faster).
 *
 * @param perm a permutation array indexing {@code a}.
 * @param a the array to be sorted.
 * @param from the index of the first element of {@code perm} (inclusive) to be permuted.
 * @param to the index of the last element of {@code perm} (exclusive) to be permuted.
 * @param stable whether the sorting algorithm should be stable.
 */
public static void radixSortIndirect(final int[] perm, final KEY_TYPE[] a, final int from, final int to, final boolean
stable) {
 if (to - from < RADIXSORT_NO_REC) {
  quickSortIndirect(perm, a, from, to);
  if (stable) stabilize(perm, a, from, to);
  return;
 }

 final int maxLevel = DIGITS_PER_ELEMENT - 1;

 final int stackSize = ((1 << DIGIT_BITS) - 1) * (DIGITS_PER_ELEMENT - 1) + 1;
 int stackPos = 0;
 final int[] offsetStack = new int[stackSize];
 final int[] lengthStack = new int[stackSize];
 final int[] levelStack = new int[stackSize];

 offsetStack[stackPos] = from;
 lengthStack[stackPos] = to - from;
 levelStack[stackPos++] = 0;
```

```
  final int[] count = new int[1 << DIGIT_BITS];
  final int[] pos = new int[1 << DIGIT_BITS];
  final int[] support = stable ? new int[perm.length] : null;

  while(stackPos > 0) {
   final int first = offsetStack[--stackPos];
   final int length = lengthStack[stackPos];
   final int level = levelStack[stackPos];
#if KEY_CLASS_Character
   final int signMask = 0;
#else
   final int signMask = level % DIGITS_PER_ELEMENT == 0 ? 1 << DIGIT_BITS - 1 : 0;
#endif

   final int shift = (DIGITS_PER_ELEMENT - 1 - level % DIGITS_PER_ELEMENT) * DIGIT_BITS; // This is the
shift that extract the right byte from a key

   // Count keys.
   for(int i = first + length; i-- != first;) count[INT(KEY2LEXINT(a[perm[i]]) >>> shift & DIGIT_MASK ^
signMask)]++;
   // Compute cumulative distribution
   int lastUsed = -1;
   for (int i = 0, p = stable ? 0 : first; i < 1 << DIGIT_BITS; i++) {
    if (count[i] != 0) lastUsed = i;
    pos[i] = (p += count[i]);
   }

   if (stable) {
    for(int i = first + length; i-- != first;) support[--pos[INT(KEY2LEXINT(a[perm[i]]) >>> shift & DIGIT_MASK ^
signMask)]] = perm[i];
    System.arraycopy(support, 0, perm, first, length);
    for(int i = 0, p = first; i <= lastUsed; i++) {
     if (level < maxLevel && count[i] > 1) {
      if (count[i] < RADIXSORT_NO_REC) {
       quickSortIndirect(perm, a, p, p + count[i]);
       if (stable) stabilize(perm, a, p, p + count[i]);
      }
      else {
       offsetStack[stackPos] = p;
       lengthStack[stackPos] = count[i];
       levelStack[stackPos++] = level + 1;
      }
     }
     p += count[i];
    }
    java.util.Arrays.fill(count, 0);
   }
```

```
  else {
   final int end = first + length - count[lastUsed];
   // i moves through the start of each block
   for(int i = first, c = -1, d; i <= end; i += count[c], count[c] = 0) {
    int t = perm[i];
    c = INT(KEY2LEXINT(a[t]) >>> shift & DIGIT_MASK ^ signMask);

    if (i < end) { // When all slots are OK, the last slot is necessarily OK.
     while((d = --pos[c]) > i) {
      final int z = t;
      t = perm[d];
      perm[d] = z;
      c = INT(KEY2LEXINT(a[t]) >>> shift & DIGIT_MASK ^ signMask);
     }
     perm[i] = t;
    }

    if (level < maxLevel && count[c] > 1) {
     if (count[c] < RADIXSORT_NO_REC) {
      quickSortIndirect(perm, a, i, i + count[c]);
      if (stable) stabilize(perm, a, i, i + count[c]);
     }
     else {
      offsetStack[stackPos] = i;
      lengthStack[stackPos] = count[c];
      levelStack[stackPos++] = level + 1;
     }
    }
   }
  }
 }
}

/** Sorts the specified range of an array using parallel indirect radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
 *
 * <p>This method implement an <em>indirect</em> sort. The elements of {@code perm} (which must
 * be exactly the numbers in the interval {@code [0..perm.length)}) will be permuted so that
 * {@code a[perm[i]] &le; a[perm[i + 1]]}.
 *
 * @param perm a permutation array indexing {@code a}.
 * @param a the array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 * @param stable whether the sorting algorithm should be stable.
 */
```

```
 public static void parallelRadixSortIndirect(final int perm[], final KEY_TYPE[] a, final int from, final int to, final
boolean stable) {
  ForkJoinPool pool = getPool();
  if (to - from < PARALLEL_RADIXSORT_NO_FORK || pool.getParallelism() == 1) {
   radixSortIndirect(perm, a, from, to, stable);
   return;
  }
  final int maxLevel = DIGITS_PER_ELEMENT - 1;
  final LinkedBlockingQueue&lt;Segment&gt; queue = new LinkedBlockingQueue<>();
  queue.add(new Segment(from, to - from, 0));
  final AtomicInteger queueSize = new AtomicInteger(1);
  final int numberOfThreads = pool.getParallelism();
  final ExecutorCompletionService<Void> executorCompletionService = new ExecutorCompletionService<>(pool);
  final int[] support = stable ? new int[perm.length] : null;

  for(int j = numberOfThreads; j-- != 0;) executorCompletionService.submit(() -> {
   final int[] count = new int[1 << DIGIT_BITS];
   final int[] pos = new int[1 << DIGIT_BITS];

   for(;;) {
    if (queueSize.get() == 0) for(int i = numberOfThreads; i-- != 0;) queue.add(POISON_PILL);
    final Segment segment = queue.take();
    if (segment == POISON_PILL) return null;

    final int first = segment.offset;
    final int length = segment.length;
    final int level = segment.level;

#if KEY_CLASS_Character
    final int signMask = 0;
#else
    final int signMask = level % DIGITS_PER_ELEMENT == 0 ? 1 << DIGIT_BITS - 1 : 0;
#endif
    final int shift = (DIGITS_PER_ELEMENT - 1 - level % DIGITS_PER_ELEMENT) * DIGIT_BITS; // This is the
shift that extract the right byte from a key


    // Count keys.
    for(int i = first + length; i-- != first;) count[INT(KEY2LEXINT(a[perm[i]]) >>> shift & DIGIT_MASK ^
signMask)]++;
    // Compute cumulative distribution
    int lastUsed = -1;
    for (int i = 0, p = first; i < 1 << DIGIT_BITS; i++) {
     if (count[i] != 0) lastUsed = i;
     pos[i] = (p += count[i]);
    }

    if (stable) {
```

```
    for(int i = first + length; i-- != first;) support[--pos[INT(KEY2LEXINT(a[perm[i]]) >>> shift & DIGIT_MASK ^
signMask)]] = perm[i];
    System.arraycopy(support, first, perm, first, length);
    for(int i = 0, p = first; i <= lastUsed; i++) {
     if (level < maxLevel && count[i] > 1) {
      if (count[i] < PARALLEL_RADIXSORT_NO_FORK) radixSortIndirect(perm, a, p, p + count[i], stable);
      else {
       queueSize.incrementAndGet();
       queue.add(new Segment(p, count[i], level + 1));
      }
     }
     p += count[i];
    }
    java.util.Arrays.fill(count, 0);
   }
   else {
    final int end = first + length - count[lastUsed];
    // i moves through the start of each block
    for(int i = first, c = -1, d; i <= end; i += count[c], count[c] = 0) {
     int t = perm[i];
     c = INT(KEY2LEXINT(a[t]) >>> shift & DIGIT_MASK ^ signMask);

     if (i < end) { // When all slots are OK, the last slot is necessarily OK.
      while((d = --pos[c]) > i) {
       final int z = t;
       t = perm[d];
       perm[d] = z;
       c = INT(KEY2LEXINT(a[t]) >>> shift & DIGIT_MASK ^ signMask);
      }
      perm[i] = t;
     }

     if (level < maxLevel && count[c] > 1) {
      if (count[c] < PARALLEL_RADIXSORT_NO_FORK) radixSortIndirect(perm, a, i, i + count[c], stable);
      else {
       queueSize.incrementAndGet();
       queue.add(new Segment(i, count[c], level + 1));
      }
     }
    }
   }
   queueSize.decrementAndGet();
  }
 });

 Throwable problem = null;
 for(int i = numberOfThreads; i-- != 0;)
  try {
```

```
   executorCompletionService.take().get();
   }
   catch(Exception e) {
    problem = e.getCause(); // We keep only the last one. They will be logged anyway.
   }

  if (problem != null) throw (problem instanceof RuntimeException) ? (RuntimeException)problem : new
RuntimeException(problem);
 }

 /** Sorts the specified array using parallel indirect radix sort.
  *
  * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
  * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
  *
  * <p>This method implement an <em>indirect</em> sort. The elements of {@code perm} (which must
  * be exactly the numbers in the interval {@code [0..perm.length)}) will be permuted so that
  * {@code a[perm[i]] &le; a[perm[i + 1]]}.
  *
  * @param perm a permutation array indexing {@code a}.
  * @param a the array to be sorted.
  * @param stable whether the sorting algorithm should be stable.
  */
 public static void parallelRadixSortIndirect(final int perm[], final KEY_TYPE[] a, final boolean stable) {
  parallelRadixSortIndirect(perm, a, 0, a.length, stable);
 }

 /** Sorts the specified pair of arrays lexicographically using radix sort.
  * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
  * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
  *
  * <p>This method implements a <em>lexicographical</em> sorting of the arguments. Pairs of elements
  * in the same position in the two provided arrays will be considered a single key, and permuted
  * accordingly. In the end, either {@code a[i] &lt; a[i + 1]} or {@code a[i] == a[i + 1]} and {@code b[i] &le; b[i +
1]}.
  *
  * @param a the first array to be sorted.
  * @param b the second array to be sorted.
  */

 public static void radixSort(final KEY_TYPE[] a, final KEY_TYPE[] b) {
  ensureSameLength(a, b);
  radixSort(a, b, 0, a.length);
 }

 /** Sorts the specified range of elements of two arrays using radix sort.
  *
  * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
```

```
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
 *
 * <p>This method implements a <em>lexicographical</em> sorting of the arguments. Pairs of elements
 * in the same position in the two provided arrays will be considered a single key, and permuted
 * accordingly. In the end, either {@code a[i] &lt; a[i + 1]} or {@code a[i] == a[i + 1]} and {@code b[i] &le; b[i +
1]}.
 *
 * @param a the first array to be sorted.
 * @param b the second array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 */
public static void radixSort(final KEY_TYPE[] a, final KEY_TYPE[] b, final int from, final int to) {
 if (to - from < RADIXSORT_NO_REC) {
  quickSort(a, b, from, to);
  return;
 }

 final int layers = 2;
 final int maxLevel = DIGITS_PER_ELEMENT * layers - 1;

 final int stackSize = ((1 << DIGIT_BITS) - 1) * (layers * DIGITS_PER_ELEMENT - 1) + 1;
 int stackPos = 0;
 final int[] offsetStack = new int[stackSize];
 final int[] lengthStack = new int[stackSize];
 final int[] levelStack = new int[stackSize];

 offsetStack[stackPos] = from;
 lengthStack[stackPos] = to - from;
 levelStack[stackPos++] = 0;

 final int[] count = new int[1 << DIGIT_BITS];
 final int[] pos = new int[1 << DIGIT_BITS];

 while(stackPos > 0) {
  final int first = offsetStack[--stackPos];
  final int length = lengthStack[stackPos];
  final int level = levelStack[stackPos];
#if KEY_CLASS_Character
  final int signMask = 0;
#else
  final int signMask = level % DIGITS_PER_ELEMENT == 0 ? 1 << DIGIT_BITS - 1 : 0;
#endif

  final KEY_TYPE[] k = level < DIGITS_PER_ELEMENT ? a : b; // This is the key array
  final int shift = (DIGITS_PER_ELEMENT - 1 - level % DIGITS_PER_ELEMENT) * DIGIT_BITS; // This is the
shift that extract the right byte from a key
```

```
  // Count keys.
  for(int i = first + length; i-- != first;) count[INT(KEY2LEXINT(k[i]) >>> shift & DIGIT_MASK ^ signMask)]++;

  // Compute cumulative distribution
  int lastUsed = -1;
  for (int i = 0, p = first; i < 1 << DIGIT_BITS; i++) {
   if (count[i] != 0) lastUsed = i;
   pos[i] = (p += count[i]);
  }



  final int end = first + length - count[lastUsed];
  // i moves through the start of each block
  for(int i = first, c = -1, d; i <= end; i += count[c], count[c] = 0) {
   KEY_TYPE t = a[i];
   KEY_TYPE u = b[i];
   c = INT(KEY2LEXINT(k[i]) >>> shift & DIGIT_MASK ^ signMask);

   if (i < end) { // When all slots are OK, the last slot is necessarily OK.
    while((d = --pos[c]) > i) {
     c = INT(KEY2LEXINT(k[d]) >>> shift & DIGIT_MASK ^ signMask);
     KEY_TYPE z = t;
     t = a[d];
     a[d] = z;
     z = u;
     u = b[d];
     b[d] = z;
    }
    a[i] = t;
    b[i] = u;

   }

   if (level < maxLevel && count[c] > 1) {
    if (count[c] < RADIXSORT_NO_REC) quickSort(a, b, i, i + count[c]);
    else {
     offsetStack[stackPos] = i;
     lengthStack[stackPos] = count[c];
     levelStack[stackPos++] = level + 1;
    }
   }
  }
 }
}

/** Sorts the specified range of elements of two arrays using a parallel radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
```

```
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
 *
 * <p>This method implements a <em>lexicographical</em> sorting of the arguments. Pairs of elements
 * in the same position in the two provided arrays will be considered a single key, and permuted
 * accordingly. In the end, either {@code a[i] &lt; a[i + 1]} or {@code a[i] == a[i + 1]} and {@code b[i] &le; b[i +
1]}.
 *
 * @param a the first array to be sorted.
 * @param b the second array to be sorted.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 */
public static void parallelRadixSort(final KEY_TYPE[] a, final KEY_TYPE[] b, final int from, final int to) {
 ForkJoinPool pool = getPool();
 if (to - from < PARALLEL_RADIXSORT_NO_FORK || pool.getParallelism() == 1) {
  quickSort(a, b, from, to);
  return;
 }
 final int layers = 2;
 if (a.length != b.length) throw new IllegalArgumentException("Array size mismatch.");
 final int maxLevel = DIGITS_PER_ELEMENT * layers - 1;
 final LinkedBlockingQueue&lt;Segment&gt; queue = new LinkedBlockingQueue<>();
 queue.add(new Segment(from, to - from, 0));
 final AtomicInteger queueSize = new AtomicInteger(1);
 final int numberOfThreads = pool.getParallelism();
 final ExecutorCompletionService<Void> executorCompletionService = new ExecutorCompletionService<>(pool);
 for (int j = numberOfThreads; j-- != 0;) executorCompletionService.submit(() -> {
   final int[] count = new int[1 << DIGIT_BITS];
   final int[] pos = new int[1 << DIGIT_BITS];
   for (;;) {
    if (queueSize.get() == 0) for (int i = numberOfThreads; i-- != 0;)
     queue.add(POISON_PILL);
    final Segment segment = queue.take();
    if (segment == POISON_PILL) return null;
    final int first = segment.offset;
    final int length = segment.length;
    final int level = segment.level;
    final int signMask = level % DIGITS_PER_ELEMENT == 0 ? 1 << DIGIT_BITS - 1 : 0;
    final KEY_TYPE[] k = level < DIGITS_PER_ELEMENT ? a : b; // This is the key array
    final int shift = (DIGITS_PER_ELEMENT - 1 - level % DIGITS_PER_ELEMENT) * DIGIT_BITS;
    // Count keys.
    for (int i = first + length; i-- != first;)
     count[INT(KEY2LEXINT(k[i]) >>> shift & DIGIT_MASK ^ signMask)]++;
    // Compute cumulative distribution
    int lastUsed = -1;
    for (int i = 0, p = first; i < 1 << DIGIT_BITS; i++) {
     if (count[i] != 0) lastUsed = i;
     pos[i] = (p += count[i]);
```

```
    }
    final int end = first + length - count[lastUsed];
    for (int i = first, c = -1, d; i <= end; i += count[c], count[c] = 0) {
     KEY_TYPE t = a[i];
     KEY_TYPE u = b[i];
     c = INT(KEY2LEXINT(k[i]) >>> shift & DIGIT_MASK ^ signMask);
     if (i < end) { // When all slots are OK, the last slot is necessarily OK.
      while ((d = --pos[c]) > i) {
       c = INT(KEY2LEXINT(k[d]) >>> shift & DIGIT_MASK ^ signMask);
       final KEY_TYPE z = t;
       final KEY_TYPE w = u;
       t = a[d];
       u = b[d];
       a[d] = z;
       b[d] = w;
      }
      a[i] = t;
      b[i] = u;
     }
     if (level < maxLevel && count[c] > 1) {
      if (count[c] < PARALLEL_RADIXSORT_NO_FORK) quickSort(a, b, i, i + count[c]);
      else {
       queueSize.incrementAndGet();
       queue.add(new Segment(i, count[c], level + 1));
      }
     }
    }
    queueSize.decrementAndGet();
   }
  });
  Throwable problem = null;
  for (int i = numberOfThreads; i-- != 0;)
   try {
    executorCompletionService.take().get();
   }
   catch (Exception e) {
    problem = e.getCause(); // We keep only the last one. They will be logged anyway.
   }
  if (problem != null) throw (problem instanceof RuntimeException) ? (RuntimeException)problem : new
RuntimeException(problem);
 }


 /** Sorts two arrays using a parallel radix sort.
  *
  * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
  * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
  *
```

```
 * <p>This method implements a <em>lexicographical</em> sorting of the arguments. Pairs of elements
 * in the same position in the two provided arrays will be considered a single key, and permuted
 * accordingly. In the end, either {@code a[i] &lt; a[i + 1]} or {@code a[i] == a[i + 1]} and {@code b[i] &le; b[i +
1]}.
 *
 * @param a the first array to be sorted.
 * @param b the second array to be sorted.
 */
public static void parallelRadixSort(final KEY_TYPE[] a, final KEY_TYPE[] b) {
 ensureSameLength(a, b);
 parallelRadixSort(a, b, 0, a.length);
}


private static KEY_GENERIC void insertionSortIndirect(final int[] perm, final KEY_TYPE[] a, final KEY_TYPE[]
b, final int from, final int to) {
 for (int i = from; ++i < to;) {
  int t = perm[i];
  int j = i;
  for (int u = perm[j - 1]; KEY_LESS(a[t], a[u]) || KEY_CMP_EQ(a[t], a[u]) && KEY_LESS(b[t], b[u]); u = perm[--j
- 1]) {
   perm[j] = u;
   if (from == j - 1) {
    --j;
    break;
   }
  }
  perm[j] = t;
 }
}

/** Sorts the specified pair of arrays lexicographically using indirect radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
 *
 * <p>This method implement an <em>indirect</em> sort. The elements of {@code perm} (which must
 * be exactly the numbers in the interval {@code [0..perm.length)}) will be permuted so that
 * {@code a[perm[i]] &le; a[perm[i + 1]]} or {@code a[perm[i]] == a[perm[i + 1]]} and {@code b[perm[i]] &le;
b[perm[i + 1]]}.
 *
 * @implSpec This implementation will allocate, in the stable case, a further support array as large as {@code
perm} (note that the stable
 * version is slightly faster).
 *
 * @param perm a permutation array indexing {@code a}.
 * @param a the array to be sorted.
 * @param b the second array to be sorted.
```

```
 * @param stable whether the sorting algorithm should be stable.
 */
public static void radixSortIndirect(final int[] perm, final KEY_TYPE[] a, final KEY_TYPE[] b, final boolean
stable) {
 ensureSameLength(a, b);
 radixSortIndirect(perm, a, b, 0, a.length, stable);
}

/** Sorts the specified pair of arrays lexicographically using indirect radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
 *
 * <p>This method implement an <em>indirect</em> sort. The elements of {@code perm} (which must
 * be exactly the numbers in the interval {@code [0..perm.length)}) will be permuted so that
 * {@code a[perm[i]] &le; a[perm[i + 1]]} or {@code a[perm[i]] == a[perm[i + 1]]} and {@code b[perm[i]] &le;
b[perm[i + 1]]}.
 *
 * @implSpec This implementation will allocate, in the stable case, a further support array as large as {@code
perm} (note that the stable
 * version is slightly faster).
 *
 * @param perm a permutation array indexing {@code a}.
 * @param a the array to be sorted.
 * @param b the second array to be sorted.
 * @param from the index of the first element of {@code perm} (inclusive) to be permuted.
 * @param to the index of the last element of {@code perm} (exclusive) to be permuted.
 * @param stable whether the sorting algorithm should be stable.
 */
public static void radixSortIndirect(final int[] perm, final KEY_TYPE[] a, final KEY_TYPE[] b, final int from, final
int to, final boolean stable) {
 if (to - from < RADIXSORT_NO_REC_SMALL) {
  insertionSortIndirect(perm, a, b, from, to);
  return;
 }

 final int layers = 2;
 final int maxLevel = DIGITS_PER_ELEMENT * layers - 1;

 final int stackSize = ((1 << DIGIT_BITS) - 1) * (layers * DIGITS_PER_ELEMENT - 1) + 1;
 int stackPos = 0;
 final int[] offsetStack = new int[stackSize];
 final int[] lengthStack = new int[stackSize];
 final int[] levelStack = new int[stackSize];

 offsetStack[stackPos] = from;
 lengthStack[stackPos] = to - from;
 levelStack[stackPos++] = 0;
```

```
  final int[] count = new int[1 << DIGIT_BITS];
  final int[] pos = new int[1 << DIGIT_BITS];
  final int[] support = stable ? new int[perm.length] : null;

  while(stackPos > 0) {
   final int first = offsetStack[--stackPos];
   final int length = lengthStack[stackPos];
   final int level = levelStack[stackPos];
#if KEY_CLASS_Character
   final int signMask = 0;
#else
   final int signMask = level % DIGITS_PER_ELEMENT == 0 ? 1 << DIGIT_BITS - 1 : 0;
#endif

   final KEY_TYPE[] k = level < DIGITS_PER_ELEMENT ? a : b; // This is the key array
   final int shift = (DIGITS_PER_ELEMENT - 1 - level % DIGITS_PER_ELEMENT) * DIGIT_BITS; // This is the
shift that extract the right byte from a key

   // Count keys.
   for(int i = first + length; i-- != first;) count[INT(KEY2LEXINT(k[perm[i]]) >>> shift & DIGIT_MASK ^
signMask)]++;

   // Compute cumulative distribution
   int lastUsed = -1;
   for (int i = 0, p = stable ? 0 : first; i < 1 << DIGIT_BITS; i++) {
    if (count[i] != 0) lastUsed = i;
    pos[i] = (p += count[i]);
   }

   if (stable) {
    for(int i = first + length; i-- != first;) support[--pos[INT(KEY2LEXINT(k[perm[i]]) >>> shift & DIGIT_MASK ^
signMask)]] = perm[i];
    System.arraycopy(support, 0, perm, first, length);
    for(int i = 0, p = first; i < 1 << DIGIT_BITS; i++) {
     if (level < maxLevel && count[i] > 1) {
      if (count[i] < RADIXSORT_NO_REC_SMALL) insertionSortIndirect(perm, a, b, p, p + count[i]);
      else {
       offsetStack[stackPos] = p;
       lengthStack[stackPos] = count[i];
       levelStack[stackPos++] = level + 1;
      }
     }
     p += count[i];
    }
    java.util.Arrays.fill(count, 0);
   }
   else {
```

```
  final int end = first + length - count[lastUsed];
  // i moves through the start of each block
  for(int i = first, c = -1, d; i <= end; i += count[c], count[c] = 0) {
   int t = perm[i];
   c = INT(KEY2LEXINT(k[t]) >>> shift & DIGIT_MASK ^ signMask);

   if (i < end) { // When all slots are OK, the last slot is necessarily OK.
    while((d = --pos[c]) > i) {
     final int z = t;
     t = perm[d];
     perm[d] = z;
     c = INT(KEY2LEXINT(k[t]) >>> shift & DIGIT_MASK ^ signMask);
    }
    perm[i] = t;
   }


   if (level < maxLevel && count[c] > 1) {
    if (count[c] < RADIXSORT_NO_REC_SMALL) insertionSortIndirect(perm, a, b, i, i + count[c]);
    else {
     offsetStack[stackPos] = i;
     lengthStack[stackPos] = count[c];
     levelStack[stackPos++] = level + 1;
    }
   }
  }
 }
}
}




private static void selectionSort(final KEY_TYPE[][] a, final int from, final int to, final int level) {
 final int layers = a.length;
 final int firstLayer = level / DIGITS_PER_ELEMENT;

 for(int i = from; i < to - 1; i++) {
  int m = i;
  for(int j = i + 1; j < to; j++) {
   for(int p = firstLayer; p < layers; p++) {
    if (a[p][j] < a[p][m]) {
     m = j;
     break;
    }
    else if (a[p][j] > a[p][m]) break;
   }
  }
```

```
  if (m != i) {
   for(int p = layers; p-- != 0;) {
    final KEY_TYPE u = a[p][i];
    a[p][i] = a[p][m];
    a[p][m] = u;
   }
  }
 }
}



/** Sorts the specified array of arrays lexicographically using radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
 *
 * <p>This method implements a <em>lexicographical</em> sorting of the provided arrays. Tuples of elements
 * in the same position will be considered a single key, and permuted
 * accordingly.
 *
 * @param a an array containing arrays of equal length to be sorted lexicographically in parallel.
 */
public static void radixSort(final KEY_TYPE[][] a) {
 radixSort(a, 0, a[0].length);
}

/** Sorts the specified array of arrays lexicographically using radix sort.
 *
 * <p>The sorting algorithm is a tuned radix sort adapted from Peter M. McIlroy, Keith Bostic and M. Douglas
 * McIlroy, &ldquo;Engineering radix sort&rdquo;, <i>Computing Systems</i>, 6(1), pages 5&minus;27 (1993).
 *
 * <p>This method implements a <em>lexicographical</em> sorting of the provided arrays. Tuples of elements
 * in the same position will be considered a single key, and permuted
 * accordingly.
 *
 * @param a an array containing arrays of equal length to be sorted lexicographically in parallel.
 * @param from the index of the first element (inclusive) to be sorted.
 * @param to the index of the last element (exclusive) to be sorted.
 */
public static void radixSort(final KEY_TYPE[][] a, final int from, final int to) {
 if (to - from < RADIXSORT_NO_REC_SMALL) {
  selectionSort(a, from, to, 0);
  return;
 }

 final int layers = a.length;
 final int maxLevel = DIGITS_PER_ELEMENT * layers - 1;
```

```
  for(int p = layers, l = a[0].length; p-- != 0;) if (a[p].length != l) throw new IllegalArgumentException("The array of
index " + p + " has not the same length of the array of index 0.");

  final int stackSize = ((1 << DIGIT_BITS) - 1) * (layers * DIGITS_PER_ELEMENT - 1) + 1;
  int stackPos = 0;
  final int[] offsetStack = new int[stackSize];
  final int[] lengthStack = new int[stackSize];
  final int[] levelStack = new int[stackSize];

  offsetStack[stackPos] = from;
  lengthStack[stackPos] = to - from;
  levelStack[stackPos++] = 0;

  final int[] count = new int[1 << DIGIT_BITS];
  final int[] pos = new int[1 << DIGIT_BITS];
  final KEY_TYPE[] t = new KEY_TYPE[layers];

  while(stackPos > 0) {
   final int first = offsetStack[--stackPos];
   final int length = lengthStack[stackPos];
   final int level = levelStack[stackPos];
#if KEY_CLASS_Character
   final int signMask = 0;
#else
   final int signMask = level % DIGITS_PER_ELEMENT == 0 ? 1 << DIGIT_BITS - 1 : 0;
#endif

   final KEY_TYPE[] k = a[level / DIGITS_PER_ELEMENT]; // This is the key array
   final int shift = (DIGITS_PER_ELEMENT - 1 - level % DIGITS_PER_ELEMENT) * DIGIT_BITS; // This is the
shift that extract the right byte from a key

   // Count keys.
   for(int i = first + length; i-- != first;) count[INT(KEY2LEXINT(k[i]) >>> shift & DIGIT_MASK ^ signMask)]++;

   // Compute cumulative distribution
   int lastUsed = -1;
   for (int i = 0, p = first; i < 1 << DIGIT_BITS; i++) {
    if (count[i] != 0) lastUsed = i;
    pos[i] = (p += count[i]);
   }

   final int end = first + length - count[lastUsed];
   // i moves through the start of each block
   for(int i = first, c = -1, d; i <= end; i += count[c], count[c] = 0) {
    for(int p = layers; p-- != 0;) t[p] = a[p][i];
    c = INT(KEY2LEXINT(k[i]) >>> shift & DIGIT_MASK ^ signMask);

    if (i < end) { // When all slots are OK, the last slot is necessarily OK.
```

```
     while((d = --pos[c]) > i) {
      c = INT(KEY2LEXINT(k[d]) >>> shift & DIGIT_MASK ^ signMask);
      for(int p = layers; p-- != 0;) {
       final KEY_TYPE u = t[p];
       t[p] = a[p][d];
       a[p][d] = u;
      }
     }
     for(int p = layers; p-- != 0;) a[p][i] = t[p];
    }

    if (level < maxLevel && count[c] > 1) {
     if (count[c] < RADIXSORT_NO_REC_SMALL) selectionSort(a, i, i + count[c], level + 1);
     else {
      offsetStack[stackPos] = i;
      lengthStack[stackPos] = count[c];
      levelStack[stackPos++] = level + 1;
     }
    }
   }
  }
 }


#endif

#endif

 /** Shuffles the specified array fragment using the specified pseudorandom number generator.
  *
  * @param a the array to be shuffled.
  * @param from the index of the first element (inclusive) to be shuffled.
  * @param to the index of the last element (exclusive) to be shuffled.
  * @param random a pseudorandom number generator.
  * @return {@code a}.
  */
 public static KEY_GENERIC KEY_GENERIC_TYPE[] shuffle(final KEY_GENERIC_TYPE[] a, final int from,
final int to, final Random random) {
  for(int i = to - from; i-- != 0;) {
   final int p = random.nextInt(i + 1);
   final KEY_GENERIC_TYPE t = a[from + i];
   a[from + i] = a[from + p];
   a[from + p] = t;
  }
  return a;
 }

 /** Shuffles the specified array using the specified pseudorandom number generator.
```

```
 *
 * @param a the array to be shuffled.
 * @param random a pseudorandom number generator.
 * @return {@code a}.
 */
public static KEY_GENERIC KEY_GENERIC_TYPE[] shuffle(final KEY_GENERIC_TYPE[] a, final Random
random) {
 for(int i = a.length; i-- != 0;) {
  final int p = random.nextInt(i + 1);
  final KEY_GENERIC_TYPE t = a[i];
  a[i] = a[p];
  a[p] = t;
 }
 return a;
}

/** Reverses the order of the elements in the specified array.
 *
 * @param a the array to be reversed.
 * @return {@code a}.
 */
public static KEY_GENERIC KEY_GENERIC_TYPE[] reverse(final KEY_GENERIC_TYPE[] a) {
 final int length = a.length;
 for(int i = length / 2; i-- != 0;) {
  final KEY_GENERIC_TYPE t = a[length - i - 1];
  a[length - i - 1] = a[i];
  a[i] = t;
 }
 return a;
}

/** Reverses the order of the elements in the specified array fragment.
 *
 * @param a the array to be reversed.
 * @param from the index of the first element (inclusive) to be reversed.
 * @param to the index of the last element (exclusive) to be reversed.
 * @return {@code a}.
 */
public static KEY_GENERIC KEY_GENERIC_TYPE[] reverse(final KEY_GENERIC_TYPE[] a, final int from,
final int to) {
 final int length = to - from;
 for(int i = length / 2; i-- != 0;) {
  final KEY_GENERIC_TYPE t = a[from + length - i - 1];
  a[from + length - i - 1] = a[from + i];
  a[from + i] = t;
 }
 return a;
}
```

```
 /** A type-specific content-based hash strategy for arrays. */

 private static final class ArrayHashStrategy KEY_GENERIC implements
Hash.Strategy<KEY_GENERIC_TYPE[]>, java.io.Serializable {
  private static final long serialVersionUID = -7046029254386353129L;

  @Override
  public int hashCode(final KEY_GENERIC_TYPE[] o) { return java.util.Arrays.hashCode(o); }

  @Override
  public boolean equals(final KEY_GENERIC_TYPE[] a, final KEY_GENERIC_TYPE[] b) { return
java.util.Arrays.equals(a, b); }
 }

 /** A type-specific content-based hash strategy for arrays.
  *
  * <p>This hash strategy may be used in custom hash collections whenever keys are
  * arrays, and they must be considered equal by content. This strategy
  * will handle {@code null} correctly, and it is serializable.
  */

#if KEYS_PRIMITIVE
 public static final Hash.Strategy<KEY_TYPE[]> HASH_STRATEGY = new ArrayHashStrategy();
#else
 @SuppressWarnings({"rawtypes"})
 public static final Hash.Strategy HASH_STRATEGY = new ArrayHashStrategy();
#endif

#ifdef TEST
#if KEYS_PRIMITIVE && ! KEY_CLASS_Boolean
 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static final KEY_TYPE[] fillArrayForBenchmark(KEY_TYPE[] a, int uniqueValues) {
  for(int i = a.length; i-- != 0;) a[i] = (KEY_TYPE)(uniqueValues - (i % uniqueValues));
  a = shuffle(a, r);
  return a;
 }

 private static final int WARMUP_RUNS = 100;
 private static final int GC_EVERY = 100;
 private static final int DEFAULT_MAX = 1000;
 private static final int RUNS = 30;
 public static final void main(String... args) {
  int max = DEFAULT_MAX;
  if (args.length > 1) max = Integer.parseInt(args[1]);
  if (args.length > 2) {
```

```
 seed = Integer.parseInt(args[2]);
 r = new java.util.Random(seed);
}
final int uniqueValues = 5 * max / 8;
KEY_TYPE[] a = new KEY_TYPE[max];
KEY_TYPE[] b = new KEY_TYPE[max];
KEY_TYPE[] c = new KEY_TYPE[max];
for (int n = 0; n < WARMUP_RUNS; ++n) {
 a = fillArrayForBenchmark(a, uniqueValues);
 System.arraycopy(a, 0, b, 0, max);
 System.arraycopy(a, 0, c, 0, max);
 java.util.Arrays.sort(a);
 quickSort(b);
 radixSort(c);
}
long arraysSortSum = 0;
long quickSortSum = 0;
long radixSortSum = 0;
System.gc();
for (int n = 0; n < RUNS; ++n) {
 a = fillArrayForBenchmark(a, uniqueValues);
 System.arraycopy(a, 0, b, 0, max);
 System.arraycopy(a, 0, c, 0, max);

 if (n > 0 && n % GC_EVERY == 0) System.gc();
 long start = System.nanoTime();
 java.util.Arrays.sort(a);
 long end = System.nanoTime();
 arraysSortSum += end - start;

 if (n > 0 && n % GC_EVERY == 0) System.gc();
 start = System.nanoTime();
 quickSort(b);
 end = System.nanoTime();
 quickSortSum += end - start;

 if (n > 0 && n % GC_EVERY == 0) System.gc();
 start = System.nanoTime();
 radixSort(c);
 end = System.nanoTime();
 radixSortSum += end - start;
}
 System.out.println(String.format("%s: Quicksort vs radix sort for arrays of length %d with %d unique values",
          ARRAYS.class.getSimpleName(), max, uniqueValues));
double averageArraysSort = (double)arraysSortSum / RUNS;
System.out.println("java.util.Arrays.sort() average time " + averageArraysSort);
double averageQuickSort = (double)quickSortSum / RUNS;
System.out.println("Average quicksort average time " + averageQuickSort);
```

```
  double averageRadixSort = (double)radixSortSum / RUNS;
  System.out.println("Average radixsort average time " + averageRadixSort);
 }
#endif
#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Arrays.drv
No license file was found, but licenses were detected in source scan.

```
/*
* Copyright (C) 2020-2022 Sebastiano Vigna
*
* Licensed under the Apache License, Version 2.0 (the "License");
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

/**  A type-specific {@link it.unimi.dsi.fastutil.Pair Pair}; provides some additional methods that use polymorphism
to avoid (un)boxing. */

public interface PAIR KEY_VALUE_GENERIC extends it.unimi.dsi.fastutil.Pair<KEY_GENERIC_CLASS,
VALUE_GENERIC_CLASS> {
#if KEYS_PRIMITIVE

 /**
  * Returns the left element of this pair.
  *
  * @return the left element of this pair.
  */
 public KEY_TYPE PAIR_LEFT();

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead.
  */
```

```
@SuppressWarnings("deprecation")
@Deprecated
@Override
public default KEY_CLASS left() {
 return KEY2OBJ(PAIR_LEFT());
}

/**
 * Sets the left element of this pair (optional operation).
 *
 * @param l a new value for the left element.
 *
 * @implSpec This implementation throws an {@link UnsupportedOperationException}.
 */
public default PAIR KEY_VALUE_GENERIC left(final KEY_TYPE l) {
 throw new UnsupportedOperationException();
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
@Deprecated
@Override
public default PAIR KEY_VALUE_GENERIC left(final KEY_CLASS l) {
 return left(KEY_CLASS2TYPE(l));
}

/**
 * Returns the left element of this pair.
 *
 * @return the left element of this pair.
 *
 * @implSpec This implementation delegates to {@link #left()}.
 *
 */
public default KEY_TYPE PAIR_FIRST() {
 return PAIR_LEFT();
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
@Deprecated
@Override
public default KEY_CLASS first() {
 return KEY2OBJ(PAIR_FIRST());
```

```
}

/**
 * Sets the left element of this pair (optional operation).
 *
 * @param l a new value for the left element.
 *
 * @implSpec This implementation delegates to {@link #left(Object)}.
 */
public default PAIR KEY_VALUE_GENERIC first(final KEY_TYPE l) {
 return left(l);
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
@Deprecated
@Override
public default PAIR KEY_VALUE_GENERIC first(final KEY_CLASS l) {
 return first(KEY_CLASS2TYPE(l));
}

/**
 * Returns the left element of this pair.
 *
 * @return the left element of this pair.
 *
 * @implSpec This implementation delegates to {@link #left()}.
 *
 */
public default KEY_TYPE PAIR_KEY() {
 return PAIR_FIRST();
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
@Deprecated
@Override
public default KEY_CLASS key() {
 return KEY2OBJ(PAIR_KEY());
}

/**
 * Sets the left element of this pair (optional operation).
 *
```

```
 * @param l a new value for the left element.
 *
 * @implSpec This implementation delegates to {@link #left(Object)}.
 */
public default PAIR KEY_VALUE_GENERIC key(final KEY_TYPE l) {
 return left(l);
}

@Override
@Deprecated
public default PAIR KEY_VALUE_GENERIC key(KEY_CLASS l) {
 return key(KEY_CLASS2TYPE(l));
}

#endif

#if VALUES_PRIMITIVE

/**
 * Returns the right element of this pair.
 *
 * @return the right element of this pair.
 */
public VALUE_TYPE PAIR_RIGHT();

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
@Deprecated
@Override
public default VALUE_CLASS right() {
 return VALUE2OBJ(PAIR_RIGHT());
}



/**
 * Sets the right element of this pair (optional operation).
 *
 * @param r a new value for the right element.
 *
 * @implSpec This implementation throws an {@link UnsupportedOperationException}.
 */
public default PAIR KEY_VALUE_GENERIC right(final VALUE_TYPE r) {
 throw new UnsupportedOperationException();
}

/** {@inheritDoc}
```

```
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
@Deprecated
@Override
public default PAIR KEY_VALUE_GENERIC right(final VALUE_CLASS l) {
 return right(VALUE_CLASS2TYPE(l));
}

/**
 * Returns the right element of this pair.
 *
 * @return the right element of this pair.
 *
 * @implSpec This implementation delegates to {@link #right()}.
 *
 */
public default VALUE_TYPE PAIR_SECOND() {
 return PAIR_RIGHT();
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
@Deprecated
@Override
public default VALUE_CLASS second() {
 return VALUE2OBJ(PAIR_SECOND());
}

/**
 * Sets the right element of this pair (optional operation).
 *
 * @param r a new value for the right element.
 *
 * @implSpec This implementation delegates to {@link #right(Object)}.
 */
public default PAIR KEY_VALUE_GENERIC second(final VALUE_TYPE r) {
 return right(r);
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
@Deprecated
@Override
```

```
public default PAIR KEY_VALUE_GENERIC second(final VALUE_CLASS l) {
 return second(VALUE_CLASS2TYPE(l));
}

/**
 * Returns the right element of this pair.
 *
 * @return the right element of this pair.
 *
 * @implSpec This implementation delegates to {@link #right()}.
 *
 */
public default VALUE_TYPE PAIR_VALUE() {
 return PAIR_RIGHT();
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
@Deprecated
@Override
public default VALUE_CLASS value() {
 return VALUE2OBJ(PAIR_VALUE());
}

/**
 * Sets the right element of this pair (optional operation).
 *
 * @param r a new value for the right element.
 *
 * @implSpec This implementation delegates to {@link #right(Object)}.
 */
public default PAIR KEY_VALUE_GENERIC value(final VALUE_TYPE r) {
 return right(r);
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
@Deprecated
@Override
public default PAIR KEY_VALUE_GENERIC value(final VALUE_CLASS l) {
 return value(VALUE_CLASS2TYPE(l));
}
```

```
#endif

 /** Returns a new type-specific immutable {@link it.unimi.dsi.fastutil.Pair Pair} with given left and right value.
  * @param left the left value.
  * @param right the right value.
  */
 public static KEY_VALUE_GENERIC PAIR KEY_VALUE_GENERIC of(final KEY_GENERIC_TYPE left, final
VALUE_GENERIC_TYPE right) {
  return new IMMUTABLE_PAIR KEY_VALUE_GENERIC(left, right);
 }

#if ! KEYS_USE_REFERENCE_EQUALITY && ! VALUES_USE_REFERENCE_EQUALITY

 /**
  * Returns a lexicographical comparator for pairs.
  *
  * <p>
  * The comparator returned by this method implements lexicographical order. It compares first
  * the left elements: if the result of the comparison is nonzero, it returns said result.
  * Otherwise, this comparator returns the result of the comparison of the right elements.
  *
  * @return a lexicographical comparator for pairs.
  */
 SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
 public static KEY_VALUE_GENERIC java.util.Comparator<PAIR KEY_VALUE_GENERIC> lexComparator() {
  return (x, y) -> {
#if KEYS_PRIMITIVE
   final int t = KEY_CLASS.compare(x.PAIR_LEFT(), y.PAIR_LEFT());
#else
   final int t = ((Comparable KEY_GENERIC)x.PAIR_LEFT()).compareTo(y.PAIR_LEFT());
#endif
   if (t != 0) return t;
#if VALUES_PRIMITIVE
   return VALUE_CLASS.compare(x.PAIR_RIGHT(), y.PAIR_RIGHT());
#else
   return ((Comparable VALUE_GENERIC)x.PAIR_RIGHT()).compareTo(y.PAIR_RIGHT());
#endif
  };
 }

#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Pair.drv
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```
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*/


package PACKAGE;

#if KEY_CLASS_Object
import java.util.Arrays;
import java.util.Comparator;
#endif

import java.io.Serializable;
import it.unimi.dsi.fastutil.HashCommon;
import it.unimi.dsi.fastutil.PriorityQueue;

import java.util.NoSuchElementException;

/** A type-specific array-based FIFO queue, supporting also deque operations.
*
* <p>Instances of this class represent a FIFO queue using a backing
* array in a circular way. The array is enlarged and shrunk as needed. You can use the {@link #trim()} method
* to reduce its memory usage, if necessary.
*
* <p>This class provides additional methods that implement a <em>deque</em> (double-ended queue).
*/

public class ARRAY_FIFO_QUEUE KEY_GENERIC implements PRIORITY_QUEUE KEY_GENERIC,
Serializable {
 private static final long serialVersionUID = 0L;

 /** The standard initial capacity of a queue. */
 public static final int INITIAL_CAPACITY = 4;

 /** The backing array. */
 protected transient KEY_GENERIC_TYPE array[];
```

```
/** The current (cached) length of {@link #array}. */
protected transient int length;

/** The start position in {@link #array}. It is always strictly smaller than {@link #length}.*/
protected transient int start;

/** The end position in {@link #array}. It is always strictly smaller than {@link #length}.
 *  Might be actually smaller than {@link #start} because {@link #array} is used cyclically. */
protected transient int end;

/** Creates a new empty queue with given capacity.
 *
 * @param capacity the initial capacity of this queue.
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
public ARRAY_FIFO_QUEUE(final int capacity) {
 if (capacity < 0) throw new IllegalArgumentException("Initial capacity (" + capacity + ") is negative");
 array = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[Math.max(1, capacity)]; // Never build a queue with
zero-sized backing array.
 length = array.length;
}

/** Creates a new empty queue with standard {@linkplain #INITIAL_CAPACITY initial capacity}. */
public ARRAY_FIFO_QUEUE() {
 this(INITIAL_CAPACITY);
}

/** {@inheritDoc}
 * @implSpec This implementation returns {@code null} (FIFO queues have no comparator). */
@Override
public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() {
 return null;
}

@Override
public KEY_GENERIC_TYPE DEQUEUE() {
 if (start == end) throw new NoSuchElementException();
 final KEY_GENERIC_TYPE t = array[start];
#if KEYS_REFERENCE
 array[start] = null; // Clean-up for the garbage collector.
#endif
 if (++start == length) start = 0;
 reduce();
 return t;
}

/** Dequeues the {@linkplain PriorityQueue#last() last} element from the queue.
```

```
 *
 * @return the dequeued element.
 * @throws NoSuchElementException if the queue is empty.
 */
public KEY_GENERIC_TYPE DEQUEUE_LAST() {
 if (start == end) throw new NoSuchElementException();
 if (end == 0) end = length;
 final KEY_GENERIC_TYPE t = array[--end];
#if KEYS_REFERENCE
 array[end] = null; // Clean-up for the garbage collector.
#endif
 reduce();
 return t;
}

SUPPRESS_WARNINGS_KEY_UNCHECKED
private final void resize(final int size, final int newLength) {
 final KEY_GENERIC_TYPE[] newArray = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[newLength];
 if (start >= end) {
  if (size != 0) {
   System.arraycopy(array, start, newArray, 0, length - start);
   System.arraycopy(array, 0, newArray, length - start, end);
  }
 }
 else System.arraycopy(array, start, newArray, 0, end - start);
 start = 0;
 end = size;
 array = newArray;
 length = newLength;
}

private final void expand() {
 resize(length, (int)Math.min(it.unimi.dsi.fastutil.Arrays.MAX_ARRAY_SIZE, 2L * length));
}

private final void reduce() {
 final int size = size();
 if (length > INITIAL_CAPACITY && size <= length / 4) resize(size, length / 2);
}

@Override
public void enqueue(KEY_GENERIC_TYPE x) {
 array[end++] = x;
 if (end == length) end = 0;
 if (end == start) expand();
}

/** Enqueues a new element as the first element (in dequeuing order) of the queue.
```

```
 * @param x the element to enqueue.
 */
public void enqueueFirst(KEY_GENERIC_TYPE x) {
 if (start == 0) start = length;
 array[--start] = x;
 if (end == start) expand();
}

@Override
public KEY_GENERIC_TYPE FIRST() {
 if (start == end) throw new NoSuchElementException();
 return array[start];
}


@Override
public KEY_GENERIC_TYPE LAST() {
 if (start == end) throw new NoSuchElementException();
 return array[(end == 0 ? length : end) - 1];
}

@Override
public void clear() {
#if KEYS_REFERENCE
 if (start <= end) Arrays.fill(array, start, end, null);
 else {
  Arrays.fill(array, start, length, null);
  Arrays.fill(array, 0, end, null);
 }
#endif
 start = end = 0;
}

/** Trims the queue to the smallest possible size. */
SUPPRESS_WARNINGS_KEY_UNCHECKED
public void trim() {
 final int size = size();
 final KEY_GENERIC_TYPE[] newArray =
#if KEYS_PRIMITIVE
	new KEY_GENERIC_TYPE[size + 1];
#else
	(KEY_GENERIC_TYPE[])new Object[size + 1];
#endif
 if (start <= end) System.arraycopy(array, start, newArray, 0, end - start);
 else {
  System.arraycopy(array, start, newArray, 0, length - start);
  System.arraycopy(array, 0, newArray, length - start, end);
 }
```

```
 start = 0;
 length = (end = size) + 1;
 array = newArray;
}

@Override
public int size() {
 final int apparentLength = end - start;
 return apparentLength >= 0 ? apparentLength : length + apparentLength;
}

private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
 s.defaultWriteObject();
 int size = size();
 s.writeInt(size);
 for(int i = start; size-- != 0;) {
  s.WRITE_KEY(array[i++]);
  if (i == length) i = 0;
 }
}

SUPPRESS_WARNINGS_KEY_UNCHECKED
private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
 s.defaultReadObject();
 end = s.readInt();
 array = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[length = HashCommon.nextPowerOfTwo(end + 1)];
 for(int i = 0; i < end; i++) array[i] = KEY_GENERIC_CAST s.READ_KEY();
}
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/ArrayFIFOQueue.drv
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```
*/


package PACKAGE;

/**  A type-specific immutable {@link it.unimi.dsi.fastutil.Pair Pair}; provides some additional methods that use
polymorphism to avoid (un)boxing. */

public class IMMUTABLE_PAIR KEY_VALUE_GENERIC implements PAIR KEY_VALUE_GENERIC,
java.io.Serializable {
 private static final long serialVersionUID = 0L;

 protected final KEY_GENERIC_TYPE left;
 protected final VALUE_GENERIC_TYPE right;

 /** Creates a new type-specific immutable {@link it.unimi.dsi.fastutil.Pair Pair} with given left and right value.
  * @param left the left value.
  * @param right the right value.
  */
 public IMMUTABLE_PAIR(final KEY_GENERIC_TYPE left, final VALUE_GENERIC_TYPE right) {
  this.left = left;
  this.right = right;
 }

 /** Returns a new type-specific immutable {@link it.unimi.dsi.fastutil.Pair Pair} with given left and right value.
  * @param left the left value.
  * @param right the right value.
  *
  * @implSpec This factory method delegates to the constructor.
  */
 public static KEY_VALUE_GENERIC IMMUTABLE_PAIR KEY_VALUE_GENERIC of(final
KEY_GENERIC_TYPE left, final VALUE_GENERIC_TYPE right) {
  return new IMMUTABLE_PAIR KEY_VALUE_GENERIC(left, right);
 }

 @Override
 public KEY_GENERIC_TYPE PAIR_LEFT() {
  return left;
 }

 @Override
 public VALUE_GENERIC_TYPE PAIR_RIGHT() {
  return right;
 }

 @Override
 @SuppressWarnings("rawtypes")
 public boolean equals(Object other) {
```

```
 if (other == null) return false;

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
 if (other instanceof PAIR) {
  return

#if KEY_CLASS_Object
 java.util.Objects.equals(left, ((PAIR)other).PAIR_LEFT())
#else
 left == ((PAIR)other).PAIR_LEFT()
#endif
#if VALUE_CLASS_Object
 && java.util.Objects.equals(right, ((PAIR)other).PAIR_RIGHT());
#else
 && right == ((PAIR)other).PAIR_RIGHT();
#endif
 }
#endif

 if (other instanceof it.unimi.dsi.fastutil.Pair) {
  return
#if KEYS_USE_REFERENCE_EQUALITY
 left == ((it.unimi.dsi.fastutil.Pair)other).left()
#else
 java.util.Objects.equals(KEY2OBJ(left), ((it.unimi.dsi.fastutil.Pair)other).left())
#endif
#if VALUES_USE_REFERENCE_EQUALITY
 && right == ((it.unimi.dsi.fastutil.Pair)other).right();
#else
 && java.util.Objects.equals(VALUE2OBJ(right), ((it.unimi.dsi.fastutil.Pair)other).right());
#endif
 }

 return false;
 }

 @Override
  public int hashCode() {
 return KEY2JAVAHASH(left) * 19 + VALUE2JAVAHASH(right);
 }

 /** Returns a string representation of this pair in the form &lt;<var>l</var>,<var>r</var>&gt;.
  *
  * @return a string representation of this pair in the form &lt;<var>l</var>,<var>r</var>&gt;.
  */
 @Override
 public String toString() {
 return "<" + PAIR_LEFT() + "," + PAIR_RIGHT() + ">";
```

 }
}

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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/ImmutablePair.drv
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/io/TextIO.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/io/BinIO.java
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-

jar/it/unimi/dsi/fastutil/Stack.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/Hash.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/AbstractStack.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/BidirectionalIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/Arrays.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/Function.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/HashCommon.java
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```
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* limitations under the License.
*/


package PACKAGE;

#if KEY_CLASS_Object
import java.util.Comparator;
import it.unimi.dsi.fastutil.IndirectPriorityQueue;
#endif

#if ! KEY_CLASS_Integer
import it.unimi.dsi.fastutil.ints.IntArrays;
#endif

import java.util.NoSuchElementException;

/** A type-specific array-based semi-indirect priority queue.
*
* <p>Instances of this class use as reference list a <em>reference array</em>,
```

```
* which must be provided to each constructor, and represent a priority queue
* using a backing array of integer indices&mdash;all operations are performed
* directly on the array. The array is enlarged as needed, but it is never
* shrunk. Use the {@link #trim()} method to reduce its size, if necessary.
*
* @implSpec This implementation is extremely inefficient, but it is difficult to beat
* when the size of the queue is very small. Moreover, it allows to enqueue several
* time the same index, without limitations.
*/

public class ARRAY_INDIRECT_PRIORITY_QUEUE KEY_GENERIC implements
INDIRECT_PRIORITY_QUEUE KEY_GENERIC {

 /** The reference array. */
 protected KEY_GENERIC_TYPE refArray[];

 /** The backing array. */
 protected int array[] = IntArrays.EMPTY_ARRAY;

 /** The number of elements in this queue. */
 protected int size;

 /** The type-specific comparator used in this queue. */
 protected KEY_COMPARATOR KEY_SUPER_GENERIC c;

 /** The first index, cached, if {@link #firstIndexValid} is true. */
 protected int firstIndex;

 /** Whether {@link #firstIndex} contains a valid value. */
 protected boolean firstIndexValid;


 /** Creates a new empty queue without elements with a given capacity and comparator.
  *
  * @param refArray the reference array.
  * @param capacity the initial capacity of this queue.
  * @param c the comparator used in this queue, or {@code null} for the natural order.
  */
 public ARRAY_INDIRECT_PRIORITY_QUEUE(KEY_GENERIC_TYPE[] refArray, int capacity,
KEY_COMPARATOR KEY_SUPER_GENERIC c) {
  if (capacity > 0) this.array = new int[capacity];
  this.refArray = refArray;
  this.c = c;
 }

 /** Creates a new empty queue with given capacity and using the natural order.
  *
  * @param refArray the reference array.
```

```
 * @param capacity the initial capacity of this queue.
 */
public ARRAY_INDIRECT_PRIORITY_QUEUE(KEY_GENERIC_TYPE[] refArray, int capacity) {
 this(refArray, capacity, null);
}

/** Creates a new empty queue with capacity equal to the length of the reference array and a given comparator.
 *
 * @param refArray the reference array.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public ARRAY_INDIRECT_PRIORITY_QUEUE(KEY_GENERIC_TYPE[] refArray, KEY_COMPARATOR
KEY_SUPER_GENERIC c) {
 this(refArray, refArray.length, c);
}

/** Creates a new empty queue with capacity equal to the length of the reference array and using the natural order.
 * @param refArray the reference array.
 */
public ARRAY_INDIRECT_PRIORITY_QUEUE(KEY_GENERIC_TYPE[] refArray) {
 this(refArray, refArray.length, null);
}


/** Wraps a given array in a queue using a given comparator.
 *
 * <p>The queue returned by this method will be backed by the given array.
 *
 * @param refArray the reference array.
 * @param a an array of indices into {@code refArray}.
 * @param size the number of elements to be included in the queue.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public ARRAY_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray, final int[] a, int size,
final KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 this(refArray, 0, c);
 this.array = a;
 this.size = size;
}


/** Wraps a given array in a queue using a given comparator.
 *
 * <p>The queue returned by this method will be backed by the given array.
 *
 * @param refArray the reference array.
 * @param a an array of indices into {@code refArray}.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
```

```
 */
public ARRAY_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray, final int[] a, final
KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 this(refArray, a, a.length, c);
}

/** Wraps a given array in a queue using the natural order.
 *
 * <p>The queue returned by this method will be backed by the given array.
 *
 * @param refArray the reference array.
 * @param a an array of indices into {@code refArray}.
 * @param size the number of elements to be included in the queue.
 */
public ARRAY_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray, final int[] a, int size) {
 this(refArray, a, size, null);
}


/** Wraps a given array in a queue using the natural order.
 *
 * <p>The queue returned by this method will be backed by the given array.
 *
 * @param refArray the reference array.
 * @param a an array of indices into {@code refArray}.
 */
public ARRAY_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray, final int[] a) {
 this(refArray, a, a.length);
}


/** Returns the index (in {@link #array}) of the smallest element. */

SUPPRESS_WARNINGS_KEY_UNCHECKED
private int findFirst() {
 if (firstIndexValid) return this.firstIndex;
 firstIndexValid = true;
 int i = size;
 int firstIndex = --i;
 KEY_GENERIC_TYPE first = refArray[array[firstIndex]];

 if (c == null) while(i-- != 0) { if (KEY_LESS(refArray[array[i]], first)) first = refArray[array[firstIndex = i]]; }
 else while(i-- != 0) { if (c.compare(refArray[array[i]], first) < 0) first = refArray[array[firstIndex = i]]; }

 return this.firstIndex = firstIndex;
}

/** Returns the index (in {@link #array}) of the largest element. */
```

```
SUPPRESS_WARNINGS_KEY_UNCHECKED
private int findLast() {
 int i = size;
 int lastIndex = --i;
 KEY_GENERIC_TYPE last = refArray[array[lastIndex]];

 if (c == null) { while(i-- != 0) if (KEY_LESS(last, refArray[array[i]])) last = refArray[array[lastIndex = i]]; }
 else { while(i-- != 0) if (c.compare(last, refArray[array[i]]) < 0) last = refArray[array[lastIndex = i]]; }

 return lastIndex;
}

protected final void ensureNonEmpty() {
 if (size == 0) throw new NoSuchElementException();
}

/** Ensures that the given index is a firstIndexValid reference.
 *
 * @param index an index in the reference array.
 * @throws IndexOutOfBoundsException if the given index is negative or larger than the reference array length.
 */
protected void ensureElement(final int index) {
 if (index < 0)  throw new IndexOutOfBoundsException("Index (" + index + ") is negative");
 if (index >= refArray.length) throw new IndexOutOfBoundsException("Index (" + index + ") is larger than or equal
to reference array size (" + refArray.length + ")");
}

/** {@inheritDoc}
 *
 * <p>Note that for efficiency reasons this method will <em>not</em> throw an exception
 * when {@code x} is already in the queue. However, the queue state will become
 * inconsistent and the following behaviour will not be predictable.
 */
@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public void enqueue(int x) {
 ensureElement(x);

 if (size == array.length) array = IntArrays.grow(array, size + 1);
 if (firstIndexValid) {
  if (c == null) { if (KEY_LESS(refArray[x], refArray[array[firstIndex]])) firstIndex = size; }
  else if (c.compare(refArray[x], refArray[array[firstIndex]]) < 0) firstIndex = size;
 }
 else firstIndexValid = false;
 array[size++] = x;
}
```

```
@Override
public int dequeue() {
 ensureNonEmpty();
 final int firstIndex = findFirst();
 final int result = array[firstIndex];
 if (--size != 0) System.arraycopy(array, firstIndex + 1, array, firstIndex, size - firstIndex);
 firstIndexValid = false;
 return result;
}

@Override
public int first() {
 ensureNonEmpty();
 return array[findFirst()];
}

@Override
public int last() {
 ensureNonEmpty();
 return array[findLast()];
}

@Override
public void changed() {
 ensureNonEmpty();
 firstIndexValid = false;
}

/** {@inheritDoc}
 *
 * <p>Note that for efficiency reasons this method will <em>not</em> throw an exception
 * when {@code index} is not in the queue.
 */
@Override
public void changed(int index) {
 ensureElement(index);
 if (index == firstIndex) firstIndexValid = false;
}

/** Signals the queue that all elements have changed. */
@Override
public void allChanged() { firstIndexValid = false; }

@Override
public boolean remove(int index) {
 ensureElement(index);
 final int[] a = array;
 int i = size;
```

```
 while(i-- != 0) if (a[i] == index) break;
 if (i < 0) return false;
 firstIndexValid = false;
 if (--size != 0) System.arraycopy(a, i + 1, a, i, size - i);
 return true;
}

/** Writes in the provided array the <em>front</em> of the queue, that is, the set of indices
 * whose elements have the same priority as the top.
 * @param a an array whose initial part will be filled with the frnot (must be sized as least as the heap size).
 * @return the number of elements of the front.
 */
@Override
public int front(int[] a) {
 final KEY_GENERIC_TYPE top = refArray[array[findFirst()]];
 int i = size, c = 0;
 while(i-- != 0) if (KEY_EQUALS_NOT_NULL(top, refArray[array[i]])) a[c++] = array[i];
 return c;
}

@Override
public int size() { return size; }

@Override
public void clear() { size = 0; firstIndexValid = false; }

/** Trims the backing array so that it has exactly {@link #size()} elements. */
public void trim() {
 array = IntArrays.trim(array, size);
}

@Override
public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return c; }

@Override
public String toString() {
 StringBuffer s = new StringBuffer();
 s.append("[");
 for (int i = 0; i < size; i++) {
  if (i != 0) s.append(", ");
  s.append(refArray[array [i]]);
 }
 s.append("]");
 return s.toString();
}


#ifdef TEST
```

```
 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#elif KEY_CLASS_Object
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }

 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition p = new java.text.FieldPosition(0);

 private static String format(double d) {
  StringBuffer s = new StringBuffer();
  return format.format(d, s, p).toString();
 }

 private static void speedTest(int n, boolean comp) {
  int i, j, s;
  ARRAY_INDIRECT_PRIORITY_QUEUE[] m = new ARRAY_INDIRECT_PRIORITY_QUEUE[100000];
  HEAP_INDIRECT_PRIORITY_QUEUE[] t = new HEAP_INDIRECT_PRIORITY_QUEUE[m.length];
  KEY_TYPE k[] = new KEY_TYPE[n];
  KEY_TYPE nk[] = new KEY_TYPE[m.length];
  long ms;

  for(i = 0; i < n; i++) k[i] = genKey();
  for(i = 0; i < m.length; i++) nk[i] = genKey();

  double totEnq = 0, totDeq = 0, totChange = 0, d;

  for(i = 0; i < m.length; i++) {
   t[i] = new HEAP_INDIRECT_PRIORITY_QUEUE(k);
   m[i] = new ARRAY_INDIRECT_PRIORITY_QUEUE(k);
  }

  if (comp) {
   for(j = 0; j < 20; j++) {

    for(i = 0; i < m.length; i++) t[i].clear();

    ms = System.currentTimeMillis();
    s = m.length;
```

```
  while(s-- != 0) { i = n; while(i-- != 0) t[s].enqueue(i); }
  d = System.currentTimeMillis() - ms;
  if (j > 2) totEnq += d;
  System.out.print("Enqueue: " + format(m.length * n/d) +" K/s ");

  ms = System.currentTimeMillis();
  s = m.length;
  while(s-- != 0) { i = n; while(i-- != 0) { k[t[s].first()] = nk[i]; t[s].changed(); } }
  d = System.currentTimeMillis() - ms;
  if (j > 2) totChange += d;
  System.out.print("Change: " + format(m.length * n/d) +" K/s ");

  ms = System.currentTimeMillis();
  s = m.length;
  while(s-- != 0) { i = n; while(i-- != 0) t[s].dequeue(); }
  d = System.currentTimeMillis() - ms;
  if (j > 2) totDeq += d;
  System.out.print("Dequeue: " + format(m.length * n/d) +" K/s ");

  System.out.println();
 }

 System.out.println();
 System.out.println("Heap:  Enqueue: " + format(m.length * (j-3)*n/totEnq) + " K/s Dequeue: " + format(m.length *
(j-3)*n/totDeq)  + " K/s Change: " + format(m.length * (j-3)*n/totChange) + " K/s");

 System.out.println();

 totEnq = totChange = totDeq = 0;

}

for(j = 0; j < 20; j++) {

 for(i = 0; i < m.length; i++) m[i].clear();

 ms = System.currentTimeMillis();
 s = m.length;
 while(s-- != 0) { i = n; while(i-- != 0) m[s].enqueue(i); }
 d = System.currentTimeMillis() - ms;
 if (j > 2) totEnq += d;
 System.out.print("Enqueue: " + format(m.length * n/d) +" K/s ");

 ms = System.currentTimeMillis();
 s = m.length;
 while(s-- != 0) { i = n; while(i-- != 0) { k[m[s].first()] = nk[i]; m[s].changed(); } }
 d = System.currentTimeMillis() - ms;
 if (j > 2) totChange += d;
```

```
   System.out.print("Change: " + format(m.length * n/d) +" K/s ");

   ms = System.currentTimeMillis();
   s = m.length;
   while(s-- != 0) { i = n; while(i-- != 0) m[s].dequeue(); }
   d = System.currentTimeMillis() - ms;
   if (j > 2) totDeq += d;
   System.out.print("Dequeue: " + format(m.length * n/d) +" K/s ");

   System.out.println();
  }


  System.out.println();
  System.out.println("Array:  Enqueue: " + format(m.length * (j-3)*n/totEnq) + " K/s Dequeue: " + format(m.length *
(j-3)*n/totDeq)  + " K/s Change: " + format(m.length * (j-3)*n/totChange) + " K/s");

  System.out.println();
 }


 private static void fatal(String msg) {
  throw new AssertionError(msg);
 }

 private static void ensure(boolean cond, String msg) {
  if (cond) return;
  fatal(msg);
 }

 private static boolean heapEqual(int[] a, int[] b, int sizea, int sizeb) {
  if (sizea != sizeb) return false;
  KEY_TYPE[] aa = new KEY_TYPE[sizea];
  KEY_TYPE[] bb = new KEY_TYPE[sizea];
  for(int i = 0; i < sizea; i++) {
   aa[i] = ref[a[i]];
   bb[i] = ref[b[i]];
  }
  java.util.Arrays.sort(aa);
  java.util.Arrays.sort(bb);
  while(sizea-- != 0) if (!KEY_EQUALS(aa[sizea], bb[sizea])) return false;
  return true;
 }

 private static KEY_TYPE[] ref;

 protected static void runTest(int n) {
  long ms;
```

```
  Exception mThrowsIllegal, tThrowsIllegal, mThrowsOutOfBounds, tThrowsOutOfBounds, mThrowsNoElement,
tThrowsNoElement;
  int rm = 0, rt = 0;

  ref = new KEY_TYPE[n];

  for(int i = 0; i < n; i++) ref[i] = genKey();

  ARRAY_INDIRECT_PRIORITY_QUEUE m = new ARRAY_INDIRECT_PRIORITY_QUEUE(ref);
  HEAP_INDIRECT_PRIORITY_QUEUE t = new HEAP_INDIRECT_PRIORITY_QUEUE(ref);

  /* We add pairs to t. */
  for(int i = 0; i < n / 2;  i++) {
   t.enqueue(i);
   m.enqueue(i);
  }

  ensure(heapEqual(m.array, t.heap, m.size(), t.size()), "Error (" + seed + "): m and t differ after creation (" + m + ", "
+ t + ")");

  /* Now we add and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<2*n;  i++) {
   if (r.nextDouble() < 0.01) {
    t.clear();
    m.clear();
    for(int j = 0; j < n / 2;  j++) {
     t.enqueue(j);
     m.enqueue(j);
    }
   }

   int T = r.nextInt(2 * n);

   mThrowsNoElement = tThrowsNoElement = mThrowsOutOfBounds = tThrowsOutOfBounds = mThrowsIllegal =
tThrowsIllegal = null;

   try {
    t.enqueue(T);
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { tThrowsIllegal = e; }

   if (tThrowsIllegal == null) { // To skip duplicates
    try {
     m.enqueue(T);
    }
    catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
```

```
    catch (IllegalArgumentException e) { mThrowsIllegal = e; }
   }

   mThrowsIllegal = tThrowsIllegal = null; // To skip duplicates

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + seed + "): enqueue()
divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds
+ ")");
   ensure((mThrowsIllegal == null) == (tThrowsIllegal == null), "Error (" + seed + "): enqueue() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");

   ensure(heapEqual(m.array, t.heap, m.size(), t.size()), "Error (" + seed + "): m and t differ after enqueue (" + m + ", "
+ t + ")");

   if (m.size() != 0) {
    ensure(KEY_EQUALS(ref[m.first()], ref[t.first()]), "Error (" + seed + "): m and t differ in first element after
enqueue (" + m.first() + "->" + ref[m.first()] + ", " + t.first() + "->" + ref[t.first()] + ")");
   }

   mThrowsNoElement = tThrowsNoElement = mThrowsOutOfBounds = tThrowsOutOfBounds = mThrowsIllegal =
tThrowsIllegal = null;

   try {
    rm = m.dequeue();
    while(! m.isEmpty() && KEY_EQUALS(ref[m.first()], ref[rm])) m.dequeue();
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { mThrowsIllegal = e; }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = e; }

   try {
    rt = t.dequeue();
    while(! t.isEmpty() && KEY_EQUALS(ref[t.first()], ref[rt])) t.dequeue();
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { tThrowsIllegal = e; }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + seed + "): dequeue()
divergence in IndexOutOfBoundsException (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
   ensure((mThrowsIllegal == null) == (tThrowsIllegal == null), "Error (" + seed + "): dequeue() divergence in
IllegalArgumentException  (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   ensure((mThrowsNoElement == null) == (tThrowsNoElement == null), "Error (" + seed + "): dequeue() divergence
in java.util.NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   if (mThrowsOutOfBounds == null) ensure(KEY_EQUALS(ref[rt], ref[rm]), "Error (" + seed + "): divergence in
dequeue() between m and t (" + rm + "->" + ref[rm] + ", " + rt + "->" + ref[rt] + ")");
```

```
   ensure(heapEqual(m.array, t.heap, m.size(), t.size()), "Error (" + seed + "): m and t differ after dequeue (" + m + ", " + t + ")");

   if (m.size() != 0) {
    ensure(KEY_EQUALS(ref[m.first()], ref[t.first()]), "Error (" + seed + "): m and t differ in first element after dequeue (" + m.first() + "->" + ref[m.first()] + ", " + t.first() + "->" + ref[t.first()] + ")");
   }

   mThrowsNoElement = tThrowsNoElement = mThrowsOutOfBounds = tThrowsOutOfBounds = mThrowsIllegal = tThrowsIllegal = null;


   int pos = r.nextInt(n * 2);

   try {
    m.remove(pos);
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { mThrowsIllegal = e; }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = e; }

   try {
    t.remove(pos);
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { tThrowsIllegal = e; }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + seed + "): remove(int) divergence in IndexOutOfBoundsException (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
   ensure((mThrowsIllegal == null) == (tThrowsIllegal == null), "Error (" + seed + "): remove(int) divergence in IllegalArgumentException  (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   ensure((mThrowsNoElement == null) == (tThrowsNoElement == null), "Error (" + seed + "): remove(int) divergence in java.util.NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");

   ensure(heapEqual(m.array, t.heap, m.size(), t.size()), "Error (" + seed + "): m and t differ after remove(int) (" + m + ", " + t + ")");

   if (m.size() != 0) {
    ensure(KEY_EQUALS(ref[m.first()], ref[t.first()]), "Error (" + seed + "): m and t differ in first element after remove(int) (" + m.first() + "->" + ref[m.first()] + ", " + t.first() + "->" + ref[t.first()] + ")");
   }



   mThrowsNoElement = tThrowsNoElement = mThrowsOutOfBounds = tThrowsOutOfBounds = mThrowsIllegal = tThrowsIllegal = null;

   pos = r.nextInt(n);
```

```
try {
 t.changed(pos);
}
catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }
catch (IllegalArgumentException e) { tThrowsIllegal = e; }
catch (java.util.NoSuchElementException e) { tThrowsNoElement = e; }

if (tThrowsIllegal == null) {
 try {
  m.changed(pos);
 }
 catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
 catch (IllegalArgumentException e) { mThrowsIllegal = e; }
 catch (java.util.NoSuchElementException e) { mThrowsNoElement = e; }
}

ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + seed + "): change(int)
divergence in IndexOutOfBoundsException (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
//ensure((mThrowsIllegal == null) == (tThrowsIllegal == null), "Error (" + seed + "): change(int) divergence in
IllegalArgumentException  (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
ensure((mThrowsNoElement == null) == (tThrowsNoElement == null), "Error (" + seed + "): change(int)
divergence in java.util.NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");

ensure(heapEqual(m.array, t.heap, m.size(), t.size()), "Error (" + seed + "): m and t differ after change(int) (" + m +
", " + t + ")");

if (m.size() != 0) {
 ensure(KEY_EQUALS(ref[m.first()], ref[t.first()]), "Error (" + seed + "): m and t differ in first element after
change(int) (" + m.first() + "->" + ref[m.first()] + ", " + t.first() + "->" + ref[t.first()] + ")");
}

int[] temp = (int[])t.heap.clone();
java.util.Arrays.sort(temp, 0, t.size()); // To scramble a bit
m = new ARRAY_INDIRECT_PRIORITY_QUEUE(m.refArray, temp, t.size());

ensure(heapEqual(m.array, t.heap, m.size(), t.size()), "Error (" + seed + "): m and t differ after wrap (" + m + ", " + t
+ ")");

if (m.size() != 0) {
 ensure(KEY_EQUALS(ref[m.first()], ref[t.first()]), "Error (" + seed + "): m and t differ in first element after wrap ("
+ m.first() + "->" + ref[m.first()] + ", " + t.first() + "->" + ref[t.first()] + ")");
}

if (m.size() != 0 && ((new it.unimi.dsi.fastutil.ints.IntOpenHashSet(m.array, 0, m.size)).size() == m.size())) {

 int first = m.first();
 ref[first] = genKey();
```

```
    //System.err.println("Pre-change m: " +m);
    //System.err.println("Pre-change t: " +t);
    m.changed();
    t.changed(first);

    //System.err.println("Post-change m: " +m);
    //System.err.println("Post-change t: " +t);

    ensure(heapEqual(m.array, t.heap, m.size(), t.size()), "Error (" + seed + "): m and t differ after change (" + m + ", " + t + ")");

    if (m.size() != 0) {
     ensure(KEY_EQUALS(ref[m.first()], ref[t.first()]), "Error (" + seed + "): m and t differ in first element after change (" + m.first() + "->" + ref[m.first()] + ", " + t.first() + "->" + ref[t.first()] + ")");
    }
   }
  }


  /* Now we check that m actually holds the same data. */

  m.clear();
  ensure(m.isEmpty(), "Error (" + seed + "): m is not empty after clear()");

  System.out.println("Test OK");
 }



 public static void main(String args[]) throws Exception {
  int n  = Integer.parseInt(args[1]);
  if (args.length > 2) r = new java.util.Random(seed = Long.parseLong(args[2]));


  try {
   if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, "speedComp".equals(args[0]));
   else if ("test".equals(args[0])) runTest(n);
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/ArrayIndirectPriorityQueue.drv
No license file was found, but licenses were detected in source scan.

```
/*
* Copyright (C) 2002-2022 Sebastiano Vigna
*
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
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* limitations under the License.
*/


package PACKAGE;

import it.unimi.dsi.fastutil.Hash;
import it.unimi.dsi.fastutil.HashCommon;
import static it.unimi.dsi.fastutil.HashCommon.arraySize;
import static it.unimi.dsi.fastutil.HashCommon.maxFill;

import java.util.Arrays;
import java.util.Collection;
import java.util.Iterator;
import java.util.NoSuchElementException;
#if KEYS_REFERENCE
import java.util.function.Consumer;
#ifndef Custom
import java.util.stream.Collector;
#endif
#endif

#ifdef Linked

#if KEYS_REFERENCE
import java.util.Comparator;
#endif

/**  A type-specific linked hash set with with a fast, small-footprint implementation.
*
```

```
* <p>Instances of this class use a hash table to represent a set. The table is
* filled up to a specified <em>load factor</em>, and then doubled in size to
* accommodate new entries. If the table is emptied below <em>one fourth</em>
* of the load factor, it is halved in size; however, the table is never reduced to a
* size smaller than that at creation time: this approach makes it
* possible to create sets with a large capacity in which insertions and
* deletions do not cause immediately rehashing. Moreover, halving is
* not performed when deleting entries from an iterator, as it would interfere
* with the iteration process.
*
* <p>Note that {@link #clear()} does not modify the hash table size.
* Rather, a family of {@linkplain #trim() trimming
* methods} lets you control the size of the table; this is particularly useful
* if you reuse instances of this class.
*
* <p>Iterators generated by this set will enumerate elements in the same order in which they
* have been added to the set (addition of elements already present
* in the set does not change the iteration order). Note that this order has nothing in common with the natural
* order of the keys. The order is kept by means of a doubly linked list, represented
* <i>via</i> an array of longs parallel to the table.
*
* <p>This class implements the interface of a sorted set, so to allow easy
* access of the iteration order: for instance, you can get the first element
* in iteration order with {@code first()} without having to create an
* iterator; however, this class partially violates the {@link java.util.SortedSet}
* contract because all subset methods throw an exception and {@link
* #comparator()} returns always {@code null}.
*
* <p>Additional methods, such as {@code addAndMoveToFirst()}, make it easy
* to use instances of this class as a cache (e.g., with LRU policy).
*
* <p>The iterators provided by this class are type-specific {@linkplain
* java.util.ListIterator list iterators}, and can be started at any
* element <em>which is in the set</em> (if the provided element
* is not in the set, a {@link NoSuchElementException} exception will be thrown).
* If, however, the provided element is not the first or last element in the
* set, the first access to the list index will require linear time, as in the worst case
* the entire set must be scanned in iteration order to retrieve the positional
* index of the starting element. If you use just the methods of a type-specific {@link
it.unimi.dsi.fastutil.BidirectionalIterator},
* however, all operations will be performed in constant time.
*
* @see Hash
* @see HashCommon
*/

public class OPEN_HASH_SET KEY_GENERIC extends ABSTRACT_SORTED_SET KEY_GENERIC
implements java.io.Serializable, Cloneable, Hash {
```

#else

#ifdef Custom

/** A type-specific hash set with a fast, small-footprint implementation whose {@linkplain it.unimi.dsi.fastutil.Hash.Strategy hashing strategy}
* is specified at creation time.
*
* <p>Instances of this class use a hash table to represent a set. The table is
* filled up to a specified load factor, and then doubled in size to
* accommodate new entries. If the table is emptied below one fourth
* of the load factor, it is halved in size; however, the table is never reduced to a
* size smaller than that at creation time: this approach makes it
* possible to create sets with a large capacity in which insertions and
* deletions do not cause immediately rehashing. Moreover, halving is
* not performed when deleting entries from an iterator, as it would interfere
* with the iteration process.
*
* <p>Note that {@link #clear()} does not modify the hash table size.
* Rather, a family of {@linkplain #trim() trimming
* methods} lets you control the size of the table; this is particularly useful
* if you reuse instances of this class.
*
* @see Hash
* @see HashCommon
*/

public class OPEN_HASH_SET KEY_GENERIC extends ABSTRACT_SET KEY_GENERIC implements java.io.Serializable, Cloneable, Hash {

#else

/** A type-specific hash set with with a fast, small-footprint implementation.
*
* <p>Instances of this class use a hash table to represent a set. The table is
* filled up to a specified load factor, and then doubled in size to
* accommodate new entries. If the table is emptied below one fourth
* of the load factor, it is halved in size; however, the table is never reduced to a
* size smaller than that at creation time: this approach makes it
* possible to create sets with a large capacity in which insertions and
* deletions do not cause immediately rehashing. Moreover, halving is
* not performed when deleting entries from an iterator, as it would interfere
* with the iteration process.
*
* <p>Note that {@link #clear()} does not modify the hash table size.
* Rather, a family of {@linkplain #trim() trimming
* methods} lets you control the size of the table; this is particularly useful

```
* if you reuse instances of this class.
*
* @see Hash
* @see HashCommon
*/

public class OPEN_HASH_SET KEY_GENERIC extends ABSTRACT_SET KEY_GENERIC implements
java.io.Serializable, Cloneable, Hash {

#endif

#endif

 private static final long serialVersionUID = 0L;
 private static final boolean ASSERTS = ASSERTS_VALUE;

 /** The array of keys. */
 protected transient KEY_GENERIC_TYPE[] key;

 /** The mask for wrapping a position counter. */
 protected transient int mask;

 /** Whether this set contains the null key. */
 protected transient boolean containsNull;

#ifdef Custom
 /** The hash strategy of this custom set. */
 protected STRATEGY KEY_SUPER_GENERIC strategy;
#endif

#ifdef Linked
 /** The index of the first entry in iteration order. It is valid iff {@link #size} is nonzero; otherwise, it contains -1. */
 protected transient int first = -1;
 /** The index of the last entry in iteration order. It is valid iff {@link #size} is nonzero; otherwise, it contains -1. */
 protected transient int last = -1;
 /** For each entry, the next and the previous entry in iteration order,
  * stored as {@code ((prev & 0xFFFFFFFFL) << 32) | (next & 0xFFFFFFFFL)}.
  * The first entry contains predecessor -1, and the last entry
  * contains successor -1. */
 protected transient long[] link;
#endif

 /** The current table size. Note that an additional element is allocated for storing the null key. */
 protected transient int n;

 /** Threshold after which we rehash. It must be the table size times {@link #f}. */
 protected transient int maxFill;
```

```
 /** We never resize below this threshold, which is the construction-time {#n}. */
 protected final transient int minN;

 /** Number of entries in the set (including the null key, if present). */
 protected int size;

 /** The acceptable load factor. */
 protected final float f;

#ifdef Custom
 /** Creates a new hash set.
  *
  * <p>The actual table size will be the least power of two greater than {@code expected}/{@code f}.
  *
  * @param expected the expected number of elements in the hash set.
  * @param f the load factor.
  * @param strategy the strategy.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public OPEN_HASH_SET(final int expected, final float f, final STRATEGY KEY_SUPER_GENERIC strategy) {
  this.strategy = strategy;
#else
 /** Creates a new hash set.
  *
  * <p>The actual table size will be the least power of two greater than {@code expected}/{@code f}.
  *
  * @param expected the expected number of elements in the hash set.
  * @param f the load factor.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public OPEN_HASH_SET(final int expected, final float f) {
#endif
  if (f <= 0 || f >= 1) throw new IllegalArgumentException("Load factor must be greater than 0 and smaller than 1");
  if (expected < 0) throw new IllegalArgumentException("The expected number of elements must be nonnegative");

  this.f = f;

  minN = n = arraySize(expected, f);
  mask = n - 1;
  maxFill = maxFill(n, f);
  key = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[n + 1];
#ifdef Linked
  link = new long[n + 1];
#endif
 }


#ifdef Custom
```

```
/** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor.
 *
 * @param expected the expected number of elements in the hash set.
 * @param strategy the strategy.
 */

public OPEN_HASH_SET(final int expected, final STRATEGY KEY_SUPER_GENERIC strategy) {
 this(expected, DEFAULT_LOAD_FACTOR, strategy);
}

#else
/** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor.
 *
 * @param expected the expected number of elements in the hash set.
 */

public OPEN_HASH_SET(final int expected) {
 this(expected, DEFAULT_LOAD_FACTOR);
}

#endif


#ifdef Custom
/** Creates a new hash set with initial expected {@link Hash#DEFAULT_INITIAL_SIZE} elements
 * and {@link Hash#DEFAULT_LOAD_FACTOR} as load factor.
 * @param strategy the strategy.
 */

public OPEN_HASH_SET(final STRATEGY KEY_SUPER_GENERIC strategy) {
this(DEFAULT_INITIAL_SIZE, DEFAULT_LOAD_FACTOR, strategy);
}
#else
/** Creates a new hash set with initial expected {@link Hash#DEFAULT_INITIAL_SIZE} elements
 * and {@link Hash#DEFAULT_LOAD_FACTOR} as load factor.
 */

public OPEN_HASH_SET() {
 this(DEFAULT_INITIAL_SIZE, DEFAULT_LOAD_FACTOR);
}
#endif


#ifdef Custom
/** Creates a new hash set copying a given collection.
 *
 * @param c a {@link Collection} to be copied into the new hash set.
 * @param f the load factor.
```

```
 * @param strategy the strategy.
 */

public OPEN_HASH_SET(final Collection<? extends KEY_GENERIC_CLASS> c, final float f, final STRATEGY
KEY_SUPER_GENERIC strategy) {
this(c.size(), f, strategy);
 addAll(c);
}
#else
/** Creates a new hash set copying a given collection.
 *
 * @param c a {@link Collection} to be copied into the new hash set.
 * @param f the load factor.
 */

public OPEN_HASH_SET(final Collection<? extends KEY_GENERIC_CLASS> c, final float f) {
 this(c.size(), f);
 addAll(c);
}
#endif



#ifdef Custom
/** Creates a new hash set  with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
 * copying a given collection.
 *
 * @param c a {@link Collection} to be copied into the new hash set.
 * @param strategy the strategy.
 */

public OPEN_HASH_SET(final Collection<? extends KEY_GENERIC_CLASS> c, final STRATEGY
KEY_SUPER_GENERIC strategy) {
 this(c, DEFAULT_LOAD_FACTOR, strategy);
}

#else
/** Creates a new hash set  with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
 * copying a given collection.
 *
 * @param c a {@link Collection} to be copied into the new hash set.
 */

public OPEN_HASH_SET(final Collection<? extends KEY_GENERIC_CLASS> c) {
 this(c, DEFAULT_LOAD_FACTOR);
}
#endif
```

```
#ifdef Custom
 /** Creates a new hash set copying a given type-specific collection.
  *
  * @param c a type-specific collection to be copied into the new hash set.
  * @param f the load factor.
  * @param strategy the strategy.
  */

 public OPEN_HASH_SET(final COLLECTION KEY_EXTENDS_GENERIC c, final float f, STRATEGY
KEY_SUPER_GENERIC strategy) {
 this(c.size(), f, strategy);
  addAll(c);
 }
#else
 /** Creates a new hash set copying a given type-specific collection.
  *
  * @param c a type-specific collection to be copied into the new hash set.
  * @param f the load factor.
  */

 public OPEN_HASH_SET(final COLLECTION KEY_EXTENDS_GENERIC c, final float f) {
  this(c.size(), f);
  addAll(c);
 }
#endif



#ifdef Custom
 /** Creates a new hash set  with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
  * copying a given type-specific collection.
  *
  * @param c a type-specific collection to be copied into the new hash set.
  * @param strategy the strategy.
  */

 public OPEN_HASH_SET(final COLLECTION KEY_EXTENDS_GENERIC c, final STRATEGY
KEY_SUPER_GENERIC strategy) {
  this(c, DEFAULT_LOAD_FACTOR, strategy);
 }
#else
 /** Creates a new hash set  with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
  * copying a given type-specific collection.
  *
  * @param c a type-specific collection to be copied into the new hash set.
  */

 public OPEN_HASH_SET(final COLLECTION KEY_EXTENDS_GENERIC c) {
```

```
  this(c, DEFAULT_LOAD_FACTOR);
 }
#endif


#ifdef Custom
 /** Creates a new hash set using elements provided by a type-specific iterator.
  *
  * @param i a type-specific iterator whose elements will fill the set.
  * @param f the load factor.
  * @param strategy the strategy.
  */

 public OPEN_HASH_SET(final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i, final float f, final
STRATEGY KEY_SUPER_GENERIC strategy) {
  this(DEFAULT_INITIAL_SIZE, f, strategy);
  while(i.hasNext()) add(i.NEXT_KEY());
 }
#else
 /** Creates a new hash set using elements provided by a type-specific iterator.
  *
  * @param i a type-specific iterator whose elements will fill the set.
  * @param f the load factor.
  */

 public OPEN_HASH_SET(final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i, final float f) {
  this(DEFAULT_INITIAL_SIZE, f);
  while(i.hasNext()) add(i.NEXT_KEY());
 }
#endif

#ifdef Custom
 /** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor using elements
provided by a type-specific iterator.
  *
  * @param i a type-specific iterator whose elements will fill the set.
  * @param strategy the strategy.
  */

 public OPEN_HASH_SET(final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i, final STRATEGY
KEY_SUPER_GENERIC strategy) {
  this(i, DEFAULT_LOAD_FACTOR, strategy);
 }
#else
 /** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor using elements
provided by a type-specific iterator.
  *
  * @param i a type-specific iterator whose elements will fill the set.
```

```
 */

 public OPEN_HASH_SET(final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i) {
  this(i, DEFAULT_LOAD_FACTOR);
 }
#endif



#if KEYS_PRIMITIVE

#ifdef Custom
 /** Creates a new hash set using elements provided by an iterator.
  *
  * @param i an iterator whose elements will fill the set.
  * @param f the load factor.
  * @param strategy the strategy.
  */

 public OPEN_HASH_SET(final Iterator<?> i, final float f, final STRATEGY KEY_SUPER_GENERIC strategy) {
  this(ITERATORS.AS_KEY_ITERATOR(i), f, strategy);
 }
#else
 /** Creates a new hash set using elements provided by an iterator.
  *
  * @param i an iterator whose elements will fill the set.
  * @param f the load factor.
  */

 public OPEN_HASH_SET(final Iterator<?> i, final float f) {
  this(ITERATORS.AS_KEY_ITERATOR(i), f);
 }

#endif



#ifdef Custom
 /** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor using elements
provided by an iterator.
  *
  * @param i an iterator whose elements will fill the set.
  * @param strategy the strategy.
  */

 public OPEN_HASH_SET(final Iterator<?> i, final STRATEGY KEY_SUPER_GENERIC strategy) {
  this(ITERATORS.AS_KEY_ITERATOR(i), strategy);
 }
#else
```

```
 /** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor using elements
provided by an iterator.
  *
  * @param i an iterator whose elements will fill the set.
  */

 public OPEN_HASH_SET(final Iterator<?> i) {
  this(ITERATORS.AS_KEY_ITERATOR(i));
 }
#endif

#endif



#ifdef Custom
 /** Creates a new hash set and fills it with the elements of a given array.
  *
  * @param a an array whose elements will be used to fill the set.
  * @param offset the first element to use.
  * @param length the number of elements to use.
  * @param f the load factor.
  * @param strategy the strategy.
  */

 public OPEN_HASH_SET(final KEY_GENERIC_TYPE[] a, final int offset, final int length, final float f, final
STRATEGY KEY_SUPER_GENERIC strategy) {
 this(length < 0 ? 0 : length, f, strategy);
  ARRAYS.ensureOffsetLength(a, offset, length);
  for(int i = 0; i < length; i++) add(a[offset + i]);
 }
#else
 /** Creates a new hash set and fills it with the elements of a given array.
  *
  * @param a an array whose elements will be used to fill the set.
  * @param offset the first element to use.
  * @param length the number of elements to use.
  * @param f the load factor.
  */

 public OPEN_HASH_SET(final KEY_GENERIC_TYPE[] a, final int offset, final int length, final float f) {
  this(length < 0 ? 0 : length, f);
  ARRAYS.ensureOffsetLength(a, offset, length);
  for(int i = 0; i < length; i++) add(a[offset + i]);
 }
#endif

#ifdef Custom
```

```
 /** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor and fills it with the elements of a given array.
  *
  * @param a an array whose elements will be used to fill the set.
  * @param offset the first element to use.
  * @param length the number of elements to use.
  * @param strategy the strategy.
  */

 public OPEN_HASH_SET(final KEY_GENERIC_TYPE[] a, final int offset, final int length, final STRATEGY KEY_SUPER_GENERIC strategy) {
  this(a, offset, length, DEFAULT_LOAD_FACTOR, strategy);
 }
#else
 /** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor and fills it with the elements of a given array.
  *
  * @param a an array whose elements will be used to fill the set.
  * @param offset the first element to use.
  * @param length the number of elements to use.
  */

 public OPEN_HASH_SET(final KEY_GENERIC_TYPE[] a, final int offset, final int length) {
  this(a, offset, length, DEFAULT_LOAD_FACTOR);
 }
#endif

#ifdef Custom
 /** Creates a new hash set copying the elements of an array.
  *
  * @param a an array to be copied into the new hash set.
  * @param f the load factor.
  * @param strategy the strategy.
  */

 public OPEN_HASH_SET(final KEY_GENERIC_TYPE[] a, final float f, final STRATEGY KEY_SUPER_GENERIC strategy) {
  this(a, 0, a.length, f, strategy);
 }
#else
 /** Creates a new hash set copying the elements of an array.
  *
  * @param a an array to be copied into the new hash set.
  * @param f the load factor.
  */

 public OPEN_HASH_SET(final KEY_GENERIC_TYPE[] a, final float f) {
  this(a, 0, a.length, f);
```

```
 }
#endif

#ifdef Custom
 /** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
  * copying the elements of an array.
  *
  * @param a an array to be copied into the new hash set.
  * @param strategy the strategy.
  */

 public OPEN_HASH_SET(final KEY_GENERIC_TYPE[] a, final STRATEGY KEY_SUPER_GENERIC
strategy) {
  this(a, DEFAULT_LOAD_FACTOR, strategy);
 }

#else
 /** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
  * copying the elements of an array.
  *
  * @param a an array to be copied into the new hash set.
  */

 public OPEN_HASH_SET(final KEY_GENERIC_TYPE[] a) {
  this(a, DEFAULT_LOAD_FACTOR);
 }

 /** Creates a new empty hash set.
  *
  * @return a new empty hash set.
  */
 public static KEY_GENERIC OPEN_HASH_SET KEY_GENERIC of() {
  return new OPEN_HASH_SET KEY_GENERIC_DIAMOND();
 }

 /** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
  * using the given element.
  *
  * @param e the element that the returned set will contain.
  * @return a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor containing {@code e}.
  */
 public static KEY_GENERIC OPEN_HASH_SET KEY_GENERIC of(final KEY_GENERIC_TYPE e) {
  OPEN_HASH_SET KEY_GENERIC result = new OPEN_HASH_SET KEY_GENERIC_DIAMOND(1,
DEFAULT_LOAD_FACTOR);
  result.add(e);
  return result;
 }
```

```
/** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
 * using the elements given.
 *
 * @param e0 the first element.
 * @param e1 the second element.
 * @return a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor containing {@code e0}
and {@code e1}.
 * @throws IllegalArgumentException if there were duplicate entries.
 */
public static KEY_GENERIC OPEN_HASH_SET KEY_GENERIC of(final KEY_GENERIC_TYPE e0, final
KEY_GENERIC_TYPE e1) {
 OPEN_HASH_SET KEY_GENERIC result = new OPEN_HASH_SET KEY_GENERIC_DIAMOND(2,
DEFAULT_LOAD_FACTOR);
 result.add(e0);
 if (!result.add(e1)) {
  throw new IllegalArgumentException("Duplicate element: " + e1);
 }
 return result;
}

/** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
 * using the elements given.
 *
 * @param e0 the first element.
 * @param e1 the second element.
 * @param e2 the third element.
 * @return a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor containing {@code e0},
{@code e1}, and {@code e2}.
 * @throws IllegalArgumentException if there were duplicate entries.
 */
public static KEY_GENERIC OPEN_HASH_SET KEY_GENERIC of(final KEY_GENERIC_TYPE e0, final
KEY_GENERIC_TYPE e1, final KEY_GENERIC_TYPE e2) {
 OPEN_HASH_SET KEY_GENERIC result = new OPEN_HASH_SET KEY_GENERIC_DIAMOND(3,
DEFAULT_LOAD_FACTOR);
 result.add(e0);
 if (!result.add(e1)) {
  throw new IllegalArgumentException("Duplicate element: " + e1);
 }
 if (!result.add(e2)) {
  throw new IllegalArgumentException("Duplicate element: " + e2);
 }
 return result;
}

/** Creates a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
 * using a list of elements.
 *
 * @param a a list of elements that will be used to initialize the new hash set.
```

```
 * @return a new hash set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor containing the elements
of {@code a}.
 * @throws IllegalArgumentException if a duplicate entry was encountered.
 */
SAFE_VARARGS
public static KEY_GENERIC OPEN_HASH_SET KEY_GENERIC of(final KEY_GENERIC_TYPE... a) {
 OPEN_HASH_SET KEY_GENERIC result = new OPEN_HASH_SET KEY_GENERIC_DIAMOND(a.length,
DEFAULT_LOAD_FACTOR);
 for (KEY_GENERIC_TYPE element : a) {
  if (!result.add(element)) {
   throw new IllegalArgumentException("Duplicate element " + element);
  }
 }
 return result;
}
#endif

#ifndef Custom
#if KEYS_INT_LONG_DOUBLE
/** Collects the result of a primitive {@code Stream} into a new hash set.
 *
 * <p>This method performs a terminal operation on the given {@code Stream}
 *
 * @apiNote Taking a primitive stream instead of returning something like a
 * {@link java.util.stream.Collector Collector} is necessary because there is no
 * primitive {@code Collector} equivalent in the Java API.
 */
public static KEY_GENERIC OPEN_HASH_SET KEY_GENERIC toSet(JDK_PRIMITIVE_STREAM stream) {
 return stream.collect(
  OPEN_HASH_SET::new,
  OPEN_HASH_SET::add,
  OPEN_HASH_SET::addAll);
}

/** Collects the result of a primitive {@code Stream} into a new hash set, potentially pre-allocated to handle the
given size.
 *
 * <p>This method performs a terminal operation on the given {@code Stream}
 *
 * @apiNote Taking a primitive stream instead returning something like a
 * {@link java.util.stream.Collector Collector} is necessary because there is no
 * primitive {@code Collector} equivalent in the Java API.
 */
public static KEY_GENERIC OPEN_HASH_SET KEY_GENERIC
toSetWithExpectedSize(JDK_PRIMITIVE_STREAM stream, int expectedSize) {
 if (expectedSize <= Hash.DEFAULT_INITIAL_SIZE) {
  // Already below default capacity. Just use all default construction instead of fiddling with atomics in
SizeDecreasingSupplier
```

```
  return toSet(stream);
 }
 return stream.collect(
  new COLLECTIONS.SizeDecreasingSupplier<
#if KEYS_REFERENCE
    K,
#endif
    OPEN_HASH_SET KEY_GENERIC>(
   expectedSize, (int size) ->
    size <= Hash.DEFAULT_INITIAL_SIZE ? new OPEN_HASH_SET KEY_GENERIC() : new OPEN_HASH_SET
KEY_GENERIC(size)),
  OPEN_HASH_SET::add,
  OPEN_HASH_SET::addAll);
}
#elif KEYS_REFERENCE
// Collector wants a function that returns the collection being added to.
private OPEN_HASH_SET KEY_GENERIC combine(OPEN_HASH_SET KEY_EXTENDS_GENERIC
toAddFrom) {
 addAll(toAddFrom);
 return this;
}

private static final Collector<KEY_TYPE, ?, OPEN_HASH_SET<KEY_TYPE>> TO_SET_COLLECTOR =
 Collector.of(
  OPEN_HASH_SET::new,
  OPEN_HASH_SET::add,
  OPEN_HASH_SET::combine
#ifndef Linked
  , Collector.Characteristics.UNORDERED
#endif
 );

/** Returns a {@link Collector} that collects a {@code Stream}'s elements into a new hash set. */
SUPPRESS_WARNINGS_KEY_UNCHECKED_RAWTYPES
public static KEY_GENERIC Collector<KEY_GENERIC_TYPE, ?, OPEN_HASH_SET KEY_GENERIC> toSet()
{
 return (Collector) TO_SET_COLLECTOR;
}

/** Returns a {@link Collector} that collects a {@code Stream}'s elements into a new hash set, potentially pre-
allocated to handle the given size. */
public static KEY_GENERIC Collector<KEY_GENERIC_TYPE, ?, OPEN_HASH_SET KEY_GENERIC>
toSetWithExpectedSize(int expectedSize) {
 if (expectedSize <= Hash.DEFAULT_INITIAL_SIZE) {
  // Already below default capacity. Just use all default construction instead of fiddling with atomics in
SizeDecreasingSupplier
  return toSet();
 }
```

```
  return Collector.of(
   new COLLECTIONS.SizeDecreasingSupplier<
#if KEYS_REFERENCE
     K,
#endif
     OPEN_HASH_SET KEY_GENERIC>(
   expectedSize, (int size) ->
    size <= Hash.DEFAULT_INITIAL_SIZE ? new OPEN_HASH_SET KEY_GENERIC() : new OPEN_HASH_SET
KEY_GENERIC(size)),
  OPEN_HASH_SET::add,
  OPEN_HASH_SET::combine
#ifndef Linked
  , Collector.Characteristics.UNORDERED
#endif
  );
 }
#endif
#endif



#ifdef Custom
 /** Returns the hashing strategy.
  *
  * @return the hashing strategy of this custom hash set.
  */

 public STRATEGY KEY_SUPER_GENERIC strategy() {
  return strategy;
 }
#endif

 private int realSize() {
  return containsNull ? size - 1 : size;
 }

 private void ensureCapacity(final int capacity) {
  final int needed = arraySize(capacity, f);
  if (needed > n) rehash(needed);
 }

 private void tryCapacity(final long capacity) {
  final int needed = (int)Math.min(1 << 30, Math.max(2, HashCommon.nextPowerOfTwo((long)Math.ceil(capacity /
f))));
  if (needed > n) rehash(needed);
 }

#if KEYS_PRIMITIVE
 @Override
```

```
 public boolean addAll(COLLECTION c) {
  if (f <= .5) ensureCapacity(c.size()); // The resulting collection will be sized for c.size() elements
  else tryCapacity(size() + c.size()); // The resulting collection will be tentatively sized for size() + c.size() elements
  return super.addAll(c);
 }
#endif

 @Override
 public boolean addAll(Collection<? extends KEY_GENERIC_CLASS> c) {
  // The resulting collection will be at least c.size() big
  if (f <= .5) ensureCapacity(c.size()); // The resulting collection will be sized for c.size() elements
  else tryCapacity(size() + c.size()); // The resulting collection will be tentatively sized for size() + c.size() elements
  return super.addAll(c);
 }


 @Override
 public boolean add(final KEY_GENERIC_TYPE k) {
  int pos;

  if (KEY_EQUALS_NULL(k)) {
   if (containsNull) return false;
#ifdef Linked
   pos = n;
#endif
   containsNull = true;
#ifdef Custom
   key[n] = k;
#endif
  }
  else {
   KEY_GENERIC_TYPE curr;
   final KEY_GENERIC_TYPE[] key = this.key;

   // The starting point.
   if (! KEY_IS_NULL(curr = key[pos = KEY2INTHASH(k) & mask])) {
    if (KEY_EQUALS_NOT_NULL(curr, k)) return false;
    while(! KEY_IS_NULL(curr = key[pos = (pos + 1) & mask]))
     if (KEY_EQUALS_NOT_NULL(curr, k)) return false;
   }
   key[pos] = k;
  }

#ifdef Linked
  if (size == 0) {
   first = last = pos;
   // Special case of SET_UPPER_LOWER(link[pos], -1, -1);
   link[pos] = -1L;
```

```
  }
  else {
   SET_NEXT(link[last], pos);
   SET_UPPER_LOWER(link[pos], last, -1);
   last = pos;
  }
#endif

  if (size++ >= maxFill) rehash(arraySize(size + 1, f));
  if (ASSERTS) checkTable();
  return true;
 }

#if KEY_CLASS_Object
 /** Add a random element if not present, get the existing value if already present.
  *
  * This is equivalent to (but faster than) doing a:
  * <pre>
  * K exist = set.get(k);
  * if (exist == null) {
  *   set.add(k);
  *   exist = k;
  * }
  * </pre>
  */
 public KEY_GENERIC_TYPE addOrGet(final KEY_GENERIC_TYPE k) {
  int pos;

  if (KEY_EQUALS_NULL(k)) {
   if (containsNull) return key [n];
#ifdef Linked
   pos = n;
#endif
   containsNull = true;
#ifdef Custom
   key [n] = k;
#endif
  }
  else {
   KEY_GENERIC_TYPE curr;
   final KEY_GENERIC_TYPE[] key = this.key;

   // The starting point.
   if (! KEY_IS_NULL(curr = key[pos = KEY2INTHASH(k) & mask])) {
    if (KEY_EQUALS_NOT_NULL(curr, k)) return curr;
    while(! KEY_IS_NULL(curr = key[pos = (pos + 1) & mask]))
     if (KEY_EQUALS_NOT_NULL(curr, k)) return curr;
   }
```

```
   key[pos] = k;
  }

#ifdef Linked
  if (size == 0) {
   first = last = pos;
   // Special case of SET_UPPER_LOWER(link[pos], -1, -1);
   link[pos] = -1L;
  }
  else {
   SET_NEXT(link[last], pos);
   SET_UPPER_LOWER(link[pos], last, -1);
   last = pos;
  }
#endif

  if (size++ >= maxFill) rehash(arraySize(size + 1, f));
  if (ASSERTS) checkTable();
  return k;
 }
#endif

 /** Shifts left entries with the specified hash code, starting at the specified position,
  * and empties the resulting free entry.
  *
  * @param pos a starting position.
  */
 protected final void shiftKeys(int pos) {
  // Shift entries with the same hash.
  int last, slot;
  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[] key = this.key;

  for(;;) {
   pos = ((last = pos) + 1) & mask;

   for(;;) {
    if (KEY_IS_NULL(curr = key[pos])) {
     key[last] = KEY_NULL;
     return;
    }
    slot = KEY2INTHASH(curr) & mask;
    if (last <= pos ? last >= slot || slot > pos : last >= slot && slot > pos) break;
    pos = (pos + 1) & mask;
   }

   key[last] = curr;
#ifdef Linked
```

```
   fixPointers(pos, last);
#endif
  }
 }

 private boolean removeEntry(final int pos) {
  size--;
#ifdef Linked
  fixPointers(pos);
#endif
  shiftKeys(pos);
  if (n > minN && size < maxFill / 4 && n > DEFAULT_INITIAL_SIZE) rehash(n / 2);
  return true;
 }

 private boolean removeNullEntry() {
  containsNull = false;
  key[n] = KEY_NULL;
  size--;
#ifdef Linked
  fixPointers(n);
#endif
  if (n > minN && size < maxFill / 4 && n > DEFAULT_INITIAL_SIZE) rehash(n / 2);
  return true;
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public boolean remove(final KEY_TYPE k) {
  if (KEY_EQUALS_NULL(KEY_GENERIC_CAST k)) {
   if (containsNull) return removeNullEntry();
   return false;
  }

  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[] key = this.key;
  int pos;

  // The starting point.
  if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH_CAST(k) & mask])) return false;
  if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return removeEntry(pos);

  while(true) {
   if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return false;
   if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return removeEntry(pos);
  }
 }
```

```
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public boolean contains(final KEY_TYPE k) {
  if (KEY_EQUALS_NULL(KEY_GENERIC_CAST k)) return containsNull;

  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[] key = this.key;
  int pos;

  // The starting point.
  if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH_CAST(k) & mask])) return false;
  if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return true;

  while(true) {
   if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return false;
   if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return true;
  }
 }

#if KEY_CLASS_Object
 /** Returns the element of this set that is equal to the given key, or {@code null}.
  * @return the element of this set that is equal to the given key, or {@code null}.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public K get(final Object k) {
  if (KEY_EQUALS_NULL(KEY_GENERIC_CAST k)) return key[n]; // This is correct independently of the value
of containsNull and of the set being custom

  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[] key = this.key;
  int pos;

  // The starting point.
  if (KEY_IS_NULL(curr = key[pos = KEY2INTHASH_CAST(k) & mask])) return null;
  if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return curr;
  // There's always an unused entry.
  while(true) {
   if (KEY_IS_NULL(curr = key[pos = (pos + 1) & mask])) return null;
   if (KEY_EQUALS_NOT_NULL_CAST(k, curr)) return curr;
  }
 }
#endif

#ifdef Linked

 /** Removes the first key in iteration order.
  * @return the first key.
  * @throws NoSuchElementException is this set is empty.
```

```
 */
public KEY_GENERIC_TYPE REMOVE_FIRST_KEY() {
 if (size == 0) throw new NoSuchElementException();
 final int pos = first;
 // Abbreviated version of fixPointers(pos)
 first = GET_NEXT(link[pos]);
 if (0 <= first) {
  // Special case of SET_PREV(link[first], -1)
  link[first] |= (-1 & 0xFFFFFFFFL) << 32;
 }
 final KEY_GENERIC_TYPE k = key[pos];
 size--;
 if (KEY_EQUALS_NULL(k)) {
  containsNull = false;
  key[n] = KEY_NULL;
 }
 else shiftKeys(pos);
 if (n > minN && size < maxFill / 4 && n > DEFAULT_INITIAL_SIZE) rehash(n / 2);
 return k;
}

/** Removes the the last key in iteration order.
 * @return the last key.
 * @throws NoSuchElementException is this set is empty.
 */
public KEY_GENERIC_TYPE REMOVE_LAST_KEY() {
 if (size == 0) throw new NoSuchElementException();
 final int pos = last;
 // Abbreviated version of fixPointers(pos)
 last = GET_PREV(link[pos]);
 if (0 <= last) {
  // Special case of SET_NEXT(link[last], -1)
  link[last] |= -1 & 0xFFFFFFFFL;
 }
 final KEY_GENERIC_TYPE k = key[pos];
 size--;
 if (KEY_EQUALS_NULL(k)) {
  containsNull = false;
  key[n] = KEY_NULL;
 }
 else shiftKeys(pos);
 if (n > minN && size < maxFill / 4 && n > DEFAULT_INITIAL_SIZE) rehash(n / 2);
 return k;
}

private void moveIndexToFirst(final int i) {
 if (size == 1 || first == i) return;
 if (last == i) {
```

```
  last = GET_PREV(link[i]);
  // Special case of SET_NEXT(link[last], -1);
  link[last] |= -1 & 0xFFFFFFFFL;
 }
 else {
  final long linki = link[i];
  final int prev = GET_PREV(linki);
  final int next = GET_NEXT(linki);
  COPY_NEXT(link[prev], linki);
  COPY_PREV(link[next], linki);
 }
 SET_PREV(link[first], i);
 SET_UPPER_LOWER(link[i], -1, first);
 first = i;
}

private void moveIndexToLast(final int i) {
 if (size == 1 ||  last == i) return;
 if (first == i) {
  first = GET_NEXT(link[i]);
  // Special case of SET_PREV(link[first], -1);
  link[first] |= (-1 & 0xFFFFFFFFL) << 32;
 }
 else {
  final long linki = link[i];
  final int prev = GET_PREV(linki);
  final int next = GET_NEXT(linki);
  COPY_NEXT(link[prev], linki);
  COPY_PREV(link[next], linki);
 }
 SET_NEXT(link[last], i);
 SET_UPPER_LOWER(link[i], last, -1);
 last = i;
}

/** Adds a key to the set; if the key is already present, it is moved to the first position of the iteration order.
 *
 * @param k the key.
 * @return true if the key was not present.
 */
public boolean addAndMoveToFirst(final KEY_GENERIC_TYPE k) {
 int pos;

 if (KEY_EQUALS_NULL(k)) {
  if (containsNull) {
   moveIndexToFirst(n);
   return false;
  }
```

```
  containsNull = true;
  pos = n;
 }
 else {
  // The starting point.
  final KEY_GENERIC_TYPE key[] = this.key;
  pos = KEY2INTHASH(k) & mask;

  // There's always an unused entry. TODO
  while(! KEY_IS_NULL(key[pos])) {
   if (KEY_EQUALS_NOT_NULL(k, key[pos])) {
    moveIndexToFirst(pos);
    return false;
   }

   pos = (pos + 1) & mask;
  }
 }

 key[pos] = k;

 if (size == 0) {
  first = last = pos;
  // Special case of SET_UPPER_LOWER(link[pos], -1, -1);
  link[pos] = -1L;
 }
 else {
  SET_PREV(link[first], pos);
  SET_UPPER_LOWER(link[pos], -1, first);
  first = pos;
 }

 if (size++ >= maxFill) rehash(arraySize(size, f));
 if (ASSERTS) checkTable();
 return true;
}

/** Adds a key to the set; if the key is already present, it is moved to the last position of the iteration order.
 *
 * @param k the key.
 * @return true if the key was not present.
 */
public boolean addAndMoveToLast(final KEY_GENERIC_TYPE k) {
 int pos;

 if (KEY_EQUALS_NULL(k)) {
  if (containsNull) {
   moveIndexToLast(n);
```

```
   return false;
  }
  containsNull = true;
  pos = n;
 }
 else {
  // The starting point.
  final KEY_GENERIC_TYPE key[] = this.key;
  pos = KEY2INTHASH(k) & mask;

  // There's always an unused entry.
  while(! KEY_IS_NULL(key[pos])) {
   if (KEY_EQUALS_NOT_NULL(k, key[pos])) {
    moveIndexToLast(pos);
    return false;
   }

   pos = (pos + 1) & mask;
  }
 }

 key[pos] = k;

 if (size == 0) {
  first = last = pos;
  // Special case of SET_UPPER_LOWER(link[pos], -1, -1);
  link[pos] = -1L;
 }
 else {
  SET_NEXT(link[last], pos);
  SET_UPPER_LOWER(link[pos], last, -1);
  last = pos;
 }

 if (size++ >= maxFill) rehash(arraySize(size, f));
 if (ASSERTS) checkTable();
 return true;
}

#endif

/* Removes all elements from this set.
 *
 * <p>To increase object reuse, this method does not change the table size.
 * If you want to reduce the table size, you must use {@link #trim()}.
 *
 */
@Override
```

```
 public void clear() {
  if (size == 0) return;
  size = 0;
  containsNull = false;
  Arrays.fill(key, KEY_NULL);
#ifdef Linked
  first = last = -1;
#endif
 }


 @Override
 public int size() {
  return size;
 }

 @Override
 public boolean isEmpty() {
  return size == 0;
 }

#ifdef Linked

 /** Modifies the {@link #link} vector so that the given entry is removed.
  * This method will complete in constant time.
  *
  * @param i the index of an entry.
  */
 protected void fixPointers(final int i) {
  if (size == 0) {
   first = last = -1;
   return;
  }
  if (first == i) {
   first = GET_NEXT(link[i]);
   if (0 <= first) {
    // Special case of SET_PREV(link[first], -1)
    link[first] |= (-1 & 0xFFFFFFFFL) << 32;
   }
   return;
  }
  if (last == i) {
   last = GET_PREV(link[i]);
   if (0 <= last) {
    // Special case of SET_NEXT(link[last], -1)
    link[last] |= -1 & 0xFFFFFFFFL;
   }
   return;
```

```
 }
 final long linki = link[i];
 final int prev = GET_PREV(linki);
 final int next = GET_NEXT(linki);
 COPY_NEXT(link[prev], linki);
 COPY_PREV(link[next], linki);
}


/** Modifies the {@link #link} vector for a shift from s to d.
 * This method will complete in constant time.
 *
 * @param s the source position.
 * @param d the destination position.
 */
protected void fixPointers(int s, int d) {
 if (size == 1) {
  first = last = d;
  // Special case of SET(link[d], -1, -1)
  link[d] = -1L;
  return;
 }
 if (first == s) {
  first = d;
  SET_PREV(link[GET_NEXT(link[s])], d);
  link[d] = link[s];
  return;
 }
 if (last == s) {
  last = d;
  SET_NEXT(link[GET_PREV(link[s])], d);
  link[d] = link[s];
  return;
 }
 final long links = link[s];
 final int prev = GET_PREV(links);
 final int next = GET_NEXT(links);
 SET_NEXT(link[prev], d);
 SET_PREV(link[next], d);
 link[d] = links;
}


/** Returns the first element of this set in iteration order.
 *
 * @return the first element in iteration order.
 */
@Override
```

```
public KEY_GENERIC_TYPE FIRST() {
 if (size == 0) throw new NoSuchElementException();
 return key[first];
}

/** Returns the last element of this set in iteration order.
 *
 * @return the last element in iteration order.
 */
@Override
public KEY_GENERIC_TYPE LAST() {
 if (size == 0) throw new NoSuchElementException();
 return key[last];
}

/** {@inheritDoc}
 * @implSpec This implementation just throws an {@link UnsupportedOperationException}.*/
@Override
public SORTED_SET KEY_GENERIC tailSet(KEY_GENERIC_TYPE from) { throw new
UnsupportedOperationException(); }

/** {@inheritDoc}
 * @implSpec This implementation just throws an {@link UnsupportedOperationException}.*/
@Override
public SORTED_SET KEY_GENERIC headSet(KEY_GENERIC_TYPE to) { throw new
UnsupportedOperationException(); }

/** {@inheritDoc}
 * @implSpec This implementation just throws an {@link UnsupportedOperationException}.*/
@Override
public SORTED_SET KEY_GENERIC subSet(KEY_GENERIC_TYPE from, KEY_GENERIC_TYPE to) { throw
new UnsupportedOperationException(); }

/** {@inheritDoc}
 * @implSpec This implementation just returns {@code null}.*/
@Override
public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return null; }


/** A list iterator over a linked set.
 *
 * <p>This class provides a list iterator over a linked hash set. The constructor runs in constant time.
 */
private final class SetIterator implements KEY_LIST_ITERATOR KEY_GENERIC {
 /** The entry that will be returned by the next call to {@link java.util.ListIterator#previous()} (or {@code null} if
no previous entry exists). */
 int prev = -1;
 /** The entry that will be returned by the next call to {@link java.util.ListIterator#next()} (or {@code null} if no
```

```
next entry exists). */
 int next = -1;
 /** The last entry that was returned (or -1 if we did not iterate or used {@link #remove()}). */
 int curr = -1;
 /** The current index (in the sense of a {@link java.util.ListIterator}). When -1, we do not know the current
index.*/
 int index = -1;

 SetIterator() {
  next = first;
  index = 0;
 }

 SetIterator(KEY_GENERIC_TYPE from) {
  if (KEY_EQUALS_NULL(from)) {
   if (OPEN_HASH_SET.this.containsNull) {
    next = GET_NEXT(link[n]);
    prev = n;
    return;
   }
   else throw new NoSuchElementException("The key " + from + " does not belong to this set.");
  }

  if (KEY_EQUALS(key[last], from)) {
   prev = last;
   index = size;
   return;
  }

  // The starting point.
  final KEY_GENERIC_TYPE key[] = OPEN_HASH_SET.this.key;
  int pos = KEY2INTHASH(from) & mask;

  // There's always an unused entry.
  while(! KEY_IS_NULL(key[pos])) {
   if (KEY_EQUALS_NOT_NULL(key[pos], from)) {
    // Note: no valid index known.
    next = GET_NEXT(link[pos]);
    prev = pos;
    return;
   }
   pos = (pos + 1) & mask;
  }
  throw new NoSuchElementException("The key " + from + " does not belong to this set.");
 }

 @Override
 public boolean hasNext() { return next != -1; }
```

```
@Override
public boolean hasPrevious() { return prev != -1; }

@Override
public KEY_GENERIC_TYPE NEXT_KEY() {
 if (! hasNext()) throw new NoSuchElementException();

 curr = next;
 next = GET_NEXT(link[curr]);
 prev = curr;

 if (index >= 0) index++;
 if (ASSERTS) assert curr == n || ! KEY_IS_NULL(key[curr]) : "Position " + curr + " is not used";
 return key[curr];
}

@Override
public KEY_GENERIC_TYPE PREV_KEY() {
 if (! hasPrevious()) throw new NoSuchElementException();

 curr = prev;
 prev = GET_PREV(link[curr]);
 next = curr;

 if (index >= 0) index--;

 return key[curr];
}

@Override
public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
 final KEY_GENERIC_TYPE key[] = OPEN_HASH_SET.this.key;
 final long link[] = OPEN_HASH_SET.this.link;

 while (next != -1) {
  curr = next;
  next = GET_NEXT(link[curr]);
  prev = curr;

  if (index >= 0) index++;
  if (ASSERTS) assert curr == n || ! KEY_IS_NULL(key[curr]) : "Position " + curr + " is not used";
  action.accept(key[curr]);
 }
}

private final void ensureIndexKnown() {
 if (index >= 0) return;
 if (prev == -1) {
```

```
   index = 0;
   return;
  }
  if (next == -1) {
   index = size;
   return;
  }
  int pos = first;
  index = 1;
  while(pos != prev) {
   pos = GET_NEXT(link[pos]);
   index++;
  }
 }

 @Override
 public int nextIndex() {
  ensureIndexKnown();
  return index;
 }

 @Override
 public int previousIndex() {
  ensureIndexKnown();
  return index - 1;
 }

 @Override
 public void remove() {
  ensureIndexKnown();
  if (curr == -1) throw new IllegalStateException();

  if (curr == prev) {
   /* If the last operation was a next(), we are removing an entry that preceeds
    * the current index, and thus we must decrement it. */
   index--;
   prev = GET_PREV(link[curr]);
  }
  else
   next = GET_NEXT(link[curr]);

  size--;
  /* Now we manually fix the pointers. Because of our knowledge of next
   * and prev, this is going to be faster than calling fixPointers(). */
  if (prev == -1) first = next;
  else
   SET_NEXT(link[prev], next);
  if (next == -1) last = prev;
```

```
  else
   SET_PREV(link[next], prev);

  int last, slot, pos = curr;
  curr = -1;

  if (pos == n) {
   OPEN_HASH_SET.this.containsNull = false;
   OPEN_HASH_SET.this.key[n] = KEY_NULL;
  }
  else {
   KEY_GENERIC_TYPE curr;
   final KEY_GENERIC_TYPE[] key = OPEN_HASH_SET.this.key;
   // We have to horribly duplicate the shiftKeys() code because we need to update next/prev.
   for(;;) {
    pos = ((last = pos) + 1) & mask;
    for(;;) {
     if (KEY_IS_NULL(curr = key[pos])) {
      key[last] = KEY_NULL;
      return;
     }
     slot = KEY2INTHASH(curr) & mask;
     if (last <= pos ? last >= slot || slot > pos : last >= slot && slot > pos) break;
     pos = (pos + 1) & mask;
    }

    key[last] = curr;
    if (next == pos) next = last;
    if (prev == pos) prev = last;
    fixPointers(pos, last);
   }
  }
 }
}

/** Returns a type-specific list iterator on the elements in this set, starting from a given element of the set.
 * Please see the class documentation for implementation details.
 *
 * @param from an element to start from.
 * @return a type-specific list iterator starting at the given element.
 * @throws IllegalArgumentException if {@code from} does not belong to the set.
 */
@Override
public KEY_LIST_ITERATOR KEY_GENERIC iterator(KEY_GENERIC_TYPE from) {
 return new SetIterator(from);
}

/** Returns a type-specific list iterator on the elements in this set, starting from the first element.
```

```
 * Please see the class documentation for implementation details.
 *
 * @return a type-specific list iterator starting at the first element.
 */
@Override
public KEY_LIST_ITERATOR KEY_GENERIC iterator() {
 return new SetIterator();
}

private static final int SPLITERATOR_CHARACTERISTICS =
SPLITERATORS.SET_SPLITERATOR_CHARACTERISTICS | java.util.Spliterator.ORDERED;

/** {@inheritDoc}
 *
 * <p>There isn't a way to split efficiently while still preserving order for a linked data structure,
 * so this implementation is just backed by the iterator. Thus, this spliterator is not well optimized
 * for parallel streams.
 *
 * <p>Note, contrary to the specification of {@link java.util.SortedSet}, this spliterator does not,
 * report {@link java.util.Spliterator#SORTED}. This is because iteration order is based on insertion
 * order, not natural ordering.
 */
@Override
public KEY_SPLITERATOR KEY_GENERIC spliterator() {
 return SPLITERATORS.asSpliterator(
  iterator(), it.unimi.dsi.fastutil.Size64.sizeOf(this), SPLITERATOR_CHARACTERISTICS);
}

@Override
public void forEach(final METHOD_ARG_KEY_CONSUMER action) {
 int curr;
 int next = first;
 while (next != -1) {
  curr = next;
  next = GET_NEXT(link[curr]);
  if (ASSERTS) assert curr == n || ! KEY_IS_NULL(key[curr]) : "Position " + curr + " is not used";
  action.accept(key[curr]);
 }
}

#else

/** An iterator over a hash set. */

private final class SetIterator implements KEY_ITERATOR KEY_GENERIC {
 /** The index of the last entry returned, if positive or zero; initially, {@link #n}. If negative, the last
  element returned was that of index {@code - pos - 1} from the {@link #wrapped} list. */
 int pos = n;
```

```
  /** The index of the last entry that has been returned (more precisely, the value of {@link #pos} if {@link #pos} is
positive,
   or {@link Integer#MIN_VALUE} if {@link #pos} is negative). It is -1 if either
   we did not return an entry yet, or the last returned entry has been removed. */
  int last = -1;
  /** A downward counter measuring how many entries must still be returned. */
  int c = size;
  /** A boolean telling us whether we should return the null key. */
  boolean mustReturnNull = OPEN_HASH_SET.this.containsNull;
  /** A lazily allocated list containing elements that have wrapped around the table because of removals. */
  ARRAY_LIST KEY_GENERIC wrapped;

  @Override
  public boolean hasNext() {
   return c != 0;
  }

  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() {
   if (! hasNext()) throw new NoSuchElementException();
   c--;
   if (mustReturnNull) {
    mustReturnNull = false;
    last = n;
    return key[n];
   }
   final KEY_GENERIC_TYPE key[] = OPEN_HASH_SET.this.key;
   for(;;) {
    if (--pos < 0) {
     // We are just enumerating elements from the wrapped list.
     last = Integer.MIN_VALUE;
     return wrapped.GET_KEY(- pos - 1);
    }
    if (! KEY_IS_NULL(key[pos])) return key[last = pos];
   }
  }


  /** Shifts left entries with the specified hash code, starting at the specified position,
   * and empties the resulting free entry.
   *
   * @param pos a starting position.
   */
  private final void shiftKeys(int pos) {
   // Shift entries with the same hash.
   int last, slot;
   KEY_GENERIC_TYPE curr;
   final KEY_GENERIC_TYPE[] key = OPEN_HASH_SET.this.key;
```

```
   for(;;) {
    pos = ((last = pos) + 1) & mask;

    for(;;) {
     if (KEY_IS_NULL(curr = key[pos])) {
      key[last] = KEY_NULL;
      return;
     }
     slot = KEY2INTHASH(curr) & mask;
     if (last <= pos ? last >= slot || slot > pos : last >= slot && slot > pos) break;
     pos = (pos + 1) & mask;
    }

    if (pos < last) { // Wrapped entry.
     if (wrapped == null) wrapped = new ARRAY_LIST KEY_GENERIC_DIAMOND(2);
     wrapped.add(key[pos]);
    }

    key[last] = curr;
   }
  }

  @Override
  public void remove() {
   if (last == -1) throw new IllegalStateException();
   if (last == n) {
    OPEN_HASH_SET.this.containsNull = false;
    OPEN_HASH_SET.this.key[n] = KEY_NULL;
   }
   else if (pos >= 0) shiftKeys(last);
   else {
    // We're removing wrapped entries.
#if KEYS_REFERENCE
    OPEN_HASH_SET.this.remove(wrapped.set(- pos - 1, null));
#else
    OPEN_HASH_SET.this.remove(wrapped.GET_KEY(- pos - 1));
#endif
    last = -1; // Note that we must not decrement size
    return;
   }

   size--;
   last = -1; // You can no longer remove this entry.
   if (ASSERTS) checkTable();
  }

  @Override
```

```
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
   final KEY_GENERIC_TYPE key[] = OPEN_HASH_SET.this.key;

   if (mustReturnNull) {
    mustReturnNull = false;
    last = n;
    action.accept(key[n]);
    c--;
   }

   while(c != 0) {
    if (--pos < 0) {
     // We are just enumerating elements from the wrapped list.
     last = Integer.MIN_VALUE;
     action.accept(wrapped.GET_KEY(- pos - 1));
     c--;
    } else if (! KEY_IS_NULL(key[pos])) {
     action.accept(key[last = pos]);
     c--;
    }
   }
  }
 }

 @Override
 public KEY_ITERATOR KEY_GENERIC iterator() {
  return new SetIterator();
 }

 private final class SetSpliterator implements KEY_SPLITERATOR KEY_GENERIC {
  private static final int POST_SPLIT_CHARACTERISTICS =
SPLITERATORS.SET_SPLITERATOR_CHARACTERISTICS & ~java.util.Spliterator.SIZED;

  /** The index (which bucket) of the next item to give to the action.
   * Unlike {@link SetIterator}, this counts up instead of down.
   */
  int pos = 0;
  /** The maximum bucket (exclusive) to iterate to */
  int max = n;
  /** An upwards counter counting how many we have given */
  int c = 0;
  /** A boolean telling us whether we should return the null key. */
  boolean mustReturnNull = OPEN_HASH_SET.this.containsNull;
  boolean hasSplit = false;


  SetSpliterator() {}
```

```
SetSpliterator(int pos, int max, boolean mustReturnNull, boolean hasSplit) {
 this.pos = pos;
 this.max = max;
 this.mustReturnNull = mustReturnNull;
 this.hasSplit = hasSplit;
}

@Override
public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
 if (mustReturnNull) {
  mustReturnNull = false;
  ++c;
  action.accept(key[n]);
  return true;
 }
 final KEY_GENERIC_TYPE key[] = OPEN_HASH_SET.this.key;
 while (pos < max) {
  if (! KEY_IS_NULL(key[pos])) {
   ++c;
   action.accept(key[pos++]);
   return true;
  } else {
   ++pos;
  }
 }
 return false;
}

@Override
public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
 final KEY_GENERIC_TYPE key[] = OPEN_HASH_SET.this.key;

 if (mustReturnNull) {
  mustReturnNull = false;
  action.accept(key[n]);
  ++c;
 }

 while (pos < max) {
  if (! KEY_IS_NULL(key[pos])) {
   action.accept(key[pos]);
   ++c;
  }
  ++pos;
 }
}

@Override
```

```
 public int characteristics() {
  return hasSplit ? POST_SPLIT_CHARACTERISTICS :
SPLITERATORS.SET_SPLITERATOR_CHARACTERISTICS;
 }

 @Override
 public long estimateSize() {
  if (!hasSplit) {
   // Root spliterator; we know how many are remaining.
   return size - c;
  } else {
   // After we split, we can no longer know exactly how many we have (or at least not efficiently).
   // (size / n) * (max - pos) aka currentTableDensity * numberOfBucketsLeft seems like a good estimate.
   return Math.min(size - c, (long)(((double)realSize() / n) * (max - pos)) + (mustReturnNull ? 1 : 0));
  }
 }

 @Override
 public SetSpliterator trySplit() {
  if (pos >= max - 1) return null;
  int retLen = (max - pos) >> 1;
  if (retLen <= 1) return null;
  int myNewPos = pos + retLen;
  int retPos = pos;
  int retMax = myNewPos;
  // Since null is returned first, and the convention is that the returned split is the prefix of elements,
  // the split will take care of returning null (if needed), and we won't return it anymore.
  SetSpliterator split = new SetSpliterator(retPos, retMax, mustReturnNull, true);
  this.pos = myNewPos;
  this.mustReturnNull = false;
  this.hasSplit = true;
  return split;
 }

 @Override
 public long skip(long n) {
  if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
  if (n == 0) return 0;
  long skipped = 0;
  if (mustReturnNull) {
   mustReturnNull = false;
   ++skipped;
   --n;
  }
  final KEY_GENERIC_TYPE key[] = OPEN_HASH_SET.this.key;
  while (pos < max && n > 0) {
   if (! KEY_IS_NULL(key[pos++])) {
    ++skipped;
```

```
   --n;
  }
 }
 return skipped;
 }
}

@Override
public KEY_SPLITERATOR KEY_GENERIC spliterator() {
 return new SetSpliterator();
}

@Override
public void forEach(final METHOD_ARG_KEY_CONSUMER action) {
 if (containsNull) action.accept(key[n]);
 final KEY_GENERIC_TYPE key[] = this.key;
 for(int pos = n; pos-- != 0; ) if (! KEY_IS_NULL(key[pos])) action.accept(key[pos]);
}

#endif


/** Rehashes this set, making the table as small as possible.
 *
 * <p>This method rehashes the table to the smallest size satisfying the
 * load factor. It can be used when the set will not be changed anymore, so
 * to optimize access speed and size.
 *
 * <p>If the table size is already the minimum possible, this method
 * does nothing.
 *
 * @return true if there was enough memory to trim the set.
 * @see #trim(int)
 */

public boolean trim() {
 return trim(size);
}


/** Rehashes this set if the table is too large.
 *
 * <p>Let <var>N</var> be the smallest table size that can hold
 * <code>max(n,{@link #size()})</code> entries, still satisfying the load factor. If the current
 * table size is smaller than or equal to <var>N</var>, this method does
 * nothing. Otherwise, it rehashes this set in a table of size
 * <var>N</var>.
 *
```

```
 * <p>This method is useful when reusing sets.  {@linkplain #clear() Clearing a
 * set} leaves the table size untouched. If you are reusing a set
 * many times, you can call this method with a typical
 * size to avoid keeping around a very large table just
 * because of a few large transient sets.
 *
 * @param n the threshold for the trimming.
 * @return true if there was enough memory to trim the set.
 * @see #trim()
 */

public boolean trim(final int n) {
 final int l = HashCommon.nextPowerOfTwo((int)Math.ceil(n / f));
 if (l >= this.n || size > maxFill(l, f)) return true;
 try {
  rehash(l);
 }
 catch(OutOfMemoryError cantDoIt) { return false; }
 return true;
}

/** Rehashes the set.
 *
 * <p>This method implements the basic rehashing strategy, and may be
 * overriden by subclasses implementing different rehashing strategies (e.g.,
 * disk-based rehashing). However, you should not override this method
 * unless you understand the internal workings of this class.
 *
 * @param newN the new size
 */

SUPPRESS_WARNINGS_KEY_UNCHECKED
protected void rehash(final int newN) {
 final KEY_GENERIC_TYPE key[] = this.key;

 final int mask = newN - 1; // Note that this is used by the hashing macro
 final KEY_GENERIC_TYPE newKey[] = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[newN + 1];

#ifdef Linked
 int i = first, prev = -1, newPrev = -1, t, pos;
 final long link[] = this.link;
 final long newLink[] = new long[newN + 1];
 first = -1;

 for(int j = size; j-- != 0;) {
  if (KEY_EQUALS_NULL(key[i])) pos = newN;
  else {
   pos = KEY2INTHASH(key[i]) & mask;
```

```
    while (! KEY_IS_NULL(newKey[pos])) pos = (pos + 1) & mask;
   }

   newKey[pos] = key[i];

   if (prev != -1) {
    SET_NEXT(newLink[newPrev], pos);
    SET_PREV(newLink[pos], newPrev);
    newPrev = pos;
   }
   else {
    newPrev = first = pos;
    // Special case of SET(newLink[pos], -1, -1);
    newLink[pos] = -1L;
   }

   t = i;
   i = GET_NEXT(link[i]);
   prev = t;
  }

  this.link = newLink;
  this.last = newPrev;
  if (newPrev != -1)
   // Special case of SET_NEXT(newLink[newPrev], -1);
   newLink[newPrev] |= -1 & 0xFFFFFFFFL;
#else
  int i = n, pos;

  for(int j = realSize(); j-- != 0;) {
   while(KEY_IS_NULL(key[--i]));
   if (! KEY_IS_NULL(newKey[pos = KEY2INTHASH(key[i]) & mask]))
    while (! KEY_IS_NULL(newKey[pos = (pos + 1) & mask]));
   newKey[pos] = key[i];
  }
#endif

  n = newN;
  this.mask = mask;
  maxFill = maxFill(n, f);
  this.key = newKey;
 }


 /** Returns a deep copy of this set.
  *
  * <p>This method performs a deep copy of this hash set; the data stored in the
  * set, however, is not cloned. Note that this makes a difference only for object keys.
```

```
 *
 *  @return a deep copy of this set.
 */
@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public OPEN_HASH_SET KEY_GENERIC clone() {
 OPEN_HASH_SET KEY_GENERIC c;
 try {
  c = (OPEN_HASH_SET KEY_GENERIC)super.clone();
 }
 catch(CloneNotSupportedException cantHappen) {
  throw new InternalError();
 }
 c.key = key.clone();
 c.containsNull = containsNull;
#ifdef Linked
 c.link = link.clone();
#endif
#ifdef Custom
 c.strategy = strategy;
#endif
 return c;
}

/** Returns a hash code for this set.
 *
 * This method overrides the generic method provided by the superclass.
 * Since {@code equals()} is not overriden, it is important
 * that the value returned by this method is the same value as
 * the one returned by the overriden method.
 *
 * @return a hash code for this set.
 */
@Override
public int hashCode() {
 int h = 0;
 for(int j = realSize(), i = 0; j-- != 0;) {
  while(KEY_IS_NULL(key[i])) i++;
#if KEYS_REFERENCE
  if (this != key[i])
#endif
   h += KEY2JAVAHASH_NOT_NULL(key[i]);
  i++;
 }

 // Zero / null have hash zero.
 return h;
}
```

```
 private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
  final KEY_ITERATOR KEY_GENERIC i = iterator();
  s.defaultWriteObject();
  for(int j = size; j-- != 0;) s.WRITE_KEY(i.NEXT_KEY());
 }


 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
  s.defaultReadObject();

  n = arraySize(size, f);
  maxFill = maxFill(n, f);
  mask = n - 1;

  final KEY_GENERIC_TYPE key[] = this.key = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[n + 1];
#ifdef Linked
  final long link[] = this.link = new long[n + 1];
  int prev = -1;
  first = last = -1;
#endif

  KEY_GENERIC_TYPE k;

  for(int i = size, pos; i-- != 0;) {

   k = KEY_GENERIC_CAST s.READ_KEY();

   if (KEY_EQUALS_NULL(k)) {
    pos = n;
    containsNull = true;
   }
   else {
    if (! KEY_IS_NULL(key[pos = KEY2INTHASH(k) & mask]))
     while (! KEY_IS_NULL(key[pos = (pos + 1) & mask]));
   }

   key[pos] = k;

#ifdef Linked
   if (first != -1) {
    SET_NEXT(link[prev], pos);
    SET_PREV(link[pos], prev);
    prev = pos;
   }
   else {
```

```
    prev = first = pos;
    // Special case of SET_PREV(newLink[pos], -1);
    link[pos] |= (-1L & 0xFFFFFFFFL) << 32;
   }
#endif
  }

#ifdef Linked
  last = prev;
  if (prev != -1)
   // Special case of SET_NEXT(link[prev], -1);
   link[prev] |= -1 & 0xFFFFFFFFL;
#endif

  if (ASSERTS) checkTable();
 }


#ifdef ASSERTS_CODE
 private void checkTable() {
  assert (n & -n) == n : "Table length is not a power of two: " + n;
  assert n == key.length - 1;
  int n = key.length - 1;
  while(n-- != 0)
   if (! KEY_IS_NULL(key[n]) && ! contains(key[n]))
    throw new AssertionError("Hash table has key " + key[n] + " marked as occupied, but the key does not belong to the
table");

#if KEYS_PRIMITIVE
  java.util.HashSet<KEY_GENERIC_CLASS> s = new java.util.HashSet<KEY_GENERIC_CLASS> ();
#else
  java.util.HashSet<Object> s = new java.util.HashSet<Object>();
#endif

  for(int i = key.length - 1; i-- != 0;)
   if (! KEY_IS_NULL(key[i]) && ! s.add(key[i])) throw new AssertionError("Key " + key[i] + " appears twice at
position " + i);

#ifdef Linked
  KEY_LIST_ITERATOR KEY_GENERIC i = iterator();
  KEY_GENERIC_TYPE k;
  n = size();
  while(n-- != 0)
   if (! contains(k = i.NEXT_KEY()))
    throw new AssertionError("Linked hash table forward enumerates key " + k + ", but the key does not belong to the
table");

  if (i.hasNext()) throw new AssertionError("Forward iterator not exhausted");
```

```
  n = size();
  if (n > 0) {
   i = iterator(LAST());
   while(n-- != 0)
    if (! contains(k = i.PREV_KEY()))
     throw new AssertionError("Linked hash table backward enumerates key " + k + ", but the key does not belong to the table");

   if (i.hasPrevious()) throw new AssertionError("Previous iterator not exhausted");
  }
#endif
 }
#else
 private void checkTable() {}
#endif

#ifdef TEST

 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#elif KEY_CLASS_Object
#ifdef Custom
  int i = r.nextInt(3);
  byte a[] = new byte[i];
  while(i-- != 0) a[i] = (byte)r.nextInt();
  return a;
#else
  return Integer.toBinaryString(r.nextInt());
#endif
#else
  return new java.io.Serializable() {};
#endif
 }


 private static final class ArrayComparator implements java.util.Comparator {
  public int compare(Object a, Object b) {
   byte[] aa = (byte[])a;
   byte[] bb = (byte[])b;
   int length = Math.min(aa.length, bb.length);
   for(int i = 0; i < length; i++) {
```

```
   if (aa[i] < bb[i]) return -1;
   if (aa[i] > bb[i]) return 1;
  }
  return aa.length == bb.length ? 0 : (aa.length < bb.length ? -1 : 1);
 }
}

private static final class MockSet extends java.util.TreeSet {
 private java.util.List list = new java.util.ArrayList();

 public MockSet(java.util.Comparator c) { super(c); }

 public boolean add(Object k) {
  if (! contains(k)) list.add(k);
  return super.add(k);
 }

 public boolean addAll(Collection c) {
  java.util.Iterator i = c.iterator();
  boolean result = false;
  while(i.hasNext()) result |= add(i.next());
  return result;
 }

 public boolean removeAll(Collection c) {
  java.util.Iterator i = c.iterator();
  boolean result = false;
  while(i.hasNext()) result |= remove(i.next());
  return result;
 }

 public boolean remove(Object k) {
  if (contains(k)) {
   int i = list.size();
   while(i-- != 0) if (comparator().compare(list.get(i), k) == 0) {
    list.remove(i);
    break;
   }
  }
  return super.remove(k);
 }

 private void justRemove(Object k) { super.remove(k); }

 public java.util.Iterator iterator() {
  return new java.util.Iterator() {
    final java.util.Iterator iterator = list.iterator();
    Object curr;
```

```
    public Object next() { return curr = iterator.next(); }
    public boolean hasNext() { return iterator.hasNext(); }
    public void remove() {
     justRemove(curr);
     iterator.remove();
    }
   };
  }
 }

 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition fp = new java.text.FieldPosition(0);

 private static String format(double d) {
  StringBuffer s = new StringBuffer();
  return format.format(d, s, fp).toString();
 }

 private static final int WARMUP_CYCLES = 12;
 private static final int NUM_RUNS = 50;
 private static final int GC_EVERY = 5;

 private static void speedTest(int n, float f, boolean comp) {
#ifndef Custom
  int i, j;
  OPEN_HASH_SET m;
#ifdef Linked
  java.util.LinkedHashSet t;
#else
  java.util.HashSet t;
#endif

  KEY_TYPE k[] = new KEY_TYPE[n];
  KEY_TYPE nk[] = new KEY_TYPE[n];
  long ns;

  for(i = 0; i < n; i++) {
   k[i] = genKey();
   nk[i] = genKey();
  }

  double totAdd = 0, totYes = 0, totNo = 0, totIter = 0, totRemYes = 0, totRemNo = 0, toStreamSum = 0, d;

  if (comp) { for(j = 0; j < NUM_RUNS; j++) {

   if ((j + 1) % GC_EVERY == 0) System.gc();

#ifdef Linked
```

```
  t = new java.util.LinkedHashSet(16);
#else
  t = new java.util.HashSet(16);
#endif

  /* We add pairs to t. */
  ns = System.nanoTime();
  for(i = 0; i < n;  i++) t.add(KEY2OBJ(k[i]));
  d = (System.nanoTime() - ns) / (double)n;
  if (j >= WARMUP_CYCLES) totAdd += d;
  System.out.print("Add: " + format(d) + "ns ");

  /* We check for pairs in t. */
  ns = System.nanoTime();
  for(i = 0; i < n;  i++) t.contains(KEY2OBJ(k[i]));
  d = (System.nanoTime() - ns) / (double)n;
  if (j >= WARMUP_CYCLES) totYes += d;
  System.out.print("Yes: " + format(d) + "ns ");

  /* We check for pairs not in t. */
  ns = System.nanoTime();
  for(i = 0; i < n;  i++) t.contains(KEY2OBJ(nk[i]));
  d = (System.nanoTime() - ns) / (double)n;
  if (j >= WARMUP_CYCLES) totNo += d;
  System.out.print("No: " + format(d) + "ns ");

  /* We iterate on t. */
  ns = System.nanoTime();
  for(java.util.Iterator it = t.iterator(); it.hasNext(); it.next());
  d = (System.nanoTime() - ns) / (double)n;
  if (j >= WARMUP_CYCLES) totIter += d;
  System.out.print("Iter: " + format(d) + "ns ");

#if KEYS_PRIMITIVE && ! KEY_CLASS_Boolean
  /* We sum on t. */
  ns = System.nanoTime();
#if KEYS_BYTE_CHAR_SHORT_FLOAT
  // Since the primitive stream has to upcast to a widened primitive, for fairness we will upcast here too
#endif
#if KEY_CLASS_Character
  ((java.util.Set<KEY_CLASS>)t).stream().MAP_TO_KEY_WIDENED(Character::charValue).sum();
#else
((java.util.Set<KEY_CLASS>)t).stream().MAP_TO_KEY_WIDENED(KEY_CLASS::KEY_WIDENED_VALUE)
.sum();
#endif
  d = (System.nanoTime() - ns) / (double)n;
  if (j >= WARMUP_CYCLES) toStreamSum += d;
  System.out.print("Stream sum: " + format(d) + "ns ");
```

```
#endif

   // Too expensive in the linked case
#ifndef Linked
   /* We delete pairs not in t. */
   ns = System.nanoTime();
   for(i = 0; i < n;  i++) t.remove(KEY2OBJ(nk[i]));
   d = (System.nanoTime() - ns) / (double)n;
   if (j >= WARMUP_CYCLES) totRemNo += d;
   System.out.print("RemNo: " + format(d) + "ns ");

   /* We delete pairs in t. */
   ns = System.nanoTime();
   for(i = 0; i < n;  i++) t.remove(KEY2OBJ(k[i]));
   d = (System.nanoTime() - ns) / (double)n;
   if (j >= WARMUP_CYCLES) totRemYes += d;
   System.out.print("RemYes: " + format(d) + "ns ");
#endif

   System.out.println();
  }

  System.out.println();
  System.out.println("java.util Add: " + format(totAdd/(j-WARMUP_CYCLES)) + "ns Yes: " + format(totYes/(j-WARMUP_CYCLES)) + "ns No: " + format(totNo/(j-WARMUP_CYCLES)) + "ns Iter: " + format(totIter/(j-WARMUP_CYCLES)) + "ns StreamSum: " + format(toStreamSum/(j-WARMUP_CYCLES)) + "ns RemNo: " + format(totRemNo/(j-WARMUP_CYCLES)) + "ns RemYes: " + format(totRemYes/(j-WARMUP_CYCLES)) + "ns");

  System.out.println();

  totAdd = totYes = totNo = totIter = totRemYes = totRemNo = toStreamSum = 0;
  }

  for(j = 0; j < NUM_RUNS; j++) {

   if ((j + 1) % GC_EVERY == 0) System.gc();

   m = new OPEN_HASH_SET(16, f);

   /* We add pairs to m. */
   ns = System.nanoTime();
   for(i = 0; i < n;  i++) m.add(k[i]);
   d = (System.nanoTime() - ns) / (double)n;
   if (j >= WARMUP_CYCLES) totAdd += d;
   System.out.print("Add: " + format(d) + "ns ");

   /* We check for pairs in m. */
```

```
    ns = System.nanoTime();
    for(i = 0; i < n;  i++) m.contains(k[i]);
    d = (System.nanoTime() - ns) / (double)n;
    if (j >= WARMUP_CYCLES) totYes += d;
    System.out.print("Yes: " + format(d) + "ns ");

    /* We check for pairs not in m. */
    ns = System.nanoTime();
    for(i = 0; i < n;  i++) m.contains(nk[i]);
    d = (System.nanoTime() - ns) / (double)n;
    if (j >= WARMUP_CYCLES) totNo += d;
    System.out.print("No: " + format(d) + "ns ");

    /* We iterate on m. */
    ns = System.nanoTime();
    for(KEY_ITERATOR it = (KEY_ITERATOR)m.iterator(); it.hasNext(); it.NEXT_KEY());
    d = (System.nanoTime() - ns) / (double)n;
    if (j >= WARMUP_CYCLES) totIter += d;
    System.out.print("Iter: " + format(d) + "ns ");

  #if KEYS_PRIMITIVE && ! KEY_CLASS_Boolean
    /* We sum on t. */
    ns = System.nanoTime();
    m.KEY_WIDENED_STREAM_METHOD().sum();
    d = (System.nanoTime() - ns) / (double)n;
    if (j >= WARMUP_CYCLES) toStreamSum += d;
    System.out.print("Stream sum: " + format(d) + "ns ");
  #endif

    // Too expensive in the linked case
  #ifndef Linked
    /* We delete pairs not in m. */
    ns = System.nanoTime();
    for(i = 0; i < n;  i++) m.remove(nk[i]);
    d = (System.nanoTime() - ns) / (double)n;
    if (j >= WARMUP_CYCLES) totRemNo += d;
    System.out.print("RemNo: " + format(d) + "ns ");

    /* We delete pairs in m. */
    ns = System.nanoTime();
    for(i = 0; i < n;  i++) m.remove(k[i]);
    d = (System.nanoTime() - ns) / (double)n;
    if (j >= WARMUP_CYCLES) totRemYes += d;
    System.out.print("RemYes: " + format(d) + "ns ");
  #endif

    System.out.println();
   }
```

```
  System.out.println();
  System.out.println("fastutil Add: " + format(totAdd/(j-WARMUP_CYCLES)) + "ns Yes: " + format(totYes/(j-WARMUP_CYCLES)) + "ns No: " + format(totNo/(j-WARMUP_CYCLES)) + "ns Iter: " + format(totIter/(j-WARMUP_CYCLES)) + "ns StreamSum: " + format(toStreamSum/(j-WARMUP_CYCLES)) + "ns RemNo: " + format(totRemNo/(j-WARMUP_CYCLES)) + "ns RemYes: " + format(totRemYes/(j-WARMUP_CYCLES)) + "ns");

  System.out.println();
#endif
 }


 private static void fatal(String msg) {
  throw new AssertionError(msg);
 }

 private static void ensure(boolean cond, String msg) {
  if (cond) return;
  fatal(msg);
 }


 private static void printProbes(OPEN_HASH_SET m) {
  long totProbes = 0;
  double totSquareProbes = 0;
  int maxProbes = 0;
  final double f = (double)m.size / m.n;
  for(int i = 0, c = 0; i < m.n; i++) {
   if (! KEY_IS_NULL(m.key[i])) c++;
   else {
    if (c != 0) {
     final long p = (c + 1) * (c + 2) / 2;
     totProbes += p;
     totSquareProbes += (double)p * p;
    }
    maxProbes = Math.max(c, maxProbes);
    c = 0;
    totProbes++;
    totSquareProbes++;
   }
  }

  final double expected = (double)totProbes / m.n;
  System.err.println("Expected probes: " + (
   3 * Math.sqrt(3) * (f / ((1 - f) * (1 - f))) + 4 / (9 * f) - 1
  ) + "; actual: " + expected + "; stddev: " + Math.sqrt(totSquareProbes / m.n - expected * expected)  + "; max probes:
```

```
" + maxProbes);
 }


 private static void runTest(int n, float f) throws Exception {
#if !defined(Custom) || KEYS_REFERENCE

  int c;
#ifdef Custom
  OPEN_HASH_SET m = new OPEN_HASH_SET(Hash.DEFAULT_INITIAL_SIZE, f,
it.unimi.dsi.fastutil.bytes.ByteArrays.HASH_STRATEGY);
#else
  OPEN_HASH_SET m = new OPEN_HASH_SET(Hash.DEFAULT_INITIAL_SIZE, f);
#endif
#ifdef Linked
#ifdef Custom
  java.util.Set t = new MockSet(new ArrayComparator());
#else
  java.util.Set t = new java.util.LinkedHashSet();
#endif
#else
#ifdef Custom
  java.util.Set t = new java.util.TreeSet(new ArrayComparator());
#else
  java.util.Set t = new java.util.HashSet();
#endif
#endif

  /* First of all, we fill t with random data. */

  for(int i=0; i<f * n;  i++) t.add(KEY2OBJ(genKey()));

  /* Now we add to m the same data */

  m.addAll(t);

  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after insertion");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after insertion");;
  printProbes(m);

  /* Now we check that m actually holds that data. */

  for(java.util.Iterator i=t.iterator(); i.hasNext();) {
   Object e = i.next();
   ensure(m.contains(e), "Error (" + seed + "): m and t differ on a key ("+e+") after insertion (iterating on t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */
```

```
 c = 0;
 for(java.util.Iterator i=m.iterator(); i.hasNext();) {
  Object e = i.next();
  c++;
  ensure(t.contains(e), "Error (" + seed + "): m and t differ on a key ("+e+") after insertion (iterating on m)");
 }

 ensure(c == t.size(), "Error (" + seed + "): m has only " + c + " keys instead of " + t.size() + " after insertion
(iterating on m)");
 /* Now we check that inquiries about random data give the same answer in m and t. For
  * m we use the polymorphic method. */

 for(int i=0; i<n;  i++) {
  KEY_TYPE T = genKey();
  ensure(m.contains(T) == t.contains(KEY2OBJ(T)), "Error (" + seed + "): divergence in keys between t and m
(polymorphic method)");
 }

 /* Again, we check that inquiries about random data give the same answer in m and t, but
  * for m we use the standard method. */

 for(int i=0; i<n;  i++) {
  KEY_TYPE T = genKey();
  ensure(m.contains(KEY2OBJ(T)) == t.contains(KEY2OBJ(T)), "Error (" + seed + "): divergence between t and m
(standard method)");
 }



 /* Now we put and remove random data in m and t, checking that the result is the same. */

 for(int i=0; i<20*n;  i++) {
  KEY_TYPE T = genKey();
  ensure(m.add(KEY2OBJ(T)) == t.add(KEY2OBJ(T)), "Error (" + seed + "): divergence in add() between t and m");
  T = genKey();
  ensure(m.remove(KEY2OBJ(T)) == t.remove(KEY2OBJ(T)), "Error (" + seed + "): divergence in remove() between
t and m");
 }

 ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after removal");;
 ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after removal");;

 /* Now we check that m actually holds that data. */

 for(java.util.Iterator i=t.iterator(); i.hasNext();) {
  Object e = i.next();
  ensure(m.contains(e), "Error (" + seed + "): m and t differ on a key ("+e+") after removal (iterating on t)");
 }
```

```
  /* Now we check that m actually holds that data, but iterating on m. */

  for(java.util.Iterator i=m.iterator(); i.hasNext();) {
   Object e = i.next();
   ensure(t.contains(e), "Error (" + seed + "): m and t differ on a key ("+e+") after removal (iterating on m)");
  }

  printProbes(m);

  /* Now we make m into an array, make it again a set and check it is OK. */
  KEY_TYPE a[] = m.TO_KEY_ARRAY();

#ifdef Custom
  ensure(new OPEN_HASH_SET(a, m.strategy()).equals(m), "Error (" + seed + "): toArray() output (or array-based
constructor) is not OK");
#else
  ensure(new OPEN_HASH_SET(a).equals(m), "Error (" + seed + "): toArray() output (or array-based constructor) is
not OK");
#endif

  /* Now we check cloning. */

  ensure(m.equals(((OPEN_HASH_SET)m).clone()), "Error (" + seed + "): m does not equal m.clone()");
  ensure(((OPEN_HASH_SET)m).clone().equals(m), "Error (" + seed + "): m.clone() does not equal m");

  /* Now test that the sets hold the same data using streams */
  {
#if KEYS_REFERENCE
   java.util.stream.Stream<KEY_TYPE> i = m.stream();
   java.util.stream.Stream<KEY_TYPE> j = t.stream();
#elif KEY_CLASS_Boolean
   java.util.stream.Stream<KEY_CLASS> i = m.stream();
   java.util.stream.Stream<KEY_CLASS> j = t.stream();
#else
   JDK_PRIMITIVE_STREAM i = m.KEY_WIDENED_STREAM_METHOD();
   java.util.stream.Stream<KEY_CLASS> j = t.stream();
#endif

#if (!defined Linked || defined Custom) && KEYS_REFERENCE
   // There is no good way to order arbitrary, non-Comparable objects in a consistent way.
   // Ordering by Object.hashCode is tempting, but can conflict (two difference objects can have the same hashCode)
   // Thus, we will dump into a JDK set, whose equals method will make sure they have the same in any order.
   java.util.Set iSet = i.collect(java.util.stream.Collectors.toSet());
   java.util.Set jSet = j.collect(java.util.stream.Collectors.toSet());
   ensure(iSet.equals(jSet), "! same contents in stream");
#else
#if !defined Linked && !KEYS_REFERENCE
```

```
    // Impose ordering to make arrays consistent even though backing data is not ordered.
    i = i.sorted();
    j = j.sorted();
#endif
#if KEYS_REFERENCE || KEY_CLASS_Boolean
    Object[] iArray = i.toArray();
    Object[] jArray = j.toArray();
#elif KEY_CLASS_Character
    int[] iArray = i.toArray();
    int[] jArray = j.mapToInt(Character::charValue).toArray();
#else
    KEY_TYPE_WIDENED[] iArray = i.toArray();
    KEY_TYPE_WIDENED[] jArray =
j.MAP_TO_KEY_WIDENED(Number::KEY_WIDENED_VALUE).toArray();
#endif
    ensure(java.util.Arrays.equals(iArray, jArray), "! sorted arrays equal");
#endif
  }

  int h = m.hashCode();

  /* Now we save and read m. */

  {
   java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
   java.io.OutputStream os = new java.io.FileOutputStream(ff);
   java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

   oos.writeObject(m);
   oos.close();

   java.io.InputStream is = new java.io.FileInputStream(ff);
   java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

   m = (OPEN_HASH_SET)ois.readObject();
   ois.close();
   ff.delete();
  }

#if !KEYS_USE_REFERENCE_EQUALITY
  ensure(m.hashCode() == h, "Error (" + seed + "): hashCode() changed after save/read");;

  printProbes(m);

  /* Now we check that m actually holds that data, but iterating on m. */

  for(java.util.Iterator i=m.iterator(); i.hasNext();) {
   Object e = i.next();
```

```
   ensure(t.contains(e), "Error (" + seed + "): m and t differ on a key ("+e+") after save/read");
  }
#else
  m.clear();
  m.addAll(t);
#endif

  /* Now we put and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();
   ensure(m.add(KEY2OBJ(T)) == t.add(KEY2OBJ(T)), "Error (" + seed + "): divergence in add() between t and m
after save/read");
   T = genKey();
   ensure(m.remove(KEY2OBJ(T)) == t.remove(KEY2OBJ(T)), "Error (" + seed + "): divergence in remove() between
t and m after save/read");
  }

  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after post-save/read removal");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after post-save/read removal");;


#ifdef Linked


  /* Now we play with iterators, but only in the linked case. */

  {
   java.util.ListIterator i, j;
   Object I, J;
   i = (java.util.ListIterator)m.iterator();
   j = new java.util.LinkedList(t).listIterator();

   for(int k = 0; k < 2*n; k++) {
    ensure(i.hasNext() == j.hasNext(), "Error (" + seed + "): divergence in hasNext()");
    ensure(i.hasPrevious() == j.hasPrevious(), "Error (" + seed + "): divergence in hasPrevious()");

    if (r.nextFloat() < .8 && i.hasNext()) {
#ifdef Custom
     ensure(m.strategy().equals(i.next(), J = j.next()), "Error (" + seed + "): divergence in next()");
#else
     ensure(i.next().equals(J = j.next()), "Error (" + seed + "): divergence in next()");
#endif
     if (r.nextFloat() < 0.5) {
      i.remove();
      j.remove();
      t.remove(J);
     }
```

```
    }
    else if (r.nextFloat() < .2 && i.hasPrevious()) {
#ifdef Custom
     ensure(m.strategy().equals(i.previous(), J = j.previous()), "Error (" + seed + "): divergence in previous()");
#else
     ensure(i.previous().equals(J = j.previous()), "Error (" + seed + "): divergence in previous()");
#endif
     if (r.nextFloat() < 0.5) {
      i.remove();
      j.remove();
      t.remove(J);
     }
    }

    ensure(i.nextIndex() == j.nextIndex(), "Error (" + seed + "): divergence in nextIndex()");
    ensure(i.previousIndex() == j.previousIndex(), "Error (" + seed + "): divergence in previousIndex()");

   }

  }

  if (t.size() > 0) {
   java.util.ListIterator i, j;
   Object J;
   j = new java.util.LinkedList(t).listIterator();
   int e = r.nextInt(t.size());
   Object from;
   do from = j.next(); while(e-- != 0);

   i = (java.util.ListIterator)m.iterator(KEY_OBJ2TYPE(from));

   for(int k = 0; k < 2*n; k++) {
    ensure(i.hasNext() == j.hasNext(), "Error (" + seed + "): divergence in hasNext() (iterator with starting point " +
from + ")");
    ensure(i.hasPrevious() == j.hasPrevious(), "Error (" + seed + "): divergence in hasPrevious() (iterator with starting
point " + from + ")");

    if (r.nextFloat() < .8 && i.hasNext()) {
#ifdef Custom
     ensure(m.strategy().equals(i.next(), J = j.next()), "Error (" + seed + "): divergence in next() (iterator with starting
point " + from + ")");
#else
     ensure(i.next().equals(J = j.next()), "Error (" + seed + "): divergence in next() (iterator with starting point " + from +
")");
#endif

     if (r.nextFloat() < 0.5) {
      i.remove();
```

```
      j.remove();
      t.remove(J);
     }
    }
    else if (r.nextFloat() < .2 && i.hasPrevious()) {
#ifdef Custom
     ensure(m.strategy().equals(i.previous(), J = j.previous()), "Error (" + seed + "): divergence in previous() (iterator with starting point " + from + ")");
#else
     ensure(i.previous().equals(J = j.previous()), "Error (" + seed + "): divergence in previous() (iterator with starting point " + from + ")");
#endif

     if (r.nextFloat() < 0.5) {
      i.remove();
      j.remove();
      t.remove(J);
     }
    }

    ensure(i.nextIndex() == j.nextIndex(), "Error (" + seed + "): divergence in nextIndex() (iterator with starting point " + from + ")");
    ensure(i.previousIndex() == j.previousIndex(), "Error (" + seed + "): divergence in previousIndex() (iterator with starting point " + from + ")");

   }

  }

  /* Now we check that m actually holds that data. */

  ensure(m.equals(t), "Error (" + seed + "): ! m.equals(t) after iteration");
  ensure(t.equals(m), "Error (" + seed + "): ! t.equals(m) after iteration");



#endif

  /* Now we take out of m everything, and check that it is empty. */

  for(java.util.Iterator i=m.iterator(); i.hasNext();) { i.next(); i.remove();}

  ensure(m.isEmpty(), "Error (" + seed + "): m is not empty (as it should be)");

#if KEY_CLASS_Integer || KEY_CLASS_Long
  m = new OPEN_HASH_SET(n, f);
  t.clear();
  int x;
```

```
/* Now we torture-test the hash table. This part is implemented only for integers and longs. */

int p = m.key.length - 1;

for(int i=0; i<p; i++) {
 for (int j=0; j<20; j++) {
  m.add(i+(r.nextInt() % 10)*p);
  m.remove(i+(r.nextInt() % 10)*p);
 }

 for (int j=-10; j<10; j++) m.remove(i+j*p);
}

t.addAll(m);

/* Now all table entries are REMOVED. */

int k = 0;
for(int i=0; i<(p*f)/10; i++) {
 for (int j=0; j<10; j++) {
  k++;
  x = i+(r.nextInt() % 10)*p;
  ensure(m.add(x) == t.add(KEY2OBJ(x)), "Error (" + seed + "): m and t differ on a key during torture-test
insertion.");
 }
}

ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after torture-test insertion");;
ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after torture-test insertion");;

for(int i=0; i<(p*f)/10; i++) {
 for (int j=0; j<10; j++) {
  x = i+(r.nextInt() % 10)*p;
  ensure(m.remove(x) == t.remove(KEY2OBJ(x)), "Error (" + seed + "): m and t differ on a key during torture-test
removal.");
 }
}

ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after torture-test removal");;
ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after torture-test removal");;

ensure(m.equals(m.clone()), "Error (" + seed + "): !m.equals(m.clone()) after torture-test removal");;
ensure(((OPEN_HASH_SET)m.clone()).equals(m), "Error (" + seed + "): !m.clone().equals(m) after torture-test
removal");;

m.trim();
```

```
  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after trim()");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after trim()");;
#endif

  System.out.println("Test OK");
  return;
#endif
 }


 public static void main(String args[]) throws Exception {
  float f = Hash.DEFAULT_LOAD_FACTOR;
  int n  = Integer.parseInt(args[1]);
  if (args.length>2) f = Float.parseFloat(args[2]);
  if (args.length > 3) r = new java.util.Random(seed = Long.parseLong(args[3]));

  try {
   if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, f, "speedComp".equals(args[0]));
   else if ("test".equals(args[0])) runTest(n, f);
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/LinkedOpenHashSet.drv
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/OpenCustomHashSet.drv
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/LinkedOpenCustomHashSet.drv
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/OpenHashSet.drv
No license file was found, but licenses were detected in source scan.

```
*
* Unless required by applicable law or agreed to in writing, software
* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/




 /** Returns the element of the given big array of specified index.
  *
  * @param array a big array.
  * @param index a position in the big array.
  * @return the element of the big array at the specified position.
  */
 public static KEY_GENERIC KEY_GENERIC_TYPE get(final KEY_GENERIC_TYPE[][] array, final long index)
{
  return array[segment(index)][displacement(index)];
 }

 /** Sets the element of the given big array of specified index.
  *
  * @param array a big array.
  * @param index a position in the big array.
  * @param value the new value for the array element at the specified position.
  */
 public static KEY_GENERIC void set(final KEY_GENERIC_TYPE[][] array, final long index,
KEY_GENERIC_TYPE value) {
  array[segment(index)][displacement(index)] = value;
 }

#if KEY_CLASS_Long || KEY_CLASS_Integer
 /** Returns the length of the given big atomic array.
  *
  * @param array a big atomic array.
  * @return the length of the given big atomic array.
  */
 public static long length(final ATOMIC_ARRAY[] array) {
  final int length = array.length;
  return length == 0 ? 0 : start(length - 1) + array[length - 1].length();
 }

 /** Returns the element of the given big atomic array of specified index.
  *
  * @param array a big atomic array.
  * @param index a position in the big atomic array.
```

```
 * @return the element of the big atomic array at the specified position.
 */
public static KEY_TYPE get(final ATOMIC_ARRAY[] array, final long index) {
 return array[segment(index)].get(displacement(index));
}

/** Sets an element of the given big atomic array to a specified value
 *
 * @param array a big atomic array.
 * @param index a position in the big atomic array.
 * @param value a new value for the element of the big atomic array at the specified position.
 */
public static void set(final ATOMIC_ARRAY[] array, final long index, KEY_TYPE value) {
 array[segment(index)].set(displacement(index), value);
}

/** Atomically sets an element of the given big atomic array to a specified value, returning the old value.
 *
 * @param array a big atomic array.
 * @param index a position in the big atomic array.
 * @param value a new value for the element of the big atomic array at the specified position.
 * @return the old value of the element of the big atomic array at the specified position.
 */
public static KEY_TYPE getAndSet(final ATOMIC_ARRAY[] array, final long index, KEY_TYPE value) {
 return array[segment(index)].getAndSet(displacement(index), value);
}

/** Atomically adds a value to an element of the given big atomic array, returning the old value.
 *
 * @param array a big atomic array.
 * @param index a position in the big atomic array.
 * @param value a value to add to the element of the big atomic array at the specified position.
 * @return the old value of the element of the big atomic array at the specified position.
 */
public static KEY_TYPE getAndAdd(final ATOMIC_ARRAY[] array, final long index, KEY_TYPE value) {
 return array[segment(index)].getAndAdd(displacement(index), value);
}

/** Atomically adds a value to an element of the given big atomic array, returning the new value.
 *
 * @param array a big atomic array.
 * @param index a position in the big atomic array.
 * @param value a value to add to the element of the big atomic array at the specified position.
 * @return the new value of the element of the big atomic array at the specified position.
 */
public static KEY_TYPE addAndGet(final ATOMIC_ARRAY[] array, final long index, KEY_TYPE value) {
 return array[segment(index)].addAndGet(displacement(index), value);
}
```

```
/** Atomically increments an element of the given big atomic array, returning the old value.
 *
 * @param array a big atomic array.
 * @param index a position in the big atomic array.
 * @return the old value of the element of the big atomic array at the specified position.
 */
public static KEY_TYPE getAndIncrement(final ATOMIC_ARRAY[] array, final long index) {
 return array[segment(index)].getAndDecrement(displacement(index));
}

/** Atomically increments an element of the given big atomic array, returning the new value.
 *
 * @param array a big atomic array.
 * @param index a position in the big atomic array.
 * @return the new value of the element of the big atomic array at the specified position.
 */
public static KEY_TYPE incrementAndGet(final ATOMIC_ARRAY[] array, final long index) {
 return array[segment(index)].incrementAndGet(displacement(index));
}

/** Atomically decrements an element of the given big atomic array, returning the old value.
 *
 * @param array a big atomic array.
 * @param index a position in the big atomic array.
 * @return the old value of the element of the big atomic array at the specified position.
 */
public static KEY_TYPE getAndDecrement(final ATOMIC_ARRAY[] array, final long index) {
 return array[segment(index)].getAndDecrement(displacement(index));
}

/** Atomically decrements an element of the given big atomic array, returning the new value.
 *
 * @param array a big atomic array.
 * @param index a position in the big atomic array.
 * @return the new value of the element of the big atomic array at the specified position.
 */
public static KEY_TYPE decrementAndGet(final ATOMIC_ARRAY[] array, final long index) {
 return array[segment(index)].decrementAndGet(displacement(index));
}

/** Atomically sets an element of the given big atomic array of specified index to specified value, given
 *  the current value is equal to a given expected value.
 *
 * @param array a big atomic array.
 * @param index a position in the big atomic array.
 * @param expected an expected value for the element of the big atomic array at the specified position.
 * @param value a new value for the element of the big atomic array at the specified position.
```

```
 * @return the element of the big atomic array at the specified position.
 */
public static boolean compareAndSet(final ATOMIC_ARRAY[] array, final long index, KEY_TYPE expected,
KEY_TYPE value) {
 return array[segment(index)].compareAndSet(displacement(index), expected, value);
}

#endif

/** Swaps the element of the given big array of specified indices.
 *
 * @param array a big array.
 * @param first a position in the big array.
 * @param second a position in the big array.
 */
public static KEY_GENERIC void swap(final KEY_GENERIC_TYPE[][] array, final long first, final long second)
{
 final KEY_GENERIC_TYPE t = array[segment(first)][displacement(first)];
 array[segment(first)][displacement(first)] = array[segment(second)][displacement(second)];
 array[segment(second)][displacement(second)] = t;
}

/** Reverses the order of the elements in the specified big array.
 *
 * @param a the big array to be reversed.
 * @return {@code a}.
 */
public static KEY_GENERIC KEY_GENERIC_TYPE[][] reverse(final KEY_GENERIC_TYPE[][] a) {
 final long length = length(a);
 for(long i = length / 2; i-- != 0;) swap(a, i, length - i- 1);
 return a;
}

#if KEYS_PRIMITIVE && ! KEY_CLASS_Boolean
/** Adds the specified increment the element of the given big array of specified index.
 *
 * @param array a big array.
 * @param index a position in the big array.
 * @param incr the increment
 */
public static void add(final KEY_GENERIC_TYPE[][] array, final long index, KEY_GENERIC_TYPE incr) {
 array[segment(index)][displacement(index)] += incr;
}

/** Multiplies by the specified factor the element of the given big array of specified index.
 *
 * @param array a big array.
 * @param index a position in the big array.
```

```
 * @param factor the factor
 */
public static void mul(final KEY_GENERIC_TYPE[][] array, final long index, KEY_GENERIC_TYPE factor) {
 array[segment(index)][displacement(index)] *= factor;
}

/** Increments the element of the given big array of specified index.
 *
 * @param array a big array.
 * @param index a position in the big array.
 */
public static void incr(final KEY_GENERIC_TYPE[][] array, final long index) {
 array[segment(index)][displacement(index)]++;
}

/** Decrements the element of the given big array of specified index.
 *
 * @param array a big array.
 * @param index a position in the big array.
 */
public static void decr(final KEY_GENERIC_TYPE[][] array, final long index) {
 array[segment(index)][displacement(index)]--;
}


#endif


/** Returns the length of the given big array.
 *
 * @param array a big array.
 * @return the length of the given big array.
 */
public static KEY_GENERIC long length(final KEY_GENERIC_TYPE[][] array) {
 final int length = array.length;
 return length == 0 ? 0 : start(length - 1) + array[length - 1].length;
}

/** Copies a big array from the specified source big array, beginning at the specified position, to the specified
position of the destination big array.
 * Handles correctly overlapping regions of the same big array.
 *
 * @param srcArray the source big array.
 * @param srcPos the starting position in the source big array.
 * @param destArray the destination big array.
 * @param destPos the starting position in the destination data.
 * @param length the number of elements to be copied.
 */
```

```
public static KEY_GENERIC void copy(final KEY_GENERIC_TYPE[][] srcArray, final long srcPos, final
KEY_GENERIC_TYPE[][] destArray, final long destPos, long length) {
 if (destPos <= srcPos) {
  int srcSegment = segment(srcPos);
  int destSegment = segment(destPos);
  int srcDispl = displacement(srcPos);
  int destDispl = displacement(destPos);

  while(length > 0) {
   final int l = (int)Math.min(length, Math.min(srcArray[srcSegment].length - srcDispl, destArray[destSegment].length
- destDispl));
   if (l == 0) throw new ArrayIndexOutOfBoundsException();
   System.arraycopy(srcArray[srcSegment], srcDispl, destArray[destSegment], destDispl, l);
   if ((srcDispl += l) == SEGMENT_SIZE) {
    srcDispl = 0;
    srcSegment++;
   }
   if ((destDispl += l) == SEGMENT_SIZE) {
    destDispl = 0;
    destSegment++;
   }
   length -= l;
  }
 }
 else {
  int srcSegment = segment(srcPos + length);
  int destSegment = segment(destPos + length);
  int srcDispl = displacement(srcPos + length);
  int destDispl = displacement(destPos + length);

  while(length > 0) {
   if (srcDispl == 0) {
    srcDispl = SEGMENT_SIZE;
    srcSegment--;
   }
   if (destDispl == 0) {
    destDispl = SEGMENT_SIZE;
    destSegment--;
   }
   final int l = (int)Math.min(length, Math.min(srcDispl, destDispl));
   if (l == 0) throw new ArrayIndexOutOfBoundsException();
   System.arraycopy(srcArray[srcSegment], srcDispl - l, destArray[destSegment], destDispl - l, l);
   srcDispl -= l;
   destDispl -= l;
   length -= l;
  }
 }
}
```

```
/** Copies a big array from the specified source big array, beginning at the specified position, to the specified position of the destination array.
 *
 * @param srcArray the source big array.
 * @param srcPos the starting position in the source big array.
 * @param destArray the destination array.
 * @param destPos the starting position in the destination data.
 * @param length the number of elements to be copied.
 */
public static KEY_GENERIC void copyFromBig(final KEY_GENERIC_TYPE[][] srcArray, final long srcPos, final KEY_GENERIC_TYPE[] destArray, int destPos, int length) {
 int srcSegment = segment(srcPos);
 int srcDispl = displacement(srcPos);

 while(length > 0) {
  final int l = Math.min(srcArray[srcSegment].length - srcDispl, length);
  if (l == 0) throw new ArrayIndexOutOfBoundsException();
  System.arraycopy(srcArray[srcSegment], srcDispl, destArray, destPos, l);
  if ((srcDispl += l) == SEGMENT_SIZE) {
   srcDispl = 0;
   srcSegment++;
  }
  destPos += l;
  length -= l;
 }
}

/** Copies an array from the specified source array, beginning at the specified position, to the specified position of the destination big array.
 *
 * @param srcArray the source array.
 * @param srcPos the starting position in the source array.
 * @param destArray the destination big array.
 * @param destPos the starting position in the destination data.
 * @param length the number of elements to be copied.
 */
public static KEY_GENERIC void copyToBig(final KEY_GENERIC_TYPE[] srcArray, int srcPos, final KEY_GENERIC_TYPE[][] destArray, final long destPos, long length) {
 int destSegment = segment(destPos);
 int destDispl = displacement(destPos);

 while(length > 0) {
  final int l = (int)Math.min(destArray[destSegment].length - destDispl, length);
  if (l == 0) throw new ArrayIndexOutOfBoundsException();
  System.arraycopy(srcArray, srcPos, destArray[destSegment], destDispl, l);
  if ((destDispl += l) == SEGMENT_SIZE) {
   destDispl = 0;
```

```
    destSegment++;
   }
   srcPos += l;
   length -= l;
  }
 }

#if KEY_CLASS_Object
 /** Turns a standard array into a big array.
  *
  * <p>Note that the returned big array might contain as a segment the original array.
  *
  * @param array an array.
  * @return a new big array with the same length and content of {@code array}.
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static <K> K[][] wrap(final K[] array) {
  if (array.length == 0 && array.getClass() == Object[].class) return KEY_GENERIC_BIG_ARRAY_CAST
BIG_ARRAYS.EMPTY_BIG_ARRAY;
  if (array.length <= SEGMENT_SIZE) {
   final K[][] bigArray = (K[][])java.lang.reflect.Array.newInstance(array.getClass(), 1);
   bigArray[0] = array;
   return bigArray;
  }
  final K[][] bigArray = (K[][])BIG_ARRAYS.newBigArray(array.getClass(), array.length);
  for(int i = 0; i < bigArray.length; i++) System.arraycopy(array, (int)start(i), bigArray[i], 0, bigArray[i].length);
  return bigArray;
 }

#else
 /** Turns a standard array into a big array.
  *
  * <p>Note that the returned big array might contain as a segment the original array.
  *
  * @param array an array.
  * @return a new big array with the same length and content of {@code array}.
  */

 public static KEY_TYPE[][] wrap(final KEY_TYPE[] array) {
  if (array.length == 0) return BIG_ARRAYS.EMPTY_BIG_ARRAY;
  if (array.length <= SEGMENT_SIZE) return new KEY_TYPE[][] { array };
  final KEY_TYPE[][] bigArray = BIG_ARRAYS.newBigArray(array.length);
  for(int i = 0; i < bigArray.length; i++) System.arraycopy(array, (int)start(i), bigArray[i], 0, bigArray[i].length);
  return bigArray;
 }
#endif
 /** Ensures that a big array can contain the given number of entries.
```

```
 *
 * <p>If you cannot foresee whether this big array will need again to be
 * enlarged, you should probably use {@code grow()} instead.
 *
 * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
 * array, which must be considered read-only after calling this method.
 *
 * @param array a big array.
 * @param length the new minimum length for this big array.
 * @return {@code array}, if it contains {@code length} entries or more; otherwise,
 * a big array with {@code length} entries whose first {@code length(array)}
 * entries are the same as those of {@code array}.
 */
 public static KEY_GENERIC KEY_GENERIC_TYPE[][] ensureCapacity(final KEY_GENERIC_TYPE[][] array,
final long length) {
  return ensureCapacity(array, length, length(array));
 }

#if KEY_CLASS_Object

 /** Forces a big array to contain the given number of entries, preserving just a part of the big array.
 *
 * <p>This method returns a new big array of the given length whose element
 * are of the same class as of those of {@code array}.
 *
 * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
 * array, which must be considered read-only after calling this method.
 *
 * @param array a big array.
 * @param length the new minimum length for this big array.
 * @param preserve the number of elements of the big array that must be preserved in case a new allocation is
necessary.
 * @return a big array with {@code length} entries whose first {@code preserve}
 * entries are the same as those of {@code array}.
 */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static KEY_GENERIC KEY_GENERIC_TYPE[][] forceCapacity(final KEY_GENERIC_TYPE[][] array,
final long length, final long preserve) {
  ensureLength(length);
  final int valid = array.length - (array.length == 0 || array.length > 0 && array[array.length - 1].length ==
SEGMENT_SIZE ? 0 : 1);
  final int baseLength = (int)((length + SEGMENT_MASK) >>> SEGMENT_SHIFT);
  final KEY_GENERIC_TYPE[][] base = java.util.Arrays.copyOf(array, baseLength);
  final Class<?> componentType = array.getClass().getComponentType();
  final int residual = (int)(length & SEGMENT_MASK);
  if (residual != 0) {
   for(int i = valid; i < baseLength - 1; i++) base[i] =
(KEY_GENERIC_TYPE[])java.lang.reflect.Array.newInstance(componentType.getComponentType(),
```

```
SEGMENT_SIZE);
   base[baseLength - 1] =
(KEY_GENERIC_TYPE[])java.lang.reflect.Array.newInstance(componentType.getComponentType(), residual);
  }
  else for(int i = valid; i < baseLength; i++) base[i] =
(KEY_GENERIC_TYPE[])java.lang.reflect.Array.newInstance(componentType.getComponentType(),
SEGMENT_SIZE);

  if (preserve - (valid * (long)SEGMENT_SIZE) > 0) copy(array, valid * (long)SEGMENT_SIZE, base, valid *
(long)SEGMENT_SIZE, preserve - (valid * (long)SEGMENT_SIZE));
  return base;
 }

 /** Ensures that a big array can contain the given number of entries, preserving just a part of the big array.
  *
  * <p>This method returns a new big array of the given length whose element
  * are of the same class as of those of {@code array}.
  *
  * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
  * array, which must be considered read-only after calling this method.
  *
  * @param array a big array.
  * @param length the new minimum length for this big array.
  * @param preserve the number of elements of the big array that must be preserved in case a new allocation is
necessary.
  * @return {@code array}, if it can contain {@code length} entries or more; otherwise,
  * a big array with {@code length} entries whose first {@code preserve}
  * entries are the same as those of {@code array}.
  */
 public static KEY_GENERIC KEY_GENERIC_TYPE[][] ensureCapacity(final KEY_GENERIC_TYPE[][] array,
final long length, final long preserve) {
  return length > length(array) ? forceCapacity(array, length, preserve) : array;
 }

#else

 /** Forces a big array to contain the given number of entries, preserving just a part of the big array.
  *
  * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
  * array, which must be considered read-only after calling this method.
  *
  * @param array a big array.
  * @param length the new minimum length for this big array.
  * @param preserve the number of elements of the big array that must be preserved in case a new allocation is
necessary.
  * @return a big array with {@code length} entries whose first {@code preserve}
  * entries are the same as those of {@code array}.
  */
```

```
 public static KEY_TYPE[][] forceCapacity(final KEY_TYPE[][] array, final long length, final long preserve) {
  ensureLength(length);
  final int valid = array.length - (array.length == 0 || array.length > 0 && array[array.length - 1].length ==
SEGMENT_SIZE ? 0 : 1);
  final int baseLength = (int)((length + SEGMENT_MASK) >>> SEGMENT_SHIFT);
  final KEY_TYPE[][] base = java.util.Arrays.copyOf(array, baseLength);
  final int residual = (int)(length & SEGMENT_MASK);
  if (residual != 0) {
   for(int i = valid; i < baseLength - 1; i++) base[i] = new KEY_TYPE[SEGMENT_SIZE];
   base[baseLength - 1] = new KEY_TYPE[residual];
  }
  else for(int i = valid; i < baseLength; i++) base[i] = new KEY_TYPE[SEGMENT_SIZE];

  if (preserve - (valid * (long)SEGMENT_SIZE) > 0) copy(array, valid * (long)SEGMENT_SIZE, base, valid *
(long)SEGMENT_SIZE, preserve - (valid * (long)SEGMENT_SIZE));
  return base;
 }

 /** Ensures that a big array can contain the given number of entries, preserving just a part of the big array.
  *
  * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
  * array, which must be considered read-only after calling this method.
  *
  * @param array a big array.
  * @param length the new minimum length for this big array.
  * @param preserve the number of elements of the big array that must be preserved in case a new allocation is
necessary.
  * @return {@code array}, if it can contain {@code length} entries or more; otherwise,
  * a big array with {@code length} entries whose first {@code preserve}
  * entries are the same as those of {@code array}.
  */
 public static KEY_TYPE[][] ensureCapacity(final KEY_TYPE[][] array, final long length, final long preserve) {
  return length > length(array) ? forceCapacity(array, length, preserve) : array;
 }

#endif

 /** Grows the given big array to the maximum between the given length and
  * the current length increased by 50%, provided that the given
  * length is larger than the current length.
  *
  * <p>If you want complete control on the big array growth, you
  * should probably use {@code ensureCapacity()} instead.
  *
  * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
  * array, which must be considered read-only after calling this method.
  *
  * @param array a big array.
```

```
  * @param length the new minimum length for this big array.
  * @return {@code array}, if it can contain {@code length}
  * entries; otherwise, a big array with
  * max({@code length},{@code length(array)}/&phi;) entries whose first
  * {@code length(array)} entries are the same as those of {@code array}.
  * */

 public static KEY_GENERIC KEY_GENERIC_TYPE[][] grow(final KEY_GENERIC_TYPE[][] array, final long
length) {
  final long oldLength = length(array);
  return length > oldLength ? grow(array, length, oldLength) : array;
 }

 /** Grows the given big array to the maximum between the given length and
  * the current length increased by 50%, provided that the given
  * length is larger than the current length, preserving just a part of the big array.
  *
  * <p>If you want complete control on the big array growth, you
  * should probably use {@code ensureCapacity()} instead.
  *
  * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
  * array, which must be considered read-only after calling this method.
  *
  * @param array a big array.
  * @param length the new minimum length for this big array.
  * @param preserve the number of elements of the big array that must be preserved in case a new allocation is
necessary.
  * @return {@code array}, if it can contain {@code length}
  * entries; otherwise, a big array with
  * max({@code length},{@code length(array)}/&phi;) entries whose first
  * {@code preserve} entries are the same as those of {@code array}.
  * */

 public static KEY_GENERIC KEY_GENERIC_TYPE[][] grow(final KEY_GENERIC_TYPE[][] array, final long
length, final long preserve) {
  final long oldLength = length(array);
  return length > oldLength ? ensureCapacity(array, Math.max(oldLength + (oldLength >> 1), length), preserve) :
array;
 }

#if KEY_CLASS_Object

 /** Trims the given big array to the given length.
  *
  * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
  * array, which must be considered read-only after calling this method.
  *
  * @param array a big array.
```

```
 * @param length the new maximum length for the big array.
 * @return {@code array}, if it contains {@code length}
 * entries or less; otherwise, a big array with
 * {@code length} entries whose entries are the same as
 * the first {@code length} entries of {@code array}.
 *
 */

public static KEY_GENERIC KEY_GENERIC_TYPE[][] trim(final KEY_GENERIC_TYPE[][] array, final long length) {
 ensureLength(length);
 final long oldLength = length(array);
 if (length >= oldLength) return array;
 final int baseLength = (int)((length + SEGMENT_MASK) >>> SEGMENT_SHIFT);
 final KEY_GENERIC_TYPE[][] base = java.util.Arrays.copyOf(array, baseLength);
 final int residual = (int)(length & SEGMENT_MASK);
 if (residual != 0) base[baseLength - 1] = ARRAYS.trim(base[baseLength - 1], residual);
 return base;
}

#else

/** Trims the given big array to the given length.
 *
 * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
 * array, which must be considered read-only after calling this method.
 *
 * @param array a big array.
 * @param length the new maximum length for the big array.
 * @return {@code array}, if it contains {@code length}
 * entries or less; otherwise, a big array with
 * {@code length} entries whose entries are the same as
 * the first {@code length} entries of {@code array}.
 *
 */

public static KEY_GENERIC KEY_GENERIC_TYPE[][] trim(final KEY_GENERIC_TYPE[][] array, final long length) {
 ensureLength(length);
 final long oldLength = length(array);
 if (length >= oldLength) return array;
 final int baseLength = (int)((length + SEGMENT_MASK) >>> SEGMENT_SHIFT);
 final KEY_TYPE[][] base = java.util.Arrays.copyOf(array, baseLength);
 final int residual = (int)(length & SEGMENT_MASK);
 if (residual != 0) base[baseLength - 1] = ARRAYS.trim(base[baseLength - 1], residual);
 return base;
}
```

```
#endif

 /** Sets the length of the given big array.
  *
  * <p><strong>Warning:</strong> the returned array might use part of the segments of the original
  * array, which must be considered read-only after calling this method.
  *
  * @param array a big array.
  * @param length the new length for the big array.
  * @return {@code array}, if it contains exactly {@code length}
  * entries; otherwise, if it contains <em>more</em> than
  * {@code length} entries, a big array with {@code length} entries
  * whose entries are the same as the first {@code length} entries of
  * {@code array}; otherwise, a big array with {@code length} entries
  * whose first {@code length(array)} entries are the same as those of
  * {@code array}.
  *
  */

 public static KEY_GENERIC KEY_GENERIC_TYPE[][] setLength(final KEY_GENERIC_TYPE[][] array, final
long length) {
  final long oldLength = length(array);
  if (length == oldLength) return array;
  if (length < oldLength) return trim(array, length);
  return ensureCapacity(array, length);
 }

 /** Returns a copy of a portion of a big array.
  *
  * @param array a big array.
  * @param offset the first element to copy.
  * @param length the number of elements to copy.
  * @return a new big array containing {@code length} elements of {@code array} starting at {@code offset}.
  */

 public static KEY_GENERIC KEY_GENERIC_TYPE[][] copy(final KEY_GENERIC_TYPE[][] array, final long
offset, final long length) {
  ensureOffsetLength(array, offset, length);
  final KEY_GENERIC_TYPE[][] a =
#if KEY_CLASS_Object
   BIG_ARRAYS.newBigArray(array, length);
#else
   BIG_ARRAYS.newBigArray(length);
#endif
  copy(array, offset, a, 0, length);
  return a;
 }
```

```
/** Returns a copy of a big array.
 *
 * @param array a big array.
 * @return a copy of {@code array}.
 */

public static KEY_GENERIC KEY_GENERIC_TYPE[][] copy(final KEY_GENERIC_TYPE[][] array) {
 final KEY_GENERIC_TYPE[][] base = array.clone();
 for(int i = base.length; i-- != 0;) base[i] = array[i].clone();
 return base;
}

/** Fills the given big array with the given value.
 *
 * <p>This method uses a backward loop. It is significantly faster than the corresponding
 * method in {@link java.util.Arrays}.
 *
 * @param array a big array.
 * @param value the new value for all elements of the big array.
 */

public static KEY_GENERIC void fill(final KEY_GENERIC_TYPE[][] array, final KEY_GENERIC_TYPE value)
{
 for(int i = array.length; i-- != 0;) java.util.Arrays.fill(array[i], value);
}

/** Fills a portion of the given big array with the given value.
 *
 * <p>If possible (i.e., {@code from} is 0) this method uses a
 * backward loop. In this case, it is significantly faster than the
 * corresponding method in {@link java.util.Arrays}.
 *
 * @param array a big array.
 * @param from the starting index of the portion to fill.
 * @param to the end index of the portion to fill.
 * @param value the new value for all elements of the specified portion of the big array.
 */

public static KEY_GENERIC void fill(final KEY_GENERIC_TYPE[][] array, final long from, long to, final
KEY_GENERIC_TYPE value) {
 final long length = length(array);
 BigArrays.ensureFromTo(length, from, to);
 if (length == 0) return; // To avoid addressing array[0]
 int fromSegment = segment(from);
 int toSegment = segment(to);
 int fromDispl = displacement(from);
 int toDispl = displacement(to);
 if (fromSegment == toSegment) {
```

```
   java.util.Arrays.fill(array[fromSegment], fromDispl, toDispl, value);
   return;
  }

  if (toDispl != 0) java.util.Arrays.fill(array[toSegment], 0, toDispl, value);
  while(--toSegment > fromSegment) java.util.Arrays.fill(array[toSegment], value);
  java.util.Arrays.fill(array[fromSegment], fromDispl, SEGMENT_SIZE, value);
 }


 /** Returns true if the two big arrays are elementwise equal.
  *
  * <p>This method uses a backward loop. It is significantly faster than the corresponding
  * method in {@link java.util.Arrays}.
  *
  * @param a1 a big array.
  * @param a2 another big array.
  * @return true if the two big arrays are of the same length, and their elements are equal.
  */

 public static KEY_GENERIC boolean equals(final KEY_GENERIC_TYPE[][] a1, final KEY_GENERIC_TYPE
a2[][]) {
  if (length(a1) != length(a2)) return false;
  int i = a1.length, j;
  KEY_GENERIC_TYPE[] t, u;
  while(i-- != 0) {
   t = a1[i];
   u = a2[i];
   j = t.length;
   while(j-- != 0) if (! KEY_EQUALS(t[j], u[j])) return false;
  }
  return true;
 }

 /* Returns a string representation of the contents of the specified big array.
  *
  * The string representation consists of a list of the big array's elements, enclosed in square brackets ("[]"). Adjacent
elements are separated by the characters ", " (a comma followed by a space). Returns "null" if {@code a} is null.
  * @param a the big array whose string representation to return.
  * @return the string representation of {@code a}.
  */

 public static KEY_GENERIC String toString(final KEY_GENERIC_TYPE[][] a) {
  if (a == null) return "null";
  final long last = length(a) - 1;
  if (last == - 1) return "[]";
  final StringBuilder b = new StringBuilder();
  b.append('[');
```

```
 for (long i = 0; ; i++) {
  b.append(String.valueOf(get(a, i)));
  if (i == last) return b.append(']').toString();
  b.append(", ");
 }
}


/** Ensures that a range given by its first (inclusive) and last (exclusive) elements fits a big array.
 *
 * <p>This method may be used whenever a big array range check is needed.
 *
 * @param a a big array.
 * @param from a start index (inclusive).
 * @param to an end index (inclusive).
 * @throws IllegalArgumentException if {@code from} is greater than {@code to}.
 * @throws ArrayIndexOutOfBoundsException if {@code from} or {@code to} are greater than the big array
length or negative.
 */
public static KEY_GENERIC void ensureFromTo(final KEY_GENERIC_TYPE[][] a, final long from, final long to)
{
 BigArrays.ensureFromTo(length(a), from, to);
}

/** Ensures that a range given by an offset and a length fits a big array.
 *
 * <p>This method may be used whenever a big array range check is needed.
 *
 * @param a a big array.
 * @param offset a start index.
 * @param length a length (the number of elements in the range).
 * @throws IllegalArgumentException if {@code length} is negative.
 * @throws ArrayIndexOutOfBoundsException if {@code offset} is negative or {@code offset}+{@code length} is
greater than the big array length.
 */
public static KEY_GENERIC void ensureOffsetLength(final KEY_GENERIC_TYPE[][] a, final long offset, final
long length) {
 BigArrays.ensureOffsetLength(length(a), offset, length);
}

/** Ensures that two big arrays are of the same length.
 *
 * @param a a big array.
 * @param b another big array.
 * @throws IllegalArgumentException if the two argument arrays are not of the same length.
 */
public static KEY_GENERIC void ensureSameLength(final KEY_GENERIC_TYPE[][] a, final
KEY_GENERIC_TYPE[][] b) {
```

```
  if (length(a) != length(b)) throw new IllegalArgumentException("Array size mismatch: " + length(a) + " != " +
length(b));
 }

 /** Shuffles the specified big array fragment using the specified pseudorandom number generator.
  *
  * @param a the big array to be shuffled.
  * @param from the index of the first element (inclusive) to be shuffled.
  * @param to the index of the last element (exclusive) to be shuffled.
  * @param random a pseudorandom number generator.
  * @return {@code a}.
  */
 public static KEY_GENERIC KEY_GENERIC_TYPE[][] shuffle(final KEY_GENERIC_TYPE[][] a, final long
from, final long to, final Random random) {
  for(long i = to - from; i-- != 0;) {
   final long p = (random.nextLong() & 0x7FFFFFFFFFFFFFFFL) % (i + 1);
   final KEY_GENERIC_TYPE t = BigArrays.get(a, from + i);
   BigArrays.set(a, from + i, BigArrays.get(a, from + p));
   BigArrays.set(a, from + p, t);
  }
  return a;
 }

 /** Shuffles the specified big array using the specified pseudorandom number generator.
  *
  * @param a the big array to be shuffled.
  * @param random a pseudorandom number generator.
  * @return {@code a}.
  */
 public static KEY_GENERIC KEY_GENERIC_TYPE[][] shuffle(final KEY_GENERIC_TYPE[][] a, final Random
random) {
  for(long i = length(a); i-- != 0;) {
   final long p = (random.nextLong() & 0x7FFFFFFFFFFFFFFFL) % (i + 1);
   final KEY_GENERIC_TYPE t = BigArrays.get(a, i);
   BigArrays.set(a, i, BigArrays.get(a, p));
   BigArrays.set(a, p, t);
  }
  return a;
 }
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/BigArraysFragment.drv
No license file was found, but licenses were detected in source scan.

```
package PACKAGE;

/** An abstract class facilitating the creation of type-specific iterators.
*
* @apiNote Presently the class hosts
* finalized versions of default delegating methods such as {@link #forEachRemaining}.
*/

public abstract class KEY_ABSTRACT_SPLITERATOR KEY_GENERIC implements KEY_SPLITERATOR
KEY_GENERIC {
 protected KEY_ABSTRACT_SPLITERATOR() {}

#if KEYS_INT_LONG_DOUBLE
 /** {@inheritDoc}
  * @implSpec This method just delegates to the interface default method,
  * as the default method, but it is final, so it cannot be overridden.
  */
 @Override
 public final boolean tryAdvance(final KEY_CONSUMER action) {
  // Java won't let delegate to java.util.Spliterator.OfInt
  return tryAdvance((JDK_PRIMITIVE_KEY_CONSUMER) action);
 }

 /** {@inheritDoc}
  * @implSpec This method just delegates to the interface default method,
  * as the default method, but it is final, so it cannot be overridden.
  */
 @Override
 public final void forEachRemaining(final KEY_CONSUMER action) {
  forEachRemaining((JDK_PRIMITIVE_KEY_CONSUMER) action);
 }
#endif
}
```

Found in path(s):

* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractSpliterator.drv
No license file was found, but licenses were detected in source scan.

```
/*
* Copyright (C) 2010-2022 Sebastiano Vigna
*
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

import it.unimi.dsi.fastutil.BigListIterator;
import it.unimi.dsi.fastutil.SafeMath;

/** A type-specific {@link BigListIterator}.
*
* @see BigListIterator
*/

public interface KEY_BIG_LIST_ITERATOR KEY_GENERIC extends KEY_BIDI_ITERATOR
KEY_GENERIC, BigListIterator<KEY_GENERIC_CLASS> {

 /**
  * Replaces the last element returned by {@link BigListIterator#next() next()} or
  * {@link BigListIterator#previous() previous()} with the specified element (optional operation).
  * @see java.util.ListIterator#set(Object)
  */

#if KEYS_REFERENCE
 @Override
#endif
 default void set(@SuppressWarnings("unused") final KEY_GENERIC_TYPE k) { throw new
UnsupportedOperationException(); }

 /**
  * Inserts the specified element into the list (optional operation).
  * @see java.util.ListIterator#add(Object)
```

```
 */

#if KEYS_REFERENCE
 @Override
#endif
 default void add(@SuppressWarnings("unused") final KEY_GENERIC_TYPE k)  { throw new
UnsupportedOperationException(); }

#if KEYS_PRIMITIVE

 /** Replaces the last element returned by {@link #next()} or {@link #previous()} with the specified element
(optional operation).
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default void set(final KEY_GENERIC_CLASS k) { set(k.KEY_VALUE()); }

 /** Inserts the specified element into the list (optional operation).
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default void add(final KEY_GENERIC_CLASS k) { add(k.KEY_VALUE()); }

#endif


 /** Skips the given number of elements.
  *
  * <p>The effect of this call is exactly the same as that of
  * calling {@link BigListIterator#next() next()} for {@code n} times (possibly stopping
  * if {@link #hasNext()} becomes false).
  *
  * @param n the number of elements to skip.
  * @return the number of elements actually skipped.
  * @see BigListIterator#next()
  */
 default long skip(final long n) {
  long i = n;
  while(i-- != 0 && hasNext()) NEXT_KEY();
  return n - i - 1;
 }

 /** Moves back for the given number of elements.
  *
  * <p>The effect of this call is exactly the same as that of
  * calling {@link BigListIterator#previous() previous()} for {@code n} times (possibly stopping
  * if {@link #hasPrevious()} becomes false).
  *
```

```
 * @param n the number of elements to skip back.
 * @return the number of elements actually skipped.
 * @see BigListIterator#previous()
 */
default long back(final long n) {
 long i = n;
 while(i-- != 0 && hasPrevious()) PREV_KEY();
 return n - i - 1;
}

/** {@inheritDoc}
 */
@Override
default int skip(int n) {
 return SafeMath.safeLongToInt(skip((long) n));
}
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/BigListIterator.drv
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/BigList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/Size64.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/BigListIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/BigSwapper.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-

jar/it/unimi/dsi/fastutil/Swapper.java
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```
/*
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*/


package PACKAGE;

#if KEY_INDEX != VALUE_INDEX && !(KEYS_REFERENCE && VALUES_REFERENCE)
import VALUE_PACKAGE.VALUE_COLLECTION;
import VALUE_PACKAGE.VALUE_ABSTRACT_COLLECTION;
import VALUE_PACKAGE.VALUE_ITERATOR;
#endif

#if KEYS_REFERENCE
import java.util.Comparator;
#else
import it.unimi.dsi.fastutil.objects.ObjectBidirectionalIterator;
#endif

/** An abstract class providing basic methods for sorted maps implementing a type-specific interface. */

public abstract class ABSTRACT_SORTED_MAP KEY_VALUE_GENERIC extends ABSTRACT_MAP
KEY_VALUE_GENERIC implements SORTED_MAP KEY_VALUE_GENERIC {

 private static final long serialVersionUID = -1773560792952436569L;

 protected ABSTRACT_SORTED_MAP() {}

 /** {@inheritDoc}
  *
  * <p>The view is backed by the sorted set returned by {@link java.util.Map#entrySet()}. Note that
  * <em>no attempt is made at caching the result of this method</em>, as this would
  * require adding some attributes that lightweight implementations would
```

```
 * not need. Subclasses may easily override this policy by calling
 * this method and caching the result, but implementors are encouraged to
 * write more efficient ad-hoc implementations.
 *
 * @return a sorted set view of the keys of this map; it may be safely cast to a type-specific interface.
 */
@Override
public SORTED_SET KEY_GENERIC keySet() {
 return new KeySet();
}

/** A wrapper exhibiting the keys of a map. */

protected class KeySet extends ABSTRACT_SORTED_SET KEY_GENERIC {
 @Override
 public boolean contains(final KEY_TYPE k) { return containsKey(k); }

 @Override
 public int size() { return ABSTRACT_SORTED_MAP.this.size(); }

 @Override
 public void clear() { ABSTRACT_SORTED_MAP.this.clear(); }

 @Override
 public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return
ABSTRACT_SORTED_MAP.this.comparator(); }

 @Override
 public KEY_GENERIC_TYPE FIRST() { return FIRST_KEY(); }

 @Override
 public KEY_GENERIC_TYPE LAST() { return LAST_KEY(); }

 @Override
 public SORTED_SET KEY_GENERIC headSet(final KEY_GENERIC_TYPE to) { return headMap(to).keySet(); }

 @Override
 public SORTED_SET KEY_GENERIC tailSet(final KEY_GENERIC_TYPE from) { return
tailMap(from).keySet(); }

 @Override
 public SORTED_SET KEY_GENERIC subSet(final KEY_GENERIC_TYPE from, final KEY_GENERIC_TYPE
to) { return subMap(from, to).keySet(); }

 @Override
 public KEY_BIDI_ITERATOR KEY_GENERIC iterator(final KEY_GENERIC_TYPE from) { return new
KeySetIterator KEY_VALUE_GENERIC_DIAMOND(ENTRYSET().iterator(new BasicEntry
KEY_VALUE_GENERIC_DIAMOND(from, VALUE_NULL))); }
```

```
 @Override
 public KEY_BIDI_ITERATOR KEY_GENERIC iterator() { return new KeySetIterator
KEY_VALUE_GENERIC_DIAMOND(SORTED_MAPS.fastIterator(ABSTRACT_SORTED_MAP.this)); }
 }

/** A wrapper exhibiting a map iterator as an iterator on keys.
 *
 * <p>To provide an iterator on keys, just create an instance of this
 * class using the corresponding iterator on entries.
 */

protected static class KeySetIterator KEY_VALUE_GENERIC implements KEY_BIDI_ITERATOR
KEY_GENERIC {
 protected final ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> i;

 public KeySetIterator(ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> i) {
  this.i = i;
 }

 @Override
 public KEY_GENERIC_TYPE NEXT_KEY() { return i.next().ENTRY_GET_KEY(); };

 @Override
 public KEY_GENERIC_TYPE PREV_KEY() { return i.previous().ENTRY_GET_KEY(); };

 @Override
 public boolean hasNext() { return i.hasNext(); }

 @Override
 public boolean hasPrevious() { return i.hasPrevious(); }
}

/** {@inheritDoc}
 *
 * <p>The view is backed by the sorted set returned by {@link java.util.Map#entrySet()}. Note that
 * <em>no attempt is made at caching the result of this method</em>, as this would
 * require adding some attributes that lightweight implementations would
 * not need. Subclasses may easily override this policy by calling
 * this method and caching the result, but implementors are encouraged to
 * write more efficient ad-hoc implementations.
 *
 * @return a type-specific collection view of the values contained in this map.
 */
@Override
public VALUE_COLLECTION VALUE_GENERIC values() {
 return new ValuesCollection();
}
```

```
 /** A wrapper exhibiting the values of a map. */
 protected class ValuesCollection extends VALUE_ABSTRACT_COLLECTION VALUE_GENERIC {
  @Override
  public VALUE_ITERATOR VALUE_GENERIC iterator() { return new ValuesIterator
KEY_VALUE_GENERIC_DIAMOND(SORTED_MAPS.fastIterator(ABSTRACT_SORTED_MAP.this)); }

  @Override
  public boolean contains(final VALUE_TYPE k) { return containsValue(k); }

  @Override
  public int size() { return ABSTRACT_SORTED_MAP.this.size(); }

  @Override
  public void clear() { ABSTRACT_SORTED_MAP.this.clear(); }
 }

 /** A wrapper exhibiting a map iterator as an iterator on values.
  *
  * <p>To provide an iterator on values, just create an instance of this
  * class using the corresponding iterator on entries.
  */

 protected static class ValuesIterator KEY_VALUE_GENERIC implements VALUE_ITERATOR
VALUE_GENERIC {
  protected final ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> i;

  public ValuesIterator(ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> i) {
   this.i = i;
  }

  @Override
  public VALUE_GENERIC_TYPE NEXT_VALUE() { return i.next().ENTRY_GET_VALUE(); };

  @Override
  public boolean hasNext() { return i.hasNext(); }
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractSortedMap.drv
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*/


package PACKAGE;

import static it.unimi.dsi.fastutil.BigArrays.copyFromBig;
import static it.unimi.dsi.fastutil.BigArrays.copyToBig;
import static it.unimi.dsi.fastutil.BigArrays.grow;
import static it.unimi.dsi.fastutil.BigArrays.trim;

import static PACKAGE.ARRAY_FRONT_CODED_LIST.count;
import static PACKAGE.ARRAY_FRONT_CODED_LIST.readInt;
import static PACKAGE.ARRAY_FRONT_CODED_LIST.writeInt;

import it.unimi.dsi.fastutil.BigArrays;
import it.unimi.dsi.fastutil.objects.AbstractObjectBigList;
import it.unimi.dsi.fastutil.objects.ObjectBigListIterator;
#if ! KEY_CLASS_Long
import it.unimi.dsi.fastutil.longs.LongBigArrays;
#endif

import java.io.Serializable;
import java.util.Iterator;
import java.util.Collection;
import java.util.NoSuchElementException;
import java.util.RandomAccess;

/** Compact storage of big lists of arrays using front-coding (also known as prefix-omission) compression.
*
* <p>This class stores immutably a big list of arrays in a single {@linkplain it.unimi.dsi.fastutil.BigArrays big
array}
* using front coding (of course, the compression will be reasonable only if
* the list is sorted lexicographically&mdash;see below). It implements an
* immutable type-specific list that returns the <var>i</var>-th array when
* calling {@link #get(long) get(<var>i</var>)}. The returned array may be
* freely modified.
*
* <p>Front-coding (also known as prefix-omission) compression is based on the idea that if the <var>i</var>-th and
the
```

```
* (<var>i</var>+1)-th array have a common prefix, we might store the length
* of the common prefix, and then the rest of the second array.
*
* <p>This approach, of course, requires that once in a while an array is
* stored entirely.  The <em>ratio</em> of a front-coded list defines how
* often this happens (once every {@link #ratio()} arrays). A higher ratio
* means more compression, but means also a longer access time, as more arrays
* have to be probed to build the result. Note that we must build an array
* every time {@link #get(long)} is called, but this class provides also methods
* that extract one of the stored arrays in a given array, reducing garbage
* collection. See the documentation of the family of {@code get()}
* methods.
*
* <p>By setting the ratio to 1 we actually disable front coding: however, we
* still have a data structure storing large list of arrays with a reduced
* overhead (just one integer per array, plus the space required for lengths).
*
* <p>Note that the typical usage of front-coded lists is under the form of
* serialized objects; usually, the data that has to be compacted is processed
* offline, and the resulting structure is stored permanently. Since the
* pointer array is not stored, the serialized format is very small.
*
* <H2>Implementation Details</H2>
*
* <p>All arrays are stored in a {@linkplain it.unimi.dsi.fastutil.BigArrays big array}. A separate array of pointers
* indexes arrays whose position is a multiple of the ratio: thus, a higher ratio
* means also less pointers.
*
* <p>More in detail, an array whose position is a multiple of the ratio is
* stored as the array length, followed by the elements of the array. The array
* length is coded by a simple variable-length list of <var>k</var>-1 bit
* blocks, where <var>k</var> is the number of bits of the underlying primitive
* type.  All other arrays are stored as follows: let {@code common} the
* length of the maximum common prefix between the array and its predecessor.
* Then we store the array length decremented by {@code common}, followed
* by {@code common}, followed by the array elements whose index is
* greater than or equal to {@code common}. For instance, if we store
* {@code foo}, {@code foobar}, {@code football} and
* {@code fool} in a front-coded character-array list with ratio 3, the
* character array will contain
*
* <pre>
* <b>3</b> f o o <b>3</b> <b>3</b> b a r <b>5</b> <b>3</b> t b a l l <b>4</b> f o o l
* </pre>
*/

public class ARRAY_FRONT_CODED_BIG_LIST extends AbstractObjectBigList<KEY_TYPE[]> implements
Serializable, Cloneable, RandomAccess {
```

```
private static final long serialVersionUID = 1L;

/** The number of arrays in the list. */
protected final long n;
/** The ratio of this front-coded list. */
protected final int ratio;
/** The big array containing the compressed arrays. */
protected final KEY_TYPE[][] array;
/** The pointers to entire arrays in the list. */
protected transient long[][] p;

/** Creates a new front-coded list containing the arrays returned by the given iterator.
 *
 * @param arrays an iterator returning arrays.
 * @param ratio the desired ratio.
 */

public ARRAY_FRONT_CODED_BIG_LIST(final Iterator<KEY_TYPE[]> arrays, final int ratio) {

 if (ratio < 1) throw new IllegalArgumentException("Illegal ratio (" + ratio + ")");

 KEY_TYPE[][] array = BIG_ARRAYS.EMPTY_BIG_ARRAY;
 long[][] p = LongBigArrays.EMPTY_BIG_ARRAY;

 KEY_TYPE[][] a = new KEY_TYPE[2][];
 long curSize = 0;
 long n = 0;
 int b = 0, length;

 while(arrays.hasNext()) {
  a[b] = arrays.next();
  length = a[b].length;

  if (n % ratio == 0) {
   p = grow(p, n / ratio + 1);
   BigArrays.set(p, n / ratio, curSize);

   array = grow(array, curSize + count(length) + length, curSize);
   curSize += writeInt(array, length, curSize);
   copyToBig(a[b], 0, array, curSize, length);
   curSize += length;
  }
  else {
   final int minLength = Math.min(a[1 - b].length, length);
   int common;
   for(common = 0; common < minLength; common++) if (a[0][common] != a[1][common]) break;
   length -= common;
```

```
   array = grow(array, curSize + count(length) + count(common) + length, curSize);
   curSize += writeInt(array, length, curSize);
   curSize += writeInt(array, common, curSize);
   copyToBig(a[b], common, array, curSize, length);
   curSize += length;
  }

  b = 1 - b;
  n++;
 }

 this.n = n;
 this.ratio = ratio;
 this.array = trim(array, curSize);
 this.p = trim(p, (n + ratio - 1) / ratio);

}

/** Creates a new front-coded list containing the arrays in the given collection.
 *
 * @param c a collection containing arrays.
 * @param ratio the desired ratio.
 */

public ARRAY_FRONT_CODED_BIG_LIST(final Collection<KEY_TYPE[]> c, final int ratio) {
 this(c.iterator(), ratio);
}



public int ratio() {
 return ratio;
}



/** Computes the length of the array at the given index.
 *
 * <p>This private version of {@link #arrayLength(long)} does not check its argument.
 *
 * @param index an index.
 * @return the length of the {@code index}-th array.
 */
private int length(final long index) {
 final KEY_TYPE[][] array = this.array;
 final int delta = (int)(index % ratio); // The index into the p array, and the delta inside the block.

 long pos = BigArrays.get(p, index / ratio); // The position into the array of the first entire word before the index-th.
```

```
  int length = readInt(array, pos);

  if (delta == 0) return length;

  // First of all, we recover the array length and the maximum amount of copied elements.
  int common;
  pos += count(length) + length;
  length = readInt(array, pos);
  common = readInt(array, pos + count(length));

  for(int i = 0; i < delta - 1; i++) {
   pos += count(length) + count(common) + length;
   length = readInt(array, pos);
   common = readInt(array, pos + count(length));
  }

  return length + common;
 }


 /** Computes the length of the array at the given index.
  *
  * @param index an index.
  * @return the length of the {@code index}-th array.
  */
 public int arrayLength(final long index) {
  ensureRestrictedIndex(index);
  return length(index);
 }

 /** Extracts the array at the given index.
  *
  * @param index an index.
  * @param a the array that will store the result (we assume that it can hold the result).
  * @param offset an offset into {@code a} where elements will be store.
  * @param length a maximum number of elements to store in {@code a}.
  * @return the length of the extracted array.
  */
 private int extract(final long index, final KEY_TYPE a[], final int offset, final int length) {
  final int delta = (int)(index % ratio); // The delta inside the block.
  final long startPos = BigArrays.get(p, index / ratio); // The position into the array of the first entire word before the
index-th.
  long pos, prevArrayPos;
  int arrayLength = readInt(array, pos = startPos), currLen = 0, actualCommon;

  if (delta == 0) {
   pos = BigArrays.get(p, index / ratio) + count(arrayLength);
   copyFromBig(array, pos, a, offset, Math.min(length, arrayLength));
```

```
  return arrayLength;
 }

 int common = 0;

 for(int i = 0; i < delta; i++) {
  prevArrayPos = pos + count(arrayLength) + (i != 0 ? count(common) : 0);
  pos = prevArrayPos + arrayLength;

  arrayLength = readInt(array, pos);
  common = readInt(array, pos + count(arrayLength));

  actualCommon = Math.min(common, length);
  if (actualCommon <= currLen) currLen = actualCommon;
  else {
   copyFromBig(array, prevArrayPos, a, currLen + offset, actualCommon - currLen);
   currLen = actualCommon;
  }
 }

 if (currLen < length) copyFromBig(array, pos + count(arrayLength) + count(common), a, currLen + offset,
Math.min(arrayLength, length - currLen));

 return arrayLength + common;
}

/** {@inheritDoc}
 * @implSpec This implementation delegates to {@link #getArray(long)}. */
@Override
public KEY_TYPE[] get(final long index) {
 return getArray(index);
}

/** Returns an array stored in this front-coded list.
 *
 * @param index an index.
 * @return the corresponding array stored in this front-coded list.
 */
public KEY_TYPE[] getArray(final long index) {
 ensureRestrictedIndex(index);
 final int length = length(index);
 final KEY_TYPE a[] = new KEY_TYPE[length];
 extract(index, a, 0, length);
 return a;
}

/** Stores in the given array elements from an array stored in this front-coded list.
 *
```

```
 * @param index an index.
 * @param a the array that will store the result.
 * @param offset an offset into {@code a} where elements will be store.
 * @param length a maximum number of elements to store in {@code a}.
 * @return if {@code a} can hold the extracted elements, the number of extracted elements;
 * otherwise, the number of remaining elements with the sign changed.
 */
public int get(final long index, final KEY_TYPE[] a, final int offset, final int length) {
 ensureRestrictedIndex(index);
 ARRAYS.ensureOffsetLength(a, offset, length);

 final int arrayLength = extract(index, a, offset, length);
 if (length >= arrayLength) return arrayLength;
 return length - arrayLength;
}

/** Stores in the given array an array stored in this front-coded list.
 *
 * @param index an index.
 * @param a the array that will store the content of the result (we assume that it can hold the result).
 * @return if {@code a} can hold the extracted elements, the number of extracted elements;
 * otherwise, the number of remaining elements with the sign changed.
 */
public int get(final long index, final KEY_TYPE[] a) {
 return get(index, a, 0, a.length);
}

@Override
public long size64() {
 return n;
}

@Override
public ObjectBigListIterator<KEY_TYPE[]> listIterator(final long start) {
 ensureIndex(start);

 return new ObjectBigListIterator<KEY_TYPE[]>() {
   KEY_TYPE s[] = ARRAYS.EMPTY_ARRAY;
   long i = 0;
   long pos = 0;
   boolean inSync; // Whether the current value in a is the string just before the next to be produced.

   {
    if (start != 0) {
     if (start == n) i = start; // If we start at the end, we do nothing.
     else {
      pos = BigArrays.get(p, start / ratio);
      int j = (int)(start % ratio);
```

```
   i = start - j;
   while(j-- != 0) next();
  }
 }
}

@Override
public boolean hasNext() {
 return i < n;
}

@Override
public boolean hasPrevious() {
 return i > 0;
}

@Override
public long previousIndex() {
 return i - 1;
}

@Override
public long nextIndex() {
 return i;
}

@Override
public KEY_TYPE[] next() {
 int length, common;

 if (! hasNext()) throw new NoSuchElementException();

 if (i % ratio == 0) {
  pos = BigArrays.get(p, i / ratio);
  length = readInt(array, pos);
  s = ARRAYS.ensureCapacity(s, length, 0);
  copyFromBig(array, pos + count(length), s, 0, length);
  pos += length + count(length);
  inSync = true;
 }
 else {
  if (inSync) {
   length = readInt(array, pos);
   common = readInt(array, pos + count(length));
   s = ARRAYS.ensureCapacity(s, length + common, common);
   copyFromBig(array, pos + count(length) + count (common), s, common, length);
   pos += count(length) + count(common) + length;
   length += common;
```

```
     }
     else {
      s = ARRAYS.ensureCapacity(s, length = length(i), 0);
      extract(i, s, 0, length);
     }
    }
   i++;
   return ARRAYS.copy(s, 0, length);
  }

  @Override
  public KEY_TYPE[] previous() {
   if (! hasPrevious()) throw new NoSuchElementException();
   inSync = false;
   return getArray(--i);
  }
 };
}


/** Returns a copy of this list.
 *
 *  @return a copy of this list.
 */
@Override
public ARRAY_FRONT_CODED_BIG_LIST clone() {
 return this;
}

@Override
public String toString() {
 final StringBuffer s = new StringBuffer();
 s.append("[");
 for(long i = 0; i < n; i++) {
  if (i != 0) s.append(", ");
  s.append(ARRAY_LIST.wrap(getArray(i)).toString());
 }
 s.append("]");
 return s.toString();
}

/** Computes the pointer big array using the currently set ratio, number of elements and underlying array.
 *
 * @return the computed pointer big array.
 */

protected long[][] rebuildPointerArray() {
 final long[][] p = LongBigArrays.newBigArray((n + ratio - 1) / ratio);
```

```
  final KEY_TYPE a[][] = array;
  int length, count;
  long pos = 0;
  int skip = ratio - 1;
  for(long i = 0, j = 0; i < n; i++) {
   length = readInt(a, pos);
   count = count(length);
   if (++skip == ratio) {
    skip = 0;
    BigArrays.set(p, j++, pos);
    pos += count + length;
   }
   else pos += count + count(readInt(a, pos + count)) + length;
  }

  return p;
 }

 public void dump(java.io.DataOutputStream array, java.io.DataOutputStream pointers) throws java.io.IOException
{
  for(KEY_TYPE[] s: this.array)
   for(KEY_TYPE e :s)
    array.WRITE_KEY(e);

  for(long[] s: p)
   for(long e: s)
    pointers.writeLong(e);
 }

 private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
  s.defaultReadObject();

  // Rebuild pointer array
  p = rebuildPointerArray();
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/ArrayFrontCodedBigList.drv
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*/


package PACKAGE;

/** A type-specific mutable {@link it.unimi.dsi.fastutil.Pair Pair}; provides some additional methods that use
polymorphism to avoid (un)boxing. */

public class MUTABLE_PAIR KEY_VALUE_GENERIC implements PAIR KEY_VALUE_GENERIC,
java.io.Serializable {
 private static final long serialVersionUID = 0L;

 protected KEY_GENERIC_TYPE left;
 protected VALUE_GENERIC_TYPE right;

 /** Creates a new type-specific mutable {@link it.unimi.dsi.fastutil.Pair Pair} with given left and right value.
  * @param left the left value.
  * @param right the right value.
  */
 public MUTABLE_PAIR(final KEY_GENERIC_TYPE left, final VALUE_GENERIC_TYPE right) {
  this.left = left;
  this.right = right;
 }

 /** Returns a new type-specific mutable {@link it.unimi.dsi.fastutil.Pair Pair} with given left and right value.
  * @param left the left value.
  * @param right the right value.
  *
  * @implSpec This factory method delegates to the constructor.
  */
 public static KEY_VALUE_GENERIC MUTABLE_PAIR KEY_VALUE_GENERIC of(final
KEY_GENERIC_TYPE left, final VALUE_GENERIC_TYPE right) {
  return new MUTABLE_PAIR KEY_VALUE_GENERIC(left, right);
 }

 @Override
 public KEY_GENERIC_TYPE PAIR_LEFT() {
  return left;
 }
```

```
 @Override
 public MUTABLE_PAIR KEY_VALUE_GENERIC left(final KEY_GENERIC_TYPE l) {
  left = l;
  return this;
 }

 @Override
 public VALUE_GENERIC_TYPE PAIR_RIGHT() {
  return right;
 }

 @Override
 public MUTABLE_PAIR KEY_VALUE_GENERIC right(final VALUE_GENERIC_TYPE r) {
  right = r;
  return this;
 }


 @Override
 @SuppressWarnings("rawtypes")
 public boolean equals(Object other) {
  if (other == null) return false;

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  if (other instanceof PAIR) {
   return

#if KEY_CLASS_Object
 java.util.Objects.equals(left, ((PAIR)other).PAIR_LEFT())
#else
 left == ((PAIR)other).PAIR_LEFT()
#endif
#if VALUE_CLASS_Object
 && java.util.Objects.equals(right, ((PAIR)other).PAIR_RIGHT());
#else
 && right == ((PAIR)other).PAIR_RIGHT();
#endif
  }
#endif

  if (other instanceof it.unimi.dsi.fastutil.Pair) {
   return
#if KEYS_USE_REFERENCE_EQUALITY
 left == ((it.unimi.dsi.fastutil.Pair)other).left()
#else
 java.util.Objects.equals(KEY2OBJ(left), ((it.unimi.dsi.fastutil.Pair)other).left())
#endif
#if VALUES_USE_REFERENCE_EQUALITY
```

```
 && right == ((it.unimi.dsi.fastutil.Pair)other).right();
#else
 && java.util.Objects.equals(VALUE2OBJ(right), ((it.unimi.dsi.fastutil.Pair)other).right());
#endif
  }

  return false;
 }

 @Override
   public int hashCode() {
  return KEY2JAVAHASH(left) * 19 + VALUE2JAVAHASH(right);
 }

 /** Returns a string representation of this pair in the form &lt;<var>l</var>,<var>r</var>&gt;.
  *
  * @return a string representation of this pair in the form &lt;<var>l</var>,<var>r</var>&gt;.
  */
 @Override
 public String toString() {
  return "<" + PAIR_LEFT() + "," + PAIR_RIGHT() + ">";
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/MutablePair.drv
No license file was found, but licenses were detected in source scan.

```
/*
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 * distributed under the License is distributed on an "AS IS" BASIS,
 * WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
 * See the License for the specific language governing permissions and
 * limitations under the License.
 */
/**
   * Construct this {@link SizeDecreasingSupplier}.
   *
   * @param expectedFinalSize The expected size of the entire remaining contents of the {@code Stream}
   *           and thus what size the Collection holding the final results should try to be
```

* preallocated to.
* @param builder the builder function.
* <p>
* The input integer will be the size of the collection to preallocate.
* <p>
* It is recommended that you allocate a minimum size if the given {@code size} is small.
* {@link #RECOMMENDED_MIN_SIZE} gives a good enough ballpark for most cases.
* <p>
* The subclass is free to use the default constructor for the Collection construction
* instead of the {@code size} given if {@code size} falls below the default size used
* for the default initial capacity for that Collection implementation. Often such
* default constructors contain additional optimizations that giving an explicit initial
* capacity would not do (even if given the default capacity as the initial capacity
* explicitly).
* <p>
* {@link Supplier#get() get()} of the {@link IntFunction} must return non-{@code null}.
*/

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntCollections.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongCollections.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectCollections.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleCollections.java
No license file was found, but licenses were detected in source scan.

/*
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
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* limitations under the License.
*/

package PACKAGE;

```
#if KEY_CLASS_Object
import java.util.Arrays;
import java.util.Comparator;

import it.unimi.dsi.fastutil.PriorityQueue;
#else
import java.util.Iterator;
#endif

import java.util.Collection;
import java.util.NoSuchElementException;


/** A type-specific heap-based priority queue.
*
* <p>Instances of this class represent a priority queue using a heap. The heap is enlarged as needed, but
* it is never shrunk. Use the {@link #trim()} method to reduce its size, if necessary.
*/

public class HEAP_PRIORITY_QUEUE KEY_GENERIC implements PRIORITY_QUEUE KEY_GENERIC,
java.io.Serializable {
 private static final long serialVersionUID = 1L;

 /** The heap array. */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 protected transient KEY_GENERIC_TYPE[] heap = KEY_GENERIC_ARRAY_CAST
ARRAYS.EMPTY_ARRAY;

 /** The number of elements in this queue. */
 protected int size;

 /** The type-specific comparator used in this queue. */
 protected KEY_COMPARATOR KEY_SUPER_GENERIC c;

 /** Creates a new empty queue with a given capacity and comparator.
  *
  * @param capacity the initial capacity of this queue.
  * @param c the comparator used in this queue, or {@code null} for the natural order.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public HEAP_PRIORITY_QUEUE(int capacity, KEY_COMPARATOR KEY_SUPER_GENERIC c) {
  if (capacity > 0) this.heap = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[capacity];
  this.c = c;
 }

 /** Creates a new empty queue with a given capacity and using the natural order.
  *
  * @param capacity the initial capacity of this queue.
```

```
 */
public HEAP_PRIORITY_QUEUE(int capacity) {
 this(capacity, null);
}

/** Creates a new empty queue with a given comparator.
 *
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public HEAP_PRIORITY_QUEUE(KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 this(0, c);
}

/** Creates a new empty queue using the natural order.
 */
public HEAP_PRIORITY_QUEUE() {
 this(0, null);
}

/** Wraps a given array in a queue using a given comparator.
 *
 * <p>The queue returned by this method will be backed by the given array.
 * The first {@code size} element of the array will be rearranged so to form a heap (this is
 * more efficient than enqueing the elements of {@code a} one by one).
 *
 * @param a an array.
 * @param size the number of elements to be included in the queue.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public HEAP_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] a, int size, final KEY_COMPARATOR
KEY_SUPER_GENERIC c) {
 this(c);
 this.heap = a;
 this.size = size;
 HEAPS.makeHeap(a, size, c);
}


/** Wraps a given array in a queue using a given comparator.
 *
 * <p>The queue returned by this method will be backed by the given array.
 * The elements of the array will be rearranged so to form a heap (this is
 * more efficient than enqueing the elements of {@code a} one by one).
 *
 * @param a an array.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public HEAP_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] a, final KEY_COMPARATOR
```

```
KEY_SUPER_GENERIC c) {
 this(a, a.length, c);
}

/** Wraps a given array in a queue using the natural order.
 *
 * <p>The queue returned by this method will be backed by the given array.
 * The first {@code size} element of the array will be rearranged so to form a heap (this is
 * more efficient than enqueing the elements of {@code a} one by one).
 *
 * @param a an array.
 * @param size the number of elements to be included in the queue.
 */
public HEAP_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] a, int size) {
 this(a, size, null);
}


/** Wraps a given array in a queue using the natural order.
 *
 * <p>The queue returned by this method will be backed by the given array.
 * The elements of the array will be rearranged so to form a heap (this is
 * more efficient than enqueing the elements of {@code a} one by one).
 *
 * @param a an array.
 */
public HEAP_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] a) {
 this(a, a.length);
}

#if KEYS_PRIMITIVE

/** Creates a queue using the elements in a type-specific collection using a given comparator.
 *
 * <p>This constructor is more efficient than enqueing the elements of {@code collection} one by one.
 *
 * @param collection a collection; its elements will be used to initialize the queue.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public HEAP_PRIORITY_QUEUE(final COLLECTION KEY_EXTENDS_GENERIC collection, final
KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 this(collection.TO_KEY_ARRAY(), c);
}

/** Creates a queue using the elements in a type-specific collection using the natural order.
 *
 * <p>This constructor is
 * more efficient than enqueing the elements of {@code collection} one by one.
```

```
 *
 * @param collection a collection; its elements will be used to initialize the queue.
 */
public HEAP_PRIORITY_QUEUE(final COLLECTION KEY_EXTENDS_GENERIC collection) {
 this(collection, null);
}

/** Creates a queue using the elements in a collection using a given comparator.
 *
 * <p>This constructor is more efficient than enqueing the elements of {@code collection} one by one.
 *
 * @param collection a collection; its elements will be used to initialize the queue.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public HEAP_PRIORITY_QUEUE(final Collection<? extends KEY_GENERIC_CLASS> collection, final
KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 this(collection.size(), c);
 final Iterator<? extends KEY_GENERIC_CLASS> iterator = collection.iterator();
 final int size = collection.size();
 for(int i = 0 ; i < size; i++) heap[i] = KEY_OBJ2TYPE(iterator.next());
}

/** Creates a queue using the elements in a collection using the natural order.
 *
 * <p>This constructor is
 * more efficient than enqueing the elements of {@code collection} one by one.
 *
 * @param collection a collection; its elements will be used to initialize the queue.
 */
public HEAP_PRIORITY_QUEUE(final Collection<? extends KEY_GENERIC_CLASS> collection) {
 this(collection, null);
}
#else
/** Creates a queue using the elements in a collection using a given comparator.
 *
 * <p>This constructor is more efficient than enqueing the elements of {@code collection} one by one.
 *
 * @param collection a collection; its elements will be used to initialize the queue.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
public HEAP_PRIORITY_QUEUE(final Collection<? extends KEY_GENERIC_CLASS> collection, final
KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 this(KEY_GENERIC_ARRAY_CAST collection.toArray(), c);
}

/** Creates a queue using the elements in a collection using the natural order.
 *
```

```
  * <p>This constructor is
  * more efficient than enqueing the elements of {@code collection} one by one.
  *
  * @param collection a collection; its elements will be used to initialize the queue.
  */
 public HEAP_PRIORITY_QUEUE(final Collection<? extends KEY_GENERIC_CLASS> collection) {
  this(collection, null);
 }
#endif

 @Override
  public void enqueue(KEY_GENERIC_TYPE x) {
  if (size == heap.length) heap = ARRAYS.grow(heap, size + 1);

  heap[size++] = x;
  HEAPS.upHeap(heap, size, size - 1, c);
 }

 @Override
 public KEY_GENERIC_TYPE DEQUEUE() {
  if (size == 0) throw new NoSuchElementException();

  final KEY_GENERIC_TYPE result = heap[0];
  heap[0] = heap[--size];
#if KEY_CLASS_Object
  heap[size] = null;
#endif
  if (size != 0) HEAPS.downHeap(heap, size, 0, c);
  return result;
 }

 @Override
 public KEY_GENERIC_TYPE FIRST() {
  if (size == 0) throw new NoSuchElementException();
  return heap[0];
 }

 @Override
 public void changed() {
  HEAPS.downHeap(heap, size, 0, c);
 }

 @Override
 public int size() { return size; }

 @Override
 public void clear() {
#if KEY_CLASS_Object
```

```
  Arrays.fill(heap, 0, size, null);
#endif
  size = 0;
 }

 /** Trims the underlying heap array so that it has exactly {@link #size()} elements. */

 public void trim() {
  heap = ARRAYS.trim(heap, size);
 }

 @Override
 public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return c; }

 private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
  s.defaultWriteObject();
  s.writeInt(heap.length);
  for(int i = 0; i < size; i++) s.WRITE_KEY(heap[i]);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
  s.defaultReadObject();
  heap = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[s.readInt()];
  for(int i = 0; i < size; i++) heap[i] = KEY_GENERIC_CAST s.READ_KEY();
 }


#ifdef TEST

 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#elif KEY_CLASS_Object
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }

 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition p = new java.text.FieldPosition(0);
```

```
private static String format(double d) {
 StringBuffer s = new StringBuffer();
 return format.format(d, s, p).toString();
}

private static void speedTest(int n, boolean comp) {
 System.out.println("There are presently no speed tests for this class.");
}


private static void fatal(String msg) {
 throw new AssertionError(msg);
}

private static void ensure(boolean cond, String msg) {
 if (cond) return;
 fatal(msg);
}

private static boolean heapEqual(KEY_TYPE[] a, KEY_TYPE[] b, int sizea, int sizeb) {
 if (sizea != sizeb) return false;
 KEY_TYPE[] aa = (KEY_TYPE[])a.clone();
 KEY_TYPE[] bb = (KEY_TYPE[])b.clone();
 java.util.Arrays.sort(aa, 0, sizea);
 java.util.Arrays.sort(bb, 0, sizeb);
 while(sizea-- != 0) if (! KEY_EQUALS(aa[sizea], bb[sizea])) return false;
 return true;
}

private static KEY_TYPE k[];

protected static void runTest(int n) throws Exception {
 long ms;
 Exception mThrowsIllegal, tThrowsIllegal, mThrowsOutOfBounds, tThrowsOutOfBounds, mThrowsNoElement,
tThrowsNoElement;
 KEY_TYPE rm = KEY_NULL, rt = KEY_NULL;
 k = new KEY_TYPE[n];

 for(int i = 0; i < n; i++) k[i] = genKey();

 HEAP_PRIORITY_QUEUE m = new
HEAP_PRIORITY_QUEUE(COMPARATORS.NATURAL_COMPARATOR);
 ARRAY_PRIORITY_QUEUE t = new
ARRAY_PRIORITY_QUEUE(COMPARATORS.NATURAL_COMPARATOR);

 /* We add pairs to t. */
 for(int i = 0; i < n / 2;  i++) {
  t.enqueue(k[i]);
```

```
  m.enqueue(k[i]);
 }

 ensure(heapEqual(m.heap, t.array, m.size(), t.size()), "Error (" + seed + "): m and t differ after creation (" + m + ", "
+ t + ")");

 if (m.size() != 0) {
  ensure(KEY_EQUALS(m.FIRST(), t.FIRST()), "Error (" + seed + "): m and t differ in first element after creation ("
+ m.FIRST() + ", " + t.FIRST() + ")");
 }

 /* Now we add and remove random data in m and t, checking that the result is the same. */

 for(int i=0; i<2*n;  i++) {

  if (r.nextDouble() < 0.01) {
   t.clear();
   m.clear();
   for(int j = 0; j < n / 2;  j++) {
    t.enqueue(k[j]);
    m.enqueue(k[j]);
   }
  }

  KEY_TYPE T = genKey();

  mThrowsNoElement = tThrowsNoElement = mThrowsOutOfBounds = tThrowsOutOfBounds = mThrowsIllegal =
tThrowsIllegal = null;

  try {
   m.enqueue(T);
  }
  catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
  catch (IllegalArgumentException e) { mThrowsIllegal = e; }

  try {
   t.enqueue(T);
  }
  catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }
  catch (IllegalArgumentException e) { tThrowsIllegal = e; }

  ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + seed + "): enqueue()
divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds
+ ")");
  ensure((mThrowsIllegal == null) == (tThrowsIllegal == null), "Error (" + seed + "): enqueue() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");

  ensure(heapEqual(m.heap, t.array, m.size(), t.size()), "Error (" + seed + "): m and t differ after enqueue (" + m + ", "
```

```
+ t + ")");

   if (m.size() != 0) {
    ensure(KEY_EQUALS(m.FIRST(), t.FIRST()), "Error (" + seed + "): m and t differ in first element after enqueue ("
+ m.FIRST() + ", " + t.FIRST() + ")");
   }

   mThrowsNoElement = tThrowsNoElement = mThrowsOutOfBounds = tThrowsOutOfBounds = mThrowsIllegal =
tThrowsIllegal = null;

   try {
    rm = m.DEQUEUE();
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { mThrowsIllegal = e; }
   catch (NoSuchElementException e) { mThrowsNoElement = e; }

   try {
    rt = t.DEQUEUE();
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { tThrowsIllegal = e; }
   catch (NoSuchElementException e) { tThrowsNoElement = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + seed + "): dequeue()
divergence in IndexOutOfBoundsException (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
   ensure((mThrowsIllegal == null) == (tThrowsIllegal == null), "Error (" + seed + "): dequeue() divergence in
IllegalArgumentException  (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   ensure((mThrowsNoElement == null) == (tThrowsNoElement == null), "Error (" + seed + "): dequeue() divergence
in NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   if (mThrowsOutOfBounds == null) ensure(KEY_EQUALS(rt, rm) , "Error (" + seed + "): divergence in dequeue()
between t and m (" + rt + ", " + rm + ")");


   ensure(heapEqual(m.heap, t.array, m.size(), t.size()), "Error (" + seed + "): m and t differ after dequeue (" + m + ", "
+ t + ")");

   if (m.size() != 0) {
    ensure(KEY_EQUALS(m.FIRST(), t.FIRST()), "Error (" + seed + "): m and t differ in first element after dequeue ("
+ m.FIRST() + ", " + t.FIRST() + ")");
   }

   /* Now we save and read m. */

   {
    java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test");
    java.io.OutputStream os = new java.io.FileOutputStream(ff);
    java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);
```

```
    oos.writeObject(m);
    oos.close();

    java.io.InputStream is = new java.io.FileInputStream(ff);
    java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

    m = (HEAP_PRIORITY_QUEUE)ois.readObject();
    ois.close();
    ff.delete();
   }

   ensure(heapEqual(m.heap, t.array, m.size(), t.size()), "Error (" + seed + "): m and t differ after save/read");

   HEAP_PRIORITY_QUEUE m2 = new HEAP_PRIORITY_QUEUE(t.array, t.size());
   ARRAY_PRIORITY_QUEUE t2 = new ARRAY_PRIORITY_QUEUE(m.heap, m.size());
   m = m2;
   t = t2;

   ensure(heapEqual(m.heap, t.array, m.size(), t.size()), "Error (" + seed + "): m and t differ after wrap (" + m + ", " + t
+ ")");

   if (m.size() != 0) {
    ensure(KEY_EQUALS(m.FIRST(), t.FIRST()), "Error (" + seed + "): m and t differ in first element after wrap (" +
m.FIRST() + ", " + t.FIRST() + ")");
   }

   if (m.size() != 0 && ((new OPEN_HASH_SET(m.heap, 0, m.size)).size() == m.size())) {

    int j = t.size(), M = --j;
#if KEYS_PRIMITIVE
    while(j-- != 0) if (KEY_LESS(t.array[j], t.array[M])) M = j;
#else
    while(j-- != 0) if (((Comparable)t.array[j]).compareTo(t.array[M])< 0) M = j;
#endif

    m.heap[0] = t.array[M] = genKey();

    m.changed();
    t.changed();

    ensure(heapEqual(m.heap, t.array, m.size(), t.size()), "Error (" + seed + "): m and t differ after change (" + m + ", " +
t + ")");

    if (m.size() != 0) {
     ensure(KEY_EQUALS(m.FIRST(), t.FIRST()), "Error (" + seed + "): m and t differ in first element after change ("
+ m.FIRST() + ", " + t.FIRST() + ")");
    }
```

```
   }
  }


 /* Now we check that m actually holds the same data. */

 m.clear();
 ensure(m.isEmpty(), "Error (" + seed + "): m is not empty after clear()");

 System.out.println("Test OK");
}



public static void main(String args[]) throws Exception {
 int n  = Integer.parseInt(args[1]);
 if (args.length > 2) r = new java.util.Random(seed = Long.parseLong(args[2]));


 try {
  if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, "speedComp".equals(args[0]));
  else if ("test".equals(args[0])) runTest(n);
 } catch(Throwable e) {
  e.printStackTrace(System.err);
  System.err.println("seed: " + seed);
  throw e;
 }
}

#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/HeapPriorityQueue.drv
No license file was found, but licenses were detected in source scan.

```
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* limitations under the License.
*/


package PACKAGE;

import it.unimi.dsi.fastutil.Function;


/** A type-specific {@link Function}; provides some additional methods that use polymorphism to avoid
(un)boxing.
*
* <p>Type-specific versions of {@code get()}, {@code put()} and
* {@code remove()} cannot rely on {@code null} to denote absence of
* a key. Rather, they return a {@linkplain #defaultReturnValue() default
* return value}, which is set to 0/false at creation, but can be changed using
* the {@code defaultReturnValue()} method.
*
* <p>For uniformity reasons, even functions returning objects implement the default
* return value (of course, in this case the default return value is
* initialized to {@code null}).
*
* <p>The default implementation of optional operations just throw an {@link
* UnsupportedOperationException}, except for the type-specific {@code
* containsKey()}, which return true. Generic versions of accessors delegate to
* the corresponding type-specific counterparts following the interface rules.
*
* <p><strong>Warning:</strong> to fall in line as much as possible with the
* {@linkplain java.util.Map standard map interface}, it is required that
* standard versions of {@code get()}, {@code put()} and
* {@code remove()} for maps with primitive-type keys or values <em>return
* {@code null} to denote missing keys </em> rather than wrap the default
* return value in an object. In case both keys and values are reference
* types, the default return value must be returned instead, thus violating
* the {@linkplain java.util.Map standard map interface} when the default
* return value is not {@code null}.
*
* @see Function
*/

@FunctionalInterface
#ifdef JDK_PRIMITIVE_FUNCTION
public interface FUNCTION KEY_VALUE_GENERIC extends Function<KEY_GENERIC_CLASS,
VALUE_GENERIC_CLASS>, JDK_PRIMITIVE_FUNCTION KEY_GENERIC VALUE_GENERIC {
#else
public interface FUNCTION KEY_VALUE_GENERIC extends Function<KEY_GENERIC_CLASS,
```

```
VALUE_GENERIC_CLASS> {
#endif

#ifdef JDK_PRIMITIVE_FUNCTION
#if KEYS_BYTE_CHAR_SHORT_FLOAT
 /** {@inheritDoc}
  *
  * @implSpec This default implementation delegates to the type-specific
  * {@code get()} method after narrowing down the key to the
  * actual key type, throwing an exception if the given key cannot be
  * represented in the restricted domain. This is done for interoperability
  * with the Java 8 function environment. The use of this method is discouraged, as
  * unexpected errors can occur. Instead, the corresponding classes should be
  * used (e.g., {@link it.unimi.dsi.fastutil.ints.Int2IntFunction} instead of
  * {@link it.unimi.dsi.fastutil.shorts.Short2IntFunction}).
  *
  * @throws IllegalArgumentException If the given operand is not an element of the key domain.
  * @since 8.0.0
  * @deprecated Please use primitive types which do not have to be widened as keys.
  */
 @Deprecated
#else
 /** {@inheritDoc}
  * @since 8.0.0
  */
#endif
 @Override
 default VALUE_GENERIC_TYPE_WIDENED
JDK_PRIMITIVE_FUNCTION_APPLY(KEY_GENERIC_TYPE_WIDENED operand) { return
GET_VALUE(KEY_NARROWING(operand)); }
#endif

 /** Adds a pair to the map (optional operation).
  *
  * @param key the key.
  * @param value the value.
  * @return the old value, or the {@linkplain #defaultReturnValue() default return value} if no value was present for
the given key.
  * @see Function#put(Object,Object)
  */

 default VALUE_GENERIC_TYPE put(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE value)
{
  throw new UnsupportedOperationException();
 }

 /** Returns the value to which the given key is mapped.
  *
```

```
 * @param key the key.
 * @return the corresponding value, or the {@linkplain #defaultReturnValue() default return value} if no value was
present for the given key.
 * @see Function#get(Object)
 */

VALUE_GENERIC_TYPE GET_VALUE(KEY_TYPE key);

/** Returns the value associated by this function to the specified key, or give the specified
 *  value if not present.
 *
 * @param key the key.
 * @param defaultValue the value to return if not present.
 * @return the corresponding value, or {@code defaultValue} if no value was present for the given key.
 * @see Function#getOrDefault(Object, Object)
 * @since 8.5.0
 */
default VALUE_GENERIC_TYPE getOrDefault(final KEY_TYPE key, final VALUE_GENERIC_TYPE
defaultValue) {
 final VALUE_GENERIC_TYPE v;
 return ((v = GET_VALUE(key)) != defaultReturnValue() || containsKey(key)) ? v : defaultValue;
}

/** Removes the mapping with the given key (optional operation).
 * @param key the key.
 * @return the old value, or the {@linkplain #defaultReturnValue() default return value} if no value was present for
the given key.
 * @see Function#remove(Object)
 */
default VALUE_GENERIC_TYPE REMOVE_VALUE(final KEY_TYPE key) {
 throw new UnsupportedOperationException();
}

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default VALUE_GENERIC_CLASS put(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS
value) {
 final KEY_GENERIC_TYPE k = KEY_CLASS2TYPE(key);
 final boolean containsKey = containsKey(k);
 final VALUE_GENERIC_TYPE v = put(k, VALUE_CLASS2TYPE(value));
 return containsKey ? VALUE2OBJ(v) : null;
}

/** {@inheritDoc}
```

```
 * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default VALUE_GENERIC_CLASS get(final Object key) {
#if KEYS_PRIMITIVE
  if (key == null) return null;
#endif
  final KEY_TYPE k = KEY_OBJ2TYPE(key);
  final VALUE_GENERIC_TYPE v;
  return ((v = GET_VALUE(k)) != defaultReturnValue() || containsKey(k)) ? VALUE2OBJ(v) : null;
 }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default VALUE_GENERIC_CLASS getOrDefault(final Object key, VALUE_GENERIC_CLASS defaultValue) {
#if KEYS_PRIMITIVE
  if (key == null) return defaultValue;
#endif
  final KEY_TYPE k = KEY_OBJ2TYPE(key);
  final VALUE_GENERIC_TYPE v = GET_VALUE(k);
  return (v != defaultReturnValue() || containsKey(k)) ? VALUE2OBJ(v) : defaultValue;
 }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default VALUE_GENERIC_CLASS remove(final Object key) {
#if KEYS_PRIMITIVE
  if (key == null) return null;
#endif
  final KEY_TYPE k = KEY_OBJ2TYPE(key);
  return containsKey(k) ? VALUE2OBJ(REMOVE_VALUE(k)) : null;
 }

#if KEYS_PRIMITIVE

 /** Returns true if this function contains a mapping for the specified key.
  *
  * <p>Note that for some kind of functions (e.g., hashes) this method will
  * always return true. In particular, this default implementation always
  * returns true.
  *
  * @param key the key.
  * @return true if this function associates a value to {@code key}.
  * @see Function#containsKey(Object)
```

```
 */
default boolean containsKey(KEY_TYPE key) {
 return true;
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */

@Deprecated
@Override
default boolean containsKey(final Object key) {
 return key == null ? false : containsKey(KEY_OBJ2TYPE(key));
}

#endif

#endif

/** Sets the default return value (optional operation).
 *
 * This value must be returned by type-specific versions of
 * {@code get()}, {@code put()} and {@code remove()} to
 * denote that the map does not contain the specified key. It must be
 * 0/{@code false}/{@code null} by default.
 *
 * @param rv the new default return value.
 * @see #defaultReturnValue()
 */

default void defaultReturnValue(VALUE_GENERIC_TYPE rv) {
 throw new UnsupportedOperationException();
}



/** Gets the default return value.
 *
 * <p>This default implementation just return the default null value
 * of the type ({@code null} for objects, 0 for scalars, false for Booleans).
 *
 * @return the current default return value.
 */

default VALUE_GENERIC_TYPE defaultReturnValue() {
 return VALUE_NULL;
}

#if KEYS_PRIMITIVE && (KEY_INDEX == VALUE_INDEX)
static KEY_VALUE_GENERIC FUNCTION identity() {
```

```
  return k -> k;
 }
#endif

#define FUNCTION_NAME(K, V) K ## 2 ## V ## Function

#if KEYS_REFERENCE && VALUES_REFERENCE
#define K_T_G <K, T>
#define T_K_G <? super T, ? extends K>
#define V_T_G <? super V, ? extends T>
#define T_V_G <T, V>
#else

#if KEYS_PRIMITIVE
#define K_T_G <T>
#define T_K_G <? super T>
#else
#define K_T_G <K, T>
#define T_K_G <? super T, ? extends K>
#endif

#if VALUES_PRIMITIVE
#define V_T_G <? extends T>
#define T_V_G <T>
#else
#define V_T_G <? super V, ? extends T>
#define T_V_G <T, V>
#endif

#endif

#if KEYS_PRIMITIVE

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 default <T> java.util.function.Function<T, VALUE_GENERIC_CLASS> compose(java.util.function.Function<?
super T, ? extends KEY_GENERIC_CLASS> before) {
  return Function.super.compose(before);
 }

#define GET_BEFORE GET_KEY
#else
#define GET_BEFORE get
#endif
```

```
#if VALUES_PRIMITIVE

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 default <T> java.util.function.Function<KEY_GENERIC_CLASS, T> andThen(java.util.function.Function<? super
VALUE_GENERIC_CLASS, ? extends T> after) {
  return Function.super.andThen(after);
 }

#define GET_AFTER(T_C) get
#else
#define GET_AFTER(T_C) get ## T_C
#endif


#define COMPOSITION(K_C, V_C, T_C, T_P, G_A, G_B, T_G, K_T_G, V_T_G, T_V_G, T_K_G) \
 default T_G PACKAGE.FUNCTION_NAME(K_C, T_C) K_T_G andThen ##
T_C(VALUE_PACKAGE.FUNCTION_NAME(V_C, T_C) V_T_G after) { \
  return k -> after.G_A(GET_VALUE(k)); \
 } \
 default T_G it.unimi.dsi.fastutil.T_P.FUNCTION_NAME(T_C, V_C) T_V_G compose ##
T_C(it.unimi.dsi.fastutil.T_P.FUNCTION_NAME(T_C, K_C) T_K_G before) { \
  return k -> GET_VALUE(before.G_B(k)); \
 }

COMPOSITION(KEY_TYPE_CAP, VALUE_TYPE_CAP, Byte, bytes, GET_AFTER(Byte), get, ,
KEY_GENERIC, VALUE_GENERIC, VALUE_GENERIC, KEY_GENERIC)
COMPOSITION(KEY_TYPE_CAP, VALUE_TYPE_CAP, Short, shorts, GET_AFTER(Short), get, ,
KEY_GENERIC, VALUE_GENERIC, VALUE_GENERIC, KEY_GENERIC)
COMPOSITION(KEY_TYPE_CAP, VALUE_TYPE_CAP, Int, ints, GET_AFTER(Int), get, , KEY_GENERIC,
VALUE_GENERIC, VALUE_GENERIC, KEY_GENERIC)
COMPOSITION(KEY_TYPE_CAP, VALUE_TYPE_CAP, Long, longs, GET_AFTER(Long), get, ,
KEY_GENERIC, VALUE_GENERIC, VALUE_GENERIC, KEY_GENERIC)
COMPOSITION(KEY_TYPE_CAP, VALUE_TYPE_CAP, Char, chars, GET_AFTER(Char), get, ,
KEY_GENERIC, VALUE_GENERIC, VALUE_GENERIC, KEY_GENERIC)
COMPOSITION(KEY_TYPE_CAP, VALUE_TYPE_CAP, Float, floats, GET_AFTER(Float), get, ,
KEY_GENERIC, VALUE_GENERIC, VALUE_GENERIC, KEY_GENERIC)
COMPOSITION(KEY_TYPE_CAP, VALUE_TYPE_CAP, Double, doubles, GET_AFTER(Double), get, ,
KEY_GENERIC, VALUE_GENERIC, VALUE_GENERIC, KEY_GENERIC)
COMPOSITION(KEY_TYPE_CAP, VALUE_TYPE_CAP, Object, objects, get, GET_BEFORE, <T>, K_T_G,
V_T_G, T_V_G, T_K_G)
COMPOSITION(KEY_TYPE_CAP, VALUE_TYPE_CAP, Reference, objects, get, GET_BEFORE, <T>, K_T_G,
V_T_G, T_V_G, T_K_G)

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Function.drv
No license file was found, but licenses were detected in source scan.

```
/*
* Copyright (C) 2002-2022 Sebastiano Vigna
*
* Licensed under the Apache License, Version 2.0 (the "License");
* you may not use this file except in compliance with the License.
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

import java.util.Collection;
import java.util.Objects;
import java.util.function.Consumer;

#if KEYS_BYTE_CHAR_SHORT_FLOAT
import WIDENED_PACKAGE.KEY_WIDENED_ITERATOR;
import WIDENED_PACKAGE.WIDENED_ITERATORS;
import WIDENED_PACKAGE.KEY_WIDENED_SPLITERATOR;
import WIDENED_PACKAGE.WIDENED_SPLITERATORS;
#elif ! KEY_CLASS_Boolean
import java.util.concurrent.atomic.AtomicInteger;
import java.util.function.IntFunction;
import java.util.function.Supplier;
#endif

#if ! KEYS_REFERENCE
import it.unimi.dsi.fastutil.objects.ObjectArrays;
#else
import java.util.function.Predicate;
#endif

/** A class providing static methods and objects that do useful things with type-specific collections.
*
* @see java.util.Collections
```

```
*/

public final class COLLECTIONS {

 private COLLECTIONS() {}

#if KEYS_PRIMITIVE && !KEY_TYPE_Boolean
 /* Only in the EmptyCollection class, where performance is critical, do we override the
  * deprecated, Object based functional methods. For the rest, we just override the
  * non-deprecated type-specific method, and let the default method from the interface
  * filter into that. This is an extra method call and lambda creation, but it isn't worth
  * complexifying the code generation for a case that is already marked as being inefficient.
  */
#endif

 /** An immutable class representing an empty type-specific collection.
  *
  * <p>This class may be useful to implement your own in case you subclass
  * a type-specific collection.
  */

 public abstract static class EmptyCollection KEY_GENERIC extends ABSTRACT_COLLECTION
KEY_GENERIC {
  protected EmptyCollection() {}

  @Override
  public boolean contains(KEY_TYPE k) { return false; }

  @Override
  public Object[] toArray() { return ObjectArrays.EMPTY_ARRAY; }

  @Override
  public <T> T[] toArray(T[] array) {
   if (array.length > 0) array[0] = null;
   return array;
  }

  @Override
  SUPPRESS_WARNINGS_KEY_UNCHECKED
  public KEY_BIDI_ITERATOR KEY_GENERIC iterator() { return ITERATORS.EMPTY_ITERATOR; }

  @Override
  SUPPRESS_WARNINGS_KEY_UNCHECKED
  public KEY_SPLITERATOR KEY_GENERIC spliterator() { return SPLITERATORS.EMPTY_SPLITERATOR; }

  @Override
  public int size() { return 0; }
```

```
  @Override
  public void clear() {}

  @Override
  public int hashCode() { return 0; }

  @Override
  public boolean equals(Object o) {
   if (o == this) return true;
   if (! (o instanceof Collection)) return false;
   return ((Collection<?>)o).isEmpty();
  }

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void forEach(final Consumer<? super KEY_GENERIC_CLASS> action) { }

  @Override
  public boolean containsAll(final Collection<?> c) { return c.isEmpty(); }

  @Override
  public boolean addAll(final Collection<? extends KEY_GENERIC_CLASS> c) { throw new
UnsupportedOperationException(); }

  @Override
  public boolean removeAll(final Collection<?> c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean retainAll(final Collection<?> c) { throw new UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
  @Deprecated
#endif
  @Override
  public boolean removeIf(final java.util.function.Predicate<? super KEY_GENERIC_CLASS> filter) {
   Objects.requireNonNull(filter);
   return false;
  }
#if KEYS_PRIMITIVE

  @Override
  public KEY_TYPE[] TO_KEY_ARRAY() { return ARRAYS.EMPTY_ARRAY; }

  /* {@inheritDoc}
   * @deprecated Please use {@code toArray()} instead&mdash;this method is redundant and will be removed in the
future.
   */
  @Deprecated
```

```
 @Override
 public KEY_TYPE[] TO_KEY_ARRAY(KEY_TYPE[] a) { return a; }

 @Override
 public void forEach(final METHOD_ARG_KEY_CONSUMER action) { }

 @Override
 public boolean containsAll(final COLLECTION c) { return c.isEmpty(); }

 @Override
 public boolean addAll(final COLLECTION c) { throw new UnsupportedOperationException(); }

 @Override
 public boolean removeAll(final COLLECTION c) { throw new UnsupportedOperationException(); }

 @Override
 public boolean retainAll(final COLLECTION c) { throw new UnsupportedOperationException(); }

 @Override
 public boolean removeIf(final METHOD_ARG_PREDICATE filter) {
  Objects.requireNonNull(filter);
  return false;
 }

#if KEYS_BYTE_CHAR_SHORT_FLOAT
 @Override
 public KEY_WIDENED_ITERATOR KEY_WIDENED_ITERATOR_METHOD() { return
WIDENED_ITERATORS.EMPTY_ITERATOR; }

 @Override
 public KEY_WIDENED_SPLITERATOR KEY_WIDENED_SPLITERATOR_METHOD() { return
WIDENED_SPLITERATORS.EMPTY_SPLITERATOR; }
#endif

#endif

}



/** A synchronized wrapper class for collections. */

static class SynchronizedCollection KEY_GENERIC implements COLLECTION KEY_GENERIC,
java.io.Serializable {

 private static final long serialVersionUID = -7046029254386353129L;

 protected final COLLECTION KEY_GENERIC collection;
 protected final Object sync;
```

```
 protected SynchronizedCollection(final COLLECTION KEY_GENERIC c, final Object sync) {
  this.collection = Objects.requireNonNull(c);
  this.sync = sync;
 }

 protected SynchronizedCollection(final COLLECTION KEY_GENERIC c) {
  this.collection = Objects.requireNonNull(c);
  this.sync = this;
 }

 @Override
 public boolean add(final KEY_GENERIC_TYPE k) { synchronized(sync) { return collection.add(k); } }

 @Override
 public boolean contains(final KEY_TYPE k) { synchronized(sync) { return collection.contains(k); } }

 @Override
 public boolean REMOVE(final KEY_TYPE k) { synchronized(sync) { return collection.REMOVE(k); } }

 @Override
 public int size() { synchronized(sync) { return collection.size(); } }

 @Override
 public boolean isEmpty() { synchronized(sync) { return collection.isEmpty(); } }

 @Override
 public KEY_TYPE[] TO_KEY_ARRAY() { synchronized(sync) { return collection.TO_KEY_ARRAY(); } }

#if KEYS_PRIMITIVE
 @Override
 public Object[] toArray() { synchronized(sync) { return collection.toArray(); } }

 /* {@inheritDoc}
  * @deprecated Please use {@code toArray()} instead&mdash;this method is redundant and will be removed in the
future.
  */
 @Deprecated
 @Override
 public KEY_TYPE[] TO_KEY_ARRAY(final KEY_TYPE[] a) { return toArray(a); }

 @Override
 public KEY_TYPE[] toArray(final KEY_TYPE[] a) { synchronized(sync) { return collection.toArray(a); } }

 @Override
 public boolean addAll(final COLLECTION c) { synchronized(sync) { return collection.addAll(c); } }

 @Override
```

```
  public boolean containsAll(final COLLECTION c) { synchronized(sync) { return collection.containsAll(c); } }

  @Override
  public boolean removeAll(final COLLECTION c) { synchronized(sync) { return collection.removeAll(c); } }

  @Override
  public boolean retainAll(final COLLECTION c) { synchronized(sync) { return collection.retainAll(c); } }

  @Override
  @Deprecated
  public boolean add(final KEY_GENERIC_CLASS k) { synchronized(sync) { return collection.add(k); } }

  @Override
  @Deprecated
  public boolean contains(final Object k) { synchronized(sync) { return collection.contains(k); } }

  @Override
  @Deprecated
  public boolean remove(final Object k) { synchronized(sync) { return collection.remove(k); } }

#if defined JDK_PRIMITIVE_ITERATOR
  @Override
  public KEY_WIDENED_ITERATOR KEY_WIDENED_ITERATOR_METHOD() { return
collection.KEY_WIDENED_ITERATOR_METHOD(); }

  @Override
  public KEY_WIDENED_SPLITERATOR KEY_WIDENED_SPLITERATOR_METHOD() { return
collection.KEY_WIDENED_SPLITERATOR_METHOD(); }
#endif

#if defined JDK_PRIMITIVE_STREAM
  @Override
  public JDK_PRIMITIVE_STREAM KEY_WIDENED_STREAM_METHOD() { return
collection.KEY_WIDENED_STREAM_METHOD(); }

  @Override
  public JDK_PRIMITIVE_STREAM KEY_WIDENED_PARALLEL_STREAM_METHOD() { return
collection.KEY_WIDENED_PARALLEL_STREAM_METHOD(); }
#endif
#endif

  @Override
  public <T> T[] toArray(final T[] a) { synchronized(sync) { return collection.toArray(a); } }

  @Override
  public KEY_ITERATOR KEY_GENERIC iterator() { return collection.iterator(); }

  @Override
```

```
  public KEY_SPLITERATOR KEY_GENERIC spliterator() { return collection.spliterator(); }

#if defined JDK_PRIMITIVE_STREAM
  @Deprecated
#endif
  @Override
  public java.util.stream.Stream <KEY_GENERIC_CLASS> stream() { return collection.stream(); }

#if defined JDK_PRIMITIVE_STREAM
  @Deprecated
#endif
  @Override
  public java.util.stream.Stream <KEY_GENERIC_CLASS> parallelStream() { return collection.parallelStream(); }

  @Override
  public void forEach(final METHOD_ARG_KEY_CONSUMER action) { synchronized(sync) {
collection.forEach(action); } }

  @Override
  public boolean addAll(final Collection<? extends KEY_GENERIC_CLASS> c) { synchronized(sync) { return
collection.addAll(c); } }

  @Override
  public boolean containsAll(final Collection<?> c) { synchronized(sync) { return collection.containsAll(c); } }

  @Override
  public boolean removeAll(final Collection<?> c) { synchronized(sync) { return collection.removeAll(c); } }

  @Override
  public boolean retainAll(final Collection<?> c) { synchronized(sync) { return collection.retainAll(c); } }

  @Override
  public boolean removeIf(final METHOD_ARG_PREDICATE filter) { synchronized(sync) { return
collection.removeIf(filter); } }

  @Override
  public void clear() { synchronized(sync) { collection.clear(); } }

  @Override
  public String toString() { synchronized(sync) { return collection.toString(); } }

  @Override
  public int hashCode() { synchronized(sync) { return collection.hashCode(); } }

  @Override
  public boolean equals(final Object o) { if (o == this) return true; synchronized(sync) { return collection.equals(o); }
}
```

```
  private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
   synchronized(sync) { s.defaultWriteObject(); }
  }
 }


 /** Returns a synchronized collection backed by the specified collection.
  *
  * @param c the collection to be wrapped in a synchronized collection.
  * @return a synchronized view of the specified collection.
  * @see java.util.Collections#synchronizedCollection(Collection)
  */
 public static KEY_GENERIC COLLECTION KEY_GENERIC synchronize(final COLLECTION KEY_GENERIC
c) { return new SynchronizedCollection KEY_GENERIC_DIAMOND(c); }

 /** Returns a synchronized collection backed by the specified collection, using an assigned object to synchronize.
  *
  * @param c the collection to be wrapped in a synchronized collection.
  * @param sync an object that will be used to synchronize the list access.
  * @return a synchronized view of the specified collection.
  * @see java.util.Collections#synchronizedCollection(Collection)
  */

 public static KEY_GENERIC COLLECTION KEY_GENERIC synchronize(final COLLECTION KEY_GENERIC
c, final Object sync) { return new SynchronizedCollection KEY_GENERIC_DIAMOND(c, sync); }


 /** An unmodifiable wrapper class for collections. */

 static class UnmodifiableCollection KEY_GENERIC implements COLLECTION KEY_GENERIC,
java.io.Serializable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected final COLLECTION KEY_EXTENDS_GENERIC collection;

  protected UnmodifiableCollection(final COLLECTION KEY_EXTENDS_GENERIC c) {
   this.collection = Objects.requireNonNull(c);
  }

  @Override
  public boolean add(final KEY_GENERIC_TYPE k) { throw new UnsupportedOperationException(); }

  @Override
  public boolean REMOVE(final KEY_TYPE k) { throw new UnsupportedOperationException(); }

  @Override
  public int size() { return collection.size(); }
```

```
  @Override
  public boolean isEmpty() { return collection.isEmpty(); }

  @Override
  public boolean contains(final KEY_TYPE o) { return collection.contains(o); }

  @Override
  public KEY_ITERATOR KEY_GENERIC iterator() { return ITERATORS.unmodifiable(collection.iterator()); }

  @Override
#if KEYS_PRIMITIVE
  public KEY_SPLITERATOR KEY_GENERIC spliterator() { return collection.spliterator(); }
#else
  @SuppressWarnings("unchecked")
  public KEY_SPLITERATOR KEY_GENERIC spliterator() { return (KEY_SPLITERATOR
KEY_GENERIC)collection.spliterator(); }
#endif

#if defined JDK_PRIMITIVE_STREAM
  @Deprecated
#endif
  @Override
#if KEYS_PRIMITIVE
  public java.util.stream.Stream <KEY_GENERIC_CLASS> stream() { return collection.stream(); }
#else
  @SuppressWarnings("unchecked")
  public java.util.stream.Stream <KEY_GENERIC_CLASS> stream() { return (java.util.stream.Stream
<KEY_GENERIC_CLASS>)collection.stream(); }
#endif

#if defined JDK_PRIMITIVE_STREAM
  @Deprecated
#endif
  @Override
#if KEYS_PRIMITIVE
  public java.util.stream.Stream <KEY_GENERIC_CLASS> parallelStream() { return collection.parallelStream(); }
#else
  @SuppressWarnings("unchecked")
  public java.util.stream.Stream <KEY_GENERIC_CLASS> parallelStream() { return (java.util.stream.Stream
<KEY_GENERIC_CLASS>)collection.parallelStream(); }
#endif

  @Override
  public void clear() { throw new UnsupportedOperationException(); }

  @Override
  public <T> T[] toArray(final T[] a) { return collection.toArray(a); }
```

```
  @Override
  public Object[] toArray() { return collection.toArray(); }

  @Override
  public void forEach(final METHOD_ARG_KEY_CONSUMER action) { collection.forEach(action); }

  @Override
  public boolean containsAll(Collection<?> c) { return collection.containsAll(c); }

  @Override
  public boolean addAll(Collection<? extends KEY_GENERIC_CLASS> c) { throw new
UnsupportedOperationException(); }

  @Override
  public boolean removeAll(Collection<?> c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean retainAll(Collection<?> c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean removeIf(final METHOD_ARG_PREDICATE filter) { throw new
UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
  @Override
  @Deprecated
  public boolean add(final KEY_GENERIC_CLASS k) { throw new UnsupportedOperationException(); }

  @Override
  @Deprecated
  public boolean contains(final Object k) { return collection.contains(k); }

  @Override
  @Deprecated
  public boolean remove(final Object k) { throw new UnsupportedOperationException(); }

  @Override
  public KEY_TYPE[] TO_KEY_ARRAY() { return collection.TO_KEY_ARRAY(); }

  /* {@inheritDoc}
   * @deprecated Please use {@code toArray()} instead&mdash;this method is redundant.
   */
  @Deprecated
  @Override
  public KEY_TYPE[] TO_KEY_ARRAY(final KEY_TYPE[] a) { return toArray(a); }

  @Override
```

```
  public KEY_TYPE[] toArray(final KEY_TYPE[] a) { return collection.toArray(a); }

  @Override
  public boolean containsAll(COLLECTION c) { return collection.containsAll(c); }

  @Override
  public boolean addAll(COLLECTION c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean removeAll(COLLECTION c) { throw new UnsupportedOperationException(); }

  @Override
  public boolean retainAll(COLLECTION c) { throw new UnsupportedOperationException(); }

#if defined JDK_PRIMITIVE_ITERATOR
  @Override
  public KEY_WIDENED_ITERATOR KEY_WIDENED_ITERATOR_METHOD() { return
collection.KEY_WIDENED_ITERATOR_METHOD(); }

  @Override
  public KEY_WIDENED_SPLITERATOR KEY_WIDENED_SPLITERATOR_METHOD() { return
collection.KEY_WIDENED_SPLITERATOR_METHOD(); }
#endif

#if defined JDK_PRIMITIVE_STREAM
  @Override
  public JDK_PRIMITIVE_STREAM KEY_WIDENED_STREAM_METHOD() { return
collection.KEY_WIDENED_STREAM_METHOD(); }

  @Override
  public JDK_PRIMITIVE_STREAM KEY_WIDENED_PARALLEL_STREAM_METHOD() { return
collection.KEY_WIDENED_PARALLEL_STREAM_METHOD(); }
#endif
#endif

  @Override
  public String toString() { return collection.toString(); }

  @Override
  public int hashCode() { return collection.hashCode(); }

  @Override
  public boolean equals(final Object o) { if (o == this) return true; return collection.equals(o); }
 }


 /** Returns an unmodifiable collection backed by the specified collection.
  *
```

```
 * @param c the collection to be wrapped in an unmodifiable collection.
 * @return an unmodifiable view of the specified collection.
 * @see java.util.Collections#unmodifiableCollection(Collection)
 */
public static KEY_GENERIC COLLECTION KEY_GENERIC unmodifiable(final COLLECTION
KEY_EXTENDS_GENERIC c) { return new UnmodifiableCollection KEY_GENERIC_DIAMOND(c); }

/** A collection wrapper class for iterables. */

public static class IterableCollection KEY_GENERIC extends ABSTRACT_COLLECTION KEY_GENERIC
implements java.io.Serializable {

 private static final long serialVersionUID = -7046029254386353129L;

 protected final KEY_ITERABLE KEY_GENERIC iterable;

 protected IterableCollection(final KEY_ITERABLE KEY_GENERIC iterable) {
  this.iterable = Objects.requireNonNull(iterable);
 }

 @Override
 public int size() {
  long size = iterable.spliterator().getExactSizeIfKnown();
  if (size >= 0) return (int)Math.min(Integer.MAX_VALUE, size);
  int c = 0;
  final KEY_ITERATOR KEY_GENERIC iterator = iterator();
  while(iterator.hasNext()) {
   iterator.NEXT_KEY();
   c++;
  }

  return c;
 }

 @Override
 public boolean isEmpty() { return ! iterable.iterator().hasNext(); }

 @Override
 public KEY_ITERATOR KEY_GENERIC iterator() { return iterable.iterator(); }

 @Override
 public KEY_SPLITERATOR KEY_GENERIC spliterator() { return iterable.spliterator(); }

#if defined JDK_PRIMITIVE_ITERATOR && KEYS_PRIMITIVE
 @Override
 public KEY_WIDENED_ITERATOR KEY_WIDENED_ITERATOR_METHOD() { return
iterable.KEY_WIDENED_ITERATOR_METHOD() ; }
```

```
  @Override
  public KEY_WIDENED_SPLITERATOR KEY_WIDENED_SPLITERATOR_METHOD() { return
iterable.KEY_WIDENED_SPLITERATOR_METHOD() ; }
#endif
 }


 /** Returns an unmodifiable collection backed by the specified iterable.
  *
  * @param iterable the iterable object to be wrapped in an unmodifiable collection.
  * @return an unmodifiable collection view of the specified iterable.
  */
 public static KEY_GENERIC COLLECTION KEY_GENERIC asCollection(final KEY_ITERABLE
KEY_GENERIC iterable) {
  if (iterable instanceof COLLECTION) return (COLLECTION KEY_GENERIC)iterable;
  // TODO test for Collection but not our collection, and make a wrapper for it.
  return new IterableCollection KEY_GENERIC_DIAMOND(iterable);
 }

#if KEYS_INT_LONG_DOUBLE || KEYS_REFERENCE  // Currently used for the collector methods, which only
exist for the "first-class" primitives and object types.
 /** Helper class for size decreasing size estimation.
  *
  * <p>Used to implement {@code toXWithExpectedSize} to prevent allocating a data structure big enough for the
full stream in every thread, when only one thread
  * (typically the first one) is going to need to "see" all of it at some point.
  *
  * <p>Currently set to always assume a roughly split-by-two strategy from the {@link java.util.Spliterator} backing
the
  * {@link java.util.stream.Stream} (or primitive equivalent). This may perform worse for {@code Spliterator}s that
don't
  * (for example the ones that wrap an {@link java.util.Iterator} as a {@code Spliterator}). This is quite rare in
practice however.
  * But note that even in such cases, this would <em>still</em> perform no worse (modulo some trivial amount) then
the default
  * "flat size for every list" method of combining.
  * A way to detect such cases and use a different size estimation strategy may come in the future.
  *
  * <p>See the {@linkplain #SizeDecreasingSupplier constructor} for requirements of the {@link #builder} functor.
  */
 static class SizeDecreasingSupplier<
#if KEYS_REFERENCE
   K,
#endif
   C extends COLLECTION KEY_GENERIC> implements Supplier<C> {
  static final int RECOMMENDED_MIN_SIZE = 8;

  final AtomicInteger suppliedCount = new AtomicInteger(0);
```

```
  final int expectedFinalSize;
  final IntFunction<C> builder;

  /**
   * Construct this {@link SizeDecreasingSupplier}.
   *
   * @param expectedFinalSize The expected size of the entire remaining contents of the {@code Stream}
   *   and thus what size the Collection holding the final results should try to be preallocated to.
   * @param builder the builder function.
   *   <p>The input integer will be the size of the collection to preallocate.
   *   <p>It is recommended that you allocate a minimum size if the given {@code size} is small.
   *     {@link #RECOMMENDED_MIN_SIZE} gives a good enough ballpark for most cases.
   *   <p>The subclass is free to use the default constructor for the Collection construction
   *     instead of the {@code size} given
   *     if {@code size} falls below the default size used for the default initial capacity for
   *     that Collection implementation. Often such default constructors contain additional
   *     optimizations that giving an explicit initial capacity would not do (even if given
   *     the default capacity as the initial capacity explicitly).
   *   <p>{@link Supplier#get() get()} of the {@link IntFunction} must return non-{@code null}.
   */
  SizeDecreasingSupplier(int expectedFinalSize, IntFunction<C> builder) {
   this.expectedFinalSize = expectedFinalSize;
   this.builder = builder;
  }

  // This method may be worth pulling into a shared superclass.
  @Override
  public C get() {
   // The "correct" splitting (assuming split by two) would be
   // expectedFinalSize / floor(ln_2(++suppliedCount)). But that seems too much trouble to be worth it.
   // Instead we will take a simple harmonically decreasing ratio (1, 1/2, 1/3, 1/4)
   //
   // Round up int math (to round up, not down) adapted from https://stackoverflow.com/a/503201.
   int expectedNeededNextSize = 1 + ((expectedFinalSize - 1) / suppliedCount.incrementAndGet());
   if (expectedNeededNextSize < 0) {
    // Overflow (and weird below zero results) failsafe
    expectedNeededNextSize = RECOMMENDED_MIN_SIZE;
   }
   return builder.apply(expectedNeededNextSize);
  }
 }
#endif  // KEYS_INT_LONG_DOUBLE || KEYS_REFERENCE
}
```

Found in path(s):

* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Collections.drv

No license file was found, but licenses were detected in source scan.

```
package PACKAGE;

/** A class providing static methods and objects that do useful things with type-specific iterables.
*
* @see Iterable
*/

public final class ITERABLES {

 private ITERABLES() {}

 /** Counts the number of elements returned by a type-specific iterable.
  *
  * @param iterable an iterable.
  * @return the number of elements returned by {@code iterable}.
  */
 public static KEY_GENERIC long size(final STD_KEY_ITERABLE KEY_GENERIC iterable) {
  long c = 0;
  for (@SuppressWarnings("unused") final KEY_GENERIC_TYPE dummy : iterable) c++;
  return c;
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Iterables.drv
No license file was found, but licenses were detected in source scan.

```
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

#if ! KEYS_REFERENCE
import it.unimi.dsi.fastutil.objects.ObjectBidirectionalIterable;
import it.unimi.dsi.fastutil.objects.ObjectBidirectionalIterator;
import it.unimi.dsi.fastutil.objects.ObjectSortedSet;
import it.unimi.dsi.fastutil.objects.ObjectSortedSets;
#endif

import PACKAGE.SORTED_MAP.FastSortedEntrySet;

import java.util.Comparator;
import java.util.Map;
import java.util.SortedMap;
import java.util.NoSuchElementException;

/** A class providing static methods and objects that do useful things with type-specific sorted maps.
*
* @see java.util.Collections
*/

public final class SORTED_MAPS {

 private SORTED_MAPS() {}

 /** Returns a comparator for entries based on a given comparator on keys.
  *
  * @param comparator a comparator on keys.
  * @return the associated comparator on entries.
  */
 public static KEY_GENERIC Comparator<? super Map.Entry<KEY_GENERIC_CLASS, ?>>
entryComparator(final KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
  return (Comparator<Map.Entry<KEY_GENERIC_CLASS, ?>>) (x, y) ->
comparator.compare(KEY_CLASS2TYPE(x.getKey()), KEY_CLASS2TYPE(y.getKey()));
 }
```

```
/** Returns a bidirectional iterator that will be {@linkplain FastSortedEntrySet fast}, if possible, on the {@linkplain Map#entrySet() entry set} of the provided {@code map}.
 * @param map a map from which we will try to extract a (fast) bidirectional iterator on the entry set.
 * @return a bidirectional iterator on the entry set of the given map that will be fast, if possible.
 * @since 8.0.0
 */
SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
public static KEY_VALUE_GENERIC ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> fastIterator(SORTED_MAP KEY_VALUE_GENERIC map) {
 final ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> entries = map.ENTRYSET();
 return entries instanceof SORTED_MAP.FastSortedEntrySet ? ((SORTED_MAP.FastSortedEntrySet KEY_VALUE_GENERIC) entries).fastIterator() : entries.iterator();
}

/** Returns an iterable yielding a bidirectional iterator that will be {@linkplain FastSortedEntrySet fast}, if possible, on the {@linkplain Map#entrySet() entry set} of the provided {@code map}.
 * @param map a map from which we will try to extract an iterable yielding a (fast) bidirectional iterator on the entry set.
 * @return an iterable yielding a bidirectional iterator on the entry set of the given map that will be fast, if possible.
 * @since 8.0.0
 */
SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
public static KEY_VALUE_GENERIC ObjectBidirectionalIterable<MAP.Entry KEY_VALUE_GENERIC> fastIterable(SORTED_MAP KEY_VALUE_GENERIC map) {
 final ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> entries = map.ENTRYSET();
 return entries instanceof SORTED_MAP.FastSortedEntrySet ? ((SORTED_MAP.FastSortedEntrySet KEY_VALUE_GENERIC)entries)::fastIterator : entries;
}


/** An immutable class representing an empty type-specific sorted map.
 *
 * <p>This class may be useful to implement your own in case you subclass
 * a type-specific sorted map.
 */

public static class EmptySortedMap KEY_VALUE_GENERIC extends MAPS.EmptyMap KEY_VALUE_GENERIC implements SORTED_MAP KEY_VALUE_GENERIC, java.io.Serializable, Cloneable {

 private static final long serialVersionUID = -7046029254386353129L;

 protected EmptySortedMap() {}

 @Override
 public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return null; }
```

```
  @Override
  public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET() { return
ObjectSortedSets.EMPTY_SET; }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#else
  /** {@inheritDoc} */
#endif
  @Override
  public ObjectSortedSet<Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS>> entrySet() { return
ObjectSortedSets.EMPTY_SET; }

  SUPPRESS_WARNINGS_KEY_UNCHECKED
  @Override
  public SORTED_SET KEY_GENERIC keySet() { return SORTED_SETS.EMPTY_SET; }

  SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC subMap(final KEY_GENERIC_TYPE from, final
KEY_GENERIC_TYPE to) { return EMPTY_MAP; }

  SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC headMap(final KEY_GENERIC_TYPE to) { return
EMPTY_MAP; }

  SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC tailMap(final KEY_GENERIC_TYPE from) { return
EMPTY_MAP; }

  @Override
  public KEY_GENERIC_TYPE FIRST_KEY() { throw new NoSuchElementException(); }

  @Override
  public KEY_GENERIC_TYPE LAST_KEY() { throw new NoSuchElementException(); }

#if KEYS_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC headMap(KEY_GENERIC_CLASS oto) { return
headMap(KEY_CLASS2TYPE(oto)); }
```

```
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC tailMap(KEY_GENERIC_CLASS ofrom) { return
tailMap(KEY_CLASS2TYPE(ofrom)); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC subMap(KEY_GENERIC_CLASS ofrom,
KEY_GENERIC_CLASS oto) { return subMap(KEY_CLASS2TYPE(ofrom), KEY_CLASS2TYPE(oto)); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS firstKey() { return KEY2OBJ(FIRST_KEY()); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS lastKey() { return KEY2OBJ(LAST_KEY()); }
#endif
 }



 /** An empty sorted map (immutable). It is serializable and cloneable.
  */
 SUPPRESS_WARNINGS_KEY_VALUE_RAWTYPES
 public static final EmptySortedMap EMPTY_MAP = new EmptySortedMap();

#if KEYS_REFERENCE || VALUES_REFERENCE
 /** Returns an empty sorted map (immutable). It is serializable and cloneable.
  *
  * <p>This method provides a typesafe access to {@link #EMPTY_MAP}.
  * @return an empty sorted map (immutable).
  */
 @SuppressWarnings("unchecked")
 public static KEY_VALUE_GENERIC SORTED_MAP KEY_VALUE_GENERIC emptyMap() {
  return EMPTY_MAP;
 }
#endif

 /** An immutable class representing a type-specific singleton sorted map.
```

```
 *
 * <p>This class may be useful to implement your own in case you subclass
 * a type-specific sorted map.
 */

 public static class Singleton KEY_VALUE_GENERIC extends MAPS.Singleton KEY_VALUE_GENERIC
implements SORTED_MAP KEY_VALUE_GENERIC, java.io.Serializable, Cloneable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected final KEY_COMPARATOR KEY_SUPER_GENERIC comparator;

  protected Singleton(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE value,
KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
   super(key, value);
   this.comparator = comparator;
  }

  protected Singleton(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE value) {
   this(key, value, null);
  }

  SUPPRESS_WARNINGS_KEY_UNCHECKED
  final int compare(final KEY_GENERIC_TYPE k1, final KEY_GENERIC_TYPE k2) {
   return comparator == null ? KEY_CMP(k1, k2) : comparator.compare(k1, k2);
  }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return comparator; }

  SUPPRESS_WARNINGS_KEY_UNCHECKED
  @Override
  public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET() { if (entries == null) entries =
ObjectSortedSets.singleton(new ABSTRACT_MAP.BasicEntry KEY_VALUE_GENERIC_DIAMOND(key,
value), entryComparator(comparator)); return (ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC>)entries; }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#else
  /** {@inheritDoc} */
#endif
  @Override
  @SuppressWarnings({ "rawtypes", "unchecked" })
  public ObjectSortedSet<Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS>> entrySet() { return
(ObjectSortedSet)ENTRYSET(); }
```

```
  @Override
  public SORTED_SET KEY_GENERIC keySet() { if (keys == null) keys = SORTED_SETS.singleton(key, comparator); return (SORTED_SET KEY_GENERIC)keys; }

  SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC subMap(final KEY_GENERIC_TYPE from, final KEY_GENERIC_TYPE to) { if (compare(from, key) <= 0 && compare(key, to) < 0) return this; return EMPTY_MAP; }

  SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC headMap(final KEY_GENERIC_TYPE to) { if (compare(key, to) < 0) return this; return EMPTY_MAP; }

  SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC tailMap(final KEY_GENERIC_TYPE from) { if (compare(from, key) <= 0) return this; return EMPTY_MAP; }

  @Override
  public KEY_GENERIC_TYPE FIRST_KEY() { return key; }

  @Override
  public KEY_GENERIC_TYPE LAST_KEY() { return key; }

#if KEYS_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC headMap(KEY_GENERIC_CLASS oto) { return headMap(KEY_CLASS2TYPE(oto)); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC tailMap(KEY_GENERIC_CLASS ofrom) { return tailMap(KEY_CLASS2TYPE(ofrom)); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC subMap(KEY_GENERIC_CLASS ofrom, KEY_GENERIC_CLASS oto) { return subMap(KEY_CLASS2TYPE(ofrom), KEY_CLASS2TYPE(oto)); }
```

/** {@inheritDoc}
* @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
public KEY_GENERIC_CLASS firstKey() { return KEY2OBJ(FIRST_KEY()); }

/** {@inheritDoc}
* @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
public KEY_GENERIC_CLASS lastKey() { return KEY2OBJ(LAST_KEY()); }
#endif
}

/** Returns a type-specific immutable sorted map containing only the specified pair. The returned sorted map is serializable and cloneable.
*
* <p>Note that albeit the returned map is immutable, its default return value may be changed.
*
* @param key the only key of the returned sorted map.
* @param value the only value of the returned sorted map.
* @return a type-specific immutable sorted map containing just the pair {@code <key,value>}.
*/

public static KEY_VALUE_GENERIC SORTED_MAP KEY_VALUE_GENERIC singleton(final KEY_GENERIC_CLASS key, VALUE_GENERIC_CLASS value) { return new Singleton KEY_VALUE_GENERIC_DIAMOND(KEY_CLASS2TYPE(key), VALUE_CLASS2TYPE(value));}

/** Returns a type-specific immutable sorted map containing only the specified pair. The returned sorted map is serializable and cloneable.
*
* <p>Note that albeit the returned map is immutable, its default return value may be changed.
*
* @param key the only key of the returned sorted map.
* @param value the only value of the returned sorted map.
* @param comparator the comparator to use in the returned sorted map.
* @return a type-specific immutable sorted map containing just the pair {@code <key,value>}.
*/

public static KEY_VALUE_GENERIC SORTED_MAP KEY_VALUE_GENERIC singleton(final KEY_GENERIC_CLASS key, VALUE_GENERIC_CLASS value, KEY_COMPARATOR KEY_SUPER_GENERIC comparator) { return new Singleton KEY_VALUE_GENERIC_DIAMOND(KEY_CLASS2TYPE(key), VALUE_CLASS2TYPE(value), comparator);
}

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE

/** Returns a type-specific immutable sorted map containing only the specified pair. The returned sorted map is

```
serializable and cloneable.
 *
 * <p>Note that albeit the returned map is immutable, its default return value may be changed.
 *
 * @param key the only key of the returned sorted map.
 * @param value the only value of the returned sorted map.
 * @return a type-specific immutable sorted map containing just the pair {@code &lt;key,value&gt;}.
 */

public static KEY_VALUE_GENERIC SORTED_MAP KEY_VALUE_GENERIC singleton(final
KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE value) {
 return new Singleton KEY_VALUE_GENERIC_DIAMOND(key, value);
}

/** Returns a type-specific immutable sorted map containing only the specified pair. The returned sorted map is
serializable and cloneable.
 *
 * <p>Note that albeit the returned map is immutable, its default return value may be changed.
 *
 * @param key the only key of the returned sorted map.
 * @param value the only value of the returned sorted map.
 * @param comparator the comparator to use in the returned sorted map.
 * @return a type-specific immutable sorted map containing just the pair {@code &lt;key,value&gt;}.
 */

public static KEY_VALUE_GENERIC SORTED_MAP KEY_VALUE_GENERIC singleton(final
KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE value, KEY_COMPARATOR
KEY_SUPER_GENERIC comparator) {
 return new Singleton KEY_VALUE_GENERIC_DIAMOND(key, value, comparator);
}

#endif


 /** A synchronized wrapper class for sorted maps. */

public static class SynchronizedSortedMap KEY_VALUE_GENERIC extends MAPS.SynchronizedMap
KEY_VALUE_GENERIC implements SORTED_MAP KEY_VALUE_GENERIC, java.io.Serializable {

 private static final long serialVersionUID = -7046029254386353129L;

 protected final SORTED_MAP KEY_VALUE_GENERIC sortedMap;

 protected SynchronizedSortedMap(final SORTED_MAP KEY_VALUE_GENERIC m, final Object sync) {
  super(m, sync);
  sortedMap = m;
 }
```

```
  protected SynchronizedSortedMap(final SORTED_MAP KEY_VALUE_GENERIC m) {
   super(m);
   sortedMap = m;
  }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { synchronized(sync) { return
sortedMap.comparator(); } }

  @Override
  public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET() { if (entries == null) entries =
ObjectSortedSets.synchronize(sortedMap.ENTRYSET(), sync); return (ObjectSortedSet<MAP.Entry
KEY_VALUE_GENERIC>)entries; }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#else
  /** {@inheritDoc} */
#endif
  @Override
  @SuppressWarnings({ "rawtypes", "unchecked" })
  public ObjectSortedSet<Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS>> entrySet() { return
(ObjectSortedSet)ENTRYSET(); }

  @Override
  public SORTED_SET KEY_GENERIC keySet() { if (keys == null) keys =
SORTED_SETS.synchronize(sortedMap.keySet(), sync); return (SORTED_SET KEY_GENERIC)keys; }

  @Override
  public SORTED_MAP KEY_VALUE_GENERIC subMap(final KEY_GENERIC_TYPE from, final
KEY_GENERIC_TYPE to) { return new SynchronizedSortedMap
KEY_VALUE_GENERIC_DIAMOND(sortedMap.subMap(from, to), sync); }

  @Override
  public SORTED_MAP KEY_VALUE_GENERIC headMap(final KEY_GENERIC_TYPE to) { return new
SynchronizedSortedMap KEY_VALUE_GENERIC_DIAMOND(sortedMap.headMap(to), sync); }

  @Override
  public SORTED_MAP KEY_VALUE_GENERIC tailMap(final KEY_GENERIC_TYPE from) { return new
SynchronizedSortedMap KEY_VALUE_GENERIC_DIAMOND(sortedMap.tailMap(from), sync); }

  @Override
  public KEY_GENERIC_TYPE FIRST_KEY() {  synchronized(sync) { return sortedMap.FIRST_KEY(); } }

  @Override
  public KEY_GENERIC_TYPE LAST_KEY() {  synchronized(sync) { return sortedMap.LAST_KEY(); } }
```

```
#if KEYS_PRIMITIVE
 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public KEY_GENERIC_CLASS firstKey() {  synchronized(sync) { return sortedMap.firstKey(); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public KEY_GENERIC_CLASS lastKey() {  synchronized(sync) { return sortedMap.lastKey(); } }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public SORTED_MAP KEY_VALUE_GENERIC subMap(final KEY_GENERIC_CLASS from, final
KEY_GENERIC_CLASS to) { return new SynchronizedSortedMap
KEY_VALUE_GENERIC_DIAMOND(sortedMap.subMap(from, to), sync); }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public SORTED_MAP KEY_VALUE_GENERIC headMap(final KEY_GENERIC_CLASS to) { return new
SynchronizedSortedMap KEY_VALUE_GENERIC_DIAMOND(sortedMap.headMap(to), sync); }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public SORTED_MAP KEY_VALUE_GENERIC tailMap(final KEY_GENERIC_CLASS from) { return new
SynchronizedSortedMap KEY_VALUE_GENERIC_DIAMOND(sortedMap.tailMap(from), sync); }
#endif



 }

 /** Returns a synchronized type-specific sorted map backed by the given type-specific sorted map.
  *
  * @param m the sorted map to be wrapped in a synchronized sorted map.
  * @return a synchronized view of the specified sorted map.
  * @see java.util.Collections#synchronizedSortedMap(SortedMap)
  */
 public static KEY_VALUE_GENERIC SORTED_MAP KEY_VALUE_GENERIC synchronize(final
SORTED_MAP KEY_VALUE_GENERIC m) { return new SynchronizedSortedMap
```

```
KEY_VALUE_GENERIC_DIAMOND(m); }

 /** Returns a synchronized type-specific sorted map backed by the given type-specific sorted map, using an assigned object to synchronize.
  *
  * @param m the sorted map to be wrapped in a synchronized sorted map.
  * @param sync an object that will be used to synchronize the access to the sorted sorted map.
  * @return a synchronized view of the specified sorted map.
  * @see java.util.Collections#synchronizedSortedMap(SortedMap)
  */

 public static KEY_VALUE_GENERIC SORTED_MAP KEY_VALUE_GENERIC synchronize(final SORTED_MAP KEY_VALUE_GENERIC m, final Object sync) { return new SynchronizedSortedMap KEY_VALUE_GENERIC_DIAMOND(m, sync); }




 /** An unmodifiable wrapper class for sorted maps. */

 public static class UnmodifiableSortedMap KEY_VALUE_GENERIC extends MAPS.UnmodifiableMap KEY_VALUE_GENERIC implements SORTED_MAP KEY_VALUE_GENERIC, java.io.Serializable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected final SORTED_MAP KEY_GENERIC_VALUE_EXTENDS_GENERIC sortedMap;

  protected UnmodifiableSortedMap(final SORTED_MAP KEY_GENERIC_VALUE_EXTENDS_GENERIC m) {
   super(m);
   sortedMap = m;
  }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return sortedMap.comparator(); }

  @SuppressWarnings({ "rawtypes", "unchecked" })
  @Override
  public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET() { if (entries == null) entries = ObjectSortedSets.unmodifiable((ObjectSortedSet)sortedMap.ENTRYSET()); return (ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC>)entries; }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#else
  /** {@inheritDoc} */
#endif
```

```
  @Override
  @SuppressWarnings({ "rawtypes", "unchecked" })
  public ObjectSortedSet<Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS>> entrySet() { return
(ObjectSortedSet)ENTRYSET(); }

  @Override
  public SORTED_SET KEY_GENERIC keySet() { if (keys == null) keys =
SORTED_SETS.unmodifiable(sortedMap.keySet()); return (SORTED_SET KEY_GENERIC)keys; }

  @Override
  public SORTED_MAP KEY_VALUE_GENERIC subMap(final KEY_GENERIC_TYPE from, final
KEY_GENERIC_TYPE to) { return new UnmodifiableSortedMap
KEY_VALUE_GENERIC_DIAMOND(sortedMap.subMap(from, to)); }

  @Override
  public SORTED_MAP KEY_VALUE_GENERIC headMap(final KEY_GENERIC_TYPE to) { return new
UnmodifiableSortedMap KEY_VALUE_GENERIC_DIAMOND(sortedMap.headMap(to)); }

  @Override
  public SORTED_MAP KEY_VALUE_GENERIC tailMap(final KEY_GENERIC_TYPE from) { return new
UnmodifiableSortedMap KEY_VALUE_GENERIC_DIAMOND(sortedMap.tailMap(from)); }

  @Override
  public KEY_GENERIC_TYPE FIRST_KEY() {  return sortedMap.FIRST_KEY(); }

  @Override
  public KEY_GENERIC_TYPE LAST_KEY() {  return sortedMap.LAST_KEY(); }

#if KEYS_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS firstKey() {  return sortedMap.firstKey(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public KEY_GENERIC_CLASS lastKey() {  return sortedMap.lastKey(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC subMap(final KEY_GENERIC_CLASS from, final
KEY_GENERIC_CLASS to) { return new UnmodifiableSortedMap
KEY_VALUE_GENERIC_DIAMOND(sortedMap.subMap(from, to)); }
```

```
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC headMap(final KEY_GENERIC_CLASS to) { return new
UnmodifiableSortedMap KEY_VALUE_GENERIC_DIAMOND(sortedMap.headMap(to)); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public SORTED_MAP KEY_VALUE_GENERIC tailMap(final KEY_GENERIC_CLASS from) { return new
UnmodifiableSortedMap KEY_VALUE_GENERIC_DIAMOND(sortedMap.tailMap(from)); }
#endif


 }

 /** Returns an unmodifiable type-specific sorted map backed by the given type-specific sorted map.
  *
  * @param m the sorted map to be wrapped in an unmodifiable sorted map.
  * @return an unmodifiable view of the specified sorted map.
  * @see java.util.Collections#unmodifiableSortedMap(SortedMap)
  */
 public static KEY_VALUE_GENERIC SORTED_MAP KEY_VALUE_GENERIC unmodifiable(final
SORTED_MAP KEY_GENERIC_VALUE_EXTENDS_GENERIC m) { return new UnmodifiableSortedMap
KEY_VALUE_GENERIC_DIAMOND(m); }



#if defined(TEST) && ! KEYS_USE_REFERENCE_EQUALITY

 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#else
  return Integer.toBinaryString(r.nextInt());
#endif
 }

 private static VALUE_TYPE genValue() {
#if VALUE_CLASS_Byte || VALUE_CLASS_Short || VALUE_CLASS_Character
```

```
  return (VALUE_TYPE)(r.nextInt());
#elif VALUES_PRIMITIVE
  return r.NEXT_VALUE();
#elif !VALUES_USE_REFERENCE_EQUALITY || KEYS_USE_REFERENCE_EQUALITY
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }


 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition p = new java.text.FieldPosition(0);

 private static String format(double d) {
  StringBuffer s = new StringBuffer();
  return format.format(d, s, p).toString();
 }

 private static void speedTest(int n, boolean comp) {
  System.out.println("There are presently no speed tests for this class.");
 }

 private static void fatal(String msg) {
  throw new AssertionError(msg);
 }

 private static void ensure(boolean cond, String msg) {
  if (cond) return;
  fatal(msg);
 }

 private static Object[] k, v, nk;
 private static KEY_TYPE kt[];
 private static KEY_TYPE nkt[];
 private static VALUE_TYPE vt[];
 private static SORTED_MAP topMap;

 protected static void testMaps(SORTED_MAP m, SortedMap t, int n, int level) throws Exception {
  long ms;
  boolean mThrowsIllegal, tThrowsIllegal, mThrowsNoElement, tThrowsNoElement, mThrowsUnsupp,
tThrowsUnsupp;
  Object rt = null, rm = null;

  if (level > 1) return;


  /* Now we check that both maps agree on first/last keys. */
```

```
  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.firstKey();
  }
  catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.firstKey();
  }
  catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): firstKey() divergence at start in java.util.NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
  if (! mThrowsNoElement) ensure(t.firstKey().equals(m.firstKey()), "Error (" + level + ", " + seed + "): m and t differ at start on their first key (" + m.firstKey() + ", " + t.firstKey() +")");

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.lastKey();
  }
  catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.lastKey();
  }
  catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): lastKey() divergence at start in java.util.NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");


  if (! mThrowsNoElement) ensure(t.lastKey().equals(m.lastKey()), "Error (" + level + ", " + seed + "): m and t differ at start on their last key (" + m.lastKey() + ", " + t.lastKey() +")");


  /* Now we check that m and t are equal. */
  if (!m.equals(t) || ! t.equals(m)) System.err.println("m: " + m + " t: " + t);

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) at start");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) at start");



  /* Now we check that m actually holds that data. */
  for(java.util.Iterator i=t.entrySet().iterator(); i.hasNext();) {
   java.util.Map.Entry e = (java.util.Map.Entry)i.next();
   ensure(java.util.Objects.equals(e.getValue(), m.get(e.getKey())), "Error (" + level + ", " + seed + "): m and t differ
```

```
on an entry ("+e+") after insertion (iterating on t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */
  for(java.util.Iterator i=m.entrySet().iterator(); i.hasNext();) {
   java.util.Map.Entry e = (java.util.Map.Entry)i.next();
   ensure(java.util.Objects.equals(e.getValue(), t.get(e.getKey())), "Error (" + level + ", " + seed + "): m and t differ on
an entry ("+e+") after insertion (iterating on m)");
  }

  /* Now we check that m actually holds the same keys. */
  for(java.util.Iterator i=t.keySet().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(m.containsKey(o), "Error (" + level + ", " + seed + "): m and t differ on a key ("+o+") after insertion
(iterating on t)");
   ensure(m.keySet().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a key ("+o+", in keySet()) after
insertion (iterating on t)");
  }

  /* Now we check that m actually holds the same keys, but iterating on m. */
  for(java.util.Iterator i=m.keySet().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsKey(o), "Error (" + level + ", " + seed + "): m and t differ on a key after insertion (iterating on m)");
   ensure(t.keySet().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a key (in keySet()) after insertion
(iterating on m)");
  }


  /* Now we check that m actually hold the same values. */
  for(java.util.Iterator i=t.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(m.containsValue(o), "Error (" + level + ", " + seed + "): m and t differ on a value after insertion (iterating on
t)");
   ensure(m.values().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a value (in values()) after
insertion (iterating on t)");
  }

  /* Now we check that m actually hold the same values, but iterating on m. */
  for(java.util.Iterator i=m.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsValue(o), "Error (" + level + ", " + seed + "): m and t differ on a value after insertion (iterating on
m)");
   ensure(t.values().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a value (in values()) after
insertion (iterating on m)");
  }

  /* Now we check that inquiries about random data give the same answer in m and t. For
     m we use the polymorphic method. */
```

```
  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

   try {
    m.containsKey(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    t.containsKey(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): containsKey() divergence in
java.util.NoSuchElementException (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): containsKey() divergence in
IllegalArgumentException (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) {
    ensure(m.containsKey(KEY2OBJ(T)) == t.containsKey(KEY2OBJ(T)), "Error (" + level + ", " + seed + "):
divergence in keys between t and m (polymorphic method)");

#if KEY_CLASS_Object && ! (VALUES_REFERENCE)
    if ((m.GET_VALUE(T) != VALUE_NULL) != ((t.get(KEY2OBJ(T)) == null ? VALUE_NULL :
VALUE_OBJ2TYPE(t.get(KEY2OBJ(T)))) != VALUE_NULL) ||
     t.get(KEY2OBJ(T)) != null &&
     ! VALUE2OBJ(m.GET_VALUE(T)).equals(t.get(KEY2OBJ(T))))
#else
     if ((m.get(T) != VALUE_NULL) != ((t.get(KEY2OBJ(T)) == null ? VALUE_NULL :
VALUE_OBJ2TYPE(t.get(KEY2OBJ(T)))) != VALUE_NULL) ||
      t.get(KEY2OBJ(T)) != null &&
      ! m.get(KEY2OBJ(T)).equals(t.get(KEY2OBJ(T))))
#endif
      {
       ensure(false, "Error (" + level + ", " + seed + "): divergence between t and m (polymorphic method)");
      }
   }
  }

  /* Again, we check that inquiries about random data give the same answer in m and t, but
     for m we use the standard method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();
```

```
   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

   try {
    m.get(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    t.get(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): get() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): get() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(java.util.Objects.equals(m.get(KEY2OBJ(T)),
t.get(KEY2OBJ(T))), "Error (" + level + ", " + seed + "): divergence between t and m (standard method)");
  }

  /* Now we put and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();
   VALUE_TYPE U = genValue();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = mThrowsUnsupp =
tThrowsUnsupp = false;

   try {
    rm = m.put(KEY2OBJ(T), VALUE2OBJ(U));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    rt = t.put(KEY2OBJ(T), VALUE2OBJ(U));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): put() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
```

```
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): put() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   //ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): put() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsUnsupp) ensure(java.util.Objects.equals(rm, rt),
"Error (" + level + ", " + seed + "): divergence in put() between t and m (" + rt + ", " + rm + ")");

   T = genKey();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = mThrowsUnsupp =
tThrowsUnsupp = false;

   try {
    rm = m.remove(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }
   catch (UnsupportedOperationException e) { mThrowsUnsupp = true; }

   try {
    rt = t.remove(KEY2OBJ(T));
   }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }
   catch (UnsupportedOperationException e) { tThrowsUnsupp = true; }


   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): remove() divergence in
java.util.NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): remove() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   //ensure(mThrowsUnsupp == tThrowsUnsupp, "Error (" + level + ", " + seed + "): remove() divergence in
UnsupportedOperationException for " + T + " (" + mThrowsUnsupp + ", " + tThrowsUnsupp + ") " + m);
   if (!mThrowsNoElement && !mThrowsIllegal && !mThrowsUnsupp) ensure(java.util.Objects.equals(rm, rt),
"Error (" + level + ", " + seed + "): divergence in remove() between t and m (" + rt + ", " + rm + ")");
  }

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after removal");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after removal");

  /* Now we check that m actually holds the same data. */

  for(java.util.Iterator i=t.entrySet().iterator(); i.hasNext();) {
   java.util.Map.Entry e = (java.util.Map.Entry)i.next();
   ensure(java.util.Objects.equals(e.getValue(), m.get(e.getKey())), "Error (" + level + ", " + seed + "): m and t differ
on an entry ("+e+") after removal (iterating on t)");
  }
```

```
  /* Now we check that m actually holds that data, but iterating on m. */

  for(java.util.Iterator i=m.entrySet().iterator(); i.hasNext();) {
   java.util.Map.Entry e = (java.util.Map.Entry)i.next();
   ensure(java.util.Objects.equals(e.getValue(), t.get(e.getKey())), "Error (" + level + ", " + seed + "): m and t differ on an entry ("+e+") after removal (iterating on m)");
  }

  /* Now we check that m actually holds the same keys. */

  for(java.util.Iterator i=t.keySet().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(m.containsKey(o), "Error (" + level + ", " + seed + "): m and t differ on a key ("+o+") after removal (iterating on t)");
   ensure(m.keySet().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a key ("+o+", in keySet()) after removal (iterating on t)");
  }

  /* Now we check that m actually holds the same keys, but iterating on m. */

  for(java.util.Iterator i=m.keySet().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsKey(o), "Error (" + level + ", " + seed + "): m and t differ on a key after removal (iterating on m)");
   ensure(t.keySet().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a key (in keySet()) after removal (iterating on m)");
  }


  /* Now we check that m actually hold the same values. */

  for(java.util.Iterator i=t.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(m.containsValue(o), "Error (" + level + ", " + seed + "): m and t differ on a value after removal (iterating on t)");
   ensure(m.values().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a value (in values()) after removal (iterating on t)");
  }

  /* Now we check that m actually hold the same values, but iterating on m. */

  for(java.util.Iterator i=m.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsValue(o), "Error (" + level + ", " + seed + "): m and t differ on a value after removal (iterating on m)");
   ensure(t.values().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a value (in values()) after removal (iterating on m)");
  }
```

```
 /* Now we check that both maps agree on first/last keys. */

 mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

 try {
  m.firstKey();
 }
 catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
 try {
  t.firstKey();
 }
 catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }

 ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): firstKey() divergence in
java.util.NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
 if (! mThrowsNoElement) ensure(t.firstKey().equals(m.firstKey()), "Error (" + level + ", " + seed + "): m and t differ
on their first key (" + m.firstKey() + ", " + t.firstKey() +")");

 mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

 try {
  m.lastKey();
 }
 catch (java.util.NoSuchElementException e) { mThrowsNoElement = true; }
 try {
  t.lastKey();
 }
 catch (java.util.NoSuchElementException e) { tThrowsNoElement = true; }

 ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): lastKey() divergence in
java.util.NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");

 if (! mThrowsNoElement) ensure(t.lastKey().equals(m.lastKey()), "Error (" + level + ", " + seed + "): m and t differ
on their last key (" + m.lastKey() + ", " + t.lastKey() +")");

 /* Now we check cloning. */

 if (level == 0) {
  ensure(m.equals(((Singleton)m).clone()), "Error (" + level + ", " + seed + "): m does not equal m.clone()");
  ensure(((Singleton)m).clone().equals(m), "Error (" + level + ", " + seed + "): m.clone() does not equal m");
  m = (SORTED_MAP)((Singleton)m).clone();
 }

 int h = m.hashCode();


 /* Now we save and read m. */
```

```
  SORTED_MAP m2 = null;

  {
   java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
   java.io.OutputStream os = new java.io.FileOutputStream(ff);
   java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

   oos.writeObject(m);
   oos.close();

   java.io.InputStream is = new java.io.FileInputStream(ff);
   java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

   m2 = (SORTED_MAP)ois.readObject();
   ois.close();
   ff.delete();
  }

#if !VALUES_USE_REFERENCE_EQUALITY
  ensure(m2.hashCode() == h, "Error (" + level + ", " + seed + "): hashCode() changed after save/read");

  /* Now we check that m2 actually holds that data. */

  ensure(m2.equals(t), "Error (" + level + ", " + seed + "): ! m2.equals(t) after save/read");
  ensure(t.equals(m2), "Error (" + level + ", " + seed + "): ! t.equals(m2) after save/read");
  /* Now we take out of m everything, and check that it is empty. */
#endif

  /* Now we play with iterators. */

  {
   java.util.ListIterator i, j;
   Object J;
   i = (java.util.ListIterator)m.entrySet().iterator();
   j = new java.util.LinkedList(t.entrySet()).listIterator();

   for(int k = 0; k < 2*n; k++) {
    ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext()");
    ensure(i.hasPrevious() == j.hasPrevious(), "Error (" + level + ", " + seed + "): divergence in hasPrevious()");

    if (r.nextFloat() < .8 && i.hasNext()) {
     ensure(((java.util.Map.Entry)i.next()).getKey().equals(J = ((Map.Entry)j.next()).getKey()), "Error (" + level + ", " +
seed + "): divergence in next()");

    }
    else if (r.nextFloat() < .2 && i.hasPrevious()) {
     ensure(((java.util.Map.Entry)i.previous()).getKey().equals(J = ((Map.Entry)j.previous()).getKey()), "Error (" + level
+ ", " + seed + "): divergence in previous()");
```

```
    }

    ensure(i.nextIndex() == j.nextIndex(), "Error (" + level + ", " + seed + "): divergence in nextIndex()");
    ensure(i.previousIndex() == j.previousIndex(), "Error (" + level + ", " + seed + "): divergence in previousIndex()");

   }
  }

  {
   boolean badPrevious = false;
   Object previous = null;
   it.unimi.dsi.fastutil.BidirectionalIterator i;
   java.util.ListIterator j;
   Object I, J;
   KEY_TYPE from = genKey();
   j = new java.util.LinkedList(t.keySet()).listIterator();
   while(j.hasNext()) {
    Object k = j.next();
    if (((Comparable)k).compareTo(KEY2OBJ(from)) > 0) {
     badPrevious = true;
     j.previous();
     break;
    }
    previous = k;
   }

   i = (it.unimi.dsi.fastutil.BidirectionalIterator)((SORTED_SET)m.keySet()).iterator(from);

   for(int k = 0; k < 2*n; k++) {
    ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext() (iterator with starting
point " + from + ")");
    ensure(i.hasPrevious() == j.hasPrevious() || badPrevious && (i.hasPrevious() == (previous != null)), "Error (" +
level + ", " + seed + "): divergence in hasPrevious() (iterator with starting point " + from + ")" + badPrevious);

    if (r.nextFloat() < .8 && i.hasNext()) {
     ensure((I = i.next()).equals(J = j.next()), "Error (" + level + ", " + seed + "): divergence in next() (" + I + ", " + J + ",
iterator with starting point " + from + ")");
     //System.err.println("Done next " + I + " " + J + "  " + badPrevious);

     badPrevious = false;

     if (r.nextFloat() < 0.5) {
     }
    }
    else if (!badPrevious && r.nextFloat() < .2 && i.hasPrevious()) {
     ensure((I = i.previous()).equals(J = j.previous()), "Error (" + level + ", " + seed + "): divergence in previous() (" + I +
", " + J + ", iterator with starting point " + from + ")");
```

```
     if (r.nextFloat() < 0.5) {
     }
    }
   }

  }

  /* Now we check that m actually holds that data. */

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after iteration");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after iteration");

  /* Now we select a pair of keys and create a submap. */

  if (! m.isEmpty()) {
   java.util.ListIterator i;
   Object start = m.firstKey(), end = m.firstKey();
   for(i = (java.util.ListIterator)m.keySet().iterator(); i.hasNext() && r.nextFloat() < .3; start = end = i.next());
   for(; i.hasNext() && r.nextFloat() < .95; end = i.next());

   //System.err.println("Checking subMap from " + start + " to " + end + " (level=" + (level+1) + ")...");
   testMaps((SORTED_MAP)m.subMap((KEY_CLASS)start, (KEY_CLASS)end), t.subMap(start, end), n, level + 1);

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after subMap");
   ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after subMap");

   //System.err.println("Checking headMap to " + end + " (level=" + (level+1) + ")...");
   testMaps((SORTED_MAP)m.headMap((KEY_CLASS)end), t.headMap(end), n, level + 1);

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after headMap");
   ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after headMap");

   //System.err.println("Checking tailMap from " + start + " (level=" + (level+1) + ")...");
   testMaps((SORTED_MAP)m.tailMap((KEY_CLASS)start), t.tailMap(start), n, level + 1);

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after tailMap");
   ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after tailMap");
  }


 }



 private static void test() throws Exception {
  int n = 1;
  k = new Object[n];
  v = new Object[n];
```

```
  nk = new Object[n];
  kt = new KEY_TYPE[n];
  nkt = new KEY_TYPE[n];
  vt = new VALUE_TYPE[n];


  for(int i = 0; i < n; i++) {
#if KEY_CLASS_Object
   k[i] = kt[i] = genKey();
   nk[i] = nkt[i] = genKey();
#else
   k[i] = new KEY_CLASS(kt[i] = genKey());
   nk[i] = new KEY_CLASS(nkt[i] = genKey());
#endif
#if VALUES_REFERENCE
   v[i] = vt[i] = genValue();
#else
   v[i] = new VALUE_CLASS(vt[i] = genValue());
#endif
  }

  SORTED_MAP m = new Singleton(kt[0], vt[0]);
  topMap = m;
  SortedMap t1 = new java.util.TreeMap();
  t1.put(k[0], v[0]);
  SortedMap t = java.util.Collections.unmodifiableSortedMap(t1);

  testMaps(m, t, n, 0);

  System.out.println("Test OK");
  return;
 }


 public static void main(String args[]) throws Exception {
  if (args.length > 1) r = new java.util.Random(seed = Long.parseLong(args[1]));

  try {
   test();
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif
```

}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/SortedMaps.drv
No license file was found, but licenses were detected in source scan.

```
/*
* Copyright (C) 2002-2022 Sebastiano Vigna
*
* Licensed under the Apache License, Version 2.0 (the "License");
* you may not use this file except in compliance with the License.
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*     http://www.apache.org/licenses/LICENSE-2.0
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

#if ! KEYS_REFERENCE
import it.unimi.dsi.fastutil.objects.ObjectIterator;
import it.unimi.dsi.fastutil.objects.ObjectIterable;
import it.unimi.dsi.fastutil.objects.ObjectSpliterator;
import it.unimi.dsi.fastutil.objects.ObjectSet;
import it.unimi.dsi.fastutil.objects.ObjectSets;
#endif

#if KEY_INDEX != VALUE_INDEX && !(KEYS_REFERENCE && VALUES_REFERENCE)
import VALUE_PACKAGE.VALUE_COLLECTION;
import VALUE_PACKAGE.VALUE_COLLECTIONS;
#if ! VALUE_CLASS_Object
import VALUE_PACKAGE.VALUE_SETS;
#endif
#endif

import java.util.Map;
import java.util.function.Consumer;
import PACKAGE.MAP.FastEntrySet;

/** A class providing static methods and objects that do useful things with type-specific maps.
*
```

```
* @see java.util.Collections
*/

public final class MAPS {

 private MAPS() {}

 /** Returns an iterator that will be {@linkplain FastEntrySet fast}, if possible, on the {@linkplain Map#entrySet()
entry set} of the provided {@code map}.
  * @param map a map from which we will try to extract a (fast) iterator on the entry set.
  * @return an iterator on the entry set of the given map that will be fast, if possible.
  * @since 8.0.0
  */
 SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
 public static KEY_VALUE_GENERIC ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> fastIterator(MAP
KEY_VALUE_GENERIC map) {
  final ObjectSet<MAP.Entry KEY_VALUE_GENERIC> entries = map.ENTRYSET();
  return entries instanceof MAP.FastEntrySet ? ((MAP.FastEntrySet KEY_VALUE_GENERIC) entries).fastIterator()
: entries.iterator();
 }

 /** Iterates {@linkplain FastEntrySet#fastForEach(Consumer) quickly}, if possible, on the {@linkplain
Map#entrySet() entry set} of the provided {@code map}.
  * @param map a map on which we will try to iterate {@linkplain FastEntrySet#fastForEach(Consumer) quickly}.
  * @param consumer the consumer that will be passed to  {@link FastEntrySet#fastForEach(Consumer)}, if
possible, or to {@link Iterable#forEach(Consumer)}.
  * @since 8.1.0
  */
 SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
 public static KEY_VALUE_GENERIC void fastForEach(MAP KEY_VALUE_GENERIC map, final Consumer<?
super MAP.Entry KEY_VALUE_GENERIC> consumer) {
  final ObjectSet<MAP.Entry KEY_VALUE_GENERIC> entries = map.ENTRYSET();
  if (entries instanceof MAP.FastEntrySet) ((MAP.FastEntrySet KEY_VALUE_GENERIC)
entries).fastForEach(consumer);
  else entries.forEach(consumer);
 }

 /** Returns an iterable yielding an iterator that will be {@linkplain FastEntrySet fast}, if possible, on the
{@linkplain Map#entrySet() entry set} of the provided {@code map}.
  * @param map a map from which we will try to extract an iterable yielding a (fast) iterator on the entry set.
  * @return an iterable  yielding an iterator on the entry set of the given map that will be
  * fast, if possible.
  * @since 8.0.0
  */
 SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
 public static KEY_VALUE_GENERIC ObjectIterable<MAP.Entry KEY_VALUE_GENERIC> fastIterable(MAP
KEY_VALUE_GENERIC map) {
  final ObjectSet<MAP.Entry KEY_VALUE_GENERIC> entries = map.ENTRYSET();
```

```
  return entries instanceof MAP.FastEntrySet ? new ObjectIterable<MAP.Entry KEY_VALUE_GENERIC>() {
   @Override
   public ObjectIterator<MAP.Entry KEY_VALUE_GENERIC> iterator() { return ((MAP.FastEntrySet
KEY_VALUE_GENERIC)entries).fastIterator(); }
   @Override
   public ObjectSpliterator<MAP.Entry KEY_VALUE_GENERIC> spliterator() { return entries.spliterator(); }
   @Override
   public void forEach(final Consumer<? super MAP.Entry KEY_VALUE_GENERIC> consumer) {
((MAP.FastEntrySet KEY_VALUE_GENERIC)entries).fastForEach(consumer); }
  } : entries;
 }

 /** An immutable class representing an empty type-specific map.
  *
  * <p>This class may be useful to implement your own in case you subclass
  * a type-specific map.
  */

 public static class EmptyMap KEY_VALUE_GENERIC extends FUNCTIONS.EmptyFunction
KEY_VALUE_GENERIC implements MAP KEY_VALUE_GENERIC, java.io.Serializable, Cloneable {

  private static final long serialVersionUID = -7046029254386353129L;

  protected EmptyMap() {}

  @Override
  public boolean containsValue(final VALUE_TYPE v) { return false; }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  @Deprecated
#endif
  @Override
  public VALUE_GENERIC_CLASS getOrDefault(final Object key, final VALUE_GENERIC_CLASS
defaultValue) { return defaultValue; }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  @Override
  public VALUE_GENERIC_TYPE getOrDefault(final KEY_TYPE key, final VALUE_GENERIC_TYPE
defaultValue) { return defaultValue; }
#endif

#if VALUES_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public boolean containsValue(final Object ov) { return false; }
#endif
```

```
 @Override
 public void putAll(final Map<? extends KEY_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> m) {
throw new UnsupportedOperationException(); }

 @Override
 public ObjectSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET() { return ObjectSets.EMPTY_SET; }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public SET KEY_GENERIC keySet() { return SETS.EMPTY_SET; }

 SUPPRESS_WARNINGS_VALUE_UNCHECKED
 @Override
 public VALUE_COLLECTION VALUE_GENERIC values() { return VALUE_SETS.EMPTY_SET; }

 @Override
 public void forEach(final java.util.function.BiConsumer<? super KEY_GENERIC_CLASS, ? super
VALUE_GENERIC_CLASS> consumer) { }

 @Override
 public Object clone() { return EMPTY_MAP; }

 @Override
 public boolean isEmpty() { return true; }

 @Override
 public int hashCode() { return 0; }

 @Override
 public boolean equals(final Object o) {
  if (! (o instanceof Map)) return false;
  return ((Map<?,?>)o).isEmpty();
 }

 @Override
 public String toString() { return "{}"; }
}


/** An empty type-specific map (immutable). It is serializable and cloneable.
 */
SUPPRESS_WARNINGS_KEY_VALUE_RAWTYPES
public static final EmptyMap EMPTY_MAP = new EmptyMap();

#if KEYS_REFERENCE || VALUES_REFERENCE
/** Returns an empty map (immutable). It is serializable and cloneable.
 *
```

```
 * <p>This method provides a typesafe access to {@link #EMPTY_MAP}.
 * @return an empty map (immutable).
 */
@SuppressWarnings("unchecked")
public static KEY_VALUE_GENERIC MAP KEY_VALUE_GENERIC emptyMap() {
 return EMPTY_MAP;
}
#endif

/** An immutable class representing a type-specific singleton map.
 *
 * <p>This class may be useful to implement your own in case you subclass
 * a type-specific map.
 */

public static class Singleton KEY_VALUE_GENERIC extends FUNCTIONS.Singleton KEY_VALUE_GENERIC
implements MAP KEY_VALUE_GENERIC, java.io.Serializable, Cloneable {

 private static final long serialVersionUID = -7046029254386353129L;

 protected transient ObjectSet<MAP.Entry KEY_VALUE_GENERIC> entries;
 protected transient SET KEY_GENERIC keys;
 protected transient VALUE_COLLECTION VALUE_GENERIC values;

 protected Singleton(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE value) {
  super(key, value);
 }

 @Override
 public boolean containsValue(final VALUE_TYPE v) { return VALUE_EQUALS(value, v); }
#if VALUES_PRIMITIVE
 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public boolean containsValue(final Object ov) { return VALUE_EQUALS(VALUE_OBJ2TYPE(ov), value); }
#endif

 @Override
 public void putAll(final Map<? extends KEY_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> m) {
throw new UnsupportedOperationException(); }

 @Override
 public ObjectSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET() { if (entries == null) entries =
ObjectSets.singleton(new ABSTRACT_MAP.BasicEntry KEY_VALUE_GENERIC_DIAMOND(key, value));
return entries; }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
```

```
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#else
  /** {@inheritDoc} */
#endif
  @Override
  @SuppressWarnings({ "rawtypes", "unchecked" })
  public ObjectSet<Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS>> entrySet() { return
(ObjectSet)ENTRYSET(); }

  @Override
  public SET KEY_GENERIC keySet() { if (keys == null) keys = SETS.singleton(key); return keys; }

  @Override
  public VALUE_COLLECTION VALUE_GENERIC values() { if (values == null) values =
VALUE_SETS.singleton(value); return values; }

  @Override
  public boolean isEmpty() { return false; }

  @Override
  public int hashCode() { return KEY2JAVAHASH(key) ^ VALUE2JAVAHASH(value); }

  @Override
  public boolean equals(final Object o) {
   if (o == this) return true;
   if (! (o instanceof Map)) return false;

   Map<?,?> m = (Map<?,?>)o;
   if (m.size() != 1) return false;
   return m.entrySet().iterator().next().equals(entrySet().iterator().next());
  }

  @Override
  public String toString() { return "{" + key + "=>" + value + "}"; }
 }

 /** Returns a type-specific immutable map containing only the specified pair. The returned map is serializable and
cloneable.
  *
  * <p>Note that albeit the returned map is immutable, its default return value may be changed.
  *
  * @param key the only key of the returned map.
  * @param value the only value of the returned map.
  * @return a type-specific immutable map containing just the pair {@code &lt;key,value&gt;}.
  */
```

public static KEY_VALUE_GENERIC MAP KEY_VALUE_GENERIC singleton(final KEY_GENERIC_TYPE key, VALUE_GENERIC_TYPE value) { return new Singleton KEY_VALUE_GENERIC_DIAMOND(key, value); }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE

/** Returns a type-specific immutable map containing only the specified pair. The returned map is serializable and cloneable.
 *
 * <p>Note that albeit the returned map is immutable, its default return value may be changed.
 *
 * @param key the only key of the returned map.
 * @param value the only value of the returned map.
 * @return a type-specific immutable map containing just the pair {@code <key,value>}.
 */

public static KEY_VALUE_GENERIC MAP KEY_VALUE_GENERIC singleton(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS value) { return new Singleton KEY_VALUE_GENERIC_DIAMOND(KEY_CLASS2TYPE(key), VALUE_CLASS2TYPE(value)); }

#endif

/** A synchronized wrapper class for maps. */

public static class SynchronizedMap KEY_VALUE_GENERIC extends FUNCTIONS.SynchronizedFunction KEY_VALUE_GENERIC implements MAP KEY_VALUE_GENERIC, java.io.Serializable {

 private static final long serialVersionUID = -7046029254386353129L;

 protected final MAP KEY_VALUE_GENERIC map;

 protected transient ObjectSet<MAP.Entry KEY_VALUE_GENERIC> entries;
 protected transient SET KEY_GENERIC keys;
 protected transient VALUE_COLLECTION VALUE_GENERIC values;

 protected SynchronizedMap(final MAP KEY_VALUE_GENERIC m, final Object sync) {
  super(m, sync);
  this.map = m;
 }

 protected SynchronizedMap(final MAP KEY_VALUE_GENERIC m) {
  super(m);
  this.map = m;
 }

 @Override
 public boolean containsValue(final VALUE_TYPE v) { synchronized(sync) { return map.containsValue(v); } }

```
#if VALUES_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public boolean containsValue(final Object ov) { synchronized(sync) { return map.containsValue(ov); } }
#endif

  @Override
  public void putAll(final Map<? extends KEY_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> m) {
synchronized(sync) { map.putAll(m); } }

  @Override
  public ObjectSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET() { synchronized(sync) { if (entries == null)
entries = ObjectSets.synchronize(map.ENTRYSET(), sync); return entries; } }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#else
  /** {@inheritDoc} */
#endif
  @Override
  @SuppressWarnings({ "unchecked", "rawtypes" })
  public ObjectSet<Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS>> entrySet() { return
(ObjectSet)ENTRYSET(); }

  @Override
  public SET KEY_GENERIC keySet() {
   synchronized(sync) { if (keys == null) keys = SETS.synchronize(map.keySet(), sync); return keys; }
  }

  @Override
  public VALUE_COLLECTION VALUE_GENERIC values() {
   synchronized(sync) { if (values == null) values = VALUE_COLLECTIONS.synchronize(map.values(), sync);
return values; }
  }

  @Override
  public boolean isEmpty() { synchronized(sync) { return map.isEmpty(); } }

  @Override
  public int hashCode() { synchronized(sync) { return map.hashCode(); } }

  @Override
  public boolean equals(final Object o) {
```

```
  if (o == this) return true;
  synchronized(sync) { return map.equals(o); }
 }

 private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
  synchronized(sync) { s.defaultWriteObject(); }
 }

 // Defaultable methods

 @Override
 public VALUE_GENERIC_TYPE getOrDefault(final KEY_TYPE key, final VALUE_GENERIC_TYPE
defaultValue) { synchronized(sync) { return map.getOrDefault(key, defaultValue); } }

 @Override
 public void forEach(final java.util.function.BiConsumer<? super KEY_GENERIC_CLASS, ? super
VALUE_GENERIC_CLASS> action) { synchronized (sync) { map.forEach(action); } }

 @Override
 public void replaceAll(final java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super
VALUE_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> function) { synchronized (sync) {
map.replaceAll(function); } }

 @Override
 public VALUE_GENERIC_TYPE putIfAbsent(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE
value) { synchronized(sync) { return map.putIfAbsent(key, value); } }

 @Override
 public boolean remove(final KEY_TYPE key, final VALUE_TYPE value) { synchronized(sync) { return
map.remove(key, value); } }

 @Override
 public VALUE_GENERIC_TYPE replace(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE
value) { synchronized(sync) { return map.replace(key, value); } }

 @Override
 public boolean replace(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE oldValue, final
VALUE_GENERIC_TYPE newValue) { synchronized(sync) { return map.replace(key, oldValue, newValue); } }

#ifdef JDK_PRIMITIVE_FUNCTION
 @Override
 public VALUE_GENERIC_TYPE computeIfAbsent(final KEY_GENERIC_TYPE key, final
JDK_PRIMITIVE_FUNCTION KEY_SUPER_GENERIC VALUE_EXTENDS_GENERIC mappingFunction) {
synchronized(sync) { return map.computeIfAbsent(key, mappingFunction); } }
#endif

#if KEYS_PRIMITIVE && VALUES_PRIMITIVE
 @Override
```

```
  public VALUE_GENERIC_TYPE computeIfAbsentNullable(final KEY_GENERIC_TYPE key, final
JDK_KEY_TO_GENERIC_FUNCTION<? extends VALUE_GENERIC_CLASS> mappingFunction) {
synchronized(sync) { return map.computeIfAbsentNullable(key, mappingFunction); } }
#endif

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  @Override
  public VALUE_GENERIC_TYPE computeIfAbsent(final KEY_GENERIC_TYPE key, final FUNCTION
KEY_SUPER_GENERIC VALUE_EXTENDS_GENERIC mappingFunction) { synchronized(sync) { return
map.computeIfAbsent(key, mappingFunction); } }
#endif

  @Override
  public VALUE_GENERIC_TYPE COMPUTE_IF_PRESENT(final KEY_GENERIC_TYPE key, final
java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> remappingFunction) {
   synchronized (sync) { return map.COMPUTE_IF_PRESENT(key, remappingFunction); }
  }

  @Override
  public VALUE_GENERIC_TYPE COMPUTE(final KEY_GENERIC_TYPE key, final
java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> remappingFunction) {
   synchronized (sync) { return map.COMPUTE(key, remappingFunction); }
  }

  @Override
  public VALUE_GENERIC_TYPE merge(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE
value, final java.util.function.BiFunction<? super VALUE_GENERIC_CLASS, ? super
VALUE_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> remappingFunction) {
   synchronized (sync) { return map.merge(key, value, remappingFunction); }
  }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public VALUE_GENERIC_CLASS getOrDefault(final Object key, final VALUE_GENERIC_CLASS
defaultValue) { synchronized (sync) { return map.getOrDefault(key, defaultValue); } }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public boolean remove(final Object key, final Object value) { synchronized (sync) { return map.remove(key, value);
} }
```

```
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public VALUE_GENERIC_CLASS replace(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS value) { synchronized (sync) { return map.replace(key, value); } }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public boolean replace(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS oldValue, final VALUE_GENERIC_CLASS newValue) { synchronized (sync) { return map.replace(key, oldValue, newValue); } }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public VALUE_GENERIC_CLASS putIfAbsent(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS value) { synchronized (sync) { return map.putIfAbsent(key, value); } }

#if KEYS_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#endif
  @Override
  public VALUE_GENERIC_CLASS computeIfAbsent(final KEY_GENERIC_CLASS key, final java.util.function.Function<? super KEY_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> mappingFunction) { synchronized (sync) { return map.computeIfAbsent(key, mappingFunction); } }

#if KEYS_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#endif
  @Override
  public VALUE_GENERIC_CLASS computeIfPresent(final KEY_GENERIC_CLASS key, final java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> remappingFunction) { synchronized (sync) { return map.computeIfPresent(key, remappingFunction); } }

#if KEYS_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#endif
  @Override
```

```
  public VALUE_GENERIC_CLASS compute(final KEY_GENERIC_CLASS key, final
java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> remappingFunction) { synchronized (sync) { return map.compute(key,
remappingFunction); } }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public VALUE_GENERIC_CLASS merge(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS
value, final java.util.function.BiFunction<? super VALUE_GENERIC_CLASS, ? super
VALUE_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> remappingFunction) { synchronized (sync)
{ return map.merge(key, value, remappingFunction); } }
#endif

 }

 /** Returns a synchronized type-specific map backed by the given type-specific map.
  *
  * @param m the map to be wrapped in a synchronized map.
  * @return a synchronized view of the specified map.
  * @see java.util.Collections#synchronizedMap(Map)
  */
 public static KEY_VALUE_GENERIC MAP KEY_VALUE_GENERIC synchronize(final MAP
KEY_VALUE_GENERIC m) { return new SynchronizedMap KEY_VALUE_GENERIC_DIAMOND(m); }

 /** Returns a synchronized type-specific map backed by the given type-specific map, using an assigned object to
synchronize.
  *
  * @param m the map to be wrapped in a synchronized map.
  * @param sync an object that will be used to synchronize the access to the map.
  * @return a synchronized view of the specified map.
  * @see java.util.Collections#synchronizedMap(Map)
  */

 public static KEY_VALUE_GENERIC MAP KEY_VALUE_GENERIC synchronize(final MAP
KEY_VALUE_GENERIC m, final Object sync) { return new SynchronizedMap
KEY_VALUE_GENERIC_DIAMOND(m, sync); }



 /** An unmodifiable wrapper class for maps. */

 public static class UnmodifiableMap KEY_VALUE_GENERIC extends FUNCTIONS.UnmodifiableFunction
KEY_VALUE_GENERIC implements MAP KEY_VALUE_GENERIC, java.io.Serializable {

  private static final long serialVersionUID = -7046029254386353129L;
```

```
 protected final MAP KEY_VALUE_EXTENDS_GENERIC map;

 protected transient ObjectSet<MAP.Entry KEY_VALUE_GENERIC> entries;
 protected transient SET KEY_GENERIC keys;
 protected transient VALUE_COLLECTION VALUE_GENERIC values;

 protected UnmodifiableMap(final MAP KEY_VALUE_EXTENDS_GENERIC m) {
  super(m);
  this.map = m;
 }

 @Override
 public boolean containsValue(final VALUE_TYPE v) { return map.containsValue(v); }
#if VALUES_PRIMITIVE
 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public boolean containsValue(final Object ov) { return map.containsValue(ov); }
#endif

 @Override
 public void putAll(final Map<? extends KEY_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> m) {
throw new UnsupportedOperationException(); }

 @SuppressWarnings({ "unchecked", "rawtypes" })
 @Override
 public ObjectSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET() { if (entries == null) entries =
ObjectSets.unmodifiable((ObjectSet)map.ENTRYSET()); return entries; }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
#else
 /** {@inheritDoc} */
#endif
 @SuppressWarnings({ "unchecked", "rawtypes" })
 @Override
 public ObjectSet<Map.Entry<KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS>> entrySet() { return
(ObjectSet)ENTRYSET(); }

 @Override
 public SET KEY_GENERIC keySet() { if (keys == null) keys = SETS.unmodifiable(map.keySet()); return keys; }

 @Override
 public VALUE_COLLECTION VALUE_GENERIC values() { if (values == null) values =
VALUE_COLLECTIONS.unmodifiable(map.values()); return values; }
```

```
  @Override
  public boolean isEmpty() { return map.isEmpty(); }

  @Override
  public int hashCode() { return map.hashCode(); }

  @Override
  public boolean equals(final Object o) {
   if (o == this) return true;
   return map.equals(o);
  }

  // Defaultable methods

  @Override
#if KEYS_REFERENCE || VALUES_REFERENCE
  @SuppressWarnings("unchecked")
  public VALUE_GENERIC_TYPE getOrDefault(final KEY_TYPE key, final VALUE_GENERIC_TYPE
defaultValue) { return ((MAP KEY_VALUE_GENERIC)map).getOrDefault(key, defaultValue); }
#else
  public VALUE_GENERIC_TYPE getOrDefault(final KEY_TYPE key, final VALUE_GENERIC_TYPE
defaultValue) { return map.getOrDefault(key, defaultValue); }
#endif

  @Override
  public void forEach(final java.util.function.BiConsumer<? super KEY_GENERIC_CLASS, ? super
VALUE_GENERIC_CLASS> action) { map.forEach(action); }

  @Override
  public void replaceAll(final java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super
VALUE_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> function) { throw new
UnsupportedOperationException(); }

  @Override
  public VALUE_GENERIC_TYPE putIfAbsent(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE
value) { throw new UnsupportedOperationException(); }

  @Override
  public boolean remove(final KEY_TYPE key, final VALUE_TYPE value) { throw new
UnsupportedOperationException(); }

  @Override
  public VALUE_GENERIC_TYPE replace(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE
value) { throw new UnsupportedOperationException(); }

  @Override
  public boolean replace(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE oldValue, final
```

```
VALUE_GENERIC_TYPE newValue) { throw new UnsupportedOperationException(); }

#ifdef JDK_PRIMITIVE_FUNCTION
  @Override
  public VALUE_GENERIC_TYPE computeIfAbsent(final KEY_GENERIC_TYPE key, final
JDK_PRIMITIVE_FUNCTION KEY_SUPER_GENERIC VALUE_EXTENDS_GENERIC mappingFunction) {
throw new UnsupportedOperationException(); }
#endif

#if KEYS_PRIMITIVE && VALUES_PRIMITIVE
  @Override
  public VALUE_GENERIC_TYPE computeIfAbsentNullable(final KEY_GENERIC_TYPE key, final
JDK_KEY_TO_GENERIC_FUNCTION<? extends VALUE_GENERIC_CLASS> mappingFunction) { throw new
UnsupportedOperationException(); }
#endif

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  @Override
  public VALUE_GENERIC_TYPE computeIfAbsent(final KEY_GENERIC_TYPE key, final FUNCTION
KEY_SUPER_GENERIC VALUE_EXTENDS_GENERIC mappingFunction) { throw new
UnsupportedOperationException(); }
#endif

  @Override
  public VALUE_GENERIC_TYPE COMPUTE_IF_PRESENT(final KEY_GENERIC_TYPE key, final
java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> remappingFunction) { throw new UnsupportedOperationException(); }

  @Override
  public VALUE_GENERIC_TYPE COMPUTE(final KEY_GENERIC_TYPE key, final
java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends
VALUE_GENERIC_CLASS> remappingFunction) { throw new UnsupportedOperationException(); }

  @Override
  public VALUE_GENERIC_TYPE merge(final KEY_GENERIC_TYPE key, final VALUE_GENERIC_TYPE
value, final java.util.function.BiFunction<? super VALUE_GENERIC_CLASS, ? super
VALUE_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> remappingFunction) { throw new
UnsupportedOperationException(); }

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
#if KEYS_REFERENCE || VALUES_REFERENCE
  @SuppressWarnings("unchecked")
  public VALUE_GENERIC_CLASS getOrDefault(final Object key, final VALUE_GENERIC_CLASS
defaultValue) { return ((MAP KEY_VALUE_GENERIC)map).getOrDefault(key, defaultValue); }
```

```
#else
  public VALUE_GENERIC_CLASS getOrDefault(final Object key, final VALUE_GENERIC_CLASS
defaultValue) { return map.getOrDefault(key, defaultValue); }
#endif

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public boolean remove(final Object key, final Object value) { throw new UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public VALUE_GENERIC_CLASS replace(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS
value) { throw new UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public boolean replace(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS oldValue, final
VALUE_GENERIC_CLASS newValue) { throw new UnsupportedOperationException(); }

  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
  @Override
  public VALUE_GENERIC_CLASS putIfAbsent(final KEY_GENERIC_CLASS key, final
VALUE_GENERIC_CLASS value) { throw new UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#endif
  @Override
  public VALUE_GENERIC_CLASS computeIfAbsent(final KEY_GENERIC_CLASS key, final
java.util.function.Function<? super KEY_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS>
mappingFunction) { throw new UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
  /** {@inheritDoc}
   * @deprecated Please use the corresponding type-specific method instead. */
  @Deprecated
#endif
  @Override
```

public VALUE_GENERIC_CLASS computeIfPresent(final KEY_GENERIC_CLASS key, final java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> remappingFunction) { throw new UnsupportedOperationException(); }

#if KEYS_PRIMITIVE
 /** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
#endif
 @Override
 public VALUE_GENERIC_CLASS compute(final KEY_GENERIC_CLASS key, final java.util.function.BiFunction<? super KEY_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> remappingFunction) { throw new UnsupportedOperationException(); }

 /** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 public VALUE_GENERIC_CLASS merge(final KEY_GENERIC_CLASS key, final VALUE_GENERIC_CLASS value, final java.util.function.BiFunction<? super VALUE_GENERIC_CLASS, ? super VALUE_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS> remappingFunction) { throw new UnsupportedOperationException(); }
#endif

 }

 /** Returns an unmodifiable type-specific map backed by the given type-specific map.
 *
 * @param m the map to be wrapped in an unmodifiable map.
 * @return an unmodifiable view of the specified map.
 * @see java.util.Collections#unmodifiableMap(Map)
 */
 public static KEY_VALUE_GENERIC MAP KEY_VALUE_GENERIC unmodifiable(final MAP KEY_VALUE_EXTENDS_GENERIC m) { return new UnmodifiableMap KEY_VALUE_GENERIC_DIAMOND(m); }

}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Maps.drv
No license file was found, but licenses were detected in source scan.

```
*
*     http://www.apache.org/licenses/LICENSE-2.0
*
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
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* limitations under the License.
*/


package PACKAGE;

#if KEYS_REFERENCE
import it.unimi.dsi.fastutil.Stack;
#endif

import java.util.List;
import java.util.Iterator;
import java.util.ListIterator;
import java.util.Collection;
import java.util.NoSuchElementException;
#if KEYS_REFERENCE
import java.util.function.Consumer;
#endif

/**  An abstract class providing basic methods for lists implementing a type-specific list interface.
*
* <p>As an additional bonus, this class implements on top of the list operations a type-specific stack.
*
* <p>Most of the methods in this class are optimized with the assumption that the List will have
* {@link java.util.RandomAccess have constant-time random access}. If this is not the case, you
* should probably <em>at least</em> override {@link #listIterator(int)} and the {@code xAll()} methods
* (such as {@link #addAll}) with a more appropriate iteration scheme. Note the {@link #subList(int, int)}
* method is cognizant of random-access or not, so that need not be reimplemented.
*/
public abstract class ABSTRACT_LIST KEY_GENERIC extends ABSTRACT_COLLECTION KEY_GENERIC
implements LIST KEY_GENERIC, STACK KEY_GENERIC {

 protected ABSTRACT_LIST() {}

 /** Ensures that the given index is nonnegative and not greater than the list size.
  *
  * @param index an index.
  * @throws IndexOutOfBoundsException if the given index is negative or greater than the list size.
  */
 protected void ensureIndex(final int index) {
  // TODO When Java 9 becomes the minimum java, use Objects#checkIndex(index, size() + 1) (as can be an
```

```
intrinsic)
  if (index < 0)  throw new IndexOutOfBoundsException("Index (" + index + ") is negative");
  if (index > size()) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than list size (" +
(size()) + ")");
 }

 /** Ensures that the given index is nonnegative and smaller than the list size.
  *
  * @param index an index.
  * @throws IndexOutOfBoundsException if the given index is negative or not smaller than the list size.
  */
 protected void ensureRestrictedIndex(final int index) {
  // TODO When Java 9 becomes the minimum java, use Objects#checkIndex (as can be an intrinsic)
  if (index < 0)  throw new IndexOutOfBoundsException("Index (" + index + ") is negative");
  if (index >= size()) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than or equal to list
size (" + (size()) + ")");
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation always throws an {@link UnsupportedOperationException}.
  */
 @Override
 public void add(final int index, final KEY_GENERIC_TYPE k) {
  throw new UnsupportedOperationException();
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation delegates to the type-specific version of {@link List#add(int, Object)}.
  */
 @Override
 public boolean add(final KEY_GENERIC_TYPE k) {
  add(size(), k);
  return true;
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation always throws an {@link UnsupportedOperationException}.
  */
 @Override
 public KEY_GENERIC_TYPE REMOVE_KEY(final int i) {
  throw new UnsupportedOperationException();
 }

 /** {@inheritDoc}
  *
```

```
 * @implSpec This implementation always throws an {@link UnsupportedOperationException}.
 */
@Override
public KEY_GENERIC_TYPE set(final int index, final KEY_GENERIC_TYPE k) {
 throw new UnsupportedOperationException();
}

/** Adds all of the elements in the specified collection to this list (optional operation). */
@Override
public boolean addAll(int index, final Collection<? extends KEY_GENERIC_CLASS> c) {
#if KEYS_PRIMITIVE
 if (c instanceof COLLECTION) {
  return addAll(index, (COLLECTION) c);
 }
#endif
 ensureIndex(index);
 final Iterator<? extends KEY_GENERIC_CLASS> i = c.iterator();
 final boolean retVal = i.hasNext();
 while(i.hasNext()) add(index++, KEY_CLASS2TYPE(i.next()));
 return retVal;
}

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to the type-specific version of {@link List#addAll(int, Collection)}.
 */
@Override
public boolean addAll(final Collection<? extends KEY_GENERIC_CLASS> c) {
 return addAll(size(), c);
}

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to {@link #listIterator()}.
 */
@Override
public KEY_LIST_ITERATOR KEY_GENERIC iterator() {
 return listIterator();
}

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to {@link #listIterator(int) listIterator(0)}.
 */
@Override
public KEY_LIST_ITERATOR KEY_GENERIC listIterator() {
 return listIterator(0);
}
```

```
/** {@inheritDoc}
 * @implSpec This implementation is based on the random-access methods. */
@Override
public KEY_LIST_ITERATOR KEY_GENERIC listIterator(final int index) {
 ensureIndex(index);

 return new ITERATORS.AbstractIndexBasedListIterator KEY_GENERIC(0, index) {
  @Override
  protected final KEY_GENERIC_TYPE get(int i) { return ABSTRACT_LIST.this.GET_KEY(i); }
  @Override
  protected final void add(int i, KEY_GENERIC_TYPE k) { ABSTRACT_LIST.this.add(i, k); }
  @Override
  protected final void set(int i, KEY_GENERIC_TYPE k) { ABSTRACT_LIST.this.set(i, k); }
  @Override
  protected final void remove(int i) { ABSTRACT_LIST.this.REMOVE_KEY(i); }
  @Override
  protected final int getMaxPos() { return ABSTRACT_LIST.this.size(); }
 };
}

static final class IndexBasedSpliterator KEY_GENERIC extends
SPLITERATORS.LateBindingSizeIndexBasedSpliterator KEY_GENERIC {
 final LIST KEY_GENERIC l;
 IndexBasedSpliterator(LIST KEY_GENERIC l, int pos) {
  super(pos);
  this.l = l;
 }

 IndexBasedSpliterator(LIST KEY_GENERIC l, int pos, int maxPos) {
  super(pos, maxPos);
  this.l = l;
 }

 @Override
 protected final int getMaxPosFromBackingStore() { return l.size(); }
 @Override
 protected final KEY_GENERIC_TYPE get(int i) { return l.GET_KEY(i); }
 @Override
 protected final IndexBasedSpliterator KEY_GENERIC makeForSplit(int pos, int maxPos) {
  return new IndexBasedSpliterator KEY_GENERIC_DIAMOND(l, pos, maxPos);
 }
}

/** Returns true if this list contains the specified element.
 * @implSpec This implementation delegates to {@code indexOf()}.
 * @see List#contains(Object)
 */
```

```
@Override
public boolean contains(final KEY_TYPE k) {
 return indexOf(k) >= 0;
}

@Override
public int indexOf(final KEY_TYPE k) {
 final KEY_LIST_ITERATOR KEY_GENERIC i = listIterator();
 KEY_GENERIC_TYPE e;
 while(i.hasNext()) {
  e = i.NEXT_KEY();
  if (KEY_EQUALS(k, e)) return i.previousIndex();
 }
 return -1;
}

@Override
public int lastIndexOf(final KEY_TYPE k) {
 KEY_LIST_ITERATOR KEY_GENERIC i = listIterator(size());
 KEY_GENERIC_TYPE e;
 while(i.hasPrevious()) {
  e = i.PREV_KEY();
  if (KEY_EQUALS(k, e)) return i.nextIndex();
 }
 return -1;
}

@Override
public void size(final int size) {
 int i = size();
 if (size > i) while(i++ < size) add(KEY_NULL);
 else while(i-- != size) REMOVE_KEY(i);
}



@Override
public LIST KEY_GENERIC subList(final int from, final int to) {
 ensureIndex(from);
 ensureIndex(to);
 if (from > to) throw new IndexOutOfBoundsException("Start index (" + from + ") is greater than end index (" + to +
")");

 return this instanceof java.util.RandomAccess ? new SUBLIST_RANDOM_ACCESS
KEY_GENERIC_DIAMOND(this, from, to) : new SUBLIST KEY_GENERIC_DIAMOND(this, from, to);
}

/** {@inheritDoc}
```

```
 *
 * @implSpec If this list is {@link java.util.RandomAccess}, will iterate using a for
 * loop and the type-specific {@link List#get(int)} method. Otherwise it will fallback
 * to using the iterator based loop implementation from the superinterface.
 */
 @Override
 public void forEach(final METHOD_ARG_KEY_CONSUMER action) {
  if (this instanceof java.util.RandomAccess) {
   for (int i = 0, max = size(); i < max; ++i) {
    action.accept(GET_KEY(i));
   }
  } else {
   LIST.super.forEach(action);
  }
 }

/** {@inheritDoc}
 *
 * <p>This is a trivial iterator-based based implementation. It is expected that
 * implementations will override this method with a more optimized version.
 */
@Override
public void removeElements(final int from, final int to) {
 ensureIndex(to);
 // Always use the iterator based implementation even for RandomAccess so we don't have to worry about shifting
indexes.
 KEY_LIST_ITERATOR KEY_GENERIC i = listIterator(from);
 int n = to - from;
 if (n < 0) throw new IllegalArgumentException("Start index (" + from + ") is greater than end index (" + to + ")");
 while(n-- != 0) {
  i.NEXT_KEY();
  i.remove();
 }
}

/** {@inheritDoc}
 *
 * <p>This is a trivial iterator-based implementation. It is expected that
 * implementations will override this method with a more optimized version.
 */
@Override
public void addElements(int index, final KEY_GENERIC_TYPE a[], int offset, int length) {
 ensureIndex(index);
 ARRAYS.ensureOffsetLength(a, offset, length);
 if (this instanceof java.util.RandomAccess) {
  while(length-- != 0) add(index++, a[offset++]);
 } else {
  KEY_LIST_ITERATOR KEY_GENERIC iter = listIterator(index);
```

```
   while(length-- != 0) iter.add(a[offset++]);
  }
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation delegates to the analogous method for array fragments.
  */
 @Override
 public void addElements(final int index, final KEY_GENERIC_TYPE a[]) {
  addElements(index, a, 0, a.length);
 }

 /** {@inheritDoc}
  *
  * <p>This is a trivial iterator-based implementation. It is expected that
  * implementations will override this method with a more optimized version.
  */
 @Override
 public void getElements(final int from, final KEY_TYPE a[], int offset, int length) {
  ensureIndex(from);
  ARRAYS.ensureOffsetLength(a, offset, length);
  if (from + length > size()) throw new IndexOutOfBoundsException("End index (" + (from + length) + ") is greater
than list size (" + size() + ")");
  if (this instanceof java.util.RandomAccess) {
   int current = from;
   while(length-- != 0) a[offset++] = GET_KEY(current++);
  } else {
   KEY_LIST_ITERATOR KEY_GENERIC i = listIterator(from);
   while(length-- != 0) a[offset++] = i.NEXT_KEY();
  }
 }

 @Override
 public void setElements(int index, KEY_GENERIC_TYPE a[], int offset, int length) {
  ensureIndex(index);
  ARRAYS.ensureOffsetLength(a, offset, length);
  if (index + length > size()) throw new IndexOutOfBoundsException("End index (" + (index + length) + ") is greater
than list size (" + size() + ")");
  if (this instanceof java.util.RandomAccess) {
   for (int i = 0; i < length; ++i) {
    set(i + index, a[i + offset]);
   }
  } else {
   KEY_LIST_ITERATOR KEY_GENERIC iter = listIterator(index);
   int i = 0;
   while (i < length) {
    iter.NEXT_KEY();
```

```
   iter.set(a[offset + i++]);
  }
 }
}

/** {@inheritDoc}
 * @implSpec This implementation delegates to {@link #removeElements(int, int)}.*/
@Override
public void clear() {
 removeElements(0, size());
}

#if KEYS_REFERENCE
@Override
public Object[] toArray() {
 final int size = size();
 Object[] ret = new Object[size];
 getElements(0, ret, 0, size);
 return ret;
}

@Override
public <T> T[] toArray(T[] a) {
 final int size = size();
 if (a.length < size) a = java.util.Arrays.copyOf(a, size);
 getElements(0, a, 0, size);
 if (a.length > size) a[size] = null;
 return a;
}
#endif

/** Returns the hash code for this list, which is identical to {@link java.util.List#hashCode()}.
 *
 * @return the hash code for this list.
 */
@Override
public int hashCode() {
 KEY_ITERATOR KEY_GENERIC i = iterator();
 int h = 1, s = size();
 while (s-- != 0) {
  KEY_GENERIC_TYPE k = i.NEXT_KEY();
  h = 31 * h + KEY2JAVAHASH(k);
 }
 return h;
}


@Override
```

```
 public boolean equals(final Object o) {
  if (o == this) return true;
  if (! (o instanceof List)) return false;

  final List<?> l = (List<?>)o;
  int s = size();
  if (s != l.size()) return false;

#if KEYS_PRIMITIVE
  if (l instanceof LIST) {
   final KEY_LIST_ITERATOR KEY_GENERIC i1 = listIterator(), i2 = ((LIST KEY_GENERIC)l).listIterator();
   while(s-- != 0) if (i1.NEXT_KEY() != i2.NEXT_KEY()) return false;
   return true;
  }
#endif

  final ListIterator<?> i1 = listIterator(), i2 = l.listIterator();

#if KEYS_USE_REFERENCE_EQUALITY
  while(s-- !=  0) if (i1.next() != i2.next()) return false;
#else
  while(s-- !=  0) if (! java.util.Objects.equals(i1.next(), i2.next())) return false;
#endif
  return true;
 }

#if ! KEYS_USE_REFERENCE_EQUALITY
 /** Compares this list to another object. If the
  * argument is a {@link java.util.List}, this method performs a lexicographical comparison; otherwise,
  * it throws a {@code ClassCastException}.
  *
  * @param l a list.
  * @return if the argument is a {@link java.util.List}, a negative integer,
  * zero, or a positive integer as this list is lexicographically less than, equal
  * to, or greater than the argument.
  * @throws ClassCastException if the argument is not a list.
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public int compareTo(final List<? extends KEY_GENERIC_CLASS> l) {
  if (l == this) return 0;

  if (l instanceof LIST) {

   final KEY_LIST_ITERATOR KEY_GENERIC i1 = listIterator(), i2 = ((LIST KEY_GENERIC)l).listIterator();
   int r;
   KEY_GENERIC_TYPE e1, e2;
```

```
   while(i1.hasNext() && i2.hasNext()) {
    e1 = i1.NEXT_KEY();
    e2 = i2.NEXT_KEY();
    if ((r = KEY_CMP(e1, e2)) != 0) return r;
   }
   return i2.hasNext() ? -1 : (i1.hasNext() ? 1 : 0);
  }

  ListIterator<? extends KEY_GENERIC_CLASS> i1 = listIterator(), i2 = l.listIterator();
  int r;

  while(i1.hasNext() && i2.hasNext()) {
   if ((r = ((Comparable<? super KEY_GENERIC_CLASS>)i1.next()).compareTo(i2.next())) != 0) return r;
  }
  return i2.hasNext() ? -1 : (i1.hasNext() ? 1 : 0);
 }
#endif

 @Override
 public void push(final KEY_GENERIC_TYPE o) {
  add(o);
 }

 @Override
 public KEY_GENERIC_TYPE POP() {
  if (isEmpty()) throw new NoSuchElementException();
  return REMOVE_KEY(size() - 1);
 }

 @Override
 public KEY_GENERIC_TYPE TOP() {
  if (isEmpty()) throw new NoSuchElementException();
  return GET_KEY(size() - 1);
 }

 @Override
 public KEY_GENERIC_TYPE PEEK(final int i) {
  return GET_KEY(size() - 1 - i);
 }

#if KEYS_PRIMITIVE

 /** Removes a single instance of the specified element from this collection, if it is present (optional operation).
  * @implSpec This implementation delegates to {@code indexOf()}.
  * @see List#remove(Object)
  */
 @Override
```

```
public boolean rem(final KEY_TYPE k) {
 int index = indexOf(k);
 if (index == -1) return false;
 REMOVE_KEY(index);
 return true;
}

@Override
public KEY_TYPE[] TO_KEY_ARRAY() {
 final int size = size();
 KEY_TYPE[] ret = new KEY_TYPE[size];
 getElements(0, ret, 0, size);
 return ret;
}

@Override
public KEY_TYPE[] toArray(KEY_TYPE a[]) {
 final int size = size();
 if (a.length < size) {
  a = java.util.Arrays.copyOf(a, size);
 }
 getElements(0, a, 0, size);
 return a;
}

@Override
public boolean addAll(int index, final COLLECTION c) {
 ensureIndex(index);
 final KEY_ITERATOR i = c.iterator();
 final boolean retVal = i.hasNext();
 while(i.hasNext()) add(index++, i.NEXT_KEY());
 return retVal;
}

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to the type-specific version of {@link List#addAll(int, Collection)}.
 */
@Override
public boolean addAll(final COLLECTION c) {
 return addAll(size(), c);
}

#if KEYS_INT_LONG_DOUBLE
/** {@inheritDoc}
 * @implSpec This method just delegates to the interface default method,
 * as the default method, but it is final, so it cannot be overridden.
 */
```

```
 @Override
 public final void replaceAll(final KEY_UNARY_OPERATOR operator) {
  replaceAll((JDK_PRIMITIVE_UNARY_OPERATOR) operator);
 }
#endif

#endif

 @Override
 public String toString() {
  final StringBuilder s = new StringBuilder();
  final KEY_ITERATOR KEY_GENERIC i = iterator();
  int n = size();
  KEY_GENERIC_TYPE k;
  boolean first = true;

  s.append("[");

  while(n-- != 0) {
   if (first) first = false;
   else s.append(", ");
   k = i.NEXT_KEY();
#if KEYS_REFERENCE
   if (this == k) s.append("(this list)"); else
#endif
    s.append(String.valueOf(k));
  }

  s.append("]");
  return s.toString();
 }

 /** A class implementing a sublist view. */
 public static class SUBLIST KEY_GENERIC extends ABSTRACT_LIST KEY_GENERIC implements
java.io.Serializable {
  private static final long serialVersionUID = -7046029254386353129L;
  /** The list this sublist restricts. */
  protected final LIST KEY_GENERIC l;
  /** Initial (inclusive) index of this sublist. */
  protected final int from;
  /** Final (exclusive) index of this sublist. */
  protected int to;

  public SUBLIST(final LIST KEY_GENERIC l, final int from, final int to) {
   this.l = l;
   this.from = from;
   this.to = to;
  }
```

```
private boolean assertRange() {
 assert from <= l.size();
 assert to <= l.size();
 assert to >= from;
 return true;
}

@Override
public boolean add(final KEY_GENERIC_TYPE k) {
 l.add(to, k);
 to++;
 assert assertRange();
 return true;
}

@Override
public void add(final int index, final KEY_GENERIC_TYPE k) {
 ensureIndex(index);
 l.add(from + index, k);
 to++;
 assert assertRange();
}

@Override
public boolean addAll(final int index, final Collection<? extends KEY_GENERIC_CLASS> c) {
 ensureIndex(index);
 to += c.size();
 return l.addAll(from + index, c);
}

@Override
public KEY_GENERIC_TYPE GET_KEY(final int index) {
 ensureRestrictedIndex(index);
 return l.GET_KEY(from + index);
}

@Override
public KEY_GENERIC_TYPE REMOVE_KEY(final int index) {
 ensureRestrictedIndex(index);
 to--;
 return l.REMOVE_KEY(from + index);
}

@Override
public KEY_GENERIC_TYPE set(final int index, final KEY_GENERIC_TYPE k) {
 ensureRestrictedIndex(index);
 return l.set(from + index, k);
```

```
}

@Override
public int size() {
 return to - from;
}

@Override
public void getElements(final int from, final KEY_TYPE[] a, final int offset, final int length) {
 ensureIndex(from);
 if (from + length > size())  throw new IndexOutOfBoundsException("End index (" + from + length + ") is greater
than list size (" + size() + ")");
 l.getElements(this.from + from, a, offset, length);
}

@Override
public void removeElements(final int from, final int to) {
 ensureIndex(from);
 ensureIndex(to);
 l.removeElements(this.from + from, this.from + to);
 this.to -= (to - from);
 assert assertRange();
}

@Override
public void addElements(int index, final KEY_GENERIC_TYPE a[], int offset, int length) {
 ensureIndex(index);
 l.addElements(this.from + index, a, offset, length);
 this.to += length;
 assert assertRange();
}

@Override
public void setElements(int index, final KEY_GENERIC_TYPE a[], int offset, int length) {
 ensureIndex(index);
 l.setElements(this.from + index, a, offset, length);
 assert assertRange();
}

private final class RandomAccessIter extends ITERATORS.AbstractIndexBasedListIterator KEY_GENERIC {

 // We don't set the minPos to be "from" because we need to call our containing class'
 // add, set, and remove methods with 0 relative to the start of the sublist, not the
 // start of the original list.
 // Thus pos is relative to the start of the SubList, not the start of the original list.
 RandomAccessIter(int pos) {
  super(0, pos);
 }
```

```
  @Override
  protected final KEY_GENERIC_TYPE get(int i) { return l.GET_KEY(from + i); }
  // Remember, these are calling SUBLIST's methods, meaning 0 is the start of the sublist for these.
  @Override
  protected final void add(int i, KEY_GENERIC_TYPE k) { SUBLIST.this.add(i, k); }
  @Override
  protected final void set(int i, KEY_GENERIC_TYPE k) { SUBLIST.this.set(i, k); }
  @Override
  protected final void remove(int i) { SUBLIST.this.REMOVE_KEY(i); }
  @Override
  protected final int getMaxPos() { return to - from; }

  @Override
  public void add(KEY_GENERIC_TYPE k) {
   super.add(k);
   assert assertRange();
  }
  @Override
  public void remove() {
   super.remove();
   assert assertRange();
  }
 }

 private class ParentWrappingIter implements KEY_LIST_ITERATOR KEY_GENERIC {
  private KEY_LIST_ITERATOR KEY_GENERIC parent;

  ParentWrappingIter(KEY_LIST_ITERATOR KEY_GENERIC parent) {
   this.parent = parent;
  }

  @Override
  public int nextIndex() { return parent.nextIndex() - from; }
  @Override
  public int previousIndex() { return parent.previousIndex() - from; }
  @Override
  public boolean hasNext() { return parent.nextIndex() < to; }
  @Override
  public boolean hasPrevious() { return parent.previousIndex() >= from; }
  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() { if (! hasNext()) throw new NoSuchElementException(); return
parent.NEXT_KEY(); }
  @Override
  public KEY_GENERIC_TYPE PREV_KEY() { if (! hasPrevious()) throw new NoSuchElementException(); return
parent.PREV_KEY(); }
  @Override
  public void add(KEY_GENERIC_TYPE k) { parent.add(k); }
```

```
  @Override
  public void set(KEY_GENERIC_TYPE k) { parent.set(k); }
  @Override
  public void remove() { parent.remove(); }

  @Override
  public int back(int n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   int currentPos = parent.previousIndex();
   int parentNewPos = currentPos - n;
   // Remember, the minimum acceptable previousIndex is not from but (from - 1), since (from - 1)
   // means this subList is at the beginning of our sub range.
   // Same reason why previousIndex()'s minimum for the full list is not 0 but -1.
   if (parentNewPos < (from - 1)) parentNewPos = (from - 1);
   int toSkip = parentNewPos - currentPos;
   return parent.back(toSkip);
  }
  @Override
  public int skip(int n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   int currentPos = parent.nextIndex();
   int parentNewPos = currentPos + n;
   if (parentNewPos > to) parentNewPos = to;
   int toSkip = parentNewPos - currentPos;
   return parent.skip(toSkip);
  }
 }


 @Override
 public KEY_LIST_ITERATOR KEY_GENERIC listIterator(final int index) {
  ensureIndex(index);

  // If this class wasn't public, then RandomAccessIter would live in SUBLISTRandomAccess,
  // and the switching would be done in sublist(int, int). However, this is a public class
  // that may have existing implementors, so to get the benefit of RandomAccessIter class for
  // for existing uses, it has to be done in this class.
  return l instanceof java.util.RandomAccess ? new RandomAccessIter(index) : new
ParentWrappingIter(l.listIterator(index + from));
 }

 @Override
 public KEY_SPLITERATOR KEY_GENERIC spliterator() {
  return l instanceof java.util.RandomAccess ? new IndexBasedSpliterator KEY_GENERIC_DIAMOND(l, from, to) :
super.spliterator();
 }

 @Override
```

```
  public LIST KEY_GENERIC subList(final int from, final int to) {
   ensureIndex(from);
   ensureIndex(to);
   if (from > to) throw new IllegalArgumentException("Start index (" + from + ") is greater than end index (" + to +
")");
   // Sadly we have to rewrap this, because if there is a sublist of a sublist, and the
   // subsublist adds, both sublists need to update their "to" value.
   return new SUBLIST KEY_GENERIC_DIAMOND(this, from, to);
  }

#if KEYS_PRIMITIVE

  @Override
  public boolean rem(final KEY_TYPE k) {
   int index = indexOf(k);
   if (index == -1) return false;
   to--;
   l.REMOVE_KEY(from + index);
   assert assertRange();
   return true;
  }

  @Override
  public boolean addAll(final int index, final COLLECTION c) {
   ensureIndex(index);
   return super.addAll(index, c);
  }

  @Override
  public boolean addAll(final int index, final LIST l) {
   ensureIndex(index);
   return super.addAll(index, l);
  }
#endif

 }

 public static class SUBLIST_RANDOM_ACCESS KEY_GENERIC extends SUBLIST KEY_GENERIC
implements java.util.RandomAccess {
  private static final long serialVersionUID = -107070782945191929L;
  public SUBLIST_RANDOM_ACCESS(final LIST KEY_GENERIC l, final int from, final int to) {
   super(l, from, to);
  }

  @Override
  public LIST KEY_GENERIC subList(final int from, final int to) {
   ensureIndex(from);
   ensureIndex(to);
```

```
  if (from > to) throw new IllegalArgumentException("Start index (" + from + ") is greater than end index (" + to +
")");
  // Sadly we have to rewrap this, because if there is a sublist of a sublist, and the
  // subsublist adds, both sublists need to update their "to" value.
  return new SUBLIST_RANDOM_ACCESS KEY_GENERIC_DIAMOND(this, from, to);
 }
}
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractList.drv
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```
/*
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

import java.util.Objects;
import java.util.function.Consumer;

/** A type-specific {@link Consumer}; provides methods to consume a primitive type both as object
* and as primitive.
*
* <p>Except for the boolean case, this interface extends both a parameterized {@link java.util.function.Consumer}
* and a type-specific JDK consumer (e.g., {@link java.util.function.IntConsumer}). For types missing
* a type-specific JDK consumer (e.g., {@code short} or {@code float}), we extend the consumer associated with
* the smallest primitive type that can represent the current type (e.g., {@code int} or {@code double},
respectively).
*
* @see Consumer
* @since 8.0.0
*/
```

```
@FunctionalInterface
#if ! KEY_CLASS_Boolean
public interface KEY_CONSUMER KEY_GENERIC extends Consumer<KEY_GENERIC_CLASS>,
JDK_PRIMITIVE_KEY_CONSUMER {
#else
public interface KEY_CONSUMER KEY_GENERIC extends Consumer<KEY_GENERIC_CLASS> {
#endif

#if ! KEYS_INT_LONG_DOUBLE
 /**
  * Performs this operation on the given input.
  *
  * @param t the input.
  */
 void accept(KEY_TYPE t);

#if ! KEY_CLASS_Boolean
 /** {@inheritDoc}
  * @deprecated Please use the corresponding exact type-specific method instead. */
 @Deprecated
 @Override
 default void accept(final KEY_TYPE_WIDENED t) {
  accept(KEY_NARROWING(t));
 }

#endif

#endif

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default void accept(final KEY_CLASS t) {
  this.accept(t.KEY_VALUE());
 }

 /**
  * Returns a composed type-specific consumer that performs, in sequence, this
  * operation followed by the {@code after} operation.
  * @param after the operation to perform after this operation.
  * @return a composed {@code Consumer} that performs in sequence this
  * operation followed by the {@code after} operation.
  * @see Consumer#andThen
  * @apiNote Implementing classes should generally override this method and
  * keep the default implementation of the other overloads, which will
  * delegate to this method (after proper conversions).
  */
```

```
 default KEY_CONSUMER andThen(final METHOD_ARG_KEY_CONSUMER after) {
  Objects.requireNonNull(after);
  return t -> { accept(t); after.accept(t); };
 }

#if KEYS_INT_LONG_DOUBLE
 /**
  * Returns a composed type-specific consumer that performs, in sequence, this
  * operation followed by the {@code after} operation.
  *
  * <p><b>WARNING</b>: Overriding this method is almost always a mistake, as this
  * overload only exists to disambiguate. Instead, override the {@code andThen()} overload
  * that uses the JDK's primitive consumer type (e.g. {@link java.util.function.IntConsumer}).
  *
  * <p>If Java supported final default methods, this would be one, but sadly it does not.
  *
  * <p>If you checked and are overriding the version with {@code java.util.function.XConsumer}, and
  * you still see this warning, then your IDE is incorrectly conflating this method with the proper
  * method to override, and you can safely ignore this message.
  *
  * @param after the operation to perform after this operation.
  * @return a composed {@code Consumer} that performs in sequence this
  * operation followed by the {@code after} operation.
  * @see Consumer#andThen
  */
 default KEY_CONSUMER andThen(final KEY_CONSUMER after) {
  return andThen((JDK_PRIMITIVE_KEY_CONSUMER) after);
 }

#elif ! KEY_CLASS_Boolean
 /** {@inheritDoc}
  * @implNote Composing with a JDK type-specific consumer will be slightly less efficient than using a type-
specific consumer, as the argument will have to be widened at each call.  */
 @Override
 default KEY_CONSUMER andThen(final JDK_PRIMITIVE_KEY_CONSUMER after) {
  return andThen(after instanceof KEY_CONSUMER ? (KEY_CONSUMER) after : (KEY_CONSUMER)
after::accept);
 }

#endif

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default Consumer<KEY_GENERIC_CLASS> andThen(final Consumer<? super KEY_GENERIC_CLASS> after)
{
  return Consumer.super.andThen(after);
```

}
}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Consumer.drv
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```
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

#if KEY_CLASS_Object
import java.util.Arrays;
import java.util.Comparator;
import it.unimi.dsi.fastutil.PriorityQueue;
#endif

import java.util.NoSuchElementException;

/** A type-specific array-based priority queue.
*
* <p>Instances of this class represent a priority queue using a backing
* array&mdash;all operations are performed directly on the array. The array is
* enlarged as needed, but it is never shrunk. Use the {@link #trim()} method
* to reduce its size, if necessary.
*
* @implSpec This implementation is extremely inefficient, but it is difficult to beat
* when the size of the queue is very small.
*/

public class ARRAY_PRIORITY_QUEUE KEY_GENERIC implements PRIORITY_QUEUE KEY_GENERIC,
java.io.Serializable {
 private static final long serialVersionUID = 1L;
```

```
/** The backing array. */
SUPPRESS_WARNINGS_KEY_UNCHECKED
protected transient KEY_GENERIC_TYPE array[] = KEY_GENERIC_ARRAY_CAST
ARRAYS.EMPTY_ARRAY;

/** The number of elements in this queue. */
protected int size;

/** The type-specific comparator used in this queue. */
protected KEY_COMPARATOR KEY_SUPER_GENERIC c;

/** The first index, cached, if {@link #firstIndexValid} is true. */
protected transient int firstIndex;

/** Whether {@link #firstIndex} contains a valid value. */
protected transient boolean firstIndexValid;

/** Creates a new empty queue with a given capacity and comparator.
 *
 * @param capacity the initial capacity of this queue.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
public ARRAY_PRIORITY_QUEUE(int capacity, KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 if (capacity > 0) this.array = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[capacity];
 this.c = c;
}

/** Creates a new empty queue with a given capacity and using the natural order.
 *
 * @param capacity the initial capacity of this queue.
 */
public ARRAY_PRIORITY_QUEUE(int capacity) {
 this(capacity, null);
}

/** Creates a new empty queue with a given comparator.
 *
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public ARRAY_PRIORITY_QUEUE(KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 this(0, c);
}

/** Creates a new empty queue using the natural order.
 */
public ARRAY_PRIORITY_QUEUE() {
```

```
 this(0, null);
 }

 /** Wraps a given array in a queue using a given comparator.
  *
  * <p>The queue returned by this method will be backed by the given array.
  *
  * @param a an array.
  * @param size the number of elements to be included in the queue.
  * @param c the comparator used in this queue, or {@code null} for the natural order.
  */
 public ARRAY_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] a, int size, final KEY_COMPARATOR
KEY_SUPER_GENERIC c) {
 this(c);
 this.array = a;
 this.size = size;
 }


 /** Wraps a given array in a queue using a given comparator.
  *
  * <p>The queue returned by this method will be backed by the given array.
  *
  * @param a an array.
  * @param c the comparator used in this queue, or {@code null} for the natural order.
  */
 public ARRAY_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] a, final KEY_COMPARATOR
KEY_SUPER_GENERIC c) {
 this(a, a.length, c);
 }

 /** Wraps a given array in a queue using the natural order.
  *
  * <p>The queue returned by this method will be backed by the given array.
  *
  * @param a an array.
  * @param size the number of elements to be included in the queue.
  */
 public ARRAY_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] a, int size) {
 this(a, size, null);
 }


 /** Wraps a given array in a queue using the natural order.
  *
  * <p>The queue returned by this method will be backed by the given array.
  *
  * @param a an array.
```

```
 */
public ARRAY_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] a) {
 this(a, a.length);
}



/** Returns the index of the smallest element. */

SUPPRESS_WARNINGS_KEY_UNCHECKED
private int findFirst() {
 if (firstIndexValid) return this.firstIndex;
 firstIndexValid = true;
 int i = size;
 int firstIndex = --i;
 KEY_GENERIC_TYPE first = array[firstIndex];

 if (c == null) { while(i-- != 0) if (KEY_LESS(array[i], first)) first = array[firstIndex = i]; }
 else while(i-- != 0) { if (c.compare(array[i], first) < 0) first = array[firstIndex = i]; }

 return this.firstIndex = firstIndex;
}

private void ensureNonEmpty() {
 if (size == 0) throw new NoSuchElementException();
}

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public void enqueue(KEY_GENERIC_TYPE x) {
 if (size == array.length) array = ARRAYS.grow(array, size + 1);
 if (firstIndexValid) {
  if (c == null) { if (KEY_LESS(x, array[firstIndex])) firstIndex = size; }
  else if (c.compare(x, array[firstIndex]) < 0) firstIndex = size;
 }
 else firstIndexValid = false;
 array[size++] = x;
}

@Override
public KEY_GENERIC_TYPE DEQUEUE() {
 ensureNonEmpty();
 final int first = findFirst();
 final KEY_GENERIC_TYPE result = array[first];
 System.arraycopy(array, first + 1, array, first, --size - first);
#if KEY_CLASS_Object
 array[size] = null;
#endif
```

```
  firstIndexValid = false;
  return result;
 }

 @Override
 public KEY_GENERIC_TYPE FIRST() {
  ensureNonEmpty();
  return array[findFirst()];
 }

 @Override
 public void changed() {
  ensureNonEmpty();
  firstIndexValid = false;
 }

 @Override
 public int size() { return size; }

 @Override
 public void clear() {
#if KEY_CLASS_Object
  Arrays.fill(array, 0, size, null);
#endif
  size = 0;
  firstIndexValid = false;
 }

 /** Trims the underlying array so that it has exactly {@link #size()} elements. */

 public void trim() {
  array = ARRAYS.trim(array, size);
 }

 @Override
 public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return c; }

 private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
  s.defaultWriteObject();
  s.writeInt(array.length);
  for(int i = 0; i < size; i++) s.WRITE_KEY(array[i]);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
  s.defaultReadObject();
  array = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[s.readInt()];
  for(int i = 0; i < size; i++) array[i] = KEY_GENERIC_CAST s.READ_KEY();
```

}
}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/ArrayPriorityQueue.drv
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*/

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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/IndirectPriorityQueues.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/PriorityQueues.java
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*/

package PACKAGE;

import it.unimi.dsi.fastutil.IndirectPriorityQueue;

/** A type-specific {@link IndirectPriorityQueue}.
*
* <p>Additionally, this interface strengthens {@link #comparator()}.
*/

public interface INDIRECT_PRIORITY_QUEUE extends IndirectPriorityQueue<KEY_CLASS> {

 /** Returns the type-specific comparator associated with this queue.
  *
  * @apiNote Note that this specification strengthens the one given in {@link IndirectPriorityQueue}.
  *
  * @return the comparator associated with this queue.
  * @see IndirectPriorityQueue#comparator()
  */
 @Override
 KEY_COMPARATOR comparator();
}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/IndirectPriorityQueue.drv
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*/

package PACKAGE;

import static it.unimi.dsi.fastutil.BigArrays.copy;
import static it.unimi.dsi.fastutil.BigArrays.fill;
import static it.unimi.dsi.fastutil.BigArrays.set;

```
import it.unimi.dsi.fastutil.BigArrays;
import it.unimi.dsi.fastutil.Hash;
import it.unimi.dsi.fastutil.Size64;
import it.unimi.dsi.fastutil.HashCommon;
import static it.unimi.dsi.fastutil.HashCommon.bigArraySize;
import static it.unimi.dsi.fastutil.HashCommon.maxFill;
#if KEYS_REFERENCE
import java.util.function.Consumer;
import java.util.stream.Collector;
#endif

import java.util.Collection;
import java.util.Iterator;
import java.util.NoSuchElementException;


/**  A type-specific hash big set with with a fast, small-footprint implementation.
*
* <p>Instances of this class use a hash table to represent a big set: the number
* of elements in the set is limited only by the amount of core memory. The table
* (backed by a {@linkplain it.unimi.dsi.fastutil.BigArrays big array}) is
* filled up to a specified <em>load factor</em>, and then doubled in size to
* accommodate new entries. If the table is emptied below <em>one fourth</em>
* of the load factor, it is halved in size; however, the table is never reduced to a
* size smaller than that at creation time: this approach makes it
* possible to create sets with a large capacity in which insertions and
* deletions do not cause immediately rehashing. Moreover, halving is
* not performed when deleting entries from an iterator, as it would interfere
* with the iteration process.
*
* <p>Note that {@link #clear()} does not modify the hash table size.
* Rather, a family of {@linkplain #trim() trimming
* methods} lets you control the size of the table; this is particularly useful
* if you reuse instances of this class.
*
* <p>The methods of this class are about 30% slower than those of the corresponding non-big set.
*
* @see Hash
* @see HashCommon
*/

public class OPEN_HASH_BIG_SET KEY_GENERIC extends ABSTRACT_SET KEY_GENERIC implements
java.io.Serializable, Cloneable, Hash, Size64 {

 private static final long serialVersionUID = 0L;
 private static final boolean ASSERTS = ASSERTS_VALUE;
```

```
/** The big array of keys. */
protected transient KEY_GENERIC_TYPE[][] key;

/** The mask for wrapping a position counter. */
protected transient long mask;

/** The mask for wrapping a segment counter. */
protected transient int segmentMask;

/** The mask for wrapping a base counter. */
protected transient int baseMask;

/** Whether this set contains the null key. */
protected transient boolean containsNull;

/** The current table size (always a power of 2). */
protected transient long n;

/** Threshold after which we rehash. It must be the table size times {@link #f}. */
protected transient long maxFill;

/** We never resize below this threshold, which is the construction-time {#n}. */
protected final transient long minN;

/** The acceptable load factor. */
protected final float f;

/** Number of entries in the set. */
protected long size;


/** Initialises the mask values. */
private void initMasks() {
 mask = n - 1;
 /* Note that either we have more than one segment, and in this case all segments
  * are BigArrays.SEGMENT_SIZE long, or we have exactly one segment whose length
  * is a power of two. */
 segmentMask = key[0].length - 1;
 baseMask = key.length - 1;
}

/** Creates a new hash big set.
 *
 * <p>The actual table size will be the least power of two greater than {@code expected}/{@code f}.
 *
 * @param expected the expected number of elements in the set.
 * @param f the load factor.
 */
```

```
SUPPRESS_WARNINGS_KEY_UNCHECKED
public OPEN_HASH_BIG_SET(final long expected, final float f) {
 if (f <= 0 || f > 1) throw new IllegalArgumentException("Load factor must be greater than 0 and smaller than or
equal to 1");
 if (n < 0) throw new IllegalArgumentException("The expected number of elements must be nonnegative");

 this.f = f;

 minN = n = bigArraySize(expected, f);
 maxFill = maxFill(n, f);
 key = KEY_GENERIC_BIG_ARRAY_CAST BIG_ARRAYS.newBigArray(n);
 initMasks();
}


/** Creates a new hash big set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor.
 *
 * @param expected the expected number of elements in the hash big set.
 */

public OPEN_HASH_BIG_SET(final long expected) {
 this(expected, DEFAULT_LOAD_FACTOR);
}

/** Creates a new hash big set with initial expected {@link Hash#DEFAULT_INITIAL_SIZE} elements
 * and {@link Hash#DEFAULT_LOAD_FACTOR} as load factor.
 */

public OPEN_HASH_BIG_SET() {
 this(DEFAULT_INITIAL_SIZE, DEFAULT_LOAD_FACTOR);
}

/** Creates a new hash big set copying a given collection.
 *
 * @param c a {@link Collection} to be copied into the new hash big set.
 * @param f the load factor.
 */

public OPEN_HASH_BIG_SET(final Collection<? extends KEY_GENERIC_CLASS> c, final float f) {
 this(Size64.sizeOf(c), f);
 addAll(c);
}

/** Creates a new hash big set  with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
 * copying a given collection.
 *
 * @param c a {@link Collection} to be copied into the new hash big set.
 */
```

```
public OPEN_HASH_BIG_SET(final Collection<? extends KEY_GENERIC_CLASS> c) {
 this(c, DEFAULT_LOAD_FACTOR);
}

/** Creates a new hash big set copying a given type-specific collection.
 *
 * @param c a type-specific collection to be copied into the new hash big set.
 * @param f the load factor.
 */

public OPEN_HASH_BIG_SET(final COLLECTION KEY_EXTENDS_GENERIC c, final float f) {
 this(Size64.sizeOf(c), f);
 addAll(c);
}

/** Creates a new hash big set  with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
 * copying a given type-specific collection.
 *
 * @param c a type-specific collection to be copied into the new hash big set.
 */

public OPEN_HASH_BIG_SET(final COLLECTION KEY_EXTENDS_GENERIC c) {
 this(c, DEFAULT_LOAD_FACTOR);
}

/** Creates a new hash big set using elements provided by a type-specific iterator.
 *
 * @param i a type-specific iterator whose elements will fill the new hash big set.
 * @param f the load factor.
 */

public OPEN_HASH_BIG_SET(final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i, final float f) {
 this(DEFAULT_INITIAL_SIZE, f);
 while(i.hasNext()) add(i.NEXT_KEY());
}

/** Creates a new hash big set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor using elements
provided by a type-specific iterator.
 *
 * @param i a type-specific iterator whose elements will fill the new hash big set.
 */

public OPEN_HASH_BIG_SET(final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i) {
 this(i, DEFAULT_LOAD_FACTOR);
}
```

```
#if KEYS_PRIMITIVE

 /** Creates a new hash big set using elements provided by an iterator.
  *
  * @param i an iterator whose elements will fill the new hash big set.
  * @param f the load factor.
  */

 public OPEN_HASH_BIG_SET(final Iterator<?> i, final float f) {
  this(ITERATORS.AS_KEY_ITERATOR(i), f);
 }
 /** Creates a new hash big set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor using elements
provided by an iterator.
  *
  * @param i an iterator whose elements will fill the new hash big set.
  */

 public OPEN_HASH_BIG_SET(final Iterator<?> i) {
  this(ITERATORS.AS_KEY_ITERATOR(i));
 }

#endif


 /** Creates a new hash big set and fills it with the elements of a given array.
  *
  * @param a an array whose elements will be used to fill the new hash big set.
  * @param offset the first element to use.
  * @param length the number of elements to use.
  * @param f the load factor.
  */

 public OPEN_HASH_BIG_SET(final KEY_GENERIC_TYPE[] a, final int offset, final int length, final float f) {
  this(length < 0 ? 0 : length, f);
  ARRAYS.ensureOffsetLength(a, offset, length);
  for(int i = 0; i < length; i++) add(a[offset + i]);
 }

 /** Creates a new hash big set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor and fills it with the
elements of a given array.
  *
  * @param a an array whose elements will be used to fill the new hash big set.
  * @param offset the first element to use.
  * @param length the number of elements to use.
  */

 public OPEN_HASH_BIG_SET(final KEY_GENERIC_TYPE[] a, final int offset, final int length) {
  this(a, offset, length, DEFAULT_LOAD_FACTOR);
```

```
 }

 /** Creates a new hash big set copying the elements of an array.
  *
  * @param a an array to be copied into the new hash big set.
  * @param f the load factor.
  */

 public OPEN_HASH_BIG_SET(final KEY_GENERIC_TYPE[] a, final float f) {
  this(a, 0, a.length, f);
 }

 /** Creates a new hash big set with {@link Hash#DEFAULT_LOAD_FACTOR} as load factor
  * copying the elements of an array.
  *
  * @param a an array to be copied into the new hash big set.
  */

 public OPEN_HASH_BIG_SET(final KEY_GENERIC_TYPE[] a) {
  this(a, DEFAULT_LOAD_FACTOR);
 }

#ifndef Custom
#if KEYS_INT_LONG_DOUBLE
 /** Collects the result of a primitive {@code Stream} into a new big hash set.
  *
  * <p>This method performs a terminal operation on the given {@code Stream}
  *
  * @apiNote Taking a primitive stream instead of returning something like a
  * {@link java.util.stream.Collector Collector} is necessary because there is no
  * primitive {@code Collector} equivalent in the Java API.
  */
  public static KEY_GENERIC OPEN_HASH_BIG_SET KEY_GENERIC toBigSet(JDK_PRIMITIVE_STREAM
stream) {
   return stream.collect(
    OPEN_HASH_BIG_SET::new,
    OPEN_HASH_BIG_SET::add,
    OPEN_HASH_BIG_SET::addAll);
  }

 /** Collects the result of a primitive {@code Stream} into a new big hash set.
  *
  * <p>This method performs a terminal operation on the given {@code Stream}
  *
  * @apiNote Taking a primitive stream instead returning something like a
  * {@link java.util.stream.Collector Collector} is necessary because there is no
  * primitive {@code Collector} equivalent in the Java API.
  */
```

```
 public static KEY_GENERIC OPEN_HASH_BIG_SET KEY_GENERIC
toBigSetWithExpectedSize(JDK_PRIMITIVE_STREAM stream, long expectedSize) {
  return stream.collect(
   () -> new OPEN_HASH_BIG_SET KEY_GENERIC(expectedSize),
   OPEN_HASH_BIG_SET::add,
   OPEN_HASH_BIG_SET::addAll);
 }
#elif KEYS_REFERENCE
 // Collector wants a function that returns the collection being added to.
 private OPEN_HASH_BIG_SET KEY_GENERIC combine(OPEN_HASH_BIG_SET
KEY_EXTENDS_GENERIC toAddFrom) {
  addAll(toAddFrom);
  return this;
 }

 private static final Collector<KEY_TYPE, ?, OPEN_HASH_BIG_SET<KEY_TYPE>> TO_SET_COLLECTOR =
  Collector.of(
   OPEN_HASH_BIG_SET::new,
   OPEN_HASH_BIG_SET::add,
   OPEN_HASH_BIG_SET::combine);

 /** Returns a {@link Collector} that collects a {@code Stream}'s elements into a new big hash set. */
 SUPPRESS_WARNINGS_KEY_UNCHECKED_RAWTYPES
 public static KEY_GENERIC Collector<KEY_GENERIC_TYPE, ?, OPEN_HASH_BIG_SET KEY_GENERIC>
toBigSet() {
  return (Collector) TO_SET_COLLECTOR;
 }

 /** Returns a {@link Collector} that collects a {@code Stream}'s elements into a new big hash set. */
 public static KEY_GENERIC Collector<KEY_GENERIC_TYPE, ?, OPEN_HASH_BIG_SET KEY_GENERIC>
toBigSetWithExpectedSize(long expectedSize) {
  return Collector.of(
  () -> new OPEN_HASH_BIG_SET KEY_GENERIC(expectedSize),
  OPEN_HASH_BIG_SET::add,
  OPEN_HASH_BIG_SET::combine);
 }
#endif
#endif

 private long realSize() {
  return containsNull ? size - 1 : size;
 }

 private void ensureCapacity(final long capacity) {
  final long needed = bigArraySize(capacity, f);
  if (needed > n) rehash(needed);
 }
```

```
 @Override
 public boolean addAll(Collection<? extends KEY_GENERIC_CLASS> c) {
  final long size = Size64.sizeOf(c);
  // The resulting collection will be at least c.size() big
  if (f <= .5) ensureCapacity(size); // The resulting collection will be sized for c.size() elements
  else ensureCapacity(size64() + size); // The resulting collection will be sized for size() + c.size() elements
  return super.addAll(c);
 }

#if KEYS_PRIMITIVE
 @Override
 public boolean addAll(COLLECTION c) {
  final long size = Size64.sizeOf(c);
  if (f <= .5) ensureCapacity(size); // The resulting collection will be size for c.size() elements
  else ensureCapacity(size64() + size); // The resulting collection will be sized for size() + c.size() elements
  return super.addAll(c);
 }
#endif

 @Override
 public boolean add(final KEY_GENERIC_TYPE k) {
  int displ, base;

  if (KEY_IS_NULL(k)) {
   if (containsNull) return false;
   containsNull = true;
  }
  else {
   KEY_GENERIC_TYPE curr;
   final KEY_GENERIC_TYPE[][] key = this.key;
   final long h = KEY2LONGHASH(k);

   // The starting point.
   if (! KEY_IS_NULL(curr = key[base = (int)((h & mask) >>> BigArrays.SEGMENT_SHIFT)][displ = (int)(h &
segmentMask)])) {
    if (KEY_EQUALS_NOT_NULL(curr, k)) return false;
    while(! KEY_IS_NULL(curr = key[base = (base + ((displ = (displ + 1) & segmentMask) == 0 ? 1 : 0)) &
baseMask][displ]))
     if (KEY_EQUALS_NOT_NULL(curr, k)) return false;
   }

   key[base][displ] = k;
  }

  if (size++ >= maxFill) rehash(2 * n);
  if (ASSERTS) checkTable();
  return true;
 }
```

```
#if KEY_CLASS_Object
 /** Add a random element if not present, get the existing value if already present.
  *
  * This is equivalent to (but faster than) doing a:
  * <pre>
  * K exist = set.get(k);
  * if (exist == null) {
  *   set.add(k);
  *   exist = k;
  * }
  * </pre>
  */
 public KEY_GENERIC_TYPE addOrGet(final KEY_GENERIC_TYPE k) {
  int displ, base;

  if (KEY_IS_NULL(k)) {
   if (containsNull) return null;
   containsNull = true;
  }
  else {
   KEY_GENERIC_TYPE curr;
   final KEY_GENERIC_TYPE[][] key = this.key;
   final long h = KEY2LONGHASH(k);

   // The starting point.
   if (! KEY_IS_NULL(curr = key[base = (int)((h & mask) >>> BigArrays.SEGMENT_SHIFT)][displ = (int)(h &
segmentMask)])) {
    if (KEY_EQUALS_NOT_NULL(curr, k)) return curr;
    while(! KEY_IS_NULL(curr = key[base = (base + ((displ = (displ + 1) & segmentMask) == 0 ? 1 : 0)) &
baseMask][displ]))
     if (KEY_EQUALS_NOT_NULL(curr, k)) return curr;
   }

   key[base][displ] = k;
  }

  if (size++ >= maxFill) rehash(2 * n);
  if (ASSERTS) checkTable();
  return k;
 }
#endif

 /** Shifts left entries with the specified hash code, starting at the specified position,
  * and empties the resulting free entry.
  *
  * @param pos a starting position.
  */
```

```
protected final void shiftKeys(long pos) {
 // Shift entries with the same hash.
 long last, slot;
 final KEY_GENERIC_TYPE[][] key = this.key;

 for(;;) {
  pos = ((last = pos) + 1) & mask;

  for(;;) {
   if (KEY_IS_NULL(BigArrays.get(key, pos))) {
    set(key, last, KEY_NULL);
    return;
   }
   slot = KEY2LONGHASH(BigArrays.get(key, pos)) & mask;
   if (last <= pos ? last >= slot || slot > pos : last >= slot && slot > pos) break;
   pos = (pos + 1) & mask;
  }

  set(key, last, BigArrays.get(key, pos));
 }
}

private boolean removeEntry(final int base, final int displ) {
 size--;
 shiftKeys(base * (long)BigArrays.SEGMENT_SIZE + displ);
 if (n > minN && size < maxFill / 4 && n > DEFAULT_INITIAL_SIZE) rehash(n / 2);
 return true;
}

private boolean removeNullEntry() {
 containsNull = false;
 size--;
 if (n > minN && size < maxFill / 4 && n > DEFAULT_INITIAL_SIZE) rehash(n / 2);
 return true;
}

@Override
public boolean remove(final KEY_TYPE k) {
 if (KEY_IS_NULL(k)) {
  if (containsNull) return removeNullEntry();
  return false;
 }

 KEY_GENERIC_TYPE curr;
 final KEY_GENERIC_TYPE[][] key = this.key;
 final long h = KEY2LONGHASH(k);
 int displ, base;
```

```
  // The starting point.
  if (KEY_IS_NULL(curr = key[base = (int)((h & mask) >>> BigArrays.SEGMENT_SHIFT)][displ = (int)(h &
segmentMask)])) return false;
  if (KEY_EQUALS_NOT_NULL(curr, k)) return removeEntry(base, displ);
  while(true) {
   if (KEY_IS_NULL(curr = key[base = (base + ((displ = (displ + 1) & segmentMask) == 0 ? 1 : 0)) &
baseMask][displ])) return false;
   if (KEY_EQUALS_NOT_NULL(curr, k)) return removeEntry(base, displ);
  }
 }

 @Override
 public boolean contains(final KEY_TYPE k) {
  if (KEY_IS_NULL(k)) return containsNull;

  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[][] key = this.key;
  final long h = KEY2LONGHASH(k);
  int displ, base;

  // The starting point.
  if (KEY_IS_NULL(curr = key[base = (int)((h & mask) >>> BigArrays.SEGMENT_SHIFT)][displ = (int)(h &
segmentMask)])) return false;
  if (KEY_EQUALS_NOT_NULL(curr, k)) return true;
  while(true) {
   if (KEY_IS_NULL(curr = key[base = (base + ((displ = (displ + 1) & segmentMask) == 0 ? 1 : 0)) &
baseMask][displ])) return false;
   if (KEY_EQUALS_NOT_NULL(curr, k)) return true;
  }
 }

#if KEY_CLASS_Object
 /** Returns the element of this set that is equal to the given key, or {@code null}.
  * @return the element of this set that is equal to the given key, or {@code null}.
  */
 public K get(final KEY_TYPE k) {
  if (k == null) return null; // This is correct independently of the value of containsNull

  KEY_GENERIC_TYPE curr;
  final KEY_GENERIC_TYPE[][] key = this.key;
  final long h = KEY2LONGHASH(k);
  int displ, base;

  // The starting point.
  if (KEY_IS_NULL(curr = key[base = (int)((h & mask) >>> BigArrays.SEGMENT_SHIFT)][displ = (int)(h &
segmentMask)])) return null;
  if (KEY_EQUALS_NOT_NULL(curr, k)) return curr;
  while(true) {
```

```
   if (KEY_IS_NULL(curr = key[base = (base + ((displ = (displ + 1) & segmentMask) == 0 ? 1 : 0)) &
baseMask][displ])) return null;
   if (KEY_EQUALS_NOT_NULL(curr, k)) return curr;
  }
 }
#endif

 /* Removes all elements from this set.
  *
  */

 /** {@inheritDoc}
  *
  * <p>To increase object reuse, this method does not change the table size.
  * If you want to reduce the table size, you must use {@link #trim(long)}.
  */
 @Override
 public void clear() {
  if (size == 0) return;
  size = 0;
  containsNull = false;
  fill(key, KEY_NULL);
 }



 /** An iterator over a hash big set. */

 private class SetIterator implements KEY_ITERATOR KEY_GENERIC {
  /** The base of the last entry returned, if positive or zero; initially, the number of components
   of the key array. If negative, the last element returned was
   that of index {@code - base - 1} from the {@link #wrapped} list. */
  int base = key.length;
  /** The displacement of the last entry returned; initially, zero. */
  int displ;
  /** The index of the last entry that has been returned (or {@link Long#MIN_VALUE} if {@link #base} is
negative).
   It is -1 if either we did not return an entry yet, or the last returned entry has been removed. */
  long last = -1;
  /** A downward counter measuring how many entries must still be returned. */
  long c = size;
  /** A boolean telling us whether we should return the null key. */
  boolean mustReturnNull = OPEN_HASH_BIG_SET.this.containsNull;
  /** A lazily allocated list containing elements that have wrapped around the table because of removals. */
  ARRAY_LIST KEY_GENERIC wrapped;

  @Override
  public boolean hasNext() { return c != 0; }
```

```
@Override
public KEY_GENERIC_TYPE NEXT_KEY() {
 if (! hasNext()) throw new NoSuchElementException();
 c--;

 if (mustReturnNull) {
  mustReturnNull = false;
  last = n;
  return KEY_NULL;
 }

 final KEY_GENERIC_TYPE[][] key = OPEN_HASH_BIG_SET.this.key;

 for(;;) {
  if (displ == 0 && base <= 0) {
   // We are just enumerating elements from the wrapped list.
   last = Long.MIN_VALUE;
   return wrapped.GET_KEY(- (--base) - 1);
  }

  if (displ-- == 0) displ = key[--base].length - 1;

  final KEY_GENERIC_TYPE k = key[base][displ];
  if (! KEY_IS_NULL(k)) {
   last = base * (long)BigArrays.SEGMENT_SIZE + displ;
   return k;
  }
 }
}

/** Shifts left entries with the specified hash code, starting at the specified position,
 * and empties the resulting free entry.
 *
 * @param pos a starting position.
 */
private final void shiftKeys(long pos) {
 // Shift entries with the same hash.
 long last, slot;
 KEY_GENERIC_TYPE curr;
 final KEY_GENERIC_TYPE[][] key = OPEN_HASH_BIG_SET.this.key;

 for(;;) {
  pos = ((last = pos) + 1) & mask;

  for(;;) {
   if(KEY_IS_NULL(curr = BigArrays.get(key, pos))) {
    set(key, last, KEY_NULL);
```

```
     return;
    }
    slot = KEY2LONGHASH(curr) & mask;
    if (last <= pos ? last >= slot || slot > pos : last >= slot && slot > pos) break;
    pos = (pos + 1) & mask;
   }

   if (pos < last) { // Wrapped entry.
    if (wrapped == null) wrapped = new ARRAY_LIST KEY_GENERIC_DIAMOND();
    wrapped.add(BigArrays.get(key, pos));
   }

   set(key, last, curr);
  }
 }

 @Override
 public void remove() {
  if (last == -1) throw new IllegalStateException();
  if (last == n) OPEN_HASH_BIG_SET.this.containsNull = false;
  else if (base >= 0) shiftKeys(last);
  else {
   // We're removing wrapped entries.
#if KEYS_REFERENCE
   OPEN_HASH_BIG_SET.this.remove(wrapped.set(- base - 1, null));
#else
   OPEN_HASH_BIG_SET.this.remove(wrapped.GET_KEY(- base - 1));
#endif
   last = -1; // Note that we must not decrement size
   return;
  }

  size--;
  last = -1; // You can no longer remove this entry.
  if (ASSERTS) checkTable();
 }
}

@Override
public KEY_ITERATOR KEY_GENERIC iterator() {
 return new SetIterator();
}


private class SetSpliterator implements KEY_SPLITERATOR KEY_GENERIC {
 /* For the sake of keeping things at least somewhat simple
  * (aka. my sanity), the spliterator will NOT handle the indexing
  * of the subarrays directly, like iterator does. Instead, it will
```

```
 * delegate to BigArrays and have only a single, unified index it
 * will fence on. This is probably less effecient, but it avoids having
 * to track what it means to split on two sets of indexes.
 * This may change in the future if the performance hit high.
 */

private static final int POST_SPLIT_CHARACTERISTICS =
SPLITERATORS.SET_SPLITERATOR_CHARACTERISTICS & ~java.util.Spliterator.SIZED;

/** The index (which bucket) of the next item to give to the action. */
long pos = 0;
/** The maximum bucket (exclusive) to iterate to */
long max = n;
/** An upwards counter counting how many we have given */
long c = 0;
/** A boolean telling us whether we should return the null key. */
boolean mustReturnNull = OPEN_HASH_BIG_SET.this.containsNull;
boolean hasSplit = false;


SetSpliterator() {}

SetSpliterator(long pos, long max, boolean mustReturnNull, boolean hasSplit) {
 this.pos = pos;
 this.max = max;
 this.mustReturnNull = mustReturnNull;
 this.hasSplit = hasSplit;
}

@Override
public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
 if (mustReturnNull) {
  mustReturnNull = false;
  ++c;
  action.accept(KEY_NULL);
  return true;
 }
 final KEY_GENERIC_TYPE key[][] = OPEN_HASH_BIG_SET.this.key;
 while (pos < max) {
  KEY_GENERIC_TYPE gotten = BigArrays.get(key, pos);
  if (! KEY_IS_NULL(gotten)) {
   ++c;
   ++pos;
   action.accept(gotten);
   return true;
  } else {
   ++pos;
  }
```

```
 }
 return false;
}

@Override
public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
 if (mustReturnNull) {
  mustReturnNull = false;
  action.accept(KEY_NULL);
  ++c;
 }
 final KEY_GENERIC_TYPE key[][] = OPEN_HASH_BIG_SET.this.key;
 while (pos < max) {
  KEY_GENERIC_TYPE gotten = BigArrays.get(key, pos);
  if (! KEY_IS_NULL(gotten)) {
   action.accept(gotten);
   ++c;
  }
  ++pos;
 }
}

@Override
public int characteristics() {
 return hasSplit ? POST_SPLIT_CHARACTERISTICS :
SPLITERATORS.SET_SPLITERATOR_CHARACTERISTICS;
}

@Override
public long estimateSize() {
 if (!hasSplit) {
  // Root spliterator; we know how many are remaining.
  return size - c;
 } else {
  // After we split, we can no longer know exactly how many we have (or at least not efficiently).
  // (size / n) * (max - pos) aka currentTableDensity * numberOfBucketsLeft seems like a good estimate.
  return Math.min(size - c, (long)(((double)realSize() / n) * (max - pos)) + (mustReturnNull ? 1 : 0));
 }
}

@Override
public SetSpliterator trySplit() {
 if (pos >= max - 1) return null;
 long retLen = (max - pos) >> 1;
 if (retLen <= 1) return null;
 long myNewPos = pos + retLen;
 // Align to an outer array boundary if possible
 // We add/subtract one to the bounds to ensure the new pos will always shrink the range
```

```
  myNewPos = BigArrays.nearestSegmentStart(myNewPos, pos + 1, max - 1);
  long retPos = pos;
  long retMax = myNewPos;
  // Since null is returned first, and the convention is that the returned split is the prefix of elements,
  // the split will take care of returning null (if needed), and we won't return it anymore.
  SetSpliterator split = new SetSpliterator(retPos, retMax, mustReturnNull, true);
  this.pos = myNewPos;
  this.mustReturnNull = false;
  this.hasSplit = true;
  return split;
 }

 @Override
 public long skip(long n) {
  if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
  if (n == 0) return 0;
  long skipped = 0;
  if (mustReturnNull) {
   mustReturnNull = false;
   ++skipped;
   --n;
  }
  final KEY_GENERIC_TYPE key[][] = OPEN_HASH_BIG_SET.this.key;
  while (pos < max && n > 0) {
   if (! KEY_IS_NULL(BigArrays.get(key, pos++))) {
    ++skipped;
    --n;
   }
  }
  return skipped;
 }
}

@Override
public KEY_SPLITERATOR KEY_GENERIC spliterator() {
 return new SetSpliterator();
}

@Override
public void forEach(final METHOD_ARG_KEY_CONSUMER action) {
 if (containsNull) {
  action.accept(KEY_NULL);
 }
 long pos = 0;
 final long max = n;
 final KEY_GENERIC_TYPE key[][] = this.key;
 while (pos < max) {
  KEY_GENERIC_TYPE gotten = BigArrays.get(key, pos++);
```

```
  if (! KEY_IS_NULL(gotten)) {
   action.accept(gotten);
  }
 }
}

/** Rehashes this set, making the table as small as possible.
 *
 * <p>This method rehashes the table to the smallest size satisfying the
 * load factor. It can be used when the set will not be changed anymore, so
 * to optimize access speed and size.
 *
 * <p>If the table size is already the minimum possible, this method
 * does nothing.
 *
 * @return true if there was enough memory to trim the set.
 * @see #trim(long)
 */

public boolean trim() {
 return trim(size);
}

/** Rehashes this set if the table is too large.
 *
 * <p>Let <var>N</var> be the smallest table size that can hold
 * <code>max(n,{@link #size64()})</code> entries, still satisfying the load factor. If the current
 * table size is smaller than or equal to <var>N</var>, this method does
 * nothing. Otherwise, it rehashes this set in a table of size
 * <var>N</var>.
 *
 * <p>This method is useful when reusing sets.  {@linkplain #clear() Clearing a
 * set} leaves the table size untouched. If you are reusing a set
 * many times, you can call this method with a typical
 * size to avoid keeping around a very large table just
 * because of a few large transient sets.
 *
 * @param n the threshold for the trimming.
 * @return true if there was enough memory to trim the set.
 * @see #trim()
 */

public boolean trim(final long n) {
 final long l = bigArraySize(n, f);
 if (l >= this.n || size > maxFill(l, f)) return true;
 try {
  rehash(l);
 }
```

```
 catch(OutOfMemoryError cantDoIt) { return false; }
 return true;
}

/** Resizes the set.
 *
 * <p>This method implements the basic rehashing strategy, and may be
 * overriden by subclasses implementing different rehashing strategies (e.g.,
 * disk-based rehashing). However, you should not override this method
 * unless you understand the internal workings of this class.
 *
 * @param newN the new size
 */

SUPPRESS_WARNINGS_KEY_UNCHECKED
protected void rehash(final long newN) {
 final KEY_GENERIC_TYPE key[][] = this.key;
 final KEY_GENERIC_TYPE newKey[][] = KEY_GENERIC_BIG_ARRAY_CAST
BIG_ARRAYS.newBigArray(newN);
 final long mask = newN - 1; // Note that this is used by the hashing macro
 final int newSegmentMask = newKey[0].length - 1;
 final int newBaseMask = newKey.length - 1;

 int base = 0, displ = 0, b, d;
 long h;
 KEY_GENERIC_TYPE k;

 for(long i = realSize(); i-- != 0;) {

  while(KEY_IS_NULL(key[base][displ])) base = (base + ((displ = (displ + 1) & segmentMask) == 0 ? 1 : 0));

  k = key[base][displ];
  h = KEY2LONGHASH(k);

  // The starting point.
  if (! KEY_IS_NULL(newKey[b = (int)((h & mask) >>> BigArrays.SEGMENT_SHIFT)][d = (int)(h &
newSegmentMask)]))
   while(! KEY_IS_NULL(newKey[b = (b + ((d = (d + 1) & newSegmentMask) == 0 ? 1 : 0)) & newBaseMask][d]));

  newKey[b][d] = k;

  base = (base + ((displ = (displ + 1) & segmentMask) == 0 ? 1 : 0));
 }

 this.n = newN;
 this.key = newKey;
 initMasks();
 maxFill = maxFill(n, f);
```

```
}

@Deprecated
@Override
public int size() {
 return (int)Math.min(Integer.MAX_VALUE, size);
}

@Override
public long size64() {
 return size;
}

@Override
public boolean isEmpty() {
 return size == 0;
}



/** Returns a deep copy of this big set.
 *
 * <p>This method performs a deep copy of this big hash set; the data stored in the
 * set, however, is not cloned. Note that this makes a difference only for object keys.
 *
 *  @return a deep copy of this big set.
 */
@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public OPEN_HASH_BIG_SET KEY_GENERIC clone() {
 OPEN_HASH_BIG_SET KEY_GENERIC c;
 try {
  c = (OPEN_HASH_BIG_SET KEY_GENERIC)super.clone();
 }
 catch(CloneNotSupportedException cantHappen) {
  throw new InternalError();
 }
 c.key = copy(key);
 c.containsNull = containsNull;
 return c;
}

/** Returns a hash code for this set.
 *
 * This method overrides the generic method provided by the superclass.
 * Since {@code equals()} is not overriden, it is important
 * that the value returned by this method is the same value as
 * the one returned by the overriden method.
```

```
 *
 * @return a hash code for this set.
 */

@Override
public int hashCode() {
 final KEY_GENERIC_TYPE key[][] = this.key;
 int h = 0, base = 0, displ = 0;

 for(long j = realSize(); j-- != 0;) {
  while(KEY_IS_NULL(key[base][displ])) base = (base + ((displ = (displ + 1) & segmentMask) == 0 ? 1 : 0));
#if KEYS_REFERENCE
  if (this != key[base][displ])
#endif
   h += KEY2JAVAHASH_NOT_NULL(key[base][displ]);
  base = (base + ((displ = (displ + 1) & segmentMask) == 0 ? 1 : 0));
 }
 return h;
}


private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
 final KEY_ITERATOR KEY_GENERIC i = iterator();
 s.defaultWriteObject();
 for(long j = size; j-- != 0;) s.WRITE_KEY(i.NEXT_KEY());
}


SUPPRESS_WARNINGS_KEY_UNCHECKED
private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
 s.defaultReadObject();

 n = bigArraySize(size, f);
 maxFill = maxFill(n, f);

 final KEY_GENERIC_TYPE[][] key = this.key = KEY_GENERIC_BIG_ARRAY_CAST
BIG_ARRAYS.newBigArray(n);

 initMasks();

 long h;
 KEY_GENERIC_TYPE k;
 int base, displ;

 for(long i = size; i-- != 0;) {
  k = KEY_GENERIC_CAST s.READ_KEY();

  if (KEY_IS_NULL(k)) containsNull = true;
```

```
   else {
    h = KEY2LONGHASH(k);
    if (! KEY_IS_NULL(key[base = (int)((h & mask) >>> BigArrays.SEGMENT_SHIFT)][displ = (int)(h &
segmentMask)]))
     while(! KEY_IS_NULL(key[base = (base + ((displ = (displ + 1) & segmentMask) == 0 ? 1 : 0)) &
baseMask][displ]));
    key[base][displ] = k;
   }
  }

  if (ASSERTS) checkTable();
 }


#ifdef ASSERTS_CODE
 private void checkTable() {
  assert (n & -n) == n : "Table length is not a power of two: " + n;
  assert n == BigArrays.length(key);
  long n = this.n;
  while(n-- != 0)
   if (! KEY_IS_NULL(BigArrays.get(key, n)) && ! contains(BigArrays.get(key, n)))
    throw new AssertionError("Hash table has key " + BigArrays.get(key, n) + " marked as occupied, but the key does
not belong to the table");

#if KEYS_PRIMITIVE
  java.util.HashSet<KEY_GENERIC_CLASS> s = new java.util.HashSet<KEY_GENERIC_CLASS> ();
#else
  java.util.HashSet<Object> s = new java.util.HashSet<Object>();
#endif

  for(long i = size(); i-- != 0;)
   if (! KEY_IS_NULL(BigArrays.get(key, i)) && ! s.add(BigArrays.get(key, i))) throw new AssertionError("Key " +
BigArrays.get(key, i) + " appears twice");

 }
#else
 private void checkTable() {}
#endif

#ifdef TEST

 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
```

```
  return r.NEXT_KEY();
#elif KEY_CLASS_Object
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }


 private static final class ArrayComparator implements java.util.Comparator {
  public int compare(Object a, Object b) {
   byte[] aa = (byte[])a;
   byte[] bb = (byte[])b;
   int length = Math.min(aa.length, bb.length);
   for(int i = 0; i < length; i++) {
    if (aa[i] < bb[i]) return -1;
    if (aa[i] > bb[i]) return 1;
   }
   return aa.length == bb.length ? 0 : (aa.length < bb.length ? -1 : 1);
  }
 }

 private static final class MockSet extends java.util.TreeSet {
  private java.util.List list = new java.util.ArrayList();

  public MockSet(java.util.Comparator c) { super(c); }

  public boolean add(Object k) {
   if (! contains(k)) list.add(k);
   return super.add(k);
  }

  public boolean addAll(Collection c) {
   java.util.Iterator i = c.iterator();
   boolean result = false;
   while(i.hasNext()) result |= add(i.next());
   return result;
  }

  public boolean removeAll(Collection c) {
   java.util.Iterator i = c.iterator();
   boolean result = false;
   while(i.hasNext()) result |= remove(i.next());
   return result;
  }

  public boolean remove(Object k) {
   if (contains(k)) {
```

```
   int i = list.size();
   while(i-- != 0) if (comparator().compare(list.get(i), k) == 0) {
    list.remove(i);
    break;
   }
  }
  return super.remove(k);
 }

 private void justRemove(Object k) { super.remove(k); }

 public java.util.Iterator iterator() {
  return new java.util.Iterator() {
    final java.util.Iterator iterator = list.iterator();
    Object curr;
    public Object next() { return curr = iterator.next(); }
    public boolean hasNext() { return iterator.hasNext(); }
    public void remove() {
     justRemove(curr);
     iterator.remove();
    }
   };
 }
}

private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
private static java.text.FieldPosition fp = new java.text.FieldPosition(0);

private static String format(double d) {
 StringBuffer s = new StringBuffer();
 return format.format(d, s, fp).toString();
}

// TODO Use a ASSERTS like preprocessor variable?
private static final boolean PARALLEL_STREAMS = Boolean.getBoolean("useParallelStreams");

private static void speedTest(int n, float f, boolean comp) {
 int i, j;
 OPEN_HASH_BIG_SET m;
 java.util.HashSet t;

 KEY_TYPE k[] = new KEY_TYPE[n];
 KEY_TYPE nk[] = new KEY_TYPE[n];
 long ms;

 for(i = 0; i < n; i++) {
  k[i] = genKey();
  nk[i] = genKey();
```

```
}

double totAdd = 0, totYes = 0, totNo = 0, totIter = 0, totRemYes = 0, totRemNo = 0, d;

if (comp) { for(j = 0; j < 20; j++) {

 t = new java.util.HashSet(16);

 /* We add pairs to t. */
 ms = System.currentTimeMillis();
 for(i = 0; i < n;  i++) t.add(KEY2OBJ(k[i]));
 d = 1.0 * n / (System.currentTimeMillis() - ms);
 if (j > 2) totAdd += d;
 System.out.print("Add: " + format(d) +" K/s ");

 /* We check for pairs in t. */
 ms = System.currentTimeMillis();
 for(i = 0; i < n;  i++) t.contains(KEY2OBJ(k[i]));
 d = 1.0 * n / (System.currentTimeMillis() - ms);
 if (j > 2) totYes += d;
 System.out.print("Yes: " + format(d) +" K/s ");

 /* We check for pairs not in t. */
 ms = System.currentTimeMillis();
 for(i = 0; i < n;  i++) t.contains(KEY2OBJ(nk[i]));
 d = 1.0 * n / (System.currentTimeMillis() - ms);
 if (j > 2) totNo += d;
 System.out.print("No: " + format(d) +" K/s ");

 /* We iterate on t. */
 ms = System.currentTimeMillis();
 for(java.util.Iterator it = t.iterator(); it.hasNext(); it.next());
 d = 1.0 * n / (System.currentTimeMillis() - ms);
 if (j > 2) totIter += d;
 System.out.print("Iter: " + format(d) +" K/s ");

 /* We delete pairs not in t. */
 ms = System.currentTimeMillis();
 for(i = 0; i < n;  i++) t.remove(KEY2OBJ(nk[i]));
 d = 1.0 * n / (System.currentTimeMillis() - ms);
 if (j > 2) totRemNo += d;
 System.out.print("RemNo: " + format(d) +" K/s ");

 /* We delete pairs in t. */
 ms = System.currentTimeMillis();
 for(i = 0; i < n;  i++) t.remove(KEY2OBJ(k[i]));
 d = 1.0 * n / (System.currentTimeMillis() - ms);
 if (j > 2) totRemYes += d;
```

```
   System.out.print("RemYes: " + format(d) +" K/s ");

   System.out.println();
  }

  System.out.println();
  System.out.println("java.util Add: " + format(totAdd/(j-3)) + " K/s Yes: " + format(totYes/(j-3)) + " K/s No: " +
format(totNo/(j-3)) + " K/s Iter: " + format(totIter/(j-3)) + " K/s RemNo: " + format(totRemNo/(j-3)) + " K/s
RemYes: " + format(totRemYes/(j-3)) + "K/s");

  System.out.println();

  totAdd = totYes = totNo = totIter = totRemYes = totRemNo = 0;
  }

  for(j = 0; j < 20; j++) {

   m = new OPEN_HASH_BIG_SET(16, f);

   /* We add pairs to m. */
   ms = System.currentTimeMillis();
   for(i = 0; i < n;  i++) m.add(k[i]);
   d = 1.0 * n / (System.currentTimeMillis() - ms);
   if (j > 2) totAdd += d;
   System.out.print("Add: " + format(d) +" K/s ");

   /* We check for pairs in m. */
   ms = System.currentTimeMillis();
   for(i = 0; i < n;  i++) m.contains(k[i]);
   d = 1.0 * n / (System.currentTimeMillis() - ms);
   if (j > 2) totYes += d;
   System.out.print("Yes: " + format(d) +" K/s ");

   /* We check for pairs not in m. */
   ms = System.currentTimeMillis();
   for(i = 0; i < n;  i++) m.contains(nk[i]);
   d = 1.0 * n / (System.currentTimeMillis() - ms);
   if (j > 2) totNo += d;
   System.out.print("No: " + format(d) +" K/s ");

   /* We iterate on m. */
   ms = System.currentTimeMillis();
   for(KEY_ITERATOR it = (KEY_ITERATOR)m.iterator(); it.hasNext(); it.NEXT_KEY());
   d = 1.0 * n / (System.currentTimeMillis() - ms);
   if (j > 2) totIter += d;
   System.out.print("Iter: " + format(d) +" K/s ");

   /* We delete pairs not in m. */
```

```
   ms = System.currentTimeMillis();
   for(i = 0; i < n;  i++) m.remove(nk[i]);
   d = 1.0 * n / (System.currentTimeMillis() - ms);
   if (j > 2) totRemNo += d;
   System.out.print("RemNo: " + format(d) +" K/s ");

   /* We delete pairs in m. */
   ms = System.currentTimeMillis();
   for(i = 0; i < n;  i++) m.remove(k[i]);
   d = 1.0 * n / (System.currentTimeMillis() - ms);
   if (j > 2) totRemYes += d;
   System.out.print("RemYes: " + format(d) +" K/s ");

   System.out.println();
  }


  System.out.println();
  System.out.println("fastutil  Add: " + format(totAdd/(j-3)) + " K/s Yes: " + format(totYes/(j-3)) + " K/s No: " +
format(totNo/(j-3)) + " K/s Iter: " + format(totIter/(j-3)) + " K/s RemNo: " + format(totRemNo/(j-3)) + " K/s
RemYes: " + format(totRemYes/(j-3)) + " K/s");

  System.out.println();
 }


 private static void fatal(String msg) {
  throw new AssertionError(msg);
 }

 private static void ensure(boolean cond, String msg) {
  if (cond) return;
  fatal(msg);
 }


 private static void printProbes(OPEN_HASH_BIG_SET m) {
  long totProbes = 0;
  double totSquareProbes = 0;
  int maxProbes = 0;
  final double f = (double)m.size / m.n;
  for(int i = 0, c = 0; i < m.n; i++) {
   if (! KEY_IS_NULL(BigArrays.get(m.key, i))) c++;
   else {
    if (c != 0) {
     final long p = (c + 1) * (c + 2) / 2;
     totProbes += p;
     totSquareProbes += (double)p * p;
```

```
   }
   maxProbes = Math.max(c, maxProbes);
   c = 0;
   totProbes++;
   totSquareProbes++;
  }
 }

 final double expected = (double)totProbes / m.n;
 System.err.println("Expected probes: " + (
  3 * Math.sqrt(3) * (f / ((1 - f) * (1 - f))) + 4 / (9 * f) - 1
 ) + "; actual: " + expected + "; stddev: " + Math.sqrt(totSquareProbes / m.n - expected * expected)  + "; max probes:
" + maxProbes);
}
private static void runTest(int n, float f) throws Exception {
 int c;
 OPEN_HASH_BIG_SET m = new OPEN_HASH_BIG_SET(Hash.DEFAULT_INITIAL_SIZE, f);
 java.util.Set t = new java.util.HashSet();

 /* First of all, we fill t with random data. */

 for(int i=0; i<f * n;  i++) t.add(KEY2OBJ(genKey()));

 /* Now we add to m the same data */

 m.addAll(t);

 ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after insertion");;
 ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after insertion");;
 printProbes(m);

 /* Now we check that m actually holds that data. */

 for(java.util.Iterator i=t.iterator(); i.hasNext();) {
  Object e = i.next();
  ensure(m.contains(e), "Error (" + seed + "): m and t differ on a key ("+e+") after insertion (iterating on t)");
 }

 /* Now we check that m actually holds that data, but iterating on m. */

 c = 0;
 for(java.util.Iterator i=m.iterator(); i.hasNext();) {
  Object e = i.next();
  c++;
  ensure(t.contains(e), "Error (" + seed + "): m and t differ on a key ("+e+") after insertion (iterating on m)");
 }

 ensure(c == t.size(), "Error (" + seed + "): m has only " + c + " keys instead of " + t.size() + " after insertion
```

```
(iterating on m)");
  /* Now we check that inquiries about random data give the same answer in m and t. For
     m we use the polymorphic method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();
   ensure(m.contains(T) == t.contains(KEY2OBJ(T)), "Error (" + seed + "): divergence in keys between t and m
(polymorphic method)");
  }

  /* Again, we check that inquiries about random data give the same answer in m and t, but
     for m we use the standard method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();
   ensure(m.contains(KEY2OBJ(T)) == t.contains(KEY2OBJ(T)), "Error (" + seed + "): divergence between t and m
(standard method)");
  }


  /* Now we put and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();
   ensure(m.add(KEY2OBJ(T)) == t.add(KEY2OBJ(T)), "Error (" + seed + "): divergence in add() between t and m");
   T = genKey();
   ensure(m.remove(KEY2OBJ(T)) == t.remove(KEY2OBJ(T)), "Error (" + seed + "): divergence in remove() between
t and m");
  }

  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after removal");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after removal");;

  /* Now we check that m actually holds that data. */

  for(java.util.Iterator i=t.iterator(); i.hasNext();) {
   Object e = i.next();
   ensure(m.contains(e), "Error (" + seed + "): m and t differ on a key ("+e+") after removal (iterating on t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */

  for(java.util.Iterator i=m.iterator(); i.hasNext();) {
   Object e = i.next();
   ensure(t.contains(e), "Error (" + seed + "): m and t differ on a key ("+e+") after removal (iterating on m)");
  }

  printProbes(m);
```

```
  /* Now we make m into an array, make it again a set and check it is OK. */
  KEY_TYPE a[] = m.TO_KEY_ARRAY();

  ensure(new OPEN_HASH_BIG_SET(a).equals(m), "Error (" + seed + "): toArray() output (or array-based
constructor) is not OK");

  /* Now we check cloning. */

  ensure(m.equals(((OPEN_HASH_BIG_SET)m).clone()), "Error (" + seed + "): m does not equal m.clone()");
  ensure(((OPEN_HASH_BIG_SET)m).clone().equals(m), "Error (" + seed + "): m.clone() does not equal m");

  int h = m.hashCode();

  /* Now we save and read m. */

  {
   java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
   java.io.OutputStream os = new java.io.FileOutputStream(ff);
   java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

   oos.writeObject(m);
   oos.close();

   java.io.InputStream is = new java.io.FileInputStream(ff);
   java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

   m = (OPEN_HASH_BIG_SET)ois.readObject();
   ois.close();
   ff.delete();
  }

#if !KEYS_USE_REFERENCE_EQUALITY
  ensure(m.hashCode() == h, "Error (" + seed + "): hashCode() changed after save/read");;

  printProbes(m);

  /* Now we check that m actually holds that data, but iterating on m. */

  for(java.util.Iterator i=m.iterator(); i.hasNext();) {
   Object e = i.next();
   ensure(t.contains(e), "Error (" + seed + "): m and t differ on a key ("+e+") after save/read");
  }
#else
  m.clear();
  m.addAll(t);
#endif
```

```
  /* Now we put and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();
   ensure(m.add(KEY2OBJ(T)) == t.add(KEY2OBJ(T)), "Error (" + seed + "): divergence in add() between t and m
after save/read");
   T = genKey();
   ensure(m.remove(KEY2OBJ(T)) == t.remove(KEY2OBJ(T)), "Error (" + seed + "): divergence in remove() between
t and m after save/read");
  }

  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after post-save/read removal");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after post-save/read removal");;

/* Now test that the sets hold the same data using streams */
  {
#if KEYS_REFERENCE
   java.util.stream.Stream<KEY_TYPE> i = m.stream();
   java.util.stream.Stream<KEY_TYPE> j = t.stream();
#elif KEY_CLASS_Boolean
   java.util.stream.Stream<KEY_CLASS> i = m.stream();
   java.util.stream.Stream<KEY_CLASS> j = t.stream();
#else
   JDK_PRIMITIVE_STREAM i = m.KEY_WIDENED_STREAM_METHOD();
   java.util.stream.Stream<KEY_CLASS> j = t.stream();
#endif

   if (PARALLEL_STREAMS) {
    i = i.parallel();
    j = j.parallel();
   }

   i = i.sorted();
   j = j.sorted();

#if KEYS_REFERENCE || KEY_CLASS_Boolean
   Object[] iArray = i.toArray();
   Object[] jArray = j.toArray();
#elif KEY_CLASS_Character
   int[] iArray = i.toArray();
   int[] jArray = j.mapToInt(c -> (int)c.charValue()).toArray();
#else
   KEY_TYPE_WIDENED[] iArray = i.toArray();
   KEY_TYPE_WIDENED[] jArray =
j.MAP_TO_KEY_WIDENED(Number::KEY_WIDENED_VALUE).toArray();
#endif
   ensure(java.util.Arrays.equals(iArray, jArray), "! sorted arrays equal");
  }
```

```
  /* Now we take out of m everything, and check that it is empty. */

  for(java.util.Iterator i=m.iterator(); i.hasNext();) { i.next(); i.remove();}

  ensure(m.isEmpty(), "Error (" + seed + "): m is not empty (as it should be)");

#if KEY_CLASS_Integer || KEY_CLASS_Long
  m = new OPEN_HASH_BIG_SET(n, f);
  t.clear();
  int x;

  /* Now we torture-test the hash table. This part is implemented only for integers and longs. */

  int p = m.key.length - 1;

  for(int i=0; i<p; i++) {
   for (int j=0; j<20; j++) {
    m.add(i+(r.nextInt() % 10)*p);
    m.remove(i+(r.nextInt() % 10)*p);
   }

   for (int j=-10; j<10; j++) m.remove(i+j*p);
  }

  t.addAll(m);

  /* Now all table entries are REMOVED. */

  int k = 0;
  for(int i=0; i<(p*f)/10; i++) {
   for (int j=0; j<10; j++) {
    k++;
    x = i+(r.nextInt() % 10)*p;
    ensure(m.add(x) == t.add(KEY2OBJ(x)), "Error (" + seed + "): m and t differ on a key during torture-test
insertion.");
   }
  }

  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after torture-test insertion");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after torture-test insertion");;

  for(int i=0; i<(p*f)/10; i++) {
   for (int j=0; j<10; j++) {
    x = i+(r.nextInt() % 10)*p;
    ensure(m.remove(x) == t.remove(KEY2OBJ(x)), "Error (" + seed + "): m and t differ on a key during torture-test
removal.");
```

```
   }
  }

  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after torture-test removal");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after torture-test removal");;

  ensure(m.equals(m.clone()), "Error (" + seed + "): !m.equals(m.clone()) after torture-test removal");;
  ensure(((OPEN_HASH_BIG_SET)m.clone()).equals(m), "Error (" + seed + "): !m.clone().equals(m) after torture-
test removal");;

  m.trim();

  ensure(m.equals(t), "Error (" + seed + "): !m.equals(t) after trim()");;
  ensure(t.equals(m), "Error (" + seed + "): !t.equals(m) after trim()");;

#endif

  System.out.println("Test OK");
  return;
 }


 public static void main(String args[]) throws Exception {
  float f = Hash.DEFAULT_LOAD_FACTOR;
  int n  = Integer.parseInt(args[1]);
  if (args.length>2) f = Float.parseFloat(args[2]);
  if (args.length > 3) r = new java.util.Random(seed = Long.parseLong(args[3]));

  try {
   if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, f, "speedComp".equals(args[0]));
   else if ("test".equals(args[0])) runTest(n, f);
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/OpenHashBigSet.drv
No license file was found, but licenses were detected in source scan.

8.5.8

- Fixed erroneous switch to Java 9.

- BinIO has been restructured to use java.nio whenever possible, and all load/store methods now accept a byte order. The performance improvements are very significant, in particular when handling data in native byte order.

- Switched naming for mapped list to the standard type-first format. Hopefully this should not hurt anyone.

8.5.7

- Memory-mapped big lists.

- Because of a wrong threshold radix sort in certain cases was much slower than it should have been. Thanks to Johan Nystrom-Persson for reporting this bug.

- Fixed subtle bug in OpenHashMap.merge(). Thanks to Ben Manes for discovering this bug using Guava's testlib.

- Fixed other minor divergences from JDK's behavior detected by Guava's testlib.

8.5.6

- Fixed broken export clause which was preventing it.unimi.dsi.fastutil classes from being included in the main jar.

8.5.5

- New layout: fastutil-core.jar contains structures for integers, longs, doubles, and objects, as before, but it has been fixed to contain dependencies recursively (thanks to Preston Bennes for reporting this bug). fastutil.jar is the usual, all-in-one fastutil jar. If your dependency tree contains both fastutil-core.jar and fastutil.jar, you have to exclude fastutil-core.jar.

- Several methods in hash-based map have better implementations in the case both keys and values are references.

- Fixed problem with load factor in immutable sets. Thanks to Matthias Seidel for reporting this bug.

8.5.4

- Fixed jar content.

8.5.3

- fastutil is now divided in three jars: fastutil-core.jar contains
 structures for integers, longs, doubles, and objects: fastutil-extra.jar
 contains additional structures for references, bytes, and characters;
 fastutil.jar the remaining structures. Each jar depends on the previous
 one (at the OSGi level, too).

- Unmodifiable wrappers now promote generic types as the JDK does. Thanks
 to Scott Kilpatrick for suggesting this feature.

- Improved allocations for parallel streams. Thanks to C. Sean Young
 <csyoung@google.com> for implementing this feature.

8.5.2

- Fixed wrong implementation of forEachRemaining() in hash-based
 containers.

- Fixed iteration in linked hash maps.

- Fixed possible infinite recursion in AbstractMap.

8.5.1

- Fixed bug in AbstractIndexBasedBigIterator that was affecting
 iterations on big lists.

- Added missing disambiguation method for type-specific Map.merge().

8.5.0

- Added type-specific spliterators and primitive stream methods to all
 Collection types. Thanks to C. Sean Young <csyoung@google.com> for this
 massive code contribution.

- Added fast spliterator implementations for most concrete types. The only
 Collection types that do not currently have an optimized spliterator are
 RBTreeSet/Map, AVLTreeSet/Map, and ArrayFrontCodedList. These are
 planned for a future version. Thanks to C. Sean Young
 <csyoung@google.com> for implementing this feature.

- Added a lot of special cases for AbstractList's methods to better take
 advantage of RandomAccess based lists (the base List interface's default
 methods will still use the iterator based versions always). Thanks to C.
 Sean Young <csyoung@google.com> for implementing this feature.

- New immutable array-based lists and associated List.of() methods.

- Type specific versions of Predicate have been added.
Methods that take predicates (mainly Collection.removeIf) have been
updated to have an overload that takes that.
A consequence of this change is that removeIf(IntPredicate) on
ByteCollection, ShortCollection, and CharCollection have been deprecated
in favor of removeIf(Byte/Short/CharPredicate), which does not do widening casts.
If you have an implementation of ByteCollection, ShortCollection, or CharCollection
that implements removeIf(IntPredicate), you should update it to instead override
removeIf(Byte/Short/CharPredicate).

- Type-specific map methods merge() and computeIfAbsent() now have the
same name as in the JDK. The older names (with a type infix) have been
deprecated.

- computeIfAbsentPartial() has been renamed computeIfAbsent() so that
lambdas will generate fastutil type-specific functions.

- Fixed deserialization bug in front-coded big lists of arrays. Thanks
to Antoine Pietri for reporting this bug.

- New type-specific Map.merge() methods.

- Array lists have optimized addAll() methods for object lists, too, and
big lists have specialized addAll() methods for lists. Thanks to
Erich Schubert for reporting this issue.

8.4.4

- Renamed andThen/compose methods for type-specific functions
to avoid potential ambiguous calls.

- Now bulk colletion methods will try to use type-specific methods
if available. A side effect is that in case someone implemented
type-specific methods using the JDK version an infinite recursion
will happen. Thanks to C. Sean Young for this improvement.

- New Pair and SortedPair implementations, both standard and type-specific.

8.4.3

- Implemented andThen/compose methods for type-specific functions.

- Parallel sort implementations now use the common pool. Thanks to
shevek@github.com for suggesting this change.

- Static counting method for type-specific iterables.

- Static factory methods for immutable sets of primitive scalar types
 within a given range.

- .of() factory methods for lists and sets.

8.4.2

- Big front-coded lists.

8.4.1

- Ported basic parallel quicksort to big arrays.

8.4.0

- Limited support for atomic big arrays of integers and longs.

8.3.2

- The documentation and the constructor for hash-based containers
 was allowing a load factor of 1. Thanks to Andy Clegg for
 reporting this bug.

- The copy constructor of array-based containers are now more efficient.
 Thanks to Vladimir Krivosheev for proposing this enhancement.

8.3.1

- Fixed old-standing bug in the remove() method of the key set of
 array-based maps. Thanks to Arnaud Floesser for reporting this bug.

- Fixed bug in ensureCapacity() for big lists based on big arrays.
 Thanks to Nate Klein for reporting this bug.

8.3.0

- Add sort and unstableSort for type-specific lists. Thanks to C. Sean Young for
 implementing this feature.

- Add methods in type-specific arrays that dynamically choose algorithm based
 on input. Thanks to C. Sean Young for implementing this feature.

- Fixed very old-standing bug in trim() for hash containers: the
 trimming was never happening due to variable shadowing.

- A number of type-specific methods for comparators have been implemented
 by C. Sean Young.

- Big-array methods which can be told apart by dynamic binding are now
 gathered in it.unimi.dsi.fastutil.BigArrays, and can be accessed very
 easily by static imports. The old versions have been deprecated.

- New methods to unwrap iterators into big arrays.

8.2.3

- Array-based lists were not allocating a backing array even if the
 required capacity was greater than the default capacity, violating
 the contract. Thanks to for reporting this bug.

- FastMultiByteArrayInputStream had since 2014 the wrong slice size
 (1Ki instead of 1Gi). Thanks to Thibault Allançon for his detailed
 reports, which dug out this old one.

8.2.2

- Fixed small bug in new lazy allocation scheme for array-based lists.
 Resizing would throw an exception in certain circumstances.

- Now strategies must accept a supertype of the base type. Thanks to
 shevek@github.com for suggesting this change.

- The Maven source jar does not contain tests anymore.

8.2.1

- Added default modularization to OSGi version, too.

8.2.0

- Added default modularization. Thanks to Joshua Popoff for taking care of
 this issue.

- Implemented lazy allocation of arrays in array-based lists. Thanks to
 Zheka Kozlov for suggesting this feature.

- Fixed a long-standing issue: the allocation of big lists based on big
 arrays could not go beyond 2^31 because of a cut-and-paste bug.

- In line with the JDK, the default initial capacity for lists is 10 and
 backing arrays (and, in generally, arrays) are automatically enlarged by
 a 50% factor instead of a 100% factor.

- Included dependency-finding scripts by Tobias Meggendorfer.

8.1.1

- More default methods.

- Fixed lack of proper forEach()/fastForEach() method for entry sets of
 linked maps (the order of iteration would be random). Thanks to Søren
 Gjesse for reporting this bug.

- Fixed lack of proper licensing in test sources.

- A new NO_SMALL_TYPES makefile variable makes it possible to compile
 a version of fastutil for ints, longs and doubles only. Thanks to
 Tobias Meggendorfer for implementing this feature.

8.1.0

- WARNING: backward-incompatible name change for a few "compute"
 methods.

- Implemented efficient new map methods and new iterable methods
 in hash-based maps.

- A number of minor glitches has been fixed.

- FastIterable now has a fastForEach() method.

- Fixed ancient bug in the remove() method of entry sets of
 tree-based maps.

- Array-based maps have a working key set and value collection.

8.0.0

- First release for Java 8 only, with implementation of new default
 methods for iterators and maps. Thanks to Tobias Meggendorfer and
 Salomon Sickert from the Technical University of Munich for help in the
 implementation. Structure-specific, more efficient code will be
 added in the near future. All wrapper (synchronized, etc.) have
 been updated.

- Abstract type-specific comparators are deprecated: their only abstract
 method has been pulled up as a default method of the type-specific
 interface, which makes it possible to use lambda expressions to define
 type-specific comparators.

- The default return value setter/getter are now optional for functions.
 In this way, functions can now be defined using lambda expressions (and
 they implement java.util.function.Function).

- New static methods in type-specific Maps and SortedMaps make it possible
to use easily fast iterators, even within for loops. Thanks to Tobias
Meggendorfer and Salomon Sickert from the Technical University of Munich
for implementing this feature.

- All hash-based structure now keep track of the size of their backing
array at creation time, and will never rehash below that size. Thanks
to Patrick Julien for suggesting this feature.

- Every deprecated method marked to be removed, or replaced by another
method, has been eliminated.

- Many abstract classes are now obsolete as their abstract methods have
become default methods.

- The type hierarchy of big-list iterators has been fixed.

7.2.0

- Major code cleanup. Several unnecessary method implementations have been
deleted. Several missing methods (e.g., equals()/hashCode() in wrappers)
have been implemented. All methods should now have a reasonable
Javadoc comment.

- Clarified the rem()/remove() conundrum: type-specific collections should
use and override rem(), but type-specific sets should use and override
remove().

- Fixed circular implementation of containsKey() in type-specific
abstract collections.

- Pulled up deprecation at the highest possible (interface) level.

- Collection.*All() methods do not assume anymore that they can
rely on the argument size().

7.1.1

- Fixed decade-old efficiency bug: implementation of RandomAccess
was hidden from synchronized and unmodifiable wrappers. Thanks to
Peter Burka for reporting this bug.

- The defaultReturnValue() getter in unmodifiable maps was throwing
an UnsupportedOperationException instead of delegating the call
to the underlying map. Thanks to Alex Fiennes for reporting this bug.

7.1.0

- Fixed decade-old efficiency bug. Due to a name clash between lists and sets, the type-specific deletion method of a type-specific collection is rem(), not remove(). The latter is reinstated in sets (but not, for example, in lists) by the type-specific abstract set classes. Nonetheless, implementors of subclasses must override rem(), not remove(), as methods such as the type-specific version of removeAll() invoke necessarily invoke rem() rather than remove(). Up to this version, all concrete set implementations were overriding remove(), instead, causing inefficiencies in the inherited methods. Thanks to Christian Habermehl for reporting this bug.

- Fixed a bug introduced with the removal of old-style gcc assertions: all load methods in BinIO that did not specify the number of elements to read were computing the number of items in the loaded file incorrectly, causing an EOFException (except for booleans and bytes).

7.0.13

- Fixed inheritance problem that would surface as key sets of maps not implementing remove(). Thanks to Luke Nezda for reporting this bug.

7.0.12

- Collection.isEmpty() was checking for iterator().hasNext() instead of the opposite. Thanks to Olaf Krische for reporting this bug.

- Fixed lack of test for null/wrong class when testing entries.

7.0.11

- Several small glitches that were making fastutil's classes behave differently from those of java.util have been fixed. Thanks to Balázs Attila-Mihály or reporting these bug (obtained by massive testing using Guava's battery of unit tests).

7.0.10

- The infinite-loop bug was affecting trim(int) besides trim(). Thanks to Igor Kabiljo for reporting this bug.

- With the help of Erich Schubert, all methods with a type-specific, more efficient counterpart have been deprecated.

7.0.9

- A subtle infinite-loop bug in hash-based structures (happening with load factor 1 and tiny structures) has been fixed. Thanks to Tuomas Välimäki and Jarkko Mönkkönen for reporting this bug.

- Now tree-based map have an addTo() method analogous to that of
 hash-based maps. Thanks to Almog Gavra for implementing the method.

7.0.8

- Non-indirect priority queues are now serializable.

- Fixed implementation of structures based on a custom hash: keys
 strategy-equal to zero zero would not be managed correctly. Thanks to
 Shawn Cao for reporting this bug.

- Natural/opposite/abstract comparators are now serializable.

7.0.7

- Now we check whether ranges of parallel sorting algorithms
 are too small *before* creating the thread pool.

- Merged Erich Schubert's fix for Object{AVL,RB}TreeSet.get().

7.0.6

- Faster priority queues: better variable caching, deleted
 a spurious check, tests for parameters turned into assertions.

- New collection-based constructors for heap-based priority queues.

- Reviewed ObjectArrays.newArray() so that there is a fast track
 for reallocation of arrays of type Object[].

7.0.4

- Fixed old-standing bug: iterators in linked maps would
 return bogus data on entrySet().next()/entrySet().previous()
 when no element is available instead of throwing an exception.

7.0.3

- Fixed wrong generation of custom-hash classes with primitive
 keys. Thanks to Michael Henke for reporting this bug.

7.0.2

- Now we shutdown() correctly ForkJoinPool's.

- Constants limiting parallelism and recursion have been tuned.

- New implementations of indirect [parallel] quicksort (in ascending order only).

- New stabilization method for post-processing of non-stable indirect sorts.

7.0.1

- Now generated sources are formatted using the Eclipse command-line facility.

7.0.0

- Now we need Java 7.

- New parallel versions of radix sort and quicksort. The sequential implementations have been further improved.

- Restored the previous constants in mixing functions.

6.6.4

- Hopefully better mixing functions created by a genetic algorithm.

- Fixed a bug in floating-point hash-based containers: -0.0 and +0.0 were both converted to +0.0. Thanks to Dawid Weiss for reporting this bug.

6.6.3

- Fixed subtle wrap-around bug in removal from iterator. Thanks to Eugene Yakavets for reporting this bug.

6.6.2

- We now reduce backing arrays of hash-based classes when they are filled below one fourth of the load factor. The reduction is not performed when deleting from an iterator, as it would make iteration impossible.

- Significant simplification of Iterator.remove()'s implementations for hash-based data structures.

6.6.1

- Fixed missed implementation: setValue() was not implemented for fast iterators in hash-based maps.

6.6.0

- Major (transparent) rewrite of all hash-based classes inspired by the Goldman-Sachs collections. We no longer allocate a byte array to store the status of each slot: a null (or zero) key denotes an empty slot. The null key is handled separately. The reduction in memory accesses makes the cost of the additional logic negligible, and brings in significant performance improvements. The code is actually simplified, as all loops become a search for a nonzero element.

- Partial (one-step) unrolling of all lookup loops, following the strategy used in Koloboke.

- Fixed an old bug: entrySet().remove(Entry) would remove entries checking the value of the key, only.

- Fixed a bug in the iterator over hash big sets.

- OSGI metadata, thanks to Benson Margulies.

6.5.17

- Now TextIO methods trim strings before parsing numbers. This avoids obnoxious exceptions when numbers are followed by whitespace.

6.5.16

- Improved speed of FastMultiByteArrayInputStream, and removed support for mark()/reset().

- Deprecated array fill() methods in favour of java.util's.

6.5.15

- De-deprecated quicksort methods for primitive-type arrays. It turned out that Java's Arrays.sort() switches to mergesort on large, semi-sorted arrays. Moreover, in Java 7 the support array is allocated of the same size of the argument array, not of the sorted fragment. This performance bug was entirely killing the performance of Transform.transposeOffline() and other methods. Until that bug is fixed, we will have to rely on our quicksort method (which is a pity, because Java's sort is, for the rest, so beautifully engineered).

6.5.14

- Equality in type-specific hash-based data structures with float or double keys is now checked by converting to int/long bits using the conversion method of the appropriate class. Previously, using NaNs as keys would have led to misbehaviour. Thanks to Davide Savazzi for reporting this bug.

6.5.13

- Fixed a very unlikely corner case that might have led to reduction in size of an array instead of a growth. Thanks to Ernst Reissner for reporting this bug.

- InspectableFileCachedInputStream no longer performs a call to RandomAccessFile.position() when the end of file has been reached and the file is entirely held in memory.

- All front-coded lists now implement java.util.RandomAccess.

6.5.12

- Removed some useless wrapper creation in a few methods of tree-based map classes.

- Fixed pathological maxFill computation for very small-sized big open hash sets.

6.5.11

- A very old and subtle performance bug in hash-based data structures has been fixed. Backing arrays were allocated using the number of expected elements divided by the load factor. However, since the test for rehashing was fired by equality with the table size multiplied by the load factor, if the expected number of elements multiplied by the load factor was an integer a useless rehash would happen for the very last added element. The only effect was an useless increase in object creation.

6.5.10

- Now iterators in object set constructors are of type Iterator, and not anymore ObjectIterator. The kind of allowed iterators has been rationalised and made uniform through all classes implementing Set.

6.5.9

- New methods to get a type-specific Iterable from binary or text files.

6.5.8

- Fixed stupid bug in creation of array-based FIFO queues.

6.5.7

- Fixed a very subtle bug in hash-based data structures: addAll() to a newly created structure could require a very long time due to correlation between the positions in structures with different table sizes.

6.5.6

- equals() method between arrays have been deprecated in favour of the java.util.Arrays version, which is intrinsified in recent JVMs.

- InspectableFileCachedInputStream.reopen() makes it possible to read again from the start an instance on which close() was invoked.

6.5.5

- The abstract implementation of equals() between (big) lists now uses type-specific access methods (as the compareTo() method was already doing) to avoid massive boxing/unboxing. Thanks to Adrien Grand for suggesting this improvement.

- FIFO array-based queues are now serializable.

6.5.4

- Further fixes related to NaNs in sorting.

- Fixed very old bug in FastByteArrayOutputStream.write(int). Thanks to Massimo Santini for reporting this bug.

- We now use Arrays.MAX_ARRAY_SIZE, which is equal to Integer.MAX_VALUE minus 8, to bound all array allocations. Previously, it might happen that grow() and other array-related functions could try to allocate an array of size Integer.MAX_VALUE, which is technically correct from the JLS, but will not work on most JVMs. The maximum length we use now is the same value as that used by java.util.ArrayList. Thanks to William Harvey for suggesting this change.

6.5.3

- Corrected erroneous introduction of compare() methods on integral classes (they appeared in Java 7).

6.5.2

- A few changes were necessary to make fastutil behave as Java on NaNs when sorting. Double.compareTo() and Float.compareTo() treat Double.NaN as greater than Double.POSITIVE_INFINITY, and fastutil was not doing it. As part of the change, now all comparisons between primitive types are performed using the compare() method of the wrapper class (microbenchmarks confirmed that there is no speed penalty for that, probably due to inlining or even intrinsification). Thanks to Adam Klein for reporting this bug.

- All quickSort() implementations that do not involve a comparator are now deprecated, as there are equivalent/better versions in java.util.Arrays.

6.5.0 -> 6.5.1

- Now FastBuffered{Input/Output}Stream has a constructor with an explicitly given buffer.

- Abandoned golden-ratio based expansion of arrays and lists in favour of a (more standard) doubling approach.

- Array-based FIFO queues now reduce their capacity automatically by halving when the size becomes one fourth of the length.

- The add() method for open hash maps has been deprecated and replaced by addTo(), as the name choice proved to be a recipe for disaster.

- New InspectableFileCachedInputStream for caching easily large byte streams partially on file and partially in memory.

- The front() method for semi-indirect heaps took no comparator, but was used in queues in which you could support a comparator. There is now a further version accepting a comparator.

- Serial Version UIDs are now private.

6.4.6 -> 6.5.0

- Fixed type of array hash strategies.

- Fixed use of equals() instead of compareTo() in SemiIndirectHeaps.front(). Thanks to Matthew Hatem for reporting this bug.

- Now we generate custom hash maps for primite types, too (as we were already doing for sets).

6.4.5 -> 6.4.6

- In array-based priority queues changed() would not invalidate the cached index of the smallest element.

6.4.4 -> 6.4.5

- In some very rare circumstances, enumeration of hash sets or maps combined with massive element removal (using the iterator remove() method) could have led to inconsistent enumeration (duplicates and missing elements). Thanks to Hamish Morgan for reporting this bug.

6.4.3 -> 6.4.4

- Array-based maps were not implementing correctly entrySet().contains(), and as a consequence equals() between such maps was broken. Thanks to Benson Margulies for reporting this bug.

6.4.2 -> 6.4.3

- Now array-based priority queue cache their first element. Moreover, they implement the correct type-specific interface.

6.4.1 -> 6.4.2

- Now we have indirect lexicographical radix sort on pairs of arrays, mainly used to compute quickly Kendall's tau.

- New reverse method for arrays (useful for radix descending sorts).

- Radix sort (one or two arrays) for big arrays.

- Now radix sort uses correctly (minimally) sized support arrays when sorting subarrays.

6.4 -> 6.4.1

- Now we have a separate directory, settable in the makefile, to generate sources. This makes Maven integration easier.

- The store methods in TextIO for big arrays were broken.

- Now big-array lists implement the Stack interface.

- Fixed subtle bug in rehash() methods of big hash sets.

6.3 -> 6.4

- WARNING: Indirect queues must obviously have a way to determine whether an index is in the queue. It was an oversight in the interface design that a contains() method was not present. We wook the risk of adding it now. At the same time, we modified remove() so that now returns a boolean specifying whether the index to be removed was actually in the queue, as this is more in line with the Java Collections Framework.

- Removed unused double-priority queue related classes.

- Now array-based sets and maps have a constructor based on java.util.Collection and java.util.Map (as for the other kind of sets and maps).

- New doubly linked implementation for linked hash maps and sets. It uses twice the space for pointers, but mixes well with linear probing, so we have again constant-time true deletions. Moreover, iterators can be started from any key in constant time (albeit the first access to the index of the list iterator will require a linear scan, unless the iterator started from the first or the last key). Additional methods such as getAndMoveToFirst() make the creation of LRU caches very easy. Thanks to Brien Colwell for donating the code.

- Now object-based array FIFO queues provide deque methods. Moreover, they clean up the backing array after returning an object or when performing a clear().

- New get() method in set implementations makes it possible to recover the actual object int the collection that is equal to the query key.

- A number of bugs were found and fixed by Christian Falz (thanks!). In all binary search code the "to" parameter was *inclusive*, but the documentation said *exclusive*, with obvious problems. Hash map iterators could return under some very subtle and almost irreproducible circumstances a previously deleted slot. Deleted hash map entries would return spurious null values.

6.2.2 -> 6.3

- We now have radix sort. It's much faster than quicksort, but it can only sort keys in their natural order. There are multiple-array and indirect (and possibly stable) versions available.

- There are now custom hash sets also for type-specific keys. This makes it possible to use hash sets to index data indirectly (e.g., using integer or long just as indices).

- Shuffling static methods for all kinds of (big) list and arrays.

6.2.1 -> 6.2.2

- A new add() method makes the usage of maps as counters easier
 and faster.

6.2.0 -> 6.2.1

- A very stupid bug was causing twice the rehashing that was
 necessary. Now insertions in hash-based classes are significantly faster.

6.1.0 -> 6.2.0

- A better structure of the scan loop for hash tables borrowed
 from HPPC (http://labs.carrotsearch.com/hppc.html) gives some
 speed improvement to hash-based classes.

6.0.0 -> 6.1.0

- Hash-based classes have been rewritten using linear probing and
 a good hash (MurmurHash3). The old classes can be still generated
 using the target oldsources.

- Bizarre queues (double- and sesqui-indirect) have been removed
 from the standard jar, but they can be still generated using the
 target oldsources.

5.1.5 -> 6.0.0

- WARNING: the jar file is now fastutil.jar (not fastutil5.jar), again.

- WARNING: now fastutil requires Java 6+.

- fastutil is now released under the Apache License 2.0.

- New framework for big arrays, represented as arrays-of-arrays.
 BigArrays and the type-specific counterparts provide static
 methods of all kinds.

- New Size64 interface for classes implementing big collections.

- New framework for big lists--lists with longs as indices. The only
 present implementation uses big arrays, but, for instance,
 Sux4J's succinct lists will be retrofitted to LongBigList
 (presently they implement LongBigList from dsiutils, which will
 be deprecated).

- List.iterator() now returns a ListIterator. There is no real reason
 not to do this, and the API change is handled from an implementation
 viewpoint in AbstractList, so nodoby should really notice.

- New Collections.asCollection(Iterable) method to expose iterables as collections (missing methods are computed using the iterator). This was also the occasion to streamline type-specific abstract collections, which now inherit from java.util.AbstractCollection, so we support contains, clear, etc. methods as long as there is an iterator.

- Fixed bugged array-based constructors of ArrayMap and ArraySet.

- Fixed bugged put/remove methods in abstract functions. Thanks to Katja Filippova for reporting this bug.

- New front-coded lists use big arrays, so they can store much more (in fact, unlimited) data. Unfortunately, they are no longer serialisation-compatible with previous versions.

- New MeasurableStream interface that is implemented by MeasurableInputStream and by a new, analogous MeasurableOutputStream.

- Better FastBufferedOutputStream and FastByteArrayOutputStream that are measurable and positionable.

- Now all clone() methods override covariantly the defult return type (Object).

5.1.4 -> 5.1.5

- ArraySet was implementing isEmpty() with inverted logic (thanks to Marko Srdanovic for reporting this bug).

- New constructor for FastMultiByteArrayInputStream: it takes a MeasurableInputStream and uses length() to determine the number of bytes to load into memory.

5.1.3 -> 5.1.4

- The implementation of RepositionableStream in FastByteArrayOutputStream was fraught with a horrendous bug (thanks to Claudio Corsi for reporting), in spite of extensive unit tests.

5.1.2 -> 5.1.3

- A bug existing since the first release was preventing tables larger than 2^30 bits to work (the computation of the next bucket to look at would cause an integer overflow).

- FastByteArrayOutputStream now implements RepositionableStream.

- Type-specific versions of Iterable.

- Some methods (e.g., iterator() and values()) are now explicitly
 re-strengthened wherever necessary to avoid complaints about
 ambiguous method invocations by some compilers.

- The introduction of functions added several bugs to the empty/singleton
 map classes. Inheriting from the respective function counterparts left
 several methods underspecified (equals(), etc.). This has been
 (hopefully) fixed.

5.1.1 -> 5.1.2

- FastBufferedInputStream now supportw length() by FileChannel-fetching
 on FileInputStream instances (it already used to support position()
 by the same mechanism).

5.1.0 -> 5.1.1

- Byte-array MG4J I/O classes have been moved here.

5.0.9 -> 5.1.0

- Fixed documentation for custom/noncustom maps (it was exchanged).

- New type-specify entrySet() methods that avoid complicated casting
 to get a type-specific entryset. Moreover, now entrySet() can
 return an object implementing Fast(Sorted)EntrySet to indicate
 that a fastIterator() method is available. Fast iterators can
 return always the same Entry object, suitably mutated. We thank
 Daniel Ramage for suggesting this feature.

- Several hundreds of new classes generated by the new Function interface,
 which represent mappings for which the entry set is not enumerable
 (e.g., hashes). Functions have their usual share of satellite objects
 (wrappers, etc.). There are no implementations--the main purpose of
 the new interfaces is to make Sux4J (http://sux.dsi.unimi.it/)
 more object-oriented.

5.0.8 -> 5.0.9

- Slightly reduced overhead for bound checks in heap-based queues.

- BinIO was loading byte arrays one byte at a time. Now some conditionally
 compiled code uses bulk-read methods instead. Moreover, horrible kluges
 to work around Java bug #6478546 have been included.

5.0.7 -> 5.0.8

- Faster array maps and sets: System.arraycopy() is very slow on small arrays (due to inherent costs of calling native code) and reflection-based array creation is a disaster. Now we use object arrays and loops.

- New clone() methods for array-based structures and custom serialisation.

- FastBuffered*Stream has been simplified and streamlined. No more block alignment.

5.0.6 -> 5.0.7

- Better algorithm for front() in heaps.

- New comprehensive collection of array-based maps and sets. The motivation behind such structures is the need for quick, low-footprint data structures for *very* small sets (say, less than 10 elements). For instance, in MG4J we were using sparse reference-based hash tables, but it turned out that System.identityHashCode() is *deadly* slow and scanning linearly an array searching for the desired element is significantly faster.

5.0.5 -> 5.0.6

- Due to erratic and unpredictable behaviour of InputStream.skip(), which does not correspond to its specification and Sun refuses to fix (see bug 6222822; don't be fooled by the “closed, fixed” label), FastBufferedInputStream now peeks at the underlying stream and if it is System.in it uses repeated reads. Moreover, it will use alternatively reads and skips to guarantee that the number of skipped bytes will be smaller than requested only if end of file has been reached.

- The insertion and key retrieval methods of hash-based structures are now protected and final.

- New front() method for indirect queues. It retrieves quickly the indices associated to elements equal to the top.

- First JUnit tests.

5.0.4 -> 5.0.5

- Fixed possible overflow in FastBufferedInputStream.available().

- Indirect heaps have faster checks for elements belonging or not to the queue. In particular, we just rely on array access for detecting indices out of bounds. Profiling with LaMa4J showed that in some circumstances checking explicitly the indices were within bounds was taking more time that the actual heap inner workings.

- Fixed obnoxious bug dating to the first fastutil implementation. The macro KEY_EQUALS_HASH(x,h,y), which checks for equality between x and y given that the hash of x is h, was evaluating hashCode() on y without guarantee that y was non-null. As a result, adding a null to a mapped followed by the insertion of an element with hash code 0 would have thrown a NullPointerException. The bug went unobserved for years because no one use nulls as keys, and was actually detected by a bug in BUbiNG's code (which was in turn mistakenly inserting nulls in a set).

5.0.3 -> 5.0.4

- Fixed missing declaration of generic type for HASH_STRATEGY.

- A new abstract class, MeasurableInputStream, is used for streams whose length and current position are always known. This actually was needed for BUbiNG development.

- New readLine() family of method for reading "lines" directly from a FastBufferedInputStream.

- In FastBufferedInputStream, reset() has been deprecated in favour of flush().

- Array-based lists of objects now reallocate the backing array using reflection *only* if they were created by wrapping. This won't change the previous behaviour, but at the price of a boolean per list we have unbelievably faster array reallocation.

- New explicit fast load factors in Hash.

5.0.2 -> 5.0.3

- Bizarrily, java.util.List re-specifies iterator(), even if it extends Collection. As a result, we need to re-strengthen it in type-specific lists.

- Fixed new horrible bug introduced by adding Booleans to BinIO and TextIO. Problem is, I didn't know #assert is cumulative.

5.0.1 -> 5.0.2

- Fixed bug in sorted maps key sets and values that would cause a stack overflow when calling size() and a few other methods.

- Fixed lack of booleans in BinIO and TextIO.

- BinIO now checks for too large files.

5.0 -> 5.0.1

- In BinIO, it was assumed that .SIZE would give the size of
 primitive types in *bytes*. Bad mistake.

4.4.3 -> 5.0

- Java 5 only!

- Support for generics. This led to a number of backward-incompatible changes:
   * toArray(Object[]) does not accept any longer null as an argument;
   * singletons for empty collections (sets, lists, ecc.) are type-specific;
   * iterators on sorted collections are bidirectional *by specification*;
   * the new, covariantly stronger methods defined in all interfaces (e.g.,
     iterator() returning a type-specific iterator) are now the default,
     and in the abstract classes the old methods (e.g., objectIterator())
     now just delegate to the standard method, which is the contrary
     of what was happening before: you'll have to turn all methods
     such as objectIterator() in iterator(), etc.
   * all deprecated methods have been dropped.

- Array growth functions now will return the correct empty array for
 object arrays (it used to return ObjectArrays.EMPTY_ARRAY).

- Strategies are generic and no longer required to accept REMOVED.

- Stale references could hang around in the nodePath array for
 Red-Black trees and map; this has been fixed.

- The difference in semantics with the standard toArray(Object[])
 specification, which has always been in place, is now exhaustively
 explained.

- Major code cleanup (mostly code deletion) due to passing fastutil
 into Eclipse to check unused code, etc.

4.4.2 -> 4.4.3

- Important bug fix in FastBufferedInputStream.

4.4.1 -> 4.4.2

- New reset() method to invalidate the buffer of a FastBufferedInputStream,
 making it possible to read safely files written by other processes
 (given, of course, that you are synchronising the accesses).

4.4.0 -> 4.4.1

- New parallel-array constructor for all maps. Very useful for static final map initialisation.

- Following considerations in Jakarta Commons I/O, the standard
 buffer size has be lowered to 8Ki.

- Some arguments were declared as DataInputStream instead of
 DataInput.

- New methods for reading/writing objects from/to streams.

4.3.2 -> 4.4

- New static containers for reading and writing easily text and binary
 data streams. They load/save arrays, iterators etc. to buffered readers
 or streams.

- Moved here fast input/output buffered classes from MG4J. This makes
 fastutil self-contained.

- The trivial implementation of the type-specific iterator was missing
 from AbstractList.drv (surprisingly, not from the subclass implementation!).

- The sublist implementation in AbstractList.drv is now protected and static.
 The attributes are protected, too.

- Now we compare booleans (false<true). As a result, also lists of
 booleans do get lexicographical comparability.

- add(k) in AbstractList.drv now calls add(size(), k).

- Fixed error messages for out-of-bound indices in lists.

4.3.1 -> 4.3.2

- Fixed small innocuous bug: a code fragment related to non-linked
 hash table was generated for linked hash tables, too, do to a
 case type in a preprocessor directive. The code fragment, however,
 had no effect.

- Fixed memory leak in OpenHashMap: the remove() method was not clearing
 the key (whereas OpenHashSet was).

4.3 -> 4.3.1

- New fully indirect heap-based double priority queues.

- Fixed docs for queues: in 4.3, we were claiming that greater elements
 are dequeued first, while the opposite happens.

4.2 -> 4.3

- New full-fledged set of unmodifiable structures *and* iterators.

- Removed about a dozen spurious final method modifiers.

- Made rehash() protected, so that everybody can play with different rehashing strategies.

- trim() in array lists wasn't doing the right thing, because trim(int) wasn't doing it in the first place. Now if n is smaller than the size of the list, we trim at the list size (previously we were doing nothing).

- Analogously, trim() in hash-table-based structures was fixed so that trimming a table below its size will result in rehashing to the minimum possible size.

4.1 -> 4.2

- Improved array methods: now all methods on objects (e.g., grow()) return an array of the same type of the array that was passed to them, similarly to toArray() in collections.

- Fixed missing macro substitution for empty iterator methods. In any case, they were already deprecated.

4.0 -> 4.1

- New classes for custom hashing methods (mainly thought for arrays). Correspondingly, methods for arrays have been implemented in the static containers.

- BasicEntry now throws an UnsupportedOperationException on calls to setValue(). If you ever used that method, you got wierd results, as it does not update the underlying map. The method is now implemented correctly in open hash maps, in which previously did not correctly update the underying map.

- Reimplemented copy of an entire array using clone().

- Fixed a bug in clear() for indirect heaps (the inversion array was not being cleared).

- Indirect priority queue interfaces now feature an optional allChanged() method that can be used to force a complete heap rebuild. It is implemented by all current array-based and head-based concrete classes.

3.1 -> 4.0

- IMPORTANT: The optimized methods that a type-specific must provide now
 include an addElements() method that quickly adds an array of elements. As
 usual, the method is fully implemented by the type-specific abstract lists.

- IMPORTANT: The abstract generic version of get(), put() and remove() for maps
 with non-object keys or values now always return null to denote a missing
 key. They used to return an object-wrapped default return value.

- Completely new and comprehensive implementation of priority queues, both
 direct and indirect. Implementations are by heaps and by flat arrays. There
 are also static containers with all relevant heap methods, for people
 wanting to do their own thing.

- New static containers for comparators.

- All singletons, empty sets and snychronized wrappers are public so
 you can inherit from them.

- Abstract maps now provide keySet() and values() based on entrySet().

- New abstract classes for sorted sets and maps with delegators to
 type-specific methods.

- New public methods in Arrays and in type-specific Arrays classes for checking
 ranges.

- New static methods for type-specific arrays that allow to grow, enlarge
 and trim them with ease.

- Clarified abstract implementation of default return values, and implemented
 clarified specification. Just a couple of method in hash maps were not
 already compliant.

- The pour() method now returns a list. The previous version was returning
 a linked hash set, which was rather nonsensical anyway, since an iterator
 build on the returned set could have been different from the original iterator.
 You can always pour an iterator into a set by providing the set explicitly.

- An exception-throwing implementation of some methods in AbstractSet
 was missing. Same for AbstractCollection, AbstractMap and AbstractList.

- New basic inner entry class for abstract maps, which makes it easier to write
 entrySet() methods for classes that do not have their own entries.

- Added missing get(Object) method in AbstractMap (just delegates to
 the type-specific version).

- For lazy people, now containsKey() and containsValue() in AbstractMap
 are defined by looking into keySet() and values().

- Fixed a few methods of EMPTY_LIST which were throwing exception
 semantically (see the introduction).

- The interval iterators are now list iterators, except for longs.

- Fixed a bug in size() for array lists (reducing the size of an array
 would lead to an exception).

- Fixed double bug in hash tables: first of all, on very small sizes adding
 growthFactor would have left the size unchanged, giving rise to infinite
 loops. (Thanks to Heikki Uusitalo for reporting this bug.) Second, growthFactor
 was not being used *at all* by hash maps.

- Fixed entries emitted by singleton maps. Now they are type-specific.

- Fixed a number of minor glitches in gencsource.sh, and added some comments.

- HashCommon.removed has been renamed HashCommon.REMOVED.

- Boolean objects are now generated using valueOf() instead of the constructor.

- New type-specific wrappers for list iterators.

3.0 -> 3.1

- IMPORTANT: it.unimi.dsi.fastutil.Iterators methods have
 been spread in type-specific static containers.

- New Stack interface, implemented by type-specific lists.

- New static container classes Collections, Sets, and Lists.
 Presently they just provide empty containers.

- New type-specific static contains (e.g., IntSets) providing
 singletons and synchronized wrappers.

- Entry sets now have entries that are equal() to entries
 coming from corresponding maps in java.util.

- Spelling everywhere changed to Pure American. "synchronized" in code and
 "synchronise" in text side-by-side were looking really wierd...

3.0 -> 3.0.1

- New unwrap() methods for type-specific collections.

- Fixed old-as-world-bug, apparently wide but that evidently no one ever noticed: AbstractMap was not serialisable, and, as a result, the default return value was not serialised (I find sincerely counterintuitive that making a class serialisable doesn't do the same for its supertypes). It wasn't ever even *documented* as preserved, so probably everyone thought this was my idea, too. Too bad this breaks once more serialisation compatibility. Since I had to break some serialisation anyway, I decided to eliminate the residual serialisation of p in hash table classes, too (which breaks serialisation for all hash-based classes).

2.60 -> 3.0

- IMPORTANT: All classes have been repackaged following the type of elements/keys. Sources will have to be retouched (just to change the import clause) and recompiled.

- IMPORTANT: Because of an unavoidable name clash in the new type-specific list interface, the method remove(int) of IntCollection has been renamed rem(int). The only really unpleasant effect is that you must use rem(int) on variables of type IntCollection that are not of type IntSet (as IntSet reinstates remove(int) in its right place)--for instance, IntList.

- Brand-new implementation of type-specific lists, with all the features you'd expect and more.

- Insertions for readObject() in hash tables are now handled in a special way (20% faster).

- Implemented linear-time tree reconstruction for readObject() (in practice, more than twice faster).

- Fixed a problem with serialisation of hash tables: the table would have been reloaded with the same p, even if it was preposterous. We still save p, however, to avoid breaking serialisation compatibility.

- Fixed missing implementation of type-specific sets, which should have extended type-specific collections, but they weren't.

- The default return value is now protected.

- New family of pour() methods that pour an iterator into a set.

- New programmable growth factor for hash-table-based classes.

- Eliminated a few useless method calls in tree map.

- Wide range of complex assertions, which are compiled in or out using the "private static final boolean" idiom.

- For references we now use System.identityHashCode(); this shouldn't change much, but it seems definitely more sensible.

- Fixed major bug in subSet()/subMap(): creating a subMap of a tailMap (or headMap) a right extreme (left, resp.) equal to 0 would have caused the creation of a tailMap (or headMap, resp.), discarding the extreme. Very, very unlikely, but it happened in a test.

- Fixed small bug in standard remove() method of submaps, which would have returned a default return value wrapped in a suitable object instead of null on non-existing keys.

2.52 -> 2.60

- IMPORTANT: Major overhaul of iterators. Now iterators must be skippable, so previous implementation of type-specific iterator interfaces will not work. However, new abstract classes allow to build iterator with ease by providing for free the skipping logic, and many useful static methods in Iterators allow to generate type-specific iterators wrapping standard iterators, arrays, etc.

- Better strategy for clear() on hash tables: we don't do anything only if all entries are free (which means that an empty table with deleted entry will be cleared).

2.51 -> 2.52

- IMPORTANT: The package name has changed to it.unimi.dsi.fastutil to be uniform with JPackage conventions. However, this means that you must manually erase the old one and update your sources.

- clear() doesn't do anything on empty hash tables.

2.50 -> 2.51
- New trim(int) method to reduce a hash table size avoiding to make it too small.

- serialVersionUID is now fixed, to avoid future incompatibilities.

2.11 -> 2.50

- IMPORTANT: The Collection interface now prescribes an iterator method with a type-specific name (e.g., intIterator()) that returns directly a type-specific iterator.

- New Reference maps and sets that allow to store more quickly
 canonised objects.

- New linked maps mimicking java.util's, but with a boatload
 of additional features.

- Small bug fix: the get(Object) method would return null
 instead of the default return value for maps with object
 keys.

- Major bug fix: iterating backwards on submaps was leading
 to unpredictable results.

- Major bug fix: cloning maps would have caused inconsistent behaviour.

- Major code redistribution: now whenever possible wrappers
 belong to abstract superclasses.

2.1 -> 2.11

- Now we cache the hash of an object before entering
 the hash table loop.

2.0 -> 2.1

- A simple optimisation in hash-table inner loops has given
 quite a performance boost under certain conditions (we do
 not compute the secondary hashing if it is not necessary). Inspired
 by Gnu Trove.
- The trim() method would have in fact trimmed nothing, just
 rehashed the table.
- The computed maxFill value was sligtly too small.
- Also tree sets now have constructors from arrays.
- More internal methods have been made final.

1.3 -> 2.0

- ALL MAPS AND SETS HAVE NEW NAMES DEPENDING ON THE IMPLEMENTATION.
- Introducing new high-performance, low memory-footprint implementation of
 SortedMap and SortedSet.
- Two tree implementations are available: RB trees and
 AVL trees. Both implementations are threaded. See the README.
- Fixed a bug in hashCode() and contains() for HashMap.drv (it was
 considering keys only!).
- Fixed a bug in contains() for entrySet() in all maps (it was using
 VALUE_EQUAL to test equality for values given as objects).
- I realised that a default return value can be useful also for maps and sets
 returning objects, so now you have it. It is even independent for submaps and

subsets.
- Classes are no longer final. The performance gain is around 1%, and
 the decrease in usefulness is orders of magnitudes greater.
- We now check equality using first hashCode() and then equals().
- The tests for speed now warm up the trees by doing repeated insertions
 and deletions, so that the benefits of a better balancing criterion
 are more evident.
- The regression tests are much more stringent.
- Fixed hashCode() for hash maps (wasn't conforming to the Map interface
 specification).
- Implemented linear cloning for tree classes.

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/CHANGES
No license file was found, but licenses were detected in source scan.

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/Long2LongFunctions.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/Int2IntFunctions.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleArrayList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/bytes/ByteIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/ShortStack.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/AbstractLong2DoubleMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntSpliterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-

jar/it/unimi/dsi/fastutil/booleans/BooleanSpliterators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/AbstractDoublePriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/AbstractLongPriorityQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/Reference2ShortFunction.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/ShortCollection.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/Short2FloatFunction.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/AbstractLong2LongSortedMap.java
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/chars/AbstractCharIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/chars/AbstractCharList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/Long2ObjectSortedMaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/Double2IntRBTreeMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-

jar/it/unimi/dsi/fastutil/chars/CharIterators.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/AbstractDouble2IntMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/Long2DoubleSortedMap.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongBigLists.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/Object2LongSortedMaps.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/AbstractDoubleListIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongLinkedOpenHashSet.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/Int2LongSortedMaps.java
No license file was found, but licenses were detected in source scan.

```
/*
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*/


package PACKAGE;

#if ! KEYS_REFERENCE
import it.unimi.dsi.fastutil.objects.AbstractObjectSortedSet;
import it.unimi.dsi.fastutil.objects.ObjectBidirectionalIterator;
import it.unimi.dsi.fastutil.objects.ObjectListIterator;
import it.unimi.dsi.fastutil.objects.ObjectSortedSet;
#endif

#if KEY_INDEX != VALUE_INDEX && !(KEYS_REFERENCE && VALUES_REFERENCE)
import VALUE_PACKAGE.VALUE_COLLECTION;
import VALUE_PACKAGE.VALUE_ABSTRACT_COLLECTION;
import VALUE_PACKAGE.VALUE_ITERATOR;
#if VALUES_PRIMITIVE
```

```
import VALUE_PACKAGE.VALUE_LIST_ITERATOR;
#endif
#endif

import java.util.Comparator;
import java.util.Iterator;
import java.util.Map;
import java.util.SortedMap;
import java.util.NoSuchElementException;

/** A type-specific red-black tree map with a fast, small-footprint implementation.
*
* <p>The iterators provided by the views of this class are type-specific {@linkplain
* it.unimi.dsi.fastutil.BidirectionalIterator bidirectional iterators}.
* Moreover, the iterator returned by {@code iterator()} can be safely cast
* to a type-specific {@linkplain java.util.ListIterator list iterator}.
*
*/

public class RB_TREE_MAP KEY_VALUE_GENERIC extends ABSTRACT_SORTED_MAP
KEY_VALUE_GENERIC implements java.io.Serializable, Cloneable {

 /** A reference to the root entry. */
 protected transient Entry KEY_VALUE_GENERIC tree;

 /** Number of entries in this map. */
 protected int count;

 /** The first key in this map. */
 protected transient Entry KEY_VALUE_GENERIC firstEntry;

 /** The last key in this map. */
 protected transient Entry KEY_VALUE_GENERIC lastEntry;

 /** Cached set of entries. */
 protected transient ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> entries;

 /** Cached set of keys. */
 protected transient SORTED_SET KEY_GENERIC keys;

 /** Cached collection of values. */
 protected transient VALUE_COLLECTION VALUE_GENERIC values;

 /** The value of this variable remembers, after a {@code put()}
  * or a {@code remove()}, whether the <em>domain</em> of the map
  * has been modified. */
 protected transient boolean modified;
```

```
/** This map's comparator, as provided in the constructor. */
protected Comparator<? super KEY_GENERIC_CLASS> storedComparator;

/** This map's actual comparator; it may differ from {@link #storedComparator} because it is
 always a type-specific comparator, so it could be derived from the former by wrapping. */
protected transient KEY_COMPARATOR KEY_SUPER_GENERIC actualComparator;

private static final long serialVersionUID = -7046029254386353129L;

{
 allocatePaths();
}

/** Creates a new empty tree map.
 */

public RB_TREE_MAP() {
 tree = null;
 count = 0;
}

/** Generates the comparator that will be actually used.
 *
 * <p>When a given {@link Comparator} is specified and stored in {@link
 * #storedComparator}, we must check whether it is type-specific.  If it is
 * so, we can used directly, and we store it in {@link #actualComparator}. Otherwise,
 * we adapt it using a helper static method.
 */
private void setActualComparator() {
#if KEY_CLASS_Object
 actualComparator = storedComparator;
#else
 actualComparator = COMPARATORS.AS_KEY_COMPARATOR(storedComparator);
#endif
}



/** Creates a new empty tree map with the given comparator.
 *
 * @param c a (possibly type-specific) comparator.
 */

public RB_TREE_MAP(final Comparator<? super KEY_GENERIC_CLASS> c) {
 this();
 storedComparator = c;
 setActualComparator();
}
```

```
/** Creates a new tree map copying a given map.
 *
 * @param m a {@link Map} to be copied into the new tree map.
 */

public RB_TREE_MAP(final Map<? extends KEY_GENERIC_CLASS, ? extends VALUE_GENERIC_CLASS>
m) {
 this();
 putAll(m);
}

/** Creates a new tree map copying a given sorted map (and its {@link Comparator}).
 *
 * @param m a {@link SortedMap} to be copied into the new tree map.
 */

public RB_TREE_MAP(final SortedMap<KEY_GENERIC_CLASS,VALUE_GENERIC_CLASS> m) {
 this(m.comparator());
 putAll(m);
}

/** Creates a new tree map copying a given map.
 *
 * @param m a type-specific map to be copied into the new tree map.
 */

public RB_TREE_MAP(final MAP KEY_VALUE_EXTENDS_GENERIC m) {
 this();
 putAll(m);
}

/** Creates a new tree map copying a given sorted map (and its {@link Comparator}).
 *
 * @param m a type-specific sorted map to be copied into the new tree map.
 */

public RB_TREE_MAP(final SORTED_MAP KEY_VALUE_GENERIC m) {
 this(m.comparator());
 putAll(m);
}

/** Creates a new tree map using the elements of two parallel arrays and the given comparator.
 *
 * @param k the array of keys of the new tree map.
 * @param v the array of corresponding values in the new tree map.
 * @param c a (possibly type-specific) comparator.
 * @throws IllegalArgumentException if {@code k} and {@code v} have different lengths.
```

```
 */

 public RB_TREE_MAP(final KEY_GENERIC_TYPE[] k, final VALUE_GENERIC_TYPE v[], final
Comparator<? super KEY_GENERIC_CLASS> c) {
  this(c);
  if (k.length != v.length) throw new IllegalArgumentException("The key array and the value array have different
lengths (" + k.length + " and " + v.length + ")");
  for(int i = 0; i < k.length; i++) this.put(k[i], v[i]);
 }

 /** Creates a new tree map using the elements of two parallel arrays.
  *
  * @param k the array of keys of the new tree map.
  * @param v the array of corresponding values in the new tree map.
  * @throws IllegalArgumentException if {@code k} and {@code v} have different lengths.
  */

 public RB_TREE_MAP(final KEY_GENERIC_TYPE[] k, final VALUE_GENERIC_TYPE v[]) {
  this(k, v, null);
 }

 /*
  * The following methods implements some basic building blocks used by
  * all accessors.  They are (and should be maintained) identical to those used in RBTreeSet.drv.
  *
  * The put()/remove() code is derived from Ben Pfaff's GNU libavl
  * (https://adtinfo.org/). If you want to understand what's
  * going on, you should have a look at the literate code contained therein
  * first.
  */



 /** Compares two keys in the right way.
  *
  * <p>This method uses the {@link #actualComparator} if it is non-{@code null}.
  * Otherwise, it resorts to primitive type comparisons or to {@link Comparable#compareTo(Object) compareTo()}.
  *
  * @param k1 the first key.
  * @param k2 the second key.
  * @return a number smaller than, equal to or greater than 0, as usual
  * (i.e., when k1 &lt; k2, k1 = k2 or k1 &gt; k2, respectively).
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 final int compare(final KEY_GENERIC_TYPE k1, final KEY_GENERIC_TYPE k2) {
  return actualComparator == null ? KEY_CMP(k1, k2) : actualComparator.compare(k1, k2);
 }
```

```
/** Returns the entry corresponding to the given key, if it is in the tree; {@code null}, otherwise.
 *
 * @param k the key to search for.
 * @return the corresponding entry, or {@code null} if no entry with the given key exists.
 */

final Entry KEY_VALUE_GENERIC findKey(final KEY_GENERIC_TYPE k) {
 Entry KEY_VALUE_GENERIC e = tree;
 int cmp;

 while (e != null && (cmp = compare(k, e.key)) != 0) e = cmp < 0 ? e.left() : e.right();

 return e;
}

/** Locates a key.
 *
 * @param k a key.
 * @return the last entry on a search for the given key; this will be
 * the given key, if it present; otherwise, it will be either the smallest greater key or the greatest smaller key.
 */

final Entry KEY_VALUE_GENERIC locateKey(final KEY_GENERIC_TYPE k) {
 Entry KEY_VALUE_GENERIC e = tree, last = tree;
 int cmp = 0;

 while (e != null && (cmp = compare(k, e.key)) != 0) {
  last = e;
  e = cmp < 0 ? e.left() : e.right();
 }

 return cmp == 0 ? e : last;
}

/** This vector remembers the path and the direction followed during the
 *  current insertion. It suffices for about 2<sup>32</sup> entries. */
private transient boolean dirPath[];
private transient Entry KEY_VALUE_GENERIC nodePath[];

SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED_RAWTYPES
private void allocatePaths() {
 dirPath = new boolean[64];
 nodePath = new Entry[64];
}

#if VALUES_PRIMITIVE && !VALUE_CLASS_Boolean
/** Adds an increment to value currently associated with a key.
 *
```

```
 * <p>Note that this method respects the {@linkplain #defaultReturnValue() default return value} semantics: when
 * called with a key that does not currently appears in the map, the key
 * will be associated with the default return value plus
 * the given increment.
 *
 * @param k the key.
 * @param incr the increment.
 * @return the old value, or the {@linkplain #defaultReturnValue() default return value} if no value was present for
the given key.
 */
public VALUE_GENERIC_TYPE addTo(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE incr) {
 Entry KEY_VALUE_GENERIC e = add(k);
 final VALUE_GENERIC_TYPE oldValue = e.value;
 e.value += incr;
 return oldValue;
}
#endif

@Override
public VALUE_GENERIC_TYPE put(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v) {
 Entry KEY_VALUE_GENERIC e = add(k);
 final VALUE_GENERIC_TYPE oldValue = e.value;
 e.value = v;
 return oldValue;
}

/** Returns a node with key k in the balanced tree, creating one with defRetValue if necessary.
 *
 * @param k the key
 * @return a node with key k. If a node with key k already exists, then that node is returned,
 * otherwise a new node with defRetValue is created ensuring that the tree is balanced
 * after creation of the node.
 */
private Entry KEY_VALUE_GENERIC add(final KEY_GENERIC_TYPE k) {
 /* After execution of this method, modified is true iff a new entry has been inserted. */
 REQUIRE_KEY_NON_NULL(k)
 modified = false;
 int maxDepth = 0;

 Entry KEY_VALUE_GENERIC e;

 if (tree == null) { // The case of the empty tree is treated separately.
  count++;
  e = tree = lastEntry = firstEntry = new Entry KEY_VALUE_GENERIC_DIAMOND(k, defRetValue);
 }
 else {
  Entry KEY_VALUE_GENERIC p = tree;
  int cmp, i = 0;
```

```
while(true) {
 if ((cmp = compare(k, p.key)) == 0) {
  // We clean up the node path, or we could have stale references later.
  while(i-- != 0) nodePath[i] = null;
  return p;
 }

 nodePath[i] = p;

 if (dirPath[i++] = cmp > 0) {
  if (p.succ()) {
   count++;
   e = new Entry KEY_VALUE_GENERIC_DIAMOND(k, defRetValue);

   if (p.right == null) lastEntry = e;

   e.left = p;
   e.right = p.right;

   p.right(e);

   break;
  }

  p = p.right;
 }
 else {
  if (p.pred()) {
   count++;
   e = new Entry KEY_VALUE_GENERIC_DIAMOND(k, defRetValue);

   if (p.left == null) firstEntry = e;

   e.right = p;
   e.left = p.left;

   p.left(e);

   break;
  }

  p = p.left;
 }
}

modified = true;
maxDepth = i--;
```

```
while(i > 0 && ! nodePath[i].black()) {
 if (! dirPath[i - 1]) {
  Entry KEY_VALUE_GENERIC y = nodePath[i - 1].right;

  if (! nodePath[i - 1].succ() && ! y.black()) {
   nodePath[i].black(true);
   y.black(true);
   nodePath[i - 1].black(false);
   i -= 2;
  }
  else {
   Entry KEY_VALUE_GENERIC x;

   if (! dirPath[i]) y = nodePath[i];
   else {
    x = nodePath[i];
    y = x.right;
    x.right = y.left;
    y.left = x;
    nodePath[i - 1].left = y;

    if (y.pred()) {
     y.pred(false);
     x.succ(y);
    }
   }

   x = nodePath[i - 1];
   x.black(false);
   y.black(true);

   x.left = y.right;
   y.right = x;
   if (i < 2) tree = y;
   else {
    if (dirPath[i - 2]) nodePath[i - 2].right = y;
    else nodePath[i - 2].left = y;
   }

   if (y.succ()) {
    y.succ(false);
    x.pred(y);
   }
   break;
  }
 }
 else {
```

```
  Entry KEY_VALUE_GENERIC y = nodePath[i - 1].left;

  if (! nodePath[i - 1].pred() && ! y.black()) {
   nodePath[i].black(true);
   y.black(true);
   nodePath[i - 1].black(false);
   i -= 2;
  }
  else {
   Entry KEY_VALUE_GENERIC x;

   if (dirPath[i]) y = nodePath[i];
   else {
    x = nodePath[i];
    y = x.left;
    x.left = y.right;
    y.right = x;
    nodePath[i - 1].right = y;

    if (y.succ()) {
     y.succ(false);
     x.pred(y);
    }

   }

   x = nodePath[i - 1];
   x.black(false);
   y.black(true);

   x.right = y.left;
   y.left = x;
   if (i < 2) tree = y;
   else {
    if (dirPath[i - 2]) nodePath[i - 2].right = y;
    else nodePath[i - 2].left = y;
   }

   if (y.pred()){
    y.pred(false);
    x.succ(y);
   }

   break;
  }
 }
}
}
```

```
 tree.black(true);
 // We clean up the node path, or we could have stale references later.
 while(maxDepth-- != 0) nodePath[maxDepth] = null;
 return e;
}


/* After execution of this method, {@link #modified} is true iff an entry
has been deleted. */

SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public VALUE_GENERIC_TYPE REMOVE_VALUE(final KEY_TYPE k) {
 modified = false;

 if (tree == null) return defRetValue;

 Entry KEY_VALUE_GENERIC p = tree;
 int cmp;
 int i = 0;
 final KEY_GENERIC_TYPE kk = KEY_GENERIC_CAST k;

 while(true) {
  if ((cmp = compare(kk, p.key)) == 0) break;

  dirPath[i] = cmp > 0;
  nodePath[i] = p;

  if (dirPath[i++]) {
   if ((p = p.right()) == null) {
    // We clean up the node path, or we could have stale references later.
    while(i-- != 0) nodePath[i] = null;
    return defRetValue;
   }
  }
  else {
   if ((p = p.left()) == null) {
    // We clean up the node path, or we could have stale references later.
    while(i-- != 0) nodePath[i] = null;
    return defRetValue;
   }
  }

 }

 if (p.left == null) firstEntry = p.next();
 if (p.right == null) lastEntry = p.prev();
```

```
if (p.succ()) {
 if (p.pred()) {
  if (i == 0) tree = p.left;
  else {
   if (dirPath[i - 1]) nodePath[i - 1].succ(p.right);
   else nodePath[i - 1].pred(p.left);
  }
 }
 else {
  p.prev().right = p.right;

  if (i == 0) tree = p.left;
  else {
   if (dirPath[i - 1]) nodePath[i - 1].right = p.left;
   else nodePath[i - 1].left = p.left;
  }
 }
}
else {
 boolean color;
 Entry KEY_VALUE_GENERIC r = p.right;

 if (r.pred()) {
  r.left = p.left;
  r.pred(p.pred());
  if (! r.pred()) r.prev().right = r;
  if (i == 0) tree = r;
  else {
   if (dirPath[i - 1]) nodePath[i - 1].right = r;
   else nodePath[i - 1].left = r;
  }

  color = r.black();
  r.black(p.black());
  p.black(color);
  dirPath[i] = true;
  nodePath[i++] = r;
 }
 else {
  Entry KEY_VALUE_GENERIC s;
  int j = i++;

  while(true) {
   dirPath[i] = false;
   nodePath[i++] = r;
   s = r.left;
   if (s.pred()) break;
   r = s;
```

```
  }

  dirPath[j] = true;
  nodePath[j] = s;

  if (s.succ()) r.pred(s);
  else r.left = s.right;

  s.left = p.left;

  if (! p.pred()) {
   p.prev().right = s;
   s.pred(false);
  }

  s.right(p.right);

  color = s.black();
  s.black(p.black());
  p.black(color);

  if (j == 0) tree = s;
  else {
   if (dirPath[j - 1]) nodePath[j - 1].right = s;
   else nodePath[j - 1].left = s;
  }
 }
}

int maxDepth = i;

if (p.black()) {
 for(; i > 0; i--) {
  if (dirPath[i - 1] && ! nodePath[i - 1].succ() ||
    ! dirPath[i - 1] && ! nodePath[i - 1].pred()) {
   Entry KEY_VALUE_GENERIC x = dirPath[i - 1] ? nodePath[i - 1].right : nodePath[i - 1].left;

   if (! x.black()) {
    x.black(true);
    break;
   }
  }

  if (! dirPath[i - 1]) {
   Entry KEY_VALUE_GENERIC w = nodePath[i - 1].right;

   if (! w.black()) {
    w.black(true);
```

```
 nodePath[i - 1].black(false);

 nodePath[i - 1].right = w.left;
 w.left = nodePath[i - 1];

 if (i < 2) tree = w;
 else {
  if (dirPath[i - 2]) nodePath[i - 2].right = w;
  else nodePath[i - 2].left = w;
 }

 nodePath[i] = nodePath[i - 1];
 dirPath[i] = false;
 nodePath[i - 1] = w;
 if (maxDepth == i++) maxDepth++;

 w = nodePath[i - 1].right;
}

if ((w.pred() || w.left.black()) &&
  (w.succ() || w.right.black())) {
 w.black(false);
}
else {
 if (w.succ() || w.right.black()) {
  Entry KEY_VALUE_GENERIC y = w.left;

  y.black (true);
  w.black(false);
  w.left = y.right;
  y.right = w;
  w = nodePath[i - 1].right = y;

  if (w.succ()) {
   w.succ(false);
   w.right.pred(w);
  }
 }

 w.black(nodePath[i - 1].black());
 nodePath[i - 1].black(true);
 w.right.black(true);

 nodePath[i - 1].right = w.left;
 w.left = nodePath[i - 1];

 if (i < 2) tree = w;
 else {
```

```
   if (dirPath[i - 2]) nodePath[i - 2].right = w;
   else nodePath[i - 2].left = w;
  }

  if (w.pred()) {
   w.pred(false);
   nodePath[i - 1].succ(w);
  }
  break;
 }
}
else {
 Entry KEY_VALUE_GENERIC w = nodePath[i - 1].left;

 if (! w.black()) {
  w.black (true);
  nodePath[i - 1].black(false);

  nodePath[i - 1].left = w.right;
  w.right = nodePath[i - 1];

  if (i < 2) tree = w;
  else {
   if (dirPath[i - 2]) nodePath[i - 2].right = w;
   else nodePath[i - 2].left = w;
  }

  nodePath[i] = nodePath[i - 1];
  dirPath[i] = true;
  nodePath[i - 1] = w;
  if (maxDepth == i++) maxDepth++;

  w = nodePath[i - 1].left;
 }

 if ((w.pred() || w.left.black()) &&
   (w.succ() || w.right.black())) {
  w.black(false);
 }
 else {
  if (w.pred() || w.left.black()) {
   Entry KEY_VALUE_GENERIC y = w.right;

   y.black(true);
   w.black (false);
   w.right = y.left;
   y.left = w;
   w = nodePath[i - 1].left = y;
```

```
      if (w.pred()) {
       w.pred(false);
       w.left.succ(w);
      }
     }

     w.black(nodePath[i - 1].black());
     nodePath[i - 1].black(true);
     w.left.black(true);

     nodePath[i - 1].left = w.right;
     w.right = nodePath[i - 1];

     if (i < 2) tree = w;
     else {
      if (dirPath[i - 2]) nodePath[i - 2].right = w;
      else nodePath[i - 2].left = w;
     }

     if (w.succ()) {
      w.succ(false);
      nodePath[i - 1].pred(w);
     }
     break;
    }
   }
  }

  if (tree != null) tree.black(true);
 }

 modified = true;
 count--;
 // We clean up the node path, or we could have stale references later.
 while(maxDepth-- != 0) nodePath[maxDepth] = null;
 return p.value;
}


@Override
public boolean containsValue(final VALUE_TYPE v) {
 final ValueIterator i = new ValueIterator();
 VALUE_TYPE ev;

 int j = count;
 while(j-- != 0) {
  ev = i.NEXT_VALUE();
```

```
  if (VALUE_EQUALS(ev, v)) return true;
 }

 return false;
}



@Override
public void clear() {
 count = 0;
 tree = null;
 entries = null;
 values = null;
 keys = null;
 firstEntry = lastEntry = null;
}



/** This class represent an entry in a tree map.
 *
 * <p>We use the only "metadata", i.e., {@link Entry#info}, to store
 * information about color, predecessor status and successor status.
 *
 * <p>Note that since the class is recursive, it can be
 * considered equivalently a tree.
 */

private static final class Entry KEY_VALUE_GENERIC extends ABSTRACT_MAP.BasicEntry
KEY_VALUE_GENERIC implements Cloneable {
 /** The the bit in this mask is true, the node is black. */
 private static final int BLACK_MASK = 1;
 /** If the bit in this mask is true, {@link #right} points to a successor. */
 private static final int SUCC_MASK = 1 << 31;
 /** If the bit in this mask is true, {@link #left} points to a predecessor. */
 private static final int PRED_MASK = 1 << 30;
 /** The pointers to the left and right subtrees. */
 Entry KEY_VALUE_GENERIC left, right;
 /** This integers holds different information in different bits (see {@link #SUCC_MASK} and {@link
#PRED_MASK}. */
 int info;

 Entry() {
  super(KEY_NULL, VALUE_NULL);
 }

 /** Creates a new entry with the given key and value.
  *
  * @param k a key.
```

```
 * @param v a value.
 */
Entry(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v) {
 super(k, v);
 info = SUCC_MASK | PRED_MASK;
}

/** Returns the left subtree.
 *
 * @return the left subtree ({@code null} if the left
 * subtree is empty).
 */
Entry KEY_VALUE_GENERIC left() {
 return (info & PRED_MASK) != 0 ? null : left;
}

/** Returns the right subtree.
 *
 * @return the right subtree ({@code null} if the right
 * subtree is empty).
 */
Entry KEY_VALUE_GENERIC right() {
 return (info & SUCC_MASK) != 0 ? null : right;
}

/** Checks whether the left pointer is really a predecessor.
 * @return true if the left pointer is a predecessor.
 */
boolean pred() {
 return (info & PRED_MASK) != 0;
}

/** Checks whether the right pointer is really a successor.
 * @return true if the right pointer is a successor.
 */
boolean succ() {
 return (info & SUCC_MASK) != 0;
}

/** Sets whether the left pointer is really a predecessor.
 * @param pred if true then the left pointer will be considered a predecessor.
 */
void pred(final boolean pred) {
 if (pred) info |= PRED_MASK;
 else info &= ~PRED_MASK;
}

/** Sets whether the right pointer is really a successor.
```

```
 * @param succ if true then the right pointer will be considered a successor.
 */
void succ(final boolean succ) {
 if (succ) info |= SUCC_MASK;
 else info &= ~SUCC_MASK;
}

/** Sets the left pointer to a predecessor.
 * @param pred the predecessr.
 */
void pred(final Entry KEY_VALUE_GENERIC pred) {
 info |= PRED_MASK;
 left = pred;
}

/** Sets the right pointer to a successor.
 * @param succ the successor.
 */
void succ(final Entry KEY_VALUE_GENERIC succ) {
 info |= SUCC_MASK;
 right = succ;
}

/** Sets the left pointer to the given subtree.
 * @param left the new left subtree.
 */
void left(final Entry KEY_VALUE_GENERIC left) {
 info &= ~PRED_MASK;
 this.left = left;
}

/** Sets the right pointer to the given subtree.
 * @param right the new right subtree.
 */
void right(final Entry KEY_VALUE_GENERIC right) {
 info &= ~SUCC_MASK;
 this.right = right;
}



/** Returns whether this node is black.
 * @return true iff this node is black.
 */
boolean black() {
 return (info & BLACK_MASK) != 0;
}

/** Sets whether this node is black.
```

```
 * @param black if true, then this node becomes black; otherwise, it becomes red..
 */
void black(final boolean black) {
 if (black) info |= BLACK_MASK;
 else info &= ~BLACK_MASK;
}

/** Computes the next entry in the set order.
 *
 * @return the next entry ({@code null}) if this is the last entry).
 */

Entry KEY_VALUE_GENERIC next() {
 Entry KEY_VALUE_GENERIC next = this.right;
 if ((info & SUCC_MASK) == 0) while ((next.info & PRED_MASK) == 0) next = next.left;
 return next;
}

/** Computes the previous entry in the set order.
 *
 * @return the previous entry ({@code null}) if this is the first entry).
 */

Entry KEY_VALUE_GENERIC prev() {
 Entry KEY_VALUE_GENERIC prev = this.left;
 if ((info & PRED_MASK) == 0) while ((prev.info & SUCC_MASK) == 0) prev = prev.right;
 return prev;
}

@Override
public VALUE_GENERIC_TYPE setValue(final VALUE_GENERIC_TYPE value) {
 final VALUE_GENERIC_TYPE oldValue = this.value;
 this.value = value;
 return oldValue;
}

@Override
SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
public Entry KEY_VALUE_GENERIC clone() {
 Entry KEY_VALUE_GENERIC c;
 try {
  c = (Entry KEY_VALUE_GENERIC)super.clone();
 }
 catch(CloneNotSupportedException cantHappen) {
  throw new InternalError();
 }

 c.key = key;
```

```
  c.value = value;
  c.info = info;

  return c;
 }

 @Override
 @SuppressWarnings("unchecked")
 public boolean equals(final Object o) {
  if (!(o instanceof Map.Entry)) return false;
  Map.Entry <KEY_GENERIC_CLASS, VALUE_GENERIC_CLASS> e = (Map.Entry <KEY_GENERIC_CLASS,
VALUE_GENERIC_CLASS>)o;

  return KEY_EQUALS(key, KEY_CLASS2TYPE(e.getKey())) && VALUE_EQUALS(value,
VALUE_CLASS2TYPE(e.getValue()));
 }

 @Override
 public int hashCode() {
  return KEY2JAVAHASH_NOT_NULL(key) ^ VALUE2JAVAHASH(value);
 }


 @Override
 public String toString() {
  return key + "=>" + value;
 }

 /*
   public void prettyPrint() {
   prettyPrint(0);
   }

   public void prettyPrint(int level) {
   if (pred()) {
   for (int i = 0; i < level; i++)
   System.err.print("  ");
   System.err.println("pred: " + left);
   }
   else if (left != null)
   left.prettyPrint(level +1);
   for (int i = 0; i < level; i++)
   System.err.print("  ");
   System.err.println(key + "=" + value + " (" + balance() + ")");
   if (succ()) {
   for (int i = 0; i < level; i++)
   System.err.print("  ");
   System.err.println("succ: " + right);
```

```
   }
   else if (right != null)
   right.prettyPrint(level + 1);
   }*/
}

/*
  public void prettyPrint() {
  System.err.println("size: " + count);
  if (tree != null) tree.prettyPrint();
  }*/

SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public boolean containsKey(final KEY_TYPE k) {
 RETURN_FALSE_IF_KEY_NULL(k)
 return findKey(KEY_GENERIC_CAST k) != null;
}

@Override
public int size() {
 return count;
}

@Override
public boolean isEmpty() {
 return count == 0;
}

SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public VALUE_GENERIC_TYPE GET_VALUE(final KEY_TYPE k) {
 final Entry KEY_VALUE_GENERIC e = findKey(KEY_GENERIC_CAST k);
 return e == null ? defRetValue : e.value;
}

@Override
public KEY_GENERIC_TYPE FIRST_KEY() {
 if (tree == null) throw new NoSuchElementException();
 return firstEntry.key;
}

@Override
public KEY_GENERIC_TYPE LAST_KEY() {
 if (tree == null) throw new NoSuchElementException();
 return lastEntry.key;
}
```

```
/** An abstract iterator on the whole range.
 *
 * <p>This class can iterate in both directions on a threaded tree.
 */

private class TreeIterator {
 /** The entry that will be returned by the next call to {@link java.util.ListIterator#previous()} (or {@code null} if
no previous entry exists). */
 Entry KEY_VALUE_GENERIC prev;
 /** The entry that will be returned by the next call to {@link java.util.ListIterator#next()} (or {@code null} if no
next entry exists). */
 Entry KEY_VALUE_GENERIC next;
 /** The last entry that was returned (or {@code null} if we did not iterate or used {@link #remove()}). */
 Entry KEY_VALUE_GENERIC curr;
 /** The current index (in the sense of a {@link java.util.ListIterator}). Note that this value is not meaningful when
this {@link TreeIterator} has been created using the nonempty constructor.*/
 int index = 0;

 TreeIterator() {
  next = firstEntry;
 }

 TreeIterator(final KEY_GENERIC_TYPE k) {
  if ((next = locateKey(k)) != null) {
   if (compare(next.key, k) <= 0) {
    prev = next;
    next = next.next();
   }
   else prev = next.prev();
  }
 }

 public boolean hasNext() { return next != null; }
 public boolean hasPrevious() { return prev != null; }

 void updateNext() {
  next = next.next();
 }

 Entry KEY_VALUE_GENERIC nextEntry() {
  if (! hasNext()) throw new NoSuchElementException();
  curr = prev = next;
  index++;
  updateNext();
  return curr;
 }
```

```
void updatePrevious() {
 prev = prev.prev();
}

Entry KEY_VALUE_GENERIC previousEntry() {
 if (! hasPrevious()) throw new NoSuchElementException();
 curr = next = prev;
 index--;
 updatePrevious();
 return curr;
}

public int nextIndex() {
 return index;
}

public int previousIndex() {
 return index - 1;
}

public void remove() {
 if (curr == null) throw new IllegalStateException();
 /* If the last operation was a next(), we are removing an entry that preceeds
    the current index, and thus we must decrement it. */
 if (curr == prev) index--;
 next = prev = curr;
 updatePrevious();
 updateNext();
 RB_TREE_MAP.this.REMOVE_VALUE(curr.key);
 curr = null;
}

public int skip(final int n) {
 int i = n;
 while(i-- != 0 && hasNext()) nextEntry();
 return n - i - 1;
}

public int back(final int n) {
 int i = n;
 while(i-- != 0 && hasPrevious()) previousEntry();
 return n - i - 1;
}
}


/** An iterator on the whole range.
 *
```

```
  * <p>This class can iterate in both directions on a threaded tree.
  */

 private class EntryIterator extends TreeIterator implements ObjectListIterator<MAP.Entry
KEY_VALUE_GENERIC> {
  EntryIterator() {}

  EntryIterator(final KEY_GENERIC_TYPE k) {
   super(k);
  }

  @Override
  public MAP.Entry KEY_VALUE_GENERIC next() { return nextEntry(); }
  @Override
  public MAP.Entry KEY_VALUE_GENERIC previous() { return previousEntry(); }
 }


 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET() {
  if (entries == null) entries = new AbstractObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC>() {
    final Comparator<? super MAP.Entry KEY_VALUE_GENERIC> comparator =
(RB_TREE_MAP.this.actualComparator == null ?
      (Comparator<MAP.Entry KEY_VALUE_GENERIC>) (x, y) -> KEY_CMP(x.ENTRY_GET_KEY(),
y.ENTRY_GET_KEY()) :
      (Comparator<MAP.Entry KEY_VALUE_GENERIC>) (x, y) ->
RB_TREE_MAP.this.actualComparator.compare(x.ENTRY_GET_KEY(), y.ENTRY_GET_KEY())
    );


    @Override
    public Comparator<? super MAP.Entry KEY_VALUE_GENERIC> comparator() { return comparator; }

    @Override
    public ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> iterator() { return new EntryIterator(); }

    @Override
    public ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> iterator(final MAP.Entry
KEY_VALUE_GENERIC from) { return new EntryIterator(from.ENTRY_GET_KEY()); }

    @Override
    SUPPRESS_WARNINGS_KEY_UNCHECKED
    public boolean contains(final Object o) {
     if (o == null || !(o instanceof Map.Entry)) return false;
     final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
     if (e.getKey() == null) return false;
#if KEYS_PRIMITIVE
```

```
    if (! (e.getKey() instanceof KEY_CLASS)) return false;
#endif
#if VALUES_PRIMITIVE
    if (e.getValue() == null || ! (e.getValue() instanceof VALUE_CLASS)) return false;
#endif
    final Entry KEY_VALUE_GENERIC f = findKey(KEY_OBJ2TYPE(KEY_GENERIC_CAST e.getKey()));
    return e.equals(f);
   }

   @Override
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   public boolean remove(final Object o) {
    if (!(o instanceof Map.Entry)) return false;
    final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
    if (e.getKey() == null) return false;
#if KEYS_PRIMITIVE
    if (! (e.getKey() instanceof KEY_CLASS)) return false;
#endif
#if VALUES_PRIMITIVE
    if (e.getValue() == null || ! (e.getValue() instanceof VALUE_CLASS)) return false;
#endif
    final Entry KEY_VALUE_GENERIC f = findKey(KEY_OBJ2TYPE(KEY_GENERIC_CAST e.getKey()));
    if (f == null || ! VALUE_EQUALS(f.ENTRY_GET_VALUE(), VALUE_OBJ2TYPE(e.getValue()))) return false;
    RB_TREE_MAP.this.REMOVE_VALUE(f.key);
    return true;
   }

   @Override
   public int size() { return count; }

   @Override
   public void clear() { RB_TREE_MAP.this.clear(); }

   @Override
   public MAP.Entry KEY_VALUE_GENERIC first() { return firstEntry; }

   @Override
   public MAP.Entry KEY_VALUE_GENERIC last() { return lastEntry; }

   @Override
   public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> subSet(MAP.Entry KEY_VALUE_GENERIC
from, MAP.Entry KEY_VALUE_GENERIC to) { return subMap(from.ENTRY_GET_KEY(),
to.ENTRY_GET_KEY()).ENTRYSET(); }

   @Override
   public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> headSet(MAP.Entry KEY_VALUE_GENERIC
to) { return headMap(to.ENTRY_GET_KEY()).ENTRYSET(); }
```

```
   @Override
   public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> tailSet(MAP.Entry KEY_VALUE_GENERIC
from) { return tailMap(from.ENTRY_GET_KEY()).ENTRYSET(); }
  };

 return entries;
 }

 /** An iterator on the whole range of keys.
  *
  * <p>This class can iterate in both directions on the keys of a threaded tree. We
  * simply override the {@link java.util.ListIterator#next()}/{@link java.util.ListIterator#previous()} methods (and
possibly
  * their type-specific counterparts) so that they return keys instead of entries.
  */
 private final class KeyIterator extends TreeIterator implements KEY_LIST_ITERATOR KEY_GENERIC {
  public KeyIterator() {}
  public KeyIterator(final KEY_GENERIC_TYPE k) { super(k); }

  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() { return nextEntry().key; }

  @Override
  public KEY_GENERIC_TYPE PREV_KEY() { return previousEntry().key; }
 };


 /** A keyset implementation using a more direct implementation for iterators. */
 private class KeySet extends ABSTRACT_SORTED_MAP KEY_VALUE_GENERIC.KeySet {
  @Override
  public KEY_BIDI_ITERATOR KEY_GENERIC iterator() { return new KeyIterator(); }
  @Override
  public KEY_BIDI_ITERATOR KEY_GENERIC iterator(final KEY_GENERIC_TYPE from) { return new
KeyIterator(from); }
 }

 /** Returns a type-specific sorted set view of the keys contained in this map.
  *
  * <p>In addition to the semantics of {@link java.util.Map#keySet()}, you can
  * safely cast the set returned by this call to a type-specific sorted
  * set interface.
  *
  * @return a type-specific sorted set view of the keys contained in this map.
  */
 @Override
 public SORTED_SET KEY_GENERIC keySet() {
  if (keys == null) keys = new KeySet();
  return keys;
```

```
}

/** An iterator on the whole range of values.
 *
 * <p>This class can iterate in both directions on the values of a threaded tree. We
 * simply override the {@link java.util.ListIterator#next()}/{@link java.util.ListIterator#previous()} methods (and
possibly
 * their type-specific counterparts) so that they return values instead of entries.
 */
private final class ValueIterator extends TreeIterator implements VALUE_LIST_ITERATOR VALUE_GENERIC {
 @Override
 public VALUE_GENERIC_TYPE NEXT_VALUE() { return nextEntry().value; }

 @Override
 public VALUE_GENERIC_TYPE PREV_VALUE() { return previousEntry().value; }
};

/** Returns a type-specific collection view of the values contained in this map.
 *
 * <p>In addition to the semantics of {@link java.util.Map#values()}, you can
 * safely cast the collection returned by this call to a type-specific collection
 * interface.
 *
 * @return a type-specific collection view of the values contained in this map.
 */
@Override
public VALUE_COLLECTION VALUE_GENERIC values() {
 if (values == null) values = new VALUE_ABSTRACT_COLLECTION VALUE_GENERIC() {
   @Override
   public VALUE_ITERATOR VALUE_GENERIC iterator() { return new ValueIterator(); }
   @Override
   public boolean contains(final VALUE_TYPE k) { return containsValue(k); }
   @Override
   public int size() { return count; }
   @Override
   public void clear() { RB_TREE_MAP.this.clear(); }
  };

 return values;
}

@Override
public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return actualComparator; }

@Override
public SORTED_MAP KEY_VALUE_GENERIC headMap(KEY_GENERIC_TYPE to) { return new
Submap(KEY_NULL, true, to, false); }
```

```
 @Override
 public SORTED_MAP KEY_VALUE_GENERIC tailMap(KEY_GENERIC_TYPE from) { return new
Submap(from, false, KEY_NULL, true); }

 @Override
 public SORTED_MAP KEY_VALUE_GENERIC subMap(KEY_GENERIC_TYPE from, KEY_GENERIC_TYPE
to) { return new Submap(from, false, to, false); }

 /** A submap with given range.
  *
  * <p>This class represents a submap. One has to specify the left/right
  * limits (which can be set to -&infin; or &infin;). Since the submap is a
  * view on the map, at a given moment it could happen that the limits of
  * the range are not any longer in the main map. Thus, things such as
  * {@link java.util.SortedMap#firstKey()} or {@link java.util.Collection#size()} must be always computed
  * on-the-fly.
  */
 private final class Submap extends ABSTRACT_SORTED_MAP KEY_VALUE_GENERIC implements
java.io.Serializable {
  private static final long serialVersionUID = -7046029254386353129L;

  /** The start of the submap range, unless {@link #bottom} is true. */
  KEY_GENERIC_TYPE from;
  /** The end of the submap range, unless {@link #top} is true. */
  KEY_GENERIC_TYPE to;
  /** If true, the submap range starts from -&infin;. */
  boolean bottom;
  /** If true, the submap range goes to &infin;. */
  boolean top;
  /** Cached set of entries. */
  protected transient ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> entries;
  /** Cached set of keys. */
  protected transient SORTED_SET KEY_GENERIC keys;
  /** Cached collection of values. */
  protected transient VALUE_COLLECTION VALUE_GENERIC values;

  /** Creates a new submap with given key range.
   *
   * @param from the start of the submap range.
   * @param bottom if true, the first parameter is ignored and the range starts from -&infin;.
   * @param to the end of the submap range.
   * @param top if true, the third parameter is ignored and the range goes to &infin;.
   */
  public Submap(final KEY_GENERIC_TYPE from, final boolean bottom, final KEY_GENERIC_TYPE to, final
boolean top) {
   if (! bottom && ! top && RB_TREE_MAP.this.compare(from, to) > 0) throw new
IllegalArgumentException("Start key (" + from  + ") is larger than end key (" + to + ")");
```

```
  this.from = from;
  this.bottom = bottom;
  this.to = to;
  this.top = top;
  this.defRetValue = RB_TREE_MAP.this.defRetValue;
 }

 @Override
 public void clear() {
  final SubmapIterator i = new SubmapIterator();
  while(i.hasNext()) {
   i.nextEntry();
   i.remove();
  }
 }

 /** Checks whether a key is in the submap range.
  * @param k a key.
  * @return true if is the key is in the submap range.
  */
 final boolean in(final KEY_GENERIC_TYPE k) {
  return (bottom || RB_TREE_MAP.this.compare(k, from) >= 0) &&
   (top || RB_TREE_MAP.this.compare(k, to) < 0);
 }

 @Override
 public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> ENTRYSET() {
  if (entries == null) entries = new AbstractObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC>() {
    @Override
    public ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> iterator() {
     return new SubmapEntryIterator();
    }

    @Override
    public ObjectBidirectionalIterator<MAP.Entry KEY_VALUE_GENERIC> iterator(final MAP.Entry
KEY_VALUE_GENERIC from) {
     return new SubmapEntryIterator(from.ENTRY_GET_KEY());
    }

    @Override
    public Comparator<? super MAP.Entry KEY_VALUE_GENERIC> comparator() { return
RB_TREE_MAP.this.ENTRYSET().comparator(); }

    @Override
    SUPPRESS_WARNINGS_KEY_UNCHECKED
    public boolean contains(final Object o) {
     if (!(o instanceof Map.Entry)) return false;
     final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
```

```
#if KEYS_PRIMITIVE
     if (e.getKey() == null || ! (e.getKey() instanceof KEY_CLASS)) return false;
#endif
#if VALUES_PRIMITIVE
     if (e.getValue() == null || ! (e.getValue() instanceof VALUE_CLASS)) return false;
#endif
     final RB_TREE_MAP.Entry KEY_VALUE_GENERIC f = findKey(KEY_OBJ2TYPE(KEY_GENERIC_CAST
e.getKey()));
     return f != null && in(f.key) && e.equals(f);
    }

    @Override
    SUPPRESS_WARNINGS_KEY_UNCHECKED
    public boolean remove(final Object o) {
     if (!(o instanceof Map.Entry)) return false;
     final Map.Entry<?,?> e = (Map.Entry<?,?>)o;
#if KEYS_PRIMITIVE
     if (e.getKey() == null || ! (e.getKey() instanceof KEY_CLASS)) return false;
#endif
#if VALUES_PRIMITIVE
     if (e.getValue() == null || ! (e.getValue() instanceof VALUE_CLASS)) return false;
#endif
     final RB_TREE_MAP.Entry KEY_VALUE_GENERIC f = findKey(KEY_OBJ2TYPE(KEY_GENERIC_CAST
e.getKey()));
     if (f != null && in(f.key)) Submap.this.REMOVE_VALUE(f.key);
     return f != null;
    }

    @Override
    public int size() {
     int c = 0;
     for(Iterator<?> i = iterator(); i.hasNext(); i.next()) c++;
     return c;
    }

    @Override
    public boolean isEmpty() { return ! new SubmapIterator().hasNext(); }

    @Override
    public void clear() { Submap.this.clear(); }

    @Override
    public MAP.Entry KEY_VALUE_GENERIC first() { return firstEntry(); }

    @Override
    public MAP.Entry KEY_VALUE_GENERIC last() { return lastEntry(); }

    @Override
```

```
    public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> subSet(MAP.Entry KEY_VALUE_GENERIC
from, MAP.Entry KEY_VALUE_GENERIC to) { return subMap(from.ENTRY_GET_KEY(),
to.ENTRY_GET_KEY()).ENTRYSET(); }

    @Override
    public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> headSet(MAP.Entry KEY_VALUE_GENERIC
to) { return headMap(to.ENTRY_GET_KEY()).ENTRYSET(); }

    @Override
    public ObjectSortedSet<MAP.Entry KEY_VALUE_GENERIC> tailSet(MAP.Entry KEY_VALUE_GENERIC
from) { return tailMap(from.ENTRY_GET_KEY()).ENTRYSET(); }
   };

  return entries;
 }

 private class KeySet extends ABSTRACT_SORTED_MAP KEY_VALUE_GENERIC.KeySet {
  @Override
  public KEY_BIDI_ITERATOR KEY_GENERIC iterator() { return new SubmapKeyIterator(); }
  @Override
  public KEY_BIDI_ITERATOR KEY_GENERIC iterator(final KEY_GENERIC_TYPE from) { return new
SubmapKeyIterator(from); }
 }

 @Override
 public SORTED_SET KEY_GENERIC keySet() {
  if (keys == null) keys = new KeySet();
  return keys;
 }

 @Override
 public VALUE_COLLECTION VALUE_GENERIC values() {
  if (values == null) values = new VALUE_ABSTRACT_COLLECTION VALUE_GENERIC() {
    @Override
    public VALUE_ITERATOR VALUE_GENERIC iterator() { return new SubmapValueIterator(); }
    @Override
    public boolean contains(final VALUE_TYPE k) { return containsValue(k); }
    @Override
    public int size() { return Submap.this.size(); }
    @Override
    public void clear() { Submap.this.clear(); }
   };

  return values;
 }

    @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
```

```
public boolean containsKey(final KEY_TYPE k) {
 RETURN_FALSE_IF_KEY_NULL(k)
 return in(KEY_GENERIC_CAST k) && RB_TREE_MAP.this.containsKey(k);
}

@Override
public boolean containsValue(final VALUE_TYPE v) {
 final SubmapIterator i = new SubmapIterator();
 VALUE_TYPE ev;

 while(i.hasNext()) {
  ev = i.nextEntry().value;
  if (VALUE_EQUALS(ev, v)) return true;
 }

 return false;
}

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public VALUE_GENERIC_TYPE GET_VALUE(final KEY_TYPE k) {
 final RB_TREE_MAP.Entry KEY_VALUE_GENERIC e;
 final KEY_GENERIC_TYPE kk = KEY_GENERIC_CAST k;
 return in(kk) && (e = findKey(kk)) != null ? e.value : this.defRetValue;
}

@Override
public VALUE_GENERIC_TYPE put(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v) {
 modified = false;
 if (! in(k)) throw new IllegalArgumentException("Key (" + k + ") out of range [" + (bottom ? "-" :
String.valueOf(from)) + ", " + (top ? "-" : String.valueOf(to)) + ")");
 final VALUE_GENERIC_TYPE oldValue = RB_TREE_MAP.this.put(k, v);
 return modified ? this.defRetValue : oldValue;
}

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public VALUE_GENERIC_TYPE REMOVE_VALUE(final KEY_TYPE k) {
 modified = false;
 if (! in(KEY_GENERIC_CAST k)) return this.defRetValue;
 final VALUE_GENERIC_TYPE oldValue = RB_TREE_MAP.this.REMOVE_VALUE(k);
 return modified ? oldValue : this.defRetValue;
}

@Override
public int size() {
 final SubmapIterator i = new SubmapIterator();
 int n = 0;
```

```
  while(i.hasNext()) {
   n++;
   i.nextEntry();
  }

  return n;
 }

 @Override
 public boolean isEmpty() { return ! new SubmapIterator().hasNext(); }

 @Override
 public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return actualComparator; }

 @Override
 public SORTED_MAP KEY_VALUE_GENERIC headMap(final KEY_GENERIC_TYPE to) {
  if (top) return new Submap(from, bottom, to, false);
  return compare(to, this.to) < 0 ? new Submap(from, bottom, to, false) : this;
 }

 @Override
 public SORTED_MAP KEY_VALUE_GENERIC tailMap(final KEY_GENERIC_TYPE from) {
  if (bottom) return new Submap(from, false, to, top);
  return compare(from, this.from) > 0 ? new Submap(from, false, to, top) : this;
 }

 @Override
 public SORTED_MAP KEY_VALUE_GENERIC subMap(KEY_GENERIC_TYPE from, KEY_GENERIC_TYPE
to) {
  if (top && bottom) return new Submap(from, false, to, false);
  if (! top) to = compare(to, this.to) < 0 ? to : this.to;
  if (! bottom) from = compare(from, this.from) > 0 ? from : this.from;
  if (! top && ! bottom && from == this.from && to == this.to) return this;
  return new Submap(from, false, to, false);
 }

 /** Locates the first entry.
  *
  * @return the first entry of this submap, or {@code null} if the submap is empty.
  */
 public RB_TREE_MAP.Entry KEY_VALUE_GENERIC firstEntry() {
  if (tree == null) return null;
  // If this submap goes to -infinity, we return the main map first entry; otherwise, we locate the start of the map.
  RB_TREE_MAP.Entry KEY_VALUE_GENERIC e;
  if (bottom) e = firstEntry;
  else {
   e = locateKey(from);
```

```
  // If we find either the start or something greater we're OK.
  if (compare(e.key, from) < 0) e = e.next();
 }
 // Finally, if this submap doesn't go to infinity, we check that the resulting key isn't greater than the end.
 if (e == null || ! top && compare(e.key, to) >= 0) return null;
 return e;
}

/** Locates the last entry.
 *
 * @return the last entry of this submap, or {@code null} if the submap is empty.
 */
public RB_TREE_MAP.Entry KEY_VALUE_GENERIC lastEntry() {
 if (tree == null) return null;
 // If this submap goes to infinity, we return the main map last entry; otherwise, we locate the end of the map.
 RB_TREE_MAP.Entry KEY_VALUE_GENERIC e;
 if (top) e = lastEntry;
 else {
  e = locateKey(to);
  // If we find something smaller than the end we're OK.
  if (compare(e.key, to) >= 0) e = e.prev();
 }
 // Finally, if this submap doesn't go to -infinity, we check that the resulting key isn't smaller than the start.
 if (e == null || ! bottom && compare(e.key, from) < 0) return null;
 return e;
}

@Override
public KEY_GENERIC_TYPE FIRST_KEY() {
 RB_TREE_MAP.Entry KEY_VALUE_GENERIC e = firstEntry();
 if (e == null) throw new NoSuchElementException();
 return e.key;
}

@Override
public KEY_GENERIC_TYPE LAST_KEY() {
 RB_TREE_MAP.Entry KEY_VALUE_GENERIC e = lastEntry();
 if (e == null) throw new NoSuchElementException();
 return e.key;
}

/** An iterator for subranges.
 *
 * <p>This class inherits from {@link TreeIterator}, but overrides the methods that
 * update the pointer after a {@link java.util.ListIterator#next()} or {@link java.util.ListIterator#previous()}. If we
would
 * move out of the range of the submap we just overwrite the next or previous
 * entry with {@code null}.
```

```
 */
private class SubmapIterator extends TreeIterator {
 SubmapIterator() {
  next = firstEntry();
 }

 SubmapIterator(final KEY_GENERIC_TYPE k) {
  this();

  if (next != null) {
   if (! bottom && compare(k, next.key) < 0) prev = null;
   else if (! top && compare(k, (prev = lastEntry()).key) >= 0) next = null;
   else {
    next = locateKey(k);

    if (compare(next.key, k) <= 0) {
     prev = next;
     next = next.next();
    }
    else prev = next.prev();
   }
  }
 }

 @Override
 void updatePrevious() {
  prev = prev.prev();
  if (! bottom && prev != null && RB_TREE_MAP.this.compare(prev.key, from) < 0) prev = null;
 }

 @Override
 void updateNext() {
  next = next.next();
  if (! top && next != null && RB_TREE_MAP.this.compare(next.key, to) >= 0) next = null;
 }
}

private class SubmapEntryIterator extends SubmapIterator implements ObjectListIterator<MAP.Entry
KEY_VALUE_GENERIC> {
 SubmapEntryIterator() {}

 SubmapEntryIterator(final KEY_GENERIC_TYPE k) {
  super(k);
 }

 @Override
 public MAP.Entry KEY_VALUE_GENERIC next() { return nextEntry(); }
 @Override
```

```
  public MAP.Entry KEY_VALUE_GENERIC previous() { return previousEntry(); }
 }


 /** An iterator on a subrange of keys.
  *
  * <p>This class can iterate in both directions on a subrange of the
  * keys of a threaded tree. We simply override the {@link
  * java.util.ListIterator#next()}/{@link java.util.ListIterator#previous()} methods (and possibly their
  * type-specific counterparts) so that they return keys instead of
  * entries.
  */
 private final class SubmapKeyIterator extends SubmapIterator implements KEY_LIST_ITERATOR
KEY_GENERIC {
  public SubmapKeyIterator() { super(); }
  public SubmapKeyIterator(KEY_GENERIC_TYPE from) { super(from); }

  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() { return nextEntry().key; }
  @Override
  public KEY_GENERIC_TYPE PREV_KEY() { return previousEntry().key; }
 };

 /** An iterator on a subrange of values.
  *
  * <p>This class can iterate in both directions on the values of a
  * subrange of the keys of a threaded tree. We simply override the
  * {@link java.util.ListIterator#next()}/{@link java.util.ListIterator#previous()} methods (and possibly their
  * type-specific counterparts) so that they return values instead of
  * entries.
  */
 private final class SubmapValueIterator extends SubmapIterator implements VALUE_LIST_ITERATOR
VALUE_GENERIC {
  @Override
  public VALUE_GENERIC_TYPE NEXT_VALUE() { return nextEntry().value; }
  @Override
  public VALUE_GENERIC_TYPE PREV_VALUE() { return previousEntry().value; }
 };
}


/** Returns a deep copy of this tree map.
 *
 * <p>This method performs a deep copy of this tree map; the data stored in the
 * set, however, is not cloned. Note that this makes a difference only for object keys.
 *
 * @return a deep copy of this tree map.
 */
```

```
@Override
SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
public RB_TREE_MAP KEY_VALUE_GENERIC clone() {
 RB_TREE_MAP KEY_VALUE_GENERIC c;
 try {
  c = (RB_TREE_MAP KEY_VALUE_GENERIC)super.clone();
 }
 catch(CloneNotSupportedException cantHappen) {
  throw new InternalError();
 }

 c.keys = null;
 c.values = null;
 c.entries = null;
 c.allocatePaths();

 if (count != 0) {
  // Also this apparently unfathomable code is derived from GNU libavl.
  Entry KEY_VALUE_GENERIC e, p, q, rp = new Entry KEY_VALUE_GENERIC_DIAMOND(), rq = new Entry
KEY_VALUE_GENERIC_DIAMOND();

  p = rp;
  rp.left(tree);

  q = rq;
  rq.pred(null);

  while(true) {
   if (! p.pred()) {
    e = p.left.clone();
    e.pred(q.left);
    e.succ(q);
    q.left(e);

    p = p.left;
    q = q.left;
   }
   else {
    while(p.succ()) {
     p = p.right;

     if (p == null) {
      q.right = null;
      c.tree = rq.left;

      c.firstEntry = c.tree;
      while(c.firstEntry.left != null) c.firstEntry = c.firstEntry.left;
      c.lastEntry = c.tree;
```

```
      while(c.lastEntry.right != null) c.lastEntry = c.lastEntry.right;

      return c;
     }
     q = q.right;
    }

    p = p.right;
    q = q.right;
   }

   if (! p.succ()) {
    e = p.right.clone();
    e.succ(q.right);
    e.pred(q);
    q.right(e);
   }
  }
 }

 return c;
}


private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
 int n = count;
 EntryIterator i = new EntryIterator();
 Entry KEY_VALUE_GENERIC e;

 s.defaultWriteObject();

 while(n-- != 0) {
  e = i.nextEntry();
  s.WRITE_KEY(e.key);
  s.WRITE_VALUE(e.value);
 }
}


/** Reads the given number of entries from the input stream, returning the corresponding tree.
 *
 * @param s the input stream.
 * @param n the (positive) number of entries to read.
 * @param pred the entry containing the key that preceeds the first key in the tree.
 * @param succ the entry containing the key that follows the last key in the tree.
 */
SUPPRESS_WARNINGS_KEY_VALUE_UNCHECKED
private Entry KEY_VALUE_GENERIC readTree(final java.io.ObjectInputStream s, final int n, final Entry
```

```
KEY_VALUE_GENERIC pred, final Entry KEY_VALUE_GENERIC succ) throws java.io.IOException,
ClassNotFoundException {
  if (n == 1) {
   final Entry KEY_VALUE_GENERIC top = new Entry
KEY_VALUE_GENERIC_DIAMOND(KEY_GENERIC_CAST s.READ_KEY(), VALUE_GENERIC_CAST
s.READ_VALUE());
   top.pred(pred);
   top.succ(succ);
   top.black(true);

   return top;
  }

  if (n == 2) {
   /* We handle separately this case so that recursion will
    *always* be on nonempty subtrees. */
   final Entry KEY_VALUE_GENERIC top = new Entry
KEY_VALUE_GENERIC_DIAMOND(KEY_GENERIC_CAST s.READ_KEY(), VALUE_GENERIC_CAST
s.READ_VALUE());
   top.black(true);
   top.right(new Entry KEY_VALUE_GENERIC_DIAMOND(KEY_GENERIC_CAST s.READ_KEY(),
VALUE_GENERIC_CAST s.READ_VALUE()));
   top.right.pred(top);
   top.pred(pred);
   top.right.succ(succ);

   return top;
  }

  // The right subtree is the largest one.
  final int rightN = n / 2, leftN = n - rightN - 1;

  final Entry KEY_VALUE_GENERIC top = new Entry KEY_VALUE_GENERIC_DIAMOND();

  top.left(readTree(s, leftN, pred, top));

  top.key = KEY_GENERIC_CAST s.READ_KEY();
  top.value = VALUE_GENERIC_CAST s.READ_VALUE();
  top.black(true);

  top.right(readTree(s, rightN, top, succ));

  if (n + 2 == ((n + 2)  & -(n + 2))) top.right.black(false); // Quick test for determining whether n + 2 is a power of 2.

  return top;
 }

 private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
```

```
  s.defaultReadObject();
  /* The storedComparator is now correctly set, but we must restore
     on-the-fly the actualComparator. */
  setActualComparator();
  allocatePaths();

  if (count != 0) {
   tree = readTree(s, count, null, null);
   Entry KEY_VALUE_GENERIC e;

   e = tree;
   while(e.left() != null) e = e.left();
   firstEntry = e;

   e = tree;
   while(e.right() != null) e = e.right();
   lastEntry = e;
  }
 }

#ifdef ASSERTS_CODE
 private void checkNodePath() {
  for(int i = nodePath.length; i-- != 0;) assert nodePath[i] == null : i;
 }

 private static KEY_VALUE_GENERIC int checkTree(Entry KEY_VALUE_GENERIC e, int d, int D) {
  if (e == null) return 0;
  if (e.black()) d++;
  if (e.left() != null) D = checkTree(e.left(), d, D);
  if (e.right() != null) D = checkTree(e.right(), d, D);
  if (e.left() == null && e.right() == null) {
   if (D == -1) D = d;
   else if (D != d) throw new AssertionError("Mismatch between number of black nodes (" + D + " and " + d + ")");
  }
  return D;
 }
#endif



#ifdef TEST

 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
```

```
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#else
  return Integer.toBinaryString(r.nextInt());
#endif
 }

 private static VALUE_TYPE genValue() {
#if VALUE_CLASS_Byte || VALUE_CLASS_Short || VALUE_CLASS_Character
  return (VALUE_TYPE)(r.nextInt());
#elif VALUES_PRIMITIVE
  return r.NEXT_VALUE();
#elif !VALUES_USE_REFERENCE_EQUALITY || KEYS_USE_REFERENCE_EQUALITY
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }


 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition p = new java.text.FieldPosition(0);

 private static String format(double d) {
  StringBuffer s = new StringBuffer();
  return format.format(d, s, p).toString();
 }

 private static void speedTest(int n, boolean comp) {
  int i, j;
  RB_TREE_MAP m;
  java.util.TreeMap t;
  KEY_TYPE k[] = new KEY_TYPE[n];
  KEY_TYPE nk[] = new KEY_TYPE[n];
  VALUE_TYPE v[] = new VALUE_TYPE[n];
  long ms;

  for(i = 0; i < n; i++) {
   k[i] = genKey();
   nk[i] = genKey();
   v[i] = genValue();
  }

  double totPut = 0, totYes = 0, totNo = 0, totAddTo = 0, totIterFor = 0, totIterBack = 0, totRemYes = 0, d, dd, ddd;

  if (comp) { for(j = 0; j < 20; j++) {

   t = new java.util.TreeMap();
```

```
/* We first add all pairs to t. */
for(i = 0; i < n;  i++) t.put(KEY2OBJ(k[i]), VALUE2OBJ(v[i]));

/* Then we remove the first half and put it back. */
for(i = 0; i < n/2;  i++) t.remove(KEY2OBJ(k[i]));

ms = System.currentTimeMillis();
for(i = 0; i < n/2;  i++) t.put(KEY2OBJ(k[i]), VALUE2OBJ(v[i]));
d = System.currentTimeMillis() - ms;

/* Then we remove the other half and put it back again. */
ms = System.currentTimeMillis();
for(i = n/2; i < n;  i++) t.remove(KEY2OBJ(k[i]));
dd = System.currentTimeMillis() - ms ;

ms = System.currentTimeMillis();
for(i = n/2; i < n;  i++) t.put(KEY2OBJ(k[i]), VALUE2OBJ(v[i]));
d += System.currentTimeMillis() - ms;
if (j > 2) totPut += n/d;
System.out.print("Add: " + format(n/d) +" K/s ");

/* Then we remove again the first half. */
ms = System.currentTimeMillis();
for(i = 0; i < n/2;  i++) t.remove(KEY2OBJ(k[i]));
dd += System.currentTimeMillis() - ms ;
if (j > 2) totRemYes += n/dd;
System.out.print("RemYes: " + format(n/dd) +" K/s ");

/* And then we put it back. */
for(i = 0; i < n/2;  i++) t.put(KEY2OBJ(k[i]), VALUE2OBJ(v[i]));

#if VALUES_PRIMITIVE && !VALUE_CLASS_Boolean
/* we perform n/2 addTo() operations with get then put */
ms = System.currentTimeMillis();
for(i = 0; i < n/2; i++) t.put(KEY2OBJ(k[i]), (VALUE_TYPE) ((VALUE_CLASS) t.get(KEY2OBJ(k[i])) + i));
ddd = System.currentTimeMillis() - ms;
if (j > 2) totAddTo += n/ddd;
System.out.print("AddTo: " + format(n/ddd) +" K/s ");
#endif

/* We check for pairs in t. */
ms = System.currentTimeMillis();
for(i = 0; i < n;  i++) t.containsKey(KEY2OBJ(k[i]));
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totYes += d;
System.out.print("Yes: " + format(d) +" K/s ");
```

```
 /* We check for pairs not in t. */
 ms = System.currentTimeMillis();
 for(i = 0; i < n;  i++) t.containsKey(KEY2OBJ(nk[i]));
 d = 1.0 * n / (System.currentTimeMillis() - ms);
 if (j > 2) totNo += d;
 System.out.print("No: " + format(d) +" K/s ");

 /* We iterate on t. */
 ms = System.currentTimeMillis();
 for(Iterator it = t.entrySet().iterator(); it.hasNext(); it.next());
 d = 1.0 * n / (System.currentTimeMillis() - ms);
 if (j > 2) totIterFor += d;
 System.out.print("IterFor: " + format(d) +" K/s ");

 System.out.println();
}

System.out.println();
System.out.println("java.util Put: " + format(totPut/(j-3)) + " K/s RemYes: " + format(totRemYes/(j-3)) + " K/s Yes:
" + format(totYes/(j-3)) + " K/s No: " + format(totNo/(j-3))+ "K/s AddTo: " + format(totAddTo/(j-3)) + " K/s
IterFor: " + format(totIterFor/(j-3))  + " K/s");

System.out.println();

t = null;
totPut = totYes = totNo = totIterFor = totIterBack = totRemYes = 0;

}

for(j = 0; j < 20; j++) {

 m = new RB_TREE_MAP();


 /* We first add all pairs to m. */
 for(i = 0; i < n;  i++) m.put(k[i], v[i]);

 /* Then we remove the first half and put it back. */
 for(i = 0; i < n/2;  i++) m.remove(k[i]);

 ms = System.currentTimeMillis();
 for(i = 0; i < n/2;  i++) m.put(k[i], v[i]);
 d = System.currentTimeMillis() - ms;

 /* Then we remove the other half and put it back again. */
 ms = System.currentTimeMillis();
 for(i = n/2; i < n;  i++) m.remove(k[i]);
```

```
dd = System.currentTimeMillis() - ms ;

ms = System.currentTimeMillis();
for(i = n/2; i < n;  i++) m.put(k[i], v[i]);
d += System.currentTimeMillis() - ms;
if (j > 2) totPut += n/d;
System.out.print("Add: " + format(n/d) +" K/s ");

/* Then we remove again the first half. */
ms = System.currentTimeMillis();
for(i = 0; i < n/2;  i++) m.remove(k[i]);
dd += System.currentTimeMillis() - ms ;
if (j > 2) totRemYes += n/dd;
System.out.print("RemYes: " + format(n/dd) +" K/s ");

/* And then we put it back. */
for(i = 0; i < n/2;  i++) m.put(k[i], v[i]);

#if VALUES_PRIMITIVE && !VALUE_CLASS_Boolean
/* we perform n/2 addTo() operations with get then put */
ms = System.currentTimeMillis();
for(i = 0; i < n/2; i++) m.addTo(k[i], (VALUE_TYPE) i);
ddd = System.currentTimeMillis() - ms;
if (j > 2) totAddTo += n/ddd;
System.out.print("AddTo: " + format(n/ddd) +" K/s ");
#endif

/* We check for pairs in m. */
ms = System.currentTimeMillis();
for(i = 0; i < n;  i++) m.containsKey(k[i]);
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totYes += d;
System.out.print("Yes: " + format(d) +" K/s ");

/* We check for pairs not in m. */
ms = System.currentTimeMillis();
for(i = 0; i < n;  i++) m.containsKey(nk[i]);
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totNo += d;
System.out.print("No: " + format(d) +" K/s ");

/* We iterate on m. */
java.util.ListIterator it = (java.util.ListIterator)m.entrySet().iterator();
ms = System.currentTimeMillis();
for(; it.hasNext(); it.next());
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totIterFor += d;
System.out.print("IterFor: " + format(d) +" K/s ");
```

```
  /* We iterate back on m. */
  ms = System.currentTimeMillis();
  for(; it.hasPrevious(); it.previous());
  d = 1.0 * n / (System.currentTimeMillis() - ms);
  if (j > 2) totIterBack += d;
  System.out.print("IterBack: " + format(d) +" K/s ");

  System.out.println();
 }



 System.out.println();
 System.out.println("fastutil Put: " + format(totPut/(j-3)) + " K/s RemYes: " + format(totRemYes/(j-3)) + " K/s Yes:
" + format(totYes/(j-3)) + " K/s No: " + format(totNo/(j-3))+ "K/s AddTo: " + format(totAddTo/(j-3)) + " K/s
IterFor: " + format(totIterFor/(j-3))  + " K/s");

 System.out.println();

}



private static void fatal(String msg) {
 throw new AssertionError(msg);
}

private static void ensure(boolean cond, String msg) {
 if (cond) return;
 fatal(msg);
}

private static Object[] k, v, nk;
private static KEY_TYPE kt[];
private static KEY_TYPE nkt[];
private static VALUE_TYPE vt[];
private static RB_TREE_MAP topMap;

protected static void testMaps(SORTED_MAP m, SortedMap t, int n, int level) throws Exception {
 long ms;
 boolean mThrowsIllegal, tThrowsIllegal, mThrowsNoElement, tThrowsNoElement;
 Object rt = null, rm = null;

 if (level > 4) return;



 /* Now we check that both maps agree on first/last keys. */

 mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;
```

```
  try {
   m.firstKey();
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.firstKey();
  }
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): firstKey() divergence at
start in NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
  if (! mThrowsNoElement) ensure(t.firstKey().equals(m.firstKey()), "Error (" + level + ", " + seed + "): m and t differ
at start on their first key (" + m.firstKey() + ", " + t.firstKey() +")");

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.lastKey();
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.lastKey();
  }
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): lastKey() divergence at start
in NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");


  if (! mThrowsNoElement) ensure(t.lastKey().equals(m.lastKey()), "Error (" + level + ", " + seed + "): m and t differ
at start on their last key (" + m.lastKey() + ", " + t.lastKey() +")");


  /* Now we check that m and t are equal. */
  if (!m.equals(t) || ! t.equals(m)) System.err.println("m: " + m + " t: " + t);

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) at start");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) at start");



  /* Now we check that m actually holds that data. */
  for(Iterator i=t.entrySet().iterator(); i.hasNext();) {
   java.util.Map.Entry e = (java.util.Map.Entry)i.next();
   ensure(java.util.Objects.equals(e.getValue(), m.get(e.getKey())), "Error (" + level + ", " + seed + "): m and t differ
on an entry ("+e+") after insertion (iterating on t)");
  }
```

```
  /* Now we check that m actually holds that data, but iterating on m. */
  for(Iterator i=m.entrySet().iterator(); i.hasNext();) {
   Entry e = (Entry)i.next();
   ensure(java.util.Objects.equals(e.getValue(), t.get(e.getKey())), "Error (" + level + ", " + seed + "): m and t differ on
an entry ("+e+") after insertion (iterating on m)");
  }

  /* Now we check that m actually holds the same keys. */
  for(Iterator i=t.keySet().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(m.containsKey(o), "Error (" + level + ", " + seed + "): m and t differ on a key ("+o+") after insertion
(iterating on t)");
   ensure(m.keySet().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a key ("+o+", in keySet()) after
insertion (iterating on t)");
  }

  /* Now we check that m actually holds the same keys, but iterating on m. */
  for(Iterator i=m.keySet().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsKey(o), "Error (" + level + ", " + seed + "): m and t differ on a key after insertion (iterating on m)");
   ensure(t.keySet().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a key (in keySet()) after insertion
(iterating on m)");
  }


  /* Now we check that m actually hold the same values. */
  for(Iterator i=t.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(m.containsValue(o), "Error (" + level + ", " + seed + "): m and t differ on a value after insertion (iterating on
t)");
   ensure(m.values().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a value (in values()) after
insertion (iterating on t)");
  }

  /* Now we check that m actually hold the same values, but iterating on m. */
  for(Iterator i=m.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsValue(o), "Error (" + level + ", " + seed + "): m and t differ on a value after insertion (iterating on
m)");
   ensure(t.values().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a value (in values()) after
insertion (iterating on m)");
  }

  /* Now we check that inquiries about random data give the same answer in m and t. For
     m we use the polymorphic method. */

  for(int i=0; i<n;  i++) {
```

```
   KEY_TYPE T = genKey();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

   try {
    m.containsKey(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    t.containsKey(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): containsKey() divergence in
NoSuchElementException (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): containsKey() divergence in
IllegalArgumentException (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) {
    ensure(m.containsKey(KEY2OBJ(T)) == t.containsKey(KEY2OBJ(T)), "Error (" + level + ", " + seed + "):
divergence in keys between t and m (polymorphic method)");

#if KEY_CLASS_Object && ! (VALUES_REFERENCE)
    if ((m.GET_VALUE(T) != VALUE_NULL) != ((t.get(KEY2OBJ(T)) == null ? VALUE_NULL :
VALUE_OBJ2TYPE(t.get(KEY2OBJ(T)))) != VALUE_NULL) ||
     t.get(KEY2OBJ(T)) != null &&
     ! VALUE2OBJ(m.GET_VALUE(T)).equals(t.get(KEY2OBJ(T))))
#else
     if ((m.get(T) != VALUE_NULL) != ((t.get(KEY2OBJ(T)) == null ? VALUE_NULL :
VALUE_OBJ2TYPE(t.get(KEY2OBJ(T)))) != VALUE_NULL) ||
      t.get(KEY2OBJ(T)) != null &&
      ! m.get(KEY2OBJ(T)).equals(t.get(KEY2OBJ(T))))
#endif
      {
       ensure(false, "Error (" + level + ", " + seed + "): divergence between t and m (polymorphic method)");
      }
   }
  }

  /* Again, we check that inquiries about random data give the same answer in m and t, but
     for m we use the standard method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;
```

```
   try {
    m.get(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    t.get(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): get() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): get() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(java.util.Objects.equals(m.get(KEY2OBJ(T)),
t.get(KEY2OBJ(T))), "Error (" + level + ", " + seed + "): divergence between t and m (standard method)");
  }

  /* Now we put and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<20*n;  i++) {
   KEY_TYPE T = genKey();
   VALUE_TYPE U = genValue();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

   try {
    rm = m.put(KEY2OBJ(T), VALUE2OBJ(U));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    rt = t.put(KEY2OBJ(T), VALUE2OBJ(U));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }


   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): put() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): put() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(java.util.Objects.equals(rm, rt), "Error (" + level + ", " + seed
+ "): divergence in put() between t and m (" + rt + ", " + rm + ")");
```

```
   T = genKey();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

   try {
    rm = m.remove(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    rt = t.remove(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }


   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): remove() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): remove() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(java.util.Objects.equals(rm, rt), "Error (" + level + ", " + seed
+ "): divergence in remove() between t and m (" + rt + ", " + rm + ")");
  }

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after removal");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after removal");

  /* Now we check that m actually holds the same data. */

  for(Iterator i=t.entrySet().iterator(); i.hasNext();) {
   java.util.Map.Entry e = (java.util.Map.Entry)i.next();
   ensure(java.util.Objects.equals(e.getValue(), m.get(e.getKey())), "Error (" + level + ", " + seed + "): m and t differ
on an entry ("+e+") after removal (iterating on t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */

  for(Iterator i=m.entrySet().iterator(); i.hasNext();) {
   Entry e = (Entry)i.next();
   ensure(java.util.Objects.equals(e.getValue(), t.get(e.getKey())), "Error (" + level + ", " + seed + "): m and t differ on
an entry ("+e+") after removal (iterating on m)");
  }

  /* Now we check that m actually holds the same keys. */

  for(Iterator i=t.keySet().iterator(); i.hasNext();) {
```

```
   Object o = i.next();
   ensure(m.containsKey(o), "Error (" + level + ", " + seed + "): m and t differ on a key ("+o+") after removal (iterating on t)");
   ensure(m.keySet().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a key ("+o+", in keySet()) after removal (iterating on t)");
  }

  /* Now we check that m actually holds the same keys, but iterating on m. */

  for(Iterator i=m.keySet().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsKey(o), "Error (" + level + ", " + seed + "): m and t differ on a key after removal (iterating on m)");
   ensure(t.keySet().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a key (in keySet()) after removal (iterating on m)");
  }


  /* Now we check that m actually hold the same values. */

  for(Iterator i=t.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(m.containsValue(o), "Error (" + level + ", " + seed + "): m and t differ on a value after removal (iterating on t)");
   ensure(m.values().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a value (in values()) after removal (iterating on t)");
  }

  /* Now we check that m actually hold the same values, but iterating on m. */

  for(Iterator i=m.values().iterator(); i.hasNext();) {
   Object o = i.next();
   ensure(t.containsValue(o), "Error (" + level + ", " + seed + "): m and t differ on a value after removal (iterating on m)");
   ensure(t.values().contains(o), "Error (" + level + ", " + seed + "): m and t differ on a value (in values()) after removal (iterating on m)");
  }

  /* Now we check that both maps agree on first/last keys. */

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.firstKey();
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.firstKey();
  }
```

```
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): firstKey() divergence in
NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
  if (! mThrowsNoElement) ensure(t.firstKey().equals(m.firstKey()), "Error (" + level + ", " + seed + "): m and t differ
on their first key (" + m.firstKey() + ", " + t.firstKey() +")");

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.lastKey();
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.lastKey();
  }
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): lastKey() divergence in
NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");

  if (! mThrowsNoElement) ensure(t.lastKey().equals(m.lastKey()), "Error (" + level + ", " + seed + "): m and t differ
on their last key (" + m.lastKey() + ", " + t.lastKey() +")");

  /* Now we check cloning. */

  if (level == 0) {
   ensure(m.equals(((RB_TREE_MAP)m).clone()), "Error (" + level + ", " + seed + "): m does not equal m.clone()");
   ensure(((RB_TREE_MAP)m).clone().equals(m), "Error (" + level + ", " + seed + "): m.clone() does not equal m");
   m = (RB_TREE_MAP)((RB_TREE_MAP)m).clone();
  }

  int h = m.hashCode();


  /* Now we save and read m. */

  SORTED_MAP m2 = null;

  {
   java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
   java.io.OutputStream os = new java.io.FileOutputStream(ff);
   java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

   oos.writeObject(m);
   oos.close();

   java.io.InputStream is = new java.io.FileInputStream(ff);
```

```
   java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

   m2 = (SORTED_MAP)ois.readObject();
   ois.close();
   ff.delete();
  }

#if !VALUES_USE_REFERENCE_EQUALITY
  ensure(m2.hashCode() == h, "Error (" + level + ", " + seed + "): hashCode() changed after save/read");

  /* Now we check that m2 actually holds that data. */

  ensure(m2.equals(t), "Error (" + level + ", " + seed + "): ! m2.equals(t) after save/read");
  ensure(t.equals(m2), "Error (" + level + ", " + seed + "): ! t.equals(m2) after save/read");
  /* Now we take out of m everything, and check that it is empty. */
#else
  m2.clear();
  m2.putAll(m);
#endif

  for(Iterator i=t.keySet().iterator(); i.hasNext();) m2.remove(i.next());

  ensure(m2.isEmpty(), "Error (" + level + ", " + seed + "): m2 is not empty (as it should be)");

  /* Now we play with iterators. */

  {
   java.util.ListIterator i, j;
   Map.Entry E, F;
   Object J;
   i = (java.util.ListIterator)m.entrySet().iterator();
   j = new java.util.LinkedList(t.entrySet()).listIterator();

   for(int k = 0; k < 2*n; k++) {
    ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext()");
    ensure(i.hasPrevious() == j.hasPrevious(), "Error (" + level + ", " + seed + "): divergence in hasPrevious()");

    if (r.nextFloat() < .8 && i.hasNext()) {
     ensure((E=(Entry)i.next()).getKey().equals(J = (F=(Map.Entry)j.next()).getKey()), "Error (" + level + ", " + seed +
"): divergence in next()");

     if (r.nextFloat() < 0.3) {
      i.remove();
      j.remove();
      t.remove(J);
     }
     else if (r.nextFloat() < 0.3) {
      Object U = VALUE2OBJ(genValue());
```

```
     E.setValue(U);
               t.put(F.getKey(), U);
     }
    }
    else if (r.nextFloat() < .2 && i.hasPrevious()) {
     ensure((E=(Entry)i.previous()).getKey().equals(J = (F=(Map.Entry)j.previous()).getKey()), "Error (" + level + ", " +
seed + "): divergence in previous()");

     if (r.nextFloat() < 0.3) {
      i.remove();
      j.remove();
      t.remove(J);
     }
     else if (r.nextFloat() < 0.3) {
      Object U = VALUE2OBJ(genValue());
      E.setValue(U);
               t.put(F.getKey(), U);
     }
    }

    ensure(i.nextIndex() == j.nextIndex(), "Error (" + level + ", " + seed + "): divergence in nextIndex()");
    ensure(i.previousIndex() == j.previousIndex(), "Error (" + level + ", " + seed + "): divergence in previousIndex()");

   }
  }

  {
   boolean badPrevious = false;
   Object previous = null;
   it.unimi.dsi.fastutil.BidirectionalIterator i;
   java.util.ListIterator j;
   Object I, J;
   KEY_TYPE from = genKey();
   j = new java.util.LinkedList(t.keySet()).listIterator();
   while(j.hasNext()) {
    Object k = j.next();
    if (((Comparable)k).compareTo(KEY2OBJ(from)) > 0) {
     badPrevious = true;
     j.previous();
     break;
    }
    previous = k;
   }

   i = (it.unimi.dsi.fastutil.BidirectionalIterator)((SORTED_SET)m.keySet()).iterator(from);

   for(int k = 0; k < 2*n; k++) {
    ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext() (iterator with starting
```

```
point " + from + ")");
    ensure(i.hasPrevious() == j.hasPrevious() || badPrevious && (i.hasPrevious() == (previous != null)), "Error (" +
level + ", " + seed + "): divergence in hasPrevious() (iterator with starting point " + from + ")" + badPrevious);

    if (r.nextFloat() < .8 && i.hasNext()) {
     ensure((I = i.next()).equals(J = j.next()), "Error (" + level + ", " + seed + "): divergence in next() (" + I + ", " + J + ",
iterator with starting point " + from + ")");
     //System.err.println("Done next " + I + " " + J + "  " + badPrevious);

     badPrevious = false;

     if (r.nextFloat() < 0.5) {
      //System.err.println("Removing in next");
      i.remove();
      j.remove();
      t.remove(J);
     }
    }
    else if (!badPrevious && r.nextFloat() < .2 && i.hasPrevious()) {
     ensure((I = i.previous()).equals(J = j.previous()), "Error (" + level + ", " + seed + "): divergence in previous() (" + I +
", " + J + ", iterator with starting point " + from + ")");

     if (r.nextFloat() < 0.5) {
      //System.err.println("Removing in prev");
      i.remove();
      j.remove();
      t.remove(J);
     }
    }
   }

  }

  /* Now we check that m actually holds that data. */

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after iteration");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after iteration");

  /* Now we select a pair of keys and create a submap. */

  if (! m.isEmpty()) {
   java.util.ListIterator i;
   Object start = m.firstKey(), end = m.firstKey();
   for(i = (java.util.ListIterator)m.keySet().iterator(); i.hasNext() && r.nextFloat() < .3; start = end = i.next());
   for(; i.hasNext() && r.nextFloat() < .95; end = i.next());

   //System.err.println("Checking subMap from " + start + " to " + end + " (level=" + (level+1) + ")...");
   testMaps((SORTED_MAP)m.subMap((KEY_CLASS) start, (KEY_CLASS)end), t.subMap(start, end), n, level +
```

```
1);

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after subMap");
   ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after subMap");

   //System.err.println("Checking headMap to " + end + " (level=" + (level+1) + ")...");
   testMaps((SORTED_MAP)m.headMap((KEY_CLASS)end), t.headMap(end), n, level + 1);

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after headMap");
   ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after headMap");

   //System.err.println("Checking tailMap from " + start + " (level=" + (level+1) + ")...");
   testMaps((SORTED_MAP)m.tailMap((KEY_CLASS)start), t.tailMap(start), n, level + 1);

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after tailMap");
   ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after tailMap");
  }


 }


 private static void runTest(int n) throws Exception {
  RB_TREE_MAP m = new RB_TREE_MAP();
  SortedMap t = new java.util.TreeMap();
  topMap = m;
  k = new Object[n];
  v = new Object[n];
  nk = new Object[n];
  kt = new KEY_TYPE[n];
  nkt = new KEY_TYPE[n];
  vt = new VALUE_TYPE[n];

  for(int i = 0; i < n; i++) {
#if KEY_CLASS_Object
   k[i] = kt[i] = genKey();
   nk[i] = nkt[i] = genKey();
#else
   k[i] = new KEY_CLASS(kt[i] = genKey());
   nk[i] = new KEY_CLASS(nkt[i] = genKey());
#endif
#if VALUES_REFERENCE
   v[i] = vt[i] = genValue();
#else
   v[i] = new VALUE_CLASS(vt[i] = genValue());
#endif
  }
```

```
  /* We add pairs to t. */
  for(int i = 0; i < n;  i++) t.put(k[i], v[i]);

  /* We add to m the same data */
  m.putAll(t);

  testMaps(m, t, n, 0);

  System.out.println("Test OK");
  return;
 }


 public static void main(String args[]) throws Exception {
  int n  = Integer.parseInt(args[1]);
  if (args.length > 2) r = new java.util.Random(seed = Long.parseLong(args[2]));

  try {
   if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, "speedComp".equals(args[0]));
   else if ("test".equals(args[0])) runTest(n);
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif


}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/RBTreeMap.drv
No license file was found, but licenses were detected in source scan.

```
* See the License for the specific language governing permissions and
* limitations under the License.
*/

package PACKAGE;

import it.unimi.dsi.fastutil.objects.Object2IntOpenHashMap;

import java.io.Serializable;
import java.util.concurrent.locks.ReentrantReadWriteLock;
import java.util.concurrent.locks.ReentrantReadWriteLock.ReadLock;
import java.util.concurrent.locks.ReentrantReadWriteLock.WriteLock;

/** A concurrent counting map. The map is made by a number of <em>stripes</em> (instances of {@link
Object2IntOpenHashMap})
* which are accessed independently
* using a {@link ReentrantReadWriteLock}. Only one thread can write in a stripe at a time, but different stripes
* can be modified independently and read access can happen concurrently on each stripe.
*
* <p>The collection view methods ({@link #entrySet()} and similar} are currently not supported, and will throw
* {@link UnsupportedOperationException}
*
* @param <K> the type of keys.
*/

public class STRIPED_OPEN_HASH_MAP KEY_VALUE_GENERIC extends ABSTRACT_MAP
KEY_VALUE_GENERIC implements java.io.Serializable, Cloneable {
 private static final long serialVersionUID = 1L;

 /** The stripes. Keys are distributed among them using the lower bits of their {@link Object#hashCode()}. */
 private final OPEN_HASH_MAP KEY_VALUE_GENERIC[] map;
 /** An array of locks parallel to {@link #map}, protecting each stripe. */
 private final transient ReentrantReadWriteLock[] lock;
 /** {@link #map map.length} &minus; 1, cached. */
 private final int mask;

 /** Creates a new concurrent counting map with concurrency level equal to {@link
Runtime#availableProcessors()}. */
 public STRIPED_OPEN_HASH_MAP() {
  this(Runtime.getRuntime().availableProcessors());
 }

 /** Creates a new concurrent counting map.
  *
  * @param concurrencyLevel the number of stripes (it will be {@linkplain Integer#highestOneBit(int) forced to be a
power of two}); ideally, as large as the number of threads that will ever access
  * this map, but higher values require more space.
  */
```

```
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public STRIPED_OPEN_HASH_MAP(final int concurrencyLevel) {
  map = new OPEN_HASH_MAP[Integer.highestOneBit(concurrencyLevel)];
  lock = new ReentrantReadWriteLock[map.length];
  for(int i = map.length; i-- != 0;) {
   map[i] = new OPEN_HASH_MAP KEY_VALUE_GENERIC_DIAMOND();
   lock[i] = new ReentrantReadWriteLock();
  }
  mask = map.length - 1;
 }

#if KEYS_PRIMITIVE

 public VALUE_GENERIC_CLASS get(final KEY_CLASS k) {
  final int stripe = KEY2INTHASH(k) & mask;
  final ReadLock readLock = lock[stripe].readLock();
  try {
   readLock.lock();
   return map[stripe].get(k);
  }
  finally {
   readLock.unlock();
  }
 }

#endif

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public VALUE_GENERIC_TYPE GET_VALUE(final KEY_TYPE k) {
  final int stripe = KEY2INTHASH(k) & mask;
  final ReadLock readLock = lock[stripe].readLock();
  try {
   readLock.lock();
   return map[stripe].GET_VALUE(k);
  }
  finally {
   readLock.unlock();
  }
 }

 public VALUE_GENERIC_TYPE put(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE v) {
  final int stripe = KEY2INTHASH(k) & mask;
  final WriteLock writeLock = lock[stripe].writeLock();
  try {
   writeLock.lock();
   return map[stripe].put(k, v);
  }
  finally {
```

```
  writeLock.unlock();
 }
}

public VALUE_GENERIC_TYPE putIfAbsent(final KEY_GENERIC_TYPE k, final VALUE_GENERIC_TYPE
v) {
 final int stripe = KEY2INTHASH(k) & mask;
 final WriteLock writeLock = lock[stripe].writeLock();
 try {
  writeLock.lock();
  if (map[stripe].containsKey(k)) return map[stripe].get(k);
  return map[stripe].put(k, v);
 }
 finally {
  writeLock.unlock();
 }
}

#if VALUES_PRIMITIVE || KEYS_PRIMITIVE

public VALUE_GENERIC_CLASS put(final KEY_GENERIC_CLASS ok, final VALUE_GENERIC_CLASS ov)
{
 final int stripe = KEY2INTHASH(ok) & mask;
 final WriteLock writeLock = lock[stripe].writeLock();
 try {
  writeLock.lock();
  return map[stripe].put(ok, ov);
 }
 finally {
  writeLock.unlock();
 }
}


public VALUE_GENERIC_CLASS putIfAbsent(final KEY_GENERIC_CLASS ok, final
VALUE_GENERIC_CLASS ov) {
 final int stripe = KEY2INTHASH(ok) & mask;
 final WriteLock writeLock = lock[stripe].writeLock();
 try {
  writeLock.lock();
  if (map[stripe].containsKey(ok)) return map[stripe].get(ok);
  return map[stripe].put(ok, ov);
 }
 finally {
  writeLock.unlock();
 }
}
```

```
#endif

 public int size() {
  int size = 0;
  for(int stripe = lock.length; stripe-- != 0;) {
   final ReadLock readLock = lock[stripe].readLock();
   try {
    readLock.lock();
    size += map[stripe].size();
   }
   finally {
    readLock.unlock();
   }
  }

  return size;
 }

 public FastEntrySet KEY_VALUE_GENERIC ENTRYSET() {
  throw new UnsupportedOperationException();
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/StripedOpenHashMap.drv
No license file was found, but licenses were detected in source scan.


```
package PACKAGE;

#if KEY_CLASS_Object
```

```
import java.util.Comparator;
#endif

#if ! KEY_CLASS_Integer
import it.unimi.dsi.fastutil.ints.IntArrays;
#endif

import java.util.Arrays;
import java.util.NoSuchElementException;

/** A type-specific heap-based indirect priority queue.
*
* <p>Instances of this class use an additional <em>inversion array</em>, of the same length of the reference array,
* to keep track of the heap position containing a given element of the reference array. The priority queue is
* represented using a heap. The heap is enlarged as needed, but it is never
* shrunk. Use the {@link #trim()} method to reduce its size, if necessary.
*
* @implSpec This implementation does <em>not</em> allow one to enqueue several times the same index.
*/

public class HEAP_INDIRECT_PRIORITY_QUEUE KEY_GENERIC extends
HEAP_SEMI_INDIRECT_PRIORITY_QUEUE KEY_GENERIC {

 /** The inversion array. */
 protected final int inv[];

 /** Creates a new empty queue with a given capacity and comparator.
  *
  * @param refArray the reference array.
  * @param capacity the initial capacity of this queue.
  * @param c the comparator used in this queue, or {@code null} for the natural order.
  */
 public HEAP_INDIRECT_PRIORITY_QUEUE(KEY_GENERIC_TYPE[] refArray, int capacity,
KEY_COMPARATOR KEY_SUPER_GENERIC c) {
  super(refArray, capacity, c);
  if (capacity > 0) this.heap = new int[capacity];

  this.c = c;

  this.inv = new int[refArray.length];
  Arrays.fill(inv, -1);
 }

 /** Creates a new empty queue with a given capacity and using the natural order.
  *
  * @param refArray the reference array.
  * @param capacity the initial capacity of this queue.
  */
```

```
public HEAP_INDIRECT_PRIORITY_QUEUE(KEY_GENERIC_TYPE[] refArray, int capacity) {
 this(refArray, capacity, null);
}

/** Creates a new empty queue with capacity equal to the length of the reference array and a given comparator.
 *
 * @param refArray the reference array.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public HEAP_INDIRECT_PRIORITY_QUEUE(KEY_GENERIC_TYPE[] refArray, KEY_COMPARATOR
KEY_SUPER_GENERIC c) {
 this(refArray, refArray.length, c);
}

/** Creates a new empty queue with capacity equal to the length of the reference array and using the natural order.
 * @param refArray the reference array.
 */
public HEAP_INDIRECT_PRIORITY_QUEUE(KEY_GENERIC_TYPE[] refArray) {
 this(refArray, refArray.length, null);
}


/** Wraps a given array in a queue using a given comparator.
 *
 * <p>The queue returned by this method will be backed by the given array.
 * The first {@code size} element of the array will be rearranged so to form a heap (this is
 * more efficient than enqueing the elements of {@code a} one by one).
 *
 * @param refArray the reference array.
 * @param a an array of indices into {@code refArray}.
 * @param size the number of elements to be included in the queue.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public HEAP_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray, final int[] a, final int
size, final KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 this(refArray, 0, c);
 this.heap = a;
 this.size = size;
 int i = size;
 while(i-- != 0) {
  if (inv[a[i]] != -1) throw new IllegalArgumentException("Index " + a[i] + " appears twice in the heap");
  inv[a[i]] = i;
 }
 INDIRECT_HEAPS.makeHeap(refArray, a, inv, size, c);
}


/** Wraps a given array in a queue using a given comparator.
```

```
 *
 * <p>The queue returned by this method will be backed by the given array.
 * The elements of the array will be rearranged so to form a heap (this is
 * more efficient than enqueing the elements of {@code a} one by one).
 *
 * @param refArray the reference array.
 * @param a an array of indices into {@code refArray}.
 * @param c the comparator used in this queue, or {@code null} for the natural order.
 */
public HEAP_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray, final int[] a, final
KEY_COMPARATOR KEY_SUPER_GENERIC c) {
 this(refArray, a, a.length, c);
}

/** Wraps a given array in a queue using the natural order.
 *
 * <p>The queue returned by this method will be backed by the given array.
 * The first {@code size} element of the array will be rearranged so to form a heap (this is
 * more efficient than enqueing the elements of {@code a} one by one).
 *
 * @param refArray the reference array.
 * @param a an array of indices into {@code refArray}.
 * @param size the number of elements to be included in the queue.
 */
public HEAP_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray, final int[] a, int size) {
 this(refArray, a, size, null);
}


/** Wraps a given array in a queue using the natural order.
 *
 * <p>The queue returned by this method will be backed by the given array.
 * The elements of the array will be rearranged so to form a heap (this is
 * more efficient than enqueing the elements of {@code a} one by one).
 *
 * @param refArray the reference array.
 * @param a an array of indices into {@code refArray}.
 */
public HEAP_INDIRECT_PRIORITY_QUEUE(final KEY_GENERIC_TYPE[] refArray, final int[] a) {
 this(refArray, a, a.length);
}

@Override
public void enqueue(final int x) {
 if (inv[x] >= 0) throw new IllegalArgumentException("Index " + x + " belongs to the queue");

 if (size == heap.length) heap = IntArrays.grow(heap, size + 1);
```

```
 inv[heap[size] = x] = size++;

 INDIRECT_HEAPS.upHeap(refArray, heap, inv, size, size - 1, c);
}

@Override
public boolean contains(final int index) {
 return inv[index] >= 0;
}

@Override
public int dequeue() {
 if (size == 0) throw new NoSuchElementException();
 final int result = heap[0];
 if (--size != 0) inv[heap[0] = heap[size]] = 0;
 inv[result] = -1;

 if (size != 0) INDIRECT_HEAPS.downHeap(refArray, heap, inv, size, 0, c);
 return result;
}

@Override
public void changed() {
 INDIRECT_HEAPS.downHeap(refArray, heap, inv, size, 0, c);
}

@Override
public void changed(final int index) {
 final int pos = inv[index];
 if (pos < 0) throw new IllegalArgumentException("Index " + index + " does not belong to the queue");
 final int newPos = INDIRECT_HEAPS.upHeap(refArray, heap, inv, size, pos, c);
 INDIRECT_HEAPS.downHeap(refArray, heap, inv, size, newPos, c);
}

/** Rebuilds this queue in a bottom-up fashion (in linear time). */
@Override
public void allChanged() { INDIRECT_HEAPS.makeHeap(refArray, heap, inv, size, c); }

@Override
public boolean remove(final int index) {
 final int result = inv[index];
 if (result < 0) return false;
 inv[index] = -1;

 if (result < --size) {
  inv[heap[result] = heap[size]] = result;
  final int newPos = INDIRECT_HEAPS.upHeap(refArray, heap, inv, size, result, c);
  INDIRECT_HEAPS.downHeap(refArray, heap, inv, size, newPos, c);
```

```
 }

 return true;
}

@Override
public void clear() {
 size = 0;
 Arrays.fill(inv, -1);
}

#ifdef TEST

/** The original class, now just used for testing. */

private static class TestQueue {

 /** The reference array */
 private KEY_TYPE refArray[];
 /** Its length */
 private int N;
 /** The number of elements in the heaps */
 private int n;
 /** The two comparators */
 private KEY_COMPARATOR primaryComp, secondaryComp;
 /** Two indirect heaps are used, called {@code primary} and {@code secondary}. Each of them contains
  a permutation of {@code n} among the indices 0, 1, ..., {@code N}-1 in such a way that the corresponding
  objects be sorted with respect to the two comparators.
  We also need an array {@code inSec[]} so that {@code inSec[k]} is the index of {@code secondary}
  containing {@code k}.
 */
 private int primary[], secondary[], inSec[];

 /** Builds a double indirect priority queue.
  *  @param refArray The reference array.
  *  @param primaryComp The primary comparator.
  *  @param secondaryComp The secondary comparator.
  */
 public TestQueue(KEY_TYPE refArray[], KEY_COMPARATOR primaryComp, KEY_COMPARATOR
secondaryComp) {
  this.refArray = refArray;
  this.N = refArray.length;
  assert this.N != 0;
  this.n = 0;
  this.primaryComp = primaryComp;
  this.secondaryComp = secondaryComp;
  this.primary = new int[N];
  this.secondary = new int[N];
```

```
 this.inSec = new int[N];
 java.util.Arrays.fill(inSec, -1);
}

/** Adds an index to the queue. Notice that the index should not be already present in the queue.
 *  @param i The index to be added
 */
public void add(int i) {
 if (i < 0 || i >= refArray.length) throw new IndexOutOfBoundsException();
 if (inSec[i] >= 0) throw new IllegalArgumentException();
 primary[n] = i;
 secondary[n] = i; inSec[i] = n;
 n++;
 swimPrimary(n-1);
 swimSecondary(n-1);
}

/** Heapify the primary heap.
 *  @param i The index of the heap to be heapified.
 */
private void heapifyPrimary(int i) {
 int dep = primary[i];
 int child;

 while ((child = 2*i+1) < n) {
  if (child+1 < n && primaryComp.compare(refArray[primary[child+1]], refArray[primary[child]]) < 0) child++;
  if (primaryComp.compare(refArray[dep], refArray[primary[child]]) <= 0) break;
  primary[i] = primary[child];
  i = child;
 }
 primary[i] = dep;
}

/** Heapify the secondary heap.
 *  @param i The index of the heap to be heapified.
 */
private void heapifySecondary(int i) {
 int dep = secondary[i];
 int child;

 while ((child = 2*i+1) < n) {
  if (child+1 < n && secondaryComp.compare(refArray[secondary[child+1]], refArray[secondary[child]]) < 0)
child++;
  if (secondaryComp.compare(refArray[dep], refArray[secondary[child]]) <= 0) break;
  secondary[i] = secondary[child]; inSec[secondary[i]] = i;
  i = child;
 }
 secondary[i] = dep; inSec[secondary[i]] = i;
```

```
}

/** Swim and heapify the primary heap.
 *  @param i The index to be moved.
 */
private void swimPrimary(int i) {
 int dep = primary[i];
 int parent;

 while (i != 0 && (parent = (i - 1) / 2) >= 0) {
  if (primaryComp.compare(refArray[primary[parent]], refArray[dep]) <= 0) break;
  primary[i] = primary[parent];
  i = parent;
 }
 primary[i] = dep;
 heapifyPrimary(i);
}

/** Swim and heapify the secondary heap.
 *  @param i The index to be moved.
 */
private void swimSecondary(int i) {
 int dep = secondary[i];
 int parent;

 while (i != 0 && (parent = (i - 1) / 2) >= 0) {
  if (secondaryComp.compare(refArray[secondary[parent]], refArray[dep]) <= 0) break;
  secondary[i] = secondary[parent]; inSec[secondary[i]] = i;
  i = parent;
 }
 secondary[i] = dep; inSec[secondary[i]] = i;
 heapifySecondary(i);
}

/** Returns the minimum element with respect to the primary comparator.
 @return the minimum element.
*/
public int top() {
 if (n == 0) throw new java.util.NoSuchElementException();
 return primary[0];
}

/** Returns the minimum element with respect to the secondary comparator.
 @return the minimum element.
*/
public int secTop() {
 if (n == 0) throw new java.util.NoSuchElementException();
 return secondary[0];
```

```
}

/** Removes the minimum element with respect to the primary comparator.
 *  @return the removed element.
 */
public boolean remove() {
 if (n == 0) throw new java.util.NoSuchElementException();
 if (inSec[primary[0]] == -1) return false;
 int result = primary[0];
 int ins = inSec[result];
 inSec[result] = -1;
 // Copy a leaf
 primary[0] = primary[n-1];
 if (ins == n-1) {
  n--;
  heapifyPrimary(0);
  return true;
 }
 secondary[ins] = secondary[n-1];
 inSec[secondary[ins]] = ins;
 // Heapify
 n--;
 heapifyPrimary(0);
 swimSecondary(ins);
 return true;
}

public void clear() {
 while(size() != 0) remove();
}

public void remove(int index) {
 if (index >= refArray.length) throw new IndexOutOfBoundsException();
 if (inSec[index] == -1) return;
 int ins = inSec[index];
 inSec[index] = -1;
 // Copy a leaf
 primary[ins] = primary[n-1];
 if (ins == n-1) {
  n--;
  swimPrimary(ins);
  return;
 }
 secondary[ins] = secondary[n-1];
 inSec[secondary[ins]] = ins;
 // Heapify
 n--;
 swimPrimary(ins);
```

```
  swimSecondary(ins);
 }

 /** Signals that the minimum element with respect to the comparator has changed.
  */
 public void change() {
  if (n == 0) throw new java.util.NoSuchElementException();
  if (inSec[primary[0]] == -1) throw new IllegalArgumentException();
  int ins = inSec[primary[0]];
  heapifyPrimary(0);
  swimSecondary(ins);
 }

 public void change(int index) {
  if (index >= refArray.length) throw new IndexOutOfBoundsException();
  if (inSec[index] == -1) throw new IllegalArgumentException();
  if (n == 0) throw new java.util.NoSuchElementException();
  int ins = inSec[index];
  swimPrimary(ins);
  swimSecondary(ins);
 }

 /** Returns the number of elements in the queue.
  *  @return the size of the queue
  */
 public int size() {
  return n;
 }



 public String toString() {
  String s = "[";
  for (int i = 0; i < n; i++)
   s += refArray[primary[i]]+", ";
  return s+ "]";
 }
}

private static long seed = System.currentTimeMillis();
private static java.util.Random r = new java.util.Random(seed);

private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
 return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
 return r.NEXT_KEY();
#elif KEY_CLASS_Object
```

```
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }

 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition p = new java.text.FieldPosition(0);

 private static String format(double d) {
  StringBuffer s = new StringBuffer();
  return format.format(d, s, p).toString();
 }

 private static void speedTest(int n, boolean comp) {
  System.out.println("There are presently no speed tests for this class.");
 }


 private static void fatal(String msg) {
  throw new AssertionError(msg);
 }

 private static void ensure(boolean cond, String msg) {
  if (cond) return;
  fatal(msg);
 }

 private static boolean heapEqual(int[] a, int[] b, int sizea, int sizeb) {
  if (sizea != sizeb) return false;
  while(sizea-- != 0) if (a[sizea] != b[sizea]) return false;
  return true;
 }

 private static boolean invEqual(int inva[], int[] invb) {
  int i = inva.length;
  while(i-- != 0) if (inva[i] != invb[i]) return false;
  return true;
 }

 protected static void runTest(int n) {
  long ms;
  Exception mThrowsIllegal, tThrowsIllegal, mThrowsOutOfBounds, tThrowsOutOfBounds, mThrowsNoElement,
tThrowsNoElement;
  int rm = 0, rt = 0;
  KEY_TYPE[] refArray = new KEY_TYPE[n];

  for(int i = 0; i < n; i++) refArray[i] = genKey();
```

```
  HEAP_INDIRECT_PRIORITY_QUEUE m = new HEAP_INDIRECT_PRIORITY_QUEUE(refArray,
COMPARATORS.NATURAL_COMPARATOR);
  TestQueue t = new TestQueue(refArray, COMPARATORS.NATURAL_COMPARATOR,
COMPARATORS.NATURAL_COMPARATOR);

  /* We add pairs to t. */
  for(int i = 0; i < n / 2;  i++) {
   t.add(i);
   m.enqueue(i);
  }

  ensure(heapEqual(m.heap, t.primary, m.size(), t.size()), "Error (" + seed + "): m and t differ after creation (" + m + ",
" + t + ")");
  ensure(invEqual(m.inv, t.inSec), "Error (" + seed + "): m and t differ in inversion arrays after creation (" +
java.util.Arrays.toString(m.inv) + ", " + java.util.Arrays.toString(t.inSec) + ")");

  /* Now we add and remove random data in m and t, checking that the result is the same. */

  for(int i=0; i<2*n;  i++) {
   if (r.nextDouble() < 0.01) {
    t.clear();
    m.clear();
    for(int j = 0; j < n / 2;  j++) {
     t.add(j);
     m.enqueue(j);
    }
   }

   int T = r.nextInt(2 * n);

   mThrowsNoElement = tThrowsNoElement = mThrowsOutOfBounds = tThrowsOutOfBounds = mThrowsIllegal =
tThrowsIllegal = null;

   try {
    m.enqueue(T);
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { mThrowsIllegal = e; }

   try {
    t.add(T);
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { tThrowsIllegal = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + seed + "): enqueue()
divergence in IndexOutOfBoundsException for " + T + " (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds
```

```
+ ")");
   ensure((mThrowsIllegal == null) == (tThrowsIllegal == null), "Error (" + seed + "): enqueue() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");

   ensure(heapEqual(m.heap, t.primary, m.size(), t.size()), "Error (" + seed + "): m and t differ after enqueue (" + m +
", " + t + ")");
   ensure(invEqual(m.inv, t.inSec), "Error (" + seed + "): m and t differ in inversion arrays after enqueue (" +
java.util.Arrays.toString(m.inv) + ", " + java.util.Arrays.toString(t.inSec) + ")");

   if (m.size() != 0) {
    ensure(m.first() == t.top(), "Error (" + seed + "): m and t differ in first element after enqueue (" + m.first() + ", " +
t.top() + ")");
   }

   mThrowsNoElement = tThrowsNoElement = mThrowsOutOfBounds = tThrowsOutOfBounds = mThrowsIllegal =
tThrowsIllegal = null;

   try {
    rm = m.dequeue();
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { mThrowsIllegal = e; }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = e; }

   try {
    rt = t.top();
    t.remove();
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { tThrowsIllegal = e; }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + seed + "): dequeue()
divergence in IndexOutOfBoundsException (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
   ensure((mThrowsIllegal == null) == (tThrowsIllegal == null), "Error (" + seed + "): dequeue() divergence in
IllegalArgumentException  (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   ensure((mThrowsNoElement == null) == (tThrowsNoElement == null), "Error (" + seed + "): dequeue() divergence
in java.util.NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   if (mThrowsOutOfBounds == null) ensure(rt == rm , "Error (" + seed + "): divergence in dequeue() between t and m
(" + rt + ", " + rm + ")");

   ensure(heapEqual(m.heap, t.primary, m.size(), t.size()), "Error (" + seed + "): m and t differ after dequeue (" + m +
", " + t + ")");
   ensure(invEqual(m.inv, t.inSec), "Error (" + seed + "): m and t differ in inversion arrays after dequeue (" +
java.util.Arrays.toString(m.inv) + ", " + java.util.Arrays.toString(t.inSec) + ")");

   if (m.size() != 0) {
    ensure(m.first() == t.top(), "Error (" + seed + "): m and t differ in first element after dequeue (" + m.first() + ", " +
```

```
t.top() + ")");
   }



   int pos = r.nextInt(n * 2);

   try {
    m.remove(pos);
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { mThrowsIllegal = e; }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = e; }

   try {
    t.remove(pos);
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { tThrowsIllegal = e; }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + seed + "): remove(int) divergence in IndexOutOfBoundsException (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
   ensure((mThrowsIllegal == null) == (tThrowsIllegal == null), "Error (" + seed + "): remove(int) divergence in IllegalArgumentException  (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   ensure((mThrowsNoElement == null) == (tThrowsNoElement == null), "Error (" + seed + "): remove(int) divergence in java.util.NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   if (mThrowsOutOfBounds == null) ensure(rt == rm , "Error (" + seed + "): divergence in remove(int) between t and m (" + rt + ", " + rm + ")");

   ensure(heapEqual(m.heap, t.primary, m.size(), t.size()), "Error (" + seed + "): m and t differ after remove(int) (" + m + ", " + t + ")");
   ensure(invEqual(m.inv, t.inSec), "Error (" + seed + "): m and t differ in inversion arrays after remove(int) (" + java.util.Arrays.toString(m.inv) + ", " + java.util.Arrays.toString(t.inSec) + ")");

   if (m.size() != 0) {
    ensure(m.first() == t.top(), "Error (" + seed + "): m and t differ in first element after remove(int) (" + m.first() + ", " + t.top() + ")");
   }



   pos = r.nextInt(n * 2);

   try {
    m.changed(pos);
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { mThrowsIllegal = e; }
   catch (java.util.NoSuchElementException e) { mThrowsNoElement = e; }
```

```
   try {
    t.change(pos);
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }
   catch (IllegalArgumentException e) { tThrowsIllegal = e; }
   catch (java.util.NoSuchElementException e) { tThrowsNoElement = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + seed + "): change(int) divergence in IndexOutOfBoundsException (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
   ensure((mThrowsIllegal == null) == (tThrowsIllegal == null), "Error (" + seed + "): change(int) divergence in IllegalArgumentException  (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   ensure((mThrowsNoElement == null) == (tThrowsNoElement == null), "Error (" + seed + "): change(int) divergence in java.util.NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   if (mThrowsOutOfBounds == null) ensure(rt == rm , "Error (" + seed + "): divergence in change(int) between t and m (" + rt + ", " + rm + ")");

   ensure(heapEqual(m.heap, t.primary, m.size(), t.size()), "Error (" + seed + "): m and t differ after change(int) (" + m + ", " + t + ")");
   ensure(invEqual(m.inv, t.inSec), "Error (" + seed + "): m and t differ in inversion arrays after change(int) (" + java.util.Arrays.toString(m.inv) + ", " + java.util.Arrays.toString(t.inSec) + ")");

   if (m.size() != 0) {
    ensure(m.first() == t.top(), "Error (" + seed + "): m and t differ in first element after change(int) (" + m.first() + ", " + t.top() + ")");
   }

   if (m.size() != 0) {

    refArray[m.first()] = genKey();

    m.changed();
    t.change();

    ensure(heapEqual(m.heap, t.primary, m.size(), t.size()), "Error (" + seed + "): m and t differ after change (" + m + ", " + t + ")");
    ensure(invEqual(m.inv, t.inSec), "Error (" + seed + "): m and t differ in inversion arrays after change (" + java.util.Arrays.toString(m.inv) + ", " + java.util.Arrays.toString(t.inSec) + ")");

    if (m.size() != 0) {
     ensure(m.first() == t.top(), "Error (" + seed + "): m and t differ in first element after change (" + m.first() + ", " + t.top() + ")");
    }
   }
  }


  /* Now we check that m actually holds the same data. */
```

```
  m.clear();
  ensure(m.isEmpty(), "Error (" + seed + "): m is not empty after clear()");

  System.out.println("Test OK");
 }



 public static void main(String args[]) throws Exception {
  int n  = Integer.parseInt(args[1]);
  if (args.length > 2) r = new java.util.Random(seed = Long.parseLong(args[2]));


  try {
   if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, "speedComp".equals(args[0]));
   else if ("test".equals(args[0])) runTest(n);
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/HeapIndirectPriorityQueue.drv
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```
package PACKAGE;

import java.util.Spliterator;
import java.util.Set;
import static it.unimi.dsi.fastutil.Size64.sizeOf;

#if !KEYS_USE_REFERENCE_EQUALITY
/** A type-specific {@link Set}; provides some additional methods that use polymorphism to avoid (un)boxing.
*
* <p>Additionally, this interface strengthens (again) {@link #iterator()}.
*
* @see Set
*/
#else
/** A type-specific {@link Set}; provides some additional methods that use polymorphism to avoid (un)boxing.
*
* <p>Additionally, this interface strengthens (again) {@link #iterator()}.
*
* <p>This interface specifies reference equality semantics (members will be compared equal with
* {@code ==} instead of {@link Object#equals(Object) equals}), which may result in breaks in contract
* if attempted to be used with non reference-equality semantics based {@link Set}s. For example, a
* {@code aReferenceSet.equals(aObjectSet)} may return different a different result then
* {@code aObjectSet.equals(aReferenceSet)}, in violation of {@link Object#equals equals}'s contract
* requiring it being symmetric.
*
* @see Set
*/
#endif
public interface SET KEY_GENERIC extends COLLECTION KEY_GENERIC, Set<KEY_GENERIC_CLASS> {

 /** Returns a type-specific iterator on the elements of this set.
  *
  * @apiNote This specification strengthens the one given in {@link java.lang.Iterable#iterator()},
  * which was already strengthened in the corresponding type-specific class,
  * but was weakened by the fact that this interface extends {@link Set}.
  * <p>Also, this is generally the only {@code iterator} method subclasses should override.
  *
  * @return a type-specific iterator on the elements of this set.
  */
 @Override
 KEY_ITERATOR KEY_GENERIC iterator();

 /**
  * Returns a type-specific spliterator on the elements of this set.
  *
  * <p>Set spliterators must report at least {@link Spliterator#DISTINCT}.
```

```
 *
 * <p>See {@link java.util.Set#spliterator()} for more documentation on the requirements
 * of the returned spliterator.
 *
 * @apiNote This specification strengthens the one given in
 * {@link java.util.Collection#spliterator()}, which was already
 * strengthened in the corresponding type-specific class,
 * but was weakened by the fact that this interface extends {@link Set}.
 * <p>Also, this is generally the only {@code spliterator} method subclasses should override.
 *
 * @implSpec The default implementation returns a late-binding spliterator (see
 * {@link Spliterator} for documentation on what binding policies mean)
 * that wraps this instance's type specific {@link #iterator}.
 * <p>Additionally, it reports {@link Spliterator#SIZED} and {@link Spliterator#DISTINCT}.
 *
 * @implNote As this default implementation wraps the iterator, and {@link java.util.Iterator}
 * is an inherently linear API, the returned spliterator will yield limited performance gains
 * when run in parallel contexts, as the returned spliterator's
 * {@link Spliterator#trySplit() trySplit()} will have linear runtime.
 *
 * @return {@inheritDoc}
 * @since 8.5.0
 */
@Override
#if SPLITERATOR_ASSURE_OVERRIDE
abstract KEY_SPLITERATOR KEY_GENERIC spliterator();
#else
default KEY_SPLITERATOR KEY_GENERIC spliterator() {
 return SPLITERATORS.asSpliterator(
   iterator(), sizeOf(this), SPLITERATORS.SET_SPLITERATOR_CHARACTERISTICS);
}
#endif

#if KEYS_PRIMITIVE
/** Removes an element from this set.
 *
 * @apiNote Note that the corresponding method of a type-specific collection is {@code rem()}.
 * This unfortunate situation is caused by the clash
 * with the similarly named index-based method in the {@link java.util.List} interface.
 *
 * @see java.util.Collection#remove(Object)
 */
boolean remove(KEY_TYPE k);

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
```

```
@Deprecated
@Override
default boolean remove(final Object o) {
 return COLLECTION.super.remove(o);
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
@Deprecated
@Override
default boolean add(final KEY_GENERIC_CLASS o) {
 return COLLECTION.super.add(o);
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@SuppressWarnings("deprecation")
@Deprecated
@Override
default boolean contains(final Object o) {
 return COLLECTION.super.contains(o);
}

/** Removes an element from this set.
 *
 * <p>This method is inherited from the type-specific collection this
 * type-specific set is based on, but it should not used as
 * this interface reinstates {@code remove()} as removal method.
 *
 * @deprecated Please use {@code remove()} instead.
 */
@Deprecated
@Override
default boolean rem(KEY_TYPE k) {
 return remove(k);
}

#endif

/** Returns an immutable empty set.
 *
 * @return an immutable empty set.
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
public static KEY_GENERIC SET KEY_GENERIC of() {
```

```
 return SETS.UNMODIFIABLE_EMPTY_SET;
}

/** Returns an immutable set with the element given.
 *
 * @param e an element.
 * @return an immutable set containing {@code e}.
 */
public static KEY_GENERIC SET KEY_GENERIC of(KEY_GENERIC_TYPE e) {
 return SETS.singleton(e);
}

/**
 * Returns an immutable set with the elements given.
 *
 * @param e0 the first element.
 * @param e1 the second element.
 * @return an immutable set containing {@code e0} and {@code e1}.
 * @throws IllegalArgumentException if there were duplicate entries.
 */
public static KEY_GENERIC SET KEY_GENERIC of(KEY_GENERIC_TYPE e0, KEY_GENERIC_TYPE e1) {
 ARRAY_SET KEY_GENERIC innerSet = new ARRAY_SET KEY_GENERIC_DIAMOND(2);
 innerSet.add(e0);
 if (!innerSet.add(e1)) {
  throw new IllegalArgumentException("Duplicate element: " + e1);
 }
 return SETS.unmodifiable(innerSet);
}

/**
 * Returns an immutable set with the elements given.
 *
 * @param e0 the first element.
 * @param e1 the second element.
 * @param e2 the third element.
 * @return an immutable set containing {@code e0}, {@code e1}, and {@code e2}.
 * @throws IllegalArgumentException if there were duplicate entries.
 */
public static KEY_GENERIC SET KEY_GENERIC of(KEY_GENERIC_TYPE e0, KEY_GENERIC_TYPE e1,
KEY_GENERIC_TYPE e2) {
 ARRAY_SET KEY_GENERIC innerSet = new ARRAY_SET KEY_GENERIC_DIAMOND(3);
 innerSet.add(e0);
 if (!innerSet.add(e1)) {
  throw new IllegalArgumentException("Duplicate element: " + e1);
 }
 if (!innerSet.add(e2)) {
  throw new IllegalArgumentException("Duplicate element: " + e2);
 }
```

```
  return SETS.unmodifiable(innerSet);
 }

 /**
  * Returns an immutable list with the elements given.
  *
  * @param a the list of elements that will be in the final set.
  * @return an immutable set containing the elements in {@code a}.
  * @throws IllegalArgumentException if there are any duplicate entries.
  */
 SAFE_VARARGS
 public static KEY_GENERIC SET KEY_GENERIC of(KEY_GENERIC_TYPE... a) {
  switch(a.length) {
   case 0:
    return of();
   case 1:
    return of(a[0]);
   case 2:
    return of(a[0], a[1]);
   case 3:
    return of(a[0], a[1], a[2]);
   default:
    // fall through
  }
  // Will copy, but that is the only way we assure immutability.
  SET KEY_GENERIC innerSet = a.length <= SETS.ARRAY_SET_CUTOFF ?
   new ARRAY_SET KEY_GENERIC_DIAMOND(a.length) :
   new OPEN_HASH_SET KEY_GENERIC_DIAMOND(a.length);
  for (KEY_GENERIC_TYPE element : a) {
   if (!innerSet.add(element)) {
    throw new IllegalArgumentException("Duplicate element: " + element);
   }
  }
  return SETS.unmodifiable(innerSet);
 }

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Set.drv
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```
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* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
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* limitations under the License.
*/


package PACKAGE;

import java.util.function.UnaryOperator;

/** A type-specific {@link UnaryOperator}; provides methods operating both on objects
* and on primitives.
*
* @see UnaryOperator
* @since 8.5.0
*/

@FunctionalInterface
#if ! KEY_CLASS_Boolean
public interface KEY_UNARY_OPERATOR KEY_GENERIC extends
UnaryOperator<KEY_GENERIC_CLASS>, JDK_PRIMITIVE_UNARY_OPERATOR {
#else
public interface KEY_UNARY_OPERATOR KEY_GENERIC extends UnaryOperator<KEY_GENERIC_CLASS>
{
#endif

 /**
  * Computes the operator on the given input.
  *
  * @param x the input.
  * @return the output of the operator on the given input.
  */
 KEY_TYPE apply(KEY_TYPE x);

 /**
  * Returns a {@code UnaryOperator} that always returns the input unmodified.
  * @see java.util.function.UnaryOperator#identity()
  */
 public static KEY_UNARY_OPERATOR identity() {
  // Java is smart enough to see this lambda is stateless and will return the same instance every time.
  return i -> i;
 }
```

```
#if KEY_CLASS_Boolean
 /** Returns a {@code UnaryOperator} that always returns the logical negation of the input. */
 public static KEY_UNARY_OPERATOR negation() {
  return i -> !i;
 }
#elif !KEY_CLASS_Character
 /**
  * Returns a {@code UnaryOperator} that always returns the arithmetic negation of the input.
  * @implNote As with all negation, be wary of unexpected behavior near the minimum value of the data type.
  * For example, -{@link Integer#MIN_VALUE} will result in {@link Integer#MIN_VALUE} (still negative),
  * as the positive value of {@link Integer#MIN_VALUE} is too big for {@code int}
  * (it would be 1 greater then {@link Integer#MAX_VALUE}).
  */
 public static KEY_UNARY_OPERATOR negation() {
#if KEYS_BYTE_CHAR_SHORT_FLOAT && !KEY_CLASS_Float
  // Annoyingly, negating a byte (or similar) results in an int.
  return i -> (KEY_TYPE) -i;
#else
  return i -> -i;
#endif

 }
#endif

#if KEYS_INT_LONG_DOUBLE
 /** {@inheritDoc}
  *
  * @implSpec This default implementation delegates to {@link #apply}.
  * @deprecated Please use {@link #apply}.
  */
#else
 /** {@inheritDoc}
  *
  * @implSpec This default implementation delegates to
  * {@link #apply} after narrowing down the argument to the
  * actual key type, throwing an exception if the argument cannot be
  * represented in the restricted domain. This is done for interoperability
  * with the Java 8 function environment. The use of this method discouraged, as
  * unexpected errors can occur.
  *
  * @throws IllegalArgumentException If the given operands are not an element of the key domain.
  * @since 8.5.0
  * @deprecated Please use {@link #apply}.
  */
#endif

#if ! KEY_CLASS_Boolean
 @Deprecated
```

```
 @Override
 default KEY_TYPE_WIDENED JDK_PRIMITIVE_KEY_APPLY(final KEY_TYPE_WIDENED x) {
  return apply(KEY_NARROWING(x));
 }
#endif

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 @SuppressWarnings("boxing")
 default KEY_CLASS apply(final KEY_CLASS x) {
  return apply(x.KEY_VALUE());
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/UnaryOperator.drv
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```
/*
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* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
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* limitations under the License.
*/


package PACKAGE;

import java.util.NoSuchElementException;

import it.unimi.dsi.fastutil.PriorityQueue;

/** A type-specific {@link PriorityQueue}; provides some additional methods that use polymorphism to avoid
(un)boxing.
*
* <p>Additionally, this interface strengthens {@link #comparator()}.
*/
```

```
public interface PRIORITY_QUEUE extends PriorityQueue<KEY_CLASS> {

 /** Enqueues a new element.
  * @see PriorityQueue#enqueue(Object)
  * @param x the element to enqueue.
  */

 void enqueue(KEY_GENERIC_TYPE x);

 /** Dequeues the {@linkplain #first() first} element from the queue.
  * @see #dequeue()
  * @return the dequeued element.
  * @throws NoSuchElementException if the queue is empty.
  */

 KEY_GENERIC_TYPE DEQUEUE();

 /** Returns the first element of the queue.
  * @see #first()
  * @return the first element.
  * @throws NoSuchElementException if the queue is empty.
  */

 KEY_GENERIC_TYPE FIRST();

 /** Returns the last element of the queue, that is, the element the would be dequeued last (optional operation).
  * <p>This default implementation just throws an {@link UnsupportedOperationException}.
  * @see #last()
  * @return the last element.
  * @throws NoSuchElementException if the queue is empty.
  */

 default KEY_GENERIC_TYPE LAST() { throw new UnsupportedOperationException(); }

 /** Returns the comparator associated with this priority queue, or null if it uses its elements' natural ordering.
  *
  * @apiNote Note that this specification strengthens the one given in {@link PriorityQueue#comparator()}.
  * @see PriorityQueue#comparator()
  * @return the comparator associated with this priority queue.
  */
 @Override
 KEY_COMPARATOR comparator();

 /** {@inheritDoc}
  * <p>This default implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
```

```
 @Override
 default void enqueue(final KEY_GENERIC_CLASS x) { enqueue(x.KEY_VALUE()); }

 /** {@inheritDoc}
  * <p>This default implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default KEY_GENERIC_CLASS dequeue() { return KEY2OBJ(DEQUEUE()); }

 /** {@inheritDoc}
  * <p>This default implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default KEY_GENERIC_CLASS first() { return KEY2OBJ(FIRST()); }

 /** {@inheritDoc}
  * <p>This default implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default KEY_GENERIC_CLASS last() { return KEY2OBJ(LAST()); }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/PriorityQueue.drv
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Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/SortedPair.java

* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/Pair.java
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/*
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* limitations under the License.
*/

package PACKAGE;

import java.util.Collection;
import java.util.Comparator;
import java.util.Iterator;
import java.util.SortedSet;
import java.util.NoSuchElementException;

/** A type-specific red-black tree set with a fast, small-footprint implementation.
*
* <p>The iterators provided by this class are type-specific {@link
* it.unimi.dsi.fastutil.BidirectionalIterator bidirectional iterators}.
* Moreover, the iterator returned by {@code iterator()} can be safely cast
* to a type-specific {@linkplain java.util.ListIterator list iterator}.
*/

public class RB_TREE_SET KEY_GENERIC extends ABSTRACT_SORTED_SET KEY_GENERIC implements java.io.Serializable, Cloneable, SORTED_SET KEY_GENERIC {

 /** A reference to the root entry. */
 protected transient Entry KEY_GENERIC tree;

 /** Number of elements in this set. */
 protected int count;

 /** The entry of the first element of this set. */
 protected transient Entry KEY_GENERIC firstEntry;

```
/** The entry of the last element of this set. */
protected transient Entry KEY_GENERIC lastEntry;

/** This set's comparator, as provided in the constructor. */
protected Comparator<? super KEY_GENERIC_CLASS> storedComparator;

/** This set's actual comparator; it may differ from {@link #storedComparator} because it is
 always a type-specific comparator, so it could be derived from the former by wrapping. */
protected transient KEY_COMPARATOR KEY_SUPER_GENERIC actualComparator;

private static final long serialVersionUID = -7046029254386353130L;

{
 allocatePaths();
}

/** Creates a new empty tree set.
 */

public RB_TREE_SET() {
 tree = null;
 count = 0;
}

/** Generates the comparator that will be actually used.
 *
 * <p>When a given {@link Comparator} is specified and stored in {@link
 * #storedComparator}, we must check whether it is type-specific.  If it is
 * so, we can used directly, and we store it in {@link #actualComparator}. Otherwise,
 * we adapt it using a helper static method.
 */
private void setActualComparator() {
#if KEY_CLASS_Object
 actualComparator = storedComparator;
#else
 actualComparator = COMPARATORS.AS_KEY_COMPARATOR(storedComparator);
#endif
}


/** Creates a new empty tree set with the given comparator.
 *
 * @param c a {@link Comparator} (even better, a type-specific comparator).
 */

public RB_TREE_SET(final Comparator<? super KEY_GENERIC_CLASS> c) {
 this();
```

```
 storedComparator = c;
 setActualComparator();
}


/** Creates a new tree set copying a given collection.
 *
 * @param c a collection to be copied into the new tree set.
 */

public RB_TREE_SET(final Collection<? extends KEY_GENERIC_CLASS> c) {
 this();
 addAll(c);
}

/** Creates a new tree set copying a given sorted set (and its {@link Comparator}).
 *
 * @param s a {@link SortedSet} to be copied into the new tree set.
 */

public RB_TREE_SET(final SortedSet<KEY_GENERIC_CLASS> s) {
 this(s.comparator());
 addAll(s);
}

/** Creates a new tree set copying a given type-specific collection.
 *
 * @param c a type-specific collection to be copied into the new tree set.
 */

public RB_TREE_SET(final COLLECTION KEY_EXTENDS_GENERIC c) {
 this();
 addAll(c);
}

/** Creates a new tree set copying a given type-specific sorted set (and its {@link Comparator}).
 *
 * @param s a type-specific sorted set to be copied into the new tree set.
 */

public RB_TREE_SET(final SORTED_SET KEY_GENERIC s) {
 this(s.comparator());
 addAll(s);
}


/** Creates a new tree set using elements provided by a type-specific iterator.
 *
```

```
 * @param i a type-specific iterator whose elements will fill the set.
 */

public RB_TREE_SET(final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i) {
 while(i.hasNext()) add(i.NEXT_KEY());
}


#if KEYS_PRIMITIVE

/** Creates a new tree set using elements provided by an iterator.
 *
 * @param i an iterator whose elements will fill the set.
 */

SUPPRESS_WARNINGS_KEY_UNCHECKED
public RB_TREE_SET(final Iterator<?> i) {
 this(ITERATORS.AS_KEY_ITERATOR(i));
}

#endif

/** Creates a new tree set and fills it with the elements of a given array using a given {@link Comparator}.
 *
 * @param a an array whose elements will be used to fill the set.
 * @param offset the first element to use.
 * @param length the number of elements to use.
 * @param c a {@link Comparator} (even better, a type-specific comparator).
 */

public RB_TREE_SET(final KEY_GENERIC_TYPE[] a, final int offset, final int length, final Comparator<? super
KEY_GENERIC_CLASS> c) {
 this(c);
 ARRAYS.ensureOffsetLength(a, offset, length);
 for(int i = 0; i < length; i++) add(a[offset + i]);
}


/** Creates a new tree set and fills it with the elements of a given array.
 *
 * @param a an array whose elements will be used to fill the set.
 * @param offset the first element to use.
 * @param length the number of elements to use.
 */

public RB_TREE_SET(final KEY_GENERIC_TYPE[] a, final int offset, final int length) {
 this(a, offset, length, null);
}
```

```
/** Creates a new tree set copying the elements of an array.
 *
 * @param a an array to be copied into the new tree set.
 */

public RB_TREE_SET(final KEY_GENERIC_TYPE[] a) {
 this();
 int i = a.length;
 while(i-- != 0) add(a[i]);
}


/** Creates a new tree set copying the elements of an array using a given {@link Comparator}.
 *
 * @param a an array to be copied into the new tree set.
 * @param c a {@link Comparator} (even better, a type-specific comparator).
 */

public RB_TREE_SET(final KEY_GENERIC_TYPE[] a, final Comparator<? super KEY_GENERIC_CLASS> c)
{
 this(c);
 int i = a.length;
 while(i-- != 0) add(a[i]);
}




/*
 * The following methods implements some basic building blocks used by
 * all accessors.  They are (and should be maintained) identical to those used in RBTreeMap.drv.
 *
 * The add()/remove() code is derived from Ben Pfaff's GNU libavl
 * (https://adtinfo.org/). If you want to understand what's
 * going on, you should have a look at the literate code contained therein
 * first.
 */


/** Compares two keys in the right way.
 *
 * <p>This method uses the {@link #actualComparator} if it is non-{@code null}.
 * Otherwise, it resorts to primitive type comparisons or to {@link Comparable#compareTo(Object) compareTo()}.
 *
 * @param k1 the first key.
 * @param k2 the second key.
```

```
 * @return a number smaller than, equal to or greater than 0, as usual
 * (i.e., when k1 &lt; k2, k1 = k2 or k1 &gt; k2, respectively).
 */

SUPPRESS_WARNINGS_KEY_UNCHECKED
final int compare(final KEY_GENERIC_TYPE k1, final KEY_GENERIC_TYPE k2) {
 return actualComparator == null ? KEY_CMP(k1, k2) : actualComparator.compare(k1, k2);
}



/** Returns the entry corresponding to the given key, if it is in the tree; {@code null}, otherwise.
 *
 * @param k the key to search for.
 * @return the corresponding entry, or {@code null} if no entry with the given key exists.
 */

private Entry KEY_GENERIC findKey(final KEY_GENERIC_TYPE k) {
 Entry KEY_GENERIC e = tree;
 int cmp;

 while (e != null && (cmp = compare(k, e.key)) != 0)
  e = cmp < 0 ? e.left() : e.right();

 return e;
}

/** Locates a key.
 *
 * @param k a key.
 * @return the last entry on a search for the given key; this will be
 * the given key, if it present; otherwise, it will be either the smallest greater key or the greatest smaller key.
 */

final Entry KEY_GENERIC locateKey(final KEY_GENERIC_TYPE k) {
 Entry KEY_GENERIC e = tree, last = tree;
 int cmp = 0;

 while (e != null && (cmp = compare(k, e.key)) != 0) {
  last = e;
  e = cmp < 0 ? e.left() : e.right();
 }

 return cmp == 0 ? e : last;
}

/** This vector remembers the path and the direction followed during the
 *  current insertion. It suffices for about 2<sup>32</sup> entries. */
```

```
private transient boolean dirPath[];
private transient Entry KEY_GENERIC nodePath[];

SUPPRESS_WARNINGS_KEY_UNCHECKED_RAWTYPES
private void allocatePaths() {
 dirPath = new boolean[64];
 nodePath = new Entry[64];
}

@Override
public boolean add(final KEY_GENERIC_TYPE k) {
 REQUIRE_KEY_NON_NULL(k)
 int maxDepth = 0;

 if (tree == null) { // The case of the empty tree is treated separately.
  count++;
  tree = lastEntry = firstEntry = new Entry KEY_GENERIC_DIAMOND(k);
 }
 else {
  Entry KEY_GENERIC p = tree, e;
  int cmp, i = 0;

  while(true) {
   if ((cmp = compare(k, p.key)) == 0) {
    // We clean up the node path, or we could have stale references later.
    while(i-- != 0) nodePath[i] = null;
    return false;
   }

   nodePath[i] = p;

   if (dirPath[i++] = cmp > 0) {
    if (p.succ()) {
     count++;
     e = new Entry KEY_GENERIC_DIAMOND(k);

     if (p.right == null) lastEntry = e;

     e.left = p;
     e.right = p.right;

     p.right(e);

     break;
    }

    p = p.right;
   }
```

```
   else {
    if (p.pred()) {
     count++;
     e = new Entry KEY_GENERIC_DIAMOND(k);

     if (p.left == null) firstEntry = e;

     e.right = p;
     e.left = p.left;

     p.left(e);

     break;
    }

    p = p.left;
   }
  }

  maxDepth = i--;

  while(i > 0 && ! nodePath[i].black()) {
   if (! dirPath[i - 1]) {
    Entry KEY_GENERIC y = nodePath[i - 1].right;

    if (! nodePath[i - 1].succ() && ! y.black()) {
     nodePath[i].black(true);
     y.black(true);
     nodePath[i - 1].black(false);
     i -= 2;
    }
    else {
     Entry KEY_GENERIC x;

     if (! dirPath[i]) y = nodePath[i];
     else {
      x = nodePath[i];
      y = x.right;
      x.right = y.left;
      y.left = x;
      nodePath[i - 1].left = y;

      if (y.pred()) {
       y.pred(false);
       x.succ(y);
      }
     }
```

```
 x = nodePath[i - 1];
 x.black(false);
 y.black(true);

 x.left = y.right;
 y.right = x;
 if (i < 2) tree = y;
 else {
  if (dirPath[i - 2]) nodePath[i - 2].right = y;
  else nodePath[i - 2].left = y;
 }

 if (y.succ()) {
  y.succ(false);
  x.pred(y);
 }
 break;
}
}
else {
Entry KEY_GENERIC y = nodePath[i - 1].left;

if (! nodePath[i - 1].pred() && ! y.black()) {
 nodePath[i].black(true);
 y.black(true);
 nodePath[i - 1].black(false);
 i -= 2;
}
else {
 Entry KEY_GENERIC x;

 if (dirPath[i]) y = nodePath[i];
 else {
  x = nodePath[i];
  y = x.left;
  x.left = y.right;
  y.right = x;
  nodePath[i - 1].right = y;

  if (y.succ()) {
   y.succ(false);
   x.pred(y);
  }

 }

 x = nodePath[i - 1];
 x.black(false);
```

```
    y.black(true);

    x.right = y.left;
    y.left = x;
    if (i < 2) tree = y;
    else {
     if (dirPath[i - 2]) nodePath[i - 2].right = y;
     else nodePath[i - 2].left = y;
    }

    if (y.pred()){
     y.pred(false);
     x.succ(y);
    }

    break;
   }
  }
 }
}
tree.black(true);
// We clean up the node path, or we could have stale references later.
while(maxDepth-- != 0) nodePath[maxDepth] = null;
return true;
}


SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public boolean remove(final KEY_TYPE k) {
 if (tree == null) return false;

 Entry KEY_GENERIC p = tree;
 int cmp;
 int i = 0;
 final KEY_GENERIC_TYPE kk = KEY_GENERIC_CAST k;

 while(true) {
  if ((cmp = compare(kk, p.key)) == 0) break;

  dirPath[i] = cmp > 0;
  nodePath[i] = p;

  if (dirPath[i++]) {
   if ((p = p.right()) == null) {
    // We clean up the node path, or we could have stale references later.
    while(i-- != 0) nodePath[i] = null;
    return false;
```

```
    }
   }
  else {
   if ((p = p.left()) == null) {
    // We clean up the node path, or we could have stale references later.
    while(i-- != 0) nodePath[i] = null;
    return false;
   }
  }
 }

 if (p.left == null) firstEntry = p.next();
 if (p.right == null) lastEntry = p.prev();

 if (p.succ()) {
  if (p.pred()) {
   if (i == 0) tree = p.left;
   else {
    if (dirPath[i - 1]) nodePath[i - 1].succ(p.right);
    else nodePath[i - 1].pred(p.left);
   }
  }
  else {
   p.prev().right = p.right;

   if (i == 0) tree = p.left;
   else {
    if (dirPath[i - 1]) nodePath[i - 1].right = p.left;
    else nodePath[i - 1].left = p.left;
   }
  }
 }
 else {
  boolean color;
  Entry KEY_GENERIC r = p.right;

  if (r.pred()) {
   r.left = p.left;
   r.pred(p.pred());
   if (! r.pred()) r.prev().right = r;
   if (i == 0) tree = r;
   else {
    if (dirPath[i - 1]) nodePath[i - 1].right = r;
    else nodePath[i - 1].left = r;
   }

   color = r.black();
   r.black(p.black());
```

```
  p.black(color);
  dirPath[i] = true;
  nodePath[i++] = r;
 }
 else {
  Entry KEY_GENERIC s;
  int j = i++;

  while(true) {
   dirPath[i] = false;
   nodePath[i++] = r;
   s = r.left;
   if (s.pred()) break;
   r = s;
  }

  dirPath[j] = true;
  nodePath[j] = s;

  if (s.succ()) r.pred(s);
  else r.left = s.right;

  s.left = p.left;

  if (! p.pred()) {
   p.prev().right =  s;
   s.pred(false);
  }

  s.right(p.right);

  color = s.black();
  s.black(p.black());
  p.black(color);

  if (j == 0) tree = s;
  else {
   if (dirPath[j - 1]) nodePath[j - 1].right = s;
   else nodePath[j - 1].left = s;
  }
 }
}

int maxDepth = i;

if (p.black()) {
 for(; i > 0; i--) {
  if (dirPath[i - 1] && ! nodePath[i - 1].succ() ||
```

```
 ! dirPath[i - 1] && ! nodePath[i - 1].pred()) {
Entry KEY_GENERIC x = dirPath[i - 1] ? nodePath[i - 1].right : nodePath[i - 1].left;

if (! x.black()) {
 x.black(true);
 break;
}
}

if (! dirPath[i - 1]) {
Entry KEY_GENERIC w = nodePath[i - 1].right;

if (! w.black()) {
 w.black(true);
 nodePath[i - 1].black(false);

 nodePath[i - 1].right = w.left;
 w.left = nodePath[i - 1];

 if (i < 2) tree = w;
 else {
  if (dirPath[i - 2]) nodePath[i - 2].right = w;
  else nodePath[i - 2].left = w;
 }

 nodePath[i] = nodePath[i - 1];
 dirPath[i] = false;
 nodePath[i - 1] = w;
 if (maxDepth == i++) maxDepth++;

 w = nodePath[i - 1].right;
}

if ((w.pred() || w.left.black()) &&
  (w.succ() || w.right.black())) {
 w.black(false);
}
else {
 if (w.succ() || w.right.black()) {
  Entry KEY_GENERIC y = w.left;

  y.black (true);
  w.black(false);
  w.left = y.right;
  y.right = w;
  w = nodePath[i - 1].right = y;

  if (w.succ()) {
```

```
    w.succ(false);
    w.right.pred(w);
   }
  }

  w.black(nodePath[i - 1].black());
  nodePath[i - 1].black(true);
  w.right.black(true);

  nodePath[i - 1].right = w.left;
  w.left = nodePath[i - 1];

  if (i < 2) tree = w;
  else {
   if (dirPath[i - 2]) nodePath[i - 2].right = w;
   else nodePath[i - 2].left = w;
  }

  if (w.pred()) {
   w.pred(false);
   nodePath[i - 1].succ(w);
  }
  break;
 }
}
else {
 Entry KEY_GENERIC w = nodePath[i - 1].left;

 if (! w.black()) {
  w.black (true);
  nodePath[i - 1].black(false);

  nodePath[i - 1].left = w.right;
  w.right = nodePath[i - 1];

  if (i < 2) tree = w;
  else {
   if (dirPath[i - 2]) nodePath[i - 2].right = w;
   else nodePath[i - 2].left = w;
  }

  nodePath[i] = nodePath[i - 1];
  dirPath[i] = true;
  nodePath[i - 1] = w;
  if (maxDepth == i++) maxDepth++;

  w = nodePath[i - 1].left;
 }
```

```
   if ((w.pred() || w.left.black()) &&
     (w.succ() || w.right.black())) {
    w.black(false);
   }
   else {
    if (w.pred() || w.left.black()) {
     Entry KEY_GENERIC y = w.right;

     y.black(true);
     w.black (false);
     w.right = y.left;
     y.left = w;
     w = nodePath[i - 1].left = y;

     if (w.pred()) {
      w.pred(false);
      w.left.succ(w);
     }
    }

    w.black(nodePath[i - 1].black());
    nodePath[i - 1].black(true);
    w.left.black(true);

    nodePath[i - 1].left = w.right;
    w.right = nodePath[i - 1];

    if (i < 2) tree = w;
    else {
     if (dirPath[i - 2]) nodePath[i - 2].right = w;
     else nodePath[i - 2].left = w;
    }

    if (w.succ()) {
     w.succ(false);
     nodePath[i - 1].pred(w);
    }
    break;
   }
  }
 }

 if (tree != null) tree.black(true);
}

count--;
// We clean up the node path, or we could have stale references later.
```

```
  while(maxDepth-- != 0) nodePath[maxDepth] = null;
  return true;
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public boolean contains(final KEY_TYPE k) {
  return findKey(KEY_GENERIC_CAST k) != null;
 }

#if KEY_CLASS_Object
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public K get(final KEY_TYPE k) {
  final Entry KEY_GENERIC entry = findKey(KEY_GENERIC_CAST k);
  return entry == null ? null : entry.key;
 }
#endif

 @Override
 public void clear() {
  count = 0;
  tree = null;
  firstEntry = lastEntry = null;
 }


 /** This class represent an entry in a tree set.
  *
  * <p>We use the only "metadata", i.e., {@link Entry#info}, to store
  * information about color, predecessor status and successor status.
  *
  * <p>Note that since the class is recursive, it can be
  * considered equivalently a tree.
  */

 private static final class Entry KEY_GENERIC implements Cloneable {
  /** The the bit in this mask is true, the node is black. */
  private static final int BLACK_MASK = 1;
  /** If the bit in this mask is true, {@link #right} points to a successor. */
  private static final int SUCC_MASK = 1 << 31;
  /** If the bit in this mask is true, {@link #left} points to a predecessor. */
  private static final int PRED_MASK = 1 << 30;
  /** The key of this entry. */
  KEY_GENERIC_TYPE key;
  /** The pointers to the left and right subtrees. */
  Entry KEY_GENERIC left, right;
  /** This integers holds different information in different bits (see {@link #SUCC_MASK}, {@link
#PRED_MASK} and {@link #BLACK_MASK}). */
```

```
int info;

Entry() {}

/** Creates a new red entry with the given key.
 *
 * @param k a key.
 */
Entry(final KEY_GENERIC_TYPE k) {
 this.key = k;
 info = SUCC_MASK | PRED_MASK;
}

/** Returns the left subtree.
 *
 * @return the left subtree ({@code null} if the left
 * subtree is empty).
 */
Entry KEY_GENERIC left() {
 return (info & PRED_MASK) != 0 ? null : left;
}

/** Returns the right subtree.
 *
 * @return the right subtree ({@code null} if the right
 * subtree is empty).
 */
Entry KEY_GENERIC right() {
 return (info & SUCC_MASK) != 0 ? null : right;
}

/** Checks whether the left pointer is really a predecessor.
 * @return true if the left pointer is a predecessor.
 */
boolean pred() {
 return (info & PRED_MASK) != 0;
}

/** Checks whether the right pointer is really a successor.
 * @return true if the right pointer is a successor.
 */
boolean succ() {
 return (info & SUCC_MASK) != 0;
}

/** Sets whether the left pointer is really a predecessor.
 * @param pred if true then the left pointer will be considered a predecessor.
 */
```

```
void pred(final boolean pred) {
 if (pred) info |= PRED_MASK;
 else info &= ~PRED_MASK;
}

/** Sets whether the right pointer is really a successor.
 * @param succ if true then the right pointer will be considered a successor.
 */
void succ(final boolean succ) {
 if (succ) info |= SUCC_MASK;
 else info &= ~SUCC_MASK;
}

/** Sets the left pointer to a predecessor.
 * @param pred the predecessr.
 */
void pred(final Entry KEY_GENERIC pred) {
 info |= PRED_MASK;
 left = pred;
}

/** Sets the right pointer to a successor.
 * @param succ the successor.
 */
void succ(final Entry KEY_GENERIC succ) {
 info |= SUCC_MASK;
 right = succ;
}

/** Sets the left pointer to the given subtree.
 * @param left the new left subtree.
 */
void left(final Entry KEY_GENERIC left) {
 info &= ~PRED_MASK;
 this.left = left;
}

/** Sets the right pointer to the given subtree.
 * @param right the new right subtree.
 */
void right(final Entry KEY_GENERIC right) {
 info &= ~SUCC_MASK;
 this.right = right;
}

/** Returns whether this node is black.
 * @return true iff this node is black.
 */
```

```
boolean black() {
 return (info & BLACK_MASK) != 0;
}

/** Sets whether this node is black.
 * @param black if true, then this node becomes black; otherwise, it becomes red..
 */
void black(final boolean black) {
 if (black) info |= BLACK_MASK;
 else info &= ~BLACK_MASK;
}

/** Computes the next entry in the set order.
 *
 * @return the next entry ({@code null}) if this is the last entry).
 */

Entry KEY_GENERIC next() {
 Entry KEY_GENERIC next = this.right;
 if ((info & SUCC_MASK) == 0) while ((next.info & PRED_MASK) == 0) next = next.left;
 return next;
}

/** Computes the previous entry in the set order.
 *
 * @return the previous entry ({@code null}) if this is the first entry).
 */

Entry KEY_GENERIC prev() {
 Entry KEY_GENERIC prev = this.left;
 if ((info & PRED_MASK) == 0) while ((prev.info & SUCC_MASK) == 0) prev = prev.right;
 return prev;
}

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public Entry KEY_GENERIC clone() {
 Entry KEY_GENERIC c;
 try {
  c = (Entry KEY_GENERIC)super.clone();
 }
 catch(CloneNotSupportedException cantHappen) {
  throw new InternalError();
 }

 c.key = key;
 c.info = info;
```

```
 return c;
}

@Override
public boolean equals(final Object o) {
 if (!(o instanceof Entry)) return false;
 Entry KEY_GENERIC_WILDCARD e = (Entry KEY_GENERIC_WILDCARD)o;

 return KEY_EQUALS(key, e.key);
}

@Override
public int hashCode() {
 return KEY2JAVAHASH_NOT_NULL(key);
}

@Override
public String toString() {
 return String.valueOf(key);
}

/*
  public void prettyPrint() {
  prettyPrint(0);
  }



  public void prettyPrint(int level) {
  if (pred()) {
  for (int i = 0; i < level; i++)
  System.err.print("  ");
  System.err.println("pred: " + left);
  }
  else if (left != null)
  left.prettyPrint(level +1);
  for (int i = 0; i < level; i++)
  System.err.print("  ");
  System.err.println(key + " (" + (black() ? "black" : "red") + ")");
  if (succ()) {
  for (int i = 0; i < level; i++)
  System.err.print("  ");
  System.err.println("succ: " + right);
  }
  else if (right != null)
  right.prettyPrint(level + 1);
  }*/
}
```

```
/*
  public void prettyPrint() {
  System.err.println("size: " + count);
  if (tree != null) tree.prettyPrint();
  }
*/

@Override
public int size() {
 return count;
}

@Override
public boolean isEmpty() {
 return count == 0;
}

@Override
public KEY_GENERIC_TYPE FIRST() {
 if (tree == null) throw new NoSuchElementException();
 return firstEntry.key;
}

@Override
public KEY_GENERIC_TYPE LAST() {
 if (tree == null) throw new NoSuchElementException();
 return lastEntry.key;
}


/** An iterator on the whole range.
 *
 * <p>This class can iterate in both directions on a threaded tree.
 */

private class SetIterator implements KEY_LIST_ITERATOR KEY_GENERIC {
 /** The entry that will be returned by the next call to {@link java.util.ListIterator#previous()} (or {@code null} if
no previous entry exists). */
 Entry KEY_GENERIC prev;
 /** The entry that will be returned by the next call to {@link java.util.ListIterator#next()} (or {@code null} if no
next entry exists). */
 Entry KEY_GENERIC next;
 /** The last entry that was returned (or {@code null} if we did not iterate or used {@link #remove()}). */
 Entry KEY_GENERIC curr;
 /** The current index (in the sense of a {@link java.util.ListIterator}). Note that this value is not meaningful when
this iterator has been created using the nonempty constructor.*/
 int index = 0;
```

```
SetIterator() {
 next = firstEntry;
}

SetIterator(final KEY_GENERIC_TYPE k) {
 if ((next = locateKey(k)) != null) {
  if (compare(next.key, k) <= 0) {
   prev = next;
   next = next.next();
  }
  else prev = next.prev();
 }
}

@Override
public boolean hasNext() { return next != null; }
@Override
public boolean hasPrevious() { return prev != null; }

void updateNext() { next = next.next(); }
void updatePrevious() { prev = prev.prev(); }

@Override
public KEY_GENERIC_TYPE NEXT_KEY() { return nextEntry().key; }
@Override
public KEY_GENERIC_TYPE PREV_KEY() { return previousEntry().key; }

Entry KEY_GENERIC nextEntry() {
 if (! hasNext()) throw new NoSuchElementException();
 curr = prev = next;
 index++;
 updateNext();
 return curr;
}

Entry KEY_GENERIC previousEntry() {
 if (! hasPrevious()) throw new NoSuchElementException();
 curr = next = prev;
 index--;
 updatePrevious();
 return curr;
}

@Override
public int nextIndex() { return index; }
@Override
public int previousIndex() { return index - 1; }
```

```
  @Override
  public void remove() {
   if (curr == null) throw new IllegalStateException();
   /* If the last operation was a next(), we are removing an entry that preceeds
      the current index, and thus we must decrement it. */
   if (curr == prev) index--;
   next = prev = curr;
   updatePrevious();
   updateNext();
   RB_TREE_SET.this.remove(curr.key);
   curr = null;
  }
 }

 @Override
 public KEY_BIDI_ITERATOR KEY_GENERIC iterator() { return new SetIterator(); }

 @Override
 public KEY_BIDI_ITERATOR KEY_GENERIC iterator(final KEY_GENERIC_TYPE from) { return new SetIterator(from); }

 @Override
 public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { return actualComparator; }

 @Override
 public SORTED_SET KEY_GENERIC headSet(final KEY_GENERIC_TYPE to) { return new Subset(KEY_NULL, true, to, false); }

 @Override
 public SORTED_SET KEY_GENERIC tailSet(final KEY_GENERIC_TYPE from) { return new Subset(from, false, KEY_NULL, true); }

 @Override
 public SORTED_SET KEY_GENERIC subSet(final KEY_GENERIC_TYPE from, final KEY_GENERIC_TYPE to) { return new Subset(from, false, to, false); }

 /** A subset with given range.
  *
  * <p>This class represents a subset. One has to specify the left/right
  * limits (which can be set to -&infin; or &infin;). Since the subset is a
  * view on the set, at a given moment it could happen that the limits of
  * the range are not any longer in the main set. Thus, things such as
  * {@link java.util.SortedSet#first()} or {@link java.util.Collection#size()} must be always computed
  * on-the-fly.
  */
 private final class Subset extends ABSTRACT_SORTED_SET KEY_GENERIC implements java.io.Serializable, SORTED_SET KEY_GENERIC {
  private static final long serialVersionUID = -7046029254386353129L;
```

```
 /** The start of the subset range, unless {@link #bottom} is true. */
 KEY_GENERIC_TYPE from;
 /** The end of the subset range, unless {@link #top} is true. */
 KEY_GENERIC_TYPE to;
 /** If true, the subset range starts from -&infin;. */
 boolean bottom;
 /** If true, the subset range goes to &infin;. */
 boolean top;

 /** Creates a new subset with given key range.
  *
  * @param from the start of the subset range.
  * @param bottom if true, the first parameter is ignored and the range starts from -&infin;.
  * @param to the end of the subset range.
  * @param top if true, the third parameter is ignored and the range goes to &infin;.
  */
 public Subset(final KEY_GENERIC_TYPE from, final boolean bottom, final KEY_GENERIC_TYPE to, final
boolean top) {
  if (! bottom && ! top && RB_TREE_SET.this.compare(from, to) > 0) throw new IllegalArgumentException("Start
element (" + from  + ") is larger than end element (" + to + ")");

  this.from = from;
  this.bottom = bottom;
  this.to = to;
  this.top = top;
 }

 @Override
 public void clear() {
  final SubsetIterator i = new SubsetIterator();
  while(i.hasNext()) {
   i.NEXT_KEY();
   i.remove();
  }
 }

 /** Checks whether a key is in the subset range.
  * @param k a key.
  * @return true if is the key is in the subset range.
  */
 final boolean in(final KEY_GENERIC_TYPE k) {
  return (bottom || RB_TREE_SET.this.compare(k, from) >= 0) &&
   (top || RB_TREE_SET.this.compare(k, to) < 0);
 }

 @Override
 SUPPRESS_WARNINGS_KEY_UNCHECKED
```

```
public boolean contains(final KEY_TYPE k) {
 return in(KEY_GENERIC_CAST k) && RB_TREE_SET.this.contains(k);
}

@Override
public boolean add(final KEY_GENERIC_TYPE  k) {
 if (! in(k)) throw new IllegalArgumentException("Element (" + k + ") out of range [" + (bottom ? "-" :
String.valueOf(from)) + ", " + (top ? "-" : String.valueOf(to)) + ")");
 return RB_TREE_SET.this.add(k);
}

@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public boolean remove(final KEY_TYPE k) {
 if (! in(KEY_GENERIC_CAST k)) return false;
 return RB_TREE_SET.this.remove(k);
}

@Override
public int size() {
 final SubsetIterator i = new SubsetIterator();
 int n = 0;

 while(i.hasNext()) {
  n++;
  i.NEXT_KEY();
 }

 return n;
}


@Override
public boolean isEmpty() {
 return ! new SubsetIterator().hasNext();
}

@Override
public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() {
 return actualComparator;
}

@Override
public KEY_BIDI_ITERATOR KEY_GENERIC iterator() {
 return new SubsetIterator();
}

@Override
```

```
public KEY_BIDI_ITERATOR KEY_GENERIC iterator(final KEY_GENERIC_TYPE from) {
 return new SubsetIterator(from);
}

@Override
public SORTED_SET KEY_GENERIC headSet(final KEY_GENERIC_TYPE to) {
 if (top) return new Subset(from, bottom, to, false);
 return compare(to, this.to) < 0 ? new Subset(from, bottom, to, false) : this;
}

@Override
public SORTED_SET KEY_GENERIC tailSet(final KEY_GENERIC_TYPE from) {
 if (bottom) return new Subset(from, false, to, top);
 return compare(from, this.from) > 0 ? new Subset(from, false, to, top) : this;
}

@Override
public SORTED_SET KEY_GENERIC subSet(KEY_GENERIC_TYPE from, KEY_GENERIC_TYPE to) {
 if (top && bottom) return new Subset(from, false, to, false);
 if (! top) to = compare(to, this.to) < 0 ? to : this.to;
 if (! bottom) from = compare(from, this.from) > 0 ? from : this.from;
    if (! top && ! bottom && from == this.from && to == this.to) return this;
 return new Subset(from, false, to, false);
}


/** Locates the first entry.
 *
 * @return the first entry of this subset, or {@code null} if the subset is empty.
 */
public RB_TREE_SET.Entry KEY_GENERIC firstEntry() {
 if (tree == null) return null;
 // If this subset goes to -infinity, we return the main set first entry; otherwise, we locate the start of the set.
 RB_TREE_SET.Entry KEY_GENERIC e;
 if (bottom) e = firstEntry;
 else {
  e = locateKey(from);
  // If we find either the start or something greater we're OK.
  if (compare(e.key, from) < 0) e = e.next();
 }
 // Finally, if this subset doesn't go to infinity, we check that the resulting key isn't greater than the end.
 if (e == null || ! top && compare(e.key, to) >= 0) return null;
 return e;
}

/** Locates the last entry.
 *
 * @return the last entry of this subset, or {@code null} if the subset is empty.
```

```
 */
public RB_TREE_SET.Entry KEY_GENERIC lastEntry() {
 if (tree == null) return null;
 // If this subset goes to infinity, we return the main set last entry; otherwise, we locate the end of the set.
 RB_TREE_SET.Entry KEY_GENERIC e;
 if (top) e = lastEntry;
 else {
  e = locateKey(to);
  // If we find something smaller than the end we're OK.
  if (compare(e.key, to) >= 0) e = e.prev();
 }
 // Finally, if this subset doesn't go to -infinity, we check that the resulting key isn't smaller than the start.
 if (e == null || ! bottom && compare(e.key, from) < 0) return null;
 return e;
}


@Override
public KEY_GENERIC_TYPE FIRST() {
 RB_TREE_SET.Entry KEY_GENERIC e = firstEntry();
 if (e == null) throw new NoSuchElementException();
 return e.key;
}

@Override
public KEY_GENERIC_TYPE LAST() {
 RB_TREE_SET.Entry KEY_GENERIC e = lastEntry();
 if (e == null) throw new NoSuchElementException();
 return e.key;
}

/** An iterator for subranges.
 *
 * <p>This class inherits from {@link SetIterator}, but overrides the methods that
 * update the pointer after a {@link java.util.ListIterator#next()} or {@link java.util.ListIterator#previous()}. If we
would
 * move out of the range of the subset we just overwrite the next or previous
 * entry with {@code null}.
 */
private final class SubsetIterator extends SetIterator {
 SubsetIterator() {
  next = firstEntry();
 }

 SubsetIterator(final KEY_GENERIC_TYPE k) {
  this();

  if (next != null) {
```

```
    if (! bottom && compare(k, next.key) < 0) prev = null;
    else if (! top && compare(k, (prev = lastEntry()).key) >= 0) next = null;
    else {
     next = locateKey(k);

     if (compare(next.key, k) <= 0) {
      prev = next;
      next = next.next();
     }
     else prev = next.prev();
    }
   }
  }

  @Override
  void updatePrevious() {
   prev = prev.prev();
   if (! bottom && prev != null && RB_TREE_SET.this.compare(prev.key, from) < 0) prev = null;
  }

  @Override
  void updateNext() {
   next = next.next();
   if (! top && next != null && RB_TREE_SET.this.compare(next.key, to) >= 0) next = null;
  }
 }
}



/** Returns a deep copy of this tree set.
 *
 * <p>This method performs a deep copy of this tree set; the data stored in the
 * set, however, is not cloned. Note that this makes a difference only for object keys.
 *
 * @return a deep copy of this tree set.
 */
@Override
SUPPRESS_WARNINGS_KEY_UNCHECKED
public Object clone() {
 RB_TREE_SET KEY_GENERIC c;
 try {
  c = (RB_TREE_SET KEY_GENERIC)super.clone();
 }
 catch(CloneNotSupportedException cantHappen) {
  throw new InternalError();
 }
```

```
  c.allocatePaths();

  if (count != 0) {
   // Also this apparently unfathomable code is derived from GNU libavl.
   Entry KEY_GENERIC e, p, q, rp = new Entry KEY_GENERIC_DIAMOND(), rq = new Entry
KEY_GENERIC_DIAMOND();

   p = rp;
   rp.left(tree);

   q = rq;
   rq.pred(null);

   while(true) {
    if (! p.pred()) {
     e = p.left.clone();
     e.pred(q.left);
     e.succ(q);
     q.left(e);

     p = p.left;
     q = q.left;
    }
    else {
     while(p.succ()) {
      p = p.right;

      if (p == null) {
       q.right = null;
       c.tree = rq.left;

       c.firstEntry = c.tree;
       while(c.firstEntry.left != null) c.firstEntry = c.firstEntry.left;
       c.lastEntry = c.tree;
       while(c.lastEntry.right != null) c.lastEntry = c.lastEntry.right;

       return c;
      }
      q = q.right;
     }

     p = p.right;
     q = q.right;
    }

    if (! p.succ()) {
     e = p.right.clone();
     e.succ(q.right);
```

```
    e.pred(q);
    q.right(e);
   }
  }
 }

 return c;
}


private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
 int n = count;
 SetIterator i = new SetIterator();

 s.defaultWriteObject();
 while(n-- != 0) s.WRITE_KEY(i.NEXT_KEY());
}


/** Reads the given number of entries from the input stream, returning the corresponding tree.
 *
 * @param s the input stream.
 * @param n the (positive) number of entries to read.
 * @param pred the entry containing the key that preceeds the first key in the tree.
 * @param succ the entry containing the key that follows the last key in the tree.
 */
SUPPRESS_WARNINGS_KEY_UNCHECKED
private Entry KEY_GENERIC readTree(final java.io.ObjectInputStream s, final int n, final Entry KEY_GENERIC
pred, final Entry KEY_GENERIC succ) throws java.io.IOException, ClassNotFoundException {
 if (n == 1) {
  final Entry KEY_GENERIC top = new Entry KEY_GENERIC_DIAMOND(KEY_GENERIC_CAST
s.READ_KEY());
  top.pred(pred);
  top.succ(succ);
  top.black(true);

  return top;
 }

 if (n == 2) {
  /* We handle separately this case so that recursion will
   *always* be on nonempty subtrees. */
  final Entry KEY_GENERIC top = new Entry KEY_GENERIC_DIAMOND(KEY_GENERIC_CAST
s.READ_KEY());
  top.black(true);
  top.right(new Entry KEY_GENERIC_DIAMOND(KEY_GENERIC_CAST s.READ_KEY()));
  top.right.pred(top);
  top.pred(pred);
```

```
  top.right.succ(succ);

  return top;
 }

 // The right subtree is the largest one.
 final int rightN = n / 2, leftN = n - rightN - 1;

 final Entry KEY_GENERIC top = new Entry KEY_GENERIC_DIAMOND();

 top.left(readTree(s, leftN, pred, top));

 top.key = KEY_GENERIC_CAST s.READ_KEY();
 top.black(true);

 top.right(readTree(s, rightN, top, succ));

 if (n + 2 == ((n + 2)  & -(n + 2))) top.right.black(false); // Quick test for determining whether n + 2 is a power of 2.

 return top;
}


private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
 s.defaultReadObject();
 /* The storedComparator is now correctly set, but we must restore
    on-the-fly the actualComparator. */
 setActualComparator();
 allocatePaths();

 if (count != 0) {
  tree = readTree(s, count, null, null);
  Entry KEY_GENERIC e;

  e = tree;
  while(e.left() != null) e = e.left();
  firstEntry = e;

  e = tree;
  while(e.right() != null) e = e.right();
  lastEntry = e;
 }
}


#ifdef ASSERTS_CODE
private void checkNodePath() {
 for(int i = nodePath.length; i-- != 0;) assert nodePath[i] == null : i;
```

```
 }

 private static KEY_GENERIC int checkTree(Entry KEY_GENERIC e, int d, int D) {
  if (e == null) return 0;
  if (e.black()) d++;
  if (e.left() != null) D = checkTree(e.left(), d, D);
  if (e.right() != null) D = checkTree(e.right(), d, D);
  if (e.left() == null && e.right() == null) {
   if (D == -1) D = d;
   else if (D != d) throw new AssertionError("Mismatch between number of black nodes (" + D + " and " + d + ")");
  }
  return D;
 }
#endif

#ifdef TEST

 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#else
  return Integer.toBinaryString(r.nextInt());
#endif
 }

 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
 private static java.text.FieldPosition p = new java.text.FieldPosition(0);

 private static String format(double d) {
  StringBuffer s = new StringBuffer();
  return format.format(d, s, p).toString();
 }

 private static void speedTest(int n, boolean comp) {
  int i, j;
  RB_TREE_SET m;
  java.util.TreeSet t;
  KEY_TYPE k[] = new KEY_TYPE[n];
  KEY_TYPE nk[] = new KEY_TYPE[n];
  long ms;

  for(i = 0; i < n; i++) {
   k[i] = genKey();
```

```
 nk[i] = genKey();
}

double totAdd = 0, totYes = 0, totNo = 0, totIterFor = 0, totIterBack = 0, totRemYes = 0, d, dd;

if (comp) {
 for(j = 0; j < 20; j++) {

  t = new java.util.TreeSet();

  /* We first add all pairs to t. */
  for(i = 0; i < n;  i++) t.add(KEY2OBJ(k[i]));

  /* Then we remove the first half and put it back. */
  for(i = 0; i < n/2;  i++) t.remove(KEY2OBJ(k[i]));

  ms = System.currentTimeMillis();
  for(i = 0; i < n/2;  i++) t.add(KEY2OBJ(k[i]));
  d = System.currentTimeMillis() - ms;

  /* Then we remove the other half and put it back again. */
  ms = System.currentTimeMillis();
  for(i = n/2; i < n;  i++) t.remove(KEY2OBJ(k[i]));
  dd = System.currentTimeMillis() - ms ;

  ms = System.currentTimeMillis();
  for(i = n/2; i < n;  i++) t.add(KEY2OBJ(k[i]));
  d += System.currentTimeMillis() - ms;
  if (j > 2) totAdd += n/d;
  System.out.print("Add: " + format(n/d) +" K/s ");

  /* Then we remove again the first half. */
  ms = System.currentTimeMillis();
  for(i = 0; i < n/2;  i++) t.remove(KEY2OBJ(k[i]));
  dd += System.currentTimeMillis() - ms ;
  if (j > 2) totRemYes += n/dd;
  System.out.print("RemYes: " + format(n/dd) +" K/s ");

  /* And then we put it back. */
  for(i = 0; i < n/2;  i++) t.add(KEY2OBJ(k[i]));

  /* We check for pairs in t. */
  ms = System.currentTimeMillis();
  for(i = 0; i < n;  i++) t.contains(KEY2OBJ(k[i]));
  d = 1.0 * n / (System.currentTimeMillis() - ms);
  if (j > 2) totYes += d;
  System.out.print("Yes: " + format(d) +" K/s ");
```

```
   /* We check for pairs not in t. */
   ms = System.currentTimeMillis();
   for(i = 0; i < n;  i++) t.contains(KEY2OBJ(nk[i]));
   d = 1.0 * n / (System.currentTimeMillis() - ms);
   if (j > 2) totNo += d;
   System.out.print("No: " + format(d) +" K/s ");

   /* We iterate on t. */
   ms = System.currentTimeMillis();
   for(Iterator it = t.iterator(); it.hasNext(); it.next());
   d = 1.0 * n / (System.currentTimeMillis() - ms);
   if (j > 2) totIterFor += d;
   System.out.print("IterFor: " + format(d) +" K/s ");

   System.out.println();
  }

  System.out.println();
  System.out.println("java.util Add: " + format(totAdd/(j-3)) + " K/s RemYes: " + format(totRemYes/(j-3)) + " K/s
Yes: " + format(totYes/(j-3)) + " K/s No: " + format(totNo/(j-3)) + " K/s IterFor: " + format(totIterFor/(j-3))  + "
K/s");

  System.out.println();

  totAdd = totYes = totNo = totIterFor = totIterBack = totRemYes = 0;

 }

 for(j = 0; j < 20; j++) {

  m = new RB_TREE_SET();


  /* We first add all pairs to m. */
  for(i = 0; i < n;  i++) m.add(k[i]);

  /* Then we remove the first half and put it back. */
  for(i = 0; i < n/2;  i++) m.remove(k[i]);

  ms = System.currentTimeMillis();
  for(i = 0; i < n/2;  i++) m.add(k[i]);
  d = System.currentTimeMillis() - ms;

  /* Then we remove the other half and put it back again. */
  ms = System.currentTimeMillis();
  for(i = n/2; i < n;  i++) m.remove(k[i]);
  dd = System.currentTimeMillis() - ms ;
```

```
ms = System.currentTimeMillis();
for(i = n/2; i < n;  i++) m.add(k[i]);
d += System.currentTimeMillis() - ms;
if (j > 2) totAdd += n/d;
System.out.print("Add: " + format(n/d) +" K/s ");

/* Then we remove again the first half. */
ms = System.currentTimeMillis();
for(i = 0; i < n/2;  i++) m.remove(k[i]);
dd += System.currentTimeMillis() - ms ;
if (j > 2) totRemYes += n/dd;
System.out.print("RemYes: " + format(n/dd) +" K/s ");

/* And then we put it back. */
for(i = 0; i < n/2;  i++) m.add(k[i]);

/* We check for pairs in m. */
ms = System.currentTimeMillis();
for(i = 0; i < n;  i++) m.contains(k[i]);
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totYes += d;
System.out.print("Yes: " + format(d) +" K/s ");

/* We check for pairs not in m. */
ms = System.currentTimeMillis();
for(i = 0; i < n;  i++) m.contains(nk[i]);
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totNo += d;
System.out.print("No: " + format(d) +" K/s ");

/* We iterate on m. */
KEY_LIST_ITERATOR it = (KEY_LIST_ITERATOR)m.iterator();
ms = System.currentTimeMillis();
for(; it.hasNext(); it.NEXT_KEY());
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totIterFor += d;
System.out.print("IterFor: " + format(d) +" K/s ");

/* We iterate back on m. */
ms = System.currentTimeMillis();
for(; it.hasPrevious(); it.PREV_KEY());
d = 1.0 * n / (System.currentTimeMillis() - ms);
if (j > 2) totIterBack += d;
System.out.print("IterBack: " + format(d) +" K/s ");

System.out.println();
}
```

```
  System.out.println();
  System.out.println("fastutil  Add: " + format(totAdd/(j-3)) + " K/s RemYes: " + format(totRemYes/(j-3)) + " K/s
Yes: " + format(totYes/(j-3)) + " K/s No: " + format(totNo/(j-3)) + " K/s IterFor: " + format(totIterFor/(j-3))  + " K/s
IterBack: " + format(totIterBack/(j-3)) + "K/s");

  System.out.println();
 }


 private static void fatal(String msg) {
  throw new AssertionError(msg);
 }

 private static void ensure(boolean cond, String msg) {
  if (cond) return;
  fatal(msg);
 }

 private static Object[] k, v, nk;
 private static KEY_TYPE kt[];
 private static KEY_TYPE nkt[];
 private static RB_TREE_SET topSet;

 protected static void testSets(SORTED_SET m, SortedSet t, int n, int level) throws Exception {
  long ms;
  boolean mThrowsIllegal, tThrowsIllegal, mThrowsNoElement, tThrowsNoElement;
  boolean rt = false, rm = false;

  if (level > 4) return;


  /* Now we check that both sets agree on first/last keys. */

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.first();
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.first();
  }
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): first() divergence at start in
NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
  if (! mThrowsNoElement) ensure(t.first().equals(m.first()), "Error (" + level + ", " + seed + "): m and t differ at start
```

```
on their first key (" + m.first() + ", " + t.first() +")");

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.last();
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.last();
  }
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): last() divergence at start in
NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");


  if (! mThrowsNoElement) ensure(t.last().equals(m.last()), "Error (" + level + ", " + seed + "): m and t differ at start
on their last key (" + m.last() + ", " + t.last() +")");


  /* Now we check that m and t are equal. */
  if (!m.equals(t) || ! t.equals(m)) System.err.println("m: " + m + " t: " + t);

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) at start");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) at start");



  /* Now we check that m actually holds that data. */
  for(Iterator i=t.iterator(); i.hasNext();) {
   ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on
t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */
  for(Iterator i=m.iterator(); i.hasNext();) {
   ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on
m)");
  }

  /* Now we check that inquiries about random data give the same answer in m and t. For
     m we use the polymorphic method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;
```

```
   try {
    m.contains(T);
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    t.contains(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): contains() divergence in
NoSuchElementException (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): contains() divergence in
IllegalArgumentException (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(m.contains(KEY2OBJ(T)) == t.contains(KEY2OBJ(T)),
"Error (" + level + ", " + seed + "): divergence in keys between t and m (polymorphic method)");
  }

  /* Again, we check that inquiries about random data give the same answer in m and t, but
     for m we use the standard method. */

  for(int i=0; i<n;  i++) {
   KEY_TYPE T = genKey();

   mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

   try {
    m.contains(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { mThrowsNoElement = true; }
   catch (IllegalArgumentException e) { mThrowsIllegal = true; }

   try {
    t.contains(KEY2OBJ(T));
   }
   catch (NoSuchElementException e) { tThrowsNoElement = true; }
   catch (IllegalArgumentException e) { tThrowsIllegal = true; }

   ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): contains() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
   ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): contains() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(m.contains(KEY2OBJ(T)) ==  t.contains(KEY2OBJ(T)),
"Error (" + level + ", " + seed + "): divergence between t and m (standard method)");
  }
```

```
/* Now we add and remove random data in m and t, checking that the result is the same. */

for(int i=0; i<20*n;  i++) {
 KEY_TYPE T = genKey();

 mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

 try {
  rm = m.add(KEY2OBJ(T));
 }
 catch (NoSuchElementException e) { mThrowsNoElement = true; }
 catch (IllegalArgumentException e) { mThrowsIllegal = true; }

 try {
  rt = t.add(KEY2OBJ(T));
 }
 catch (NoSuchElementException e) { tThrowsNoElement = true; }
 catch (IllegalArgumentException e) { tThrowsIllegal = true; }


 ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): add() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
 ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): add() divergence in
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
 if (!mThrowsNoElement && !mThrowsIllegal) ensure(rm == rt, "Error (" + level + ", " + seed + "): divergence in
add() between t and m");

 T = genKey();

 mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

 try {
  rm = m.remove(KEY2OBJ(T));
 }
 catch (NoSuchElementException e) { mThrowsNoElement = true; }
 catch (IllegalArgumentException e) { mThrowsIllegal = true; }

 try {
  rt = t.remove(KEY2OBJ(T));
 }
 catch (NoSuchElementException e) { tThrowsNoElement = true; }
 catch (IllegalArgumentException e) { tThrowsIllegal = true; }


 ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): remove() divergence in
NoSuchElementException for " + T + " (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
 ensure(mThrowsIllegal == tThrowsIllegal, "Error (" + level + ", " + seed + "): remove() divergence in
```

```
IllegalArgumentException for " + T + " (" + mThrowsIllegal + ", " + tThrowsIllegal + ")");
   if (!mThrowsNoElement && !mThrowsIllegal) ensure(rm == rt, "Error (" + level + ", " + seed + "): divergence in
remove() between t and m");
  }

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after removal");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after removal");

  /* Now we check that m actually holds the same data. */

  for(Iterator i=t.iterator(); i.hasNext();) {
   ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after removal (iterating on
t)");
  }

  /* Now we check that m actually holds that data, but iterating on m. */

  for(Iterator i=m.iterator(); i.hasNext();) {
   ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after removal (iterating on
m)");
  }

  /* Now we check that both sets agree on first/last keys. */

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.first();
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.first();
  }
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): first() divergence in
NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");
  if (! mThrowsNoElement) ensure(t.first().equals(m.first()), "Error (" + level + ", " + seed + "): m and t differ on their
first key (" + m.first() + ", " + t.first() +")");

  mThrowsNoElement = mThrowsIllegal = tThrowsNoElement = tThrowsIllegal = false;

  try {
   m.last();
  }
  catch (NoSuchElementException e) { mThrowsNoElement = true; }
  try {
   t.last();
```

```
  }
  catch (NoSuchElementException e) { tThrowsNoElement = true; }

  ensure(mThrowsNoElement == tThrowsNoElement, "Error (" + level + ", " + seed + "): last() divergence in
NoSuchElementException  (" + mThrowsNoElement + ", " + tThrowsNoElement + ")");

  if (! mThrowsNoElement) ensure(t.last().equals(m.last()), "Error (" + level + ", " + seed + "): m and t differ on their
last key (" + m.last() + ", " + t.last() +")");

  /* Now we check cloning. */

  if (level == 0) {
   ensure(m.equals(((RB_TREE_SET)m).clone()), "Error (" + level + ", " + seed + "): m does not equal m.clone()");
   ensure(((RB_TREE_SET)m).clone().equals(m), "Error (" + level + ", " + seed + "): m.clone() does not equal m");
   m = (RB_TREE_SET)((RB_TREE_SET)m).clone();
  }

  /* Now we play with constructors. */
  ensure(m.equals(new RB_TREE_SET((Collection)m)), "Error (" + level + ", " + seed + "): m does not equal new
(Collection m)");
  ensure((new RB_TREE_SET((Collection)m)).equals(m), "Error (" + level + ", " + seed + "): new (Collection
m)does not equal m");
  ensure(m.equals(new RB_TREE_SET((COLLECTION)m)), "Error (" + level + ", " + seed + "): m does not equal
new (type-specific Collection m)");
  ensure((new RB_TREE_SET((COLLECTION)m)).equals(m), "Error (" + level + ", " + seed + "): new (type-specific
Collection m) does not equal m");
  ensure(m.equals(new RB_TREE_SET((SortedSet)m)), "Error (" + level + ", " + seed + "): m does not equal new
(SortedSet m)");
  ensure((new RB_TREE_SET((SortedSet)m)).equals(m), "Error (" + level + ", " + seed + "): new (SortedSet m) does
not equal m");
  ensure(m.equals(new RB_TREE_SET((SORTED_SET)m)), "Error (" + level + ", " + seed + "): m does not equal
new (type-specific SortedSet m)");
  ensure((new RB_TREE_SET((SORTED_SET)m)).equals(m), "Error (" + level + ", " + seed + "): new (type-specific
SortedSet m) does not equal m");
  ensure(m.equals(new RB_TREE_SET(m.iterator())), "Error (" + level + ", " + seed + "): m does not equal new
(m.iterator())");
  ensure((new RB_TREE_SET(m.iterator())).equals(m), "Error (" + level + ", " + seed + "): new (m.iterator()) does
not equal m");
  ensure(m.equals(new RB_TREE_SET(m.iterator())), "Error (" + level + ", " + seed + "): m does not equal new
(m.type_specific_iterator())");
  ensure((new RB_TREE_SET(m.iterator())).equals(m), "Error (" + level + ", " + seed + "): new
(m.type_specific_iterator()) does not equal m");

  /* Now we play with conversion to array, wrapping and copying. */
  ensure(m.equals(new RB_TREE_SET(m.TO_KEY_ARRAY())), "Error (" + level + ", " + seed + "): m does not
equal new (toArray(m))");
  ensure((new RB_TREE_SET(m.TO_KEY_ARRAY())).equals(m), "Error (" + level + ", " + seed + "): new
(toArray(m)) does not equal m");
```

```
int h = m.hashCode();


/* Now we save and read m. */

SORTED_SET m2 = null;

{
 java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
 java.io.OutputStream os = new java.io.FileOutputStream(ff);
 java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

 oos.writeObject(m);
 oos.close();

 java.io.InputStream is = new java.io.FileInputStream(ff);
 java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

 m2 = (SORTED_SET)ois.readObject();
 ois.close();
 ff.delete();
}

ensure(m2.hashCode() == h, "Error (" + level + ", " + seed + "): hashCode() changed after save/read");

/* Now we check that m2 actually holds that data. */

ensure(m2.equals(t), "Error (" + level + ", " + seed + "): ! m2.equals(t) after save/read");
ensure(t.equals(m2), "Error (" + level + ", " + seed + "): ! t.equals(m2) after save/read");

/* Now we take out of m everything, and check that it is empty. */

for(Iterator i=t.iterator(); i.hasNext();) m2.remove(i.next());

ensure(m2.isEmpty(), "Error (" + level + ", " + seed + "): m2 is not empty (as it should be)");

/* Now we play with iterators. */

{
 java.util.ListIterator i, j;
 Object J;
 i = (java.util.ListIterator)m.iterator();
 j = new java.util.LinkedList(t).listIterator();

 for(int k = 0; k < 2*n; k++) {
```

```
 ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext()");
 ensure(i.hasPrevious() == j.hasPrevious(), "Error (" + level + ", " + seed + "): divergence in hasPrevious()");

 if (r.nextFloat() < .8 && i.hasNext()) {
  ensure(i.next().equals(J = j.next()), "Error (" + level + ", " + seed + "): divergence in next()");

  if (r.nextFloat() < 0.5) {
   i.remove();
   j.remove();
   t.remove(J);
  }
 }
 else if (r.nextFloat() < .2 && i.hasPrevious()) {
  ensure(i.previous().equals(J = j.previous()), "Error (" + level + ", " + seed + "): divergence in previous()");

  if (r.nextFloat() < 0.5) {
   i.remove();
   j.remove();
   t.remove(J);
  }
 }

 ensure(i.nextIndex() == j.nextIndex(), "Error (" + level + ", " + seed + "): divergence in nextIndex()");
 ensure(i.previousIndex() == j.previousIndex(), "Error (" + level + ", " + seed + "): divergence in previousIndex()");

}

}

{
boolean badPrevious = false;
Object previous = null;
it.unimi.dsi.fastutil.BidirectionalIterator i;
java.util.ListIterator j;
Object I, J;
KEY_TYPE from = genKey();
j = new java.util.LinkedList(t).listIterator();
while(j.hasNext()) {
 Object k = j.next();
 if (((Comparable)k).compareTo(KEY2OBJ(from)) > 0) {
  badPrevious = true;
  j.previous();
  break;
 }
 previous = k;
}

i = (it.unimi.dsi.fastutil.BidirectionalIterator)m.iterator(from);
```

```
   for(int k = 0; k < 2*n; k++) {
    ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext() (iterator with starting point " + from + ")");
    ensure(i.hasPrevious() == j.hasPrevious() || badPrevious && (i.hasPrevious() == (previous != null)), "Error (" + level + ", " + seed + "): divergence in hasPrevious() (iterator with starting point " + from + ")" + badPrevious);

    if (r.nextFloat() < .8 && i.hasNext()) {
     ensure((I = i.next()).equals(J = j.next()), "Error (" + level + ", " + seed + "): divergence in next() (" + I + ", " + J + ", iterator with starting point " + from + ")");
     //System.err.println("Done next " + I + " " + J + "  " + badPrevious);

     badPrevious = false;

     if (r.nextFloat() < 0.5) {
      //System.err.println("Removing in next");
      i.remove();
      j.remove();
      t.remove(J);
     }
    }
    else if (!badPrevious && r.nextFloat() < .2 && i.hasPrevious()) {
     ensure((I = i.previous()).equals(J = j.previous()), "Error (" + level + ", " + seed + "): divergence in previous() (" + I + ", " + J + ", iterator with starting point " + from + ")");

     if (r.nextFloat() < 0.5) {
      //System.err.println("Removing in prev");
      i.remove();
      j.remove();
      t.remove(J);
     }
    }
   }

  }

  /* Now we check that m actually holds that data. */

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after iteration");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after iteration");

  /* Now we select a pair of keys and create a subset. */

  if (! m.isEmpty()) {
   java.util.ListIterator i;
   Object start = m.first(), end = m.first();
   for(i = (java.util.ListIterator)m.iterator(); i.hasNext() && r.nextFloat() < .3; start = end = i.next());
   for(; i.hasNext() && r.nextFloat() < .95; end = i.next());
```

```
   //System.err.println("Checking subSet from " + start + " to " + end + " (level=" + (level+1) + ")...");
   testSets((SORTED_SET)m.subSet((KEY_CLASS)start, (KEY_CLASS)end), t.subSet(start, end), n, level + 1);

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after subSet");
   ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after subSet");

   //System.err.println("Checking headSet to " + end + " (level=" + (level+1) + ")...");
   testSets((SORTED_SET)m.headSet((KEY_CLASS)end), t.headSet(end), n, level + 1);

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after headSet");
   ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after headSet");

   //System.err.println("Checking tailSet from " + start + " (level=" + (level+1) + ")...");
   testSets((SORTED_SET)m.tailSet((KEY_CLASS)start), t.tailSet(start), n, level + 1);

   ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after tailSet");
   ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after tailSet");
  }


 }


 private static void runTest(int n) throws Exception {
  RB_TREE_SET m = new RB_TREE_SET();
  SortedSet t = new java.util.TreeSet();
  topSet = m;
  k = new Object[n];
  nk = new Object[n];
  kt = new KEY_TYPE[n];
  nkt = new KEY_TYPE[n];

  for(int i = 0; i < n; i++) {
#if KEY_CLASS_Object
   k[i] = kt[i] = genKey();
   nk[i] = nkt[i] = genKey();
#else
   k[i] = new KEY_CLASS(kt[i] = genKey());
   nk[i] = new KEY_CLASS(nkt[i] = genKey());
#endif
  }

  /* We add pairs to t. */
  for(int i = 0; i < n;  i++) t.add(k[i]);

  /* We add to m the same data */
  m.addAll(t);
```

```
  testSets(m, t, n, 0);

  System.out.println("Test OK");
  return;
 }


 public static void main(String args[]) throws Exception {
  int n  = Integer.parseInt(args[1]);
  if (args.length > 2) r = new java.util.Random(seed = Long.parseLong(args[2]));

  try {
   if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, "speedComp".equals(args[0]));
   else if ("test".equals(args[0])) runTest(n);
  } catch(Throwable e) {
   e.printStackTrace(System.err);
   System.err.println("seed: " + seed);
   throw e;
  }
 }

#endif



}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/RBTreeSet.drv
No license file was found, but licenses were detected in source scan.

```
#if KEY_CLASS_Byte

// HORRIBLE kluges to work around bug #6478546

private static final int MAX_IO_LENGTH = 1024 * 1024;

private static int read(final InputStream is, final byte a[], final int offset, final int length) throws IOException {
 if (length == 0) return 0;

 int read = 0, result;
 do {
  result = is.read(a, offset + read, Math.min(length - read, MAX_IO_LENGTH));
  if (result < 0) return read;
  read += result;
 } while(read < length);

 return read;
}

private static void write(final OutputStream outputStream, final byte a[], final int offset, final int length) throws
IOException {
 int written = 0;
 while(written < length) {
  outputStream.write(a, offset + written, Math.min(length - written, MAX_IO_LENGTH));
  written += Math.min(length - written, MAX_IO_LENGTH);
 }
}

private static void write(final DataOutput dataOutput, final byte a[], final int offset, final int length) throws
IOException {
 int written = 0;
 while(written < length) {
  dataOutput.write(a, offset + written, Math.min(length - written, MAX_IO_LENGTH));
  written += Math.min(length - written, MAX_IO_LENGTH);
 }
}

// Additional read/write methods to work around the DataInput/DataOutput schizophrenia.

/** Loads bytes from a given input stream, storing them in a given array fragment.
*
* <p>Note that this method is going to be significantly faster than {@link #loadBytes(DataInput,byte[],int,int)}
* as it uses {@link InputStream}'s bulk-read methods.
*
* @param inputStream an input stream.
* @param array an array which will be filled with data from {@code inputStream}.
* @param offset the index of the first element of {@code array} to be filled.
```

```
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from {@code inputStream} (it might be less than {@code length} if
{@code inputStream} ends).
*/
public static int loadBytes(final InputStream inputStream, final byte[] array, final int offset, final int length) throws
IOException {
 return read(inputStream, array, offset, length);
}

/** Loads bytes from a given input stream, storing them in a given array.
*
* <p>Note that this method is going to be significantly faster than {@link #loadBytes(DataInput,byte[])}
* as it uses {@link InputStream}'s bulk-read methods.
*
* @param inputStream an input stream.
* @param array an array which will be filled with data from {@code inputStream}.
* @return the number of elements actually read from {@code inputStream} (it might be less than the array length if
{@code inputStream} ends).
*/
public static int loadBytes(final InputStream inputStream, final byte[] array) throws IOException {
 return read(inputStream, array, 0, array.length);
}

/** Stores an array fragment to a given writable channel.
*
* <p>Note that this method is going to be significantly faster than {@link #storeBytes(byte[],int,int,DataOutput)}
* as it uses {@link OutputStream}'s bulk-write methods.
*
* @param array an array whose elements will be written to {@code outputStream}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param outputStream an output stream.
*/
public static void storeBytes(final byte array[], final int offset, final int length, final OutputStream outputStream)
throws IOException {
 write(outputStream, array, offset, length);
}

/** Stores an array to a given writable channel.
*
* <p>Note that this method is going to be significantly faster than {@link #storeBytes(byte[],DataOutput)}
* as it uses {@link OutputStream}'s bulk-write methods.
*
* @param array an array whose elements will be written to {@code outputStream}.
* @param outputStream an output stream.
*/
public static void storeBytes(final byte array[], final OutputStream outputStream) throws IOException {
 write(outputStream, array, 0, array.length);
```

```
}

private static long read(final InputStream is, final byte a[][], final long offset, final long length) throws IOException
{
 if (length == 0) return 0;

 long read = 0;
 int segment = segment(offset);
 int displacement = displacement(offset);
 int result;
 do {
  result = is.read(a[segment], displacement, (int)Math.min(a[segment].length - displacement, Math.min(length - read,
MAX_IO_LENGTH)));
  if (result < 0) return read;
  read += result;
  displacement += result;
  if (displacement == a[segment].length) {
   segment++;
   displacement = 0;
  }
 } while(read < length);

 return read;
}

private static void write(final OutputStream outputStream, final byte a[][], final long offset, final long length) throws
IOException {
 if (length == 0) return;
 long written = 0;
 int toWrite;
 int segment = segment(offset);
 int displacement = displacement(offset);
 do {
  toWrite = (int)Math.min(a[segment].length - displacement, Math.min(length - written, MAX_IO_LENGTH));
  outputStream.write(a[segment], displacement, toWrite);
  written += toWrite;
  displacement += toWrite;
  if (displacement == a[segment].length) {
   segment++;
   displacement = 0;
  }
 } while(written < length);
}

private static void write(final DataOutput dataOutput, final byte a[][], final long offset, final long length) throws
IOException {
 if (length == 0) return;
```

```
 long written = 0;
 int toWrite;
 int segment = segment(offset);
 int displacement = displacement(offset);
 do {
  toWrite = (int)Math.min(a[segment].length - displacement, Math.min(length - written, MAX_IO_LENGTH));
  dataOutput.write(a[segment], displacement, toWrite);
  written += toWrite;
  displacement += toWrite;
  if (displacement == a[segment].length) {
   segment++;
   displacement = 0;
  }
 } while(written < length);
}

// Additional read/write methods to work around the DataInput/DataOutput schizophrenia.


/** Loads bytes from a given readable channel, storing them in a given big-array fragment.
*
* <p>Note that this method is going to be significantly faster than {@link
#loadBytes(DataInput,byte[][],long,long)}
* as it uses {@link InputStream}'s bulk-read methods.
*
* @param inputStream an input stream.
* @param array a big array which will be filled with data from {@code inputStream}.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from {@code inputStream} (it might be less than {@code length} if
{@code inputStream} ends).
*/
public static long loadBytes(final InputStream inputStream, final byte[][] array, final long offset, final long length)
throws IOException {
 return read(inputStream, array, offset, length);
}

/** Loads bytes from a given readable channel, storing them in a given big array.
*
* <p>Note that this method is going to be significantly faster than {@link #loadBytes(DataInput,byte[][])}
* as it uses {@link InputStream}'s bulk-read methods.
*
* @param inputStream an input stream.
* @param array a big array which will be filled with data from {@code inputStream}.
* @return the number of elements actually read from {@code inputStream} (it might be less than the array length if
{@code inputStream} ends).
*/
public static long loadBytes(final InputStream inputStream, final byte[][] array) throws IOException {
```

```
 return read(inputStream, array, 0, length(array));
}

/** Stores a big-array fragment to a given writable channel.
*
* <p>Note that this method is going to be significantly faster than {@link
#storeBytes(byte[][],long,long,DataOutput)}
* as it uses {@link OutputStream}'s bulk-write methods.
*
* @param array a big array whose elements will be written to {@code outputStream}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param outputStream an output stream.
*/
public static void storeBytes(final byte array[][], final long offset, final long length, final OutputStream
outputStream) throws IOException {
 write(outputStream, array, offset, length);
}

/** Stores a big array to a given writable channel.
*
* <p>Note that this method is going to be significantly faster than {@link #storeBytes(byte[][],DataOutput)}
* as it uses {@link OutputStream}'s bulk-write methods.
*
* @param array a big array whose elements will be written to {@code outputStream}.
* @param outputStream an output stream.
*/
public static void storeBytes(final byte array[][], final OutputStream outputStream) throws IOException {
 write(outputStream, array, 0, length(array));
}


// Methods working with channels.

/** Loads bytes from a given readable channel, storing them in a given array fragment.
*
* <p>Note that this method is going to be significantly faster than {@link #loadBytes(DataInput,byte[],int,int)}
* as it uses {@link ReadableByteChannel}'s bulk-read methods.
*
* @param channel a readable channel.
* @param array an array which will be filled with data from {@code channel}.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from {@code channel} (it might be less than {@code length} if
{@code channel} ends).
*/
public static int loadBytes(final ReadableByteChannel channel, final byte[] array, int offset, int length) throws
IOException {
```

```
 ensureOffsetLength(array.length, offset, length);
 ByteBuffer buffer = ByteBuffer.allocateDirect(BUFFER_SIZE);
 int read = 0;
 for (;;) {
  buffer.clear();
  buffer.limit(Math.min(buffer.capacity(), length));
  int r = channel.read(buffer);
  if (r <= 0) return read;
  read += r;
  buffer.flip();
  buffer.get(array, offset, r);
  offset += r;
  length -= r;
 }
}

/** Loads bytes from a given readable channel, storing them in a given array.
*
* <p>Note that this method is going to be significantly faster than {@link #loadBytes(DataInput,byte[],int,int)}
* as it uses {@link ReadableByteChannel}'s bulk-read methods.
*
* @param channel a readable channel.
* @param array an array which will be filled with data from {@code channel}.
* @return the number of elements actually read from {@code channel} (it might be less than the array length if
{@code channel} ends).
*/
public static int loadBytes(final ReadableByteChannel channel, final byte[] array) throws IOException {
 return loadBytes(channel, array, 0, array.length);
}

/** Stores an array fragment to a given writable channel.
*
* <p>Note that this method is going to be significantly faster than {@link #loadBytes(DataInput,byte[],int,int)}
* as it uses {@link WritableByteChannel}'s bulk-write methods.
*
* @param array an array whose elements will be written to {@code channel}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param channel a writable channel.
*/
public static void storeBytes(final byte array[], int offset, int length, final WritableByteChannel channel) throws
IOException {
 ensureOffsetLength(array.length, offset, length);
 ByteBuffer buffer = ByteBuffer.allocateDirect(BUFFER_SIZE);

 while(length != 0) {
  final int l = Math.min(length, buffer.capacity());
  buffer.clear();
```

```
  buffer.put(array, offset, l);
  buffer.flip();
  channel.write(buffer);

  offset += l;
  length -= l;
 }
}

/** Stores an array to a given writable channel.
*
* <p>Note that this method is going to be significantly faster than {@link #loadBytes(DataInput,byte[],int,int)}
* as it uses {@link WritableByteChannel}'s bulk-write methods.
*
* @param array an array whose elements will be written to {@code channel}.
* @param channel a writable channel.
*/
public static void storeBytes(final byte array[], final WritableByteChannel channel) throws IOException {
 storeBytes(array, 0, array.length, channel);
}

/** Loads bytes from a given readable channel, storing them in a given big-array fragment.
*
* <p>Note that this method is going to be significantly faster than {@link #loadBytes(DataInput,byte[],int,int)}
* as it uses {@link ReadableByteChannel}'s bulk-read methods.
*
* @param channel a readable channel.
* @param array a big array which will be filled with data from {@code channel}.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from {@code channel} (it might be less than {@code length} if
{@code channel} ends).
*/
public static long loadBytes(final ReadableByteChannel channel, final byte[][] array, final long offset, final long
length) throws IOException {
 ensureOffsetLength(array, offset, length);
 long read = 0;
 for(int i = segment(offset); i < segment(offset + length + SEGMENT_MASK); i++) {
  final byte[] t = array[i];
  final int s = (int)Math.max(0, offset - start(i));
  final int e = (int)Math.min(t.length, offset + length - start(i));
  final int r = loadBytes(channel, t, s, e - s);
  read += r;
  if (r < e -s) break;
 }
 return read;
}
```

```
/** Loads bytes from a given readable channel, storing them in a given big array.
*
* <p>Note that this method is going to be significantly faster than {@link #loadBytes(DataInput,byte[],int,int)}
* as it uses {@link ReadableByteChannel}'s bulk-read methods.
*
* @param channel a readable channel.
* @param array a big array which will be filled with data from {@code channel}.
* @return the number of elements actually read from {@code channel} (it might be less than the array length if
{@code channel} ends).
*/
public static long loadBytes(final ReadableByteChannel channel, final byte[][] array) throws IOException {
 return loadBytes(channel, array, 0, length(array));
}

/** Stores a big-array fragment to a given writable channel.
*
* <p>Note that this method is going to be significantly faster than {@link #loadBytes(DataInput,byte[],int,int)}
* as it uses {@link WritableByteChannel}'s bulk-write methods.
*
* @param array a big array whose elements will be written to {@code channel}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param channel a writable channel.
*/
public static void storeBytes(final byte array[][], final long offset, final long length, final WritableByteChannel
channel) throws IOException {
 for(int i = segment(offset); i < segment(offset + length + SEGMENT_MASK); i++) {
  final int s = (int)Math.max(0, offset - start(i));
  final int l = (int)Math.min(array[i].length, offset + length - start(i));
  storeBytes(array[i], s, l - s, channel);
 }
}

/** Stores a big array to a given writable channel.
*
* <p>Note that this method is going to be significantly faster than {@link #loadBytes(DataInput,byte[],int,int)}
* as it uses {@link WritableByteChannel}'s bulk-write methods.
*
* @param array a big array whose elements will be written to {@code channel}.
* @param channel a writable channel.
*/
public static void storeBytes(final byte array[][], final WritableByteChannel channel) throws IOException {
 for(byte[] t: array) storeBytes(t, channel);
}

#elif ! KEY_CLASS_Boolean

/** Loads elements from a given readable channel, using the given byte order, storing them in a given array
```

```
fragment.
*
* @param channel a readable channel.
* @param byteOrder the byte order of the data from {@code channel}.
* @param array an array which will be filled with data from {@code channel}.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from {@code channel} (it might be less than {@code length} if
{@code channel} ends).
*/
public static int LOAD_KEYS(final ReadableByteChannel channel, final ByteOrder byteOrder, final KEY_TYPE[]
array, int offset, int length) throws IOException {
 ensureOffsetLength(array.length, offset, length);
 ByteBuffer byteBuffer = ByteBuffer.allocateDirect(BUFFER_SIZE).order(byteOrder);
 final KEY_BUFFER buffer = byteBuffer.AS_KEY_BUFFER();
 int read = 0;
 for (;;) {
  byteBuffer.clear();
  byteBuffer.limit(Math.min(buffer.capacity(), length << MAPPED_BIG_LIST.LOG2_BYTES));
  int r = channel.read(byteBuffer);
  if (r <= 0) return read;
  r >>>= MAPPED_BIG_LIST.LOG2_BYTES;
  read += r;
  // TODO: use the indexed get() method when switching to Java 13+
  buffer.clear();
  buffer.limit(r);
  buffer.get(array, offset, r);
  offset += r;
  length -= r;
 }
}

/** Loads elements from a given readable channel, using the given byte order, storing them in a given array.
*
* @param channel a readable channel.
* @param byteOrder the byte order of the data from {@code channel}.
* @param array an array which will be filled with data from {@code channel}.
* @return the number of elements actually read from {@code channel} (it might be less than the array length if
{@code channel} ends).
*/
public static int LOAD_KEYS(final ReadableByteChannel channel, final ByteOrder byteOrder, final KEY_TYPE[]
array) throws IOException {
 return LOAD_KEYS(channel, byteOrder, array, 0, array.length);
}

/** Loads elements from a file given by a {@link File} object, using the given byte order, storing them in a given
array fragment.
*
```

```
* @param file a file.
* @param byteOrder the byte order of the data stored in {@code file}.
* @param array an array which will be filled with data from the specified file.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from the given file (it might be less than {@code length} if the file is too short).
*/
public static int LOAD_KEYS(final File file, final ByteOrder byteOrder, final KEY_TYPE[] array, final int offset, final int length) throws IOException {
 ensureOffsetLength(array.length, offset, length);
 final FileChannel channel = FileChannel.open(file.toPath());
 final int read = LOAD_KEYS(channel, byteOrder, array, offset, length);
 channel.close();
 return read;
}

/** Loads elements from a file given by a filename, using the given byte order, storing them in a given array fragment.
*
* @param filename a filename.
* @param byteOrder the byte order of the data stored in the file {@code filename}.
* @param array an array which will be filled with data from the specified file.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from the given file (it might be less than {@code length} if the file is too short).
*/
public static int LOAD_KEYS(final CharSequence filename, final ByteOrder byteOrder, final KEY_TYPE[] array, final int offset, final int length) throws IOException {
 return LOAD_KEYS(new File(filename.toString()), byteOrder, array, offset, length);
}

/** Loads elements from a file given by a {@link File} object, using the given byte order, storing them in a given array.
*
* @param file a file.
* @param byteOrder the byte order of the data stored in {@code file}.
* @param array an array which will be filled with data from the specified file.
* @return the number of elements actually read from the given file (it might be less than the array length if the file is too short).
*/
public static int LOAD_KEYS(final File file, final ByteOrder byteOrder, final KEY_TYPE[] array) throws IOException {
 return LOAD_KEYS(file, byteOrder, array, 0, array.length);
}

/** Loads elements from a file given by a filename, using the given byte order, storing them in a given array.
```

```
*
* @param filename a filename.
* @param byteOrder the byte order of the data stored in the file {@code filename}.
* @param array an array which will be filled with data from the specified file.
* @return the number of elements actually read from the given file (it might be less than the array length if the file
is too short).
*/
public static int LOAD_KEYS(final CharSequence filename, final ByteOrder byteOrder, final KEY_TYPE[] array)
throws IOException {
 return LOAD_KEYS(new File(filename.toString()), byteOrder, array);
}

/** Loads elements from a file given by a {@link File} object, using the given byte order, storing them in a new
array.
*
* <p>Note that the length of the returned array will be computed
* dividing the specified file size by the number of bytes used to
* represent each element.
*
* @param file a file.
* @param byteOrder the byte order of the data stored in {@code file}.
* @return an array filled with the content of the specified file.
*/
public static KEY_TYPE[] LOAD_KEYS(final File file, final ByteOrder byteOrder) throws IOException {
 final FileChannel channel = FileChannel.open(file.toPath());
 final long length = channel.size() / KEY_CLASS.BYTES;

 if (length > Integer.MAX_VALUE) {
  channel.close();
  throw new IllegalArgumentException("File too long: " + channel.size()+ " bytes (" + length + " elements)");
 }

 final KEY_TYPE[] array = new KEY_TYPE[(int)length];
 if (LOAD_KEYS(channel, byteOrder, array) < length) throw new EOFException();
 channel.close();
 return array;
}

/** Loads elements from a file given by a filename, using the given byte order, storing them in a new array.
*
* <p>Note that the length of the returned array will be computed
* dividing the specified file size by the number of bytes used to
* represent each element.
*
* @param filename a filename.
* @return an array filled with the content of the specified file.
*/
public static KEY_TYPE[] LOAD_KEYS(final CharSequence filename, final ByteOrder byteOrder) throws
```

```
IOException {
 return LOAD_KEYS(new File(filename.toString()), byteOrder);
}

/** Stores an array fragment to a given writable channel, using the given byte order.
*
* @param array an array whose elements will be written to {@code channel}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param channel a writable channel.
* @param byteOrder the byte order to be used to store data in {@code channel}.
*/
public static void STORE_KEYS(final KEY_TYPE array[], int offset, int length, final WritableByteChannel
channel, final ByteOrder byteOrder) throws IOException {
 ensureOffsetLength(array.length, offset, length);

 ByteBuffer byteBuffer = ByteBuffer.allocateDirect(BUFFER_SIZE).order(byteOrder);
 final KEY_BUFFER buffer = byteBuffer.AS_KEY_BUFFER();

 while(length != 0) {
  final int l = Math.min(length, buffer.capacity());
  buffer.clear();
  buffer.put(array, offset, l);
  buffer.flip();

  byteBuffer.clear();
  byteBuffer.limit(buffer.limit() << MAPPED_BIG_LIST.LOG2_BYTES);
  channel.write(byteBuffer);

  offset += l;
  length -= l;
 }
}

/** Stores an array to a given writable channel, using the given byte order.
*
* @param array an array whose elements will be written to {@code channel}.
* @param channel a writable channel.
* @param byteOrder the byte order to be used to store data in {@code channel}.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final WritableByteChannel channel, final ByteOrder
byteOrder) throws IOException {
 STORE_KEYS(array, 0, array.length, channel, byteOrder);
}

/** Stores an array fragment to a file given by a {@link File} object, using the given byte order.
*
* @param array an array whose elements will be written to {@code file}.
```

```
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param file a file.
* @param byteOrder the byte order to be used to store data in {@code file}.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final int offset, final int length, final File file, final
ByteOrder byteOrder) throws IOException {
 final FileChannel channel = FileChannel.open(file.toPath(), StandardOpenOption.WRITE,
StandardOpenOption.CREATE, StandardOpenOption.TRUNCATE_EXISTING);
 STORE_KEYS(array, offset, length, channel, byteOrder);
 channel.close();
}

/** Stores an array fragment to a file given by a filename, using the given byte order.
*
* @param array an array whose elements will be written to the file {@code filename}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param filename a filename.
* @param byteOrder the byte order to be used to store data in the file {@code filename}.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final int offset, final int length, final CharSequence
filename, final ByteOrder byteOrder) throws IOException {
 STORE_KEYS(array, offset, length, new File(filename.toString()), byteOrder);
}

/** Stores an array to a file given by a {@link File} object, using the given byte order.
*
* @param array an array whose elements will be written to {@code file}.
* @param file a file.
* @param byteOrder the byte order to be used to store data in {@code file}.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final File file, final ByteOrder byteOrder) throws
IOException {
 STORE_KEYS(array, 0, array.length, file, byteOrder);
}

/** Stores an array to a file given by a filename, using the given byte order.
*
* @param array an array whose elements will be written to the file {@code filename}.
* @param filename a filename.
* @param byteOrder the byte order to be used to store data in the file {@code filename}.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final CharSequence filename, final ByteOrder
byteOrder) throws IOException {
 STORE_KEYS(array, new File(filename.toString()), byteOrder);
}
```

```
/** Loads elements from a given readable channel, using the given byte order, storing them in a given big-array
fragment.
*
* @param channel a readable channel.
* @param byteOrder the byte order of the data from {@code channel}.
* @param array a big array which will be filled with data from {@code channel}.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from {@code channel} (it might be less than {@code length} if
{@code channel} ends).
*/
public static long LOAD_KEYS(final ReadableByteChannel channel, final ByteOrder byteOrder, final
KEY_TYPE[][] array, final long offset, final long length) throws IOException {
 ensureOffsetLength(array, offset, length);
 long read = 0;
 for(int i = segment(offset); i < segment(offset + length + SEGMENT_MASK); i++) {
  final KEY_TYPE[] t = array[i];
  final int s = (int)Math.max(0, offset - start(i));
  final int e = (int)Math.min(t.length, offset + length - start(i));
  final int r = LOAD_KEYS(channel, byteOrder, t, s, e - s);
  read += r;
  if (r < e -s) break;
 }
 return read;
}

/** Loads elements from a given readable channel, using the given byte order, storing them in a given big array.
*
* @param channel a readable channel.
* @param byteOrder the byte order of the data from {@code channel}.
* @param array a big array which will be filled with data from {@code channel}.
* @return the number of elements actually read from {@code channel} (it might be less than the array length if
{@code channel} ends).
*/
public static long LOAD_KEYS(final ReadableByteChannel channel, final ByteOrder byteOrder, final
KEY_TYPE[][] array) throws IOException {
 return LOAD_KEYS(channel, byteOrder, array, 0, length(array));
}

/** Loads elements from a file given by a {@link File} object, using the given byte order, storing them in a given
big-array fragment.
*
* @param file a file.
* @param byteOrder the byte order of the data stored in {@code file}.
* @param array a big array which will be filled with data from the specified file.
* @param offset the index of the first element of {@code array} to be filled.
```

```
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from the given file (it might be less than {@code length} if the file is too short).
*/
public static long LOAD_KEYS(final File file, final ByteOrder byteOrder, final KEY_TYPE[][] array, final long offset, final long length) throws IOException {
 final FileChannel channel = FileChannel.open(file.toPath());
 final long read = LOAD_KEYS(channel, byteOrder, array, offset, length);
 channel.close();
 return read;
}

/** Loads elements from a file given by a filename, using the given byte order, storing them in a given big-array fragment.
*
* @param filename a filename.
* @param byteOrder the byte order of the data stored in the file {@code filename}.
* @param array an array which will be filled with data from the specified file.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from the given file (it might be less than {@code length} if the file is too short).
*/
public static long LOAD_KEYS(final CharSequence filename, final ByteOrder byteOrder, final KEY_TYPE[][] array, final long offset, final long length) throws IOException {
 return LOAD_KEYS(new File(filename.toString()), byteOrder, array, offset, length);
}

/** Loads elements from a file given by a {@link File} object, using the given byte order, storing them in a given big array.
*
* @param file a file.
* @param byteOrder the byte order of the data stored in {@code file}.
* @param array a big array which will be filled with data from the specified file.
* @return the number of elements actually read from the given file (it might be less than the array length if the file is too short).
*/
public static long LOAD_KEYS(final File file, final ByteOrder byteOrder, final KEY_TYPE[][] array) throws IOException {
 return LOAD_KEYS(file, byteOrder, array, 0, length(array));
}

/** Loads elements from a file given by a filename, using the given byte order, storing them in a given big array.
*
* @param filename a filename.
* @param byteOrder the byte order of the data stored in the file {@code filename}.
* @param array a big array which will be filled with data from the specified file.
* @return the number of elements actually read from the given file (it might be less than the array length if the file
```

```
is too short).
*/
public static long LOAD_KEYS(final CharSequence filename, final ByteOrder byteOrder, final KEY_TYPE[][]
array) throws IOException {
 return LOAD_KEYS(new File(filename.toString()), byteOrder, array);
}

/** Loads elements from a file given by a {@link File} object, using the given byte order, storing them in a new big
array.
*
* <p>Note that the length of the returned big array will be computed
* dividing the specified file size by the number of bytes used to
* represent each element.
*
* @param file a file.
* @param byteOrder the byte order of the data stored in {@code file}.
* @return a big array filled with the content of the specified file.
*/
public static KEY_TYPE[][] LOAD_KEYS_BIG(final File file, final ByteOrder byteOrder) throws IOException {
 final FileChannel channel = FileChannel.open(file.toPath());
 final long length = channel.size() / KEY_CLASS.BYTES;
 final KEY_TYPE[][] array = BIG_ARRAYS.newBigArray(length);
 for(final KEY_TYPE[] t: array) LOAD_KEYS(channel, byteOrder, t);
 channel.close();
 return array;
}

/** Loads elements from a file given by a filename, using the given byte order, storing them in a new big array.
*
* <p>Note that the length of the returned big array will be computed
* dividing the specified file size by the number of bytes used to
* represent each element.
*
* @param filename a filename.
* @param byteOrder the byte order of the data stored in the file {@code filename}.
* @return a big array filled with the content of the specified file.
*/
public static KEY_TYPE[][] LOAD_KEYS_BIG(final CharSequence filename, final ByteOrder byteOrder) throws
IOException {
 return LOAD_KEYS_BIG(new File(filename.toString()), byteOrder);
}

/** Stores an array fragment to a given writable channel, using the given byte order.
*
* @param array an array whose elements will be written to {@code channel}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param channel a writable channel.
```

```
* @param byteOrder the byte order to be used to store data in {@code channel}.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final long offset, final long length, final
WritableByteChannel channel, final ByteOrder byteOrder) throws IOException {
 for(int i = segment(offset); i < segment(offset + length + SEGMENT_MASK); i++) {
  final int s = (int)Math.max(0, offset - start(i));
  final int l = (int)Math.min(array[i].length, offset + length - start(i));
  STORE_KEYS(array[i], s, l - s, channel, byteOrder);
 }
}

/** Stores a big array to a given writable channel, using the given byte order.
*
* @param array a big array whose elements will be written to {@code channel}.
* @param channel a writable channel.
* @param byteOrder the byte order to be used to store data in {@code channel}.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final WritableByteChannel channel, final ByteOrder
byteOrder) throws IOException {
 for(KEY_TYPE[] t: array) STORE_KEYS(t, channel, byteOrder);
}

/** Stores a big-array fragment to a file given by a {@link File} object, using the given byte order.
*
* @param array a big array whose elements will be written to {@code file}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param file a file.
* @param byteOrder the byte order to be used to store data in {@code file}.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final long offset, final long length, final File file, final
ByteOrder byteOrder) throws IOException {
 final FileChannel channel = FileChannel.open(file.toPath(), StandardOpenOption.WRITE,
StandardOpenOption.CREATE, StandardOpenOption.TRUNCATE_EXISTING);
 STORE_KEYS(array, offset, length, channel, byteOrder);
 channel.close();
}

/** Stores a big-array fragment to a file given by a filename, using the given byte order.
*
* @param array a big array whose elements will be written to the file {@code filename}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param filename a filename.
* @param byteOrder the byte order to be used to store data in the file {@code filename}.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final long offset, final long length, final
CharSequence filename, final ByteOrder byteOrder) throws IOException {
```

```
 STORE_KEYS(array, offset, length, new File(filename.toString()), byteOrder);
}

/** Stores an array to a file given by a {@link File} object, using the given byte order.
*
* @param array an array whose elements will be written to {@code file}.
* @param file a file.
* @param byteOrder the byte order to be used to store data in {@code file}.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final File file, final ByteOrder byteOrder) throws
IOException {
 final FileChannel channel = FileChannel.open(file.toPath(), StandardOpenOption.WRITE,
StandardOpenOption.CREATE, StandardOpenOption.TRUNCATE_EXISTING);
 STORE_KEYS(array, channel, byteOrder);
 channel.close();
}

/** Stores a big array to a file given by a filename, using the given byte order.
*
* @param array a big array whose elements will be written to the file {@code filename}.
* @param filename a filename.
* @param byteOrder the byte order to be used to store data in the file {@code filename}.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final CharSequence filename, final ByteOrder
byteOrder) throws IOException {
 STORE_KEYS(array, new File(filename.toString()), byteOrder);
}

/** Stores the element returned by an iterator to a given writable channel, using the given byte order.
*
* @param i an iterator whose output will be written to {@code channel}.
* @param channel a writable channel.
* @param byteOrder the byte order to be used to store data in {@code channel}.
*/
public static void STORE_KEYS(final KEY_ITERATOR i, final WritableByteChannel channel, final ByteOrder
byteOrder) throws IOException {
 ByteBuffer byteBuffer = ByteBuffer.allocateDirect(BUFFER_SIZE).order(byteOrder);
 final KEY_BUFFER buffer = byteBuffer.AS_KEY_BUFFER();
 while(i.hasNext()) {
  if (! buffer.hasRemaining()) {
   buffer.flip();
   byteBuffer.clear();
   byteBuffer.limit(buffer.limit() << MAPPED_BIG_LIST.LOG2_BYTES);
   channel.write(byteBuffer);

   buffer.clear();
  }
  buffer.put(i.NEXT_KEY());
```

```
 }

 buffer.flip();
 byteBuffer.clear();
 byteBuffer.limit(buffer.limit() << MAPPED_BIG_LIST.LOG2_BYTES);
 channel.write(byteBuffer);
}

/** Stores the element returned by an iterator to a file given by a {@link File} object, using the given byte order.
*
* @param i an iterator whose output will be written to {@code file}.
* @param file a file.
* @param byteOrder the byte order to be used to store data in {@code file}.
*/
public static void STORE_KEYS(final KEY_ITERATOR i, final File file, final ByteOrder byteOrder) throws
IOException {
 final FileChannel channel = FileChannel.open(file.toPath(), StandardOpenOption.WRITE,
StandardOpenOption.CREATE, StandardOpenOption.TRUNCATE_EXISTING);
 STORE_KEYS(i, channel, byteOrder);
 channel.close();
}

/** Stores the element returned by an iterator to a file given by a filename, using the given byte order.
*
* @param i an iterator whose output will be written to the file {@code filename}.
* @param filename a filename.
* @param byteOrder the byte order to be used to store data in the file {@code filename}.
*/
public static void STORE_KEYS(final KEY_ITERATOR i, final CharSequence filename, final ByteOrder
byteOrder) throws IOException {
 STORE_KEYS(i, new File(filename.toString()), byteOrder);
}

/** A wrapper that exhibits the content of a readable channel as a type-specific iterator. */

private static final class KEY_DATA_NIO_INPUT_WRAPPER implements KEY_ITERATOR {
 private final ReadableByteChannel channel;
 private final ByteBuffer byteBuffer;
 private final KEY_BUFFER buffer;

 public KEY_DATA_NIO_INPUT_WRAPPER(final ReadableByteChannel channel, final ByteOrder byteOrder) {
  this.channel = channel;
  byteBuffer = ByteBuffer.allocateDirect(BUFFER_SIZE).order(byteOrder);
  buffer = byteBuffer.AS_KEY_BUFFER();
  buffer.clear().flip();
 }

 @Override
```

```
 public boolean hasNext() {
  if (! buffer.hasRemaining()) {
   byteBuffer.clear();
   try {
    channel.read(byteBuffer);
   } catch(IOException e) {
    throw new RuntimeException(e);
   }
   byteBuffer.flip();

   buffer.clear();
   buffer.limit(byteBuffer.limit() >>> MAPPED_BIG_LIST.LOG2_BYTES);
  }
  return buffer.hasRemaining();
 }

 @Override
 public KEY_TYPE NEXT_KEY() {
  if (! hasNext()) throw new NoSuchElementException();
  return buffer.get();
 }
}

/** Wraps the given readable channel, using the given byte order, into an iterator.
*
* @param channel a readable channel.
* @param byteOrder the byte order of the data from {@code channel}.
*/
public static KEY_ITERATOR AS_KEY_ITERATOR(final ReadableByteChannel channel, final ByteOrder
byteOrder) {
 return new KEY_DATA_NIO_INPUT_WRAPPER(channel, byteOrder);
}

/** Wraps a file given by a {@link File} object, using the given byte order, into an iterator.
*
* @implNote This method opens a {@link FileChannel} that will not be closed until
* it is garbage collected.
*
* @param file a file.
* @param byteOrder the byte order of the data stored in {@code file}.
*/
public static KEY_ITERATOR AS_KEY_ITERATOR(final File file, final ByteOrder byteOrder) throws
IOException {
 final FileChannel channel = FileChannel.open(file.toPath());
 return new KEY_DATA_NIO_INPUT_WRAPPER(channel, byteOrder);
}

/** Wraps a file given by a filename, using the given byte order, into an iterator.
```

```
*
* @implNote This method opens a {@link FileChannel} that will not be closed until
* it is garbage collected.
*
* @param filename a filename.
* @param byteOrder the byte order of the data stored in the file {@code filename}.
*/
public static KEY_ITERATOR AS_KEY_ITERATOR(final CharSequence filename, final ByteOrder byteOrder)
throws IOException {
 return AS_KEY_ITERATOR(new File(filename.toString()), byteOrder);
}

/** Wraps a file given by a {@link File} object, using the given byte order, into an iterable object.
*
* @implNote Each iterator returned by this class opens a {@link FileChannel}
* that will not be closed until it is garbage collected.
*
* @param file a file.
* @param byteOrder the byte order of the data stored in {@code file}.
*/
public static KEY_ITERABLE AS_KEY_ITERABLE(final File file, final ByteOrder byteOrder) {
 return () -> {
  try { return AS_KEY_ITERATOR(file, byteOrder); }
  catch(IOException e) { throw new RuntimeException(e); }
 };
}

/** Wraps a file given by a filename, using the given byte order, into an iterable object.
*
* @implNote Each iterator returned by this class opens a {@link FileChannel}
* that will not be closed until it is garbage collected.
*
* @param filename a filename.
* @param byteOrder the byte order of the data stored in the file {@code filename}.
*/
public static KEY_ITERABLE AS_KEY_ITERABLE(final CharSequence filename, final ByteOrder byteOrder) {
 return () -> {
  try { return AS_KEY_ITERATOR(filename, byteOrder); }
  catch(IOException e) { throw new RuntimeException(e); }
 };
}

#endif


/** Loads elements from a given data input, storing them in a given array fragment.
*
* @param dataInput a data input.
```

```
* @param array an array which will be filled with data from {@code dataInput}.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from {@code dataInput} (it might be less than {@code length} if
{@code dataInput} ends).
*/
public static int LOAD_KEYS(final DataInput dataInput, final KEY_TYPE[] array, final int offset, final int length)
throws IOException {
 ensureOffsetLength(array.length, offset, length);
 int i = 0;
 try {
  for(i = 0; i < length; i++) array[i + offset] = dataInput.READ_KEY();
 }
 catch(EOFException itsOk) {}
 return i;
}

/** Loads elements from a given data input, storing them in a given array.
*
* @param dataInput a data input.
* @param array an array which will be filled with data from {@code dataInput}.
* @return the number of elements actually read from {@code dataInput} (it might be less than the array length if
{@code dataInput} ends).
*/
public static int LOAD_KEYS(final DataInput dataInput, final KEY_TYPE[] array) throws IOException {
 int i = 0;
 try {
  final int length = array.length;
  for(i = 0; i < length; i++) array[i] = dataInput.READ_KEY();
 }
 catch(EOFException itsOk) {}
 return i;
}

/** Loads elements from a file given by a {@link File} object, storing them in a given array fragment.
*
* @param file a file.
* @param array an array which will be filled with data from the specified file.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from the given file (it might be less than {@code length} if the file
is too short).
*/
public static int LOAD_KEYS(final File file, final KEY_TYPE[] array, final int offset, final int length) throws
IOException {
#if KEY_CLASS_Byte
 final FileChannel channel = FileChannel.open(file.toPath());
 final int result = loadBytes(channel, array, offset, length);
```

```
 channel.close();
 return result;
#elif KEY_CLASS_Boolean
 ensureOffsetLength(array.length, offset, length);
 final DataInputStream dis = new DataInputStream(new FastBufferedInputStream(new FileInputStream(file)));

 int i = 0;
 try {
  for(i = 0; i < length; i++) array[i + offset] = dis.READ_KEY();
 }
 catch(EOFException itsOk) {}

 dis.close();
 return i;
#else
 return LOAD_KEYS(file, ByteOrder.BIG_ENDIAN, array, offset, length);
#endif
}

/** Loads elements from a file given by a filename, storing them in a given array fragment.
*
* @param filename a filename.
* @param array an array which will be filled with data from the specified file.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from the given file (it might be less than {@code length} if the file
is too short).
*/
public static int LOAD_KEYS(final CharSequence filename, final KEY_TYPE[] array, final int offset, final int
length) throws IOException {
 return LOAD_KEYS(new File(filename.toString()), array, offset, length);
}

/** Loads elements from a file given by a {@link File} object, storing them in a given array.
*
* @param file a file.
* @param array an array which will be filled with data from the specified file.
* @return the number of elements actually read from the given file (it might be less than the array length if the file
is too short).
*/
public static int LOAD_KEYS(final File file, final KEY_TYPE[] array) throws IOException {
 return LOAD_KEYS(file, array, 0, array.length);
}

/** Loads elements from a file given by a filename, storing them in a given array.
*
* @param filename a filename.
* @param array an array which will be filled with data from the specified file.
```

```
* @return the number of elements actually read from the given file (it might be less than the array length if the file
is too short).
*/
public static int LOAD_KEYS(final CharSequence filename, final KEY_TYPE[] array) throws IOException {
 return LOAD_KEYS(new File(filename.toString()), array);
}

/** Loads elements from a file given by a {@link File} object, storing them in a new array.
*
* <p>Note that the length of the returned array will be computed
* dividing the specified file size by the number of bytes used to
* represent each element.
*
* @param file a file.
* @return an array filled with the content of the specified file.
*/
public static KEY_TYPE[] LOAD_KEYS(final File file) throws IOException {
#if KEY_CLASS_Byte
 final FileChannel channel = FileChannel.open(file.toPath());
 final long length = channel.size();
 if (length > Integer.MAX_VALUE) {
  channel.close();
  throw new IllegalArgumentException("File too long: " + channel.size()+ " bytes (" + length + " elements)");
 }

 final byte[] array = new byte[(int)length];
 if (loadBytes(channel, array) < length) throw new EOFException();
 return array;
#elif KEY_CLASS_Boolean
 final FileInputStream fis = new FileInputStream(file);
 final long length = fis.getChannel().size();

 if (length > Integer.MAX_VALUE) {
  fis.close();
  throw new IllegalArgumentException("File too long: " + fis.getChannel().size()+ " bytes (" + length + " elements)");
 }

 final boolean[] array = new boolean[(int)length];
 final DataInputStream dis = new DataInputStream(new FastBufferedInputStream(fis));
 for(int i = 0; i < length; i++) array[i] = dis.READ_KEY();
 dis.close();
 return array;
#else
 return LOAD_KEYS(file, ByteOrder.BIG_ENDIAN);
#endif
}

/** Loads elements from a file given by a filename, storing them in a new array.
```

```
*
* <p>Note that the length of the returned array will be computed
* dividing the specified file size by the number of bytes used to
* represent each element.
*
* @param filename a filename.
* @return an array filled with the content of the specified file.
*/
public static KEY_TYPE[] LOAD_KEYS(final CharSequence filename) throws IOException {
 return LOAD_KEYS(new File(filename.toString()));
}

/** Stores an array fragment to a given data output.
*
* @param array an array whose elements will be written to {@code dataOutput}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param dataOutput a data output.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final int offset, final int length, final DataOutput
dataOutput) throws IOException {
 ensureOffsetLength(array.length, offset, length);
#if KEY_CLASS_Byte
 write(dataOutput, array, offset, length);
#else
 for(int i = 0; i < length; i++) dataOutput.WRITE_KEY(array[offset + i]);
#endif
}

/** Stores an array to a given data output.
*
* @param array an array whose elements will be written to {@code dataOutput}.
* @param dataOutput a data output.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final DataOutput dataOutput) throws IOException {
#if KEY_CLASS_Byte
 write(dataOutput, array, 0, array.length);
#else
 final int length = array.length;
 for(int i = 0; i < length; i++) dataOutput.WRITE_KEY(array[i]);
#endif
}

/** Stores an array fragment to a file given by a {@link File} object.
*
* @param array an array whose elements will be written to {@code file}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
```

```
* @param file a file.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final int offset, final int length, final File file) throws
IOException {
#if KEY_CLASS_Byte
 final FileChannel channel = FileChannel.open(file.toPath(), StandardOpenOption.WRITE,
StandardOpenOption.CREATE, StandardOpenOption.TRUNCATE_EXISTING);
 storeBytes(array, offset, length, channel);
 channel.close();
#elif KEY_CLASS_Boolean
 ensureOffsetLength(array.length, offset, length);
 final DataOutputStream dos = new DataOutputStream(new FastBufferedOutputStream(new
FileOutputStream(file)));
 for(int i = 0; i < length; i++) dos.writeBoolean(array[offset + i]);
 dos.close();
#else
 STORE_KEYS(array, offset, length, file, ByteOrder.BIG_ENDIAN);
#endif
}

/** Stores an array fragment to a file given by a filename.
*
* @param array an array whose elements will be written to the file {@code filename}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param filename a filename.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final int offset, final int length, final CharSequence
filename) throws IOException {
 STORE_KEYS(array, offset, length, new File(filename.toString()));
}

/** Stores an array to a file given by a {@link File} object.
*
* @param array an array whose elements will be written to {@code file}.
* @param file a file.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final File file) throws IOException {
 STORE_KEYS(array, 0, array.length, file);
}

/** Stores an array to a file given by a filename.
*
* @param array an array whose elements will be written to the file {@code filename}.
* @param filename a filename.
*/
public static void STORE_KEYS(final KEY_TYPE array[], final CharSequence filename) throws IOException {
 STORE_KEYS(array, new File(filename.toString()));
```

```
}


/** Loads elements from a given data input, storing them in a given big-array fragment.
*
* @param dataInput a data input.
* @param array a big array which will be filled with data from {@code dataInput}.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from {@code dataInput} (it might be less than {@code length} if
{@code dataInput} ends).
*/
public static long LOAD_KEYS(final DataInput dataInput, final KEY_TYPE[][] array, final long offset, final long
length) throws IOException {
 ensureOffsetLength(array, offset, length);
 long c = 0;
 try {
  for(int i = segment(offset); i < segment(offset + length + SEGMENT_MASK); i++) {
   final KEY_TYPE[] t = array[i];
   final int l = (int)Math.min(t.length, offset + length - start(i));
   for(int d = (int)Math.max(0, offset - start(i)); d < l; d++) {
    t[d] = dataInput.READ_KEY();
    c++;
   }
  }
 }
 catch(EOFException itsOk) {}
 return c;
}

/** Loads elements from a given data input, storing them in a given big array.
*
* @param dataInput a data input.
* @param array a big array which will be filled with data from {@code dataInput}.
* @return the number of elements actually read from {@code dataInput} (it might be less than the array length if
{@code dataInput} ends).
*/
public static long LOAD_KEYS(final DataInput dataInput, final KEY_TYPE[][] array) throws IOException {
 long c = 0;
 try {
  for(int i = 0; i < array.length; i++) {
   final KEY_TYPE[] t = array[i];
   final int l = t.length;
   for(int d = 0; d < l; d++) {
    t[d] = dataInput.READ_KEY();
    c++;
   }
  }
```

```
 }
 catch(EOFException itsOk) {}
 return c;
}

/** Loads elements from a file given by a {@link File} object, storing them in a given big-array fragment.
*
* @param file a file.
* @param array a big array which will be filled with data from the specified file.
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from the given file (it might be less than {@code length} if the file
is too short).
*/
public static long LOAD_KEYS(final File file, final KEY_TYPE[][] array, final long offset, final long length)
throws IOException {
#if KEY_CLASS_Byte
 final FileChannel channel = FileChannel.open(file.toPath());
 final long read = LOAD_KEYS(channel, array, offset, length);
 return read;
#elif KEY_CLASS_Boolean
 ensureOffsetLength(array, offset, length);
 final FileInputStream fis = new FileInputStream(file);
 final DataInputStream dis = new DataInputStream(new FastBufferedInputStream(fis));

 long c = 0;
 try {
  for(int i = segment(offset); i < segment(offset + length + SEGMENT_MASK); i++) {
   final KEY_TYPE[] t = array[i];
   final int l = (int)Math.min(t.length, offset + length - start(i));
   for(int d = (int)Math.max(0, offset - start(i)); d < l; d++) {
    t[d] = dis.readBoolean();
    c++;
   }
  }
 }
 catch(EOFException itsOk) {}
 dis.close();
 return c;
#else
 return LOAD_KEYS(file, ByteOrder.BIG_ENDIAN, array, offset, length);
#endif
}

/** Loads elements from a file given by a filename, storing them in a given big-array fragment.
*
* @param filename a filename.
* @param array an array which will be filled with data from the specified file.
```

```
* @param offset the index of the first element of {@code array} to be filled.
* @param length the number of elements of {@code array} to be filled.
* @return the number of elements actually read from the given file (it might be less than {@code length} if the file
is too short).
*/
public static long LOAD_KEYS(final CharSequence filename, final KEY_TYPE[][] array, final long offset, final
long length) throws IOException {
 return LOAD_KEYS(new File(filename.toString()), array, offset, length);
}

/** Loads elements from a file given by a {@link File} object, storing them in a given big array.
*
* @param file a file.
* @param array a big array which will be filled with data from the specified file.
* @return the number of elements actually read from the given file (it might be less than the array length if the file
is too short).
*/
public static long LOAD_KEYS(final File file, final KEY_TYPE[][] array) throws IOException {
#if KEY_CLASS_Byte
 final FileChannel channel = FileChannel.open(file.toPath());
 final long read = LOAD_KEYS(channel, array);
 return read;
#elif KEY_CLASS_Boolean
 final FileInputStream fis = new FileInputStream(file);
 final DataInputStream dis = new DataInputStream(new FastBufferedInputStream(fis));

 long c = 0;
 try {
  for(int i = 0; i < array.length; i++) {
   final KEY_TYPE[] t = array[i];
   final int l = t.length;
   for(int d = 0; d < l; d++) {
    t[d] = dis.readBoolean();
    c++;
   }
  }
 }
 catch(EOFException itsOk) {}
 dis.close();

 return c;
#else
 return LOAD_KEYS(file, ByteOrder.BIG_ENDIAN, array);
#endif
}

/** Loads elements from a file given by a filename, storing them in a given big array.
*
```

```
* @param filename a filename.
* @param array a big array which will be filled with data from the specified file.
* @return the number of elements actually read from the given file (it might be less than the array length if the file
is too short).
*/
public static long LOAD_KEYS(final CharSequence filename, final KEY_TYPE[][] array) throws IOException {
 return LOAD_KEYS(new File(filename.toString()), array);
}

/** Loads elements from a file given by a {@link File} object, storing them in a new big array.
*
* <p>Note that the length of the returned big array will be computed
* dividing the specified file size by the number of bytes used to
* represent each element.
*
* @param file a file.
* @return a big array filled with the content of the specified file.
*/
public static KEY_TYPE[][] LOAD_KEYS_BIG(final File file) throws IOException {
#if KEY_CLASS_Byte
 final FileChannel channel = FileChannel.open(file.toPath());
 final long length = channel.size();
 final byte[][] array = ByteBigArrays.newBigArray(length);
 loadBytes(channel, array);
 channel.close();
 return array;
#elif KEY_CLASS_Boolean
 final FileInputStream fis = new FileInputStream(file);
 final long length = fis.getChannel().size();
 final KEY_TYPE[][] array = BooleanBigArrays.newBigArray(length);
 final DataInputStream dis = new DataInputStream(new FastBufferedInputStream(fis));

 for(int i = 0; i < array.length; i++) {
  final boolean[] t = array[i];
  final int l = t.length;
  for(int d = 0; d < l; d++) t[d] = dis.readBoolean();
 }
 dis.close();
 return array;
#else
 return LOAD_KEYS_BIG(file, ByteOrder.BIG_ENDIAN);
#endif
}

/** Loads elements from a file given by a filename, storing them in a new big array.
*
* <p>Note that the length of the returned big array will be computed
* dividing the specified file size by the number of bytes used to
```

```
* represent each element.
*
* @param filename a filename.
* @return a big array filled with the content of the specified file.
*/
public static KEY_TYPE[][] LOAD_KEYS_BIG(final CharSequence filename) throws IOException {
 return LOAD_KEYS_BIG(new File(filename.toString()));
}

/** Stores an array fragment to a given data output.
*
* @param array an array whose elements will be written to {@code dataOutput}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param dataOutput a data output.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final long offset, final long length, final DataOutput
dataOutput) throws IOException {
 ensureOffsetLength(array, offset, length);
#if KEY_CLASS_Byte
 write(dataOutput, array, offset, length);
#else
 for(int i = segment(offset); i < segment(offset + length + SEGMENT_MASK); i++) {
  final KEY_TYPE[] t = array[i];
  final int l = (int)Math.min(t.length, offset + length - start(i));
  for(int d = (int)Math.max(0, offset - start(i)); d < l; d++) dataOutput.WRITE_KEY(t[d]);
 }
#endif
}

/** Stores a big array to a given data output.
*
* @param array a big array whose elements will be written to {@code dataOutput}.
* @param dataOutput a data output.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final DataOutput dataOutput) throws IOException {
#if KEY_CLASS_Byte
 write(dataOutput, array, 0, length(array));
#else
 for(int i = 0; i < array.length; i++) {
  final KEY_TYPE[] t = array[i];
  final int l = t.length;
  for(int d = 0; d < l; d++) dataOutput.WRITE_KEY(t[d]);
 }
#endif
}

/** Stores a big-array fragment to a file given by a {@link File} object.
```

```
*
* @param array a big array whose elements will be written to {@code file}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param file a file.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final long offset, final long length, final File file)
throws IOException {
#if KEY_CLASS_Byte
 final FileChannel channel = FileChannel.open(file.toPath(), StandardOpenOption.WRITE,
StandardOpenOption.CREATE, StandardOpenOption.TRUNCATE_EXISTING);
 storeBytes(array, offset, length, channel);
 channel.close();
#elif KEY_CLASS_Boolean
 final DataOutputStream dos = new DataOutputStream(new FastBufferedOutputStream(new
FileOutputStream(file)));
 for(int i = segment(offset); i < segment(offset + length + SEGMENT_MASK); i++) {
  final KEY_TYPE[] t = array[i];
  final int l = (int)Math.min(t.length, offset + length - start(i));
  for(int d = (int)Math.max(0, offset - start(i)); d < l; d++) dos.WRITE_KEY(t[d]);
 }
 dos.close();
#else
 STORE_KEYS(array, offset, length, file, ByteOrder.BIG_ENDIAN);
#endif
}

/** Stores a big-array fragment to a file given by a filename.
*
* @param array a big array whose elements will be written to the file {@code filename}.
* @param offset the index of the first element of {@code array} to be written.
* @param length the number of elements of {@code array} to be written.
* @param filename a filename.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final long offset, final long length, final
CharSequence filename) throws IOException {
 STORE_KEYS(array, offset, length, new File(filename.toString()));
}

/** Stores an array to a file given by a {@link File} object.
*
* @param array an array whose elements will be written to {@code file}.
* @param file a file.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final File file) throws IOException {
#if KEY_CLASS_Byte
 final FileChannel channel = FileChannel.open(file.toPath(), StandardOpenOption.WRITE,
StandardOpenOption.CREATE, StandardOpenOption.TRUNCATE_EXISTING);
```

```
 storeBytes(array, channel);
 channel.close();
#elif KEY_CLASS_Boolean
 final DataOutputStream dos = new DataOutputStream(new FastBufferedOutputStream(new
FileOutputStream(file)));
 for(int i = 0; i < array.length; i++) {
  final KEY_TYPE[] t = array[i];
  final int l = t.length;
  for(int d = 0; d < l; d++) dos.WRITE_KEY(t[d]);
 }
 dos.close();
#else
 STORE_KEYS(array, file, ByteOrder.BIG_ENDIAN);
#endif
}

/** Stores a big array to a file given by a filename.
*
* @param array a big array whose elements will be written to the file {@code filename}.
* @param filename a filename.
*/
public static void STORE_KEYS(final KEY_TYPE array[][], final CharSequence filename) throws IOException {
 STORE_KEYS(array, new File(filename.toString()));
}

/** Stores the element returned by an iterator to a given data output.
*
* @param i an iterator whose output will be written to {@code dataOutput}.
* @param dataOutput a filename.
*/
public static void STORE_KEYS(final KEY_ITERATOR i, final DataOutput dataOutput) throws IOException {
 while(i.hasNext()) dataOutput.WRITE_KEY(i.NEXT_KEY());
}

/** Stores the element returned by an iterator to a file given by a {@link File} object.
*
* @param i an iterator whose output will be written to {@code file}.
* @param file a file.
*/
public static void STORE_KEYS(final KEY_ITERATOR i, final File file) throws IOException {
#if KEY_CLASS_Boolean || KEY_CLASS_Byte
 final DataOutputStream dos = new DataOutputStream(new FastBufferedOutputStream(new
FileOutputStream(file)));
 while(i.hasNext()) dos.WRITE_KEY(i.NEXT_KEY());
 dos.close();
#else
 STORE_KEYS(i, file, ByteOrder.BIG_ENDIAN);
#endif
```

```
}

/** Stores the element returned by an iterator to a file given by a filename.
*
* @param i an iterator whose output will be written to the file {@code filename}.
* @param filename a filename.
*/
public static void STORE_KEYS(final KEY_ITERATOR i, final CharSequence filename) throws IOException {
 STORE_KEYS(i, new File(filename.toString()));
}

/** A wrapper that exhibits the content of a data input stream as a type-specific iterator. */

private static final class KEY_DATA_INPUT_WRAPPER implements KEY_ITERATOR {
 private final DataInput dataInput;
 private boolean toAdvance = true;
 private boolean endOfProcess = false;
 private KEY_TYPE next;

 public KEY_DATA_INPUT_WRAPPER(final DataInput dataInput) {
  this.dataInput = dataInput;
 }

 @Override
 public boolean hasNext() {
  if (! toAdvance) return ! endOfProcess;

  toAdvance = false;

  try { next = dataInput.READ_KEY(); }
  catch(EOFException eof) { endOfProcess = true; }
  catch(IOException rethrow) { throw new RuntimeException(rethrow); }

  return ! endOfProcess;
 }

 @Override
 public KEY_TYPE NEXT_KEY() {
  if (! hasNext()) throw new NoSuchElementException();
  toAdvance = true;
  return next;
 }
}

/** Wraps the given data input stream into an iterator.
*
* @param dataInput a data input.
*/
```

```
public static KEY_ITERATOR AS_KEY_ITERATOR(final DataInput dataInput) {
 return new KEY_DATA_INPUT_WRAPPER(dataInput);
}

/** Wraps a file given by a {@link File} object into an iterator.
*
* @implNote This method opens a {@link FileChannel} that will not be closed until
* it is garbage collected.
*
* @param file a file.
*/
public static KEY_ITERATOR AS_KEY_ITERATOR(final File file) throws IOException {
#if KEY_CLASS_Boolean || KEY_CLASS_Byte
 return new KEY_DATA_INPUT_WRAPPER(new DataInputStream(new FastBufferedInputStream(new
FileInputStream(file))));
#else
 return AS_KEY_ITERATOR(file, ByteOrder.BIG_ENDIAN);
#endif
}

/** Wraps a file given by a filename into an iterator.
*
* @implNote This method opens a {@link FileChannel} that will not be closed until
* it is garbage collected.
*
* @param filename a filename.
*/
public static KEY_ITERATOR AS_KEY_ITERATOR(final CharSequence filename) throws IOException {
 return AS_KEY_ITERATOR(new File(filename.toString()));
}

/** Wraps a file given by a {@link File} object into an iterable object.
*
* @implNote Each iterator returned by this class opens a {@link FileChannel}
* that will not be closed until it is garbage collected.
*
* @param file a file.
*/
public static KEY_ITERABLE AS_KEY_ITERABLE(final File file) {
 return () -> {
  try { return AS_KEY_ITERATOR(file); }
  catch(IOException e) { throw new RuntimeException(e); }
 };
}

/** Wraps a file given by a filename into an iterable object.
*
* @implNote Each iterator returned by this class opens a {@link FileChannel}
```

```
* that will not be closed until it is garbage collected.
*
* @param filename a filename.
*/
public static KEY_ITERABLE AS_KEY_ITERABLE(final CharSequence filename) {
 return () -> {
  try { return AS_KEY_ITERATOR(filename); }
  catch(IOException e) { throw new RuntimeException(e); }
 };
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/BinIOFragment.drv
No license file was found, but licenses were detected in source scan.

```
/*
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

/**  An abstract class facilitating the creation of type-specific {@linkplain java.util.Comparator comparators}.
*
* @see java.util.Comparator
* @deprecated As of {@code fastutil} 8 this class is no longer necessary, as its only previous abstract
* method is now a default method of the type-specific interface.
*/

@Deprecated
public abstract class KEY_ABSTRACT_COMPARATOR KEY_GENERIC implements KEY_COMPARATOR
KEY_GENERIC, java.io.Serializable {
 private static final long serialVersionUID = 0L;
 protected KEY_ABSTRACT_COMPARATOR() {}
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractComparator.drv
No license file was found, but licenses were detected in source scan.

```
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/



package PACKAGE;

/**  An abstract class facilitating the creation of type-specific {@linkplain it.unimi.dsi.fastutil.BigListIterator big-list iterators}.
*
* @deprecated As of {@code fastutil} 8 this class is no longer necessary, as its previous abstract
* methods are now default methods of the type-specific interface.
*/

@Deprecated
public abstract class KEY_ABSTRACT_BIG_LIST_ITERATOR KEY_GENERIC extends
KEY_ABSTRACT_BIDI_ITERATOR KEY_GENERIC implements KEY_BIG_LIST_ITERATOR
KEY_GENERIC {
 protected KEY_ABSTRACT_BIG_LIST_ITERATOR() {}
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractBigListIterator.drv
No license file was found, but licenses were detected in source scan.

```
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```

```
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* Unless required by applicable law or agreed to in writing, software
* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

import java.util.Comparator;
import java.util.Spliterator;
import java.util.Objects;
import java.util.function.Consumer;
#if KEYS_REFERENCE
import java.util.function.Predicate;
#endif
import it.unimi.dsi.fastutil.SafeMath;
#if KEYS_BYTE_CHAR_SHORT_FLOAT
import WIDENED_PACKAGE.KEY_WIDENED_SPLITERATOR;
import WIDENED_PACKAGE.WIDENED_SPLITERATORS;
#endif

/** A class providing static methods and objects that do useful things with type-specific spliterators.
*
* @author C. Sean Young &lt;csyoung@google.com&gt;
* @see java.util.Spliterators
* @since 8.5.0
*/

public final class SPLITERATORS {

 private SPLITERATORS() {}

#if KEYS_PRIMITIVE
 static final int BASE_SPLITERATOR_CHARACTERISTICS = Spliterator.NONNULL;
#else
 static final int BASE_SPLITERATOR_CHARACTERISTICS = 0;
#endif

 // Default characteristics for various Collection implementations
 public static final int COLLECTION_SPLITERATOR_CHARACTERISTICS =
BASE_SPLITERATOR_CHARACTERISTICS | Spliterator.SIZED;

 public static final int LIST_SPLITERATOR_CHARACTERISTICS =
```

```
COLLECTION_SPLITERATOR_CHARACTERISTICS | Spliterator.ORDERED | Spliterator.SUBSIZED;

 public static final int SET_SPLITERATOR_CHARACTERISTICS =
COLLECTION_SPLITERATOR_CHARACTERISTICS | Spliterator.DISTINCT;

 private static final int SORTED_CHARACTERISTICS = Spliterator.ORDERED | Spliterator.SORTED;

 public static final int SORTED_SET_SPLITERATOR_CHARACTERISTICS =
SET_SPLITERATOR_CHARACTERISTICS | SORTED_CHARACTERISTICS;

 /** A class returning no elements and a type-specific spliterator interface.
  *
  * <p>This class may be useful to implement your own in case you subclass
  * a type-specific spliterator.
  */

 public static class EmptySpliterator KEY_GENERIC implements KEY_SPLITERATOR KEY_GENERIC,
java.io.Serializable, Cloneable {

  private static final long serialVersionUID = 8379247926738230492L;
  private static final int CHARACTERISTICS = Spliterator.SIZED | Spliterator.SUBSIZED;

  protected EmptySpliterator() {}

#if KEYS_PRIMITIVE
  @Override
  public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) { return false; }
#endif

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public boolean tryAdvance(final Consumer<? super KEY_GENERIC_CLASS> action) { return false; }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC trySplit() { return null; }
  @Override
  public long estimateSize() { return 0; }
  @Override
  public int characteristics() { return CHARACTERISTICS; }

#if KEYS_PRIMITIVE
  @Override
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) { }
#endif

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) { }
```

```
  @Override
  public Object clone() { return EMPTY_SPLITERATOR; }

  private Object readResolve() { return EMPTY_SPLITERATOR; }
 }

 /** An empty spliterator. It is serializable and cloneable.
  *
  * <p>The class of this objects represent an abstract empty spliterator
  * that can iterate as a type-specific spliterator.
  */
 SUPPRESS_WARNINGS_KEY_RAWTYPES
 public static final EmptySpliterator EMPTY_SPLITERATOR = new EmptySpliterator();

#if KEYS_REFERENCE
 /** Returns an empty spliterator. It is serializable and cloneable.
  *
  * <p>The class of the object returned represent an abstract empty spliterator
  * that can iterate as a type-specific (list) spliterator.
  *
  * <p>This method provides a typesafe access to {@link #EMPTY_SPLITERATOR}.
  * @return an empty spliterator.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC emptySpliterator() { return
EMPTY_SPLITERATOR; }
#endif


 /** a spliterator returning a single element. */

 private static class SingletonSpliterator KEY_GENERIC implements KEY_SPLITERATOR KEY_GENERIC {
  private final KEY_GENERIC_TYPE element;
  private final KEY_COMPARATOR KEY_SUPER_GENERIC comparator;
  private boolean consumed = false;
  private static final int CHARACTERISTICS = BASE_SPLITERATOR_CHARACTERISTICS
   | Spliterator.SIZED | Spliterator.SUBSIZED | Spliterator.ORDERED
   | Spliterator.DISTINCT | Spliterator.SORTED | Spliterator.IMMUTABLE;

  public SingletonSpliterator(final KEY_GENERIC_TYPE element) {
   this(element, null);
  }

  public SingletonSpliterator(final KEY_GENERIC_TYPE element, final KEY_COMPARATOR
KEY_SUPER_GENERIC comparator) {
   this.element = element;
   this.comparator = comparator;
```

```
  }

  @Override
  public boolean tryAdvance(METHOD_ARG_KEY_CONSUMER action) {
   Objects.requireNonNull(action);
   if (consumed) return false;
   // Existing JVM implementations advance even if the action throw.
   consumed = true;
   action.accept(element);
   return true;
  }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC trySplit() { return null; }
  @Override
  public long estimateSize() { return consumed ? 0 : 1; }
  @Override
  public int characteristics() {
#if KEYS_PRIMITIVE
   return CHARACTERISTICS;
#else
   return CHARACTERISTICS | (element != null ? Spliterator.NONNULL : 0);
#endif
  }

  @Override
#if KEYS_PRIMITIVE
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
#else // ! KEY_PRIMITIVE == KEY_REFERENCE
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
#endif
   Objects.requireNonNull(action);
   if (!consumed) {
    consumed = true;
    action.accept(element);
   }
  }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC getComparator() {
   return comparator;
  }

  @Override
  public long skip(long n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   if (n == 0 || consumed) return 0;
   consumed = true;
```

```
   return 1;
  }
 }


 /** Returns a spliterator that iterates just over the given element.
  *
  * @param element the only element to be returned by a type-specific spliterator.
  * @return a spliterator that iterates just over {@code element}.
  */
 public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC singleton(final KEY_GENERIC_TYPE
element) {
  return new SingletonSpliterator KEY_GENERIC_DIAMOND(element);
 }

 /** Returns a spliterator that iterates just over the given element.
  *
  * <p>The {@link Spliterator#getComparator()} method will return the given comparator.
  * This is within spec because sequences of size 1 are trivially sorted for any
  * comparison function.
  *
  * @param element the only element to be returned by a type-specific spliterator.
  * @param comparator the comparator to return when {@link Spliterator#getComparator()} is called.
  * @return a spliterator that iterates just over {@code element}.
  */
 public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC singleton(final KEY_GENERIC_TYPE
element, final KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
  return new SingletonSpliterator KEY_GENERIC_DIAMOND(element, comparator);
 }

 /** A class to wrap arrays in spiterators. */

 private static class ArraySpliterator KEY_GENERIC implements KEY_SPLITERATOR KEY_GENERIC {

  private static final int BASE_CHARACTERISTICS = BASE_SPLITERATOR_CHARACTERISTICS
   | Spliterator.SIZED | Spliterator.SUBSIZED | Spliterator.ORDERED;

  final KEY_GENERIC_TYPE[] array;
  private final int offset;
  private int length, curr;
  final int characteristics;

  public ArraySpliterator(final KEY_GENERIC_TYPE[] array, final int offset, final int length, int
additionalCharacteristics) {
   this.array = array;
   this.offset = offset;
   this.length = length;
   characteristics = BASE_CHARACTERISTICS | additionalCharacteristics;
```

```
}

@Override
public boolean tryAdvance(METHOD_ARG_KEY_CONSUMER action) {
 if (curr >= length) return false;
 Objects.requireNonNull(action);
 action.accept(array[offset + curr++]);
 return true;
}

@Override
public long estimateSize() { return length - curr; }
@Override
public int characteristics() { return characteristics; }

protected ArraySpliterator KEY_GENERIC makeForSplit(int newOffset, int newLength) {
 return new ArraySpliterator KEY_GENERIC_DIAMOND(array, newOffset, newLength, characteristics);
}

@Override
public KEY_SPLITERATOR KEY_GENERIC trySplit() {
 int retLength = (length - curr) >> 1;
 if (retLength <= 1) return null;
 int myNewCurr = curr + retLength;
 int retOffset = offset + curr;
 // int myNewLength = length - retLength;
 this.curr = myNewCurr;
 // this.length = myNewLength;
 return makeForSplit(retOffset, retLength);
}

@Override
public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
 Objects.requireNonNull(action);
 for (; curr < length; ++curr) {
  action.accept(array[offset + curr]);
 }
}

@Override
public long skip(long n) {
 if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
 if (curr >= length) return 0;
 final int remaining = length - curr;
 if (n < remaining) {
  curr = SafeMath.safeLongToInt(curr + n);
  return n;
 }
```

```
   n = remaining;
   curr = length;
   return n;
  }
 }

 private static class ArraySpliteratorWithComparator KEY_GENERIC extends ArraySpliterator KEY_GENERIC {
  private final KEY_COMPARATOR KEY_SUPER_GENERIC comparator;

  public ArraySpliteratorWithComparator(final KEY_GENERIC_TYPE[] array, final int offset, final int length, int
additionalCharacteristics, final KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
   super(array, offset, length, additionalCharacteristics | SORTED_CHARACTERISTICS);
   this.comparator = comparator;
  }

  @Override
  protected ArraySpliteratorWithComparator KEY_GENERIC makeForSplit(int newOffset, int newLength) {
   return new ArraySpliteratorWithComparator KEY_GENERIC_DIAMOND(array, newOffset, newLength,
characteristics, comparator);
  }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC getComparator() {
   return comparator;
  }
 }

 /** Wraps the given part of an array into a type-specific spliterator.
  *
  * <p>The type-specific spliterator returned by this method will iterate
  * {@code length} times, advancing over consecutive elements of the given
  * array starting from the one with index {@code offset}.
  *
  * <p>The returned spliterator will report {@linkplain Spliterator#characteristics() characteristics}
  * {@link Spliterator#SIZED}, {@link Spliterator#SUBSIZED},
  * {@link Spliterator#ORDERED}, and for primitive arrays, {@link Spliterator#NONNULL}.
  *
  * @param array an array to wrap into a type-specific spliterator.
  * @param offset the first element of the array to be returned.
  * @param length the number of elements to return.
  * @return a spliterator that will iterate over {@code length} elements of {@code array} starting at position
{@code offset}.
  */
 public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC wrap(final KEY_GENERIC_TYPE[] array,
final int offset, final int length) {
  ARRAYS.ensureOffsetLength(array, offset, length);
  return new ArraySpliterator KEY_GENERIC_DIAMOND(array, offset, length, 0);
 }
```

```
/** Wraps the given array into a type-specific spliterator.
 *
 * <p>The type-specific spliterator returned by this method will advance over
 * all elements of the given array.
 *
 * <p>The returned spliterator will report {@linkplain Spliterator#characteristics() characteristics}
 * {@link Spliterator#SIZED}, {@link Spliterator#SUBSIZED},
 * {@link Spliterator#ORDERED}, and for primitive arrays, {@link Spliterator#NONNULL}.
 *
 * @param array an array to wrap into a type-specific spliterator.
 * @return a spliterator that will iterate over the elements of {@code array}.
 */
public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC wrap(final KEY_GENERIC_TYPE[] array)
{
 return new ArraySpliterator KEY_GENERIC_DIAMOND(array, 0, array.length, 0);
}

/** Wraps the given part of an array into a type-specific spliterator.
 *
 * <p>The type-specific spliterator returned by this method will iterate
 * {@code length} times, advancing over consecutive elements of the given
 * array starting from the one with index {@code offset}.
 *
 * <p>The returned spliterator will report {@linkplain Spliterator#characteristics() characteristics}
 * {@link Spliterator#SIZED}, {@link Spliterator#SUBSIZED},
 * {@link Spliterator#ORDERED}, and for primitive arrays, {@link Spliterator#NONNULL},
 * on top of any additional characteristics given in {@code additionalCharacteristics} (for example, if
 * the caller knows the backing array has distinct elements, they can pass {@link Spliterator#DISTINCT}).
 *
 * @param array an array to wrap into a type-specific spliterator.
 * @param offset the first element of the array to be returned.
 * @param length the number of elements to return.
 * @param additionalCharacteristics any additional characteristics to report.
 * @return a spliterator that will iterate over {@code length} elements of {@code array} starting at position
{@code offset}.
 */
public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC wrap(final KEY_GENERIC_TYPE[] array,
final int offset, final int length, final int additionalCharacteristics) {
 ARRAYS.ensureOffsetLength(array, offset, length);
 return new ArraySpliterator KEY_GENERIC_DIAMOND(array, offset, length, additionalCharacteristics);
}

/** Wraps the given part of a sorted array into a type-specific spliterator.
 *
 * <p>It is the caller's responsibility to ensure the array is actually sorted using
 * the comparator given.
 *
```

```
 * <p>The type-specific spliterator returned by this method will iterate
 * {@code length} times, advancing over consecutive elements of the given
 * array starting from the one with index {@code offset}.
 *
 * <p>The returned spliterator will report {@linkplain Spliterator#characteristics() characteristics}
 * {@link Spliterator#SIZED}, {@link Spliterator#SUBSIZED},
 * {@link Spliterator#ORDERED}, {@link Spliterator#SORTED}, and for primitive arrays,
 * {@link Spliterator#NONNULL},
 * on top of any additional characteristics given in {@code additionalCharacteristics} (for example, if
 * the caller knows the backing array has distinct elements, they can pass {@link Spliterator#DISTINCT}).
 *
 * @param array an array to wrap into a type-specific spliterator.
 * @param offset the first element of the array to be returned.
 * @param length the number of elements to return.
 * @param additionalCharacteristics any additional characteristics to report.
 * @param comparator the comparator the array was sorted with (or {@code null} for natural ordering)
 * @return a spliterator that will iterate over {@code length} elements of {@code array} starting at position
{@code offset}.
 */
public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC wrapPreSorted(
  final KEY_GENERIC_TYPE[] array, final int offset, final int length, final int additionalCharacteristics,
KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
 ARRAYS.ensureOffsetLength(array, offset, length);
 return new ArraySpliteratorWithComparator KEY_GENERIC_DIAMOND(array, offset, length,
additionalCharacteristics, comparator);
}

/** Wraps the given part of a sorted array into a type-specific spliterator.
 *
 * <p>It is the caller's responsibility to ensure the array is actually sorted using
 * the comparator given.
 *
 * <p>The type-specific spliterator returned by this method will iterate
 * {@code length} times, advancing over consecutive elements of the given
 * array starting from the one with index {@code offset}.
 *
 * <p>The returned spliterator will report {@linkplain Spliterator#characteristics() characteristics}
 * {@link Spliterator#SIZED}, {@link Spliterator#SUBSIZED},
 * {@link Spliterator#ORDERED}, {@link Spliterator#SORTED}, and for primitive arrays,
 * {@link Spliterator#NONNULL}.
 *
 * @param array an array to wrap into a type-specific spliterator.
 * @param offset the first element of the array to be returned.
 * @param length the number of elements to return.
 * @param comparator the comparator the array was sorted with (or {@code null} for natural ordering)
 * @return a spliterator that will iterate over {@code length} elements of {@code array} starting at position
{@code offset}.
 */
```

```
public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC wrapPreSorted(
  final KEY_GENERIC_TYPE[] array, final int offset, final int length, KEY_COMPARATOR
KEY_SUPER_GENERIC comparator) {
 return wrapPreSorted(array, offset, length, 0, comparator);
}

/** Wraps the given sorted array into a type-specific spliterator.
 *
 * <p>It is the caller's responsibility to ensure the array is actually sorted using
 * the comparator given.
 *
 * <p>The type-specific spliterator returned by this method will advance over
 * all elements of the given array.
 *
 * <p>The returned spliterator will report {@linkplain Spliterator#characteristics() characteristics}
 * {@link Spliterator#SIZED}, {@link Spliterator#SUBSIZED},
 * {@link Spliterator#ORDERED}, {@link Spliterator#SORTED}, and for primitive arrays,
 * {@link Spliterator#NONNULL}.
 *
 * @param array an array to wrap into a type-specific spliterator.
 * @param comparator the comparator the array was sorted with (or {@code null} for natural ordering)
 * @return a spliterator that will iterate over {@code length} elements of {@code array} starting at position
{@code offset}.
 */
public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC wrapPreSorted(
  final KEY_GENERIC_TYPE[] array, KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
 return wrapPreSorted(array, 0, array.length, comparator);
}

// There is no non-comparator version of wrapPreSorted; because Spliterator has to return the Comparator
// it is ordered with respect to, the caller should think about the Spliterator they use.

// wrap, unwrap, and pour are not provided because if you are using Spliterators, you typically
// are going to be using streams. That and Spliterator's API isn't well suited for these
// types of tasks.

private static class SpliteratorWrapper KEY_GENERIC implements KEY_SPLITERATOR KEY_GENERIC {
 final Spliterator<KEY_GENERIC_CLASS> i;

 public SpliteratorWrapper(final Spliterator<KEY_GENERIC_CLASS> i) {
  this.i = i;
 }

#if KEYS_INT_LONG_DOUBLE
 // This is pretty much the only time overriding this overload is correct; we want to
 // delegate as an Object consumer, not wrap it as a primitive one.
 @Override
 public boolean tryAdvance(final KEY_CONSUMER action) {
```

```
   return i.tryAdvance(action);
  }
#endif

#if KEYS_INT_LONG_DOUBLE
  @SuppressWarnings("unchecked")
#endif
#if KEYS_PRIMITIVE
  @Override
  public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
#if KEYS_INT_LONG_DOUBLE // The JDK's IntConsumer is not a subclass of Consumer, so we need another
lambda.
   Objects.requireNonNull(action);
   return i.tryAdvance(action instanceof Consumer ? (Consumer<? super KEY_GENERIC_CLASS>)action :
action::accept);
#else
   return i.tryAdvance(action);
#endif
  }
#endif

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public boolean tryAdvance(final Consumer<? super KEY_GENERIC_CLASS> action) {
   return i.tryAdvance(action);
  }

#if KEYS_INT_LONG_DOUBLE
  // This is pretty much the only time overriding this overload is correct; we want to
  // delegate as an Object consumer, not wrap it as a primitive one.
  @Override
  public void forEachRemaining(final KEY_CONSUMER action) {
   i.forEachRemaining(action);
  }
#endif

#if KEYS_INT_LONG_DOUBLE
  @SuppressWarnings("unchecked")
#endif
#if KEYS_PRIMITIVE
  @Override
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
#if KEYS_INT_LONG_DOUBLE // The JDK's IntConsumer is not a subclass of Consumer, so we need another
lambda.
   Objects.requireNonNull(action);
   i.forEachRemaining(action instanceof Consumer ? (Consumer<? super KEY_GENERIC_CLASS>)action :
action::accept);
#else
```

```
   i.forEachRemaining(action);
#endif
  }
#endif

  DEPRECATED_IF_KEYS_PRIMITIVE
  @Override
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
   i.forEachRemaining(action);
  }

  @Override
  public long estimateSize() { return i.estimateSize(); }

  @Override
  public int characteristics() { return i.characteristics(); }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC getComparator() {
   return COMPARATORS.AS_KEY_COMPARATOR(i.getComparator());
  }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC trySplit() {
   Spliterator<KEY_GENERIC_CLASS> innerSplit = i.trySplit();
   if (innerSplit == null) return null;
   return new SpliteratorWrapper KEY_GENERIC_DIAMOND(innerSplit);
  }
 }

 private static class SpliteratorWrapperWithComparator KEY_GENERIC extends SpliteratorWrapper
KEY_GENERIC {
  final KEY_COMPARATOR KEY_SUPER_GENERIC comparator;

  public SpliteratorWrapperWithComparator(final Spliterator<KEY_GENERIC_CLASS> i, final
KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
   super(i);
   this.comparator = comparator;
  }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC getComparator() {
   return comparator;
  }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC trySplit() {
   Spliterator<KEY_GENERIC_CLASS> innerSplit = i.trySplit();
```

```
   if (innerSplit == null) return null;
   return new SpliteratorWrapperWithComparator KEY_GENERIC_DIAMOND(innerSplit, comparator);
  }
 }

#if KEYS_PRIMITIVE && ! KEY_CLASS_Boolean
 private static class PrimitiveSpliteratorWrapper KEY_GENERIC implements KEY_SPLITERATOR
KEY_GENERIC {
  final JDK_PRIMITIVE_SPLITERATOR i;

  public PrimitiveSpliteratorWrapper(final JDK_PRIMITIVE_SPLITERATOR i) {
   this.i = i;
  }

  @Override
  public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
   return i.tryAdvance(action);
  }

  @Override
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
   i.forEachRemaining(action);
  }

  @Override
  public long estimateSize() { return i.estimateSize(); }

  @Override
  public int characteristics() { return i.characteristics(); }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC getComparator() {
#if KEYS_BYTE_CHAR_SHORT_FLOAT
    // Get comparator outside of lambda to fail-fast in case inner call throws.
    final java.util.Comparator<? super KEY_CLASS_WIDENED> comp = i.getComparator();
    return (KEY_TYPE left, KEY_TYPE right) -> comp.compare(KEY_CLASS_WIDENED.valueOf(left),
KEY_CLASS_WIDENED.valueOf(right));
#else
    return COMPARATORS.AS_KEY_COMPARATOR(i.getComparator());
#endif
  }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC trySplit() {
   JDK_PRIMITIVE_SPLITERATOR innerSplit = i.trySplit();
   if (innerSplit == null) return null;
   return new PrimitiveSpliteratorWrapper(innerSplit);
  }
```

```
 }

 private static class PrimitiveSpliteratorWrapperWithComparator KEY_GENERIC extends
PrimitiveSpliteratorWrapper KEY_GENERIC {
  final KEY_COMPARATOR KEY_SUPER_GENERIC comparator;

  public PrimitiveSpliteratorWrapperWithComparator(final JDK_PRIMITIVE_SPLITERATOR i, final
KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
   super(i);
   this.comparator = comparator;
  }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC getComparator() {
   return comparator;
  }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC trySplit() {
   JDK_PRIMITIVE_SPLITERATOR innerSplit = i.trySplit();
   if (innerSplit == null) return null;
   return new PrimitiveSpliteratorWrapperWithComparator(innerSplit, comparator);
  }
 }
#endif


 /** Wraps a standard spliterator into a type-specific spliterator.
  *
  * <p>This method wraps a standard spliterator into a type-specific one which will handle the
  * type conversions for you. Of course, any attempt to wrap a spliterator returning the
  * instances of the wrong class will generate a {@link ClassCastException}. The
  * returned spliterator is backed by {@code i}: changes to one of the spliterators
  * will affect the other, too.
  *
  * <p>If {@code i} is already type-specific, it will returned and no new object
  * will be generated.
  *
  * @param i a spliterator.
  * @return a type-specific spliterator backed by {@code i}.
  */
#if KEYS_PRIMITIVE
 @SuppressWarnings({"unchecked","rawtypes"})
#endif
 public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC AS_KEY_SPLITERATOR(final Spliterator
KEY_GENERIC i) {
  if (i instanceof KEY_SPLITERATOR) return (KEY_SPLITERATOR KEY_GENERIC)i;
#if KEYS_INT_LONG_DOUBLE
```

```
  if (i instanceof JDK_PRIMITIVE_SPLITERATOR) return new PrimitiveSpliteratorWrapper
KEY_GENERIC_DIAMOND((JDK_PRIMITIVE_SPLITERATOR)i);
#endif
  return new SpliteratorWrapper KEY_GENERIC_DIAMOND(i);
 }

 /** Wraps a standard spliterator into a type-specific spliterator.
  *
  * <p>This method wraps a standard spliterator into a type-specific one which will handle the
  * type conversions for you. Of course, any attempt to wrap a spliterator returning the
  * instances of the wrong class will generate a {@link ClassCastException}. The
  * returned spliterator is backed by {@code i}: changes to one of the spliterators
  * will affect the other, too.
  *
  * <p>This method will cause the returned spliterator's {@link Spliterator#getComparator()} method
  * to always return {@code comparatorOverride}, regardless of what the wrapped spliterator's
  * {@code getComparator()} method returns.
  *
  * <p><b>NOTE:</b>This is mostly intended for supporting default
  * implementations in interfaces that wrap JDK spliterators, and not a general purpose method.
  *
  * <p>If {@code i} is already type-specific, this method will throw, as such spliterators already
  * have a {@code getComparator()} that returns a properly typed comparator.
  *
  * @param i a spliterator.
  * @param comparatorOverride the comparator to return when {@link Spliterator#getComparator()}
  * @return a type-specific spliterator backed by {@code i}.
  */
#if KEYS_PRIMITIVE
 @SuppressWarnings({"unchecked","rawtypes"})
#endif
 public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC AS_KEY_SPLITERATOR(final Spliterator
KEY_GENERIC i, final KEY_COMPARATOR KEY_SUPER_GENERIC comparatorOverride) {
  if (i instanceof KEY_SPLITERATOR) throw new IllegalArgumentException("Cannot override comparator on
instance that is already a " + KEY_SPLITERATOR.class.getSimpleName());
#if defined JDK_PRIMITIVE_SPLITERATOR && KEYS_PRIMITIVE
  if (i instanceof JDK_PRIMITIVE_SPLITERATOR) return new PrimitiveSpliteratorWrapperWithComparator
KEY_GENERIC_DIAMOND((JDK_PRIMITIVE_SPLITERATOR)i, comparatorOverride);
#endif
  return new SpliteratorWrapperWithComparator KEY_GENERIC_DIAMOND(i, comparatorOverride);
 }

#if KEYS_BYTE_CHAR_SHORT_FLOAT
 /** Wrap a JDK primitive spliterator to a type-specific spliterator, making checked
  * narrowed casts.<p>
  * The {@code tryAdvance} method throws {@link IllegalArgumentException} if any element would underflow or
overflow.
  *
```

```
 * @param i a spiterator
 * @return a type-specific spliterator backed by {@code i}
 */
public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC narrow(final
JDK_PRIMITIVE_SPLITERATOR i) {
#if KEYS_INT_LONG_DOUBLE
 if (i instanceof KEY_SPLITERATOR) return (KEY_SPLITERATOR KEY_GENERIC)i;
#endif
 return new PrimitiveSpliteratorWrapper KEY_GENERIC_DIAMOND(i);
}
#endif

#if KEYS_BYTE_CHAR_SHORT_FLOAT
#if KEY_CLASS_Character
/** Wrap a type-specific spliterator to a JDK compatible primitive spliterator.
 *
 * <p><b>WARNING</b>: This is <em>not</em> the same as converting the source to a sequence
 * of code points. This returned instance literally performs {@code (int)(charValue)} casts.
 * Surrogate pairs will be left as separate elements instead of combined into a single element
 * with the code point it represents.
 *
 * @param i a spliterator
 * @return a JDK compatible primitive spliterator backed by {@code i}
 */
#else
/** Wrap a type-specific spliterator to a JDK compatible primitive spliterator.
 *
 * @param i a spliterator
 * @return a JDK compatible primitive spliterator backed by {@code i}
 */
#endif
public static KEY_WIDENED_SPLITERATOR widen(KEY_SPLITERATOR i) { return
WIDENED_SPLITERATORS.wrap(i); }
#endif

/**
 * Perform the given {@code action} on each element that matches the given {@code predicate}.
 *
 * <p>This is equivalent to {@code
java.util.stream.StreamSupport.stream(spliterator).filter(predicate).forEach(action)}
 * (substitute the proper primitive stream as needed), except it may perform better (but no potential for parallelism).
 */
public static KEY_GENERIC void onEachMatching(final STD_KEY_SPLITERATOR KEY_GENERIC
spliterator, final METHOD_ARG_PREDICATE predicate, final METHOD_ARG_KEY_CONSUMER action) {
 Objects.requireNonNull(predicate);
 Objects.requireNonNull(action);

 spliterator.forEachRemaining((KEY_GENERIC_TYPE value) -> {
```

```
   if (predicate.test(value)) {
    action.accept(value);
   }
  });
 }
#if KEYS_BYTE_CHAR_SHORT_FLOAT
 /**
  * Perform the given {@code action} on each element that matches the given {@code predicate}.
  *
  * <p>This is equivalent to {@code
java.util.stream.StreamSupport.stream(spliterator).filter(predicate).forEach(action)}
  * (substitute the proper primitive stream as needed), except it may perform better (but no potential for parallelism).
  */
 public static KEY_GENERIC void onEachMatching(final STD_KEY_SPLITERATOR KEY_GENERIC
spliterator, final JDK_PRIMITIVE_PREDICATE predicate, final JDK_PRIMITIVE_KEY_CONSUMER action) {
  Objects.requireNonNull(predicate);
  Objects.requireNonNull(action);

  // No lambda introduction here; this isn't overrideable (static method) and widening casts are implicit.
  spliterator.forEachRemaining((KEY_GENERIC_TYPE value) -> {
   if (predicate.test(value)) {
    action.accept(value);
   }
  });
 }
#endif

 /**
  * A skeletal implementation for a spliterator backed by an index based data store. High performance
  * concrete implementations (like the main Spliterator of ArrayList) generally should avoid using this
  * and just implement the interface directly, but should be decent for less
  * performance critical implementations.
  *
  * <p>This class is only appropriate for sequences that are at most {@link Integer#MAX_VALUE} long.
  * If your backing data store can be bigger then this, consider the equivalently named class in
  * the type specific {@code BigSpliterators} class.
  *
  * <p>As the abstract methods in this class are used in inner loops, it is generally a
  * good idea to override the class as {@code final} as to encourage the JVM to inline
  * them (or alternatively, override the abstract methods as final).
  */
 public static abstract class AbstractIndexBasedSpliterator KEY_GENERIC extends
KEY_ABSTRACT_SPLITERATOR KEY_GENERIC {

  /** The current position index, the index of the item to be given after the next call to {@link #tryAdvance}.
   *
   * <p>This value will be between {@code minPos} and {@link #getMaxPos()} (exclusive) (on a best effort, so
concurrent
```

```
 * structural modifications may cause this to be violated, but that usually invalidates spliterators anyways).
 * Thus {@code pos} being {@code minPos + 2} would mean {@link #tryAdvance}
 * was called twice and the next call will give the third element of this spliterator.
 */
protected int pos;

protected AbstractIndexBasedSpliterator(int initialPos) {
 this.pos = initialPos;
}

// When you implement these, you should probably declare them final to encourage the JVM to inline them.

/** Get the item corresponding to the given index location.
 *
 * <p>Do <em>not</em> advance {@link #pos} in this method; the default {@link #tryAdvance} and
 * {@link #forEachRemaining} methods takes care of this.
 *
 * <p>The {@code location} given will be between {@code minPos} and {@link #getMaxPos()} (exclusive).
 * Thus, a {@code location} of {@code minPos + 2} would mean {@link #tryAdvance} was called twice
 * and this method should return what the next call to {@link #tryAdvance()} should give.
 */
protected abstract KEY_GENERIC_TYPE get(int location);

/** The maximum pos can be, and is the logical end (exclusive) of the "range".
 *
 * <p>If pos is equal to the return of this method, this means the last element has been returned and the next call to
{@link #tryAdvance} will return {@code false}.
 *
 * <p>Usually set return the parent {@linkplain java.util.Collection#size() collection's size}, but does not have to be
 * (for example, sublists and subranges).
 *
 * <p>This method allows the implementation to decide how it binds on the size (late or early).
 * However, {@link EarlyBindingSizeIndexBasedSpliterator} and {@link LateBindingSizeIndexBasedSpliterator}
give
 * an implementation of this method for the two most common strategies.
 */
protected abstract int getMaxPos();

/** Make a new spliterator to {@link #trySplit()} starting with the given {@code pos}
 * and ending at the given {@code maxPos}.
 *
 * <p>An implementation is free to look at the range given, and if it deems it too small
 * to split further, return {@code null}. In which case, {@link #trySplit()} will not
 * modify the state of this spliterator.
 *
 * <p>Do <em>not</em> modify {@link #pos} in this method; the default {@link #trySplit()}
 * method takes care of this.
 *
```

```
 * <p>To comply with the spec of {@link Spliterator#ORDERED}, this will
 * only be called to create prefixes of the current sequence this spliterator is over,
 * and this instance will start at the end of the returned sequence and have the same
 * end point.
 * As such, this method should also not change what {@link #getMaxPos()} returns.
 */
protected abstract KEY_SPLITERATOR KEY_GENERIC makeForSplit(int pos, int maxPos);

/** Compute where to split on the next {@link #trySplit()}, given the current pos and
 * {@link #getMaxPos()} (or any other metric the implementation wishes to use).
 *
 * <p>If a value {@code == pos} or {@code == getMaxPos()} is returned, the
 * {@link #trySplit()} method will assume a split of size 0 was computed,
 * and thus won't split or change state. If a value outside that range is
 * returned, then {@link #trySplit()} will throw {@link IndexOutOfBoundsException}.
 * In particular, this means that no handling of overflow or underflow
 * is performed.
 *
 * @apiNote The reasoning behind the throwing if out of range behavior is that, even
 * though it can significantly slow the process of splitting, it is much better then
 * risking a buggy implementation causing splits to stop happening much earlier then
 * intended. Also, splitting is not usually in the "inner loop" of stream operations,
 * so this slowness isn't in the bottleneck. That and we have already warned that
 * high performance spliterators should prefer implementing all the methods themselves
 * instead of through this interface.
 *
 * @implSpec This default implementation is a simple split-by-2 strategy, dividing
 * in the middle of pos and {@link #getMaxPos()}. It is unspecified whether
 * the first range or the second range will be larger in the case of an odd length range.
 */
protected int computeSplitPoint() {
 // Overflow safe midpoint computation.
 return pos + ((getMaxPos() - pos) / 2);
}

private void splitPointCheck(final int splitPoint, final int observedMax) {
 // TODO When minimum Java version becomes Java 9, use Objects.checkFromToIndex (after first letting == max
case pass through)
 if (splitPoint < pos || splitPoint > observedMax) {
  throw new IndexOutOfBoundsException("splitPoint " + splitPoint + " outside of range of current position " + pos +
" and range end " + observedMax);
 }
}

// Since this is an index based spliterator, list characteristics make sense.
@Override
public int characteristics() { return SPLITERATORS.LIST_SPLITERATOR_CHARACTERISTICS; }
```

```
@Override
public long estimateSize() { return (long)getMaxPos() - pos; }

@Override
public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
 if (pos >= getMaxPos()) return false;
 action.accept(get(pos++));
 return true;
}

@Override
public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
 for (final int max = getMaxPos(); pos < max; ++pos) {
  action.accept(get(pos));
 }
}

// TODO since this method doesn't depend on the type at all, should it be "hoisted" into a
// non type-specific superclass in it.unimi.dsi.fastutil?
@Override
public long skip(long n) {
 if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
 final int max = getMaxPos();
 if (pos >= max) return 0;
 final int remaining = max - pos;
 if (n < remaining) {
  pos = SafeMath.safeLongToInt(pos + n);
  return n;
 }
 n = remaining;
 pos = max;
 return n;
}

// TODO since this method doesn't depend on the type at all, should it be "hoisted" into a
// non type-specific superclass in it.unimi.dsi.fastutil?
/** {@inheritDoc}
 *
 * @implSpec This implementation always returns a prefix of the elements, in order to comply with
 * the {@link Spliterator#ORDERED} property. This means this current iterator does not need to
 * to update what {@link #getMaxPos()} returns in response to this method (but it may do
 * "book-keeping" on it based on binding strategy).
 *
 * <p>The split point is computed by {@link #computeSplitPoint()}; see that method for details.
 *
 * @throws IndexOutOfBoundsException if the return of {@link #computeSplitPoint()} was
 *  {@code < pos} or {@code > {@link #getMaxPos()}}.
 */
```

```
 @Override
 public KEY_SPLITERATOR KEY_GENERIC trySplit() {
  final int max = getMaxPos();
  final int splitPoint = computeSplitPoint();
  if (splitPoint == pos || splitPoint == max) return null;
  splitPointCheck(splitPoint, max);
  int oldPos = pos;
  KEY_SPLITERATOR KEY_GENERIC maybeSplit = makeForSplit(oldPos, splitPoint);
  if (maybeSplit != null) this.pos = splitPoint;
  return maybeSplit;
 }
}

/**
 * A skeletal implementation for a spliterator backed by an index based data store. High performance
 * concrete implementations (like the main Spliterator of ArrayList) generally should avoid using this
 * and just implement the interface directly, but should be decent for less
 * performance critical implementations.
 *
 * <p>This class implements an early binding strategy for {@link #getMaxPos()}. The last index
 * this spliterator covers is fixed at construction time and does not vary on changes to the
 * backing data store. This should usually be the {@linkplain java.util.Collection#size() size} of the
 * backing data store (until a split at least), hence the class' name, but this is not required.
 *
 * <p>As the abstract methods in this class are used in inner loops, it is generally a
 * good idea to override the class as {@code final} as to encourage the JVM to inline
 * them (or alternatively, override the abstract methods as final).
 */
 public static abstract class EarlyBindingSizeIndexBasedSpliterator KEY_GENERIC extends
AbstractIndexBasedSpliterator KEY_GENERIC {
  /** The maximum {@link #pos} can be */
  protected final int maxPos;

 protected EarlyBindingSizeIndexBasedSpliterator(int initialPos, int maxPos) {
  super(initialPos);
  this.maxPos = maxPos;
 }


 @Override
 protected final int getMaxPos() { return maxPos; }
}

/**
 * A skeletal implementation for a spliterator backed by an index based data store. High performance
 * concrete implementations (like the main Spliterator of ArrayList) generally should avoid using this
 * and just implement the interface directly, but should be decent for less
 * performance critical implementations.
```

```
 *
 * <p>This class implements a late binding strategy. On a new, non-split instance, the
 * {@link #getMaxPos() max pos} will track the given data store (usually it's
 * {@linkplain java.util.Collection#size() size}, hence the class' name). On the first
 * {@linkplain #trySplit() split}, the last index will be read from the backing data store one
 * last time and then be fixed for the remaining duration of this instance.<br>
 * The returned split <em>should</em> should also be have a constant {@code maxPos}.
 *
 * <p>As the abstract methods in this class are used in inner loops, it is generally a
 * good idea to override the class as {@code final} as to encourage the JVM to inline
 * them (or alternatively, override the abstract methods as final).
 */
 public static abstract class LateBindingSizeIndexBasedSpliterator KEY_GENERIC extends
AbstractIndexBasedSpliterator KEY_GENERIC {
  /** The maximum {@link #pos} can be, or -1 if it hasn't been fixed yet. */
  protected int maxPos = -1;
  private boolean maxPosFixed;

 protected LateBindingSizeIndexBasedSpliterator(int initialPos) {
  super(initialPos);
  this.maxPosFixed = false;
 }

 protected LateBindingSizeIndexBasedSpliterator(int initialPos, int fixedMaxPos) {
  super(initialPos);
  this.maxPos = fixedMaxPos;
  this.maxPosFixed = true;
 }

 /** Return the maximum pos can be dynamically tracking the backing data store.
  *
  * <p>This method will be the return value of {@link #getMaxPos()} until this spliterator
  * is {@linkplain #trySplit()} split, in which case its final return value will be saved
  * and remain constant for the rest of the duration of this instance.
  */
 protected abstract int getMaxPosFromBackingStore();

 @Override
 protected final int getMaxPos() { return maxPosFixed ? maxPos : getMaxPosFromBackingStore(); }

 @Override
 public KEY_SPLITERATOR KEY_GENERIC trySplit() {
  KEY_SPLITERATOR KEY_GENERIC maybeSplit = super.trySplit();
  if (!maxPosFixed && maybeSplit != null) {
   maxPos = getMaxPosFromBackingStore();
   maxPosFixed = true;
  }
  return maybeSplit;
```

```
  }
 }

#if KEY_CLASS_Integer || KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character ||
KEY_CLASS_Long

 private static class IntervalSpliterator implements KEY_SPLITERATOR {
  private static final int DONT_SPLIT_THRESHOLD = 2;
#if KEY_CLASS_Long
  private static final long MAX_SPLIT_SIZE = 1 << 30;
#endif
  private static final int CHARACTERISTICS = BASE_SPLITERATOR_CHARACTERISTICS
   | Spliterator.SIZED | Spliterator.SUBSIZED | Spliterator.ORDERED
   | Spliterator.DISTINCT | Spliterator.SORTED | Spliterator.IMMUTABLE;

  private KEY_TYPE curr, to;

  public IntervalSpliterator(final KEY_TYPE from, final KEY_TYPE to) {
   this.curr = from;
   this.to = to;
  }

  @Override
  public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
   if (curr >= to) return false;
   action.accept(curr++);
   return true;
  }

  @Override
#if KEYS_PRIMITIVE
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
#else // ! KEY_PRIMITIVE == KEY_REFERENCE
  public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
#endif
   Objects.requireNonNull(action);
   for (; curr < to; ++curr) {
    action.accept(curr);
   }
  }

  @Override
  public long estimateSize() {
#if KEY_CLASS_Integer
   return (long)to - curr;
#else
   return to - curr;
#endif
```

```
  }

  @Override
  public int characteristics() {
   return CHARACTERISTICS;
  }

  @Override
  public KEY_COMPARATOR getComparator() {
   // Return null to indicate natural ordering.
   return null;
  }

  @Override
  public KEY_SPLITERATOR trySplit() {
#if KEY_CLASS_Integer || KEY_CLASS_Long
   long remaining = to - curr;
#else
   int remaining = to - curr;
#endif
#if KEY_CLASS_Long
   long mid = curr + (remaining >> 1);
   // Can be less then 0 if range overflowed.
   if (remaining > 2 * MAX_SPLIT_SIZE || remaining < 0) {
    mid = curr + MAX_SPLIT_SIZE;
   }
#else
   KEY_TYPE mid = (KEY_TYPE)(curr + (remaining >> 1));
#endif
   if (remaining >= 0 && remaining <= DONT_SPLIT_THRESHOLD) return null;
   KEY_TYPE old_curr = curr;
   curr = mid;
   return new IntervalSpliterator(old_curr, mid);
  }

  @Override
  public long skip(long n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   if (curr >= to) return 0;
   // Can't do the traditional int remaining = to - curr
   // because that could overflow, due to signed from and to (and thus curr).
   long newCurr = curr + n;
   // Can be less then "curr" if overflow
   if (newCurr <= to && newCurr >= curr) {
    curr = KEY_LONG_NARROWING(newCurr);
    return n;
   }
   n = to - curr;
```

```
   curr = to;
   return n;
  }
 }


 /** Creates a type-specific spliterator over an interval.
  *
  * <p>The type-specific spliterator returned by this method will return the
  * elements {@code from}, {@code from+1},&hellip;, {@code to-1}.
  *
  * @param from the starting element (inclusive).
  * @param to the ending element (exclusive).
  * @return a type-specific spliterator enumerating the elements from {@code from} to {@code to}.
  */
 public static KEY_SPLITERATOR fromTo(final KEY_TYPE from, final KEY_TYPE to) {
  return new IntervalSpliterator(from, to);
 }

#endif

 private static class SpliteratorConcatenator KEY_GENERIC implements KEY_SPLITERATOR KEY_GENERIC {
  private static final int EMPTY_CHARACTERISTICS = Spliterator.SIZED | Spliterator.SUBSIZED;
  // Neither SORTED nor DISTINCT "combine". Two combined spliterators with these characteristics may not have
it.
  // Example, {1, 2} and {1, 3}, both SORTED and DISTINCT, concat to {1, 2, 1, 3}, which isn't.
  private static final int CHARACTERISTICS_NOT_SUPPORTED_WHILE_MULTIPLE = Spliterator.SORTED |
Spliterator.DISTINCT;

  final KEY_SPLITERATOR KEY_EXTENDS_GENERIC a[];
  // Unlike the other classes in this file, length represents remaining, NOT the high mark for offset.
  int offset, length;
  /** The sum of estimatedRemaining <em>except</em> current offset */
  long remainingEstimatedExceptCurrent = Long.MAX_VALUE;
  int characteristics = 0;

  public SpliteratorConcatenator(final KEY_SPLITERATOR KEY_EXTENDS_GENERIC a[], int offset, int length)
{
   this.a = a;
   this.offset = offset;
   this.length = length;
   this.remainingEstimatedExceptCurrent = recomputeRemaining();
   this.characteristics = computeCharacteristics();
  }

  private long recomputeRemaining() {
   int curLength = length - 1;
   int curOffset = offset + 1;
```

```
 long result = 0;
 while (curLength > 0) {
  long cur = a[curOffset++].estimateSize();
  --curLength;
  if (cur == Long.MAX_VALUE) return Long.MAX_VALUE;
  result += cur;
  // Hit max or overflow
  if (result == Long.MAX_VALUE || result < 0) {
   return Long.MAX_VALUE;
  }
 }
 return result;
}

/** Compute the intersection of all contained spliterators' characteristics. */
private int computeCharacteristics() {
 if (length <= 0) {
  return EMPTY_CHARACTERISTICS;
 }
 int current = ~0;
 int curLength = length;
 int curOffset = offset;
 if (curLength > 1) {
  current &= ~CHARACTERISTICS_NOT_SUPPORTED_WHILE_MULTIPLE;
 }
 while (curLength > 0) {
  current &= a[curOffset++].characteristics();
  --curLength;
 }
 return current;
}

private void advanceNextSpliterator() {
 if (length <= 0) {
  throw new AssertionError("advanceNextSpliterator() called with none remaining");
 }
 ++offset;
 --length;
 this.remainingEstimatedExceptCurrent = recomputeRemaining();
 // We do NOT recompute the union of all characteristics here.
 // Per spec, the only time characteristics() can change its
 // return value on an instance is after a call to trySplt().
}

@Override
public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
 boolean any = false;
```

```
  while(length > 0) {
   if (a[offset].tryAdvance(action)) {
    any = true;
    break;
   }
   advanceNextSpliterator();
  }
  return any;
 }

#if KEYS_PRIMITIVE
 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  while (length > 0) {
   a[offset].forEachRemaining(action);
   advanceNextSpliterator();
  }
 }
#endif


 DEPRECATED_IF_KEYS_PRIMITIVE
 @Override
 public void forEachRemaining(final Consumer<? super KEY_GENERIC_CLASS> action) {
  while (length > 0) {
   a[offset].forEachRemaining(action);
   advanceNextSpliterator();
  }
 }

 @Override
 public long estimateSize() {
  if (length <= 0) return 0;
  long est = a[offset].estimateSize() + remainingEstimatedExceptCurrent;
  if (est < 0) {
   // Overflow
   return Long.MAX_VALUE;
  }
  return est;
 }

 @Override
 public int characteristics() {
  return characteristics;
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
```

```
  public KEY_COMPARATOR KEY_SUPER_GENERIC getComparator() {
   if (length == 1 && ((characteristics & Spliterator.SORTED) != 0) ) {
#if KEYS_REFERENCE
    return (KEY_COMPARATOR KEY_SUPER_GENERIC) a[offset].getComparator();
#else
    return a[offset].getComparator();
#endif
   }
   throw new IllegalStateException();
  }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC trySplit() {
   /* First we split on the spliterators array, with new concating spliterators for those array slices.
    * Then if we can't split anymore due to only 1 spliterator we are "concating", return the splits
    * of that single spliterator.
    */
   switch(length) {
    case 0: return null;
    case 1: {
     // We are on the last spliterator. So now we ask it to split.
#if KEYS_REFERENCE
     SUPPRESS_WARNINGS_KEY_UNCHECKED // This is safe because spliterators only "give" K, never "take"
them.
     KEY_SPLITERATOR KEY_GENERIC split = (KEY_SPLITERATOR KEY_GENERIC)a[offset].trySplit();
#else
     KEY_SPLITERATOR split = a[offset].trySplit();
#endif
     // It is possible for a Spliterator to change characteristics after a split.
     // e.g. a SIZED but not SUBSIZED spliterator may split into non-SIZED spliterators.
     this.characteristics = a[offset].characteristics();
     return split;
    }
    case 2: {
     // Per spec, this instance becomes suffix, and we return prefix.
     // Fetch first to return
#if KEYS_REFERENCE
     SUPPRESS_WARNINGS_KEY_UNCHECKED // This is safe because spliterators only "give" K, never "take"
them.
     KEY_SPLITERATOR KEY_GENERIC split = (KEY_SPLITERATOR KEY_GENERIC)a[offset++];
#else
     KEY_SPLITERATOR KEY_GENERIC split = a[offset++];
#endif
     --length;
     // assert length == 1;
     // We become the second
     this.characteristics = a[offset].characteristics();
     this.remainingEstimatedExceptCurrent = 0;
```

```
    return split;
   }
   default:  // Fallthrough to below
  }
  int mid = length >> 1;
  int ret_offset = offset;
  int new_offset = offset + mid;
  int ret_length = mid;
  int new_length = length - mid;
  this.offset = new_offset;
  this.length = new_length;
  this.remainingEstimatedExceptCurrent = recomputeRemaining();
  this.characteristics = computeCharacteristics();
  return new SpliteratorConcatenator KEY_GENERIC_DIAMOND(a, ret_offset, ret_length);
 }

 @Override
 public long skip(long n) {
  long skipped = 0;
  if (length <= 0) return 0;

  while(skipped < n && length >= 0) {
   long curSkipped = a[offset].skip(n - skipped);
   skipped += curSkipped;
   // This relies on the sub spliterators implementing skip() correctly
   // and always skipping as much as possible first call, so the next
   // call to skip() will always return 0.
   // If this assumption does not hold, change the condition to curSkipped == 0.
   // That will make it work correctly in the face of non-conforming implementations,
   // at the cost of doing at least 2 passes through this loop for each spliterator.
   if (skipped < n) advanceNextSpliterator();
  }

  return skipped;
 }
}


/** Concatenates all spliterators contained in an array.
 *
 * <p>This method returns a spliterator that will enumerate in order the elements returned
 * by all spliterators contained in the given array.
 *
 * <p> Note: Due to there being no way to ensure the {@link Comparator} is consistent
 * between each inner spliterator, the returned spliterator's {@link Spliterator#getComparator()}
 * will always throw {@link IllegalStateException}, even when if the current or even all
 * the inner spliterators are {@linkplain Spliterator#SORTED sorted}.
 *
```

```
  * @param a an array of spliterators.
  * @return a spliterator obtained by concatenation.
  */
#if KEYS_REFERENCE
 @SafeVarargs  // Spliterators can only give K, never consume them, making this safe.
#endif
 public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC concat(final KEY_SPLITERATOR
KEY_EXTENDS_GENERIC... a) {
  return concat(a, 0, a.length);
 }



 /** Concatenates a sequence of spliterators contained in an array.
  *
  * <p>This method returns a spliterator that will enumerate in order the elements returned
  * by {@code a[offset]}, then those returned
  * by {@code a[offset + 1]}, and so on up to
  * {@code a[offset + length - 1]}.
  *
  * <p> Note: Due to there being no way to ensure the {@link Comparator} is consistent
  * between each inner spliterator, the returned spliterator's {@link Spliterator#getComparator()}
  * will always throw {@link IllegalStateException}, even when if the current or even all
  * the inner spliterators are {@linkplain Spliterator#SORTED sorted}.
  *
  * @param a an array of spliterators.
  * @param offset the index of the first spliterator to concatenate.
  * @param length the number of spliterators to concatenate.
  * @return a spliterator obtained by concatenation of {@code length} elements of {@code a} starting at {@code
offset}.
  */

 public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC concat(final KEY_SPLITERATOR
KEY_EXTENDS_GENERIC a[], final int offset, final int length) {
  return new SpliteratorConcatenator KEY_GENERIC_DIAMOND(a, offset, length);
 }

 private static class SpliteratorFromIterator KEY_GENERIC implements KEY_SPLITERATOR KEY_GENERIC {
  // TODO Expose this arithmetically incrementing split size logic as an abstract class.
  // Like java.util.Spliterators.AbstractSpliterator?
  private static final int BATCH_INCREMENT_SIZE = 1024;
  private static final int BATCH_MAX_SIZE = 1 << 25;

  private final KEY_ITERATOR KEY_EXTENDS_GENERIC iter;
  final int characteristics;
  private final boolean knownSize;
  /** If {@code knownSize}, then has the remaining size left.
   * Otherwise the value of this variable has no meaning.
   */
```

```
private long size = Long.MAX_VALUE;
private int nextBatchSize = BATCH_INCREMENT_SIZE;

/** Used to "finish off" elements once we hit the end while splitting. */
private KEY_SPLITERATOR KEY_GENERIC delegate = null;

SpliteratorFromIterator(final KEY_ITERATOR KEY_EXTENDS_GENERIC iter, int characteristics) {
 this.iter = iter;
 this.characteristics = BASE_SPLITERATOR_CHARACTERISTICS | characteristics;
 knownSize = false;
}

SpliteratorFromIterator(final KEY_ITERATOR KEY_EXTENDS_GENERIC iter, long size, int
additionalCharacteristics) {
 this.iter = iter;
 knownSize = true;
 this.size = size;
 if ((additionalCharacteristics & Spliterator.CONCURRENT) != 0) {
  this.characteristics = BASE_SPLITERATOR_CHARACTERISTICS | additionalCharacteristics;
 } else {
  this.characteristics = Spliterator.SIZED | Spliterator.SUBSIZED | BASE_SPLITERATOR_CHARACTERISTICS |
additionalCharacteristics;
 }
}

@Override
public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
 if (delegate != null){
  boolean hadRemaining = delegate.tryAdvance(action);
  if (!hadRemaining) delegate = null;
  return hadRemaining;
 }
 if (!iter.hasNext()) return false;
 --size;
 action.accept(iter.NEXT_KEY());
 return true;
}

@Override
public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
 if (delegate != null) {
  delegate.forEachRemaining(action);
  delegate = null;
 }
 iter.forEachRemaining(action);
 size = 0;
}
```

```
@Override
public long estimateSize() {
 if (delegate != null) return delegate.estimateSize();
 if (!iter.hasNext()) return 0;
 // Size can be less then or equal to zero yet still have next if the iterator
 // was concurrently modified, in which case we don't know anymore.
 return knownSize && size >= 0 ? size : Long.MAX_VALUE;
}

@Override
public int characteristics() {
 return characteristics;
}

protected KEY_SPLITERATOR KEY_GENERIC makeForSplit(KEY_GENERIC_TYPE[] batch, int len) {
 return wrap(batch, 0, len, characteristics);
}

@Override
public KEY_SPLITERATOR KEY_GENERIC trySplit() {
 if (!iter.hasNext()) return null;
 int batchSizeEst = knownSize && size > 0 ? (int)Math.min(nextBatchSize, size) : nextBatchSize;
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 KEY_GENERIC_TYPE[] batch = KEY_GENERIC_ARRAY_CAST new KEY_TYPE[batchSizeEst];
 int actualSeen = 0;
 while (actualSeen < batchSizeEst && iter.hasNext()) {
  batch[actualSeen++] = iter.NEXT_KEY();
  --size;
 }
 // Check if the local size variable fell behind the backing source, and if so, fill up remaining of batch
 if (batchSizeEst < nextBatchSize && iter.hasNext()) {
  batch = java.util.Arrays.copyOf(batch, nextBatchSize);
  while (iter.hasNext() && actualSeen < nextBatchSize) {
   batch[actualSeen++] = iter.NEXT_KEY();
   --size;
  }
 }
 nextBatchSize = Math.min(BATCH_MAX_SIZE, nextBatchSize + BATCH_INCREMENT_SIZE);

 // If we have none remaining, then set our delegate to "finish off" the batch we just made.
 KEY_SPLITERATOR KEY_GENERIC split = makeForSplit(batch, actualSeen);
 if (!iter.hasNext()) {
  delegate = split;
  return split.trySplit();
 } else {
  return split;
 }
}
```

```
  @Override
  public long skip(long n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   if (iter instanceof KEY_BIG_LIST_ITERATOR) {
    long skipped = ((KEY_BIG_LIST_ITERATOR KEY_EXTENDS_GENERIC)iter).skip(n);
    size -= skipped;
    return skipped;
   } else {
    long skippedSoFar = 0;
    while (skippedSoFar < n && iter.hasNext()) {
     int skipped = iter.skip(SafeMath.safeLongToInt(Math.min(n, Integer.MAX_VALUE)));
     size -= skipped;
     skippedSoFar += skipped;
    }
    return skippedSoFar;
   }
  }
 }

 private static class SpliteratorFromIteratorWithComparator KEY_GENERIC extends SpliteratorFromIterator
KEY_GENERIC {

  private final KEY_COMPARATOR KEY_SUPER_GENERIC comparator;

  SpliteratorFromIteratorWithComparator(final KEY_ITERATOR KEY_EXTENDS_GENERIC iter, int
additionalCharacteristics, final KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
   super(iter, additionalCharacteristics | SORTED_CHARACTERISTICS);
   this.comparator = comparator;
  }

  SpliteratorFromIteratorWithComparator(final KEY_ITERATOR KEY_EXTENDS_GENERIC iter, long size, int
additionalCharacteristics, final KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
   super(iter, size, additionalCharacteristics | SORTED_CHARACTERISTICS);
   this.comparator = comparator;
  }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC getComparator() {
   return comparator;
  }

  @Override
  protected KEY_SPLITERATOR KEY_GENERIC makeForSplit(KEY_GENERIC_TYPE[] array, int len) {
   return wrapPreSorted(array, 0, len, characteristics, comparator);
  }
 }
```

```
/** Wrap a type-specific {@link java.util.Iterator} of a known size as a type-specific {@link java.util.Spliterator}
 *
 * <p>The returned spliterator will report
 * {@link Spliterator#characteristics() characteristics} {@code additionalCharacterisitcs},
 * and for primitive types, {@link Spliterator#NONNULL}.
 * It will also report {@link Spliterator#SIZED}, {@link Spliterator#SUBSIZED},
 * unless {@link Spliterator#CONCURRENT} is to be reported, in which case these two
 * are not implicitly reported.
 *
 * <p>Because {@link java.util.Iterator} is an inherently linear API, the returned spliterator will
 * yield limited performance gains when run in parallel contexts, as the returned spliterator's
 * {@link Spliterator#trySplit()} will have linear runtime.
 *
 * @param iter the type-specific {@code Iterator} to wrap
 * @param size the number of elements the iterator will return
 * @param additionalCharacterisitcs any additional characteristics to report
 * @return a type-specific {@code Spliterator} that will give the same elements the iterator will return.
 * @see java.util.Spliterators#spliterator(java.util.Iterator, long, int)
 */
 public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC asSpliterator(final KEY_ITERATOR
KEY_EXTENDS_GENERIC iter, final long size, final int additionalCharacterisitcs) {
  return new SpliteratorFromIterator KEY_GENERIC_DIAMOND(iter, size, additionalCharacterisitcs);
 }

/** Wrap a type-specific, sorted {@link java.util.Iterator} of a known size as a type-specific {@link
java.util.Spliterator}
 *
 * <p>It is the caller's responsibility to ensure the iterator's order
 * is actually sorted according to the comparator given.
 *
 * <p>The returned spliterator will report
 * {@link Spliterator#characteristics() characteristics} {@code additionalCharacterisitcs},
 * {@link Spliterator#ORDERED}, {@link Spliterator#SORTED}, and for primitive types,
 * {@link Spliterator#NONNULL}.
 * It will also report {@link Spliterator#SIZED}, {@link Spliterator#SUBSIZED},
 * unless {@link Spliterator#CONCURRENT} is to be reported, in which case these two
 * are not implicitly reported.
 *
 * <p>Because {@link java.util.Iterator} is an inherently linear API, the returned spliterator will
 * yield limited performance gains when run in parallel contexts, as the returned spliterator's
 * {@link Spliterator#trySplit()} will have linear runtime.
 *
 * @param iter the type-specific {@code Iterator} to wrap
 * @param size the number of elements the iterator will return
 * @param additionalCharacterisitcs any additional characteristics to report
 * @param comparator the comparator the iterator is ordered on (or {@code null} for natural ordering)
 * @return a type-specific {@code Spliterator} that will give the same elements the iterator will return.
 */
```

```
 public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC asSpliteratorFromSorted(
   final KEY_ITERATOR KEY_EXTENDS_GENERIC iter, final long size, final int additionalCharacterisitcs, final
KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
  return new SpliteratorFromIteratorWithComparator KEY_GENERIC_DIAMOND(iter, size,
additionalCharacterisitcs, comparator);
 }

 /** Wrap a type-specific {@link java.util.Iterator} of an unknown size as a type-specific {@link
java.util.Spliterator}
  *
  * <p>The returned spliterator will report {@code additionalCharacterisitcs},
  * and for primitive types, {@link Spliterator#NONNULL}.
  *
  * <p>Because {@link java.util.Iterator} is an inherently linear API, the returned spliterator will
  * yield limited performance gains when run in parallel contexts, as the returned spliterator's
  * {@link Spliterator#trySplit()} will have linear runtime.
  *
  * @param iter the type-specific {@code Iterator} to wrap
  * @param characterisitcs the characteristics to report
  * @return a type-specific {@code Spliterator} that will give the same elements the iterator will return.
  * @see java.util.Spliterators#spliteratorUnknownSize(java.util.Iterator, int)
  */
 public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC asSpliteratorUnknownSize(final
KEY_ITERATOR KEY_EXTENDS_GENERIC iter, final int characterisitcs) {
  return new SpliteratorFromIterator KEY_GENERIC_DIAMOND(iter, characterisitcs);
 }

 /** Wrap a type-specific, sorted {@link java.util.Iterator} of an unknown size as a type-specific {@link
java.util.Spliterator}
  *
  * <p>It is the caller's responsibility to ensure the iterator's order
  * is actually sorted according to the comparator given.
  *
  * <p>The returned spliterator will report
  * {@link Spliterator#characteristics() characteristics} {@code additionalCharacterisitcs},
  * {@link Spliterator#ORDERED}, {@link Spliterator#SORTED}, and for primitive types,
  * {@link Spliterator#NONNULL}.
  *
  * <p>Because {@link java.util.Iterator} is an inherently linear API, the returned spliterator will
  * yield limited performance gains when run in parallel contexts, as the returned spliterator's
  * {@link Spliterator#trySplit()} will have linear runtime.
  *
  * @param iter the type-specific {@code Iterator} to wrap
  * @param additionalCharacterisitcs the characteristics to report
  * @param comparator the comparator the iterator is ordered on (or {@code null} for natural ordering)
  * @return a type-specific {@code Spliterator} that will give the same elements the iterator will return.
  */
 public static KEY_GENERIC KEY_SPLITERATOR KEY_GENERIC asSpliteratorFromSortedUnknownSize(final
```

```
KEY_ITERATOR KEY_EXTENDS_GENERIC iter, final int additionalCharacterisitcs, final
KEY_COMPARATOR KEY_SUPER_GENERIC comparator) {
  return new SpliteratorFromIteratorWithComparator KEY_GENERIC_DIAMOND(iter, additionalCharacterisitcs,
comparator);
 }

 private static final class IteratorFromSpliterator KEY_GENERIC implements KEY_ITERATOR KEY_GENERIC,
KEY_CONSUMER KEY_GENERIC {
  private final KEY_SPLITERATOR KEY_EXTENDS_GENERIC spliterator;
  private KEY_GENERIC_TYPE holder = KEY_NULL;
  /** Whether we have an element "peeked" from a hasNext that we have yet to return */
  private boolean hasPeeked = false;

  IteratorFromSpliterator(final KEY_SPLITERATOR KEY_EXTENDS_GENERIC spliterator) {
   this.spliterator = spliterator;
  }

  @Override
  public void accept(final KEY_GENERIC_TYPE item) {
   holder = item;
  }

  @Override
  public boolean hasNext() {
   if (hasPeeked) return true;
   boolean hadElement = spliterator.tryAdvance(this);
   if (!hadElement) return false;
   hasPeeked = true;
   return true;
  }

  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() {
   if (hasPeeked) {
    hasPeeked = false;
    return holder;
   }
   boolean hadElement = spliterator.tryAdvance(this);
   if (!hadElement) throw new java.util.NoSuchElementException();
   return holder;
  }

  @Override
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
   if (hasPeeked) {
    hasPeeked = false;
    action.accept(holder);
   }
```

```
  spliterator.forEachRemaining(action);
 }

 @Override
 public int skip(int n) {
  if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
  int skipped = 0;
  if (hasPeeked) {
   hasPeeked = false;
   spliterator.skip(1);
   ++skipped;
   --n;
  }
  if (n > 0) {
   skipped += SafeMath.safeLongToInt(spliterator.skip(n));
  }
  return skipped;
 }
}

/** Wrap a type-specific {@link java.util.Spliterator} as a type-specific {@link java.util.Iterator}
 *
 * @param spliterator the type-specific {@code Spliterator} to wrap
 * @return a type-specific {@code Iterator} that will return the same elements the spliterator will give.
 * @see java.util.Spliterators#iterator(java.util.Spliterator)
 */
public static KEY_GENERIC KEY_ITERATOR KEY_GENERIC asIterator(final KEY_SPLITERATOR
KEY_EXTENDS_GENERIC spliterator) {
 return new IteratorFromSpliterator KEY_GENERIC_DIAMOND(spliterator);
}

#if KEY_CLASS_Short || KEY_CLASS_Integer || KEY_CLASS_Long || KEY_CLASS_Float ||
KEY_CLASS_Double

/** A wrapper promoting the results of a ByteSpliterator. */

private static final class ByteSpliteratorWrapper implements KEY_SPLITERATOR {
 final it.unimi.dsi.fastutil.bytes.ByteSpliterator spliterator;

 public ByteSpliteratorWrapper(final it.unimi.dsi.fastutil.bytes.ByteSpliterator spliterator) {
  this.spliterator = spliterator;
 }

 @Override
 public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  return spliterator.tryAdvance(action::accept);
 }
```

```
 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  spliterator.forEachRemaining(action::accept);
 }

 @Override
 public long estimateSize() { return spliterator.estimateSize(); }

 @Override
 public int characteristics() { return spliterator.characteristics(); }

 @Override
 public long skip(long n) { return spliterator.skip(n); }

 @Override
 public KEY_SPLITERATOR KEY_GENERIC trySplit() {
  it.unimi.dsi.fastutil.bytes.ByteSpliterator possibleSplit = spliterator.trySplit();
  if (possibleSplit == null) return null;
  return new ByteSpliteratorWrapper(possibleSplit);
 }
}

/** Returns a spliterator backed by the specified byte spliterator.
 *
 * <p>Note: Due to the incompatibility of primitive {@link Comparator} types,
 * the returned spliterator's {@link Spliterator#getComparator()} will always
 * throw {@link IllegalStateException}, even when the underlying spliterator is
 * {@linkplain Spliterator#SORTED sorted}.
 *
 * @param spliterator a byte spliterator.
 * @return a spliterator backed by the specified byte spliterator.
 */
public static KEY_SPLITERATOR wrap(final it.unimi.dsi.fastutil.bytes.ByteSpliterator spliterator) {
 return new ByteSpliteratorWrapper(spliterator);
}
#endif

#if KEY_CLASS_Integer || KEY_CLASS_Long || KEY_CLASS_Float || KEY_CLASS_Double

/** A wrapper promoting the results of a ShortSpliterator. */

private static final class ShortSpliteratorWrapper implements KEY_SPLITERATOR {
 final it.unimi.dsi.fastutil.shorts.ShortSpliterator spliterator;

 public ShortSpliteratorWrapper(final it.unimi.dsi.fastutil.shorts.ShortSpliterator spliterator) {
  this.spliterator = spliterator;
```

```
 }

 @Override
 public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  return spliterator.tryAdvance(action::accept);
 }

 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  spliterator.forEachRemaining(action::accept);
 }

 @Override
 public long estimateSize() { return spliterator.estimateSize(); }

 @Override
 public int characteristics() { return spliterator.characteristics(); }

 @Override
 public long skip(long n) { return spliterator.skip(n); }

 @Override
 public KEY_SPLITERATOR trySplit() {
  it.unimi.dsi.fastutil.shorts.ShortSpliterator possibleSplit = spliterator.trySplit();
  if (possibleSplit == null) return null;
  return new ShortSpliteratorWrapper(possibleSplit);
 }
}

/** Returns a spliterator backed by the specified short spliterator.
 *
 * <p>Note: Due to the incompatibility of primitive {@link Comparator} types,
 * the returned spliterator's {@link Spliterator#getComparator()} will always
 * throw {@link IllegalStateException}, even when the underlying spliterator is
 * {@linkplain Spliterator#SORTED sorted}.
 *
 * @param spliterator a short spliterator.
 * @return a spliterator backed by the specified short spliterator.
 */
public static KEY_SPLITERATOR wrap(final it.unimi.dsi.fastutil.shorts.ShortSpliterator spliterator) {
 return new ShortSpliteratorWrapper(spliterator);
}

#endif

#if KEY_CLASS_Integer || KEY_CLASS_Long || KEY_CLASS_Float || KEY_CLASS_Double
```

```
/** A wrapper promoting the results of a CharSpliterator. */

private static final class CharSpliteratorWrapper implements KEY_SPLITERATOR {
 final it.unimi.dsi.fastutil.chars.CharSpliterator spliterator;

 public CharSpliteratorWrapper(final it.unimi.dsi.fastutil.chars.CharSpliterator spliterator) {
  this.spliterator = spliterator;
 }

 @Override
 public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  return spliterator.tryAdvance(action::accept);
 }

 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  spliterator.forEachRemaining(action::accept);
 }

 @Override
 public long estimateSize() { return spliterator.estimateSize(); }

 @Override
 public int characteristics() { return spliterator.characteristics(); }

 @Override
 public long skip(long n) { return spliterator.skip(n); }

 @Override
 public KEY_SPLITERATOR trySplit() {
  it.unimi.dsi.fastutil.chars.CharSpliterator possibleSplit = spliterator.trySplit();
  if (possibleSplit == null) return null;
  return new CharSpliteratorWrapper(possibleSplit);
 }
}

/** Returns a spliterator backed by the specified char spliterator.
 *
 * <p><b>WARNING</b>: This is <em>not</em> the same as converting the source to a sequence
 * of code points. This returned instance literally performs {@code (int)(charValue)} casts.
 * Surrogate pairs will be left as separate elements instead of combined into a single element
 * with the code point it represents.
 *
 * <p>Note: Due to the incompatibility of primitive {@link Comparator} types,
 * the returned spliterator's {@link Spliterator#getComparator()} will always
```

```
 * throw {@link IllegalStateException}, even when the underlying spliterator is
 * {@linkplain Spliterator#SORTED sorted}.
 *
 * @param spliterator a char spliterator.
 * @return a spliterator backed by the specified char spliterator.
 */
public static KEY_SPLITERATOR wrap(final it.unimi.dsi.fastutil.chars.CharSpliterator spliterator) {
 return new CharSpliteratorWrapper(spliterator);
}

#endif

#if KEY_CLASS_Long || KEY_CLASS_Double

/** A wrapper promoting the results of an IntSpliterator. */

private static final class IntSpliteratorWrapper implements KEY_SPLITERATOR {
 final it.unimi.dsi.fastutil.ints.IntSpliterator spliterator;

 public IntSpliteratorWrapper(final it.unimi.dsi.fastutil.ints.IntSpliterator spliterator) {
  this.spliterator = spliterator;
 }

 @Override
 public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  return spliterator.tryAdvance(action::accept);
 }

 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  spliterator.forEachRemaining(action::accept);
 }

 @Override
 public long estimateSize() { return spliterator.estimateSize(); }

 @Override
 public int characteristics() { return spliterator.characteristics(); }

 @Override
 public long skip(long n) { return spliterator.skip(n); }

 @Override
 public KEY_SPLITERATOR trySplit() {
  it.unimi.dsi.fastutil.ints.IntSpliterator possibleSplit = spliterator.trySplit();
  if (possibleSplit == null) return null;
```

```
  return new IntSpliteratorWrapper(possibleSplit);
 }
}

/** Returns a spliterator backed by the specified integer spliterator.
 *
 * <p>Note: Due to the incompatibility of primitive {@link Comparator} types,
 * the returned spliterator's {@link Spliterator#getComparator()} will always
 * throw {@link IllegalStateException}, even when the underlying spliterator is
 * {@linkplain Spliterator#SORTED sorted}.
 *
 * @param spliterator an integer spliterator.
 * @return a spliterator backed by the specified integer spliterator.
 */

public static KEY_SPLITERATOR wrap(final it.unimi.dsi.fastutil.ints.IntSpliterator spliterator) {
 return new IntSpliteratorWrapper(spliterator);
}

#endif

#if KEY_CLASS_Double

/** A wrapper promoting the results of a FloatSpliterator. */

private static final class FloatSpliteratorWrapper implements KEY_SPLITERATOR {
 final it.unimi.dsi.fastutil.floats.FloatSpliterator spliterator;

 public FloatSpliteratorWrapper(final it.unimi.dsi.fastutil.floats.FloatSpliterator spliterator) {
  this.spliterator = spliterator;
 }

 @Override
 public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  return spliterator.tryAdvance(action::accept);
 }

 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  Objects.requireNonNull(action);
  spliterator.forEachRemaining(action::accept);
 }

 @Override
 public long estimateSize() { return spliterator.estimateSize(); }

 @Override
```

```
 public int characteristics() { return spliterator.characteristics(); }

 @Override
 public long skip(long n) { return spliterator.skip(n); }

 @Override
 public KEY_SPLITERATOR trySplit() {
  it.unimi.dsi.fastutil.floats.FloatSpliterator possibleSplit = spliterator.trySplit();
  if (possibleSplit == null) return null;
  return new FloatSpliteratorWrapper(possibleSplit);
 }
}

/** Returns a spliterator backed by the specified float spliterator.
 *
 * <p>Note: Due to the incompatibility of primitive {@link Comparator} types,
 * the returned spliterator's {@link Spliterator#getComparator()} will always
 * throw {@link IllegalStateException}, even when the underlying spliterator is
 * {@linkplain Spliterator#SORTED sorted}.
 *
 * @param spliterator a float spliterator.
 * @return a spliterator backed by the specified float spliterator.
 */
public static KEY_SPLITERATOR wrap(final it.unimi.dsi.fastutil.floats.FloatSpliterator spliterator) {
 return new FloatSpliteratorWrapper(spliterator);
}
#endif
}
```

Found in path(s):

* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Spliterators.drv

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package PACKAGE;

/** A type-specific {@link Iterable} that further strengthens the specification of {@link Iterable#iterator()}.
*/
public interface KEY_BIDI_ITERABLE KEY_GENERIC extends KEY_ITERABLE KEY_GENERIC {

 /** Returns a type-specific {@link it.unimi.dsi.fastutil.BidirectionalIterator}.
  *
  * @return a type-specific bidirectional iterator.
  */
 @Override
 KEY_BIDI_ITERATOR KEY_GENERIC iterator();
}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/BidirectionalIterable.drv
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/chars/CharBigList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/AbstractObjectBigList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/ShortBigList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/chars/AbstractCharBigList.java

* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/bytes/ByteBigListIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/floats/AbstractFloatBigList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongBigListIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/ShortBigListIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/booleans/BooleanBigListIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectBigList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleBigListIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/AbstractShortBigList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongBigList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/floats/FloatBigListIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/AbstractLongBigList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleBigList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectBigListIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongArrayFIFOQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleArrayFIFOQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/floats/FloatBigList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/chars/CharBigListIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/ObjectArrayFIFOQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/AbstractIntBigList.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntBigListIterator.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntArrayFIFOQueue.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntBigList.java

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*/


package PACKAGE;

/**  A type-specific immutable {@link it.unimi.dsi.fastutil.SortedPair SortedPair}; provides some additional methods that use polymorphism to avoid (un)boxing. */

#if KEYS_PRIMITIVE
public class IMMUTABLE_SORTED_PAIR extends IMMUTABLE_PAIR implements SORTED_PAIR, java.io.Serializable {
#else
public class IMMUTABLE_SORTED_PAIR <K extends Comparable<K>> extends IMMUTABLE_PAIR <K, K> implements it.unimi.dsi.fastutil.SortedPair<K>, java.io.Serializable {
#endif
 private static final long serialVersionUID = 0L;

 private IMMUTABLE_SORTED_PAIR(final KEY_GENERIC_TYPE left, final KEY_GENERIC_TYPE right) {
  super(left, right);
 }

 /** Returns a new type-specific immutable {@link it.unimi.dsi.fastutil.SortedPair SortedPair} with given left and right value.
  *
  * <p>Note that if {@code left} and {@code right} are in the wrong order, they will be exchanged.
  *
  * @param left the left value.
  * @param right the right value.
  *
  * @implSpec This factory method delegates to the constructor.
  */
#if KEYS_PRIMITIVE
 public static IMMUTABLE_SORTED_PAIR of(final KEY_GENERIC_TYPE left, final KEY_GENERIC_TYPE right) {
  if (left <= right) return new IMMUTABLE_SORTED_PAIR(left, right);
  else return new IMMUTABLE_SORTED_PAIR(right, left);
```

```
#else
 public static <K extends Comparable<K>> IMMUTABLE_SORTED_PAIR <K> of(final KEY_GENERIC_TYPE
left, final KEY_GENERIC_TYPE right) {
  if (left.compareTo(right) <= 0) return new IMMUTABLE_SORTED_PAIR <K>(left, right);
  else return new IMMUTABLE_SORTED_PAIR <K>(right, left);
#endif
 }

 @Override
 @SuppressWarnings("rawtypes")
 public boolean equals(Object other) {
  if (other == null) return false;

#if KEYS_PRIMITIVE || VALUES_PRIMITIVE
  if (other instanceof SORTED_PAIR) {
   return

#if KEY_CLASS_Object
 java.util.Objects.equals(left, ((SORTED_PAIR)other).PAIR_LEFT())
#else
 left == ((SORTED_PAIR)other).PAIR_LEFT()
#endif
#if VALUE_CLASS_Object
 && java.util.Objects.equals(right, ((SORTED_PAIR)other).PAIR_RIGHT());
#else
 && right == ((SORTED_PAIR)other).PAIR_RIGHT();
#endif
  }
#endif

  if (other instanceof it.unimi.dsi.fastutil.SortedPair) {
   return
#if KEYS_USE_REFERENCE_EQUALITY
 left == ((it.unimi.dsi.fastutil.SortedPair)other).left()
#else
 java.util.Objects.equals(KEY2OBJ(left), ((it.unimi.dsi.fastutil.SortedPair)other).left())
#endif
#if VALUES_USE_REFERENCE_EQUALITY
 && right == ((it.unimi.dsi.fastutil.SortedPair)other).right();
#else
 && java.util.Objects.equals(VALUE2OBJ(right), ((it.unimi.dsi.fastutil.SortedPair)other).right());
#endif
  }

  return false;
 }

 /** Returns a string representation of this sorted pair in the form {<var>l</var>,<var>r</var>}.
```

*
 * @return a string representation of this pair sorted in the form {<var>l</var>,<var>r</var>}.
 */
@Override
public String toString() {
 return "{" + PAIR_LEFT() + "," + PAIR_RIGHT() + "}";
}
}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/ImmutableSortedPair.drv
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*/

package PACKAGE;

import it.unimi.dsi.fastutil.Hash;

/** A type-specific {@link Hash} interface.
*
* @see Hash
*/

public interface HASH {

/** A type-specific hash strategy.
 *
 * @see it.unimi.dsi.fastutil.Hash.Strategy
 */

interface Strategy {

/** Returns the hash code of the specified element with respect to this hash strategy.
 *
 * @param e an element.
 * @return the hash code of the given element with respect to this hash strategy.
 */

int hashCode(KEY_TYPE e);

/** Returns true if the given elements are equal with respect to this hash strategy.
 *
 * @param a an element.
 * @param b another element.
 * @return true if the two specified elements are equal with respect to this hash strategy.
 */

boolean equals(KEY_TYPE a, KEY_TYPE b);
}
}

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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Hash.drv
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/shorts/ShortConsumer.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoubleConsumer.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/floats/FloatConsumer.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-

jar/it/unimi/dsi/fastutil/longs/LongConsumer.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntConsumer.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/booleans/BooleanConsumer.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/chars/CharConsumer.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/bytes/ByteConsumer.java
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*/


package PACKAGE;

/** An abstract class providing basic methods for sorted sets implementing a type-specific interface. */

public abstract class ABSTRACT_SORTED_SET KEY_GENERIC extends ABSTRACT_SET KEY_GENERIC implements SORTED_SET KEY_GENERIC {

 protected ABSTRACT_SORTED_SET() {}

 @Override
 public abstract KEY_BIDI_ITERATOR KEY_GENERIC iterator();
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractSortedSet.drv
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* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/IntPriorityQueues.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/LongPriorityQueues.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/longs/AbstractLongSortedSet.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/objects/AbstractObjectSortedSet.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/ints/AbstractIntSortedSet.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/DoublePriorityQueues.java
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/doubles/AbstractDoubleSortedSet.java
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*/

package PACKAGE;

/** An abstract class facilitating the creation of type-specific {@linkplain it.unimi.dsi.fastutil.BidirectionalIterator bidirectional iterators}.
*
* @deprecated As of {@code fastutil} 8 this class is no longer necessary, as its previous abstract
* methods are now default methods of the type-specific interface.
*/

@Deprecated
public abstract class KEY_ABSTRACT_BIDI_ITERATOR KEY_GENERIC extends
KEY_ABSTRACT_ITERATOR KEY_GENERIC implements KEY_BIDI_ITERATOR KEY_GENERIC {
 protected KEY_ABSTRACT_BIDI_ITERATOR() {}
}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractBidirectionalIterator.drv
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*/

package PACKAGE;

import java.util.Collection;
import static it.unimi.dsi.fastutil.Size64.sizeOf;
#if KEYS_BYTE_CHAR_SHORT_FLOAT
import WIDENED_PACKAGE.KEY_WIDENED_ITERATOR;
import WIDENED_PACKAGE.KEY_WIDENED_SPLITERATOR;
#endif

#if KEYS_USE_REFERENCE_EQUALITY
/** A type-specific {@link Collection}; provides some additional methods
* that use polymorphism to avoid (un)boxing.

```
*
* <p>Additionally, this class defines strengthens (again) {@link #iterator()}.
*
* @see Collection
*/
#else
/** A type-specific {@link Collection}; provides some additional methods
* that use polymorphism to avoid (un)boxing.
*
* <p>Additionally, this class defines strengthens (again) {@link #iterator()}.
*
* <p>This interface specifies reference equality semantics (members will be compared equal with
* {@code ==} instead of {@link Object#equals(Object) equals}), which may result in breaks in contract
* if attempted to be used with non reference-equality semantics based {@link Collection}s. For example, a
* {@code aReferenceCollection.equals(aObjectCollection)} may return different a different result then
* {@code aObjectCollection.equals(aReferenceCollection)}, in violation of {@link Object#equals equals}'s
* contract requiring it being symmetric.
*
* @see Collection
*/
#endif
public interface COLLECTION KEY_GENERIC extends Collection<KEY_GENERIC_CLASS>,
KEY_ITERABLE KEY_GENERIC {

 /** Returns a type-specific iterator on the elements of this collection.
  *
  * @apiNote This specification strengthens the one given in
  * {@link java.lang.Iterable#iterator()}, which was already
  * strengthened in the corresponding type-specific class,
  * but was weakened by the fact that this interface extends {@link Collection}.
  *
  * @return a type-specific iterator on the elements of this collection.
  */
 @Override
 KEY_ITERATOR KEY_GENERIC iterator();

#if KEYS_PRIMITIVE && !KEY_CLASS_Boolean
#if KEYS_INT_LONG_DOUBLE
 /** Returns a primitive iterator on the elements of this collection.<p>
  *
  * <p>This method is identical to {@link #iterator()}, as the type-specific
  * iterator is already compatible with the JDK's primitive iterators.
  * It only exists for compatibility with the other primitive types' {@code Collection}s
  * that have use for widened iterators.
  *
  * @return a primitive iterator on the elements of this collection.
  * @since 8.5.0
  */
```

```
 @Override
 default KEY_WIDENED_ITERATOR KEY_WIDENED_ITERATOR_METHOD() { return iterator(); }
#else
#if KEY_CLASS_Character
 /**
  * Returns a widened primitive iterator on the elements of this collection.<p>
  *
  * <p>This method is provided for the purpose of APIs that expect only the JDK's
  * primitive iterators, of which there are only {@code int}, {@code long}, and {@code double}.
  *
  * <p><b>WARNING</b>: This is <em>not</em> the same as converting the source to a sequence
  * of code points. This returned instance literally performs {@code (int)(charValue)} casts.
  * Surrogate pairs will be left as separate elements instead of combined into a single element
  * with the code point it represents. See {@link Character} for more discussion on code points,
  * char values, and surrogate pairs.
  *
  * @return a widened primitive iterator on the elements of this collection.
  * @since 8.5.0
  */
#else
 /**
  * Returns a widened primitive iterator on the elements of this collection.<p>
  *
  * <p>This method is provided for the purpose of APIs that expect only the JDK's
  * primitive iterators, of which there are only {@code int}, {@code long}, and {@code double}.
  *
  * @return a widened primitive iterator on the elements of this collection.
  * @since 8.5.0
  */
#endif
 @Override
 default KEY_WIDENED_ITERATOR KEY_WIDENED_ITERATOR_METHOD() {
  return KEY_ITERABLE.super.KEY_WIDENED_ITERATOR_METHOD();
 }
#endif
#endif

 // If you change these default spliterator methods, you will likely need to update Iterable, List, Set, and SortedSet too

 /** Returns a type-specific spliterator on the elements of this collection.
  *
  * <p>See {@link java.util.Collection#spliterator()} for more documentation on the requirements
  * of the returned spliterator.
  *
  * @apiNote This specification strengthens the one given in
  * {@link java.util.Collection#spliterator()}.
  * <p>Also, this is generally the only {@code spliterator} method subclasses should override.
  *
```

```
  * @implSpec The default implementation returns a late-binding spliterator (see
  * {@link java.util.Spliterator Spliterator} for documentation on what binding policies mean)
  * that wraps this instance's type specific {@link #iterator}.
  * <p>Additionally, it reports {@link java.util.Spliterator#SIZED Spliterator.SIZED}
  *
  * @implNote As this default implementation wraps the iterator, and {@link java.util.Iterator}
  * is an inherently linear API, the returned spliterator will yield limited performance gains
  * when run in parallel contexts, as the returned spliterator's
  * {@link java.util.Spliterator#trySplit() trySplit()} will have linear runtime.
  *
  * @return a type-specific spliterator on the elements of this collection.
  * @since 8.5.0
  */
 @Override
#if SPLITERATOR_ASSURE_OVERRIDE
 abstract KEY_SPLITERATOR KEY_GENERIC spliterator();
#else
 default KEY_SPLITERATOR KEY_GENERIC spliterator() {
  return SPLITERATORS.asSpliterator(
    iterator(), sizeOf(this), SPLITERATORS.COLLECTION_SPLITERATOR_CHARACTERISTICS);
 }
#endif

#if KEYS_PRIMITIVE && !KEY_CLASS_Boolean
#if KEYS_INT_LONG_DOUBLE
 /** Returns a primitive spliterator on the elements of this collection.<p>
  *
  * <p>This method is identical to {@link #spliterator()}, as the type-specific
  * spliterator is already compatible with the JDK's primitive spliterators.
  * It only exists for compatibility with the other primitive types' {@code Collection}s
  * that have use for widened spliterators.
  *
  * @return a primitive spliterator on the elements of this collection.
  * @since 8.5.0
  */
 @Override
 default KEY_WIDENED_SPLITERATOR KEY_WIDENED_SPLITERATOR_METHOD() { return spliterator();
}
#else
#if KEY_CLASS_Character
 /** Returns widened primitive spliterator on the elements of this collection.<p>
  *
  * <p>This method is provided for the purpose of APIs that expect only the JDK's
  * primitive spliterators, of which there are only {@code int}, {@code long}, and {@code double}.
  *
  * <p><b>WARNING</b>: This is <em>not</em> the same as converting the source to a sequence
  * of code points. This returned instance literally performs {@code (int)(charValue)} casts.
  * Surrogate pairs will be left as separate elements instead of combined into a single element
```

```
 * with the code point it represents. See {@link Character} for more discussion on code points,
 * char values, and surrogate pairs.
 *
 * @return a widened primitive spliterator on the elements of this collection.
 * @since 8.5.0
 */
#else
/** Returns widened primitive spliterator on the elements of this collection.<p>
 *
 * <p>This method is provided for the purpose of APIs that expect only the JDK's
 * primitive spliterators, of which there are only {@code int}, {@code long}, and {@code double}.
 *
 * @return a widened primitive spliterator on the elements of this collection.
 * @since 8.5.0
 */
#endif
@Override
default KEY_WIDENED_SPLITERATOR KEY_WIDENED_SPLITERATOR_METHOD() {
 return KEY_ITERABLE.super.KEY_WIDENED_SPLITERATOR_METHOD();
}
#endif
#endif

#if KEYS_PRIMITIVE

/** Ensures that this collection contains the specified element (optional operation).
 * @see Collection#add(Object)
 */
boolean add(KEY_TYPE key);

/** Returns {@code true} if this collection contains the specified element.
 * @see Collection#contains(Object)
 */
boolean contains(KEY_TYPE key);

/** Removes a single instance of the specified element from this
 * collection, if it is present (optional operation).
 *
 * <p>Note that this method should be called {@link java.util.Collection#remove(Object) remove()}, but the clash
 * with the similarly named index-based method in the {@link java.util.List} interface
 * forces us to use a distinguished name. For simplicity, the set interfaces reinstates
 * {@code remove()}.
 *
 * @see Collection#remove(Object)
 */
boolean rem(KEY_TYPE key);

/** {@inheritDoc}
```

```
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
default boolean add(final KEY_GENERIC_CLASS key) {
 return add(KEY_CLASS2TYPE(key));
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
default boolean contains(final Object key) {
 if (key == null) return false;
 return contains(KEY_OBJ2TYPE(key));
}

/** {@inheritDoc}
 * @deprecated Please use (and implement) the {@code rem()} method instead.
 */
@Deprecated
@Override
default boolean remove(final Object key) {
 if (key == null) return false;
 return rem(KEY_OBJ2TYPE(key));
}

/** Returns a primitive type array containing the items of this collection.
 * @return a primitive type array containing the items of this collection.
 * @see Collection#toArray()
 */
KEY_TYPE[] TO_KEY_ARRAY();

/** Returns a primitive type array containing the items of this collection.
 *
 * <p>Note that, contrarily to {@link Collection#toArray(Object[])}, this
 * methods just writes all elements of this collection: no special
 * value will be added after the last one.
 *
 * @param a if this array is big enough, it will be used to store this collection.
 * @return a primitive type array containing the items of this collection.
 * @see Collection#toArray(Object[])
 * @deprecated Please use {@code toArray()} instead&mdash;this method is redundant and will be removed in the
future.
 */
@Deprecated
default KEY_TYPE[] TO_KEY_ARRAY(KEY_TYPE a[]) {
```

```
 return toArray(a);
}

/** Returns an array containing all of the elements in this collection; the runtime type of the returned array is that of the specified array.
 *
 * <p>Note that, contrarily to {@link Collection#toArray(Object[])}, this
 * methods just writes all elements of this collection: no special
 * value will be added after the last one.
 *
 * @param a if this array is big enough, it will be used to store this collection.
 * @return a primitive type array containing the items of this collection.
 * @see Collection#toArray(Object[])
 */
KEY_TYPE[] toArray(KEY_TYPE a[]);

/** Adds all elements of the given type-specific collection to this collection.
 *
 * @param c a type-specific collection.
 * @see Collection#addAll(Collection)
 * @return {@code true} if this collection changed as a result of the call.
 */
boolean addAll(COLLECTION c);

/** Checks whether this collection contains all elements from the given type-specific collection.
 *
 * @param c a type-specific collection.
 * @see Collection#containsAll(Collection)
 * @return {@code true} if this collection contains all elements of the argument.
 */
boolean containsAll(COLLECTION c);

/** Remove from this collection all elements in the given type-specific collection.
 *
 * @param c a type-specific collection.
 * @see Collection#removeAll(Collection)
 * @return {@code true} if this collection changed as a result of the call.
 */
boolean removeAll(COLLECTION c);

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
default boolean removeIf(final java.util.function.Predicate<? super KEY_GENERIC_CLASS> filter) {
 return removeIf(
  filter instanceof METHOD_ARG_PREDICATE ?
```

```
  ((METHOD_ARG_PREDICATE) filter) :
  (METHOD_ARG_PREDICATE) key -> filter.test(KEY2OBJ(KEY_NARROWING(key))));
 }

 /** Remove from this collection all elements which satisfy the given predicate.
  *
  * @param filter a predicate which returns {@code true} for elements to be
  *       removed.
  * @see Collection#removeIf(java.util.function.Predicate)
  * @return {@code true} if any elements were removed.
  * @apiNote Implementing classes should generally override this method, and take the default
  *   implementation of the other overloads which will delegate to this method (after proper
  *   conversions).
  */
 default boolean removeIf(final METHOD_ARG_PREDICATE filter) {
  java.util.Objects.requireNonNull(filter);
  boolean removed = false;
  final KEY_ITERATOR each = iterator();
  while (each.hasNext()) {
   if (filter.test(each.NEXT_KEY())) {
    each.remove();
    removed = true;
   }
  }
  return removed;
 }

#if KEYS_INT_LONG_DOUBLE
 // Because our primitive Predicate interface extends both the JDK's primitive
 // and object Predicate interfaces, calling this method with it would be ambiguous.
 // This overload exists to pass it to the proper primitive overload.

 /** Remove from this collection all elements which satisfy the given predicate.
  *
  * <p><b>WARNING</b>: Overriding this method is almost always a mistake, as this
  * overload only exists to disambiguate. Instead, override the {@code removeIf()} overload
  * that uses the JDK's primitive predicate type (e.g. {@link java.util.function.IntPredicate}).
  *
  * <p>If Java supported final default methods, this would be one, but sadly it does not.
  *
  * <p>If you checked and are overriding the version with {@code java.util.function.XPredicate}, and
  * still see this warning, then your IDE is incorrectly conflating this method with the proper
  * method to override, and you can safely ignore this message.
  *
  * @param filter a predicate which returns {@code true} for elements to be
  *       removed.
  * @see Collection#removeIf(java.util.function.Predicate)
  * @return {@code true} if any elements were removed.
```

```
  */
 default boolean removeIf(final KEY_PREDICATE filter) {
  return removeIf((JDK_PRIMITIVE_PREDICATE) filter);
 }
#elif KEYS_BYTE_CHAR_SHORT_FLOAT
 /** Remove from this collection all elements which satisfy the given predicate.
  *
  * @param filter a predicate which returns {@code true} for elements to be
  *        removed.
  * @see Collection#removeIf(java.util.function.Predicate)
  * @return {@code true} if any elements were removed.
  * @implNote Unless the argument is type-specific, this method will introduce an intermediary
  *   lambda to perform widening casts. Please use the type-specific overload to avoid this overhead.
  */
 @SuppressWarnings("overloads")
 default boolean removeIf(final JDK_PRIMITIVE_PREDICATE filter) {
  return removeIf(filter instanceof KEY_PREDICATE ? (KEY_PREDICATE) filter : (KEY_PREDICATE)
filter::test);
 }
#endif

 /** Retains in this collection only elements from the given type-specific collection.
  *
  * @param c a type-specific collection.
  * @see Collection#retainAll(Collection)
  * @return {@code true} if this collection changed as a result of the call.
  */
 boolean retainAll(COLLECTION c);

#if !KEY_CLASS_Boolean
 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 default java.util.stream.Stream<KEY_GENERIC_CLASS> stream() { return Collection.super.stream(); }

#if KEY_CLASS_Character
 /** Return a primitive stream over the elements, performing widening casts if needed.
  *
  * <p><b>WARNING</b>: This is <em>not</em> the same as converting the source to a sequence
  * of code points. This returned instance literally performs {@code (int)(charValue)} casts.
  * Surrogate pairs will be left as separate elements instead of combined into a single element
  * with the code point it represents. See {@link Character} for more discussion on code points,
  * char values, and surrogate pairs.
  *
  * @return a primitive stream over the elements.
  * @see Collection#stream()
```

```
  * @see java.util.stream.IntStream
  */
#else
 /** Return a primitive stream over the elements, performing widening casts if needed.
  * @return a primitive stream over the elements.
  * @see Collection#stream()
  * @see java.util.stream.IntStream
  */
#endif
 default JDK_PRIMITIVE_STREAM KEY_WIDENED_STREAM_METHOD() {
  return
java.util.stream.StreamSupport.KEY_WIDENED_STREAM_METHOD(KEY_WIDENED_SPLITERATOR_MET
HOD(), false);
 }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 default java.util.stream.Stream<KEY_GENERIC_CLASS> parallelStream() { return
Collection.super.parallelStream(); }

#if KEY_CLASS_Character
 /** Return a parallel primitive stream over the elements, performing widening casts if needed.
  *
  * <p><b>WARNING</b>: This is <em>not</em> the same as converting the source to a sequence
  * of code points. This returned instance literally performs {@code (int)(charValue)} casts.
  * Surrogate pairs will be left as separate elements instead of combined into a single element
  * with the code point it represents. See {@link Character} for more discussion on code points,
  * char values, and surrogate pairs.
  *
  * @return a parallel primitive stream over the elements.
  * @see Collection#parallelStream()
  * @see java.util.stream.IntStream
  */
#else
 /** Return a parallel primitive stream over the elements, performing widening casts if needed.
  * @return a parallel primitive stream over the elements.
  * @see Collection#parallelStream()
  * @see java.util.stream.IntStream
  */
#endif
 default JDK_PRIMITIVE_STREAM KEY_WIDENED_PARALLEL_STREAM_METHOD() {
  return
java.util.stream.StreamSupport.KEY_WIDENED_STREAM_METHOD(KEY_WIDENED_SPLITERATOR_MET
HOD(), true);
 }
```

#endif

#endif
}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Collection.drv
No license file was found, but licenses were detected in source scan.

```
/*
* Copyright (C) 2002-2022 Sebastiano Vigna
*
* Licensed under the Apache License, Version 2.0 (the "License");
* you may not use this file except in compliance with the License.
* You may obtain a copy of the License at
*
*     http://www.apache.org/licenses/LICENSE-2.0
*
* Unless required by applicable law or agreed to in writing, software
* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

import java.util.Comparator;

/** A type-specific {@link Comparator}; provides methods to compare two primitive types both as objects
* and as primitive types.
*
* <p>Note that {@code fastutil} provides a corresponding abstract class that
* can be used to implement this interface just by specifying the type-specific
* comparator.
*
* @see Comparator
*/

@FunctionalInterface
public interface KEY_COMPARATOR KEY_GENERIC extends Comparator<KEY_GENERIC_CLASS> {

 /** Compares its two primitive-type arguments for order. Returns a negative integer,
  * zero, or a positive integer as the first argument is less than, equal
  * to, or greater than the second.
  *
  * @see java.util.Comparator
```

```
 * @return a negative integer, zero, or a positive integer as the first
 * argument is less than, equal to, or greater than the second.
 */

int compare(KEY_TYPE k1, KEY_TYPE k2);

@Override
default KEY_COMPARATOR KEY_GENERIC reversed() {
 return COMPARATORS.oppositeComparator(this);
}

#if KEYS_PRIMITIVE
/** {@inheritDoc}
 * @implSpec This implementation delegates to the corresponding type-specific method.
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
default int compare(KEY_GENERIC_CLASS ok1, KEY_GENERIC_CLASS ok2) {
 return compare(ok1.KEY_VALUE(), ok2.KEY_VALUE());
}

/** Return a new comparator that first uses this comparator, then uses the second comparator
 * if this comparator compared the two elements as equal.
 *
 * @see Comparator#thenComparing(Comparator)
 */
default KEY_COMPARATOR KEY_GENERIC thenComparing(KEY_COMPARATOR KEY_SUPER_GENERIC
second) {
 return (KEY_COMPARATOR KEY_SUPER_GENERIC & java.io.Serializable) (k1, k2) -> {
  int comp = compare(k1, k2);
  return comp == 0 ? second.compare(k1, k2) : comp;
 };
}

@Override
default Comparator<KEY_GENERIC_CLASS> KEY_GENERIC thenComparing(Comparator<? super
KEY_GENERIC_CLASS> second) {
 if (second instanceof KEY_COMPARATOR) return thenComparing((KEY_COMPARATOR
KEY_SUPER_GENERIC)second);
 return Comparator.super.thenComparing(second);
}
#endif
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Comparator.drv
No license file was found, but licenses were detected in source scan.

```
package PACKAGE;

/**  An abstract class facilitating the creation of type-specific {@linkplain java.util.ListIterator list iterators}.
*
* @deprecated As of {@code fastutil} 8 this class is no longer necessary, as its previous abstract
* methods are now default methods of the type-specific interface.
*/

@Deprecated
public abstract class KEY_ABSTRACT_LIST_ITERATOR KEY_GENERIC extends
KEY_ABSTRACT_BIDI_ITERATOR KEY_GENERIC implements KEY_LIST_ITERATOR KEY_GENERIC {
 protected KEY_ABSTRACT_LIST_ITERATOR() {}
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractListIterator.drv
No license file was found, but licenses were detected in source scan.

```
* limitations under the License.
*/


package PACKAGE;

/** A class providing static methods and objects that do useful things with type-specific priority queues.
*
* @see it.unimi.dsi.fastutil.PriorityQueue
*/

public final class PRIORITY_QUEUES {

 private PRIORITY_QUEUES() {}

 /** A synchronized wrapper class for priority queues. */

 public static class SynchronizedPriorityQueue KEY_GENERIC implements PRIORITY_QUEUE KEY_GENERIC
{
  protected final PRIORITY_QUEUE KEY_GENERIC q;
  protected final Object sync;

  protected SynchronizedPriorityQueue(final PRIORITY_QUEUE KEY_GENERIC q, final Object sync) {
   this.q = q;
   this.sync = sync;
  }

  protected SynchronizedPriorityQueue(final PRIORITY_QUEUE KEY_GENERIC q) {
   this.q = q;
   this.sync = this;
  }

  @Override
  public void enqueue(KEY_GENERIC_TYPE x) { synchronized(sync) { q.enqueue(x); } }

  @Override
  public KEY_GENERIC_TYPE DEQUEUE() { synchronized(sync) { return q.DEQUEUE(); } }

  @Override
  public KEY_GENERIC_TYPE FIRST() { synchronized(sync) { return q.FIRST(); } }

  @Override
  public KEY_GENERIC_TYPE LAST() { synchronized(sync) { return q.LAST(); } }

  @Override
  public boolean isEmpty() { synchronized(sync) { return q.isEmpty(); } }

  @Override
```

```
  public int size() { synchronized(sync) { return q.size(); } }

  @Override
  public void clear() { synchronized(sync) { q.clear(); } }

  @Override
  public void changed() { synchronized(sync) { q.changed(); } }

  @Override
  public KEY_COMPARATOR KEY_SUPER_GENERIC comparator() { synchronized(sync) { return
q.comparator(); } }

#if KEYS_PRIMITIVE

  @Deprecated
  @Override
  public void enqueue(KEY_CLASS x) { synchronized(sync) { q.enqueue(x); } }

  @Deprecated
  @Override
  public KEY_CLASS dequeue() { synchronized(sync) { return q.dequeue(); } }

  @Deprecated
  @Override
  public KEY_CLASS first() { synchronized(sync) { return q.first(); } }

  @Deprecated
  @Override
  public KEY_CLASS last() { synchronized(sync) { return q.last(); } }

#endif
  @Override
  public int hashCode() { synchronized(sync) { return q.hashCode(); } }

  @Override
  public boolean equals(final Object o) { if (o == this) return true; synchronized(sync) { return q.equals(o); } }

  private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
   synchronized(sync) { s.defaultWriteObject(); }
  }
 }


 /** Returns a synchronized type-specific priority queue backed by the specified type-specific priority queue.
  *
  * @param q the priority queue to be wrapped in a synchronized priority queue.
  * @return a synchronized view of the specified priority queue.
  */
```

public static KEY_GENERIC PRIORITY_QUEUE KEY_GENERIC synchronize(final PRIORITY_QUEUE KEY_GENERIC q) { return new SynchronizedPriorityQueue(q); }

/** Returns a synchronized type-specific priority queue backed by the specified type-specific priority queue, using an assigned object to synchronize.
 *
 * @param q the priority queue to be wrapped in a synchronized priority queue.
 * @param sync an object that will be used to synchronize the access to the priority queue.
 * @return a synchronized view of the specified priority queue.
 */

public static KEY_GENERIC PRIORITY_QUEUE KEY_GENERIC synchronize(final PRIORITY_QUEUE KEY_GENERIC q, final Object sync) { return new SynchronizedPriorityQueue(q, sync); }

}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/PriorityQueues.drv
No license file was found, but licenses were detected in source scan.

package PACKAGE;

import java.io.DataOutput;
import java.io.IOException;
import java.nio.KEY_BUFFER;
import java.nio.ByteOrder;
import java.nio.ByteBuffer;
import java.nio.MappedByteBuffer;
import java.nio.channels.FileChannel;
import java.nio.channels.FileChannel.MapMode;

```
import java.util.Arrays;

/** A bridge between byte {@linkplain ByteBuffer buffers} and type-specific {@linkplain
it.unimi.dsi.fastutil.BigList big lists}.
*
* <p>Java's {@linkplain FileChannel#map(MapMode, long, long) memory-mapping facilities} have
* the severe limitation of mapping at most {@link Integer#MAX_VALUE} bytes, as they
* expose the content of a file using a {@link MappedByteBuffer}. This class can {@linkplain #map(FileChannel,
ByteOrder, FileChannel.MapMode) expose
* a file of primitive types of arbitrary length} as a {@link it.unimi.dsi.fastutil.BigList}
* that is actually based on an array of {@link MappedByteBuffer}s, each mapping
* a <em>chunk</em> of {@link #CHUNK_SIZE} longs.
*
* <p>Mapping can happen with a specified byte order: saving and mapping data in {@linkplain
ByteOrder#nativeOrder() native order}
* using methods from {@link it.unimi.dsi.fastutil.io.BinIO} will enhance performance significantly.
*
* <p>Instances of this class are not thread safe, but the {@link #copy()} method provides a lightweight
* duplicate that can be read independently by another thread.
* Only chunks that are actually used will be {@linkplain ByteBuffer#duplicate() duplicated} lazily.
* If you are modifiying the content of list, however, you will need to provide external synchronization.
*
* @author Sebastiano Vigna
*/

public class MAPPED_BIG_LIST extends ABSTRACT_BIG_LIST {
 /** The logarithm of the number of bytes of the primitive type of this list. */
 public static int LOG2_BYTES = Long.SIZE - 1 - Long.numberOfLeadingZeros(KEY_CLASS.BYTES);

 /** @deprecated Use {@link #LOG2_BYTES}. */
 @Deprecated
 public static int LOG2_BITS = Long.SIZE - 1 - Long.numberOfLeadingZeros(KEY_CLASS.BYTES);

 private static int CHUNK_SHIFT = 30 - LOG2_BYTES;

 /** The size in elements of a chunk created by {@link #map(FileChannel, ByteOrder, FileChannel.MapMode)}. */
 public static final long CHUNK_SIZE = 1L << CHUNK_SHIFT;

 /** The mask used to compute the offset in the chunk in longs. */
 private static final long CHUNK_MASK = CHUNK_SIZE - 1;

 /** The underlying buffers. */
 private final KEY_BUFFER[] buffer;

 /** An array parallel to {@link #buffer} specifying which buffers do not need to be
  * duplicated before being used. */
 private final boolean[] readyToUse;
```

```
/** The number of byte buffers. */
private final int n;

/** The overall size in elements. */
private final long size;

/** Creates a new mapped big list.
 *
 * @param buffer the underlying buffers.
 * @param size the overall number of elements in the underlying buffers (i.e., the
 * sum of the capacities of the byte buffers divided by the size of an element in bytes).
 * @param readyToUse an array parallel to {@code buffer} specifying which buffers do not need to be
 * {@linkplain ByteBuffer#duplicate() duplicated} before being used (the process will happen lazily); the array
 * will be used internally by the newly created mapped big list.
 */

protected MAPPED_BIG_LIST(final KEY_BUFFER[] buffer, final long size, final boolean[] readyToUse) {
 this.buffer = buffer;
 this.n = buffer.length;
 this.size = size;
 this.readyToUse = readyToUse;

 for(int i = 0; i < n; i++) if (i < n - 1 && buffer[i].capacity() != CHUNK_SIZE) throw new
IllegalArgumentException();
}

/** Creates a new mapped big list by read-only mapping a given file channel using the
 * standard Java (i.e., {@link DataOutput}) byte order ({@link ByteOrder#BIG_ENDIAN}).
 *
 * @param fileChannel the file channel that will be mapped.
 * @return a new read-only mapped big list over the contents of {@code fileChannel}.
 *
 * @see #map(FileChannel, ByteOrder, MapMode)
 */

public static MAPPED_BIG_LIST map(final FileChannel fileChannel) throws IOException {
 return map(fileChannel, ByteOrder.BIG_ENDIAN);
}

/** Creates a new mapped big list by read-only mapping a given file channel.
 *
 * @param fileChannel the file channel that will be mapped.
 * @param byteOrder a prescribed byte order.
 * @return a new read-only mapped big list over the contents of {@code fileChannel}.
 *
 * @see #map(FileChannel, ByteOrder, MapMode)
 */
```

```
 public static MAPPED_BIG_LIST map(final FileChannel fileChannel, final ByteOrder byteOrder) throws
IOException {
  return map(fileChannel, byteOrder, MapMode.READ_ONLY);
 }

 /** Creates a new mapped big list by mapping a given file channel.
  *
  * @param fileChannel the file channel that will be mapped.
  * @param byteOrder a prescribed byte order.
  * @param mapMode the mapping mode: usually {@link MapMode#READ_ONLY}, but if intend to make the list
  * {@linkplain #set mutable}, you have to pass {@link MapMode#READ_WRITE}.
  * @return a new mapped big list over the contents of {@code fileChannel}.
  */

 public static MAPPED_BIG_LIST map(final FileChannel fileChannel, final ByteOrder byteOrder, final MapMode
mapMode) throws IOException {
  final long size = fileChannel.size() / KEY_CLASS.BYTES;
  final int chunks = (int)((size + (CHUNK_SIZE - 1)) / CHUNK_SIZE);
  final KEY_BUFFER[] buffer = new KEY_BUFFER[chunks];
#if KEY_CLASS_Byte
  for(int i = 0; i < chunks; i++) buffer[i] = fileChannel.map(mapMode, i * CHUNK_SIZE * KEY_CLASS.BYTES,
Math.min(CHUNK_SIZE, size - i * CHUNK_SIZE) * KEY_CLASS.BYTES);
#else
  for(int i = 0; i < chunks; i++) buffer[i] = fileChannel.map(mapMode, i * CHUNK_SIZE * KEY_CLASS.BYTES,
Math.min(CHUNK_SIZE, size - i * CHUNK_SIZE) *
KEY_CLASS.BYTES).order(byteOrder).AS_KEY_BUFFER();
#endif
  final boolean[] readyToUse = new boolean[chunks];
  Arrays.fill(readyToUse, true);
  return new MAPPED_BIG_LIST(buffer, size, readyToUse);
 }

 private KEY_BUFFER KEY_BUFFER(final int n) {
  if (readyToUse[n]) return buffer[n];
  readyToUse[n] = true;
  return buffer[n] = buffer[n].duplicate();
 }

 /** Returns a lightweight duplicate that can be read independently by another thread.
  *
  * <p>Only chunks that are actually used will be {@linkplain ByteBuffer#duplicate() duplicated} lazily.
  * @return a lightweight duplicate that can be read independently by another thread.
  */
 public MAPPED_BIG_LIST copy() {
  return new MAPPED_BIG_LIST(buffer.clone(), size, new boolean[n]);
 }

 @Override
```

```
public KEY_TYPE GET_KEY(final long index) {
 return KEY_BUFFER((int)(index >>> CHUNK_SHIFT)).get((int)(index & CHUNK_MASK));
}

@Override
public void getElements(long from, KEY_TYPE a[], int offset, int length) {
 int chunk = (int)(from >>> CHUNK_SHIFT);
 int displ = (int)(from & CHUNK_MASK);

 while(length > 0) {
  KEY_BUFFER b = KEY_BUFFER(chunk);
  final int l = Math.min(b.capacity() - displ, length);
  if (l == 0) throw new ArrayIndexOutOfBoundsException();

  // TODO: use chaining switching to Java 9+
  b.position(displ);
  b.get(a, offset, l);

  if ((displ += l) == CHUNK_SIZE) {
   displ = 0;
   chunk++;
  }

  offset += l;
  length -= l;
 }
 }

@Override
public KEY_TYPE set(final long index, final KEY_TYPE value) {
 final KEY_BUFFER b = KEY_BUFFER((int)(index >>> CHUNK_SHIFT));
 final int i = (int)(index & CHUNK_MASK);
 final KEY_TYPE previousValue = b.get(i);
 b.put(i, value);
 return previousValue;
}

@Override
public long size64() {
 return size;
}
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/MappedBigList.drv
No license file was found, but licenses were detected in source scan.

/*

package PACKAGE;

import java.util.List;
import java.util.Spliterator;
import static it.unimi.dsi.fastutil.BigArrays.length;
import it.unimi.dsi.fastutil.BigArrays;
import it.unimi.dsi.fastutil.BigList;

#if ! KEYS_USE_REFERENCE_EQUALITY
/** A type-specific {@link BigList}; provides some additional methods that use polymorphism to avoid (un)boxing.
*
* <p>Additionally, this interface strengthens {@link #iterator()}, {@link #listIterator()},
* {@link #listIterator(long)} and {@link #subList(long,long)}.
*
* <p>Besides polymorphic methods, this interfaces specifies methods to copy into an array or remove contiguous
* sublists. Although the abstract implementation of this interface provides simple, one-by-one implementations
* of these methods, it is expected that concrete implementation override them with optimized versions.
*
* @see List
*/
public interface BIG_LIST KEY_GENERIC extends BigList<KEY_GENERIC_CLASS>, COLLECTION KEY_GENERIC, Comparable<BigList<? extends KEY_GENERIC_CLASS>> {
#else
/** A type-specific {@link BigList}; provides some additional methods that use polymorphism to avoid (un)boxing.
*
* <p>Additionally, this interface strengthens {@link #iterator()}, {@link #listIterator()},
* {@link #listIterator(long)} and {@link #subList(long,long)}.
*
* <p>This interface specifies reference equality semantics (members will be compared equal with
* {@code ==} instead of {@link Object#equals(Object) equals}), which may result in breaks in contract
* if attempted to be used with non reference-equality semantics based {@link BigList}s. For example, a
* {@code aReferenceBigList.equals(aObjectBigList)} may return different a different result then

```
* {@code aObjectBigList.equals(aReferenceBigList)}, in violation of {@link Object#equals equals}'s contract
* requiring it being symmetric.
*
* <p>Besides polymorphic methods, this interfaces specifies methods to copy into an array or remove contiguous
* sublists. Although the abstract implementation of this interface provides simple, one-by-one implementations
* of these methods, it is expected that concrete implementation override them with optimized versions.
*
* @see List
*/
public interface BIG_LIST KEY_GENERIC extends BigList<KEY_GENERIC_CLASS>, COLLECTION
KEY_GENERIC {
#endif

 /** Returns a type-specific iterator on the elements of this list.
  *
  * @apiNote This specification strengthens the one given in {@link java.util.Collection#iterator()}.
  * @see java.util.Collection#iterator()
  */
 @Override
 KEY_BIG_LIST_ITERATOR KEY_GENERIC iterator();


 /** Returns a type-specific big-list iterator on this type-specific big list.
  *
  * @apiNote This specification strengthens the one given in {@link BigList#listIterator()}.
  * @see BigList#listIterator()
  */
 @Override
 KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator();

 /** Returns a type-specific list iterator on this type-specific big list starting at a given index.
  *
  * @apiNote This specification strengthens the one given in {@link BigList#listIterator(long)}.
  * @see BigList#listIterator(long)
  */
 @Override
 KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator(long index);

 /** Returns a type-specific spliterator on the elements of this big-list.
  *
  * <p>BigList spliterators must report at least {@link Spliterator#SIZED} and {@link Spliterator#ORDERED}.
  *
  * <p>See {@link java.util.List#spliterator()} for more documentation on the requirements
  * of the returned spliterator (despite {@code BigList} not being a {@code List}, most of the
  * same requirements apply.
  *
  * @apiNote This is generally the only {@code spliterator} method subclasses should override.
  *
```

```
 * @implSpec The default implementation returns a late-binding spliterator (see
 * {@link Spliterator} for documentation on what binding policies mean).
 * <ul>
 * <li>For {@link java.util.RandomAccess RandomAccess} lists, this will return a spliterator
 * that calls the type-specific {@link #get(long)} method on the appropriate indexes.</li>
 * <li>Otherwise, the spliterator returned will wrap this instance's type specific {@link #iterator}.</li>
 * </ul>
 * <p>In either case, the spliterator reports {@link Spliterator#SIZED},
 * {@link Spliterator#SUBSIZED}, and {@link Spliterator#ORDERED}.
 *
 * @implNote As the non-{@linkplain java.util.RandomAccess RandomAccess} case is based on the
 * iterator, and {@link java.util.Iterator} is an inherently linear API, the returned
 * spliterator will yield limited performance gains when run in parallel contexts, as the
 * returned spliterator's {@link Spliterator#trySplit() trySplit()} will have linear runtime.
 * <p>For {@link java.util.RandomAccess RandomAccess} lists, the parallel performance should
 * be reasonable assuming {@link #get(long)} is truly constant time like {@link java.util.RandomAccess
 * RandomAccess} suggests.
 *
 * @return {@inheritDoc}
 * @since 8.5.0
 */
@Override
#if SPLITERATOR_ASSURE_OVERRIDE
abstract KEY_SPLITERATOR KEY_GENERIC spliterator();
#else
default KEY_SPLITERATOR KEY_GENERIC spliterator() {
 return SPLITERATORS.asSpliterator(
   iterator(), size64(), SPLITERATORS.LIST_SPLITERATOR_CHARACTERISTICS);
}
#endif

/** Returns a type-specific view of the portion of this type-specific big list from the index {@code from}, inclusive,
to the index {@code to}, exclusive.
 *
 * @apiNote This specification strengthens the one given in {@link BigList#subList(long,long)}.
 *
 * @see BigList#subList(long,long)
 */
@Override
BIG_LIST KEY_GENERIC subList(long from, long to);

/** Copies (hopefully quickly) elements of this type-specific big list into the given big array.
 *
 * @param from the start index (inclusive).
 * @param a the destination big array.
 * @param offset the offset into the destination big array where to store the first element copied.
 * @param length the number of elements to be copied.
 */
```

```
 void getElements(long from, KEY_TYPE a[][], long offset, long length);

 /** Copies (hopefully quickly) elements of this type-specific big list into the given array.
  *
  * @param from the start index (inclusive).
  * @param a the destination array.
  * @param offset the offset into the destination array where to store the first element copied.
  * @param length the number of elements to be copied.
  */
 default void getElements(long from, KEY_TYPE a[], int offset, int length) {
#if KEYS_REFERENCE
  getElements(from, new KEY_TYPE[][]{a}, (long)offset, (long)length);
#else
  getElements(from, new KEY_TYPE[][]{a}, offset, length);
#endif
 }

 /** Removes (hopefully quickly) elements of this type-specific big list.
  *
  * @param from the start index (inclusive).
  * @param to the end index (exclusive).
  */
 void removeElements(long from, long to);

 /** Add (hopefully quickly) elements to this type-specific big list.
  *
  * @param index the index at which to add elements.
  * @param a the big array containing the elements.
  */
 void addElements(long index, KEY_GENERIC_TYPE a[][]);

 /** Add (hopefully quickly) elements to this type-specific big list.
  *
  * @param index the index at which to add elements.
  * @param a the big array containing the elements.
  * @param offset the offset of the first element to add.
  * @param length the number of elements to add.
  */
 void addElements(long index, KEY_GENERIC_TYPE a[][], long offset, long length);

 /** Set (hopefully quickly) elements to match the array given.
  * @param a the big array containing the elements.
  * @since 8.5.0
  */
 default void setElements(KEY_GENERIC_TYPE a[][]) {
  setElements(0, a);
 }
```

```
/** Set (hopefully quickly) elements to match the array given.
 * @param index the index at which to start setting elements.
 * @param a the big array containing the elements.
 * @since 8.5.0
 */
default void setElements(long index, KEY_GENERIC_TYPE a[][]) {
 setElements(index, a, 0, length(a));
}

/** Set (hopefully quickly) elements to match the array given.
 *
 * Sets each in this list to the corresponding elements in the array, as if by
 * <pre>
 * ListIterator iter = listIterator(index);
 * long i = 0;
 * while (i &lt; length) {
 *   iter.next();
 *   iter.set(BigArrays.get(a, offset + i++);
 * }
 * </pre>
 * However, the exact implementation may be more efficient, taking into account
 * whether random access is faster or not, or at the discretion of subclasses,
 * abuse internals.
 *
 * @param index the index at which to start setting elements.
 * @param a the big array containing the elements.
 * @param offset the offset of the first element to add.
 * @param length the number of elements to add.
 * @since 8.5.0
 */
default void setElements(long index, KEY_GENERIC_TYPE a[][], long offset, long length) {
 // We can't use AbstractList#ensureIndex, sadly.
 if (index < 0)  throw new IndexOutOfBoundsException("Index (" + index + ") is negative");
 if (index > size64()) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than list size (" +
(size64()) + ")");
 BigArrays.ensureOffsetLength(a, offset, length);
 if (index + length > size64()) throw new IndexOutOfBoundsException("End index (" + (index + length) + ") is
greater than list size (" + size64() + ")");
 KEY_BIG_LIST_ITERATOR KEY_GENERIC iter = listIterator(index);
 long i = 0;
 while (i < length) {
  iter.NEXT_KEY();
  iter.set(BigArrays.get(a, offset + i++));
 }
}

#if KEYS_PRIMITIVE
```

```
/** Inserts the specified element at the specified position in this type-specific big list (optional operation).
 * @see BigList#add(long,Object)
 */
void add(long index, KEY_TYPE key);

/** Inserts all of the elements in the specified type-specific collection into this type-specific big list at the specified position (optional operation).
 * @see List#addAll(int,java.util.Collection)
 */
boolean addAll(long index, COLLECTION c);

/** Returns the element at the specified position.
 * @see BigList#get(long)
 */
KEY_TYPE GET_KEY(long index);

/** Removes the element at the specified position.
 * @see BigList#remove(long) */
KEY_TYPE REMOVE_KEY(long index);

/** Replaces the element at the specified position in this big list with the specified element (optional operation).
 * @see BigList#set(long,Object)
 */
KEY_TYPE set(long index, KEY_TYPE k);

/** Returns the index of the first occurrence of the specified element in this type-specific big list, or -1 if this big list does not contain the element.
 * @see BigList#indexOf(Object)
 */
long indexOf(KEY_TYPE k);

/** Returns the index of the last occurrence of the specified element in this type-specific big list, or -1 if this big list does not contain the element.
 * @see BigList#lastIndexOf(Object)
 */
long lastIndexOf(KEY_TYPE k);

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
void add(long index, KEY_CLASS key);

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead. */
@Deprecated
@Override
KEY_GENERIC_CLASS get(long index);
```

```
 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 long indexOf(Object o);

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 long lastIndexOf(Object o);

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 KEY_GENERIC_CLASS remove(long index);

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 KEY_GENERIC_CLASS set(long index, KEY_GENERIC_CLASS k);
#endif

 /** Inserts all of the elements in the specified type-specific big list into this type-specific big list at the specified
position (optional operation).
  * @apiNote This method exists only for the sake of efficiency: override are expected to use {@link
#getElements}/{@link #addElements}.
  * @implSpec This method delegates to the one accepting a collection, but it might be implemented more
efficiently.
  * @see BigList#addAll(long,Collection)
  */
 default boolean addAll(final long index, final BIG_LIST KEY_EXTENDS_GENERIC l) { return addAll(index,
(COLLECTION KEY_EXTENDS_GENERIC) l); }

 /** Appends all of the elements in the specified type-specific big list to the end of this type-specific big list (optional
operation).
  * @implSpec This method delegates to the index-based version, passing {@link #size()} as first argument.
  * @see BigList#addAll(Collection)
  */
 default boolean addAll(final BIG_LIST KEY_EXTENDS_GENERIC l) { return addAll(size64(), l); }


 /** Inserts all of the elements in the specified type-specific list into this type-specific big list at the specified position
(optional operation).
  * @apiNote This method exists only for the sake of efficiency: override are expected to use {@link
```

#getElements}/{@link #addElements}.
  * @implSpec This method delegates to the one accepting a collection, but it might be implemented more efficiently.
  * @see BigList#addAll(long,Collection)
  */
 default boolean addAll(final long index, final LIST KEY_EXTENDS_GENERIC l) { return addAll(index, (COLLECTION KEY_EXTENDS_GENERIC) l); }

 /** Appends all of the elements in the specified type-specific list to the end of this type-specific big list (optional operation).
  * @implSpec This method delegates to the index-based version, passing {@link #size()} as first argument.
  * @see BigList#addAll(Collection)
  */
 default boolean addAll(final LIST KEY_EXTENDS_GENERIC l) { return addAll(size64(), l); }

 // Without any toBigArray methods, there is no sensible default sort methods we can have.
}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/BigList.drv
No license file was found, but licenses were detected in source scan.

package PACKAGE;

/** A type-specific immutable {@link it.unimi.dsi.fastutil.SortedPair SortedPair}. */

#if KEYS_PRIMITIVE
public interface SORTED_PAIR extends PAIR, it.unimi.dsi.fastutil.SortedPair<KEY_CLASS>, java.io.Serializable {
#else
public interface SORTED_PAIR <K extends Comparable<K>> extends PAIR <K, K>,

```
it.unimi.dsi.fastutil.SortedPair<K>, java.io.Serializable {
#endif

 /** Returns a new type-specific immutable {@link it.unimi.dsi.fastutil.SortedPair SortedPair} with given left and
right value.
  *
  * <p>Note that if {@code left} and {@code right} are in the wrong order, they will be exchanged.
  *
  * @param left the left value.
  * @param right the right value.
  *
  * @implSpec This factory method delegates to the factory method of the corresponding immutable implementation.
  */
#if KEYS_PRIMITIVE
 public static SORTED_PAIR of(final KEY_GENERIC_TYPE left, final KEY_GENERIC_TYPE right) {
  return IMMUTABLE_SORTED_PAIR.of(left, right);
#else
 public static <K extends Comparable<K>> SORTED_PAIR <K> of(final KEY_GENERIC_TYPE left, final
KEY_GENERIC_TYPE right) {
  return IMMUTABLE_SORTED_PAIR.of(left, right);
#endif
 }

#if KEYS_PRIMITIVE
 /**
  * Returns true if one of the two elements of this sorted pair is equal to a given element.
  *
  * @param e an element.
  * @return true if one of the two elements of this sorted pair is equal to {@code e}.
  * @see it.unimi.dsi.fastutil.SortedPair#contains(Object)
  */
 default boolean contains(final KEY_TYPE e) {
  return e == PAIR_LEFT() || e == PAIR_RIGHT();
 }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 default boolean contains(final Object o) {
  if (o == null) return false;
  return contains(KEY_OBJ2TYPE(o));
 }

#endif
```

}

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/SortedPair.drv
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```
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

/** An abstract class providing basic methods for implementing a type-specific stack interface.
*
* @deprecated As of {@code fastutil} 8 this class is no longer necessary, as its previous abstract
* methods are now default methods of the type-specific interface.
*/
@Deprecated
public abstract class ABSTRACT_STACK KEY_GENERIC extends
it.unimi.dsi.fastutil.AbstractStack<KEY_GENERIC_CLASS> implements STACK KEY_GENERIC {
 protected ABSTRACT_STACK() {}
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractStack.drv
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```
/*
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*
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```

```
*
* Unless required by applicable law or agreed to in writing, software
* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

import it.unimi.dsi.fastutil.Stack;

/** A type-specific {@link Stack}; provides some additional methods that use polymorphism to avoid (un)boxing.
*/

public interface STACK KEY_GENERIC extends Stack<KEY_GENERIC_CLASS> {

 /** Pushes the given object on the stack.
  * @param k the object to push on the stack.
  * @see Stack#push(Object)
  */
 void push(KEY_TYPE k);

 /** Pops the top off the stack.
  *
  * @return the top of the stack.
  * @see Stack#pop()
  */
 KEY_TYPE POP();

 /** Peeks at the top of the stack (optional operation).
  * @return the top of the stack.
  * @see Stack#top()
  */
 KEY_TYPE TOP();

 /** Peeks at an element on the stack (optional operation).
  * @param i an index from the stop of the stack (0 represents the top).
  * @return the {@code i}-th element on the stack.
  * @see Stack#peek(int)
  */
 KEY_TYPE PEEK(int i);

 /** {@inheritDoc}
  * <p>This default implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
```

```
 @Override
 default void push(KEY_GENERIC_CLASS o) {
  push(o.KEY_VALUE());
 }

 /** {@inheritDoc}
  * <p>This default implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default KEY_GENERIC_CLASS pop() {
  return KEY_CLASS.valueOf(POP());
 }

 /** {@inheritDoc}
  * <p>This default implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default KEY_GENERIC_CLASS top() {
  return KEY_CLASS.valueOf(TOP());
 }

 /** {@inheritDoc}
  * <p>This default implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default KEY_GENERIC_CLASS peek(final int i) {
  return KEY_CLASS.valueOf(PEEK(i));
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Stack.drv
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```
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* limitations under the License.
*/


package PACKAGE;

import it.unimi.dsi.fastutil.BidirectionalIterator;
#if KEYS_PRIMITIVE
import it.unimi.dsi.fastutil.objects.ObjectBidirectionalIterator;
#endif

/** A type-specific bidirectional iterator; provides an additional method to avoid (un)boxing,
* and the possibility to skip elements backwards.
*
* @see BidirectionalIterator
*/

#if KEYS_PRIMITIVE
public interface KEY_BIDI_ITERATOR KEY_GENERIC extends KEY_ITERATOR KEY_GENERIC,
ObjectBidirectionalIterator<KEY_GENERIC_CLASS> {
#else
public interface KEY_BIDI_ITERATOR KEY_GENERIC extends KEY_ITERATOR KEY_GENERIC,
BidirectionalIterator<KEY_GENERIC_CLASS> {
#endif

#if KEYS_PRIMITIVE

 /**
  * Returns the previous element as a primitive type.
  *
  * @return the previous element in the iteration.
  * @see java.util.ListIterator#previous()
  */

 KEY_TYPE PREV_KEY();

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead. */
 @Deprecated
 @Override
 default KEY_GENERIC_CLASS previous() { return KEY_CLASS.valueOf(PREV_KEY()); }

#endif

 /** Moves back for the given number of elements.
  *
```

```
  * <p>The effect of this call is exactly the same as that of
  * calling {@link #previous()} for {@code n} times (possibly stopping
  * if {@link #hasPrevious()} becomes false).
  *
  * @param n the number of elements to skip back.
  * @return the number of elements actually skipped.
  * @see #previous()
  */
#if KEYS_PRIMITIVE
 @Override
#endif
 default int back(final int n) {
  int i = n;
  while(i-- != 0 && hasPrevious()) PREV_KEY();
  return n - i - 1;
 }

 /** {@inheritDoc} */
 @Override
 default int skip(final int n) {
  return KEY_ITERATOR.super.skip(n);
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/BidirectionalIterator.drv
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```
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* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/



package PACKAGE;

import java.util.Collection;
```

import java.util.Iterator;
import java.util.RandomAccess;
import java.util.NoSuchElementException;
import it.unimi.dsi.fastutil.BigArrays;
import static it.unimi.dsi.fastutil.BigArrays.length;
import it.unimi.dsi.fastutil.BigList;
import it.unimi.dsi.fastutil.Size64;
#if KEYS_REFERENCE
import java.util.function.Consumer;
import java.util.stream.Collector;
#endif

#if KEYS_PRIMITIVE

/** A type-specific big list based on a big array; provides some additional methods that use polymorphism to avoid (un)boxing.
*
* <p>This class implements a lightweight, fast, open, optimized,
* reuse-oriented version of big-array-based big lists. Instances of this class
* represent a big list with a big array that is enlarged as needed when new entries
* are created (by increasing its current length by 50%), but is
* never made smaller (even on a {@link #clear()}). A family of
* {@linkplain #trim() trimming methods} lets you control the size of the
* backing big array; this is particularly useful if you reuse instances of this class.
* Range checks are equivalent to those of {@link java.util}'s classes, but
* they are delayed as much as possible. The backing big array is exposed by the
* {@link #elements()} method.
*
* <p>This class implements the bulk methods {@code removeElements()},
* {@code addElements()} and {@code getElements()} using
* high-performance system calls (e.g., {@link
* System#arraycopy(Object,int,Object,int,int) System.arraycopy()}) instead of
* expensive loops.
*
* @see java.util.ArrayList
*/

public class BIG_ARRAY_BIG_LIST KEY_GENERIC extends ABSTRACT_BIG_LIST KEY_GENERIC implements RandomAccess, Cloneable, java.io.Serializable {
 private static final long serialVersionUID = -7046029254386353130L;

#else

/** A type-specific big-array-based big list; provides some additional methods that use polymorphism to avoid (un)boxing.
*
* <p>This class implements a lightweight, fast, open, optimized,

```
* reuse-oriented version of big-array-based big lists. Instances of this class
* represent a big list with a big array that is enlarged as needed when new entries
* are created (by increasing its current length to 50%), but is
* <em>never</em> made smaller (even on a {@link #clear()}). A family of
* {@linkplain #trim() trimming methods} lets you control the size of the
* backing big array; this is particularly useful if you reuse instances of this class.
* Range checks are equivalent to those of {@link java.util}'s classes, but
* they are delayed as much as possible.
*
* <p>The backing big array is exposed by the {@link #elements()} method. If an instance
* of this class was created {@linkplain #wrap(Object[][],long) by wrapping},
* backing-array reallocations will be performed using reflection, so that
* {@link #elements()} can return a big array of the same type of the original big array; the comments
* about efficiency made in {@link it.unimi.dsi.fastutil.objects.ObjectArrays} apply here.
*
* <p>This class implements the bulk methods {@code removeElements()},
* {@code addElements()} and {@code getElements()} using
* high-performance system calls (e.g., {@link
* System#arraycopy(Object,int,Object,int,int) System.arraycopy()}) instead of
* expensive loops.
*
* @see java.util.ArrayList
*/

public class BIG_ARRAY_BIG_LIST KEY_GENERIC extends ABSTRACT_BIG_LIST KEY_GENERIC
implements RandomAccess, Cloneable, java.io.Serializable {
 private static final long serialVersionUID = -7046029254386353131L;


#endif

 /** The initial default capacity of a big-array big list. */
 public static final int DEFAULT_INITIAL_CAPACITY = 10;

#if ! KEYS_PRIMITIVE
 /** Whether the backing big array was passed to {@code wrap()}. In
  * this case, we must reallocate with the same type of big array. */
 protected final boolean wrapped;
#endif

 /** The backing big array. */
 protected transient KEY_GENERIC_TYPE a[][];

 /** The current actual size of the big list (never greater than the backing-array length). */
 protected long size;

 /** Creates a new big-array big list using a given array.
  *
```

```
  * <p>This constructor is only meant to be used by the wrapping methods.
  *
  * @param a the big array that will be used to back this big-array big list.
  */

 protected BIG_ARRAY_BIG_LIST(final KEY_GENERIC_TYPE a[][], @SuppressWarnings("unused") boolean
dummy) {
  this.a = a;
#if ! KEYS_PRIMITIVE
  this.wrapped = true;
#endif
 }

 /** Creates a new big-array big list with given capacity.
  *
  * @param capacity the initial capacity of the array list (may be 0).
  */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public BIG_ARRAY_BIG_LIST(final long capacity) {
  if (capacity < 0) throw new IllegalArgumentException("Initial capacity (" + capacity + ") is negative");
  if (capacity == 0) a = KEY_GENERIC_BIG_ARRAY_CAST BIG_ARRAYS.EMPTY_BIG_ARRAY;
  else a = KEY_GENERIC_BIG_ARRAY_CAST BIG_ARRAYS.newBigArray(capacity);
#if ! KEYS_PRIMITIVE
  wrapped = false;
#endif
 }

 /** Creates a new big-array big list with {@link #DEFAULT_INITIAL_CAPACITY} capacity. */

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public BIG_ARRAY_BIG_LIST() {
  a = KEY_GENERIC_BIG_ARRAY_CAST BIG_ARRAYS.DEFAULT_EMPTY_BIG_ARRAY; // We delay
allocation
#if ! KEYS_PRIMITIVE
  wrapped = false;
#endif
 }

 /** Creates a new big-array big list and fills it with a given type-specific collection.
  *
  * @param c a type-specific collection that will be used to fill the array list.
  */

 public BIG_ARRAY_BIG_LIST(final COLLECTION KEY_EXTENDS_GENERIC c) {
  this(Size64.sizeOf(c));
  if (c instanceof BIG_LIST) {
   ((BIG_LIST KEY_EXTENDS_GENERIC)c).getElements(0, a, 0, size = Size64.sizeOf(c));
```

```
  } else {
   for(KEY_ITERATOR KEY_EXTENDS_GENERIC i = c.iterator(); i.hasNext();) add(i.NEXT_KEY());
  }
 }

#if KEYS_REFERENCE

 /** Creates a new big-array big list and fills it with a given collection.
  *
  * @param c a collection that will be used to fill the array list.
  */

 public BIG_ARRAY_BIG_LIST(final Collection KEY_EXTENDS_GENERIC c) {
  this(Size64.sizeOf(c));
  if (c instanceof BIG_LIST) {
   ((BIG_LIST KEY_EXTENDS_GENERIC)c).getElements(0, a, 0, size = Size64.sizeOf(c));
  } else {
   for(Iterator KEY_EXTENDS_GENERIC i = c.iterator(); i.hasNext();) add(i.next());
  }
 }

#endif

 /** Creates a new big-array big list and fills it with a given type-specific list.
  *
  * @param l a type-specific list that will be used to fill the array list.
  */

 public BIG_ARRAY_BIG_LIST(final BIG_LIST KEY_EXTENDS_GENERIC l) {
  this(l.size64());
  l.getElements(0, a, 0, size = l.size64());
 }

 /** Creates a new big-array big list and fills it with the elements of a given big array.
  *
  * @param a a big array whose elements will be used to fill the array list.
  */

 public BIG_ARRAY_BIG_LIST(final KEY_GENERIC_TYPE a[][]) {
  this(a, 0, length(a));
 }

 /** Creates a new big-array big list and fills it with the elements of a given big array.
  *
  * @param a a big array whose elements will be used to fill the array list.
  * @param offset the first element to use.
  * @param length the number of elements to use.
  */
```

```
 public BIG_ARRAY_BIG_LIST(final KEY_GENERIC_TYPE a[][], final long offset, final long length) {
  this(length);
  BigArrays.copy(a, offset, this.a, 0, length);
  size = length;
 }

 /** Creates a new big-array big list and fills it with the elements returned by an iterator..
  *
  * @param i an iterator whose returned elements will fill the array list.
  */

 public BIG_ARRAY_BIG_LIST(final Iterator<? extends KEY_GENERIC_CLASS> i) {
  this();
  while(i.hasNext()) this.add(KEY_CLASS2TYPE(i.next()));
 }

 /** Creates a new big-array big list and fills it with the elements returned by a type-specific iterator..
  *
  * @param i a type-specific iterator whose returned elements will fill the array list.
  */

 public BIG_ARRAY_BIG_LIST(final KEY_ITERATOR KEY_EXTENDS_GENERIC i) {
  this();
  while(i.hasNext()) this.add(i.NEXT_KEY());
 }

#if KEYS_PRIMITIVE
 /** Returns the backing big array of this big list.
  *
  * @return the backing big array.
  */

 public KEY_GENERIC_TYPE[][] elements() {
  return a;
 }
#else
 /** Returns the backing big array of this big list.
  *
  * <p>If this big-array big list was created by wrapping a given big array, it is guaranteed
  * that the type of the returned big array will be the same. Otherwise, the returned
  * big array will be an big array of objects.
  *
  * @return the backing big array.
  */

 public KEY_GENERIC_TYPE[][] elements() {
  return a;
```

```
 }
#endif

 /** Wraps a given big array into a big-array list of given size.
  *
  * @param a a big array to wrap.
  * @param length the length of the resulting big-array list.
  * @return a new big-array list of the given size, wrapping the given big array.
  */

 public static KEY_GENERIC BIG_ARRAY_BIG_LIST KEY_GENERIC wrap(final KEY_GENERIC_TYPE a[][],
final long length) {
  if (length > length(a)) throw new IllegalArgumentException("The specified length (" + length + ") is greater than the
array size (" + length(a) + ")");
  final BIG_ARRAY_BIG_LIST KEY_GENERIC l = new BIG_ARRAY_BIG_LIST
KEY_GENERIC_DIAMOND(a, false);
  l.size = length;
  return l;
 }

 /** Wraps a given big array into a big-array big list.
  *
  * @param a a big array to wrap.
  * @return a new big-array big list wrapping the given array.
  */

 public static KEY_GENERIC BIG_ARRAY_BIG_LIST KEY_GENERIC wrap(final KEY_GENERIC_TYPE
a[][]) {
  return wrap(a, length(a));
 }

 /** Creates a new empty big array list.
  *
  * @return a new empty big-array big list.
  */
 public static KEY_GENERIC BIG_ARRAY_BIG_LIST KEY_GENERIC of() {
  return new BIG_ARRAY_BIG_LIST KEY_GENERIC_DIAMOND();
 }

 /** Creates a big array list using a list of elements.
  *
  * @param init a list of elements that will be used to initialize the big list.
  *   It is possible (but not assured) that the returned big-array big list will be
  *   backed by the given array in one of its segments.
  * @return a new big-array big list containing the given elements.
  * @see BigArrays#wrap
  */
 SAFE_VARARGS
```

```
 public static KEY_GENERIC BIG_ARRAY_BIG_LIST KEY_GENERIC of(final KEY_GENERIC_TYPE... init) {
  return wrap(BigArrays.wrap(init));
 }

#if KEYS_INT_LONG_DOUBLE
 /** Collects the result of a primitive {@code Stream} into a new BigArrayBigList.
  *
  * <p>This method performs a terminal operation on the given {@code Stream}
  *
  * @apiNote Taking a primitive stream instead of returning something like a
  * {@link java.util.stream.Collector Collector} is necessary because there is no
  * primitive {@code Collector} equivalent in the Java API.
  */
  public static KEY_GENERIC BIG_ARRAY_BIG_LIST KEY_GENERIC toBigList(JDK_PRIMITIVE_STREAM
stream) {
   return stream.collect(
    BIG_ARRAY_BIG_LIST::new,
    BIG_ARRAY_BIG_LIST::add,
    BIG_ARRAY_BIG_LIST::addAll);
  }

 /** Collects the result of a primitive {@code Stream} into a new BigArrayBigList.
  *
  * <p>This method performs a terminal operation on the given {@code Stream}
  *
  * @apiNote Taking a primitive stream instead returning something like a
  * {@link java.util.stream.Collector Collector} is necessary because there is no
  * primitive {@code Collector} equivalent in the Java API.
  * @implNote The current implementation preallocates the full size for every worker thread when used on parallel
streams.
  *   This can be quite wasteful, as worker threads other then the first don't usually handle the contents of the full
stream.
  */
 public static KEY_GENERIC BIG_ARRAY_BIG_LIST KEY_GENERIC
toBigListWithExpectedSize(JDK_PRIMITIVE_STREAM stream, long expectedSize) {
  return stream.collect(
   () -> new BIG_ARRAY_BIG_LIST KEY_GENERIC(expectedSize),
   BIG_ARRAY_BIG_LIST::add,
   BIG_ARRAY_BIG_LIST::addAll);
 }
#elif KEYS_REFERENCE
 // Collector wants a function that returns the collection being added to.
 private BIG_ARRAY_BIG_LIST KEY_GENERIC combine(BIG_ARRAY_BIG_LIST
KEY_EXTENDS_GENERIC toAddFrom) {
  addAll(toAddFrom);
  return this;
 }
```

```
 private static final Collector<KEY_TYPE, ?, BIG_ARRAY_BIG_LIST<KEY_TYPE>> TO_LIST_COLLECTOR
=
  Collector.of(
   BIG_ARRAY_BIG_LIST::new,
   BIG_ARRAY_BIG_LIST::add,
   BIG_ARRAY_BIG_LIST::combine);

 /** Returns a {@link Collector} that collects a {@code Stream}'s elements into a new ArrayList. */
 SUPPRESS_WARNINGS_KEY_UNCHECKED_RAWTYPES
 public static KEY_GENERIC Collector<KEY_GENERIC_TYPE, ?, BIG_ARRAY_BIG_LIST KEY_GENERIC>
toBigList() {
  return (Collector) TO_LIST_COLLECTOR;
 }

 /**
  * Returns a {@link Collector} that collects a {@code Stream}'s elements into a new ArrayList.
  *
  * @implNote The current implementation preallocates the full size for every worker thread when used on parallel
streams.
  *   This can be quite wasteful, as worker threads other then the first don't usually handle the contents of the full
stream.
  */
 public static KEY_GENERIC Collector<KEY_GENERIC_TYPE, ?, BIG_ARRAY_BIG_LIST KEY_GENERIC>
toBigListWithExpectedSize(long expectedSize) {
  return Collector.of(
  () -> new BIG_ARRAY_BIG_LIST KEY_GENERIC(expectedSize),
  BIG_ARRAY_BIG_LIST::add,
  BIG_ARRAY_BIG_LIST::combine);
 }
#endif


 /** Ensures that this big-array big list can contain the given number of entries without resizing.
  *
  * @param capacity the new minimum capacity for this big-array big list.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public void ensureCapacity(final long capacity) {
  if (capacity <= length(a) || a == BIG_ARRAYS.DEFAULT_EMPTY_BIG_ARRAY) return;
#if KEYS_PRIMITIVE
  a = BigArrays.forceCapacity(a, capacity, size);
#else
  if (wrapped) a = BigArrays.forceCapacity(a, capacity, size);
  else {
   if (capacity > length(a)) {
    final Object t[][] = BIG_ARRAYS.newBigArray(capacity);
    BigArrays.copy(a, 0, t, 0, size);
    a = (KEY_GENERIC_TYPE[][])t;
```

```
  }
 }
#endif
 assert size <= length(a);
 }

 /** Grows this big-array big list, ensuring that it can contain the given number of entries without resizing,
  * and in case increasing current capacity at least by a factor of 50%.
  *
  * @param capacity the new minimum capacity for this big-array big list.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private void grow(long capacity) {
  final long oldLength = length(a);
  if (capacity <= oldLength) return;
  if (a != BIG_ARRAYS.DEFAULT_EMPTY_BIG_ARRAY) capacity = Math.max(oldLength + (oldLength >> 1),
capacity);
  else if (capacity < DEFAULT_INITIAL_CAPACITY) capacity = DEFAULT_INITIAL_CAPACITY;
#if KEYS_PRIMITIVE
  a = BigArrays.forceCapacity(a, capacity, size);
#else
  if (wrapped) a =  BigArrays.forceCapacity(a, capacity, size);
  else {
   final Object t[][] = BIG_ARRAYS.newBigArray(capacity);
   BigArrays.copy(a, 0, t, 0, size);
   a = (KEY_GENERIC_TYPE[][])t;
  }
#endif
  assert size <= length(a);
 }

 @Override
 public void add(final long index, final KEY_GENERIC_TYPE k) {
  ensureIndex(index);
  grow(size + 1);
  if (index != size) BigArrays.copy(a, index, a, index + 1, size - index);
  BigArrays.set(a, index, k);
  size++;
  assert size <= length(a);
 }

 @Override
 public boolean add(final KEY_GENERIC_TYPE k) {
  grow(size + 1);
  BigArrays.set(a, size++, k);
  assert size <= length(a);
  return true;
 }
```

```
 @Override
 public KEY_GENERIC_TYPE GET_KEY(final long index) {
  if (index >= size) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than or equal to list size
(" + size + ")");
  return BigArrays.get(a, index);
 }

 @Override
 public long indexOf(final KEY_TYPE k) {
  for(long i = 0; i < size; i++) if (KEY_EQUALS(k, BigArrays.get(a, i))) return i;
  return -1;
 }

 @Override
 public long lastIndexOf(final KEY_TYPE k) {
  for(long i = size; i-- != 0;) if (KEY_EQUALS(k, BigArrays.get(a, i))) return i;
  return -1;
 }

 @Override
 public KEY_GENERIC_TYPE REMOVE_KEY(final long index) {
  if (index >= size) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than or equal to list size
(" + size + ")");
  final KEY_GENERIC_TYPE old = BigArrays.get(a, index);
  size--;
  if (index != size) BigArrays.copy(a, index + 1, a, index, size - index);
#if KEYS_REFERENCE
  BigArrays.set(a, size, null);
#endif
  assert size <= length(a);
  return old;
 }

 @Override
 public boolean REMOVE(final KEY_TYPE k) {
  final long index = indexOf(k);
  if (index == -1) return false;
  REMOVE_KEY(index);
  assert size <= length(a);
  return true;
 }

 @Override
 public KEY_GENERIC_TYPE set(final long index, final KEY_GENERIC_TYPE k) {
  if (index >= size) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than or equal to list size
(" + size + ")");
  KEY_GENERIC_TYPE old = BigArrays.get(a, index);
```

```
  BigArrays.set(a, index, k);
  return old;
 }

#if KEYS_PRIMITIVE
 @Override
 public boolean removeAll(final COLLECTION c) {
  KEY_GENERIC_TYPE[] s = null, d = null;
  int ss = -1, sd = BigArrays.SEGMENT_SIZE, ds = -1, dd = BigArrays.SEGMENT_SIZE;
  for (long i = 0; i < size; i++) {
   if (sd == BigArrays.SEGMENT_SIZE) {
    sd = 0;
    s = a[++ss];
   }
   if (!c.contains(s[sd])) {
    if (dd == BigArrays.SEGMENT_SIZE) {
     d = a[++ds];
     dd = 0;
    }
    d[dd++] = s[sd];
   }
   sd++;
  }
  final long j = BigArrays.index(ds, dd);
#if KEYS_REFERENCE
  BigArrays.fill(a, j, size, null);
#endif
  final boolean modified = size != j;
  size = j;
  return modified;
 }

#endif

 @Override
 public boolean removeAll(final Collection<?> c) {
  KEY_GENERIC_TYPE[] s = null, d = null;
  int ss = -1, sd = BigArrays.SEGMENT_SIZE, ds = -1, dd = BigArrays.SEGMENT_SIZE;
  for (long i = 0; i < size; i++) {
   if (sd == BigArrays.SEGMENT_SIZE) {
    sd = 0;
    s = a[++ss];
   }
   if (!c.contains(KEY2OBJ(s[sd]))) {
    if (dd == BigArrays.SEGMENT_SIZE) {
     d = a[++ds];
     dd = 0;
    }
```

```
    d[dd++] = s[sd];
   }
   sd++;
  }
  final long j = BigArrays.index(ds, dd);
#if KEYS_REFERENCE
  BigArrays.fill(a, j, size, null);
#endif
  final boolean modified = size != j;
  size = j;
  return modified;
 }

 @Override
 public boolean addAll(long index, final STD_KEY_COLLECTION KEY_EXTENDS_GENERIC c) {
  if (c instanceof LIST) {
   return addAll(index, (LIST KEY_EXTENDS_GENERIC)c);
  }
  if (c instanceof BIG_LIST) {
   return addAll(index, (BIG_LIST KEY_EXTENDS_GENERIC)c);
  }
  ensureIndex(index);
  int n = c.size();
  if (n == 0) return false;
  grow(size + n);
  BigArrays.copy(a, index, a, index + n, size - index);
  final STD_KEY_ITERATOR KEY_EXTENDS_GENERIC i = c.iterator();
  size += n;
  assert size <= length(a);
  while(n-- != 0) BigArrays.set(a, index++, i.NEXT_KEY());
  return true;
 }

 @Override
 public boolean addAll(final long index, final BIG_LIST KEY_EXTENDS_GENERIC list) {
  ensureIndex(index);
  final long n = list.size64();
  if (n == 0) return false;
  grow(size + n);
  BigArrays.copy(a, index, a, index + n, size - index);
  list.getElements(0, a, index, n);
  size += n;
  assert size <= length(a);
  return true;
 }

 @Override
 public boolean addAll(final long index, final LIST KEY_EXTENDS_GENERIC list) {
```

```
  ensureIndex(index);
  int n = list.size();
  if (n == 0) return false;
  grow(size + n);
  BigArrays.copy(a, index, a, index + n, size - index);

  size += n;
  assert size <= length(a);

  int segment = BigArrays.segment(index);
  int displ = BigArrays.displacement(index);
  int pos = 0;

  while(n > 0) {
   final int l = Math.min(a[segment].length - displ, n);
   list.getElements(pos, a[segment], displ, l);
   if ((displ += l) == BigArrays.SEGMENT_SIZE) {
    displ = 0;
    segment++;
   }
   pos += l;
   n -= l;
  }

  return true;
 }

 @Override
 public void clear() {
#if KEYS_REFERENCE
  BigArrays.fill(a, 0, size, null);
#endif
  size = 0;
  assert size <= length(a);
 }

 @Override
 public long size64() {
  return size;
 }

 @Override
 public void size(final long size) {
  if (size > length(a)) a = BigArrays.forceCapacity(a, size, this.size);
  if (size > this.size) BigArrays.fill(a, this.size, size, KEY_NULL);
#if KEYS_REFERENCE
  else BigArrays.fill(a, size, this.size, KEY_NULL);
#endif
```

```
 this.size = size;
}

@Override
public boolean isEmpty() {
 return size == 0;
}

/** Trims this big-array big list so that the capacity is equal to the size.
 *
 * @see java.util.ArrayList#trimToSize()
 */
public void trim() {
 trim(0);
}

/** Trims the backing big array if it is too large.
 *
 * If the current big array length is smaller than or equal to
 * {@code n}, this method does nothing. Otherwise, it trims the
 * big-array length to the maximum between {@code n} and {@link #size64()}.
 *
 * <p>This method is useful when reusing big lists.  {@linkplain #clear() Clearing a
 * big list} leaves the big-array length untouched. If you are reusing a big list
 * many times, you can call this method with a typical
 * size to avoid keeping around a very large big array just
 * because of a few large transient big lists.
 *
 * @param n the threshold for the trimming.
 */

public void trim(final long n) {
 final long arrayLength = length(a);
 if (n >= arrayLength || size == arrayLength) return;
 a = BigArrays.trim(a, Math.max(n, size));
 assert size <= length(a);
}

private class SubList extends ABSTRACT_BIG_LIST.SUBLIST_RANDOM_ACCESS KEY_GENERIC {
 private static final long serialVersionUID = -3185226345314976296L;

 protected SubList(long from, long to) {
  super(BIG_ARRAY_BIG_LIST.this, from, to);
 }

 // Needed because we can't access the parent class' instance variables directly in a different instance of SubList.
 private KEY_GENERIC_TYPE[][] getParentArray() {
  return a;
```

```
  }

  // Most of the inherited methods should be fine, but we can override a few of them for performance.

  @Override
  public KEY_GENERIC_TYPE GET_KEY(long i) {
   ensureRestrictedIndex(i);
   return BigArrays.get(a, i + from);
  }

  private final class SubListIterator extends BIG_LIST_ITERATORS.AbstractIndexBasedBigListIterator
KEY_GENERIC {

   // We are using pos == 0 to be 0 relative to SubList.from (meaning you need to do a[from + i] when accessing
array).
   SubListIterator(long index) {
    super(0, index);
   }

   @Override
   protected final KEY_GENERIC_TYPE get(long i) { return BigArrays.get(a, from + i); }
   @Override
   protected final void add(long i, KEY_GENERIC_TYPE k) { SubList.this.add(i, k); }
   @Override
   protected final void set(long i, KEY_GENERIC_TYPE k) { SubList.this.set(i, k); }
   @Override
   protected final void remove(long i) { SubList.this.REMOVE_KEY(i); }
   @Override
   protected final long getMaxPos() { return to - from; }

   @Override
   public KEY_GENERIC_TYPE NEXT_KEY() { if (! hasNext()) throw new NoSuchElementException(); return
BigArrays.get(a, from + (lastReturned = pos++)); }
   @Override
   public KEY_GENERIC_TYPE PREV_KEY() { if (! hasPrevious()) throw new NoSuchElementException(); return
BigArrays.get(a, from + (lastReturned = --pos)); }

   @Override
   public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
    final long max = to - from;
    while(pos < max) {
     action.accept(BigArrays.get(a, from + (lastReturned = pos++)));
    }
   }
  }

  @Override
  public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator(long index) {
```

```
 return new SubListIterator(index);
}

private final class SubListSpliterator extends BIG_SPLITERATORS.LateBindingSizeIndexBasedSpliterator
KEY_GENERIC {

 // We are using pos == 0 to be 0 relative to real array 0
 SubListSpliterator() {
  super(from);
 }

 private SubListSpliterator(long pos, long maxPos) {
  super(pos, maxPos);
 }

 @Override
 protected final long getMaxPosFromBackingStore() { return to; }

  @Override
 protected final KEY_GENERIC_TYPE get(long i) { return BigArrays.get(a, i); }
 @Override
 protected final SubListSpliterator makeForSplit(long pos, long maxPos) {
  return new SubListSpliterator(pos, maxPos);
 }
 @Override
 protected final long computeSplitPoint() {
  long defaultSplit = super.computeSplitPoint();
  // Align to outer array starting point if possible.
  // We add/subtract one to the bounds to ensure the new pos will always shrink the range
  return BigArrays.nearestSegmentStart(defaultSplit, pos + 1, getMaxPos() - 1);
 }
 @Override
 public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
  if (pos >= getMaxPos()) return false;
  action.accept(BigArrays.get(a, pos++));
  return true;
 }
 @Override
 public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
  final long max = getMaxPos();
  while(pos < max) {
   action.accept(BigArrays.get(a, pos++));
  }
 }
}

@Override
public KEY_SPLITERATOR KEY_GENERIC spliterator() {
```

```
  return new SubListSpliterator();
 }

 boolean contentsEquals(KEY_GENERIC_TYPE[][] otherA, long otherAFrom, long otherATo) {
  if (a == otherA && from == otherAFrom && to == otherATo) return true;
  if (otherATo - otherAFrom != size64()) {
   return false;
  }
  long pos = to, otherPos = otherATo;
  // We have already assured that the two ranges are the same size, so we only need to check one bound.
  // If BigArrays.equals ever gets an overload that accepts bounds, use that instead
  // (but make sure to break out the reference equality case).
#if KEY_CLASS_Object
  while(--pos >= from) if (! java.util.Objects.equals(BigArrays.get(a, pos), BigArrays.get(otherA, --otherPos))) return
false;
#else
  while(--pos >= from) if (BigArrays.get(a, pos) != BigArrays.get(otherA, --otherPos)) return false;
#endif
  return true;
 }

 @Override
 public boolean equals(Object o) {
  if (o == this) return true;
  if (o == null) return false;
  if (!(o instanceof BigList)) return false;
  if (o instanceof BIG_ARRAY_BIG_LIST) {
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   BIG_ARRAY_BIG_LIST KEY_GENERIC other = (BIG_ARRAY_BIG_LIST KEY_GENERIC) o;
   return contentsEquals(other.a, 0, other.size64());
  }
  if (o instanceof BIG_ARRAY_BIG_LIST.SubList) {
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   BIG_ARRAY_BIG_LIST KEY_GENERIC.SubList other = (BIG_ARRAY_BIG_LIST KEY_GENERIC.SubList)
o;
   return contentsEquals(other.getParentArray(), other.from, other.to);
  }
  return super.equals(o);
 }

#if ! KEYS_USE_REFERENCE_EQUALITY
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 int contentsCompareTo(KEY_GENERIC_TYPE[][] otherA, long otherAFrom, long otherATo) {
#if KEYS_PRIMITIVE // Can't make this assumption for reference types in case we have a goofy Comparable that
doesn't compare itself equal
  if (a == otherA && from == otherAFrom && to == otherATo) return 0;
#endif
  // TODO When minimum version of Java becomes Java 9, use Arrays.compare, which vectorizes.
```

```
  KEY_GENERIC_TYPE e1, e2;
  int r;
  long i, j;
  for(i = from, j = otherAFrom; i < to && i < otherATo; i++, j++) {
   e1 = BigArrays.get(a, i);
   e2 = BigArrays.get(otherA, j);
   if ((r = KEY_CMP(e1, e2)) != 0) return r;
  }
  return i < otherATo ? -1 : (i < to ? 1 : 0);
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public int compareTo(final BigList <? extends KEY_GENERIC_CLASS> l) {
  if (l instanceof BIG_ARRAY_BIG_LIST) {
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   BIG_ARRAY_BIG_LIST KEY_GENERIC other = (BIG_ARRAY_BIG_LIST KEY_GENERIC) l;
   return contentsCompareTo(other.a, 0, other.size64());
  }
  if (l instanceof BIG_ARRAY_BIG_LIST.SubList) {
   SUPPRESS_WARNINGS_KEY_UNCHECKED
   BIG_ARRAY_BIG_LIST KEY_GENERIC.SubList other = (BIG_ARRAY_BIG_LIST KEY_GENERIC.SubList)
l;
   return contentsCompareTo(other.getParentArray(), other.from, other.to);
  }
  return super.compareTo(l);
 }
#endif

 // We don't override subList as we want AbstractList's "sub-sublist" nesting handling,
 // which would be tricky to do here.
 // TODO Do override it so array access isn't sent through N indirections.
 // This will likely mean making this class static.
}

@Override
public BIG_LIST KEY_GENERIC subList(long from, long to) {
 if (from == 0 && to == size64()) return this;
 ensureIndex(from);
 ensureIndex(to);
 if (from > to) throw new IndexOutOfBoundsException("Start index (" + from + ") is greater than end index (" + to +
")");
 return new SubList(from, to);
}


/** Copies element of this type-specific list into the given big array using optimized system calls.
 *
```

```
 * @param from the start index (inclusive).
 * @param a the destination big array.
 * @param offset the offset into the destination array where to store the first element copied.
 * @param length the number of elements to be copied.
 */

@Override
public void getElements(final long from, final KEY_TYPE[][] a, final long offset, final long length) {
 BigArrays.copy(this.a, from, a, offset, length);
}

/** Copies element of this type-specific list into the given array using optimized system calls.
 *
 * @param from the start index (inclusive).
 * @param a the destination array.
 * @param offset the offset into the destination array where to store the first element copied.
 * @param length the number of elements to be copied.
 */

@Override
public void getElements(final long from, final KEY_TYPE[] a, final int offset, final int length) {
 BigArrays.copyFromBig(this.a, from, a, offset, length);
}

/** Removes elements of this type-specific list using optimized system calls.
 *
 * @param from the start index (inclusive).
 * @param to the end index (exclusive).
 */
@Override
public void removeElements(final long from, final long to) {
 BigArrays.ensureFromTo(size, from, to);
 BigArrays.copy(a, to, a, from, size - to);
 size -= (to - from);
#if KEYS_REFERENCE
 BigArrays.fill(a, size, size + to - from, null);
#endif
}


/** Adds elements to this type-specific list using optimized system calls.
 *
 * @param index the index at which to add elements.
 * @param a the big array containing the elements.
 * @param offset the offset of the first element to add.
 * @param length the number of elements to add.
 */
@Override
```

```
public void addElements(final long index, final KEY_GENERIC_TYPE a[][], final long offset, final long length) {
 ensureIndex(index);
 BigArrays.ensureOffsetLength(a, offset, length);
 grow(size + length);
 BigArrays.copy(this.a, index, this.a, index + length, size - index);
 BigArrays.copy(a, offset, this.a, index, length);
 size += length;
}

/** Copies elements in the given big array into this type-specific list using optimized system calls.
 *
 * @param index the start index (inclusive).
 * @param a the destination big array.
 * @param offset the offset into the destination array where to store the first element copied.
 * @param length the number of elements to be copied.
 */
@Override
public void setElements(final long index, final KEY_TYPE[][] a, final long offset, final long length) {
 BigArrays.copy(a, offset, this.a, index, length);
}

@Override
public void forEach(final METHOD_ARG_KEY_CONSUMER action) {
 for (long i = 0; i < size; ++i) {
  action.accept(BigArrays.get(a, i));
 }
}

@Override
public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator(final long index) {
 ensureIndex(index);

 return new KEY_BIG_LIST_ITERATOR KEY_GENERIC() {
   long pos = index, last = -1;

   @Override
   public boolean hasNext() { return pos < size; }
   @Override
   public boolean hasPrevious() { return pos > 0; }
   @Override
   public KEY_GENERIC_TYPE NEXT_KEY() { if (! hasNext()) throw new NoSuchElementException(); return
BigArrays.get(a, last = pos++); }
   @Override
   public KEY_GENERIC_TYPE PREV_KEY() { if (! hasPrevious()) throw new NoSuchElementException(); return
BigArrays.get(a, last = --pos); }
   @Override
   public long nextIndex() { return pos; }
   @Override
```

```
public long previousIndex() { return pos - 1; }
@Override
public void add(KEY_GENERIC_TYPE k) {
 BIG_ARRAY_BIG_LIST.this.add(pos++, k);
 last = -1;
}
@Override
public void set(KEY_GENERIC_TYPE k) {
 if (last == -1) throw new IllegalStateException();
 BIG_ARRAY_BIG_LIST.this.set(last, k);
}
@Override
public void remove() {
 if (last == -1) throw new IllegalStateException();
 BIG_ARRAY_BIG_LIST.this.REMOVE_KEY(last);
 /* If the last operation was a next(), we are removing an element *before* us, and we must decrease pos
correspondingly. */
 if (last < pos) pos--;
 last = -1;
}
@Override
public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
 while (pos < size) {
  action.accept(BigArrays.get(a, last = pos++));
 }
}
@Override
public long back(long n) {
 if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
 final long remaining = size - pos;
 if (n < remaining) {
  pos -= n;
 } else {
  n = remaining;
  pos = 0;
 }
 last = pos;
 return n;
}
@Override
public long skip(long n) {
 if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
 final long remaining = size - pos;
 if (n < remaining) {
  pos += n;
 } else {
  n = remaining;
  pos = size;
```

```
    }
    last = pos - 1;
    return n;
   }
  };
 }

 private final class Spliterator implements KEY_SPLITERATOR KEY_GENERIC {
  // Until we split, we will track the size of the list.
  // Once we split, then we stop updating on structural modifications.
  // Aka, size is late-binding.
  boolean hasSplit = false;
  long pos, max;

#ifdef TEST
  // Sentinel to make sure we don't accidentally use size when we mean max
  @Deprecated
  private final Object size = null;
#endif

  public Spliterator() {
   this(0, BIG_ARRAY_BIG_LIST.this.size, false);
  }

  private Spliterator(long pos, long max, boolean hasSplit) {
   assert pos <= max : "pos " + pos + " must be <= max " + max;
   this.pos = pos;
   this.max = max;
   this.hasSplit = hasSplit;
  }

  private long getWorkingMax() {
   return hasSplit ? max : BIG_ARRAY_BIG_LIST.this.size;
  }

  @Override
  public int characteristics() { return SPLITERATORS.LIST_SPLITERATOR_CHARACTERISTICS; }

  @Override
  public long estimateSize() { return getWorkingMax() - pos; }

  @Override
  public boolean tryAdvance(final METHOD_ARG_KEY_CONSUMER action) {
   if (pos >= getWorkingMax()) return false;
   action.accept(BigArrays.get(a, pos++));
   return true;
  }
```

```
  @Override
  public void forEachRemaining(final METHOD_ARG_KEY_CONSUMER action) {
   for (final long max = getWorkingMax(); pos < max; ++pos) {
    action.accept(BigArrays.get(a, pos));
   }
  }

  @Override
  public long skip(long n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   final long max = getWorkingMax();
   if (pos >= max) return 0;
   final long remaining = max - pos;
   if (n < remaining) {
    pos += n;
    return n;
   }
   n = remaining;
   pos = max;
   return n;
  }

  @Override
  public KEY_SPLITERATOR KEY_GENERIC trySplit() {
   final long max = getWorkingMax();
   long retLen = (max - pos) >> 1;
   if (retLen <= 1) return null;
   // Update instance max with the last seen list size (if needed) before continuing
   this.max = max;
   long myNewPos = pos + retLen;
   // Align to an outer array boundary if possible
   // We add/subtract one to the bounds to ensure the new pos will always shrink the range
   myNewPos = BigArrays.nearestSegmentStart(myNewPos, pos + 1, max - 1);
   long retMax = myNewPos;
   long oldPos = pos;
   this.pos = myNewPos;
   this.hasSplit = true;
   return new Spliterator(oldPos, retMax, true);
  }
 }

 @Override
 public KEY_SPLITERATOR KEY_GENERIC spliterator() {
  return new Spliterator();
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
```

```
 public BIG_ARRAY_BIG_LIST KEY_GENERIC clone() {
  BIG_ARRAY_BIG_LIST KEY_GENERIC c;
  // Test for fastpath we can do if exactly an BigArrayBigList
  if (getClass() == BIG_ARRAY_BIG_LIST.class) {
   c = new BIG_ARRAY_BIG_LIST KEY_GENERIC_DIAMOND(size);
   c.size = size;
  } else {
   try {
    c = (BIG_ARRAY_BIG_LIST KEY_GENERIC)super.clone();
   } catch (CloneNotSupportedException e) {
    // Can't happen
    throw new InternalError(e);
   }
   c.a = KEY_GENERIC_BIG_ARRAY_CAST BIG_ARRAYS.newBigArray(size);
  }
  BigArrays.copy(a, 0, c.a, 0, size);
  return c;
 }

 /** Compares this type-specific big-array list to another one.
  *
  * <p>This method exists only for sake of efficiency. The implementation
  * inherited from the abstract implementation would already work.
  *
  * @param l a type-specific big-array list.
  * @return true if the argument contains the same elements of this type-specific big-array list.
  */
 public boolean equals(final BIG_ARRAY_BIG_LIST KEY_GENERIC l) {
  if (l == this) return true;
  long s = size64();
  if (s != l.size64()) return false;
  final KEY_GENERIC_TYPE[][] a1 = a;
  final KEY_GENERIC_TYPE[][] a2 = l.a;
  // Already checked s == l.size64 above
  if (a1 == a2) return true;
  // Backwards loop is faster then forwards loop, at least in Java 8 and below.
#if KEY_CLASS_Object
  while(s-- !=  0) if (! java.util.Objects.equals(BigArrays.get(a1, s), BigArrays.get(a2, s))) return false;
#else
  while(s-- !=  0) if (BigArrays.get(a1, s) != BigArrays.get(a2, s)) return false;
#endif
  return true;
 }

#if KEYS_PRIMITIVE
 @SuppressWarnings("unlikely-arg-type" )
#else
 @SuppressWarnings({ "unchecked", "unlikely-arg-type" })
```

```
#endif
 @Override
 public boolean equals(final Object o) {
  if (o == this) return true;
  if (o == null) return false;
  if (!(o instanceof BigList)) return false;
  if (o instanceof BIG_ARRAY_BIG_LIST) {
   // Safe cast because we are only going to take elements from other list, never give them
   return equals((BIG_ARRAY_BIG_LIST KEY_GENERIC) o);
  }
  if (o instanceof BIG_ARRAY_BIG_LIST.SubList) {
   // Safe cast because we are only going to take elements from other list, never give them
   // Sublist has an optimized sub-array based comparison, reuse that.
   return ((BIG_ARRAY_BIG_LIST KEY_GENERIC.SubList)o).equals(this);
  }
  return super.equals(o);
 }

#if ! KEYS_USE_REFERENCE_EQUALITY

 /** Compares this big list to another big list.
  *
  * <p>This method exists only for sake of efficiency. The implementation
  * inherited from the abstract implementation would already work.
  *
  * @param l a big list.
  * @return a negative integer,
  * zero, or a positive integer as this big list is lexicographically less than, equal
  * to, or greater than the argument.
  */
 SUPPRESS_WARNINGS_KEY_UNCHECKED
 public int compareTo(final BIG_ARRAY_BIG_LIST KEY_EXTENDS_GENERIC l) {
  final long s1 = size64(), s2 = l.size64();
  final KEY_GENERIC_TYPE a1[][] = a, a2[][] = l.a;
#if KEYS_PRIMITIVE // Can't make this assumption for reference types in case we have a goofy Comparable that
doesn't compare itself equal
  if (a1 == a2 && s1 == s2) return 0;
#endif
  KEY_GENERIC_TYPE e1, e2;
  int r, i;

  for(i = 0; i < s1 && i < s2; i++) {
   e1 = BigArrays.get(a1, i);
   e2 = BigArrays.get(a2, i);
   if ((r = KEY_CMP(e1, e2)) != 0) return r;
  }

  return i < s2 ? -1 : (i < s1 ? 1 : 0);
```

```
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 @Override
 public int compareTo(final BigList <? extends KEY_GENERIC_CLASS> l) {
  if (l instanceof BIG_ARRAY_BIG_LIST) {
   return compareTo((BIG_ARRAY_BIG_LIST KEY_EXTENDS_GENERIC)l);
  }
  if (l instanceof BIG_ARRAY_BIG_LIST.SubList) {
   // Must negate because we are inverting the order of the comparison.
   return -((BIG_ARRAY_BIG_LIST KEY_GENERIC.SubList) l).compareTo(this);
  }
  return super.compareTo(l);
 }
#endif


 private void writeObject(java.io.ObjectOutputStream s) throws java.io.IOException {
  s.defaultWriteObject();
  for(int i = 0; i < size; i++) s.WRITE_KEY(BigArrays.get(a, i));
 }

 SUPPRESS_WARNINGS_KEY_UNCHECKED
 private void readObject(java.io.ObjectInputStream s) throws java.io.IOException, ClassNotFoundException {
  s.defaultReadObject();
  a = KEY_GENERIC_BIG_ARRAY_CAST BIG_ARRAYS.newBigArray(size);
  for(int i = 0; i < size; i++) BigArrays.set(a, i, KEY_GENERIC_CAST s.READ_KEY());
 }


#ifdef TEST

 private static long seed = System.currentTimeMillis();
 private static java.util.Random r = new java.util.Random(seed);

 private static KEY_TYPE genKey() {
#if KEY_CLASS_Byte || KEY_CLASS_Short || KEY_CLASS_Character
  return (KEY_TYPE)(r.nextInt());
#elif KEYS_PRIMITIVE
  return r.NEXT_KEY();
#elif KEY_CLASS_Object
  return Integer.toBinaryString(r.nextInt());
#else
  return new java.io.Serializable() {};
#endif
 }

 private static java.text.NumberFormat format = new java.text.DecimalFormat("#,###.00");
```

```
private static java.text.FieldPosition p = new java.text.FieldPosition(0);

private static String format(double d) {
 StringBuffer s = new StringBuffer();
 return format.format(d, s, p).toString();
}

private static void speedTest(int n, boolean comp) {
 System.out.println("There are presently no speed tests for this class.");
}



private static void fatal(String msg) {
 throw new AssertionError(msg);
}

private static void ensure(boolean cond, String msg) {
 if (cond) return;
 fatal(msg);
}

private static void ensure(boolean cond, java.util.function.Supplier<String> msgSupplier) {
 if (cond) return;
 fatal(msgSupplier.get());
}

private static Object[] k, v, nk;
private static KEY_TYPE kt[];
private static KEY_TYPE nkt[];
private static BIG_ARRAY_BIG_LIST topList;

protected static void testLists(BIG_LIST m, BIG_LIST t, int n, int level) throws Exception {
 long ms;
 Exception mThrowsIllegal, tThrowsIllegal, mThrowsOutOfBounds, tThrowsOutOfBounds;
 Object rt = null;
 KEY_TYPE rm = KEY_NULL;

 if (level > 4) return;



 /* Now we check that both sets agree on random keys. For m we use the polymorphic method. */

 for(int i = 0; i < n; i++) {
  int p = r.nextInt() % (n * 2);

  KEY_TYPE T = genKey();
  mThrowsOutOfBounds = tThrowsOutOfBounds  = null;
```

```
   try {
    m.set(p, T);
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
   try {
    t.set(p, KEY2OBJ(T));
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): set() divergence at start in IndexOutOfBoundsException for index " + p + "  (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
   if (mThrowsOutOfBounds == null) ensure(t.get(p).equals(KEY2OBJ(m.GET_KEY(p))), "Error (" + level + ", " + seed + "): m and t differ after set() on position " + p + " (" + m.GET_KEY(p) + ", " + t.get(p) + ")");

   p = r.nextInt() % (n * 2);
   mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

   try {
    m.GET_KEY(p);
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
   try {
    t.get(p);
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): get() divergence at start in IndexOutOfBoundsException for index " + p + "  (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
   if (mThrowsOutOfBounds == null) ensure(t.get(p).equals(KEY2OBJ(m.GET_KEY(p))), "Error (" + level + ", " + seed + "): m and t differ aftre get() on position " + p + " (" + m.GET_KEY(p) + ", " + t.get(p) + ")");

  }

  /* Now we check that both sets agree on random keys. For m we use the standard method. */

  for(int i = 0; i < n; i++) {
   int p = r.nextInt() % (n * 2);

   mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

   try {
    m.get(p);
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
   try {
    t.get(p);
```

```
  }
  catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

  ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "):
get() divergence at start in IndexOutOfBoundsException for index " + p + "  (" + mThrowsOutOfBounds + ", " +
tThrowsOutOfBounds + ")");
  if (mThrowsOutOfBounds == null) ensure(t.get(p).equals(m.get(p)), "Error (" + level + ", " + seed + "): m and t
differ at start on position " + p + " (" + m.get(p) + ", " + t.get(p) + ")");

 }

 /* Now we check that m and t are equal. */
 if (!m.equals(t) || ! t.equals(m)) System.err.println("m: " + m + " t: " + t);

 ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) at start");
 ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) at start");



 /* Now we check that m actually holds that data. */
 for(Iterator i=t.iterator(); i.hasNext();) {
  ensure(m.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on
t)");
 }

 /* Now we check that m actually holds that data, but iterating on m. */
 for(Iterator i=m.listIterator(); i.hasNext();) {
  ensure(t.contains(i.next()), "Error (" + level + ", " + seed + "): m and t differ on an entry after insertion (iterating on
m)");
 }

 /* Now we check that inquiries about random data give the same answer in m and t. For
    m we use the polymorphic method. */

 for(int i=0; i<n;  i++) {
  KEY_TYPE T = genKey();
  ensure(m.contains(T) == t.contains(KEY2OBJ(T)), "Error (" + level + ", " + seed + "): divergence in content
between t and m (polymorphic method)");
 }

 /* Again, we check that inquiries about random data give the same answer in m and t, but
    for m we use the standard method. */

 for(int i=0; i<n;  i++) {
  KEY_TYPE T = genKey();
  ensure(m.contains(KEY2OBJ(T)) == t.contains(KEY2OBJ(T)), "Error (" + level + ", " + seed + "): divergence in
content between t and m (polymorphic method)");
 }
```

```
/* Now we add and remove random data in m and t, checking that the result is the same. */

for(int i=0; i<2*n;  i++) {
 KEY_TYPE T = genKey();

 try {
  m.add(T);
 }
 catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

 try {
  t.add(KEY2OBJ(T));
 }
 catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

 T = genKey();
 int p = r.nextInt() % (2 * n + 1);

 mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

 try {
  m.add(p, T);
 }
 catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

 try {
  t.add(p, KEY2OBJ(T));
 }
 catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }


 ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): add() divergence in IndexOutOfBoundsException for index " + p + " for " + T + " (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");

 p = r.nextInt() % (2 * n + 1);

 mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

 try {
  rm = m.REMOVE_KEY(p);
 }
 catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

 try {
  rt = t.remove(p);
 }
```

```
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }


   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): remove() divergence in IndexOutOfBoundsException for index " + p + " (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");
   if (mThrowsOutOfBounds == null) ensure(rt.equals(KEY2OBJ(rm)), "Error (" + level + ", " + seed + "): divergence in remove() between t and m (" + rt + ", " + rm + ")");
  }

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after add/remove");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after add/remove");

  /* Now we add random data in m and t using addAll on a collection, checking that the result is the same. */

  for(int i=0; i<n;  i++) {
   int p = r.nextInt() % (2 * n + 1);
   java.util.Collection m1 = new java.util.ArrayList();
   int s = r.nextInt(n / 2 + 1);
   for(int j = 0; j < s; j++) m1.add(KEY2OBJ(genKey()));

   mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

   try {
    m.addAll(p, m1);
   }
   catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

   try {
    t.addAll(p, m1);
   }
   catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

   ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): addAll() divergence in IndexOutOfBoundsException for index " + p + " for " + m1 + " (" + mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");

   ensure(m.equals(t), () -> "Error (" + level + ", " + seed + m + t + "): ! m.equals(t) after addAll");
   ensure(t.equals(m), () -> "Error (" + level + ", " + seed + m + t + "): ! t.equals(m) after addAll");
  }

  if (m.size64() > n) {
   m.size(n);
   while(t.size64() != n) t.remove(t.size64() -1);
  }

  /* Now we add random data in m and t using addAll on a type-specific collection, checking that the result is the same. */
```

```
for(int i=0; i<n;  i++) {
 int p = r.nextInt() % (2 * n + 1);
 COLLECTION m1 = new BIG_ARRAY_BIG_LIST();
 java.util.Collection t1 = new java.util.ArrayList();
 int s = r.nextInt(n / 2 + 1);
 for(int j = 0; j < s; j++) {
  KEY_TYPE x = genKey();
  m1.add(x);
  t1.add(KEY2OBJ(x));
 }

 mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

 try {
  m.addAll(p, m1);
 }
 catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

 try {
  t.addAll(p, t1);
 }
 catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

 ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "):
polymorphic addAll() divergence in IndexOutOfBoundsException for index " + p + " for " + m1 + " (" +
mThrowsOutOfBounds + ", " + tThrowsOutOfBounds + ")");

 ensure(m.equals(t), () -> "Error (" + level + ", " + seed + m + t + "): ! m.equals(t) after polymorphic addAll");
 ensure(t.equals(m), () -> "Error (" + level + ", " + seed + m + t + "): ! t.equals(m) after polymorphic addAll");
}

if (m.size64() > n) {
 m.size(n);
 while(t.size64() != n) t.remove(t.size64() -1);
}

/* Now we add random data in m and t using addAll on a list, checking that the result is the same. */

for(int i=0; i<n;  i++) {
 int p = r.nextInt() % (2 * n + 1);
 BIG_LIST m1 = new BIG_ARRAY_BIG_LIST();
 java.util.Collection t1 = new java.util.ArrayList();
 int s = r.nextInt(n / 2 + 1);
 for(int j = 0; j < s; j++) {
  KEY_TYPE x = genKey();
  m1.add(x);
  t1.add(KEY2OBJ(x));
```

```
  }

  mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

  try {
   m.addAll(p, m1);
  }
  catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }

  try {
   t.addAll(p, t1);
  }
  catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

  ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "): list
addAll() divergence in IndexOutOfBoundsException for index " + p + " for " + m1 + " (" + mThrowsOutOfBounds
+ ", " + tThrowsOutOfBounds + ")");

  ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after list addAll");
  ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after list addAll");
 }

 /* Now we check that both sets agree on random keys. For m we use the standard method. */

 for(int i = 0; i < n; i++) {
  int p = r.nextInt() % (n * 2);

  mThrowsOutOfBounds = tThrowsOutOfBounds  = null;

  try {
   m.get(p);
  }
  catch (IndexOutOfBoundsException e) { mThrowsOutOfBounds = e; }
  try {
   t.get(p);
  }
  catch (IndexOutOfBoundsException e) { tThrowsOutOfBounds = e; }

  ensure((mThrowsOutOfBounds == null) == (tThrowsOutOfBounds == null), "Error (" + level + ", " + seed + "):
get() divergence in IndexOutOfBoundsException for index " + p + "  (" + mThrowsOutOfBounds + ", " +
tThrowsOutOfBounds + ")");
  if (mThrowsOutOfBounds == null) ensure(t.get(p).equals(m.get(p)), "Error (" + level + ", " + seed + "): m and t
differ on position " + p + " (" + m.get(p) + ", " + t.get(p) +")");

 }

 /* Now we inquiry about the content with indexOf()/lastIndexOf(). */
```

```
  for(int i=0; i<10*n;  i++) {
   KEY_TYPE T = genKey();
   ensure(m.indexOf(KEY2OBJ(T)) == t.indexOf(KEY2OBJ(T)),
     "Error (" + level + ", " + seed + "): indexOf() divergence for " + T + "  (" + m.indexOf(KEY2OBJ(T)) + ", " + t.indexOf(KEY2OBJ(T)) + ")");
   ensure(m.lastIndexOf(KEY2OBJ(T)) == t.lastIndexOf(KEY2OBJ(T)),
     "Error (" + level + ", " + seed + "): lastIndexOf() divergence for " + T + "  (" + m.lastIndexOf(KEY2OBJ(T)) + ", " + t.lastIndexOf(KEY2OBJ(T)) + ")");
   ensure(m.indexOf(T) == t.indexOf(KEY2OBJ(T)),
     "Error (" + level + ", " + seed + "): polymorphic indexOf() divergence for " + T + "  (" + m.indexOf(T) + ", " + t.indexOf(KEY2OBJ(T)) + ")");
   ensure(m.lastIndexOf(T) == t.lastIndexOf(KEY2OBJ(T)),
     "Error (" + level + ", " + seed + "): polymorphic lastIndexOf() divergence for " + T + "  (" + m.lastIndexOf(T) + ", " + t.lastIndexOf(KEY2OBJ(T)) + ")");
  }

  /* Now we check cloning. */

  if (level == 0) {
   ensure(m.equals(((BIG_ARRAY_BIG_LIST)m).clone()), "Error (" + level + ", " + seed + "): m does not equal m.clone()");
   ensure(((BIG_ARRAY_BIG_LIST)m).clone().equals(m), "Error (" + level + ", " + seed + "): m.clone() does not equal m");
  }

  /* Now we play with constructors. */
  ensure(m.equals(new BIG_ARRAY_BIG_LIST((COLLECTION)m)), "Error (" + level + ", " + seed + "): m does not equal new (type-specific Collection m)");
  ensure((new BIG_ARRAY_BIG_LIST((COLLECTION)m)).equals(m), "Error (" + level + ", " + seed + "): new (type-specific nCollection m) does not equal m");
  ensure(m.equals(new BIG_ARRAY_BIG_LIST((BIG_LIST)m)), "Error (" + level + ", " + seed + "): m does not equal new (type-specific List m)");
  ensure((new BIG_ARRAY_BIG_LIST((BIG_LIST)m)).equals(m), "Error (" + level + ", " + seed + "): new (type-specific List m) does not equal m");
  ensure(m.equals(new BIG_ARRAY_BIG_LIST(m.listIterator())), "Error (" + level + ", " + seed + "): m does not equal new (m.listIterator())");
  ensure((new BIG_ARRAY_BIG_LIST(m.listIterator())).equals(m), "Error (" + level + ", " + seed + "): new (m.listIterator()) does not equal m");
  ensure(m.equals(new BIG_ARRAY_BIG_LIST(m.iterator())), "Error (" + level + ", " + seed + "): m does not equal new (m.type_specific_iterator())");
  ensure((new BIG_ARRAY_BIG_LIST(m.iterator())).equals(m), "Error (" + level + ", " + seed + "): new (m.type_specific_iterator()) does not equal m");



  int h = m.hashCode();

  /* Now we save and read m. */
```

```
  BIG_LIST m2 = null;

  {
   java.io.File ff = new java.io.File("it.unimi.dsi.fastutil.test." + m.getClass().getSimpleName() + "." + n);
   java.io.OutputStream os = new java.io.FileOutputStream(ff);
   java.io.ObjectOutputStream oos = new java.io.ObjectOutputStream(os);

   oos.writeObject(m);
   oos.close();

   java.io.InputStream is = new java.io.FileInputStream(ff);
   java.io.ObjectInputStream ois = new java.io.ObjectInputStream(is);

   m2 = (BIG_LIST)ois.readObject();
   ois.close();
   ff.delete();
  }

#if ! KEYS_USE_REFERENCE_EQUALITY
  ensure(m2.hashCode() == h, "Error (" + level + ", " + seed + "): hashCode() changed after save/read");

  /* Now we check that m2 actually holds that data. */

  ensure(m2.equals(t), "Error (" + level + ", " + seed + "): ! m2.equals(t) after save/read");
  ensure(t.equals(m2), "Error (" + level + ", " + seed + "): ! t.equals(m2) after save/read");
  /* Now we take out of m everything, and check that it is empty. */

  for(Iterator i=t.iterator(); i.hasNext();) m2.remove(i.next());

  ensure(m2.isEmpty(), "Error (" + level + ", " + seed + "): m2 is not empty (as it should be)");
#endif

  /* Now we play with iterators. */

  {
   KEY_BIG_LIST_ITERATOR i;
   KEY_BIG_LIST_ITERATOR j;
   Object J;
   i = m.listIterator();
   j = t.listIterator();

   for(int k = 0; k < 2*n; k++) {
    ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext()");
    ensure(i.hasPrevious() == j.hasPrevious(), "Error (" + level + ", " + seed + "): divergence in hasPrevious()");

    if (r.nextFloat() < .8 && i.hasNext()) {
     ensure(i.next().equals(J = j.next()), "Error (" + level + ", " + seed + "): divergence in next()");
```

```
    if (r.nextFloat() < 0.2) {
     i.remove();
     j.remove();
    }
    else if (r.nextFloat() < 0.2) {
     KEY_TYPE T = genKey();
     i.set(T);
     j.set(KEY2OBJ(T));
    }
    else if (r.nextFloat() < 0.2) {
     KEY_TYPE T = genKey();
     i.add(T);
     j.add(KEY2OBJ(T));
    }
   }
   else if (r.nextFloat() < .2 && i.hasPrevious()) {
    ensure(i.previous().equals(J = j.previous()), "Error (" + level + ", " + seed + "): divergence in previous()");

    if (r.nextFloat() < 0.2) {
     i.remove();
     j.remove();
    }
    else if (r.nextFloat() < 0.2) {
     KEY_TYPE T = genKey();
     i.set(T);
     j.set(KEY2OBJ(T));
    }
    else if (r.nextFloat() < 0.2) {
     KEY_TYPE T = genKey();
     i.add(T);
     j.add(KEY2OBJ(T));
    }
   }

   ensure(i.nextIndex() == j.nextIndex(), "Error (" + level + ", " + seed + "): divergence in nextIndex()");
   ensure(i.previousIndex() == j.previousIndex(), "Error (" + level + ", " + seed + "): divergence in previousIndex()");

  }

 }

 /* Now we play with spliterators.
  *
  * Or rather we would, except comparing results of spliterators directly is a bit painful.
  * However, there is an easy workaround; use streams, which are built on Spliterators.
  */
 {
#if KEYS_REFERENCE
```

```
  java.util.stream.Stream<KEY_TYPE> i = m.parallelStream();
  java.util.stream.Stream<KEY_TYPE> j = t.parallelStream();
#elif KEY_CLASS_Boolean
  java.util.stream.Stream<KEY_CLASS> i = m.parallelStream();
  java.util.stream.Stream<KEY_CLASS> j = t.parallelStream();
#else
  JDK_PRIMITIVE_STREAM i = m.KEY_WIDENED_PARALLEL_STREAM_METHOD();
  java.util.stream.Stream<KEY_CLASS> j = t.parallelStream();
#endif

#if KEYS_REFERENCE || KEY_CLASS_Boolean
  Object[] iArray = i.toArray();
  Object[] jArray = j.toArray();
#elif KEY_CLASS_Character
  KEY_TYPE_WIDENED[] iArray = i.toArray();
  KEY_TYPE_WIDENED[] jArray = j.MAP_TO_KEY_WIDENED(c -> (int)c.charValue()).toArray();
#else
  KEY_TYPE_WIDENED[] iArray = i.toArray();
  KEY_TYPE_WIDENED[] jArray =
j.MAP_TO_KEY_WIDENED(Number::KEY_WIDENED_VALUE).toArray();
#endif
  ensure(java.util.Arrays.equals(iArray, jArray), "Error (" + level + ", " + seed + "): divergence in toArray() from
streams (" + java.util.Arrays.toString(iArray) + " != " + java.util.Arrays.toString(jArray) + ")");
 }

 {
  Object previous = null;
  Object I, J;
  long from = m.isEmpty() ? 0 : (r.nextLong() & 0x7FFFFFFFFFFFFFFFL) % m.size64();
  KEY_BIG_LIST_ITERATOR i;
  KEY_BIG_LIST_ITERATOR j;
  i = m.listIterator(from);
  j = t.listIterator(from);

  for(int k = 0; k < 2*n; k++) {
   ensure(i.hasNext() == j.hasNext(), "Error (" + level + ", " + seed + "): divergence in hasNext() (iterator with starting
point " + from + ")");
   ensure(i.hasPrevious() == j.hasPrevious() , "Error (" + level + ", " + seed + "): divergence in hasPrevious() (iterator
with starting point " + from + ")");

   if (r.nextFloat() < .8 && i.hasNext()) {
    ensure((I = i.next()).equals(J = j.next()), "Error (" + level + ", " + seed + "): divergence in next() (" + I + ", " + J + ",
iterator with starting point " + from + ")");
    //System.err.println("Done next " + I + " " + J + "  " + badPrevious);

    if (r.nextFloat() < 0.2) {
     //System.err.println("Removing in next");
     i.remove();
```

```
     j.remove();
    }
    else if (r.nextFloat() < 0.2) {
     KEY_TYPE T = genKey();
     i.set(T);
     j.set(KEY2OBJ(T));
    }
    else if (r.nextFloat() < 0.2) {
     KEY_TYPE T = genKey();
     i.add(T);
     j.add(KEY2OBJ(T));
    }
   }
   else if (r.nextFloat() < .2 && i.hasPrevious()) {
    ensure((I = i.previous()).equals(J = j.previous()), "Error (" + level + ", " + seed + "): divergence in previous() (" + I +
", " + J + ", iterator with starting point " + from + ")");

    if (r.nextFloat() < 0.2) {
     //System.err.println("Removing in prev");
     i.remove();
     j.remove();
    }
    else if (r.nextFloat() < 0.2) {
     KEY_TYPE T = genKey();
     i.set(T);
     j.set(KEY2OBJ(T));
    }
    else if (r.nextFloat() < 0.2) {
     KEY_TYPE T = genKey();
     i.add(T);
     j.add(KEY2OBJ(T));
    }
   }
  }

 }

 /* Now we check that m actually holds that data. */

 ensure(m.equals(t), "Error (" + level + ", " + seed + "): ! m.equals(t) after iteration");
 ensure(t.equals(m), "Error (" + level + ", " + seed + "): ! t.equals(m) after iteration");

 /* Now we select a pair of keys and create a subset. */

 if (! m.isEmpty()) {
  long start = (r.nextLong() & 0x7FFFFFFFFFFFFFFFL) % m.size64();
  long end = start + (r.nextLong() & 0x7FFFFFFFFFFFFFFFL) % (m.size64() - start);
  //System.err.println("Checking subList from " + start + " to " + end + " (level=" + (level+1) + ")...");
```

```
   testLists(m.subList(start, end), t.subList(start, end), n, level + 1);

   ensure(m.equals(t), () -> "Error (" + level + ", " + seed + m + t + "): ! m.equals(t) after subList");
   ensure(t.equals(m), () -> "Error (" + level + ", " + seed + "): ! t.equals(m) after subList");

  }

  m.clear();
  t.clear();
  ensure(m.isEmpty(), "Error (" + level + ", " + seed + "): m is not empty after clear()");
 }


 protected static void runTest(int n) throws Exception {
  BIG_ARRAY_BIG_LIST m = new BIG_ARRAY_BIG_LIST();
  BIG_LIST t = BIG_LISTS.asBigList(new ARRAY_LIST());
  topList = m;
  k = new Object[n];
  nk = new Object[n];
  kt = new KEY_TYPE[n];
  nkt = new KEY_TYPE[n];

  for(int i = 0; i < n; i++) {
#if KEYS_REFERENCE
   k[i] = kt[i] = genKey();
   nk[i] = nkt[i] = genKey();
#else
   k[i] = new KEY_CLASS(kt[i] = genKey());
   nk[i] = new KEY_CLASS(nkt[i] = genKey());
#endif
  }

  /* We add pairs to t. */
#if KEYS_PRIMITIVE
  for(int i = 0; i < n;  i++) t.add((KEY_GENERIC_CLASS)k[i]);
#else
  for(int i = 0; i < n;  i++) t.add(k[i]);
#endif

  /* We add to m the same data */
  m.addAll(t);

  testLists(m, t, n, 0);

  System.out.println("Test OK");
  return;
 }
```

```
public static void main(String args[]) throws Exception {
 int n  = Integer.parseInt(args[1]);
 if (args.length > 2) r = new java.util.Random(seed = Long.parseLong(args[2]));


 try {
  if ("speedTest".equals(args[0]) || "speedComp".equals(args[0])) speedTest(n, "speedComp".equals(args[0]));
  else if ("test".equals(args[0])) runTest(n);
 } catch(Throwable e) {
  e.printStackTrace(System.err);
  System.err.println("seed: " + seed);
  throw e;
 }
}

#endif

}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/BigArrayBigList.drv
No license file was found, but licenses were detected in source scan.

* suitability of this software for any purpose. It is provided "as is"
* without expressed or implied warranty.
*/

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/it/unimi/dsi/fastutil/BigArrays.java
No license file was found, but licenses were detected in source scan.

<project>
<modelVersion>4.0.0</modelVersion>
<groupId>it.unimi.dsi</groupId>
<artifactId>fastutil-core</artifactId>
<packaging>jar</packaging>
<name>fastutil</name>
<version>@VERSION@</version>
<description>fastutil extends the Java Collections Framework by providing type-specific maps, sets, lists, and queues with a small memory footprint and fast operations; it provides also big (64-bit) arrays, sets, and lists, sorting algorithms, fast, practical I/O classes for binary and text files, and facilities for memory mapping large files. This jar (fastutil-core.jar) contains data structures based on integers, longs, doubles, and objects, only; fastutil.jar contains all classes. If you have both jars in your dependencies, this jar should be excluded.</description>
<url>http://fastutil.di.unimi.it/</url>
<licenses>
<license>
<name>Apache License, Version 2.0</name>
<url>http://www.apache.org/licenses/LICENSE-2.0.html</url>
<distribution>repo</distribution>
</license>
</licenses>
<scm>
<connection>scm:git://github.com/vigna/fastutil.git</connection>
<url>https://github.com/vigna/fastutil</url>
</scm>
<developers>
<developer>
<id>vigna</id>
<name>Sebastiano Vigna</name>
<email>sebastiano.vigna@unimi.it</email>
</developer>
</developers>
<properties>
<maven.compiler.source>1.8</maven.compiler.source>
<maven.compiler.target>1.8</maven.compiler.target>
</properties>
<dependencies>
<dependency>
<groupId>junit</groupId>
<artifactId>junit</artifactId>

```
    <version>4.12</version>
    <scope>test</scope>
  </dependency>
 </dependencies>
</project>
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/pom-core-model.xml
No license file was found, but licenses were detected in source scan.

```
/*
* Copyright (C) 2002-2022 Sebastiano Vigna
*
* Licensed under the Apache License, Version 2.0 (the "License");
* you may not use this file except in compliance with the License.
* You may obtain a copy of the License at
*
*     http://www.apache.org/licenses/LICENSE-2.0
*
* Unless required by applicable law or agreed to in writing, software
* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

import java.util.AbstractCollection;

#if KEYS_PRIMITIVE
import java.util.Collection;
#endif

/** An abstract class providing basic methods for collections implementing a type-specific interface.
*
* <p>In particular, this class provide {@link #iterator()}, {@code add()}, {@link #remove(Object)} and
* {@link #contains(Object)} methods that just call the type-specific counterpart.
*
* <p><strong>Warning</strong>: Because of a name clash between the list and collection interfaces
* the type-specific deletion method of a type-specific abstract
* collection is {@code rem()}, rather then {@code remove()}. A
* subclass must thus override {@code rem()}, rather than
* {@code remove()}, to make all inherited methods work properly.
*/

public abstract class ABSTRACT_COLLECTION KEY_GENERIC extends
```

```
AbstractCollection<KEY_GENERIC_CLASS> implements COLLECTION KEY_GENERIC {

 protected ABSTRACT_COLLECTION() {}

 @Override
 public abstract KEY_ITERATOR KEY_GENERIC iterator();

#if KEYS_PRIMITIVE

 /** {@inheritDoc}
  *
  * @implSpec This implementation always throws an {@link UnsupportedOperationException}.
  */
 @Override
 public boolean add(final KEY_TYPE k) {
  throw new UnsupportedOperationException();
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation iterates over the elements in the collection,
  * looking for the specified element.
  */
 @Override
 public boolean contains(final KEY_TYPE k) {
  final KEY_ITERATOR iterator = iterator();
  while (iterator.hasNext()) if (k == iterator.NEXT_KEY()) return true;
  return false;
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation iterates over the elements in the collection,
  * looking for the specified element and tries to remove it.
  */
 @Override
 public boolean rem(final KEY_TYPE k) {
  final KEY_ITERATOR KEY_GENERIC iterator = iterator();
  while (iterator.hasNext())
   if (k == iterator.NEXT_KEY()) {
    iterator.remove();
    return true;
   }
  return false;
 }

 /** {@inheritDoc}
  * @deprecated Please use the corresponding type-specific method instead.
```

```
 */
@Deprecated
@Override
public boolean add(final KEY_GENERIC_CLASS key) {
 return COLLECTION.super.add(key);
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
public boolean contains(final Object key) {
 return COLLECTION.super.contains(key);
}

/** {@inheritDoc}
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
public boolean remove(final Object key) {
 return COLLECTION.super.remove(key);
}

@Override
public KEY_TYPE[] toArray(KEY_TYPE a[]) {
 final int size = size();
 if (a == null) {
  a = new KEY_TYPE[size];
 } else if (a.length < size) {
  a = java.util.Arrays.copyOf(a, size);
 }
 ITERATORS.unwrap(iterator(), a);
 return a;
}

@Override
public KEY_TYPE[] TO_KEY_ARRAY() {
 return toArray((KEY_TYPE[]) null);
}

/** {@inheritDoc}
 * @deprecated Please use {@code toArray()} instead&mdash;this method is redundant and will be removed in the future.
 */
@Deprecated
@Override
```

```
public KEY_TYPE[] TO_KEY_ARRAY(final KEY_TYPE a[]) {
 return toArray(a);
}

#if KEYS_INT_LONG_DOUBLE
/** {@inheritDoc}
 *
 * @apiNote This method exists to make final what should have been final in the interface.
 */
@Override
public final void forEach(final KEY_CONSUMER action) {
 COLLECTION.super.forEach(action);
}

/** {@inheritDoc}
 *
 * @apiNote This method exists to make final what should have been final in the interface.
 */
@Override
public final boolean removeIf(final KEY_PREDICATE filter) {
 return COLLECTION.super.removeIf(filter);
}
#endif

@Override
public boolean addAll(final COLLECTION c) {
 boolean retVal = false;

 for(final KEY_ITERATOR i = c.iterator(); i.hasNext();)
  if (add(i.NEXT_KEY())) retVal = true;
 return retVal;
}

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to the type-specific version if given a type-specific
 * collection, otherwise is uses the implementation from {@link AbstractCollection}.
 */
@Override
public boolean addAll(final Collection<? extends KEY_CLASS> c) {
 if (c instanceof COLLECTION) {
  return addAll((COLLECTION) c);
 }
 return super.addAll(c);
}

@Override
public boolean containsAll(final COLLECTION c) {
```

```
 for(final KEY_ITERATOR i = c.iterator(); i.hasNext();)
  if (! contains(i.NEXT_KEY())) return false;
 return true;
}

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to the type-specific version if given a type-specific
 * collection, otherwise is uses the implementation from {@link AbstractCollection}.
 */
@Override
public boolean containsAll(final Collection<?> c) {
 if (c instanceof COLLECTION) {
  return containsAll((COLLECTION) c);
 }
 return super.containsAll(c);
}

@Override
public boolean removeAll(final COLLECTION c) {
 boolean retVal = false;
 for(final KEY_ITERATOR i = c.iterator(); i.hasNext();)
  if (rem(i.NEXT_KEY())) retVal = true;
 return retVal;
}

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to the type-specific version if given a type-specific
 * collection, otherwise is uses the implementation from {@link AbstractCollection}.
 */
@Override
public boolean removeAll(final Collection<?> c) {
 if (c instanceof COLLECTION) {
  return removeAll((COLLECTION) c);
 }
 return super.removeAll(c);
}

@Override
public boolean retainAll(final COLLECTION c) {
 boolean retVal = false;
 for(final KEY_ITERATOR i = iterator(); i.hasNext();)
  if (! c.contains(i.NEXT_KEY())) {
   i.remove();
   retVal = true;
  }
 return retVal;
```

```
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation delegates to the type-specific version if given a type-specific
  * collection, otherwise is uses the implementation from {@link AbstractCollection}.
  */
 @Override
 public boolean retainAll(final Collection<?> c) {
  if (c instanceof COLLECTION) {
   return retainAll((COLLECTION) c);
  }
  return super.retainAll(c);
 }
#endif

 @Override
 public String toString() {
  final StringBuilder s = new StringBuilder();
  final KEY_ITERATOR KEY_GENERIC i = iterator();
  int n = size();
  KEY_TYPE k;
  boolean first = true;

  s.append("{");

  while(n-- != 0) {
   if (first) first = false;
   else s.append(", ");
   k = i.NEXT_KEY();
#if KEYS_REFERENCE
   if (this == k) s.append("(this collection)"); else
#endif
    s.append(String.valueOf(k));
  }

  s.append("}");
  return s.toString();
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractCollection.drv
No license file was found, but licenses were detected in source scan.

<project>
 <modelVersion>4.0.0</modelVersion>
 <groupId>it.unimi.dsi</groupId>

<artifactId>fastutil</artifactId>
<packaging>jar</packaging>
<name>fastutil</name>
<version>@VERSION@</version>
<description>fastutil extends the Java Collections Framework by providing type-specific maps, sets, lists, and queues with a small memory footprint and fast access and insertion; it provides also big (64-bit) arrays, sets and lists, sorting algorithms, fast, practical I/O classes for binary and text files, and facilities for memory mapping large files. Note that if you have both this jar and fastutil-core.jar in your dependencies, fastutil-core.jar should be excluded.</description>
<url>http://fastutil.di.unimi.it/</url>
<licenses>
<license>
<name>Apache License, Version 2.0</name>
<url>http://www.apache.org/licenses/LICENSE-2.0.html</url>
<distribution>repo</distribution>
</license>
</licenses>
<scm>
<connection>scm:git://github.com/vigna/fastutil.git</connection>
<url>https://github.com/vigna/fastutil</url>
</scm>
<developers>
<developer>
<id>vigna</id>
<name>Sebastiano Vigna</name>
<email>sebastiano.vigna@unimi.it</email>
</developer>
</developers>
<properties>
<maven.compiler.source>1.8</maven.compiler.source>
<maven.compiler.target>1.8</maven.compiler.target>
</properties>
<dependencies>
<dependency>
<groupId>junit</groupId>
<artifactId>junit</artifactId>
<version>4.12</version>
<scope>test</scope>
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</dependencies>
</project>

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/pom-model.xml
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```
*
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

import java.util.Comparator;

/** A class providing static methods and objects that do useful things with comparators.
*/

public final class COMPARATORS {

 private COMPARATORS() {}

 /** A type-specific comparator mimicking the natural order. */
#if KEYS_REFERENCE
 SUPPRESS_WARNINGS_KEY_UNCHECKED_RAWTYPES
 protected static class NaturalImplicitComparator implements Comparator, java.io.Serializable {
#else
 protected static class NaturalImplicitComparator implements KEY_COMPARATOR KEY_GENERIC,
java.io.Serializable {
#endif
  private static final long serialVersionUID = 1L;

  @Override
  public final int compare(final KEY_TYPE a, final KEY_TYPE b) {
#if KEYS_PRIMITIVE
   return KEY_CMP(a, b);
#else
   return ((Comparable)a).compareTo(b);
#endif
  }

  @Override
  public KEY_COMPARATOR reversed() { return OPPOSITE_COMPARATOR; }
```

```
  private Object readResolve() { return NATURAL_COMPARATOR; }
 };

 SUPPRESS_WARNINGS_KEY_RAWTYPES
 public static final KEY_COMPARATOR NATURAL_COMPARATOR = new NaturalImplicitComparator();

 /** A type-specific comparator mimicking the opposite of the natural order. */
#if KEYS_REFERENCE
 SUPPRESS_WARNINGS_KEY_UNCHECKED_RAWTYPES
 protected static class OppositeImplicitComparator implements Comparator, java.io.Serializable {
#else
 protected static class OppositeImplicitComparator implements KEY_COMPARATOR KEY_GENERIC,
java.io.Serializable {
#endif
  private static final long serialVersionUID = 1L;

  @Override
  public final int compare(final KEY_TYPE a, final KEY_TYPE b) {
#if KEYS_PRIMITIVE
   return - KEY_CMP(a, b);
#else
   return ((Comparable)b).compareTo(a);
#endif
  }
  @Override
  public KEY_COMPARATOR reversed() { return NATURAL_COMPARATOR; }

  private Object readResolve() { return OPPOSITE_COMPARATOR; }
 };

 SUPPRESS_WARNINGS_KEY_RAWTYPES
 public static final KEY_COMPARATOR OPPOSITE_COMPARATOR = new OppositeImplicitComparator();

#if KEYS_REFERENCE
 protected static class OppositeComparator KEY_GENERIC implements Comparator KEY_GENERIC,
java.io.Serializable {
#else
 protected static class OppositeComparator KEY_GENERIC implements KEY_COMPARATOR KEY_GENERIC,
java.io.Serializable {
#endif
  private static final long serialVersionUID = 1L;

  final KEY_COMPARATOR KEY_GENERIC comparator;

  protected OppositeComparator(final KEY_COMPARATOR KEY_GENERIC c) { comparator = c; }

  @Override
  public final int compare(final KEY_GENERIC_TYPE a, final KEY_GENERIC_TYPE b) { return
```

```
comparator.compare(b, a); }

  @Override
  public final KEY_COMPARATOR KEY_GENERIC reversed() { return comparator; }
 };

 /** Returns a comparator representing the opposite order of the given comparator.
  *
  * @param c a comparator.
  * @return a comparator representing the opposite order of {@code c}.
  */
 public static KEY_GENERIC KEY_COMPARATOR KEY_GENERIC oppositeComparator(final
KEY_COMPARATOR KEY_GENERIC c) {
  if (c instanceof OppositeComparator) return ((OppositeComparator KEY_GENERIC)c).comparator;
  return new OppositeComparator KEY_GENERIC_DIAMOND(c);
 }

#if KEYS_PRIMITIVE
 /** Returns a type-specific comparator that is equivalent to the given comparator.
  *
  * @param c a comparator, or {@code null}.
  * @return a type-specific comparator representing the order of {@code c}.
  */
 public static KEY_COMPARATOR AS_KEY_COMPARATOR(final Comparator<? super
KEY_GENERIC_CLASS> c) {
  if (c == null || c instanceof KEY_COMPARATOR) return (KEY_COMPARATOR) c;

  return new KEY_COMPARATOR() {
   @Override
   public int compare(KEY_GENERIC_TYPE x, KEY_GENERIC_TYPE y) { return c.compare(KEY2OBJ(x),
KEY2OBJ(y)); }
   @SuppressWarnings("deprecation")
   @Override
   public int compare(KEY_GENERIC_CLASS x, KEY_GENERIC_CLASS y) { return c.compare(x, y); }
  };
 }
#else
 /** Returns a the comparator given unmodified.
  *
  * This method merely serves as a way to be compatible with primtive type-specific Comparators
  * implementations, as they do have type-specific Comparators, but Object ones do not.
  *
  * @param c a comparator, or {@code null}.
  * @return {@code c}, unmodified.
  */
 public static KEY_GENERIC KEY_COMPARATOR KEY_GENERIC AS_KEY_COMPARATOR(final
Comparator KEY_GENERIC c) {
  return c;
```

```
 }
#endif
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/Comparators.drv
No license file was found, but licenses were detected in source scan.

```
/*
* Copyright (C) 2010-2022 Sebastiano Vigna
*
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* distributed under the License is distributed on an "AS IS" BASIS,
* WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
* See the License for the specific language governing permissions and
* limitations under the License.
*/


package PACKAGE;

import static it.unimi.dsi.fastutil.BigArrays.ensureOffsetLength;
import static it.unimi.dsi.fastutil.BigArrays.length;

import it.unimi.dsi.fastutil.BigArrays;

#if KEYS_REFERENCE
import it.unimi.dsi.fastutil.Stack;
import java.util.function.Consumer;
#endif

import java.util.Iterator;
import java.util.Collection;
import java.util.NoSuchElementException;

import it.unimi.dsi.fastutil.BigList;
import it.unimi.dsi.fastutil.BigListIterator;

/**  An abstract class providing basic methods for big lists implementing a type-specific big list interface.
*
* <p>Most of the methods in this class are optimized with the assumption that the List will have
* {@link java.util.RandomAccess have constant-time random access}. If this is not the case, you
```

```
* should probably <em>at least</em> override {@link #listIterator(long)} and the {@code xAll()} methods
* (such as {@link #addAll}) with a more appropriate iteration scheme. Note the {@link #subList(long, long)}
* method is cognizant of random-access or not, so that need not be reimplemented.
*/
public abstract class ABSTRACT_BIG_LIST KEY_GENERIC extends ABSTRACT_COLLECTION
KEY_GENERIC implements BIG_LIST KEY_GENERIC, STACK KEY_GENERIC {

 protected ABSTRACT_BIG_LIST() {}

 /** Ensures that the given index is nonnegative and not greater than this big-list size.
  *
  * @param index an index.
  * @throws IndexOutOfBoundsException if the given index is negative or greater than this big-list size.
  */
 protected void ensureIndex(final long index) {
  if (index < 0)  throw new IndexOutOfBoundsException("Index (" + index + ") is negative");
  if (index > size64()) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than list size (" +
(size64()) + ")");
 }

 /** Ensures that the given index is nonnegative and smaller than this big-list size.
  *
  * @param index an index.
  * @throws IndexOutOfBoundsException if the given index is negative or not smaller than this big-list size.
  */
 protected void ensureRestrictedIndex(final long index) {
  if (index < 0)  throw new IndexOutOfBoundsException("Index (" + index + ") is negative");
  if (index >= size64()) throw new IndexOutOfBoundsException("Index (" + index + ") is greater than or equal to list
size (" + (size64()) + ")");
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation always throws an {@link UnsupportedOperationException}.
  */
 @Override
 public void add(final long index, final KEY_GENERIC_TYPE k) {
  throw new UnsupportedOperationException();
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation delegates to the type-specific version of {@link BigList#add(long, Object)}.
  */
 @Override
 public boolean add(final KEY_GENERIC_TYPE k) {
  add(size64(), k);
  return true;
```

```
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation always throws an {@link UnsupportedOperationException}.
  */
 @Override
 public KEY_GENERIC_TYPE REMOVE_KEY(long i) {
  throw new UnsupportedOperationException();
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation always throws an {@link UnsupportedOperationException}.
  */
 @Override
 public KEY_GENERIC_TYPE set(final long index, final KEY_GENERIC_TYPE k) {
  throw new UnsupportedOperationException();
 }

 /** Adds all of the elements in the specified collection to this list (optional operation). */
 @Override
 public boolean addAll(long index, final Collection<? extends KEY_GENERIC_CLASS> c) {
  ensureIndex(index);
  final Iterator<? extends KEY_GENERIC_CLASS> i = c.iterator();
  final boolean retVal = i.hasNext();
  while(i.hasNext()) add(index++, i.next());
  return retVal;
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation delegates to the type-specific version of {@link BigList#addAll(long,
Collection)}.
  */
 @Override
 public boolean addAll(final Collection<? extends KEY_GENERIC_CLASS> c) {
  return addAll(size64(), c);
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation delegates to {@link #listIterator()}.
  */
 @Override
 public KEY_BIG_LIST_ITERATOR KEY_GENERIC iterator() {
  return listIterator();
 }
```

```
/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to {@link BigList#listIterator(long) listIterator(0)}.
 */
@Override
public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator() {
 return listIterator(0L);
}

/** {@inheritDoc}
 * @implSpec This implementation is based on the random-access methods. */
@Override
public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator(final long index) {
 ensureIndex(index);

 return new BIG_LIST_ITERATORS.AbstractIndexBasedBigListIterator KEY_GENERIC(0, index) {
  @Override
  protected final KEY_GENERIC_TYPE get(long i) { return ABSTRACT_BIG_LIST.this.GET_KEY(i); }
  @Override
  protected final void add(long i, KEY_GENERIC_TYPE k) { ABSTRACT_BIG_LIST.this.add(i, k); }
  @Override
  protected final void set(long i, KEY_GENERIC_TYPE k) { ABSTRACT_BIG_LIST.this.set(i, k); }
  @Override
  protected final void remove(long i) { ABSTRACT_BIG_LIST.this.REMOVE_KEY(i); }
  @Override
  protected final long getMaxPos() { return ABSTRACT_BIG_LIST.this.size64(); }
 };
}

static final class IndexBasedSpliterator KEY_GENERIC extends
BIG_SPLITERATORS.LateBindingSizeIndexBasedSpliterator KEY_GENERIC {
 final BIG_LIST KEY_GENERIC l;

 IndexBasedSpliterator(BIG_LIST KEY_GENERIC l, long pos) {
  super(pos);
  this.l = l;
 }

 IndexBasedSpliterator(BIG_LIST KEY_GENERIC l, long pos, long maxPos) {
  super(pos, maxPos);
  this.l = l;
 }

 @Override
 protected final long getMaxPosFromBackingStore() { return l.size64(); }
 @Override
 protected final KEY_GENERIC_TYPE get(long i) { return l.GET_KEY(i); }
```

```
  @Override
  protected final IndexBasedSpliterator KEY_GENERIC makeForSplit(long pos, long maxPos) {
   return new IndexBasedSpliterator KEY_GENERIC_DIAMOND(l, pos, maxPos);
  }
 }

#if KEYS_BYTE_CHAR_SHORT_FLOAT
 @Override
 public WIDENED_PACKAGE.KEY_WIDENED_SPLITERATOR KEY_GENERIC
KEY_WIDENED_SPLITERATOR_METHOD() {
  if (this instanceof java.util.RandomAccess) {
   return SPLITERATORS.widen(spliterator());
  } else {
   return super.KEY_WIDENED_SPLITERATOR_METHOD();
  }
 }
#endif

 /** Returns true if this list contains the specified element.
  * @implSpec This implementation delegates to {@code indexOf()}.
  * @see BigList#contains(Object)
  */
 @Override
 public boolean contains(final KEY_TYPE k) { return indexOf(k) >= 0; }

 @Override
 public long indexOf(final KEY_TYPE k) {
  final KEY_BIG_LIST_ITERATOR KEY_GENERIC i = listIterator();
  KEY_GENERIC_TYPE e;
  while(i.hasNext()) {
   e = i.NEXT_KEY();
   if (KEY_EQUALS(k, e)) return i.previousIndex();
  }
  return -1;
 }

 @Override
 public long lastIndexOf(final KEY_TYPE k) {
  KEY_BIG_LIST_ITERATOR KEY_GENERIC i = listIterator(size64());
  KEY_GENERIC_TYPE e;
  while(i.hasPrevious()) {
   e = i.PREV_KEY();
   if (KEY_EQUALS(k, e)) return i.nextIndex();
  }
  return -1;
 }

 @Override
```

```
 public void size(final long size) {
  long i = size64();
  if (size > i) while(i++ < size) add(KEY_NULL);
  else while(i-- != size) remove(i);
 }

 @Override
 public BIG_LIST KEY_GENERIC subList(final long from, final long to) {
  ensureIndex(from);
  ensureIndex(to);
  if (from > to) throw new IndexOutOfBoundsException("Start index (" + from + ") is greater than end index (" + to +
")");

  return this instanceof java.util.RandomAccess ? new SUBLIST_RANDOM_ACCESS
KEY_GENERIC_DIAMOND(this, from, to) : new SUBLIST KEY_GENERIC_DIAMOND(this, from, to);
 }

 /** {@inheritDoc}
  *
  * @implSpec If this list is {@link java.util.RandomAccess}, will iterate using a for
  * loop and the type-specific {@link java.util.List#get(int)} method. Otherwise it will fallback
  * to using the iterator based loop implementation from the superinterface.
  */
  @Override
  public void forEach(final METHOD_ARG_KEY_CONSUMER action) {
   if (this instanceof java.util.RandomAccess) {
    for (long i = 0, max = size64(); i < max; ++i) {
     action.accept(GET_KEY(i));
    }
   } else {
   super.forEach(action);
  }
 }

 /** {@inheritDoc}
  *
  * <p>This is a trivial iterator-based implementation. It is expected that
  * implementations will override this method with a more optimized version.
  */
 @Override
 public void removeElements(final long from, final long to) {
  ensureIndex(to);
  KEY_BIG_LIST_ITERATOR KEY_GENERIC i = listIterator(from);
  long n = to - from;
  if (n < 0) throw new IllegalArgumentException("Start index (" + from + ") is greater than end index (" + to + ")");
  while(n-- != 0) {
   i.NEXT_KEY();
   i.remove();
```

```
 }
}

/** {@inheritDoc}
 *
 * <p>This is a trivial iterator-based implementation. It is expected that
 * implementations will override this method with a more optimized version.
 */
@Override
public void addElements(long index, final KEY_GENERIC_TYPE a[][], long offset, long length) {
 ensureIndex(index);
 ensureOffsetLength(a, offset, length);
 if (this instanceof java.util.RandomAccess) {
  while(length-- != 0) add(index++, BigArrays.get(a, offset++));
 } else {
  KEY_BIG_LIST_ITERATOR KEY_GENERIC iter = listIterator(index);
  while(length-- != 0) iter.add(BigArrays.get(a, offset++));
 }
}

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to the analogous method for big-array fragments.
 */
@Override
public void addElements(final long index, final KEY_GENERIC_TYPE a[][]) {
 addElements(index, a, 0, length(a));
}

/** {@inheritDoc}
 *
 * <p>This is a trivial iterator-based implementation. It is expected that
 * implementations will override this method with a more optimized version.
 */
@Override
public void getElements(final long from, final KEY_TYPE a[][], long offset, long length) {
 ensureIndex(from);
 ensureOffsetLength(a, offset, length);
 if (from + length > size64()) throw new IndexOutOfBoundsException("End index (" + (from + length) + ") is
greater than list size (" + size64() + ")");
 if (this instanceof java.util.RandomAccess) {
  long current = from;
  while(length-- != 0) BigArrays.set(a, offset++, GET_KEY(current++));
 } else {
  KEY_BIG_LIST_ITERATOR KEY_GENERIC i = listIterator(from);
  while(length-- != 0) BigArrays.set(a, offset++, i.NEXT_KEY());
 }
}
```

```
@Override
public void setElements(long index, KEY_GENERIC_TYPE a[][], long offset, long length) {
 ensureIndex(index);
 ensureOffsetLength(a, offset, length);
 if (index + length > size64()) throw new IndexOutOfBoundsException("End index (" + (index + length) + ") is
greater than list size (" + size64() + ")");
 if (this instanceof java.util.RandomAccess) {
  for (long i = 0; i < length; ++i) {
   set(i + index, BigArrays.get(a, i + offset));
  }
 } else {
  KEY_BIG_LIST_ITERATOR KEY_GENERIC iter = listIterator(index);
  long i = 0;
  while (i < length) {
   iter.NEXT_KEY();
   iter.set(BigArrays.get(a, offset + i++));
  }
 }
}

/** {@inheritDoc}
 * @implSpec This implementation delegates to {@link #removeElements(long, long)}.*/
@Override
public void clear() {
 removeElements(0, size64());
}

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to {@link #size64()}.
 * @deprecated Please use {@link #size64()} instead. */
@Override
@Deprecated
public int size() {
 return (int)Math.min(Integer.MAX_VALUE, size64());
}

/** Returns the hash code for this big list, which is identical to {@link java.util.List#hashCode()}.
 *
 * @return the hash code for this big list.
 */
@Override
public int hashCode() {
 KEY_ITERATOR KEY_GENERIC i = iterator();
 int h = 1;
 long s = size64();
 while (s-- != 0) {
```

```
  KEY_GENERIC_TYPE k = i.NEXT_KEY();
  h = 31 * h + KEY2JAVAHASH(k);
 }
 return h;
}

@Override
public boolean equals(final Object o) {
 if (o == this) return true;
 if (! (o instanceof BigList)) return false;
 final BigList<?> l = (BigList<?>)o;
 long s = size64();
 if (s != l.size64()) return false;

#if KEYS_PRIMITIVE
 if (l instanceof BIG_LIST) {
  final KEY_BIG_LIST_ITERATOR KEY_GENERIC i1 = listIterator(), i2 = ((BIG_LIST
KEY_GENERIC)l).listIterator();
  while(s-- != 0) if (i1.NEXT_KEY() != i2.NEXT_KEY()) return false;
  return true;
 }
#endif

 final BigListIterator<?> i1 = listIterator(), i2 = l.listIterator();

#if KEYS_USE_REFERENCE_EQUALITY
 while(s-- !=  0) if (i1.next() != i2.next()) return false;
#else
 while(s-- !=  0) if (! java.util.Objects.equals(i1.next(), i2.next())) return false;
#endif
 return true;
}

#if ! KEYS_USE_REFERENCE_EQUALITY
/** Compares this big list to another object. If the
 * argument is a {@link BigList}, this method performs a lexicographical comparison; otherwise,
 * it throws a {@code ClassCastException}.
 *
 * @param l a big list.
 * @return if the argument is a {@link BigList}, a negative integer,
 * zero, or a positive integer as this list is lexicographically less than, equal
 * to, or greater than the argument.
 * @throws ClassCastException if the argument is not a big list.
 */

SUPPRESS_WARNINGS_KEY_UNCHECKED
@Override
public int compareTo(final BigList<? extends KEY_GENERIC_CLASS> l) {
```

```
  if (l == this) return 0;

  if (l instanceof BIG_LIST) {

   final KEY_BIG_LIST_ITERATOR KEY_GENERIC i1 = listIterator(), i2 = ((BIG_LIST
KEY_GENERIC)l).listIterator();
   int r;
   KEY_GENERIC_TYPE e1, e2;

   while(i1.hasNext() && i2.hasNext()) {
    e1 = i1.NEXT_KEY();
    e2 = i2.NEXT_KEY();
    if ((r = KEY_CMP(e1, e2)) != 0) return r;
   }
   return i2.hasNext() ? -1 : (i1.hasNext() ? 1 : 0);
  }

  BigListIterator<? extends KEY_GENERIC_CLASS> i1 = listIterator(), i2 = l.listIterator();
  int r;

  while(i1.hasNext() && i2.hasNext()) {
   if ((r = ((Comparable<? super KEY_GENERIC_CLASS>)i1.next()).compareTo(i2.next())) != 0) return r;
  }
  return i2.hasNext() ? -1 : (i1.hasNext() ? 1 : 0);
 }
#endif

 @Override
 public void push(KEY_GENERIC_TYPE o) {
  add(o);
 }

 @Override
 public KEY_GENERIC_TYPE POP() {
  if (isEmpty()) throw new NoSuchElementException();
  return REMOVE_KEY(size64() - 1);
 }

 @Override
 public KEY_GENERIC_TYPE TOP() {
  if (isEmpty()) throw new NoSuchElementException();
  return GET_KEY(size64() - 1);
 }

 @Override
 public KEY_GENERIC_TYPE PEEK(int i) {
  return GET_KEY(size64() - 1 - i);
 }
```

```
#if KEYS_PRIMITIVE
 /** Removes a single instance of the specified element from this collection, if it is present (optional operation).
  * @implSpec This implementation delegates to {@code indexOf()}.
  * @see BigList#remove(Object)
  */
 @Override
 public boolean rem(KEY_TYPE k) {
  long index = indexOf(k);
  if (index == -1) return false;
  REMOVE_KEY(index);
  return true;
 }

 /** {@inheritDoc}
  *
  * @implSpec This implementation delegates to the type-specific version of {@link #addAll(long, Collection)}.
  */
 @Override
 public boolean addAll(final long index, final COLLECTION c) { return addAll(index, (Collection<? extends
KEY_CLASS>)c); }

 /** {@inheritDoc}
  *
  * @implSpec This implementation delegates to the type-specific version of {@link #addAll(long, Collection)}.
  */
 @Override
 public boolean addAll(final COLLECTION c) { return addAll(size64(), c); }

 /** {@inheritDoc}
  *
  * @implSpec This implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 public void add(final long index, final KEY_CLASS ok) { add(index, ok.KEY_VALUE()); }

 /** {@inheritDoc}
  *
  * @implSpec This implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 public KEY_CLASS set(final long index, final KEY_CLASS ok) { return KEY2OBJ(set(index,
ok.KEY_VALUE())); }
```

```
/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to the corresponding type-specific method.
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
public KEY_CLASS get(final long index) { return KEY2OBJ(GET_KEY(index)); }

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to the corresponding type-specific method.
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
public long indexOf(final Object ok) { return indexOf(KEY_OBJ2TYPE(ok)); }

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to the corresponding type-specific method.
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
public long lastIndexOf(final Object ok) { return lastIndexOf(KEY_OBJ2TYPE(ok)); }

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to the corresponding type-specific method.
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
public KEY_CLASS remove(final long index) { return KEY2OBJ(REMOVE_KEY(index)); }

/** {@inheritDoc}
 *
 * @implSpec This implementation delegates to the corresponding type-specific method.
 * @deprecated Please use the corresponding type-specific method instead.
 */
@Deprecated
@Override
public void push(KEY_CLASS o) { push(o.KEY_VALUE()); }

/** {@inheritDoc}
 *
```

```
  * @implSpec This implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 public KEY_CLASS pop() { return KEY_CLASS.valueOf(POP()); }

 /** {@inheritDoc}
  *
  * @implSpec This implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 public KEY_CLASS top() { return KEY_CLASS.valueOf(TOP()); }

 /** {@inheritDoc}
  *
  * @implSpec This implementation delegates to the corresponding type-specific method.
  * @deprecated Please use the corresponding type-specific method instead.
  */
 @Deprecated
 @Override
 public KEY_CLASS peek(int i) { return KEY_CLASS.valueOf(PEEK(i)); }

#endif

 @Override
 public String toString() {
  final StringBuilder s = new StringBuilder();
  final KEY_ITERATOR KEY_GENERIC i = iterator();
  long n = size64();
  KEY_GENERIC_TYPE k;
  boolean first = true;

  s.append("[");

  while(n-- != 0) {
   if (first) first = false;
   else s.append(", ");
   k = i.NEXT_KEY();
#if KEYS_REFERENCE
   if (this == k) s.append("(this big list)"); else
#endif
    s.append(String.valueOf(k));
  }

  s.append("]");
```

```
 return s.toString();
}


/** A class implementing a sublist view. */
public static class SUBLIST KEY_GENERIC extends ABSTRACT_BIG_LIST KEY_GENERIC implements
java.io.Serializable {
 private static final long serialVersionUID = -7046029254386353129L;
 /** The list this sublist restricts. */
 protected final BIG_LIST KEY_GENERIC l;
 /** Initial (inclusive) index of this sublist. */
 protected final long from;
 /** Final (exclusive) index of this sublist. */
 protected long to;

 public SUBLIST(final BIG_LIST KEY_GENERIC l, final long from, final long to) {
  this.l = l;
  this.from = from;
  this.to = to;
 }

 private boolean assertRange() {
  assert from <= l.size64();
  assert to <= l.size64();
  assert to >= from;
  return true;
 }

 @Override
 public boolean add(final KEY_GENERIC_TYPE k) {
  l.add(to, k);
  to++;
  assert assertRange();
  return true;
 }

 @Override
 public void add(final long index, final KEY_GENERIC_TYPE k) {
  ensureIndex(index);
  l.add(from + index, k);
  to++;
  assert assertRange();
 }

 @Override
 public boolean addAll(final long index, final Collection<? extends KEY_GENERIC_CLASS> c) {
  ensureIndex(index);
  to += c.size();
```

```
  return l.addAll(from + index, c);
 }

 @Override
 public KEY_GENERIC_TYPE GET_KEY(long index) {
  ensureRestrictedIndex(index);
  return l.GET_KEY(from + index);
 }

 @Override
 public KEY_GENERIC_TYPE REMOVE_KEY(long index) {
  ensureRestrictedIndex(index);
  to--;
  return l.REMOVE_KEY(from + index);
 }

 @Override
 public KEY_GENERIC_TYPE set(long index, KEY_GENERIC_TYPE k) {
  ensureRestrictedIndex(index);
  return l.set(from + index, k);
 }

 @Override
 public long size64() { return to - from; }

 @Override
 public void getElements(final long from, final KEY_TYPE[][] a, final long offset, final long length) {
  ensureIndex(from);
  if (from + length > size64())  throw new IndexOutOfBoundsException("End index (" + from + length + ") is greater
than list size (" + size64() + ")");
  l.getElements(this.from + from, a, offset, length);
 }

 @Override
 public void removeElements(final long from, final long to) {
  ensureIndex(from);
  ensureIndex(to);
  l.removeElements(this.from + from, this.from + to);
  this.to -= (to - from);
  assert assertRange();
 }

 @Override
 public void addElements(final long index, final KEY_GENERIC_TYPE a[][], long offset, long length) {
  ensureIndex(index);
  l.addElements(this.from + index, a, offset, length);
  this.to += length;
  assert assertRange();
```

```
 }

 private final class RandomAccessIter extends BIG_LIST_ITERATORS.AbstractIndexBasedBigListIterator
KEY_GENERIC {

  // We don't set the minPos to be "from" because we need to call our containing class'
  // add, set, and remove methods with 0 relative to the start of the sublist, not the
  // start of the original list.
  // Thus pos is relative to the start of the SubList, not the start of the original list.
  RandomAccessIter(long pos) {
   super(0, pos);
  }

  @Override
  protected final KEY_GENERIC_TYPE get(long i) { return l.GET_KEY(from + i); }
  // Remember, these are calling SUBLIST's methods, meaning 0 is the start of the sublist for these.
  @Override
  protected final void add(long i, KEY_GENERIC_TYPE k) { SUBLIST.this.add(i, k); }
  @Override
  protected final void set(long i, KEY_GENERIC_TYPE k) { SUBLIST.this.set(i, k); }
  @Override
  protected final void remove(long i) { SUBLIST.this.REMOVE_KEY(i); }
  @Override
  protected final long getMaxPos() { return to - from; }

  @Override
  public void add(KEY_GENERIC_TYPE k) {
   super.add(k);
   assert assertRange();
  }
  @Override
  public void remove() {
   super.remove();
   assert assertRange();
  }
 }

 private class ParentWrappingIter implements KEY_BIG_LIST_ITERATOR KEY_GENERIC {
  private KEY_BIG_LIST_ITERATOR KEY_GENERIC parent;

  ParentWrappingIter(KEY_BIG_LIST_ITERATOR KEY_GENERIC parent) {
   this.parent = parent;
  }

  @Override
  public long nextIndex() { return parent.nextIndex() - from; }
  @Override
  public long previousIndex() { return parent.previousIndex() - from; }
```

```
  @Override
  public boolean hasNext() { return parent.nextIndex() < to; }
  @Override
  public boolean hasPrevious() { return parent.previousIndex() >= from; }
  @Override
  public KEY_GENERIC_TYPE NEXT_KEY() { if (! hasNext()) throw new NoSuchElementException(); return
parent.NEXT_KEY(); }
  @Override
  public KEY_GENERIC_TYPE PREV_KEY() { if (! hasPrevious()) throw new NoSuchElementException(); return
parent.PREV_KEY(); }
  @Override
  public void add(KEY_GENERIC_TYPE k) { parent.add(k); }
  @Override
  public void set(KEY_GENERIC_TYPE k) { parent.set(k); }
  @Override
  public void remove() { parent.remove(); }

  @Override
  public long back(long n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   long currentPos = parent.previousIndex();
   long parentNewPos = currentPos - n;
   // Remember, the minimum acceptable previousIndex is not from but (from - 1), since (from - 1)
   // means this subList is at the beginning of our sub range.
   // Same reason why previousIndex()'s minimum for the full list is not 0 but -1.
   if (parentNewPos < (from - 1)) parentNewPos = (from - 1);
   long toSkip = parentNewPos - currentPos;
   return parent.back(toSkip);
  }
  @Override
  public long skip(long n) {
   if (n < 0) throw new IllegalArgumentException("Argument must be nonnegative: " + n);
   long currentPos = parent.nextIndex();
   long parentNewPos = currentPos + n;
   if (parentNewPos > to) parentNewPos = to;
   long toSkip = parentNewPos - currentPos;
   return parent.skip(toSkip);
  }
 }

 @Override
 public KEY_BIG_LIST_ITERATOR KEY_GENERIC listIterator(final long index) {
  ensureIndex(index);

  // If this class wasn't public, then RandomAccessIter would live in SUBLISTRandomAccess,
  // and the switching would be done in sublist(long, long). However, this is a public class
  // that may have existing implementors, so to get the benefit of RandomAccessIter class for
  // for existing uses, it has to be done in this class.
```

```
  return l instanceof java.util.RandomAccess ? new RandomAccessIter(index) : new
ParentWrappingIter(l.listIterator(index + from));
 }

 @Override
 public KEY_SPLITERATOR KEY_GENERIC spliterator() {
  return l instanceof java.util.RandomAccess ? new IndexBasedSpliterator KEY_GENERIC_DIAMOND(l, from, to) :
super.spliterator();
 }

#if KEYS_BYTE_CHAR_SHORT_FLOAT
 @Override
 public WIDENED_PACKAGE.KEY_WIDENED_SPLITERATOR KEY_GENERIC
KEY_WIDENED_SPLITERATOR_METHOD() {
  if (l instanceof java.util.RandomAccess) {
   return SPLITERATORS.widen(spliterator());
  } else {
   return super.KEY_WIDENED_SPLITERATOR_METHOD();
  }
 }
#endif

 @Override
 public BIG_LIST KEY_GENERIC subList(final long from, final long to) {
  ensureIndex(from);
  ensureIndex(to);
  if (from > to) throw new IllegalArgumentException("Start index (" + from + ") is greater than end index (" + to +
")");
  // Sadly we have to rewrap this, because if there is a sublist of a sublist, and the
  // subsublist adds, both sublists need to update their "to" value.
  return new SUBLIST KEY_GENERIC_DIAMOND(this, from, to);
 }

#if KEYS_PRIMITIVE
 @Override
 public boolean rem(KEY_TYPE k) {
  long index = indexOf(k);
  if (index == -1) return false;
  to--;
  l.REMOVE_KEY(from + index);
  assert assertRange();
  return true;
 }

 @Override
 public boolean addAll(final long index, final COLLECTION c) {
  return super.addAll(index, c);
 }
```

```
  @Override
  public boolean addAll(final long index, final BIG_LIST l) {
   return super.addAll(index, l);
  }
#endif
 }

 public static class SUBLIST_RANDOM_ACCESS KEY_GENERIC extends SUBLIST KEY_GENERIC
implements java.util.RandomAccess {
  private static final long serialVersionUID = -107070782945191929L;
  public SUBLIST_RANDOM_ACCESS(final BIG_LIST KEY_GENERIC l, final long from, final long to) {
   super(l, from, to);
  }

  @Override
  public BIG_LIST KEY_GENERIC subList(final long from, final long to) {
   ensureIndex(from);
   ensureIndex(to);
   if (from > to) throw new IllegalArgumentException("Start index (" + from + ") is greater than end index (" + to +
")");
   // Sadly we have to rewrap this, because if there is a sublist of a sublist, and the
   // subsublist adds, both sublists need to update their "to" value.
   return new SUBLIST_RANDOM_ACCESS KEY_GENERIC_DIAMOND(this, from, to);
  }
 }
}
```

Found in path(s):
* /opt/cola/permits/1449238736_1666539688.7953708/0/fastutil-core-8-5-8-sources-jar/drv/AbstractBigList.drv

1.42 alpine-baselayout-data 3.2.0-r23

1.42.1 Available under license :

No license file was found, but licenses were detected in source scan.

/opt/cola/permits/1415439565_1664205532.7928042/0/alpine-baselayout-3-2-0-r23-tgz/z: binary file matches

Found in path(s):
* /bin/grep
No license file was found, but licenses were detected in source scan.

```
/*
* Create mount directories in fstab
*
* Copyright(c) 2008 Natanael Copa <natanael.copa@gmail.com>
* May be distributed under the terms of GPL-2
```

*
* usage: mkmntdirs [fstab]
*
*/

Found in path(s):
* /opt/cola/permits/1415439565_1664205532.7928042/0/alpine-baselayout-3-2-0-r23-tgz/mkmntdirs.c

1.43 dom-serializer 1.4.1

1.43.1 Available under license :

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1.44 simplejson 3.17.6

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1.45 safe-buffer 5.2.1

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1.46 zap 1.17.0

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1.47 go.opentelemetry.io/contrib/instrumentation/google.golang.org/grpc/otelgrpc 0.25.0

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1.54 apk-tools 2.12.9-r3

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5 7936 12799   4864 2.4M
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1.68 jackson-datatype-jdk8 2.14.0

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1.69 cryptography 3.3.2

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1.79 readable-stream 3.6.0

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1.81 sanitized-anchor-name 1.0.0

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1.84 kerberos 1.19.3-r0

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cmd/krb5/slave/kpropd_rpc.c
lib/gss_mechs/mech_krb5/et/kdb5_err.c
lib/gss_mechs/mech_spnego/mech/gssapiP_spnego.h
lib/gss_mechs/mech_spnego/mech/spnego_mech.c
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lib/krb5/kdb/kdb_hdr.h
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lib/libgss/g_utils.c
lib/libgss/g_verify.c
lib/libgss/gssd_pname_to_uid.c
uts/common/gssapi/include/gssapi_err_generic.h
uts/common/gssapi/include/mechglueP.h

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lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

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kadmin/server/ipropd_svc.c
lib/kdb/iprop.x

lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
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* ~~~~~~~~~~~~~~~~
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* ~~~~~~~~~
*
* Sphinx stylesheet -- basic theme.
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* https://jquery.com/
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* Date: 2020-05-04T22:49Z
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Metadata-Version: 1.1
Name: pathlib2
Version: 2.3.7.post1
Summary: Object-oriented filesystem paths
Home-page: https://github.com/jazzband/pathlib2
Author: Matthias C. M. Troffaes
Author-email: matthias.troffaes@gmail.com
License: MIT
Description: The `old pathlib <https://web.archive.org/web/20181106215056/https://bitbucket.org/pitrou/pathlib/>`_
    module on bitbucket is no longer maintained.
    The goal of pathlib2 is to provide a backport of
    `standard pathlib <http://docs.python.org/dev/library/pathlib.html>`_
    module which tracks the standard library module,
    so all the newest features of the standard pathlib can be

used also on older Python versions.

Download

Standalone releases are available on PyPI:
http://pypi.python.org/pypi/pathlib2/

Development

The main development takes place in the Python standard library: see
the `Python developer's guide <http://docs.python.org/devguide/>`_.
In particular, new features should be submitted to the
`Python bug tracker <http://bugs.python.org/>`_.

Issues that occur in this backport, but that do not occur not in the
standard Python pathlib module can be submitted on
the `pathlib2 bug tracker <https://github.com/jazzband/pathlib2/issues>`_.

Documentation

Refer to the
`standard pathlib <http://docs.python.org/dev/library/pathlib.html>`_
documentation.

Known Issues

For historic reasons, pathlib2 still uses bytes to represent file paths internally.
Unfortunately, on Windows with Python 2.7, the file system encoder (``mcbs``)
has only poor support for non-ascii characters,
and can silently replace non-ascii characters without warning.
For example, ``u''.encode(sys.getfilesystemencoding())`` results in ``????``
which is obviously completely useless.

Therefore, on Windows with Python 2.7, until this problem is fixed upstream,
unfortunately you cannot rely on pathlib2 to support the full unicode range for filenames.
See `issue #56 <https://github.com/jazzband/pathlib2/issues/56>`_ for more details.

.. |github| image:: https://github.com/jazzband/pathlib2/actions/workflows/python-package.yml/badge.svg
   :target: https://github.com/jazzband/pathlib2/actions/workflows/python-package.yml
   :alt: github

.. |codecov| image:: https://codecov.io/gh/jazzband/pathlib2/branch/develop/graph/badge.svg
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.. |jazzband| image:: https://jazzband.co/static/img/badge.svg
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Classifier: Programming Language :: Python :: 2
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Classifier: Programming Language :: Python :: 3.6
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* /opt/cola/permits/1269426042_1646389920.16/0/pathlib2-2-3-7-post1-tar-gz/pathlib2-2.3.7.post1/tests/test_pathlib2.py
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* doctools.js
* ~~~~~~~~~~~
*
* Sphinx JavaScript utilities for all documentation.
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* /opt/cola/permits/1269426042_1646389920.16/0/pathlib2-2-3-7-post1-tar-gz/pathlib2-2.3.7.post1/docs/_build/_static/underscore-1.13.1.js
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* searchtools.js
* ~~~~~~~~~~~~~~~~
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1.86 v8 9.4.146.26

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- Strongtalk assembler, the basis of the files assembler-arm-inl.h, assembler-arm.cc, assembler-arm.h, assembler-ia32-inl.h, assembler-ia32.cc, assembler-ia32.h, assembler-x64-inl.h, assembler-x64.cc, assembler-x64.h, assembler-mips-inl.h, assembler-mips.cc, assembler-mips.h, assembler.cc and assembler.h. This code is copyrighted by Sun Microsystems Inc. and released under a 3-clause BSD license.

- Valgrind client API header, located at src/third_party/valgrind/valgrind.h This is released under the BSD license.

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THE BASIC LIBRARY FUNCTIONS

Written by: Philip Hazel

Email local part: ph10
Email domain: cam.ac.uk

University of Cambridge Computing Service,
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THE C++ WRAPPER FUNCTIONS

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A. HISTORY OF THE SOFTWARE
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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see https://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes

2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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1.94 wcwidth 1.0.1

1.94.1 Available under license :

wcwidth.js: JavaScript Portng of Markus Kuhn's wcwidth() Implementation
===

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This package is a JavaScript porting of `wcwidth()` implementation [by Markus Kuhn](http://www.cl.cam.ac.uk/~mgk25/ucs/wcwidth.c).

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1.95 flask-sqlalchemy 2.5.1

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.. _models:

.. currentmodule:: flask_sqlalchemy

Declaring Models
================

Generally Flask-SQLAlchemy behaves like a properly configured declarative
base from the :mod:`~sqlalchemy.ext.declarative` extension. As such we
recommend reading the SQLAlchemy docs for a full reference. However the
most common use cases are also documented here.

Things to keep in mind:

- The baseclass for all your models is called ``db.Model``. It's stored
  on the SQLAlchemy instance you have to create. See :ref:`quickstart`
  for more details.
- Some parts that are required in SQLAlchemy are optional in
  Flask-SQLAlchemy. For instance the table name is automatically set
  for you unless overridden. It's derived from the class name converted
  to lowercase and with “CamelCase” converted to “camel_case”. To override
  the table name, set the ``__tablename__`` class attribute.

Simple Example

A very simple example::

```
  class User(db.Model):
      id = db.Column(db.Integer, primary_key=True)
      username = db.Column(db.String(80), unique=True, nullable=False)
      email = db.Column(db.String(120), unique=True, nullable=False)

      def __repr__(self):
          return '<User %r>' % self.username
```

Use :class:`~sqlalchemy.schema.Column` to define a column. The name of the column is the name you assign it to. If you want to use a different name in the table you can provide an optional first argument which is a string with the desired column name. Primary keys are marked with ``primary_key=True``. Multiple keys can be marked as primary keys in which case they become a compound primary key.

The types of the column are the first argument to :class:`~sqlalchemy.schema.Column`. You can either provide them directly or call them to further specify them (like providing a length). The following types are the most common:

==
=====================================
:class:`~sqlalchemy.types.Integer`   an integer
:class:`String(size) <sqlalchemy.types.String>` a string with a maximum length
                                            (optional in some databases, e.g.
                                            PostgreSQL)
:class:`~sqlalchemy.types.Text`   some longer unicode text
:class:`~sqlalchemy.types.DateTime`   date and time expressed as Python
                                            :class:`~datetime.datetime` object.
:class:`~sqlalchemy.types.Float`   stores floating point values
:class:`~sqlalchemy.types.Boolean`   stores a boolean value
:class:`~sqlalchemy.types.PickleType`   stores a pickled Python object
:class:`~sqlalchemy.types.LargeBinary`   stores large arbitrary binary data
==
=====================================

One-to-Many Relationships

The most common relationships are one-to-many relationships. Because relationships are declared before they are established you can use strings to refer to classes that are not created yet (for instance if ``Person`` defines a relationship to ``Address`` which is declared later in the file).

Relationships are expressed with the :func:`~sqlalchemy.orm.relationship`
function. However the foreign key has to be separately declared with the
:class:`~sqlalchemy.schema.ForeignKey` class::

```
  class Person(db.Model):
      id = db.Column(db.Integer, primary_key=True)
      name = db.Column(db.String(50), nullable=False)
      addresses = db.relationship('Address', backref='person', lazy=True)

  class Address(db.Model):
      id = db.Column(db.Integer, primary_key=True)
      email = db.Column(db.String(120), nullable=False)
      person_id = db.Column(db.Integer, db.ForeignKey('person.id'),
          nullable=False)
```

What does :func:`db.relationship() <sqlalchemy.orm.relationship>` do?
That function returns a new property that can do multiple things.
In this case we told it to point to the ``Address`` class and load
multiple of those. How does it know that this will return more than
one address? Because SQLAlchemy guesses a useful default from your
declaration. If you would want to have a one-to-one relationship you
can pass ``uselist=False`` to :func:`~sqlalchemy.orm.relationship`.

Since a person with no name or an email address with no address associated
makes no sense, ``nullable=False`` tells SQLAlchemy to create the column
as ``NOT NULL``. This is implied for primary key columns, but it's a good
idea to specify it for all other columns to make it clear to other people
working on your code that you did actually want a nullable column and did
not just forget to add it.

So what do ``backref`` and ``lazy`` mean? ``backref`` is a simple way to also
declare a new property on the ``Address`` class. You can then also use
``my_address.person`` to get to the person at that address. ``lazy`` defines
when SQLAlchemy will load the data from the database:

- ``'select'`` / ``True`` (which is the default, but explicit is better
   than implicit) means that SQLAlchemy will load the data as necessary
   in one go using a standard select statement.
- ``'joined'`` / ``False`` tells SQLAlchemy to load the relationship in
   the same query as the parent using a ``JOIN`` statement.
- ``'subquery'`` works like ``'joined'`` but instead SQLAlchemy will
   use a subquery.
- ``'dynamic'`` is special and can be useful if you have many items
   and always want to apply additional SQL filters to them.
   Instead of loading the items SQLAlchemy will return another query
   object which you can further refine before loading the items.
   Note that this cannot be turned into a different loading strategy

when querying so it's often a good idea to avoid using this in
favor of ``lazy=True``. A query object equivalent to a dynamic
``user.addresses`` relationship can be created using
:meth:`Address.query.with_parent(user) <sqlalchemy.orm.query.Query.with_parent>`
while still being able to use
lazy or eager loading on the relationship itself as necessary.

How do you define the lazy status for backrefs? By using the
:func:`~sqlalchemy.orm.backref` function::

```
class Person(db.Model):
    id = db.Column(db.Integer, primary_key=True)
    name = db.Column(db.String(50), nullable=False)
    addresses = db.relationship('Address', lazy='select',
        backref=db.backref('person', lazy='joined'))
```

Many-to-Many Relationships

If you want to use many-to-many relationships you will need to define a
helper table that is used for the relationship. For this helper table it
is strongly recommended to *not* use a model but an actual table::

```
tags = db.Table('tags',
    db.Column('tag_id', db.Integer, db.ForeignKey('tag.id'), primary_key=True),
    db.Column('page_id', db.Integer, db.ForeignKey('page.id'), primary_key=True)
)

class Page(db.Model):
    id = db.Column(db.Integer, primary_key=True)
    tags = db.relationship('Tag', secondary=tags, lazy='subquery',
        backref=db.backref('pages', lazy=True))

class Tag(db.Model):
    id = db.Column(db.Integer, primary_key=True)
```

Here we configured ``Page.tags`` to be loaded immediately after loading
a Page, but using a separate query. This always results in two
queries when retrieving a Page, but when querying for multiple pages
you will not get additional queries.

The list of pages for a tag on the other hand is something that's
rarely needed. For example, you won't need that list when retrieving
the tags for a specific page. Therefore, the backref is set to be
lazy-loaded so that accessing it for the first time will trigger a
query to get the list of pages for that tag. If you need to apply
further query options on that list, you could either switch to the
``'dynamic'`` strategy - with the drawbacks mentioned above - or get

a query object using
:meth:`Page.query.with_parent(some_tag) <sqlalchemy.orm.query.Query.with_parent>`
and then use it exactly as you would with the query object from a dynamic
relationship.

Found in path(s):
* /opt/cola/permits/1160879740_1620413007.96/0/pallets-flask-sqlalchemy-2-5-1-0-gda0e0df-tar-gz/pallets-flask-sqlalchemy-da0e0df/docs/models.rst
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* /opt/cola/permits/1160879740_1620413007.96/0/pallets-flask-sqlalchemy-2-5-1-0-gda0e0df-tar-gz/pallets-flask-sqlalchemy-da0e0df/examples/flaskr/LICENSE.rst
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import io
import re

```
from setuptools import setup

with io.open("README.rst", "rt", encoding="utf8") as f:
  readme = f.read()

with io.open("flask_sqlalchemy/__init__.py", "rt", encoding="utf8") as f:
  version = re.search(r'__version__ = "(.*?)"', f.read(), re.M).group(1)

setup(
  name="Flask-SQLAlchemy",
  version=version,
  url="https://github.com/pallets/flask-sqlalchemy",
  project_urls={
     "Documentation": "https://flask-sqlalchemy.palletsprojects.com/",
     "Code": "https://github.com/pallets/flask-sqlalchemy",
     "Issue tracker": "https://github.com/pallets/flask-sqlalchemy/issues",
  },
  license="BSD-3-Clause",
  author="Armin Ronacher",
  author_email="armin.ronacher@active-4.com",
  maintainer="Pallets",
  maintainer_email="contact@palletsprojects.com",
  description="Adds SQLAlchemy support to your Flask application.",
  long_description=readme,
  packages=["flask_sqlalchemy"],
  include_package_data=True,
  python_requires=">= 2.7, != 3.0.*, != 3.1.*, != 3.2.*, != 3.3.*",
  install_requires=["Flask>=0.10", "SQLAlchemy>=0.8.0"],
  classifiers=[
     "Development Status :: 5 - Production/Stable",
     "Environment :: Web Environment",
     "Intended Audience :: Developers",
     "License :: OSI Approved :: BSD License",
     "Operating System :: OS Independent",
     "Programming Language :: Python",
     "Programming Language :: Python :: 2",
     "Programming Language :: Python :: 2.7",
     "Programming Language :: Python :: 3",
     "Programming Language :: Python :: 3.4",
     "Programming Language :: Python :: 3.5",
     "Programming Language :: Python :: 3.6",
     "Programming Language :: Python :: 3.7",
     "Programming Language :: Python :: Implementation :: CPython",
     "Programming Language :: Python :: Implementation :: PyPy",
     "Topic :: Internet :: WWW/HTTP :: Dynamic Content",
     "Topic :: Software Development :: Libraries :: Python Modules",
  ],
```

)

Found in path(s):
* /opt/cola/permits/1160879740_1620413007.96/0/pallets-flask-sqlalchemy-2-5-1-0-gda0e0df-tar-gz/pallets-flask-sqlalchemy-da0e0df/setup.py

1.96 bcrypt-pbkdf 1.0.2

1.96.1 Available under license :

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Implementation advice by David Mazieres <dm@lcs.mit.edu>.

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1.97 promise-retry 2.0.1

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1.98 e2fsprogs 1.46.5-r0

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This is the Debian GNU/Linux prepackaged version of the static EXT2
file system consistency checker (e2fsck.static). The EXT2 utilities
were written by Theodore Ts'o <tytso@mit.edu> and Remy Card
<card@masi.ibp.fr>.

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```
#
# This is a Makefile stub which handles the creation of BSD shared
# libraries.
#
# In order to use this stub, the following makefile variables must be defined.
#
# BSDLIB_VERSION = 1.0
# BSDLIB_IMAGE = libce
# BSDLIB_MYDIR = et
# BSDLIB_INSTALL_DIR = $(SHLIBDIR)
#

all:: image
```

```
real-subdirs:: Makefile
	@echo "	MKDIR pic"
	@mkdir -p pic

BSD_LIB = $(BSDLIB_IMAGE).so.$(BSDLIB_VERSION)
BSDLIB_PIC_FLAG = -fpic

image:		$(BSD_LIB)

$(BSD_LIB): $(OBJS)
	(cd pic; ld -Bshareable -o $(BSD_LIB) $(LDFLAGS_SHLIB) $(OBJS))
	$(MV) pic/$(BSD_LIB) .
	$(RM) -f ../$(BSD_LIB)
	(cd ..; $(LN) $(LINK_BUILD_FLAGS) \
		`echo $(my_dir) | sed -e 's;lib/;;'`/$(BSD_LIB) $(BSD_LIB))

install-shlibs install:: $(BSD_LIB)
	@echo "	INSTALL_PROGRAM $(BSDLIB_INSTALL_DIR)/$(BSD_LIB)"
	@$(INSTALL_PROGRAM) $(BSD_LIB) \
		$(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)
	@-$(LDCONFIG)

install-strip: install

install-shlibs-strip:: install-shlibs

uninstall-shlibs uninstall::
	$(RM) -f $(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)

clean::
	$(RM) -rf pic
	$(RM) -f $(BSD_LIB)
	$(RM) -f ../$(BSD_LIB)
```

This package was added to the e2fsprogs debian source package by
Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

It is part of the main e2fsprogs distribution, which can be found at:

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<card@masi.ibp.fr>.

Sources were obtained from http://sourceforge.net/projects/e2fsprogs

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Index: tdbsa/tdb.c
===
--- tdbsa.orig/tdb.c

+++ tdbsa/tdb.c
@@ -4,11 +4,11 @@ Rev: 23371
Last Changed Date: 2007-06-06 20:14:06 -0400 (Wed, 06 Jun 2007)
*/
 /*
-   Unix SMB/CIFS implementation.
+   trivial database library - standalone version

-   trivial database library - private includes
-
-   Copyright (C) Andrew Tridgell   2005
+   Copyright (C) Andrew Tridgell   1999-2005
+   Copyright (C) Jeremy Allison   2000-2006
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repository from the development branch, please contact me
(tytso@mit.edu) before you ship. The release schedules for this
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Theodore Ts'o
23-June-2007

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[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

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1.108 python-dateutil 2.8.2

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1.111 socks 2.6.2

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1.116 openblas 0.3.20-r0

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is done, however, it is the responsibility of the person who modified the
routine to provide support.

Contributions to the OpenBLAS project

Creator & Maintainer

* Zhang Xianyi <traits.zhang@gmail.com>

Active Developers

* Wang Qian <traz0824@gmail.com>
 * Optimize BLAS3 on ICT Loongson 3A.

* Optimize BLAS3 on Intel Sandy Bridge.

* Werner Saar <wernsaar@googlemail.com>
 * [2013-03-04] Optimize AVX and FMA4 DGEMM on AMD Bulldozer
 * [2013-04-27] Optimize AVX and FMA4 TRSM on AMD Bulldozer
 * [2013-06-09] Optimize AVX and FMA4 SGEMM on AMD Bulldozer
 * [2013-06-11] Optimize AVX and FMA4 ZGEMM on AMD Bulldozer
 * [2013-06-12] Optimize AVX and FMA4 CGEMM on AMD Bulldozer
 * [2013-06-16] Optimize dgemv_n kernel on AMD Bulldozer
 * [2013-06-20] Optimize ddot, daxpy kernel on AMD Bulldozer
 * [2013-06-21] Optimize dcopy kernel on AMD Bulldozer
 * Porting and Optimization on ARM Cortex-A9
 * Optimization on AMD Piledriver
 * Optimization on Intel Haswell

Previous Developers

* Zaheer Chothia <zaheer.chothia@gmail.com>
 * Improve the compatibility about complex number
 * Build LAPACKE: C interface to LAPACK
 * Improve the windows build.

* Chen Shaohu <huhumartinwar@gmail.com>
 * Optimize GEMV on the Loongson 3A processor.

* Luo Wen
 * Intern. Test Level-2 BLAS.

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 * [2011-06-11] Make USE_OPENMP=0 disable openmp.

* Stefan Karpinski <stefan@karpinski.org>
 * [2011-12-28] Fix a bug about SystemStubs on Mac OS X.

* Alexander Eberspcher <https://github.com/aeberspaecher>
 * [2012-05-02] Add note on patch for segfaults on Linux kernel 2.6.32.

* Mike Nolta <mike@nolta.net>
 * [2012-05-19] Fix building bug on FreeBSD and NetBSD.

* Sylvestre Ledru <https://github.com/sylvestre>
 * [2012-07-01] Improve the detection of sparc. Fix building bug under
   Hurd and kfreebsd.

* Jameson Nash <https://github.com/vtjnash>
 * [2012-08-20] Provide support for passing CFLAGS, FFLAGS, PFLAGS, FPFLAGS to
   make on the command line.

* Alexander Nasonov <alnsn@yandex.ru>
 * [2012-11-10] Fix NetBSD build.

* Sbastien Villemot <sebastien@debian.org>
 * [2012-11-14] Fix compilation with TARGET=GENERIC. Patch applied to Debian package.
 * [2013-08-28] Avoid failure on qemu guests declaring an Athlon CPU without 3dnow!

* Kang-Che Sung <Explorer09@gmail.com>
 * [2013-05-17] Fix typo in the document. Re-order the architecture list in getarch.c.

* Kenneth Hoste <kenneth.hoste@gmail.com>
 * [2013-05-22] Adjust Makefile about downloading LAPACK source files.

* Lei WANG <https://github.com/wlbksy>
 * [2013-05-22] Fix a bug about wget.

* Dan Luu <http://www.linkedin.com/in/danluu>
 * [2013-06-30] Add Intel Haswell support (using sandybridge optimizations).

* grisuthedragon <https://github.com/grisuthedragon>
 * [2013-07-11] create openblas_get_parallel to retrieve information which parallelization
   model is used by OpenBLAS.

* Elliot Saba <staticfloat@gmail.com>
 * [2013-07-22] Add in return value for `interface/trtri.c`

* Sbastien Fabbro <bicatali@gentoo.org>
 * [2013-07-24] Modify makefile to respect user's LDFLAGS
 * [2013-07-24] Add stack markings for GNU as arch-independent for assembler files

* Viral B. Shah <viral@mayin.org>
 * [2013-08-21] Patch LAPACK XLASD4.f as discussed in JuliaLang/julia#2340

* Lars Buitinck <https://github.com/larsmans>
 * [2013-08-28] get rid of the generated cblas_noconst.h file
 * [2013-08-28] Missing threshold in gemm.c
 * [2013-08-28] fix default prefix handling in makefiles

* yieldthought <https://github.com/yieldthought>
 * [2013-10-08] Remove -Wl,--retain-symbols-file from dynamic link line to fix tool support

* Keno Fischer <https://github.com/loladiro>
 * [2013-10-23] Use FC instead of CC to link the dynamic library on OS X

* Christopher Meng <cickumqt@gmail.com>
 * [2013-12-09] Add DESTDIR support for easier building on RPM based distros.
 Use install command instead of cp to install files with permissions control.

* Lucas Beyer <lucasb.eyer.be@gmail.com>
 * [2013-12-10] Added support for NO_SHARED in make install.

* carlkl <https://github.com/carlkl>
 * [2013-12-13] Fixed LAPACKE building bug on Windows

* Isaac Dunham <https://github.com/idunham>
 * [2014-08-03] Fixed link error on Linux/musl

* Dave Nuechterlein
 * [2014-10-10] trmm and sgemm kernels (optimized for APM's X-Gene 1).
 ARMv8 support.

* Jerome Robert <jeromerobert@gmx.com>
 * [2015-01-01] Speed-up small `ger` and `gemv` using stack allocation (bug #478)
 * [2015-12-23] `stack_check` in `gemv.c` (bug #722)
 * [2015-12-28] Allow to force the number of parallel make job
 * [2015-12-28] Fix detection of AMD E2-3200 detection
 * [2015-12-31] Let `make MAX_STACK_ALLOC=0` do what expected
 * [2016-01-19] Disable multi-threading in `ger` and `swap` for small matrices (bug #731)
 * [2016-01-24] Use `GEMM_MULTITHREAD_THRESHOLD` as a number of ops (bug #742)
 * [2016-01-26] Let `openblas_get_num_threads` return the number of active threads (bug #760)
 * [2016-01-30] Speed-up small `zger`, `zgemv`, `ztrmv` using stack allocation (bug #727)

* Dan Kortschak
 * [2015-01-07] Added test for drotmg bug #484.

* Ton van den Heuvel <https://github.com/ton>
 * [2015-03-18] Fix race condition during shutdown causing a crash in gotoblas_set_affinity().

* Martin Koehler <https://github.com/grisuthedragon/>
 * [2015-09-07] Improved imatcopy

* Ashwin Sekhar T K <https://github.com/ashwinyes/>
 * [2015-11-09] Assembly kernels for Cortex-A57 (ARMv8)
 * [2015-11-20] lapack-test fixes for Cortex-A57
 * [2016-03-14] Additional functional Assembly Kernels for Cortex-A57
 * [2016-03-14] Optimize Dgemm 4x4 for Cortex-A57

* theoractice <https://github.com/theoractice/>
 * [2016-03-20] Fix compiler error in VisualStudio with CMake
 * [2016-03-22] Fix access violation on Windows while static linking

* Paul Mustire <https://github.com/buffer51/>

* [2016-02-04] Fix Android build on ARMV7
* [2016-04-26] Android build with LAPACK for ARMV7 & ARMV8

* Shivraj Patil <https://github.com/sva-img/>
 * [2016-05-03] DGEMM optimization for MIPS P5600 and I6400 using MSA

* Kaustubh Raste <https://github.com/ksraste/>
 * [2016-05-09] DTRSM optimization for MIPS P5600 and I6400 using MSA
 * [2016-05-20] STRSM optimization for MIPS P5600 and I6400 using MSA

* Abdelrauf <https://github.com/quickwritereader>
 * [2017-01-01] dgemm and dtrmm kernels for IBM z13
 * [2017-02-26] ztrmm kernel for IBM z13
 * [2017-03-13] strmm and ctrmm kernel for IBM z13
 * [2017-09-01] initial Blas Level-1,2 (double precision) for IBM z13
 * [2018-03-07] added missing Blas Level 1-2 (double precision) simd codes
 * [2019-02-01] added missing Blas Level-1,2 (single precision) simd codes
 * [2019-03-14] power9 dgemm/dtrmm kernel
 * [2019-04-29] power9 sgemm/strmm kernel

* Jiachen Wang <https://github.com/wjc404>
 * [2019-07-29] optimize AVX2 DGEMM
 * [2019-10-20] AVX512 DGEMM kernel (4x8)
 * [2019-11-06] optimize AVX512 SGEMM
 * [2019-11-12] AVX512 CGEMM & ZGEMM kernels
 * [2019-12-23] optimize AVX2 CGEMM and ZGEMM
 * [2019-12-30] AVX2 CGEMM3M & ZGEMM3M kernels
 * [2020-01-07] optimize AVX2 SGEMM and STRMM

* Rajalakshmi Srinivasaraghavan <https://github.com/RajalakshmiSR>
 * [2020-04-15] Half-precision GEMM for bfloat16

* Marius Hillenbrand <https://github.com/mhillenibm>
 * [2020-05-12] Revise dynamic architecture detection for IBM z
 * [2020-05-12] Add new sgemm and strmm kernel for IBM z14
 * [2020-09-07] Fix builds with clang on IBM z, including dynamic architecture support

* Danfeng Zhang <https://github.com/craft-zhang>
 * [2020-05-20] Improve performance of SGEMM and STRMM on Arm Cortex-A53

* PingTouGe Semiconductor Co., Ltd.
 * [2020-10] Add RISC-V Vector (0.7.1) support. Optimize BLAS kernels for Xuantie C910

* River Dillon <oss@outerpassage.net>
 * [2021-07-10] fix compilation with musl libc

* Bine Brank <https://github.com/binebrank>
 * [2021-10-27] Add vector-length-agnostic DGEMM kernels for Arm SVE

* [2021-11-20] Vector-length-agnostic Arm SVE copy routines for DGEMM, DTRMM, DSYMM
* [2021-11-12] SVE kernels for SGEMM, STRMM and corresponding SVE copy functions
* [2022-01-06] SVE kernels for CGEMM, ZGEMM, CTRMM, ZTRMM and corresponding SVE copy functions
* [2022-01-18] SVE kernels and copy functions for TRSM

* Ilya Kurdyukov <https://github.com/ilyakurdyukov>
 * [2021-02-21] Add basic support for the Elbrus E2000 architecture

1.117 @mapbox/geojson-rewind 0.5.2

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1.121 aws-cli 1.19.27

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1.123 lz4 1.9.3-r1

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1.124 go-runewidth 0.0.9

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1.125 golang 1.18.7

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This package contains a modified version of ca-bundle.crt:

ca-bundle.crt -- Bundle of CA Root Certificates

Certificate data from Mozilla as of: Thu Nov 3 19:04:19 2011#
This is a bundle of X.509 certificates of public Certificate Authorities
(CA). These were automatically extracted from Mozilla's root certificates
file (certdata.txt). This file can be found in the mozilla source tree:
http://mxr.mozilla.org/mozilla/source/security/nss/lib/ckfw/builtins/certdata.txt?raw=1#
It contains the certificates in PEM format and therefore
can be directly used with curl / libcurl / php_curl, or with
an Apache+mod_ssl webserver for SSL client authentication.
Just configure this file as the SSLCACertificateFile.#

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@(#) $RCSfile: certdata.txt,v $ $Revision: 1.80 $ $Date: 2011/11/03 15:11:58 $
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In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes

2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1	2010	PSF	yes
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In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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2.0.1	2.0+1.6.1	2001	PSF	yes
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The hypothetical commands `show w' and `show c' should show the appropriate
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`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

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1.131 keyutils 1.6.3-r1

1.131.1 Available under license :

```
/*
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* WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE.
*/
# Contributor: Sheila Aman <sheila@vulpine.house>
# Maintainer: Adlie Perl Team <adelie-perl@lists.adelielinux.org>
pkgname=perl-software-license
_pkgreal=Software-License
_author=LEONT
_au=${_author%%"${_author#??}"}
_a=${_author%%"${_author#?}"}
pkgver=0.103014
pkgrel=0
pkgdesc="Perl module for generating prefilled license text"
url="https://metacpan.org/pod/Software::License"
arch="noarch"
license="Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template perl-try-tiny"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/$_a/$_au/$_author/$_pkgreal-$pkgver.tar.gz"
builddir="$srcdir/$_pkgreal-$pkgver"

build() {
 PERL_MM_USE_DEFAULT=1 perl Makefile.PL INSTALLDIRS=vendor
 make
}

check() {
 make test
}

package() {
 make DESTDIR="$pkgdir" install
 find "$pkgdir" \( -name perllocal.pod -o -name .packlist \) -delete
```

```
}

sha512sums="8012f9d3e8671bdcbaf52f6790f6cd2f6a0510883bb40115c222c8c685aed6697ba33b3f9df8d853841cd
2eef0806d919c9038b6ba7b1057f475b3b63457069d  Software-License-0.103014.tar.gz"
# Maintainer: Adelie Platform Group <adelie-devel@lists.adelielinux.org>
pkgname=bsd-compat-headers
pkgver=0.7.1
pkgrel=1
pkgdesc="Compatibility files for building BSD software"
url=" "
arch="noarch"
options="!check"  # Just header files.
license="BSD-2-Clause AND BSD-3-Clause"
depends=""
makedepends=""
subpackages=""
source="sys-cdefs.h
 sys-queue.h
 sys-tree.h
 "

package() {
 mkdir -p "$pkgdir"
 case "$CLIBC" in
 musl)
  install -D "$srcdir"/sys-cdefs.h "$pkgdir"/usr/include/sys/cdefs.h
  install -D "$srcdir"/sys-queue.h "$pkgdir"/usr/include/sys/queue.h
  install -D "$srcdir"/sys-tree.h "$pkgdir"/usr/include/sys/tree.h
  ;;
 esac
}

sha512sums="8c3fddd73b696a38e633953715c79c47703739be27ee085fc6c960a57b6746ca05bf6406f7e6126cc1a13
204254fd5830afb566624e1f298f4d6b58216013c28  sys-cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750  sys-queue.h
07cb70f2f0ddb31e23dd913c6f561fc9885667c5803fdf3a559676c99d08834b4104589bacb5d17b4a0b379c68c81a1cf
3173832b3da33a7b936fa7b93706844  sys-tree.h"
# Contributor: Sheila Aman <sheila@vulpine.house>
# Maintainer: Adlie Perl Team <adelie-perl@lists.adelielinux.org>
pkgname=perl-string-copyright
_pkgreal=String-Copyright
_author=JONASS
_au=${_author%%"${_author#??}"}
_a=${_author%%"${_author#?}"}
pkgver=0.003006
pkgrel=0
pkgdesc="Perl module for normalizing copyright text"
```

```
url="https://metacpan.org/pod/String::Copyright"
arch="noarch"
license="GPL-3.0+"
depends="perl perl-exporter-tiny perl-number-range"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/$_a/$_au/$_author/$_pkgreal-$pkgver.tar.gz"
builddir="$srcdir/$_pkgreal-$pkgver"

build() {
 PERL_MM_USE_DEFAULT=1 perl Makefile.PL INSTALLDIRS=vendor
 make
}

check() {
 make test
}

package() {
 make DESTDIR="$pkgdir" install
 find "$pkgdir" \( -name perllocal.pod -o -name .packlist \) -delete
}

sha512sums="7852d96cbe465dde14b4c093f77374b530967412ef95a98703fe838511e405ea9744e4dbfa314bc5a33fc
23b160d8a4866654ad60da1bfb07853263f1c11cd3f  String-Copyright-0.003006.tar.gz"
```

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see http://www.sqlite.org/copyright.html
# Contributor: Sheila Aman <sheila@vulpine.house>
# Maintainer: Adlie Perl Team <adelie-perl@lists.adelielinux.org>
pkgname=perl-regexp-pattern-license
_pkgreal=Regexp-Pattern-License
_author=JONASS
_au=${_author%%"${_author#??}"}
_a=${_author%%"${_author#?}"}
pkgver=3.4.0
pkgrel=0
pkgdesc="Perl module for regex-matching legal licenses"
url="https://metacpan.org/pod/Regexp::Pattern::License"
arch="noarch"
license="GPL-3.0+"
depends="perl perl-re-engine-re2 perl-regexp-pattern perl-strictures
 perl-test-regexp-pattern perl-try-tiny"
checkdepends="perl-test-requires"
makedepends="perl-dev"

```
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/$_a/$_au/$_author/$_pkgreal-v$pkgver.tar.gz"
builddir="$srcdir/$_pkgreal-v$pkgver"

build() {
 PERL_MM_USE_DEFAULT=1 perl Makefile.PL INSTALLDIRS=vendor
 make
}

check() {
 make test
}

package() {
 make DESTDIR="$pkgdir" install
 find "$pkgdir" \( -name perllocal.pod -o -name .packlist \) -delete
}

sha512sums="5524535f8eebe6cc2ce2065bae1f726b9a2717c34262df2ddd9106464dcfbaeb67eb310679bb636e72866
9f17041e4f101c7fb241a8e07a6cf3dc6fb3ae88e12  Regexp-Pattern-License-v3.4.0.tar.gz"
# Maintainer:
pkgname=libart-lgpl
pkgver=2.3.21
pkgrel=6
pkgdesc="Library for high-performance 2D graphics"
url="https://www.levien.com/libart/"
arch="all"
options="!check"  # No test suite.
license="LGPL-2.0+"
depends=""
makedepends=""
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart_lgpl/2.3/libart_lgpl-$pkgver.tar.bz2"
builddir="$srcdir"/libart_lgpl-$pkgver

prepare() {
 default_prepare
 update_config_sub
}

build() {
 ./configure \
  --build=$CBUILD \
  --host=$CHOST \
  --prefix=/usr
 make
}
```

```
package() {
 make DESTDIR="$pkgdir" install
}
```

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e76654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"

Developed by: Adlie Linux Team
http://adelielinux.org/

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1.132 picomatch 2.3.1

1.132.1 Available under license :

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1.133 dataclasses-json 0.5.2

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Metadata-Version: 2.1
Name: dataclasses-json
Version: 0.5.2
Summary: Easily serialize dataclasses to and from JSON
Home-page: https://github.com/lidatong/dataclasses-json
Author: lidatong
Author-email: charles.dt.li@gmail.com
License: MIT
Description: # Dataclasses JSON

`![](https://github.com/lidatong/dataclasses-json/workflows/dataclasses-json/badge.svg)`

This library provides a simple API for encoding and decoding [dataclasses](https://docs.python.org/3/library/dataclasses.html) to and from JSON.

It's very easy to get started.

[README / Documentation website](https://lidatong.github.io/dataclasses-json). Features a navigation bar and search functionality, and should mirror this README exactly -- take a look!

Quickstart

`pip install dataclasses-json`

```python
from dataclasses import dataclass
from dataclasses_json import dataclass_json

@dataclass_json
@dataclass
class SimpleExample:
    int_field: int

simple_example = SimpleExample(1)

# Encoding to JSON. Note the output is a string, not a dictionary.
simple_example.to_json()  # {"int_field": 1}

# Encoding to a (JSON) dict
simple_example.to_dict()  # {'int_field': 1}

# Decoding from JSON. Note the input is a string, not a dictionary.
SimpleExample.from_json('{"int_field": 1}')  # SimpleExample(1)

# Decoding from a (JSON) dict
SimpleExample.from_dict({'int_field': 1})  # SimpleExample(1)
```

What if you want to work with camelCase JSON?

```python
# same imports as above, with the additional `LetterCase` import
from dataclasses import dataclass
from dataclasses_json import dataclass_json, LetterCase

@dataclass_json(letter_case=LetterCase.CAMEL)  # now all fields are encoded/decoded from camelCase
@dataclass
class ConfiguredSimpleExample:
    int_field: int

ConfiguredSimpleExample(1).to_json()  # {"intField": 1}
ConfiguredSimpleExample.from_json('{"intField": 1}')  # ConfiguredSimpleExample(1)
```

Supported types

It's recursive (see caveats below), so you can easily work with nested dataclasses.
In addition to the supported types in the
[py to JSON table](https://docs.python.org/3/library/json.html#py-to-json-table), this library supports the following:

- any arbitrary [Collection](https://docs.python.org/3/library/collections.abc.html#collections.abc.Collection) type is supported.

[Mapping](https://docs.python.org/3/library/collections.abc.html#collections.abc.Mapping) types are encoded as JSON objects and `str` types as JSON strings.

Any other Collection types are encoded into JSON arrays, but decoded into the original collection types.

- [datetime](https://docs.python.org/3/library/datetime.html#available-types)
objects. `datetime` objects are encoded to `float` (JSON number) using
[timestamp](https://docs.python.org/3/library/datetime.html#datetime.datetime.timestamp).
As specified in the `datetime` docs, if your `datetime` object is naive, it will
assume your system local timezone when calling `.timestamp()`. JSON numbers
corresponding to a `datetime` field in your dataclass are decoded
into a datetime-aware object, with `tzinfo` set to your system local timezone.
Thus, if you encode a datetime-naive object, you will decode into a
datetime-aware object. This is important, because encoding and decoding won't
strictly be inverses. See [this section](#Overriding) if you want to override this default
behavior (for example, if you want to use ISO).

- [UUID](https://docs.python.org/3/library/uuid.html#uuid.UUID) objects. They
are encoded as `str` (JSON string).

- [Decimal](https://docs.python.org/3/library/decimal.html) objects. They are
also encoded as `str`.

The [latest release](https://github.com/lidatong/dataclasses-json/releases/latest) is compatible with both Python 3.7 and Python 3.6 (with the dataclasses backport).

Usage

Approach 1: Class decorator

```python
from dataclasses import dataclass
from dataclasses_json import dataclass_json

@dataclass_json
@dataclass
class Person:
    name: str

lidatong = Person('lidatong')

# Encoding to JSON
lidatong.to_json()  # '{"name": "lidatong"}'

# Decoding from JSON
Person.from_json('{"name": "lidatong"}')  # Person(name='lidatong')
```

Note that the `@dataclass_json` decorator must be stacked above the `@dataclass` decorator (order matters!)

Approach 2: Inherit from a mixin

```python
from dataclasses import dataclass
from dataclasses_json import DataClassJsonMixin

@dataclass
class Person(DataClassJsonMixin):
    name: str

lidatong = Person('lidatong')

# A different example from Approach 1 above, but usage is the exact same
assert Person.from_json(lidatong.to_json()) == lidatong
```

Pick whichever approach suits your taste. Note that there is better support for
 the mixin approach when using _static analysis_ tools (e.g. linting, typing),
 but the differences in implementation will be invisible in _runtime_ usage.

How do I...

Use my dataclass with JSON arrays or objects?

```python
from dataclasses import dataclass
from dataclasses_json import dataclass_json

@dataclass_json
@dataclass
class Person:
    name: str
```

Encode into a JSON array containing instances of my Data Class

```python
people_json = [Person('lidatong')]
Person.schema().dumps(people_json, many=True)  # '[{"name": "lidatong"}]'
```

Decode a JSON array containing instances of my Data Class

```python
people_json = '[{"name": "lidatong"}]'
Person.schema().loads(people_json, many=True)  # [Person(name='lidatong')]
```

Encode as part of a larger JSON object containing my Data Class (e.g. an HTTP request/response)

```python
import json

response_dict = {
    'response': {
        'person': Person('lidatong').to_dict()
    }
}

response_json = json.dumps(response_dict)
```

In this case, we do two steps. First, we encode the dataclass into a **python dictionary** rather than a JSON string, using `.to_dict`.

Second, we leverage the built-in `json.dumps` to serialize our `dataclass` into a JSON string.

Decode as part of a larger JSON object containing my Data Class (e.g. an HTTP response)

```python
import json

response_dict = json.loads('{"response": {"person": {"name": "lidatong"}}}')

person_dict = response_dict['response']

person = Person.from_dict(person_dict)
```

In a similar vein to encoding above, we leverage the built-in `json` module.

First, call `json.loads` to read the entire JSON object into a dictionary. We then access the key of the value containing the encoded dict of our `Person` that we want to decode (`response_dict['response']`).

Second, we load in the dictionary using `Person.from_dict`.

Encode or decode into Python lists/dictionaries rather than JSON?

This can be by calling `.schema()` and then using the corresponding
encoder/decoder methods, ie. `.load(...)`/`.dump(...)`.

Encode into a single Python dictionary

```python
person = Person('lidatong')
person.to_dict()  # {'name': 'lidatong'}
```

Encode into a list of Python dictionaries

```python
people = [Person('lidatong')]
Person.schema().dump(people, many=True)  # [{'name': 'lidatong'}]
```

Decode a dictionary into a single dataclass instance

```python
person_dict = {'name': 'lidatong'}
Person.from_dict(person_dict)  # Person(name='lidatong')
```

Decode a list of dictionaries into a list of dataclass instances

```python
people_dicts = [{"name": "lidatong"}]
Person.schema().load(people_dicts, many=True)  # [Person(name='lidatong')]
```

Encode or decode from camelCase (or kebab-case)?

JSON letter case by convention is camelCase, in Python members are by convention snake_case.

You can configure it to encode/decode from other casing schemes at both the class level and the field level.

```python
from dataclasses import dataclass, field

from dataclasses_json import LetterCase, config, dataclass_json


# changing casing at the class level
@dataclass_json(letter_case=LetterCase.CAMEL)
@dataclass
```

class Person:
    given_name: str
    family_name: str

Person('Alice', 'Liddell').to_json() # '{"givenName": "Alice"}'
Person.from_json('{"givenName": "Alice", "familyName": "Liddell"}') # Person('Alice', 'Liddell')

at the field level
@dataclass_json
@dataclass
class Person:
    given_name: str = field(metadata=config(letter_case=LetterCase.CAMEL))
    family_name: str

Person('Alice', 'Liddell').to_json() # '{"givenName": "Alice"}'
# notice how the `family_name` field is still snake_case, because it wasn't configured above
Person.from_json('{"givenName": "Alice", "family_name": "Liddell"}') # Person('Alice', 'Liddell')
```

**This library assumes your field follows the Python convention of snake_case naming.**
If your field is not `snake_case` to begin with and you attempt to parameterize `LetterCase`,
the behavior of encoding/decoding is undefined (most likely it will result in subtle bugs).

### Encode or decode using a different name

```python
from dataclasses import dataclass, field

from dataclasses_json import config, dataclass_json

@dataclass_json
@dataclass
class Person:
    given_name: str = field(metadata=config(field_name="overriddenGivenName"))

Person(given_name="Alice")  # Person('Alice')
Person.from_json('{"overriddenGivenName": "Alice"}')  # Person('Alice')
Person('Alice').to_json()  # {"overriddenGivenName": "Alice"}
```

Handle missing or optional field values when decoding?

By default, any fields in your dataclass that use `default` or
`default_factory` will have the values filled with the provided default, if the
corresponding field is missing from the JSON you're decoding.

Decode JSON with missing field
```

```python
@dataclass_json
@dataclass
class Student:
    id: int
    name: str = 'student'

Student.from_json('{"id": 1}')  # Student(id=1, name='student')
```

Notice `from_json` filled the field `name` with the specified default 'student'
when it was missing from the JSON.

Sometimes you have fields that are typed as `Optional`, but you don't
necessarily want to assign a default. In that case, you can use the
`infer_missing` kwarg to make `from_json` infer the missing field value as `None`.

Decode optional field without default

```python
@dataclass_json
@dataclass
class Tutor:
    id: int
    student: Optional[Student] = None

Tutor.from_json('{"id": 1}')  # Tutor(id=1, student=None)
```

Personally I recommend you leverage dataclass defaults rather than using
`infer_missing`, but if for some reason you need to decouple the behavior of
JSON decoding from the field's default value, this will allow you to do so.

Handle unknown / extraneous fields in JSON?

By default, it is up to the implementation what happens when a `json_dataclass` receives input parameters that are not defined.
(the `from_dict` method ignores them, when loading using `schema()` a ValidationError is raised.)
There are three ways to customize this behavior.

Assume you want to instantiate a dataclass with the following dictionary:
```python
dump_dict = {"endpoint": "some_api_endpoint", "data": {"foo": 1, "bar": "2"}, "undefined_field_name": [1, 2, 3]}
```

1. You can enforce to always raise an error by setting the `undefined` keyword to `Undefined.RAISE`

(`'RAISE'` as a case-insensitive string works as well). Of course it works normally if you don't pass any undefined parameters.

```python
from dataclasses_json import Undefined

@dataclass_json(undefined=Undefined.RAISE)
@dataclass()
class ExactAPIDump:
    endpoint: str
    data: Dict[str, Any]

dump = ExactAPIDump.from_dict(dump_dict)  # raises UndefinedParameterError
```

2. You can simply ignore any undefined parameters by setting the `undefined` keyword to `Undefined.EXCLUDE` (`'EXCLUDE'` as a case-insensitive string works as well). Note that you will not be able to retrieve them using `to_dict`:

```python
from dataclasses_json import Undefined

@dataclass_json(undefined=Undefined.EXCLUDE)
@dataclass()
class DontCareAPIDump:
    endpoint: str
    data: Dict[str, Any]

dump = DontCareAPIDump.from_dict(dump_dict)  # DontCareAPIDump(endpoint='some_api_endpoint', data={'foo': 1, 'bar': '2'})
dump.to_dict()  # {"endpoint": "some_api_endpoint", "data": {"foo": 1, "bar": "2"}}
```

3. You can save them in a catch-all field and do whatever needs to be done later. Simply set the `undefined` keyword to `Undefined.INCLUDE` (`'INCLUDE'` as a case-insensitive string works as well) and define a field of type `CatchAll` where all unknown values will end up.
This simply represents a dictionary that can hold anything.
If there are no undefined parameters, this will be an empty dictionary.

```python
from dataclasses_json import Undefined, CatchAll

@dataclass_json(undefined=Undefined.INCLUDE)
@dataclass()
class UnknownAPIDump:
    endpoint: str
    data: Dict[str, Any]
```

unknown_things: CatchAll

dump = UnknownAPIDump.from_dict(dump_dict) # UnknownAPIDump(endpoint='some_api_endpoint', data={'foo': 1, 'bar': '2'}, unknown_things={'undefined_field_name': [1, 2, 3]})
dump.to_dict() # {'endpoint': 'some_api_endpoint', 'data': {'foo': 1, 'bar': '2'}, 'undefined_field_name': [1, 2, 3]}
```

Notes:
- When using `Undefined.INCLUDE`, an `UndefinedParameterError` will be raised if you don't specify exactly one field of type `CatchAll`.
- Note that `LetterCase` does not affect values written into the `CatchAll` field, they will be as they are given.
- When specifying a default (or a default factory) for the the `CatchAll`-field, e.g. `unknown_things: CatchAll = None`, the default value will be used instead of an empty dict if there are no undefined parameters.
- Calling __init__ with non-keyword arguments resolves the arguments to the defined fields and writes everything else into the catch-all field.

4. All 3 options work as well using `schema().loads` and `schema().dumps`, as long as you don't overwrite it by specifying `schema(unknown=&lt;a marshmallow value&gt;)`.
marshmallow uses the same 3 keywords ['include', 'exclude', 'raise'](https://marshmallow.readthedocs.io/en/stable/quickstart.html#handling-unknown-fields).

5. All 3 operations work as well using `__init__`, e.g. `UnknownAPIDump(**dump_dict)` will **not** raise a `TypeError`, but write all unknown values to the field tagged as `CatchAll`.
Classes tagged with `EXCLUDE` will also simply ignore unknown parameters. Note that classes tagged as `RAISE` still raise a `TypeError`, and **not** a `UndefinedParameterError` if supplied with unknown keywords.

### Override the default encode / decode / marshmallow field of a specific field?

See [Overriding](#Overriding)

### Handle recursive dataclasses?
Object hierarchies where fields are of the type that they are declared within require a small type hinting trick to declare the forward reference.
```python
from typing import Optional
from dataclasses import dataclass
from dataclasses_json import dataclass_json

@dataclass_json
@dataclass
class Tree():
    value: str
    left: Optional['Tree']
    right: Optional['Tree']
```

Avoid using
```

```python
from __future__ import annotations
```
as it will cause problems with the way dataclasses_json accesses the type annotations.

Marshmallow interop

Using the `dataclass_json` decorator or mixing in `DataClassJsonMixin` will
provide you with an additional method `.schema()`.

`.schema()` generates a schema exactly equivalent to manually creating a
marshmallow schema for your dataclass. You can reference the [marshmallow API
docs](https://marshmallow.readthedocs.io/en/3.0/api_reference.html#schema)
to learn other ways you can use the schema returned by `.schema()`.

You can pass in the exact same arguments to `.schema()` that you would when
constructing a `PersonSchema` instance, e.g. `.schema(many=True)`, and they will
get passed through to the marshmallow schema.

```python
from dataclasses import dataclass
from dataclasses_json import dataclass_json

@dataclass_json
@dataclass
class Person:
    name: str

# You don't need to do this - it's generated for you by `.schema()`!
from marshmallow import Schema, fields

class PersonSchema(Schema):
    name = fields.Str()
```

Briefly, on what's going on under the hood in the above examples: calling
`.schema()` will have this library generate a
[marshmallow schema]('https://marshmallow.readthedocs.io/en/3.0/api_reference.html#schema)
for you. It also fills in the corresponding object hook, so that marshmallow
will create an instance of your Data Class on `load` (e.g.
`Person.schema().load` returns a `Person`) rather than a `dict`, which it does
by default in marshmallow.

Performance note

`.schema()` is not cached (it generates the schema on every call), so if you

have a nested Data Class you may want to save the result to a variable to
avoid re-generation of the schema on every usage.

```python
person_schema = Person.schema()
person_schema.dump(people, many=True)

# later in the code...

person_schema.dump(person)
```

Overriding / Extending

Overriding

For example, you might want to encode/decode `datetime` objects using ISO format
rather than the default `timestamp`.

```python
from dataclasses import dataclass, field
from dataclasses_json import dataclass_json, config
from datetime import datetime
from marshmallow import fields

@dataclass_json
@dataclass
class DataClassWithIsoDatetime:
    created_at: datetime = field(
        metadata=config(
            encoder=datetime.isoformat,
            decoder=datetime.fromisoformat,
            mm_field=fields.DateTime(format='iso')
        )
    )
```

Extending

Similarly, you might want to extend `dataclasses_json` to encode `date` objects.

```python
from dataclasses import dataclass, field
from dataclasses_json import dataclass_json, config
from datetime import date
from marshmallow import fields

@dataclass_json
```

@dataclass
class DataClassWithIsoDatetime:
    created_at: date = field(
        metadata=config(
            encoder= date.isoformat,
            decoder= date.fromisoformat,
            mm_field= fields.DateTime(format='iso')
        ))
```

As you can see, you can **override** or **extend** the default codecs by providing a "hook" via a callable:
- `encoder`: a callable, which will be invoked to convert the field value when encoding to JSON
- `decoder`: a callable, which will be invoked to convert the JSON value when decoding from JSON
- `mm_field`: a marshmallow field, which will affect the behavior of any operations involving `.schema()`

Note that these hooks will be invoked regardless if you're using
`.to_json`/`dump`/`dumps`
and `.from_json`/`load`/`loads`. So apply overrides / extensions judiciously, making sure to
carefully consider whether the interaction of the encode/decode/mm_field is consistent with what you expect!


#### What if I have other dataclass field extensions that rely on `metadata`

All the `dataclasses_json.config` does is return a mapping, namespaced under the key `'dataclasses_json'`.

Say there's another module, `other_dataclass_package` that uses metadata. Here's how you solve your problem:

```python
metadata = {'other_dataclass_package': 'some metadata...'}  # pre-existing metadata for another dataclass
package
dataclass_json_config = config(
            encoder=datetime.isoformat,
            decoder=datetime.fromisoformat,
            mm_field=fields.DateTime(format='iso')
        )
metadata.update(dataclass_json_config)

@dataclass_json
@dataclass
class DataClassWithIsoDatetime:
    created_at: datetime = field(metadata=metadata)
```

You can also manually specify the dataclass_json configuration mapping.

```python
@dataclass_json

```
@dataclass
class DataClassWithIsoDatetime:
    created_at: date = field(
        metadata={'dataclasses_json': {
            'encoder': date.isoformat,
            'decoder': date.fromisoformat,
            'mm_field': fields.DateTime(format='iso')
        }}
    )
```

A larger example

```python
from dataclasses import dataclass
from dataclasses_json import dataclass_json

from typing import List

@dataclass_json
@dataclass(frozen=True)
class Minion:
    name: str



@dataclass_json
@dataclass(frozen=True)
class Boss:
    minions: List[Minion]

boss = Boss([Minion('evil minion'), Minion('very evil minion')])
boss_json = """
{
    "minions": [
        {
            "name": "evil minion"
        },
        {
            "name": "very evil minion"
        }
    ]
}
""".strip()

assert boss.to_json(indent=4) == boss_json
assert Boss.from_json(boss_json) == boss
```

Performance

Take a look at [this issue](https://github.com/lidatong/dataclasses-json/issues/228)

Versioning

Note this library is still pre-1.0.0 (SEMVER).

The current convention is:
- **PATCH** version upgrades for bug fixes and minor feature additions.
- **MINOR** version upgrades for big API features and breaking changes.

Once this library is 1.0.0, it will follow standard SEMVER conventions.

Roadmap

Currently the focus is on investigating and fixing bugs in this library, working
on performance, and finishing [this issue](https://github.com/lidatong/dataclasses-json/issues/31).

That said, if you think there's a feature missing / something new needed in the
library, please see the contributing section below.

Contributing

First of all, thank you for being interested in contributing to this library.
I really appreciate you taking the time to work on this project.

- If you're just interested in getting into the code, a good place to start are
issues tagged as bugs.
- If introducing a new feature, especially one that modifies the public API,
consider submitting an issue for discussion before a PR. Please also take a look
at existing issues / PRs to see what you're proposing has already been covered
before / exists.
- I like to follow the commit conventions documented
[here](https://www.conventionalcommits.org/en/v1.0.0/#summary)

Keywords: dataclasses json
Platform: UNKNOWN
Requires-Python: >=3.6
Description-Content-Type: text/markdown
Provides-Extra: dev

Found in path(s):
* /opt/cola/permits/1193924570_1629395684.52/0/dataclasses-json-0-5-2-tar-gz/dataclasses-json-0.5.2/PKG-INFO
* /opt/cola/permits/1193924570_1629395684.52/0/dataclasses-json-0-5-2-tar-gz/dataclasses-json-0.5.2/dataclasses_json.egg-info/PKG-INFO

1.134 protobuf 1.27.1

1.134.1 Available under license :

1.135 minipass 3.3.4

1.135.1 Available under license :

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1.136 flask-compress 1.13

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1.137 is-core-module 2.9.0

1.137.1 Available under license :

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1.138 brotli 1.0.9-r6

1.138.1 Available under license :

1.139 jackson-module-paranamer 2.14.0

1.139.1 Available under license :

Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library.
It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has
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It is currently developed by a community of developers, as well as supported
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Credits

A list of contributors may be found from CREDITS file, which is included
in some artifacts (usually source distributions); but is always available
from the source code management (SCM) system project uses.

1.140 tough-cookie 2.5.0

1.140.1 Available under license :

1.141 infer-owner 1.0.4

1.141.1 Available under license :

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1.142 brotli 1.0.9

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1.143 init-package-json 3.0.2

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1.144 webencodings 0.5.1

1.144.1 Available under license :

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* /opt/cola/permits/1401468445_1661617535.3616152/0/webencodings-0-5-1-1-tar-gz/webencodings-0.5.1/webencodings/labels.py
* /opt/cola/permits/1401468445_1661617535.3616152/0/webencodings-0-5-1-1-tar-gz/webencodings-0.5.1/webencodings/__init__.py
* /opt/cola/permits/1401468445_1661617535.3616152/0/webencodings-0-5-1-1-tar-gz/webencodings-0.5.1/webencodings/tests.py
* /opt/cola/permits/1401468445_1661617535.3616152/0/webencodings-0-5-1-1-tar-gz/webencodings-0.5.1/webencodings/x_user_defined.py

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```
from setuptools import setup, find_packages
import io
from os import path
import re
```

```
VERSION = re.search("VERSION = '([^']+)'", io.open(
   path.join(path.dirname(__file__), 'webencodings', '__init__.py'),
   encoding='utf-8'
).read().strip()).group(1)

LONG_DESCRIPTION = io.open(
   path.join(path.dirname(__file__), 'README.rst'),
   encoding='utf-8'
).read()


setup(
   name='webencodings',
   version=VERSION,
   url='https://github.com/SimonSapin/python-webencodings',
   license='BSD',
   author='Simon Sapin',
   author_email='simon.sapin@exyr.org',
   maintainer='Geoffrey Sneddon',
   maintainer_email='me@gsnedders.com',
   description='Character encoding aliases for legacy web content',
   long_description=LONG_DESCRIPTION,
   classifiers=[
       'Development Status :: 4 - Beta',
       'Intended Audience :: Developers',
       'License :: OSI Approved :: BSD License',
       'Programming Language :: Python',
       'Programming Language :: Python :: 2',
       'Programming Language :: Python :: 2.6',
       'Programming Language :: Python :: 2.7',
       'Programming Language :: Python :: 3',
       'Programming Language :: Python :: 3.3',
       'Programming Language :: Python :: 3.4',
       'Programming Language :: Python :: 3.5',
       'Programming Language :: Python :: 3.6',
       'Programming Language :: Python :: Implementation :: CPython',
       'Programming Language :: Python :: Implementation :: PyPy',
       'Topic :: Internet :: WWW/HTTP',
   ],
   packages=find_packages(),
)
```

Found in path(s):
* /opt/cola/permits/1401468445_1661617535.3616152/0/webencodings-0-5-1-1-tar-gz/webencodings-0.5.1/setup.py
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Metadata-Version: 1.1

Name: webencodings
Version: 0.5.1
Summary: Character encoding aliases for legacy web content
Home-page: https://github.com/SimonSapin/python-webencodings
Author: Geoffrey Sneddon
Author-email: me@gsnedders.com
License: BSD
Description: python-webencodings
===================

This is a Python implementation of the `WHATWG Encoding standard
<http://encoding.spec.whatwg.org/>`_.

* Latest documentation: http://packages.python.org/webencodings/
* Source code and issue tracker:
  https://github.com/gsnedders/python-webencodings
* PyPI releases: http://pypi.python.org/pypi/webencodings
* License: BSD
* Python 2.6+ and 3.3+

In order to be compatible with legacy web content
when interpreting something like ``Content-Type: text/html; charset=latin1``,
tools need to use a particular set of aliases for encoding labels
as well as some overriding rules.
For example, ``US-ASCII`` and ``iso-8859-1`` on the web are actually
aliases for ``windows-1252``, and an UTF-8 or UTF-16 BOM takes precedence
over any other encoding declaration.
The Encoding standard defines all such details so that implementations do
not have to reverse-engineer each other.

This module has encoding labels and BOM detection,
but the actual implementation for encoders and decoders is Python's.

Platform: UNKNOWN
Classifier: Development Status :: 4 - Beta
Classifier: Intended Audience :: Developers
Classifier: License :: OSI Approved :: BSD License
Classifier: Programming Language :: Python
Classifier: Programming Language :: Python :: 2
Classifier: Programming Language :: Python :: 2.6
Classifier: Programming Language :: Python :: 2.7
Classifier: Programming Language :: Python :: 3
Classifier: Programming Language :: Python :: 3.3
Classifier: Programming Language :: Python :: 3.4
Classifier: Programming Language :: Python :: 3.5
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Classifier: Programming Language :: Python :: Implementation :: PyPy

Classifier: Topic :: Internet :: WWW/HTTP

Found in path(s):
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* /opt/cola/permits/1401468445_1661617535.3616152/0/webencodings-0-5-1-1-tar-gz/webencodings-0.5.1/PKG-INFO
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```
"""

    webencodings.mklabels
    ~~~~~~~~~~~~~~~~~~~~~

    Regenarate the webencodings.labels module.

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    :license: BSD, see LICENSE for details.

"""

import json
try:
    from urllib import urlopen
except ImportError:
    from urllib.request import urlopen


def assert_lower(string):
    assert string == string.lower()
    return string


def generate(url):
    parts = ['''\
"""

    webencodings.labels
    ~~~~~~~~~~~~~~~~~~~

    Map encoding labels to their name.

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"""

# XXX Do not edit!
```

```
# This file is automatically generated by mklabels.py

LABELS = {
"']
    labels = [
        (repr(assert_lower(label)).lstrip('u'),
         repr(encoding['name']).lstrip('u'))
        for category in json.loads(urlopen(url).read().decode('ascii'))
        for encoding in category['encodings']
        for label in encoding['labels']]
    max_len = max(len(label) for label, name in labels)
    parts.extend(
        '    %s:%s %s,\n' % (label, ' ' * (max_len - len(label)), name)
        for label, name in labels)
    parts.append('}')
    return ''.join(parts)


if __name__ == '__main__':
    print(generate('http://encoding.spec.whatwg.org/encodings.json'))
```

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* /opt/cola/permits/1401468445_1661617535.3616152/0/webencodings-0-5-1-1-tar-gz/webencodings-0.5.1/webencodings/mklabels.py
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python-webencodings
===================

This is a Python implementation of the `WHATWG Encoding standard
<http://encoding.spec.whatwg.org/>`_.

* Latest documentation: http://packages.python.org/webencodings/
* Source code and issue tracker:
 https://github.com/gsnedders/python-webencodings
* PyPI releases: http://pypi.python.org/pypi/webencodings
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when interpreting something like ``Content-Type: text/html; charset=latin1``,
tools need to use a particular set of aliases for encoding labels
as well as some overriding rules.
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The Encoding standard defines all such details so that implementations do
not have to reverse-engineer each other.

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* /opt/cola/permits/1401468445_1661617535.3616152/0/webencodings-0-5-1-1-tar-gz/webencodings-0.5.1/README.rst

1.145 which 2.0.2

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1.146 pyyaml 5.4

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1.147 zstd-libs 1.5.2-r1

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1.155 socks-proxy-agent 7.0.0

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Found in path(s):
* /opt/cola/permits/1341437049_1654776513.646622/0/socks-proxy-agent-7-0-0-tgz/package/README.md

1.156 commons-compress 1.21

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1.157 iconv-lite 0.6.3

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1.158 jctools-core 3.1.0

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* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-jar/org/jctools/queues/spec/Ordering.java

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* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-jar/org/jctools/queues/atomic/BaseSpscLinkedAtomicArrayQueue.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-jar/org/jctools/queues/atomic/AtomicQueueFactory.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-jar/org/jctools/queues/MpmcArrayQueue.java
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* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-jar/org/jctools/queues/SpmcArrayQueue.java
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   <artifactId>maven-bundle-plugin</artifactId>
   <version>4.2.1</version>
   <extensions>true</extensions>
   <configuration>
    <instructions>
     <Import-Package>sun.misc;resolution:=optional</Import-Package>
    </instructions>
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  </plugin>
  <plugin>
   <groupId>org.apache.maven.plugins</groupId>
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   <artifactId>maven-source-plugin</artifactId>
   <version>3.2.0</version>
   <executions>
    <execution>
     <id>attach-sources</id>
     <phase>verify</phase>
     <goals>
      <goal>jar-no-fork</goal>
     </goals>
    </execution>
   </executions>
  </plugin>
  <plugin>
   <groupId>org.apache.maven.plugins</groupId>
   <artifactId>maven-javadoc-plugin</artifactId>
   <version>3.1.1</version>
   <configuration>
    <additionalOptions>
     <additionalOption>-Xdoclint:none</additionalOption>
    </additionalOptions>
    <source>8</source>
   </configuration>
   <executions>
    <execution>
     <id>attach-javadocs</id>
     <goals>
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     </goals>
    </execution>
   </executions>
  </plugin>
 </plugins>
</build>

<distributionManagement>
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  <id>bintray-jctools-jctools</id>
  <name>jctools-jctools</name>
  <url>https://api.bintray.com/maven/jctools/jctools/jctools-core/;publish=1</url>
 </repository>
</distributionManagement>

<url>https://github.com/JCTools</url>
<inceptionYear>2013</inceptionYear>

<licenses>
 <license>
  <name>Apache License, Version 2.0</name>
```

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  <url>http://www.apache.org/licenses/LICENSE-2.0.txt</url>
  <distribution>repo</distribution>
 </license>
</licenses>

<scm>
 <url>https://github.com/JCTools/JCTools</url>
 <connection>scm:git:https://github.com/JCTools/JCTools</connection>
 <tag>HEAD</tag>
</scm>

<developers>
 <developer>
  <url>https://github.com/nitsanw</url>
 </developer>
 <developer>
  <url>https://github.com/mjpt777</url>
 </developer>
 <developer>
  <url>https://github.com/RichardWarburton</url>
 </developer>
 <developer>
  <url>https://github.com/kay</url>
 </developer>
 <developer>
  <url>https://github.com/franz1981</url>
 </developer>
</developers>

<prerequisites>
 <maven>3.5.0</maven>
</prerequisites>

<properties>
 <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
 <java.version>1.6</java.version>
 <java.test.version>1.8</java.test.version>

 <maven.compiler.source>${java.version}</maven.compiler.source>
 <maven.compiler.target>${java.version}</maven.compiler.target>
 <maven.compiler.testSource>${java.test.version}</maven.compiler.testSource>
 <maven.compiler.testTarget>${java.test.version}</maven.compiler.testTarget>

 <hamcrest.version>1.3</hamcrest.version>
 <junit.version>4.12</junit.version>
 <guava-testlib.version>21.0</guava-testlib.version>
</properties>
</project>
```

Found in path(s):
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-jar/META-INF/maven/org.jctools/jctools-core/pom.xml

1.159 py3-six 1.16.0-r1

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1.160 wtforms 3.0.1

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Metadata-Version: 2.1
Name: WTForms
Version: 3.0.1
Summary: Form validation and rendering for Python web development.
Home-page: https://wtforms.readthedocs.io/
Maintainer: WTForms
Maintainer-email: davidism@gmail.com
License: BSD-3-Clause
Project-URL: Documentation, https://wtforms.readthedocs.io/
Project-URL: Code, https://github.com/wtforms/wtforms
Project-URL: Issue Tracker, https://github.com/wtforms/wtforms/issues
Platform: UNKNOWN
Classifier: Development Status :: 5 - Production/Stable
Classifier: Environment :: Web Environment
Classifier: Intended Audience :: Developers
Classifier: License :: OSI Approved :: BSD License
Classifier: Operating System :: OS Independent
Classifier: Programming Language :: Python
Classifier: Topic :: Internet :: WWW/HTTP :: Dynamic Content
Requires-Python: >=3.7
Description-Content-Type: text/x-rst
Provides-Extra: email
License-File: LICENSE.rst

WTForms
=======

WTForms is a flexible forms validation and rendering library for Python
web development. It can work with whatever web framework and template
engine you choose. It supports data validation, CSRF protection,
internationalization (I18N), and more. There are various community
libraries that provide closer integration with popular frameworks.

Installation

Install and update using pip:

.. code-block:: text

   pip install -U WTForms

Third-Party Library Integrations

WTForms is designed to work with any web framework and template engine.
There are a number of community-provided libraries that make integrating
with frameworks even better.

- `Flask-WTF`_ integrates with the Flask framework. It can
  automatically load data from the request, uses Flask-Babel to
  translate based on user-selected locale, provides full-application
  CSRF, and more.
- `WTForms-Alchemy`_ provides rich support for generating forms from
  SQLAlchemy models, including an expanded set of fields and
  validators.
- `WTForms-SQLAlchemy`_ provides ORM-backed fields and form generation
  from SQLAlchemy models.
- `WTForms-AppEngine`_ provides ORM-backed fields and form generation
  from AppEnding db/ndb schema
- `WTForms-Django`_ provides ORM-backed fields and form generation
  from Django models, as well as integration with Django's I18N
  support.
- `Starlette-WTF`_ integrates with Starlette and the FastAPI
  framework, based on the features of Flask-WTF.

.. _Flask-WTF: https://flask-wtf.readthedocs.io/
.. _WTForms-Alchemy: https://wtforms-alchemy.readthedocs.io/
.. _WTForms-SQLAlchemy: https://github.com/wtforms/wtforms-sqlalchemy
.. _WTForms-AppEngine: https://github.com/wtforms/wtforms-appengine
.. _WTForms-Django: https://github.com/wtforms/wtforms-django
.. _Starlette-WTF: https://github.com/muicss/starlette-wtf

Links

- Documentation: https://wtforms.readthedocs.io/
- Releases: https://pypi.org/project/WTForms/
- Code: https://github.com/wtforms/wtforms
- Issue tracker: https://github.com/wtforms/wtforms/issues
- Discord Chat: https://discord.gg/F65P7Z9

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* /opt/cola/permits/1280392378_1646205763.84/0/wtforms-3-0-1-tar-gz/WTForms-3.0.1/PKG-INFO
No license file was found, but licenses were detected in source scan.

```
[metadata]
name = WTForms
version = 3.0.1
url = https://wtforms.readthedocs.io/
project_urls =
 Documentation = https://wtforms.readthedocs.io/
 Code = https://github.com/wtforms/wtforms
 Issue Tracker = https://github.com/wtforms/wtforms/issues
license = BSD-3-Clause
license_files = LICENSE.rst
maintainer = WTForms
maintainer_email = davidism@gmail.com
description = Form validation and rendering for Python web development.
long_description = file: README.rst
long_description_content_type = text/x-rst
classifiers =
 Development Status :: 5 - Production/Stable
 Environment :: Web Environment
 Intended Audience :: Developers
 License :: OSI Approved :: BSD License
 Operating System :: OS Independent
 Programming Language :: Python
 Topic :: Internet :: WWW/HTTP :: Dynamic Content

[options]
packages = find:
package_dir = = src
include_package_data = true
python_requires = >= 3.7
setup_requires = Babel >= 2.6.0
install_requires = MarkupSafe

[options.packages.find]
where = src

[options.extras_require]
email = email_validator

[extract_messages]
copyright_holder = WTForms Team
input_paths = src/wtforms
output_file = src/wtforms/locale/wtforms.pot
```

```
[init_catalog]
input_file = src/wtforms/locale/wtforms.pot
output_dir = src/wtforms/locale/
domain = wtforms

[update_catalog]
input_file = src/wtforms/locale/wtforms.pot
output_dir = src/wtforms/locale/
domain = wtforms
update-header-comment = true
no-fuzzy-matching = true
ignore-obsolete = true

[compile_catalog]
directory = src/wtforms/locale/
domain = wtforms
statistics = true

[tool:pytest]
testpaths = tests
filterwarnings =
 error

[coverage:run]
branch = true
source =
 wtforms

[coverage:paths]
source =
 src
 .tox/*/site-packages

[coverage:report]
exclude_lines =
 pragma: no cover
 except ImportError:

[flake8]
select = B, E, F, W, B9, ISC
ignore =
 E203
 E501
 E722
 W503
max-line-length = 80
per-file-ignores =
 **/__init__.py: F401, F403
```

[egg_info]
tag_build =
tag_date = 0

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* /opt/cola/permits/1322130364_1651777329.29/0/hikaricp-5-0-1-sources-jar/com/zaxxer/hikari/util/UtilityElf.java
* /opt/cola/permits/1322130364_1651777329.29/0/hikaricp-5-0-1-sources-jar/com/zaxxer/hikari/hibernate/HikariConfigurationUtil.java
* /opt/cola/permits/1322130364_1651777329.29/0/hikaricp-5-0-1-sources-jar/com/zaxxer/hikari/HikariPoolMXBean.java
* /opt/cola/permits/1322130364_1651777329.29/0/hikaricp-5-0-1-sources-jar/com/zaxxer/hikari/metrics/dropwizard/CodahaleMetricsTrackerFactory.java
* /opt/cola/permits/1322130364_1651777329.29/0/hikaricp-5-0-1-sources-jar/com/zaxxer/hikari/pool/ProxyStatement.java
* /opt/cola/permits/1322130364_1651777329.29/0/hikaricp-5-0-1-sources-jar/com/zaxxer/hikari/HikariConfigMXBean.java
* /opt/cola/permits/1322130364_1651777329.29/0/hikaricp-5-0-1-sources-jar/com/zaxxer/hikari/hibernate/HikariConnectionProvider.java
* /opt/cola/permits/1322130364_1651777329.29/0/hikaricp-5-0-1-sources-

jar/com/zaxxer/hikari/metrics/prometheus/PrometheusMetricsTracker.java
* /opt/cola/permits/1322130364_1651777329.29/0/hikaricp-5-0-1-sources-jar/com/zaxxer/hikari/util/PropertyElf.java
* /opt/cola/permits/1322130364_1651777329.29/0/hikaricp-5-0-1-sources-jar/com/zaxxer/hikari/HikariDataSource.java
* /opt/cola/permits/1322130364_1651777329.29/0/hikaricp-5-0-1-sources-jar/com/zaxxer/hikari/pool/ProxyCallableStatement.java
* /opt/cola/permits/1322130364_1651777329.29/0/hikaricp-5-0-1-sources-jar/com/zaxxer/hikari/pool/ProxyPreparedStatement.java

1.169 jackc-pgservicefile 0.0.0-20200714003250-2b9c44734f2b

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1.174 lucene-memory 9.2.0

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core/src/java/org/apache/lucene/util/compress/LZ4.java is a Java implementation of the LZ4 (https://github.com/lz4/lz4/tree/dev/lib) compression format for Lucene's DataInput/DataOutput abstractions.

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analysis/common/src/resources/org/apache/lucene/analysis/bg/stopwords.txt,
analysis/common/src/resources/org/apache/lucene/analysis/hi/stopwords.txt,
analysis/common/src/resources/org/apache/lucene/analysis/bn/stopwords.txt
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analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchMinimalStemmer.java
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1.175 text-table 0.2.0

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1.178 winston 3.8.2

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1.179 pyparsing 2.4.7

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```
NR START   END SECTORS SIZE NAME UUID
1    32  7679    7648 3.7M      8f8378c0-01
2  7680 16383    8704 4.3M      8f8378c0-02
5  7936 12799    4864 2.4M
6 12544 16127    3584 1.8M
WEV @@ WEV[B  "1
```

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1.182 aiohttp-swagger 1.0.15

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1.183 cookie 0.5.0

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1.184 color-name 1.1.4

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1.185 json-parse-even-better-errors 2.3.1

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1.186 libnpmfund 3.0.2

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1.187 paramiko 2.11.0

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1.188 multidict 5.0.2

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1.189 mapbox-gl 1.13.2

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1.195 scandir 1.10.0

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1.196 dnsmasq 2.86-r3

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/**
* Outer class that exists solely to let us write {@code Partially.GwtIncompatible} instead of plain
* {@code GwtIncompatible}. This is more accurate for {@link Futures#catching}, which is available
* under GWT but with a slightly different signature.
*
* <p>We can't use {@code PartiallyGwtIncompatible} because then the GWT compiler wouldn't recognize
* it as a {@code GwtIncompatible} annotation. And for {@code Futures.catching}, we need the GWT
* compiler to autostrip the normal server method in order to expose the special, inherited GWT
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/MessageDigestHashFunction.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/PairwiseEquivalence.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/BloomFilter.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ListeningScheduledExecutorService.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/TreeRangeSet.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/Weigher.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/net/HttpHeaders.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/Crc32cHashFunction.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/RegularContiguousSet.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/LoadingCache.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/AbstractCache.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/FutureCallback.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/RemovalListener.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/Types.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/AbstractNonStreamingHashFunction.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AsyncFunction.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/Murmur3_128HashFunction.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/RemovalNotification.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/RemovalListeners.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/CacheLoader.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/UncheckedExecutionException.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AbstractListeningExecutorService.java

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jar/com/google/common/graph/IncidentEdgeSet.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/EndpointPairIterator.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/ForwardingNetwork.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/ForwardingGraph.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/AbstractGraph.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/ElementOrder.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/NetworkConnections.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/UndirectedNetworkConnections.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/EdgesConnecting.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Comparators.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/GraphConnections.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/AbstractDirectedNetworkConnections.java

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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/CollectCollectors.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/StandardNetwork.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/DirectedNetworkConnections.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Stopwatch.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/CharMatcher.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/Floats.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Converter.java
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*/
/**
* Holder for web specializations of methods of {@code Ints}. Intended to be empty for regular
* version.
*/

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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/Subscriber.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/MoreObjects.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ListenerCallQueue.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/math/Quantiles.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/Dispatcher.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/SubscriberRegistry.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/Striped64.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/Striped64.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AtomicDoubleArray.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableSortedMultisetFauxverideShim.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/GeneralRange.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Count.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/RegularImmutableSortedMultiset.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SortedIterable.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/RangeSet.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractRangeSet.java

* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SortedIterables.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableSortedMultiset.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/Java8Compatibility.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/Java8Compatibility.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/math/ToDoubleRounder.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SortedMapDifference.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/ParametricNullness.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/ParametricNullness.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/html/ElementTypesAreNonnullByDefault.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ElementTypesAreNonnullByDefault.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/ElementTypesAreNonnullByDefault.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/ElementTypesAreNonnullByDefault.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/SubscriberExceptionContext.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/CharSequenceReader.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/WrappingScheduledExecutorService.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/SubscriberExceptionHandler.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/TypeVisitor.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/FilteredMultimapValues.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractTable.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/Runnables.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/HashingInputStream.java

* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Utf8.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/thirdparty/publicsuffix/PublicSuffixType.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/xml/XmlEscapers.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/UnsignedBytes.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/TypeResolver.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Splitter.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/LineProcessor.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/MapMakerInternalMap.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/net/UrlEscapers.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Platform.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/escape/ArrayBasedEscaperMap.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/FinalizablePhantomReference.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/LineBuffer.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Function.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/CharStreams.java

* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Defaults.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/Files.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AbstractFuture.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/Flushables.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/LittleEndianDataInputStream.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/RangeMap.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingNavigableMap.java

* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/CompactHashSet.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/TransformedListIterator.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingImmutableSet.java
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* Holder for web specializations of methods of {@code Floats}. Intended to be empty for regular
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*/

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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/CombinedFuture.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/ReaderInputStream.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/InterruptibleTask.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AggregateFutureState.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/FarmHashFingerprint64.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AsyncCallable.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ConsumingQueueIterator.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/Platform.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ListenableScheduledFuture.java

* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/BaseEncoding.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableRangeMap.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/math/Stats.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/math/PairedStats.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/math/StatsAccumulator.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/xml/package-info.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/Closer.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/package-info.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/SmoothRateLimiter.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/SipHashFunction.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/CartesianList.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/TypeCapture.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/LongAddables.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/LongAddable.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ServiceManager.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/Invokable.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/LongAddables.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/html/package-info.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/CharSource.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-

jar/com/google/common/base/StandardSystemProperty.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/AbstractByteHasher.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/ClassPath.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/TypeToInstanceMap.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/math/LinearTransformation.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/CharSink.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/ByteSource.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/ImmutableTypeToInstanceMap.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/AbstractInvocationHandler.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/RateLimiter.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableRangeSet.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/MutableTypeToInstanceMap.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/MultimapBuilder.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableMapEntry.java
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*/
/**
* Holder for extra methods of {@code Objects} only in web. Intended to be empty for regular
* version.
*/

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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/MutableClassToInstanceMap.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ArrayListMultimap.java
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jar/com/google/common/collect/SingletonImmutableSet.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ExplicitOrdering.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Lists.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractBiMap.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingMapEntry.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ReverseNaturalOrdering.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingSortedMap.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractSetMultimap.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SortedMultisets.java
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/**
 * Returns an array containing all of the elements in the specified collection. This method
 * returns the elements in the order they are returned by the collection's iterator. The returned
 * array is "safe" in that no references to it are maintained by the collection. The caller is
 * thus free to modify the returned array.
 *
 * <p>This method assumes that the collection size doesn't change while the method is running.
 *
 * <p>TODO(kevinb): support concurrently modified collections?
 *
 * @param c the collection for which to return an array of elements
 */

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/*
 * This method was rewritten in Java from an intermediate step of the Murmur hash function in
 * http://code.google.com/p/smhasher/source/browse/trunk/MurmurHash3.cpp, which contained the
 * following header:
 *
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/IndexedImmutableSet.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/JdkBackedImmutableBiMap.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/JdkBackedImmutableMap.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/BaseImmutableMultimap.java
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jar/com/google/common/annotations/package-info.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/Atomics.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/package-info.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SortedLists.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/net/package-info.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/annotations/Beta.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ContiguousSet.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Ascii.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Equivalence.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/UncaughtExceptionHandlers.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ListeningExecutorService.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/Monitor.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Strings.java
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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ClosingFuture.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/AbstractBaseGraph.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/BaseGraph.java

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*/
/**
* Holder for web specializations of methods of {@code Shorts}. Intended to be empty for regular
* version.
*/

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* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ForwardingCondition.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/ImmutableIntArray.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/AbstractHashFunction.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/ImmutableDoubleArray.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/ImmutableLongArray.java
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/**
* Holder for web specializations of methods of {@code Doubles}. Intended to be empty for regular
* version.
*/

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*/
/**
 * Not supported. You are attempting to create a map that may contain a non-{@code Comparable}
 * key. Proper calls will resolve to the version in {@code ImmutableSortedMap}, not this dummy
 * version.

*
 * @throws UnsupportedOperationException always
 * @deprecated Pass a key of type {@code Comparable} to use {@link
 *   ImmutableSortedMap#of(Comparable, Object)}.
 */

Found in path(s):
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableSortedMapFauxverideShim.java
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*/
/*
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 *
 * As of 2010/06/11, this method is identical to the (package private) hash method in OpenJDK 7's
 * java.util.HashMap class.
 */

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1.199 ip-regex 4.3.0

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1.200 go-humanize 1.0.0

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1.201 colorspace 1.1.4

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1.202 binary-extensions 2.2.0

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1.203 minimatch 3.1.2

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1.204 netty-transport-native-epoll 4.1.78.Final

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* /opt/cola/permits/1350828752_1656063995.818272/0/netty-transport-native-epoll-4-1-78-final-sources-jar/netty_epoll_linuxsocket.c
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1.205 markupsafe 2.1.1

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[metadata]
name = MarkupSafe
version = attr: markupsafe.__version__
url = https://palletsprojects.com/p/markupsafe/
project_urls =
 Donate = https://palletsprojects.com/donate
 Documentation = https://markupsafe.palletsprojects.com/
 Changes = https://markupsafe.palletsprojects.com/changes/
 Source Code = https://github.com/pallets/markupsafe/
 Issue Tracker = https://github.com/pallets/markupsafe/issues/
 Twitter = https://twitter.com/PalletsTeam
 Chat = https://discord.gg/pallets
license = BSD-3-Clause
license_files = LICENSE.rst
author = Armin Ronacher
author_email = armin.ronacher@active-4.com
maintainer = Pallets
maintainer_email = contact@palletsprojects.com
description = Safely add untrusted strings to HTML/XML markup.
long_description = file: README.rst
long_description_content_type = text/x-rst
classifiers =
 Development Status :: 5 - Production/Stable

```
 Environment :: Web Environment
 Intended Audience :: Developers
 License :: OSI Approved :: BSD License
 Operating System :: OS Independent
 Programming Language :: Python
 Topic :: Internet :: WWW/HTTP :: Dynamic Content
 Topic :: Text Processing :: Markup :: HTML

[options]
packages = find:
package_dir = = src
include_package_data = True
python_requires = >= 3.7

[options.packages.find]
where = src

[tool:pytest]
testpaths = tests
filterwarnings =
 error

[coverage:run]
branch = True
source =
 markupsafe
 tests

[coverage:paths]
source =
 src
 */site-packages

[flake8]
select = B, E, F, W, B9, ISC
ignore =
 E203
 E501
 E722
 W503
max-line-length = 80

[mypy]
files = src/markupsafe
python_version = 3.7
show_error_codes = True
disallow_subclassing_any = True
disallow_untyped_calls = True
```

disallow_untyped_defs = True
disallow_incomplete_defs = True
no_implicit_optional = True
local_partial_types = True
no_implicit_reexport = True
strict_equality = True
warn_redundant_casts = True
warn_unused_configs = True
warn_unused_ignores = True
warn_return_any = True
warn_unreachable = True

[egg_info]
tag_build =
tag_date = 0

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Metadata-Version: 2.1
Name: MarkupSafe
Version: 2.1.1
Summary: Safely add untrusted strings to HTML/XML markup.
Home-page: https://palletsprojects.com/p/markupsafe/
Author: Armin Ronacher
Author-email: armin.ronacher@active-4.com
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Requires-Python: >=3.7
Description-Content-Type: text/x-rst

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MarkupSafe
==========

MarkupSafe implements a text object that escapes characters so it is
safe to use in HTML and XML. Characters that have special meanings are
replaced so that they display as the actual characters. This mitigates
injection attacks, meaning untrusted user input can safely be displayed
on a page.

Installing

Install and update using `pip`_:

.. code-block:: text

```
pip install -U MarkupSafe
```

.. _pip: https://pip.pypa.io/en/stable/getting-started/

Examples

.. code-block:: pycon

```
>>> from markupsafe import Markup, escape

>>> # escape replaces special characters and wraps in Markup
>>> escape("<script>alert(document.cookie);</script>")
Markup('&lt;script&gt;alert(document.cookie);&lt;/script&gt;')

>>> # wrap in Markup to mark text "safe" and prevent escaping
>>> Markup("<strong>Hello</strong>")
Markup('<strong>hello</strong>')

>>> escape(Markup("<strong>Hello</strong>"))
Markup('<strong>hello</strong>')

>>> # Markup is a str subclass
>>> # methods and operators escape their arguments
>>> template = Markup("Hello <em>{name}</em>")
>>> template.format(name='"World"')
Markup('Hello <em>&#34;World&#34;</em>')
```

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1.206 domhandler 4.3.1

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* /opt/cola/permits/1372396176_1660699824.6867015/0/libwebp-1-2-3-linux-x86-64-tar-gz/libwebp-1.2.3-linux-x86-64/include/webp/mux_types.h
* /opt/cola/permits/1372396176_1660699824.6867015/0/libwebp-1-2-3-linux-x86-64-tar-gz/libwebp-1.2.3-linux-x86-64/include/webp/demux.h

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* /opt/cola/permits/1372396176_1660699824.6867015/0/libwebp-1-2-3-linux-x86-64-tar-gz/libwebp-1.2.3-linux-x86-64/include/webp/mux.h

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* /opt/cola/permits/1372396176_1660699824.6867015/0/libwebp-1-2-3-linux-x86-64-tar-gz/libwebp-1.2.3-linux-x86-64/CONTRIBUTING.md
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WebP Codec

```
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        \____/____/\_____/_____/____/v1.2.3
```

WebP codec is a library to encode and decode images in WebP format. This package
contains the library that can be used in other programs to add WebP support, as
well as the command line tools 'cwebp' and 'dwebp' to compress and decompress
images respectively.

See https://developers.google.com/speed/webp for details on the image format.

The latest source tree is available at
https://chromium.googlesource.com/webm/libwebp

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Files

* bin/cwebp : encoding tool
* bin/dwebp : decoding tool
* bin/gif2webp : gif conversion tool
* bin/img2webp : animation creation tool
* bin/vwebp : webp visualization tool
* bin/webpinfo : webp analysis tool
* bin/webpmux : webp muxing tool
* bin/anim_diff : webp file comparison tool
* bin/anim_dump : tool for dumping animation frames
* bin/get_disto : tool for calculating file distortion
* bin/webp_quality : webp quality estimation tool
* doc/ : manual in HTML and text formats
* lib/ : static libraries
* include/webp : headers

Encoding and Decoding Tools

The bin/ directory contains tools to encode and decode images and animations,
view information about WebP images, and more. See the
[tools documentation](doc/tools.md).

APIs

See the [APIs documentation](doc/api.md).

Bugs

Please report all bugs to the issue tracker: https://bugs.chromium.org/p/webp

Patches welcome! See [how to contribute](CONTRIBUTING.md).

Discuss

Email: webp-discuss@webmproject.org

Web: https://groups.google.com/a/webmproject.org/group/webp-discuss

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* /opt/cola/permits/1372396176_1660699824.6867015/0/libwebp-1-2-3-linux-x86-64-tar-gz/libwebp-1.2.3-linux-x86-64/README.md
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/opt/cola/permits/1372396176_1660699824.6867015/0/libwebp-1-2-3-linux-x86-64-tar-gz/libwebp-1.2.3-linux-x86-64/bin/cwebp: binary file matches
/opt/cola/permits/1372396176_1660699824.6867015/0/libwebp-1-2-3-linux-x86-64-tar-gz/libwebp-1.2.3-linux-x86-

64/bin/get_disto: binary file matches
/opt/cola/permits/1372396176_1660699824.6867015/0/libwebp-1-2-3-linux-x86-64-tar-gz/libwebp-1.2.3-linux-x86-64/bin/img2webp: binary file matches

Found in path(s):
* /bin/grep

1.227 wcwidth 0.2.5

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Markus Kuhn -- 2007-05-26 (Unicode 5.0)

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1.228 six 1.16.0

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The primary author and maintainer of six is Benjamin Peterson. He would like to
acknowledge the following people who submitted bug reports, pull requests, and
otherwise worked to improve six:

Marc Abramowitz

immerrr again
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Aymeric Augustin
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Brett Cannon
Jason R. Coombs
Julien Danjou
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Sridhar Ratnakumar
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Eli Schwartz
Anthony Sottile
Victor Stinner
Jonathan Vanasco
Lucas Wiman
Jingxin Zhu

If you think you belong on this list, please let me know! --Benjamin

1.229 python3-asn1crypto 1.4.0

1.229.1 Available under license :

1.230 earcut 2.2.4

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1.231 grpc-ecosystem-go-grpc-middleware 1.3.0

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1.232 python-pip 22.3

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This package contains a modified version of ca-bundle.crt:

ca-bundle.crt -- Bundle of CA Root Certificates

Certificate data from Mozilla as of: Thu Nov 3 19:04:19 2011#
This is a bundle of X.509 certificates of public Certificate Authorities
(CA). These were automatically extracted from Mozilla's root certificates
file (certdata.txt). This file can be found in the mozilla source tree:
https://hg.mozilla.org/mozilla-central/file/tip/security/nss/lib/ckfw/builtins/certdata.txt
It contains the certificates in PEM format and therefore
can be directly used with curl / libcurl / php_curl, or with
an Apache+mod_ssl webserver for SSL client authentication.
Just configure this file as the SSLCACertificateFile.#

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@(#) $RCSfile: certdata.txt,v $ $Revision: 1.80 $ $Date: 2011/11/03 15:11:58 $
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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to

BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
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2.6.3	2.6.2	2009	PSF	yes
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2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes

2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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1.233 pycparser 2.21

1.233.1 Available under license :

pycparser -- A C parser in Python

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1.234 negotiator 0.6.3

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1.235 @mapbox/whoots-js 3.1.0

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1.236 gcompat 1.0.0-r4

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1.237 libintl 0.21-r2

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1.238 function-bind 1.1.1

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1.239 su-exec 0.2-r1

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1.240 test-utils 0.1.0

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1.241 blas 3.10.1-r0

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1.242 pax-utils 1.3.4-r0

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Python was created in the early 1990s by Guido van Rossum at Stichting
Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands
as a successor of a language called ABC. Guido remains Python's
principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for
National Research Initiatives (CNRI, see http://www.cnri.reston.va.us)
in Reston, Virginia where he released several versions of the
software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes

2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1	2010	PSF	yes
3.2	3.1	2010	PSF	yes

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core/src/java/org/apache/lucene/util/compress/LZ4.java is a Java implementation of the LZ4 (https://github.com/lz4/lz4/tree/dev/lib) compression format for Lucene's DataInput/DataOutput abstractions.

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analysis/common/src/resources/org/apache/lucene/analysis/bg/stopwords.txt,
analysis/common/src/resources/org/apache/lucene/analysis/hi/stopwords.txt,
analysis/common/src/resources/org/apache/lucene/analysis/bn/stopwords.txt
See http://members.unine.ch/jacques.savoy/clef/index.html.

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1.246 marshmallow-enum 1.5.1

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1.247 jakarta xml bind api 3.0.0

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1.248 python-certifi 2022.06.15

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Certificate data from Mozilla as of: Thu Nov 3 19:04:19 2011#
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(CA). These were automatically extracted from Mozilla's root certificates
file (certdata.txt). This file can be found in the mozilla source tree:
http://mxr.mozilla.org/mozilla/source/security/nss/lib/ckfw/builtins/certdata.txt?raw=1#
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1.249 body-parser 1.20.0

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1.250 c-ares 1.18.1-r0

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1.251 modern-go-reflect2 1.0.1

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1.252 golang 1.16.15

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1.253 postgre-sql 14.5

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1.254 java-uuid-generator 4.0.1

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1.255 npm 8.15.0

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wcwidth.js: JavaScript Portng of Markus Kuhn's wcwidth() Implementation
===

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Version 2.1, February 1999

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That's all there is to it!
DRuntime: Runtime Library for the D Programming Language
==

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GCC RUNTIME LIBRARY EXCEPTION

Version 3.1, 31 March 2009

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1.261 cli-columns 4.0.0

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1.262 contextlib2 0.6.0.post1

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In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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Release	Derived from	Year	Owner	GPL-compatible? (1)
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1.1	2010	PSF	yes
3.1.3	3.1.2	2010	PSF	yes
3.1.4	3.1.3	2011	PSF	yes
3.2	3.1	2011	PSF	yes
3.2.1	3.2	2011	PSF	yes
3.2.2	3.2.1	2011	PSF	yes
3.3	3.2	2012	PSF	yes

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1.263 pytz 2020.4

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1.264 sqlite 3.39.3

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1.265 call-bind 1.0.2

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1.266 just-diff-apply 5.3.1

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1.267 color 3.2.1

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1.268 http-cache-semantics 4.1.0

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1.269 https-proxy-agent 5.0.1

1.269.1 Available under license :

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https-proxy-agent
================

> Temporary fork that fixes the issue [#52](https://github.com/TooTallNate/node-https-proxy-agent/issues/52).

An HTTP(s) proxy `http.Agent` implementation for HTTPS
`[![Build Status](https://github.com/TooTallNate/node-https-proxy-agent/workflows/Node%20CI/badge.svg)](https://github.com/TooTallNate/node-https-proxy-agent/actions?workflow=Node+CI)`

This module provides an `http.Agent` implementation that connects to a specified
HTTP or HTTPS proxy server, and can be used with the built-in `https` module.

Specifically, this `Agent` implementation connects to an intermediary "proxy"
server and issues the [CONNECT HTTP method][CONNECT], which tells the proxy to
open a direct TCP connection to the destination server.

Since this agent implements the CONNECT HTTP method, it also works with other
protocols that use this method when connecting over proxies (i.e. WebSockets).
See the "Examples" section below for more.

Installation

Install with `npm`:

``` bash
$ npm install https-proxy-agent
```

Examples

`https` module example

``` js
var url = require('url');
var https = require('https');
var HttpsProxyAgent = require('https-proxy-agent');

// HTTP/HTTPS proxy to connect to
var proxy = process.env.http_proxy || 'http://168.63.76.32:3128';
console.log('using proxy server %j', proxy);

// HTTPS endpoint for the proxy to connect to
var endpoint = process.argv[2] || 'https://graph.facebook.com/tootallnate';
console.log('attempting to GET %j', endpoint);
var options = url.parse(endpoint);

// create an instance of the `HttpsProxyAgent` class with the proxy server information
var agent = new HttpsProxyAgent(proxy);
options.agent = agent;

https.get(options, function (res) {
 console.log('"response" event!', res.headers);
 res.pipe(process.stdout);
});
```

`ws` WebSocket connection example

``` js
var url = require('url');
var WebSocket = require('ws');
var HttpsProxyAgent = require('https-proxy-agent');

// HTTP/HTTPS proxy to connect to
var proxy = process.env.http_proxy || 'http://168.63.76.32:3128';
console.log('using proxy server %j', proxy);

// WebSocket endpoint for the proxy to connect to
var endpoint = process.argv[2] || 'ws://echo.websocket.org';
var parsed = url.parse(endpoint);
console.log('attempting to connect to WebSocket %j', endpoint);

// create an instance of the `HttpsProxyAgent` class with the proxy server information
var options = url.parse(proxy);
```

```
var agent = new HttpsProxyAgent(options);

// finally, initiate the WebSocket connection
var socket = new WebSocket(endpoint, { agent: agent });

socket.on('open', function () {
 console.log('"open" event!');
 socket.send('hello world');
});

socket.on('message', function (data, flags) {
 console.log('"message" event! %j %j', data, flags);
 socket.close();
});
```

API
---

new HttpsProxyAgent(Object options)

The `HttpsProxyAgent` class implements an `http.Agent` subclass that connects
to the specified "HTTP(s) proxy server" in order to proxy HTTPS and/or WebSocket
requests. This is achieved by using the [HTTP `CONNECT` method][CONNECT].

The `options` argument may either be a string URI of the proxy server to use, or an
"options" object with more specific properties:

 * `host` - String - Proxy host to connect to (may use `hostname` as well). Required.
 * `port` - Number - Proxy port to connect to. Required.
 * `protocol` - String - If `https:`, then use TLS to connect to the proxy.
 * `headers` - Object - Additional HTTP headers to be sent on the HTTP CONNECT method.
 * Any other options given are passed to the `net.connect()`/`tls.connect()` functions.

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[CONNECT]: http://en.wikipedia.org/wiki/HTTP_tunnel#HTTP_CONNECT_Tunneling

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* /opt/cola/permits/1307940101_1649962714.49/0/https-proxy-agent-5-0-1-tgz/package/README.md

1.270 otel-trace 1.0.1

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1.272 dns-python 2.2.1

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1.273 csscolorparser 1.0.3

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https://github.com/deanm/css-color-parser-js

JavaScript parser for CSS color strings.

```
> parseCSSColor(' rgba (255, 128, 12, 0.5)');
[ 255, 128, 12, 0.5 ]
> parseCSSColor('#fff');
[ 255, 255, 255, 1 ]
> parseCSSColor('#ff0011');
[ 255, 0, 17, 1 ]
> parseCSSColor('slateblue');
[ 106, 90, 205, 1 ]
> parseCSSColor('blah');
null
> parseCSSColor('ffffff');
null
> parseCSSColor('hsla(900, 15%, 90%, 0.5)')
[ 226, 233, 233, 0.5 ]
> parseCSSColor('hsla(900, 15%, 90%)')
null
> parseCSSColor('hsl(900, 15%, 90%)')
[ 226, 233, 233, 1 ]
> parseCSSColor('hsl(900, 0.15, 90%)')  // NOTE: not spec compliant.
[ 226, 233, 233, 1 ]
```

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1.274 python-requests 2.27.1

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1.275 pandas 1.5.1

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A. HISTORY OF THE SOFTWARE
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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
2.7	2.6	2010	PSF	yes

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(2) According to Richard Stallman, 1.6.1 is not GPL-compatible,
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1.276 flask-wtf 1.0.1

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Metadata-Version: 2.1
Name: Flask-WTF
Version: 1.0.1
Summary: Form rendering, validation, and CSRF protection for Flask with WTForms.
Home-page: https://github.com/wtforms/flask-wtf/
Author: Dan Jacob
Author-email: danjac354@gmail.com
Maintainer: Hsiaoming Yang
Maintainer-email: me@lepture.com
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Project-URL: Documentation, https://flask-wtf.readthedocs.io/
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Project-URL: Issue Tracker, https://github.com/wtforms/flask-wtf/issues/
Project-URL: Chat, https://discord.gg/pallets
Platform: UNKNOWN
Classifier: Development Status :: 5 - Production/Stable
Classifier: Environment :: Web Environment
Classifier: Framework :: Flask
Classifier: Intended Audience :: Developers
Classifier: License :: OSI Approved :: BSD License
Classifier: Operating System :: OS Independent
Classifier: Programming Language :: Python
Classifier: Topic :: Internet :: WWW/HTTP :: Dynamic Content
Classifier: Topic :: Internet :: WWW/HTTP :: WSGI
Classifier: Topic :: Internet :: WWW/HTTP :: WSGI :: Application
Classifier: Topic :: Software Development :: Libraries :: Application Frameworks
Requires-Python: >=3.6
Description-Content-Type: text/x-rst
Provides-Extra: email
License-File: LICENSE.rst

Flask-WTF
=========

Simple integration of Flask and WTForms, including CSRF, file upload,
and reCAPTCHA.

Links

- Documentation: https://flask-wtf.readthedocs.io/

- Changes: https://flask-wtf.readthedocs.io/changes/
- PyPI Releases: https://pypi.org/project/Flask-WTF/
- Source Code: https://github.com/wtforms/flask-wtf/
- Issue Tracker: https://github.com/wtforms/flask-wtf/issues/
- Chat: https://discord.gg/pallets

Found in path(s):
* /opt/cola/permits/1326075069_1652360427.5145478/0/flask-wtf-1-0-1-tar-gz/Flask-WTF-1.0.1/src/Flask_WTF.egg-info/PKG-INFO
* /opt/cola/permits/1326075069_1652360427.5145478/0/flask-wtf-1-0-1-tar-gz/Flask-WTF-1.0.1/PKG-INFO
No license file was found, but licenses were detected in source scan.

Found in path(s):
* /opt/cola/permits/1326075069_1652360427.5145478/0/flask-wtf-1-0-1-tar-gz/Flask-WTF-1.0.1/LICENSE.rst
No license file was found, but licenses were detected in source scan.

[metadata]
name = Flask-WTF
version = attr: flask_wtf.__version__

```
url = https://github.com/wtforms/flask-wtf/
project_urls =
 Documentation = https://flask-wtf.readthedocs.io/
 Changes = https://flask-wtf.readthedocs.io/changes/
 Source Code = https://github.com/wtforms/flask-wtf/
 Issue Tracker = https://github.com/wtforms/flask-wtf/issues/
 Chat = https://discord.gg/pallets
license = BSD-3-Clause
author = Dan Jacob
author_email = danjac354@gmail.com
maintainer = Hsiaoming Yang
maintainer_email = me@lepture.com
description = Form rendering, validation, and CSRF protection for Flask with WTForms.
long_description = file: README.rst
long_description_content_type = text/x-rst
classifiers =
 Development Status :: 5 - Production/Stable
 Environment :: Web Environment
 Framework :: Flask
 Intended Audience :: Developers
 License :: OSI Approved :: BSD License
 Operating System :: OS Independent
 Programming Language :: Python
 Topic :: Internet :: WWW/HTTP :: Dynamic Content
 Topic :: Internet :: WWW/HTTP :: WSGI
 Topic :: Internet :: WWW/HTTP :: WSGI :: Application
 Topic :: Software Development :: Libraries :: Application Frameworks

[options]
packages = find:
package_dir = = src
include_package_data = true
python_requires = >= 3.6

[options.packages.find]
where = src

[tool:pytest]
testpaths = tests
filterwarnings =
 error

[coverage:run]
branch = True
source =
 flask_wtf
 tests
```

[coverage:paths]
source =
 src
 */site-packages

[flake8]
select = B, E, F, W, B9, ISC
ignore =
 E203
 E501
 E722
 W503
max-line-length = 80
per-file-ignores =
 src/flask_wtf/__init__.py: F401
 src/flask_wtf/recaptcha/__init__.py: F401

[egg_info]
tag_build =
tag_date = 0

Found in path(s):
* /opt/cola/permits/1326075069_1652360427.5145478/0/flask-wtf-1-0-1-tar-gz/Flask-WTF-1.0.1/setup.cfg

1.277 libjpeg-turbo 2.1.3-r1

1.277.1 Available under license :

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1.278 jsr305 3.0.2

1.278.1 Available under license :

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Found in path(s):
* /opt/cola/permits/1334730768_1653653249.5131547/0/jsr305-3-0-2-sources-8-jar/javax/annotation/concurrent/GuardedBy.java
* /opt/cola/permits/1334730768_1653653249.5131547/0/jsr305-3-0-2-sources-8-jar/javax/annotation/concurrent/NotThreadSafe.java
* /opt/cola/permits/1334730768_1653653249.5131547/0/jsr305-3-0-2-sources-8-jar/javax/annotation/concurrent/Immutable.java
* /opt/cola/permits/1334730768_1653653249.5131547/0/jsr305-3-0-2-sources-8-jar/javax/annotation/concurrent/ThreadSafe.java

1.279 krb5-conf 1.0-r2

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cmd/krb5/kadmin/server/ipropd_svc.c
cmd/krb5/kproplog/kproplog.c
cmd/krb5/slave/kpropd_rpc.c
lib/gss_mechs/mech_krb5/et/kdb5_err.c
lib/gss_mechs/mech_spnego/mech/gssapiP_spnego.h
lib/gss_mechs/mech_spnego/mech/spnego_mech.c
lib/krb5/kadm5/kadm_host_srv_names.c
lib/krb5/kdb/kdb_convert.c
lib/krb5/kdb/kdb_hdr.h
lib/krb5/kdb/kdb_log.c
lib/krb5/kdb/kdb_log.h
lib/libgss/g_accept_sec_context.c
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lib/libgss/g_canon_name.c
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lib/libgss/g_context_time.c
lib/libgss/g_delete_sec_context.c
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lib/libgss/g_dup_name.c
lib/libgss/g_exp_sec_context.c
lib/libgss/g_export_name.c
lib/libgss/g_glue.c
lib/libgss/g_imp_name.c
lib/libgss/g_imp_sec_context.c
lib/libgss/g_init_sec_context.c
lib/libgss/g_initialize.c
lib/libgss/g_inquire_context.c
lib/libgss/g_inquire_cred.c
lib/libgss/g_inquire_names.c

lib/libgss/g_process_context.c
lib/libgss/g_rel_buffer.c
lib/libgss/g_rel_cred.c
lib/libgss/g_rel_name.c
lib/libgss/g_rel_oid_set.c
lib/libgss/g_seal.c
lib/libgss/g_sign.c
lib/libgss/g_store_cred.c
lib/libgss/g_unseal.c
lib/libgss/g_userok.c
lib/libgss/g_utils.c
lib/libgss/g_verify.c
lib/libgss/gssd_pname_to_uid.c
uts/common/gssapi/include/gssapi_err_generic.h
uts/common/gssapi/include/mechglueP.h

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lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c

lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

and the initial implementation of incremental propagation, including the following new or changed files:

include/iprop_hdr.h
kadmin/server/ipropd_svc.c
lib/kdb/iprop.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
kprop/kpropd_rpc.c
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In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes

2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1	2010	PSF	yes
3.2	3.1	2010	PSF	yes

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2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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1.282 wipefs 2.38-r1

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1.283 jake 10.8.5

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Jake -- the JavaScript build tool for Node.js

```
[![Build Status](https://travis-ci.org/jakejs/jake.svg?branch=master)](https://travis-ci.org/jakejs/jake)
```

Documentation site at http://jakejs.com

Contributing
1. [Install node](http://nodejs.org/#download).
2. Clone this repository `$ git clone git@github.com:jakejs/jake.git`.
3. Install dependencies `$ npm install`.
4. Run tests with `$ npm test`.
5. Start Hacking!

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1.284 npm-bundled 1.1.2

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1.285 ee-first 1.1.1

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1.286 nfdk 6.0.394

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7za9Wq93gGnYkYHAAAAeNrbwKDNsImRiUmbcRMziNzOrKYgKczDwKG9nUUFymLYzqinJichABJk0lCSE
QELbmLlYNfewKDgWpsp4eK9gyEhKGIDo/QGhsgNjH0AckQQ2QAA) format("woff")}.nfdk-6-0-394-s .pynr-
floating-app.adapter{background-color:#e8eaee;height:100%;width:100%;overflow-y:auto}.nfdk-6-0-394-s .pynr-
floating-app.adapter>.header{width:882px;height:65px;margin-left:auto;margin-right:auto;padding-left:0;padding-
right:0}.nfdk-6-0-394-s .pynr-floating-app.adapter>.header>.title{font-weight:unset;font-
size:1.2rem;color:#828ba2}.nfdk-6-0-394-s .pynr-floating-app.adapter>.header>.button.close{display:none}.nfdk-6-
0-394-s .pynr-floating-app.adapter>.content{overflow:hidden;height:unset}.nfdk-6-0-394-s .pynr-floating-
app.adapter>.content>.action-sheet{border-bottom:none}.nfdk-6-0-394-s .pynr-floating-
app.adapter>.content>.action-sheet>.actions{padding:0;margin-top:20px;margin-left:auto;margin-
right:auto;width:882px}.nfdk-6-0-394-s .pynr-floating-app.adapter>.content>.action-sheet>.content .schema-
form{margin-left:auto;margin-right:auto;width:882px}.nfdk-6-0-394-s .pynr-floating-app.adapter.embedded .action-
sheet .content{background-color:transparent}.nfdk-6-0-394-s .report-app .title-container{display:flex;align-
items:center}.nfdk-6-0-394-s .report-app .title-container>div:first-child{flex:1 1 auto}.nfdk-6-0-394-s .report-
app>.header .pynr-model-selector{line-height:normal}.nfdk-6-0-394-s .report-app>.content{display:flex;flex-
direction:column}.nfdk-6-0-394-s .report-app>.content>.info-container .pynr-cardbox{display:block}.nfdk-6-0-394-
s .report-app>.content>.info-container .pynr-cardbox .title{margin-bottom:10px}.nfdk-6-0-394-s .report-
app>.content>.info-container{display:block;border:2px solid #e8eaee;border-radius:5px}.nfdk-6-0-394-s .report-app
.model-since-label{font-weight:300;font-size:.85rem;color:#9fa6b8;line-height:normal;padding-right:10px;padding-
left:10px;max-height:35px;overflow-y:hidden}.nfdk-6-0-394-s .report-app>.content>.standby-app-
message{color:rgba(245,23,69,.6);display:flex;flex-direction:column;margin:200px auto;max-
width:600px;height:min-content;text-align:center;font-size:1.5rem;transition:color .3s ease-out}.nfdk-6-0-394-s
.report-app>.content>.standby-app-message:hover{color:#f51745}.nfdk-6-0-394-s .report-app>.content>.standby-
app-message:before{content:"error_outline";font-family:Material Icons;font-size:5rem}.nfdk-6-0-394-s
.expandable>.expandable-header{padding-left:0!important;position:relative;min-height:30px;line-
height:30px;cursor:pointer}.nfdk-6-0-394-s .expandable>.expandable-header
.expander{position:absolute;top:calc(50% - 5px);left:5px;flex:0 0 10px;fill:grey;overflow:visible}.nfdk-6-0-394-s
.expandable>.expandable-header .expander polygon{transition:transform .15s;transform-origin:4px 6px}.nfdk-6-0-
394-s .expandable>.expandable-header:hover .expander{fill:#000}.nfdk-6-0-394-s .expandable.open>.expandable-
header>.expander>polygon{transform:rotate(90deg)}.nfdk-6-0-394-s .expandable>.content{padding:5px 5px 5px
10px;margin-left:15px}.nfdk-6-0-394-s .pynr-tab-view{display:flex;flex-direction:column}.nfdk-6-0-394-s .pynr-
tab-view>.tabs{flex:0 0 40px;height:40px;width:100%;display:flex;justify-
content:center;overflow:hidden;color:#383f50}.nfdk-6-0-394-s .pynr-tab-view>.tabs .tab{flex:1 1 auto;max-
width:300px;line-height:40px;text-align:center;cursor:pointer}.nfdk-6-0-394-s .pynr-tab-
view.flat>.tabs{background-color:#e8eaee;overflow:hidden}.nfdk-6-0-394-s .pynr-tab-
view.flat>.tabs>.tab{color:hsla(0,0%,100%,.7);position:relative;border-top-left-radius:10px;border-top-right-
radius:10px}.nfdk-6-0-394-s .pynr-tab-view.flat>.tabs>.tab:first-child{margin-left:10px}.nfdk-6-0-394-s .pynr-tab-
view.flat>.tabs>.tab:last-child{margin-right:10px}.nfdk-6-0-394-s .pynr-tab-view.flat>.tabs>.tab .title{flex:1 1
auto;padding-left:10px;padding-right:10px}.nfdk-6-0-394-s .pynr-tab-view.flat>.tabs>.tab:after,.nfdk-6-0-394-s
.pynr-tab-view.flat>.tabs>.tab:before{position:absolute;bottom:-1px;width:10px;height:10px;content:" "}.nfdk-6-0-
394-s .pynr-tab-view.flat>.tabs>.tab:before{left:-10px;border-bottom-right-radius:10px;border-width:0 1px 1px
0;box-shadow:2px 2px 0 #e8eaee}.nfdk-6-0-394-s .pynr-tab-view.flat>.tabs>.tab:after{right:-10px;border-bottom-
left-radius:10px;border-width:0 0 1px 1px;box-shadow:-2px 2px 0 #e8eaee}.nfdk-6-0-394-s .pynr-tab-
view.flat>.tabs>.tab.active{background-color:#fff;color:#e8eaee;z-index:3}.nfdk-6-0-394-s .pynr-tab-
view.flat>.tabs>.tab.active:before{box-shadow:3px 2px 0 #fff}.nfdk-6-0-394-s .pynr-tab-
view.flat>.tabs>.tab.active:after{box-shadow:-3px 2px 0 #fff}.nfdk-6-0-394-s .pynr-tab-
view.flat>.tabs>.tab:hover:not(.active){z-index:2;background-color:#dadce3;color:#fff}.nfdk-6-0-394-s .pynr-tab-
view.flat>.tabs>.tab:hover:not(.active):before{box-shadow:2px 2px 0 #dadce3}.nfdk-6-0-394-s .pynr-tab-

view.flat>.tabs>.tab:hover:not(.active):after{box-shadow:-2px 2px 0 #dadce3}.nfdk-6-0-394-s .pynr-tab-view.flat>.tabs>.tab{color:rgba(56,63,80,.6)}.nfdk-6-0-394-s .pynr-tab-view.flat>.tabs>.tab.active{color:#383f50}.nfdk-6-0-394-s .pynr-tab-view.flat>.tabs>.tab:hover{color:#383f50!important}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs{background-color:#9fa6b8;overflow:hidden}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab{color:hsla(0,0%,100%,.7);position:relative;border-top-left-radius:10px;border-top-right-radius:10px}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab:first-child{margin-left:10px}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab:last-child{margin-right:10px}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab .title{flex:1 1 auto;padding-left:10px;padding-right:10px}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab:after,.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab:before{position:absolute;bottom:-1px;width:10px;height:10px;content:" "}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab:before{left:-10px;border-bottom-right-radius:10px;border-width:0 1px 1px 0;box-shadow:2px 2px 0 #9fa6b8}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab:after{right:-10px;border-bottom-left-radius:10px;border-width:0 0 1px 1px;box-shadow:-2px 2px 0 #9fa6b8}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab.active{background-color:#fff;color:#9fa6b8;z-index:3}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab.active:before{box-shadow:3px 2px 0 #fff}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab.active:after{box-shadow:-3px 2px 0 #fff}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab:hover:not(.active){z-index:2;background-color:#aeb4c3;color:#fff}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab:hover:not(.active):before{box-shadow:2px 2px 0 #aeb4c3}.nfdk-6-0-394-s .pynr-tab-view.primary>.tabs>.tab:hover:not(.active):after{box-shadow:-2px 2px 0 #aeb4c3}.nfdk-6-0-394-s .pynr-tab-view.streamlined>.tabs{align-items:center}.nfdk-6-0-394-s .pynr-tab-view.streamlined>.tabs>.tab:first-child{border-top-left-radius:5px;border-bottom-left-radius:5px}.nfdk-6-0-394-s .pynr-tab-view.streamlined>.tabs>.tab:last-child{border-top-right-radius:5px;border-bottom-right-radius:5px;border-right:1px solid #e8eaee}.nfdk-6-0-394-s .pynr-tab-view.streamlined>.tabs>.tab{transition:background-color .1s;text-transform:uppercase;font-size:.8rem;line-height:25px;height:25px;padding:0 20px;border:1px solid #e8eaee;border-right:none;background-color:#f7f8f9;color:#383f50}.nfdk-6-0-394-s .pynr-tab-view.streamlined>.tabs>.tab:hover:not(:active):not(.active){background-color:#e8eaee}.nfdk-6-0-394-s .pynr-tab-view.streamlined>.tabs>.tab:active{background-color:#dadce3}.nfdk-6-0-394-s .pynr-tab-view.streamlined>.tabs>.tab.active{color:#fff;background-color:#2e84ca}.nfdk-6-0-394-s .pynr-tab-view.streamlined>.tabs>.tab.active:hover{background-color:#2976b5}.nfdk-6-0-394-s .pynr-tab-view.chips>.tabs{flex:0 0 auto;flex-wrap:wrap;height:auto;justify-content:flex-start;align-items:center;padding-left:10px;padding-right:10px}.nfdk-6-0-394-s .pynr-tab-view.chips>.tabs>.tab{flex:0 0 auto;padding-left:10px;padding-right:10px;border-radius:15px;background-color:#f7f8f9;height:25px;line-height:25px;border:1px solid #e8eaee;text-transform:uppercase;font-weight:700;font-size:.9rem;margin-bottom:10px}.nfdk-6-0-394-s .pynr-tab-view.chips>.tabs>.tab:hover{background-color:#e8eaee}.nfdk-6-0-394-s .pynr-tab-view.chips>.tabs>.tab.active{background-color:rgba(46,132,202,.2);border:1px solid rgba(46,132,202,.6);color:#2569a0}.nfdk-6-0-394-s .pynr-tab-view.chips>.tabs>.tab:not(:last-child){margin-right:10px}.nfdk-6-0-394-s .pynr-tab-view.underline>.tabs{flex:1 0 auto}.nfdk-6-0-394-s .pynr-tab-view.underline>.tabs>.tab{padding-left:13px;padding-right:13px;display:flex;justify-content:center;position:relative;font-size:1rem;font-weight:400;letter-spacing:.11px;cursor:pointer}.nfdk-6-0-394-s .pynr-tab-view.underline>.tabs>.tab:before{content:" ";position:absolute;bottom:-1px;left:0;right:0;height:3px;background:#2e84ca;border-radius:1.5px;transition:opacity .16s ease-in-out;opacity:0}.nfdk-6-0-394-s .pynr-tab-view.underline>.tabs>.tab.active{color:#2e84ca;font-weight:600}.nfdk-6-0-394-s .pynr-tab-view.underline>.tabs>.tab.active:before{opacity:1}.nfdk-6-0-394-s .pynr-tab-view.underline>.tabs>.tab:hover{color:#2e84ca}.nfdk-6-0-394-s .pyoneer-action-sheet{display:flex;flex-direction:column}.nfdk-6-0-394-s .pyoneer-action-sheet>.children{flex:1 1 auto}.nfdk-6-0-394-s .pyoneer-action-sheet>.actions{display:flex;flex:0 0 auto;justify-content:flex-end;margin-top:10px;padding-top:10px;border-top:1px solid #eee}.nfdk-6-0-394-s .pynr-split-view{display:flex;flex:1 1 auto}.nfdk-6-0-394-s .pynr-split-view>.left{flex:0

0 350px;border-right:1px solid #ddd;overflow-x:hidden;min-width:250px;display:flex}.nfdk-6-0-394-s .pynr-split-
view>.pynr-resizer{background-color:hsla(0,0%,93.3%,.8)}.nfdk-6-0-394-s .pynr-split-
view>.right{padding:10px;overflow-y:auto;flex:1 1 auto;display:flex;flex-direction:column}.nfdk-6-0-394-s .pynr-
split-view.vertical{flex-direction:column}.nfdk-6-0-394-s .pynr-split-view.vertical>.left{border-right:none;border-
bottom:1px solid #ddd;min-height:0;transition:min-height .1s;box-sizing:border-box;z-index:1}.nfdk-6-0-394-s
.pynr-split-view.vertical>.left.full{min-height:100%}.nfdk-6-0-394-s .pynr-split-view.vertical>.left.full+.pynr-
resizer{pointer-events:none;cursor:normal}.nfdk-6-0-394-s .pynr-split-view.vertical.vertical-icon-indicator{border-
radius:5px;border:1px solid #d3d3d3;min-height:0;margin:10px;overflow-y:hidden}.nfdk-6-0-394-s .pynr-split-
view.vertical.vertical-icon-indicator>.left{padding:20px 20px 0;max-height:calc(100% - 1.5rem)}.nfdk-6-0-394-s
.pynr-split-view.vertical.vertical-icon-indicator>.pynr-resizer>.resizer:before{font-family:Material Icons;font-
size:1.5rem;content:"drag_indicator";color:#000;user-select:none;position:absolute;left:calc(50% - .75rem);bottom:-
22px;transform:rotate(90deg);background:transparent;border-radius:3px}.nfdk-6-0-394-s .pynr-split-
view.vertical.vertical-icon-indicator>.right{background-color:#e8eaee;padding:20px;min-height:0}.nfdk-6-0-394-s
.pynr-cardbox{padding:10px;background-color:#fff;border-radius:4px;border:1px solid #dadce3;display:flex;flex-
direction:column}.nfdk-6-0-394-s .pynr-cardbox>.title{flex:0 0 auto;margin-bottom:20px;font-size:.9rem;text-
transform:uppercase;color:#9fa6b8}.nfdk-6-0-394-s .pynr-cardbox>*{flex:1 1 auto}.nfdk-6-0-394-s .pynr-
container.horizontal{display:flex;align-items:center;justify-content:space-between}.nfdk-6-0-394-s .pynr-
expandable{padding-left:24px;display:flex;flex-direction:column}.nfdk-6-0-394-s .pynr-
expandable>.header{display:flex;flex:0 0 30px;margin-left:-24px;align-items:center;cursor:pointer;user-
select:none}.nfdk-6-0-394-s .pynr-expandable>.header:before{width:18px;height:18px;font-family:Material
Icons;font-size:18px;line-height:1;display:inline-block;margin-right:5px;color:#9fa6b8;transition:transform
.15s;content:"play_arrow"}.nfdk-6-0-394-s .pynr-expandable>.header:hover:before{color:#5c657c}.nfdk-6-0-394-s
.pynr-expandable>.header.expanded:before{transform:rotate(90deg);color:#51596d}.nfdk-6-0-394-s .pynr-
resizer{position:relative}.nfdk-6-0-394-s .pynr-resizer .resizer{transition:background-color
.2s;position:absolute;width:0;height:0;z-index:100}.nfdk-6-0-394-s .pynr-resizer .resizer:hover{background-
color:rgba(46,132,202,.5)}.nfdk-6-0-394-s .pynr-resizer .resizer:active{background-
color:rgba(46,132,202,.8)}.nfdk-6-0-394-s .pynr-dialog-box{pointer-
events:none;position:fixed;width:100vw;height:100vh;top:0;left:0;display:flex;align-items:center;justify-
content:center}.nfdk-6-0-394-s .pynr-dialog-box.visible{z-index:999;animation:fadein .1s linear}.nfdk-6-0-394-s
.pynr-dialog-
box.visible:after{position:fixed;content:"";top:0;left:0;bottom:0;right:0;background:rgba(59,65,80,.5);pointer-
events:none;z-index:-2}.nfdk-6-0-394-s .pynr-dialog-
box.visible:before{position:absolute;content:"";top:0;left:0;bottom:0;right:0;background:transparent;border-
radius:4px;z-index:-1;pointer-events:auto}.nfdk-6-0-394-s .pynr-dialog-box .dialog{min-width:300px;min-
height:100px;max-height:80vh;max-width:80vw;box-shadow:0 2px 8px rgba(0,0,0,.16);border-
radius:4px;background:#fff;display:flex;flex-direction:column;visibility:visible;pointer-
events:auto;overflow:hidden}.nfdk-6-0-394-s .pynr-dialog-box .dialog>.header{flex:0 0 auto;align-
items:center;display:flex;margin-left:10px;margin-right:10px;font-weight:300;height:40px;line-height:40px;border-
bottom:1px solid #dadce3;box-sizing:border-box}.nfdk-6-0-394-s .pynr-dialog-box .dialog>.header>.title{font-
size:1.2rem;flex:1 1 auto}.nfdk-6-0-394-s .pynr-dialog-box .dialog>.header>.pyoneer-action.close{margin-right:-
5px}.nfdk-6-0-394-s .pynr-dialog-box .dialog>.content{flex:1 1 auto;overflow-y:auto;overflow-x:hidden}.nfdk-6-0-
394-s .pynr-dialog-box .dialog.hidden{visibility:hidden;pointer-events:none}.nfdk-6-0-394-s .pynr-async-
container>.async-message{color:#9fa6b8;display:flex;align-items:center}.nfdk-6-0-394-s .pynr-async-
container>.async-message .indeterminate-loader-circular{width:15px;height:15px;margin-right:5px}.nfdk-6-0-394-s
.pynr-async-container>.async-message .indeterminate-loader-circular circle{stroke-width:5px}.nfdk-6-0-394-s
.indeterminate-loader-indicator{margin:20px;height:5px;overflow-x:hidden;position:relative}.nfdk-6-0-394-s
.indeterminate-loader-indicator
.line{position:absolute;opacity:.4;background:#bcc1ce;width:150%;height:5px}.nfdk-6-0-394-s .indeterminate-

loader-indicator .subline{position:absolute;background:#aeb4c3;height:5px}.nfdk-6-0-394-s .indeterminate-loader-
indicator .subline.inc{animation:increase 2s infinite}.nfdk-6-0-394-s .indeterminate-loader-indicator
.subline.dec{animation:decrease 2s .5s infinite}@keyframes increase{0%{left:-
5%;width:5%}to{left:130%;width:100%}}@keyframes decrease{0%{left:-
80%;width:80%}to{left:110%;width:10%}}.nfdk-6-0-394-s .indeterminate-loader-circular{animation:rotate 2s
linear infinite;width:50px;height:50px;transform-origin:center center}.nfdk-6-0-394-s .indeterminate-loader-circular
.path{stroke-dasharray:1,200;stroke-dashoffset:0;stroke-width:3px;stroke-miterlimit:10;stroke:#bcc1ce;stroke-
linecap:round;animation:dash 1.5s ease-in-out infinite}@keyframes
rotate{0%{transform:rotate(0deg)}to{transform:rotate(1turn)}}@keyframes dash{0%{stroke-
dasharray:1,200;stroke-dashoffset:0}50%{stroke-dasharray:89,200;stroke-dashoffset:-35px}to{stroke-
dasharray:89,200;stroke-dashoffset:-124px}}.nfdk-6-0-394-s .pynr-action{height:30px;min-width:50px;padding-
left:5px;padding-right:5px;text-align:center;border-radius:3px;line-height:30px;cursor:pointer;font-
size:.9rem;color:#2e84ca;box-sizing:border-box;user-select:none;display:flex;align-items:center;justify-
content:center}.nfdk-6-0-394-s .pynr-action:hover:not(:active){background-color:#f7f8f9}.nfdk-6-0-394-s .pynr-
action.disabled{pointer-events:none}.nfdk-6-0-394-s .pynr-action.primary{background-
color:#2e84ca;color:#fff;box-shadow:0 1px 8px rgba(0,0,0,.16)}.nfdk-6-0-394-s .pynr-
action.primary:hover:not(:active){background-color:#539cd8}.nfdk-6-0-394-s .pynr-
action.primary.disabled{background-color:#aaa!important}.nfdk-6-0-394-s .pynr-
action.primary.critical:hover:not(:active){background-color:#f7486c}.nfdk-6-0-394-s .pynr-
action.outlined{border:1px solid #2e84ca}.nfdk-6-0-394-s .pynr-action.outlined:hover:not(:active){background-
color:#edf4fa}.nfdk-6-0-394-s .pynr-action.outlined.critical{color:#f51745;border-color:#f51745}.nfdk-6-0-394-s
.pynr-action.outlined.critical:hover:not(:active){background-color:rgba(245,23,69,.1)}.nfdk-6-0-394-s .pynr-
action.outlined.disabled{border:1px solid #ddd;color:#ddd}.nfdk-6-0-394-s .pynr-
action.flat.disabled{color:#ddd}.nfdk-6-0-394-s .pynr-action.flat.critical{color:#f51745}.nfdk-6-0-394-s .pynr-
action.flat.critical:hover:not(:active){background-color:rgba(245,23,69,.1)}.nfdk-6-0-394-s .pynr-action:not(:last-
child){margin-right:10px}.nfdk-6-0-394-s .pynr-action>.title{pointer-events:none}.nfdk-6-0-394-s .pynr-
action>.title:before{width:18px;height:18px;font-family:Material Icons;font-size:18px;line-height:1;display:inline-
block;vertical-align:middle}.nfdk-6-0-394-s .pynr-action.circular{min-width:40px;max-
width:40px;width:40px;height:40px;border-radius:50%}.nfdk-6-0-394-s .pynr-action.primary.critical{background-
color:#f51745}.nfdk-6-0-394-s .pynr-action.primary.critical:hover{background-color:#d00932}.nfdk-6-0-394-s
.pynr-action.menu-item{color:#383f50;text-align:left;justify-content:flex-start;margin-right:0}.nfdk-6-0-394-s
.pynr-action.menu-item.disabled{color:#e8eaee}.nfdk-6-0-394-s .pynr-action.outlined:hover{border-
color:#2569a0;color:#2569a0;background-color:rgba(46,132,202,.2)}.nfdk-6-0-394-s .pynr-
action.outlined.critical:not(.disabled){border-color:#f51745;color:#f51745}.nfdk-6-0-394-s .pynr-
action.outlined.critical:not(.disabled):hover:not(:active){background-color:rgba(245,23,69,.05)}.nfdk-6-0-394-s
.pynr-action.outlined.critical:not(.disabled):hover{border-color:#d00932;color:#d00932;background-
color:rgba(245,23,69,.1)}.nfdk-6-0-394-s .pynr-action.icon-download>.title:before{content:"get_app";margin-
right:5px}.nfdk-6-0-394-s .pynr-action.icon-add>.title:before{content:"add";margin-right:5px}.nfdk-6-0-394-s
.pynr-action.icon-remove>.title:before{content:"remove";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-
clear>.title:before{content:"clear";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-
delete>.title:before{content:"delete_outline";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-
checkmark>.title:before{content:"check";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-
edit>.title:before{content:"edit";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-
help>.title:before{content:"help_outline";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-
locate>.title:before{content:"near_me";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-
reload>.title:before{content:"refresh";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-
star>.title:before{content:"star_border";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-
star_filled>.title:before{content:"star";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-

backspace>.title:before{content:"keyboard_backspace";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-back>.title:before{content:"navigate_before";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-next>.title:before{content:"navigate_next";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-input>.title:before{content:"input";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-test>.title:before{content:"playlist_add_check";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-idl>.title:before{content:"settings_ethernet";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-visibility>.title:before{content:"visibility";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-filter_list>.title:before{content:"filter_list";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-link_off>.title:before{content:"link_off";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-error_outline>.title:before{content:"error_outline";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-settings>.title:before{content:"settings";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-dropdown>.title:before{content:"arrow_drop_down";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-search>.title:before{content:"search";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-more>.title:before{content:"more_horiz";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-arrow_down>.title:before{content:"arrow_downward";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-arrow_up>.title:before{content:"arrow_upward";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-open_new_tab>.title:before{content:"open_in_new";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-zoom_in>.title:before{content:"zoom_in";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-zoom_out>.title:before{content:"zoom_out";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-fit_screen>.title:before{content:"fit_screen";margin-right:5px}.nfdk-6-0-394-s .pynr-action.icon-back>.title:before,.nfdk-6-0-394-s .pynr-action.icon-next>.title:before{vertical-align:sub}.nfdk-6-0-394-s .pynr-action.icon-only{color:#383f50;min-width:30px;font-size:unset}.nfdk-6-0-394-s .pynr-action.icon-only.primary{color:#fff}.nfdk-6-0-394-s .pynr-action.icon-only>.title{font-size:0}.nfdk-6-0-394-s .pynr-action.icon-only>.title:before{font-size:24px;width:24px;height:24px;margin-right:0}.nfdk-6-0-394-s .pynr-table{position:relative;border:1px solid #dadce3;border-radius:5px;overflow-x:auto;display:flex;flex-direction:column;width:100%}.nfdk-6-0-394-s .pynr-table .table-headers{position:sticky;z-index:10;top:0;background-color:#fff;box-shadow:0 1px 0 0 #dadce3;font-size:13px}.nfdk-6-0-394-s .pynr-table .table-headers .headers-container{color:#383f50;display:flex}.nfdk-6-0-394-s .pynr-table .table-headers .indeterminate-loader-indicator{margin:0}.nfdk-6-0-394-s .pynr-table .table-headers .summary{height:20px;background-color:#e8eaee;text-transform:uppercase;padding-left:10px;border-top:1px solid #dadce3;font-weight:600;font-size:.8rem;line-height:20px;color:#626a7c}.nfdk-6-0-394-s .pynr-table .table-headers .header{flex:0 1 auto;user-select:none;display:flex;align-items:flex-start;position:relative;padding-left:10px}.nfdk-6-0-394-s .pynr-table .table-headers .header:not(:last-child){border-right:1px solid #e8eaee}.nfdk-6-0-394-s .pynr-table .table-headers .header:not(:last-child)>.resizer{right:-3px}.nfdk-6-0-394-s .pynr-table .table-headers .header>.title{flex:1 1 auto;align-items:center;text-transform:capitalize;overflow:hidden;white-space:normal;transition:color .15s;align-self:stretch;line-height:1rem}.nfdk-6-0-394-s .pynr-table .table-headers .header>.title>*{vertical-align:middle}.nfdk-6-0-394-s .pynr-table .table-headers .header:first-child .title{padding-left:0}.nfdk-6-0-394-s .pynr-table .table-headers .header.sortable{cursor:pointer}.nfdk-6-0-394-s .pynr-table .table-headers .header.sortable>.title:hover,.nfdk-6-0-394-s .pynr-table .table-headers .header.sorted>.title{color:#000}.nfdk-6-0-394-s .pynr-table .table-headers .header .sort-icon{flex:0 0 auto;transition-duration:.15s;transition-property:transform;transform-origin:center;font-size:.7rem!important;width:.7rem;height:.7rem;pointer-events:none;margin-right:2px;padding:2px 0;font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga"}.nfdk-6-0-394-s .pynr-table .table-headers .header .sort-icon.desc{transform:rotate(180deg)}.nfdk-6-0-394-s .pynr-table .table-headers .header .sort-icon:before{content:"arrow_upward"}.nfdk-6-0-394-s .pynr-table .table-headers .header .filter{flex:0 0 auto;transition:color .15s;font-size:.7rem!important;border-radius:50%;width:.7rem;height:.7rem;padding:.2rem;font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga"}.nfdk-6-0-394-s .pynr-table .table-headers .header .filter.open,.nfdk-6-0-394-s .pynr-table .table-headers .header .filter:hover{color:#000;background-color:#dadce3}.nfdk-6-0-394-s .pynr-table .table-headers .header .filter.active{color:#9fa6b8;background-color:#dadce3}.nfdk-6-0-394-s .pynr-table .table-headers .header .filter-popup{position:absolute;display:none;width:80%;top:calc(100% + 5px);right:5px;background-color:#fff;max-width:300px;min-width:200px;box-sizing:border-box;padding:10px;border:1px solid #eee;border-radius:5px;box-shadow:0 3px 6px -1px rgba(67,74,91,.27)}.nfdk-6-0-394-s .pynr-table .table-headers .header .filter-popup.open{display:block}.nfdk-6-0-394-s .pynr-table .table-headers .header .filter-field.textual.with-margin{margin-bottom:15px}.nfdk-6-0-394-s .pynr-table .table-headers .header .filter-field.exact .placeholder{display:none}.nfdk-6-0-394-s .pynr-table .table-headers .header .filter-field.exact>.options{position:relative;box-shadow:unset;border:0;padding:0}.nfdk-6-0-394-s .pynr-table .table-headers .header>.resizer{position:absolute;z-index:1;width:6px;height:100%;cursor:col-resize;right:0;top:0}.nfdk-6-0-394-s .pynr-table .row{background-color:#fff;color:#383f50;display:flex;align-items:stretch;font-size:14px;line-height:15px}.nfdk-6-0-394-s .pynr-table .row:hover{transition:background-color .15s;background-color:#f0f1f4}.nfdk-6-0-394-s .pynr-table .row .col{flex:0 1 auto;overflow:hidden}.nfdk-6-0-394-s .pynr-table .row .col:not(:last-child){border-right:1px solid #e8eaee}.nfdk-6-0-394-s .pynr-table .row.selected{color:#4084ce;font-weight:600}.nfdk-6-0-394-s .pynr-table .table-body,.nfdk-6-0-394-s .pynr-table .table-body *{box-sizing:border-box}.nfdk-6-0-394-s .pynr-table .table-body>.expandable{background-color:#fff}.nfdk-6-0-394-s .pynr-table .table-body>.expandable .row{padding-left:0;background-color:transparent}.nfdk-6-0-394-s .pynr-table .table-body>.expandable .row>:first-child{padding-left:20px}.nfdk-6-0-394-s .pynr-table .table-body>.expandable.open{box-shadow:inset 2px 0 0 0 #2e84ca}.nfdk-6-0-394-s .pynr-table .table-body>.expandable:hover{transition:background-color .15s;background-color:#f0f1f4}.nfdk-6-0-394-s .pynr-table .table-body>.loading{padding:20px;text-align:center;color:#bcc1ce}.nfdk-6-0-394-s .pynr-table .table-body>.loading>*{vertical-align:middle}.nfdk-6-0-394-s .pynr-table .table-body>.loading .indeterminate-loader-circular{width:20px;height:20px;margin-right:5px}.nfdk-6-0-394-s .pynr-table .table-body>.loading .indeterminate-loader-circular circle{stroke-width:5px}.nfdk-6-0-394-s .pynr-table .table-body>.empty{padding:20px;text-align:center;color:#bcc1ce}.nfdk-6-0-394-s .pynr-table .table-body>.padding{box-sizing:border-box}.nfdk-6-0-394-s .pynr-table .col,.nfdk-6-0-394-s .pynr-table .header{text-align:left;box-sizing:border-box;padding:8px 8px 8px 10px}.nfdk-6-0-394-s .pynr-table .col>.basic-markdown{text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .pynr-table.processing{pointer-events:none}.nfdk-6-0-394-s .pynr-table.processing .row{background-color:#eee;color:#ddd}.nfdk-6-0-394-s .pynr-table.bordered .table-body>div{border-bottom:1px solid #ddd}.nfdk-6-0-394-s .pynr-table.zebra .table-body>div:not(:hover):nth-child(2n){background-color:#f7f8f9}.nfdk-6-0-394-s .pynr-table.selectable .row{cursor:pointer}.nfdk-6-0-394-s .pynr-table.paginated{overflow-y:auto;height:100%}.nfdk-6-0-394-s .pynr-table.lightheader{border:none}.nfdk-6-0-394-s .pynr-table.lightheader .table-body{border:1px solid #ddd}.nfdk-6-0-394-s .pynr-table.lightheader .table-body .row:not(:last-child){border-bottom:1px solid #ddd}.nfdk-6-0-394-s .pynr-table.lightheader .col>.basic-markdown{text-overflow:unset;overflow:unset;white-space:unset}.nfdk-6-0-394-s .pynr-table.lightheader .table-headers{box-shadow:none;margin-bottom:10px}.nfdk-6-0-394-s .pynr-table.lightheader .table-headers .headers-container .header .title{color:#a0a6b9;font-size:14px}.nfdk-6-0-394-s .pynr-table.lightheader .table-headers .headers-container .header:not(:last-child){border-right:none}.nfdk-6-0-394-s .pynr-table.lightheader .table-headers .summary{display:none}.nfdk-6-0-394-s .pynr-table{width:unset}.nfdk-6-0-394-s .pynr-sstable{box-sizing:border-box;display:flex;flex-direction:column;width:100%;overflow:auto;min-height:0;min-width:0}.nfdk-6-0-394-s .pynr-sstable>.headers{z-index:10;position:sticky;top:0}.nfdk-6-0-394-s .pynr-sstable>.headers>.indeterminate-loader-indicator{margin:0;height:2px;display:none;border-bottom:1px solid #dadce3}.nfdk-6-0-394-s .pynr-sstable>.headers>.indeterminate-loader-indicator>.line{height:2px;background-color:#e8eaee;opacity:1}.nfdk-6-0-

394-s .pynr-sstable>.headers>.indeterminate-loader-indicator>.subline{height:2px;background-color:#9fa6b8}.nfdk-6-0-394-s .pynr-sstable.loading>.headers>.indeterminate-loader-indicator{display:block}.nfdk-6-0-394-s .pynr-sstable.loading>.headers>.summary{height:18px;border-bottom:none}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal{display:flex}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>*{flex:1 1 0;min-width:50px}.nfdk-6-0-394-s .pynr-sstable>.row{display:flex}.nfdk-6-0-394-s .pynr-sstable>.row>*{flex:1 1 0;min-width:50px}.nfdk-6-0-394-s .pynr-sstable>.headers>.summary{flex:1 1 auto;height:20px;background-color:#e8eaee;text-transform:uppercase;padding-left:10px;border-top:1px solid #dadce3;border-bottom:1px solid #dadce3;font-weight:600;font-size:.8rem;line-height:20px;color:#626a7c}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header{padding:5px 5px 5px 10px;display:flex;align-items:flex-start;user-select:none;position:relative;background-color:#fff;box-shadow:0 1px 0 0 #dadce3;box-sizing:border-box;font-size:13px;border-right:1px solid #e3e4e4}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header:last-child{border-right:none}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.column-drag-over *{pointer-events:none}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.column-drag-over:after{content:"";position:absolute;top:0;left:0;right:0;bottom:0;border:2px dashed #2e84ca}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.dragging{background-color:#ddd}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header .resizer{position:absolute;top:0;right:0;width:2px;height:100%;z-index:100;background-color:#9fa6b8;opacity:0;cursor:col-resize;transition:opacity .15s}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header .resizer:hover{opacity:1}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header>.title{flex:1 1 auto;align-items:center;text-transform:capitalize;overflow:hidden;white-space:normal;transition:color .15s;align-self:stretch;line-height:1rem}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header>.actions-button{flex:0 0 15px;min-width:15px;font-size:1rem!important;width:15px;height:15px;position:relative;border-radius:50%;margin-right:0}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header>.actions-button .title:before{font-size:17px;width:17px;height:17px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header>.actions-button.open,.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header>.actions-button:hover{color:#000;background-color:#dadce3}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header>.actions-button.active{color:#9fa6b8;background-color:#dadce3}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header>.actions-button.hidden{display:none}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header>.actions-popup{position:absolute;top:100%;right:0;width:80%;margin-top:5px;margin-right:5px;margin-left:auto;padding:10px;min-width:200px;max-width:250px;background:#fff;border:1px solid #eee;border-radius:5px;box-shadow:0 3px 6px -1px rgba(67,74,91,.27);box-sizing:border-box;display:none}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header>.actions-popup.open{display:block}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header>.actions-popup>:not(:last-child){border-bottom:1px solid #e3e4e4;padding-bottom:10px;margin-bottom:10px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header>.actions-popup.overflows-left{left:0;margin-left:5px;margin-right:auto;right:unset}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header>.actions-popup.overflows-bottom{overflow-y:auto}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.sortable{cursor:pointer}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.sortable>.sort-indicator:not(:empty){flex:0 0 12px;font-size:.7rem;width:12px;height:15px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.actions{border-top:none;margin-top:0}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner .material-input>.title{top:20px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner .material-input.filled>.title,.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner .material-input>input:focus+.title{top:3px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner:active,.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner:focus{outline:none}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.filter-options .actions{padding-top:5px;padding-bottom:5px;margin-bottom:5px;display:flex;justify-content:space-between}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.filter-options .actions .basic-markdown{color:#5c657c;font-size:.8rem}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.filter-options .actions .basic-markdown:before{font-size:14px;height:14px;width:14px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.filter-options .options{max-height:290px;overflow-y:auto}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.filter-options .options .table-filter-option{display:flex}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.filter-options .options .table-filter-option .material-checkbox,.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.filter-options .options .table-filter-option .material-checkbox>label{flex:1 1 auto;line-height:20px;height:20px;overflow:hidden;margin-right:5px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.filter-options .options .table-filter-option .material-checkbox input{min-width:16px;width:16px;height:16px;margin-right:5px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.filter-options .options .table-filter-option .material-checkbox input:before{line-height:15px;font-size:14px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.filter-options .options .table-filter-option .material-checkbox .title{text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.filter-options .options .table-filter-option .count{flex:0 0 auto;line-height:20px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.filter-options .options .table-filter-option.muted{color:#bcc1ce}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.tags-categories{max-height:290px;overflow-y:auto}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.tags-categories>.pynr-multi-select .header .actions{display:flex;margin-left:auto}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.tags-categories>.pynr-multi-select .header .actions .pynr-action{min-width:unset;margin:unset;color:#5c657c;font-size:.8rem}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.tags-categories>.pynr-multi-select .material-checkbox,.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.tags-categories>.pynr-multi-select .material-checkbox>label{flex:1 1 auto;line-height:20px;height:20px;overflow:hidden;margin-right:5px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.tags-categories>.pynr-multi-select .material-checkbox input{width:16px;height:16px;margin-right:5px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.tags-categories>.pynr-multi-select .material-checkbox input:before{line-height:15px;font-size:14px}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable>.actions-popup>.filter-inner>.children>.tags-categories>.pynr-multi-select .material-checkbox .title{text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable:last-child .filter-popup{left:unset;width:calc(100% - 10px)}.nfdk-6-0-394-s .pynr-sstable>.headers>.headers-internal>.header.filterable:last-child .filter-popup .filter-inner{float:right}.nfdk-6-0-394-s .pynr-sstable.bordered>.row{border-bottom:1px solid #e3e4e4}.nfdk-6-0-394-s .pynr-sstable.zebra>.row:not(.selected):not(:hover):nth-child(2n){background-color:#f7f8f9}.nfdk-6-0-394-s .pynr-sstable.zebra>.row:last-child{border-bottom:1px solid #e3e4e4}.nfdk-6-0-394-s .pynr-sstable>.row{font-size:14px;line-height:15px;min-height:32px;background-color:#fff}.nfdk-6-0-394-s .pynr-sstable>.row>*{padding:8px 8px 8px 10px;min-height:32px;box-sizing:border-box;text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .pynr-sstable>.row>:not(:last-child){border-right:1px solid #e8eaee}.nfdk-6-0-394-s .pynr-sstable>.row:hover{background-color:#e9f2fa;transition:background-color .15s}.nfdk-6-0-394-s .pynr-sstable>.row.selected{background-color:#e9f2fa}.nfdk-6-0-394-s .pynr-sstable>.row.selected>.basic-markdown{color:#4084ce;font-weight:600}.nfdk-6-0-394-s .pynr-sstable>.no-items-msg{padding:20px;text-align:center;color:#bcc1ce}.nfdk-6-0-394-s .pynr-sstable.hidden-column-0>.headers>.headers-internal>:first-child,.nfdk-6-0-394-s .pynr-sstable.hidden-column-0>.row>:first-child{border-left:2px solid #9fa6b8}.nfdk-6-0-394-s .pynr-sstable.hidden-column-1>.headers>.headers-internal>:first-child,.nfdk-6-0-394-s .pynr-sstable.hidden-column-1>.row>:first-child,.nfdk-6-0-394-s .pynr-sstable.hidden-column-2>.headers>.headers-internal>:nth-child(2),.nfdk-6-0-394-s .pynr-sstable.hidden-column-2>.row>:nth-child(2),.nfdk-6-0-394-s .pynr-sstable.hidden-column-3>.headers>.headers-internal>:nth-child(3),.nfdk-6-0-394-s .pynr-sstable.hidden-column-3>.row>:nth-child(3),.nfdk-6-0-394-s .pynr-sstable.hidden-column-4>.headers>.headers-internal>:nth-child(4),.nfdk-6-0-394-s .pynr-sstable.hidden-column-4>.row>:nth-child(4),.nfdk-6-0-394-s .pynr-sstable.hidden-column-5>.headers>.headers-internal>:nth-child(5),.nfdk-6-0-394-s .pynr-sstable.hidden-column-5>.row>:nth-child(5),.nfdk-6-0-394-s .pynr-sstable.hidden-column-6>.headers>.headers-internal>:nth-child(6),.nfdk-6-0-394-s .pynr-sstable.hidden-column-6>.row>:nth-child(6),.nfdk-6-0-394-s .pynr-sstable.hidden-column-7>.headers>.headers-internal>:nth-child(7),.nfdk-6-0-394-s .pynr-sstable.hidden-column-7>.row>:nth-child(7),.nfdk-6-0-394-s .pynr-sstable.hidden-column-8>.headers>.headers-internal>:nth-child(8),.nfdk-6-0-394-s .pynr-sstable.hidden-column-8>.row>:nth-child(8),.nfdk-6-0-394-s .pynr-sstable.hidden-column-9>.headers>.headers-internal>:nth-child(9),.nfdk-6-0-394-s .pynr-sstable.hidden-column-9>.row>:nth-child(9),.nfdk-6-0-394-s .pynr-sstable.hidden-column-10>.headers>.headers-internal>:nth-child(10),.nfdk-6-0-394-s .pynr-sstable.hidden-column-10>.row>:nth-child(10),.nfdk-6-0-394-s .pynr-sstable.hidden-column-11>.headers>.headers-internal>:nth-child(11),.nfdk-6-0-394-s .pynr-sstable.hidden-column-11>.row>:nth-child(11),.nfdk-6-0-394-s .pynr-sstable.hidden-column-12>.headers>.headers-internal>:nth-child(12),.nfdk-6-0-394-s .pynr-sstable.hidden-column-12>.row>:nth-child(12),.nfdk-6-0-394-s .pynr-sstable.hidden-column-13>.headers>.headers-internal>:nth-child(13),.nfdk-6-0-394-s .pynr-sstable.hidden-column-13>.row>:nth-child(13),.nfdk-6-0-394-s .pynr-sstable.hidden-column-14>.headers>.headers-internal>:nth-child(14),.nfdk-6-0-394-s .pynr-sstable.hidden-column-14>.row>:nth-child(14),.nfdk-6-0-394-s .pynr-sstable.hidden-column-15>.headers>.headers-internal>:nth-child(15),.nfdk-6-0-394-s .pynr-sstable.hidden-column-15>.row>:nth-child(15),.nfdk-6-0-394-s .pynr-sstable.hidden-column-16>.headers>.headers-internal>:nth-child(16),.nfdk-6-0-394-s .pynr-sstable.hidden-column-16>.row>:nth-child(16),.nfdk-6-0-394-s .pynr-sstable.hidden-column-17>.headers>.headers-internal>:nth-child(17),.nfdk-6-0-394-s .pynr-sstable.hidden-column-17>.row>:nth-child(17),.nfdk-6-0-394-s .pynr-sstable.hidden-column-18>.headers>.headers-internal>:nth-child(18),.nfdk-6-0-394-s .pynr-sstable.hidden-column-18>.row>:nth-child(18),.nfdk-6-0-394-s .pynr-sstable.hidden-column-19>.headers>.headers-internal>:nth-child(19),.nfdk-6-0-394-s .pynr-sstable.hidden-column-19>.row>:nth-child(19),.nfdk-6-0-394-s .pynr-sstable.hidden-column-20>.headers>.headers-internal>:nth-child(20),.nfdk-6-0-394-s .pynr-sstable.hidden-column-20>.row>:nth-child(20),.nfdk-6-0-394-s .pynr-sstable.hidden-column-21>.headers>.headers-internal>:nth-child(21),.nfdk-6-0-394-s .pynr-sstable.hidden-column-21>.row>:nth-child(21),.nfdk-6-0-394-s .pynr-sstable.hidden-column-22>.headers>.headers-internal>:nth-child(22),.nfdk-6-0-394-s .pynr-sstable.hidden-column-22>.row>:nth-child(22),.nfdk-6-0-394-s .pynr-sstable.hidden-column-23>.headers>.headers-internal>:nth-child(23),.nfdk-6-0-394-s .pynr-sstable.hidden-column-23>.row>:nth-child(23),.nfdk-6-0-394-s .pynr-sstable.hidden-column-24>.headers>.headers-internal>:nth-child(24),.nfdk-6-0-394-s .pynr-sstable.hidden-column-24>.row>:nth-child(24),.nfdk-6-0-394-s .pynr-sstable.hidden-column-25>.headers>.headers-internal>:nth-child(25),.nfdk-6-0-394-s .pynr-sstable.hidden-column-25>.row>:nth-child(25),.nfdk-6-0-394-s .pynr-sstable.hidden-column-26>.headers>.headers-internal>:nth-child(26),.nfdk-6-0-394-s .pynr-sstable.hidden-column-26>.row>:nth-child(26),.nfdk-6-0-394-s .pynr-sstable.hidden-column-27>.headers>.headers-internal>:nth-child(27),.nfdk-6-0-394-s .pynr-sstable.hidden-column-27>.row>:nth-child(27),.nfdk-6-0-394-s .pynr-sstable.hidden-column-28>.headers>.headers-internal>:nth-child(28),.nfdk-6-0-394-s .pynr-sstable.hidden-column-28>.row>:nth-child(28),.nfdk-6-0-394-s .pynr-sstable.hidden-column-29>.headers>.headers-internal>:nth-child(29),.nfdk-6-0-394-s .pynr-sstable.hidden-column-29>.row>:nth-child(29),.nfdk-6-0-394-s .pynr-sstable.hidden-column-

30>.headers>.headers-internal>:nth-child(30),.nfdk-6-0-394-s .pynr-sstable.hidden-column-30>.row>:nth-
child(30){border-right:2px solid #9fa6b8}.nfdk-6-0-394-s .pynr-model-item-hot-zone-table-
item{padding:6px!important;display:flex;max-height:32px}.nfdk-6-0-394-s .pynr-model-item-hot-
zone{position:relative;overflow:visible!important;min-height:18px;transition:all .1s ease-in;background:#fff;font-
size:14px;display:flex;align-items:center;overflow:hidden;transition:border-color .15s ease-in-out;border:1px solid
#dadce3;border-radius:3px;padding:0 4px;display:inline-flex;max-width:calc(100% - 8px);cursor:pointer}.nfdk-6-0-
394-s .pynr-model-item-hot-zone>.actions{display:none;margin-left:5px}.nfdk-6-0-394-s .pynr-model-item-hot-
zone>*{box-sizing:border-box;text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .pynr-
model-item-hot-zone:hover{border-color:#2e84ca}.nfdk-6-0-394-s .pynr-model-item-hot-
zone.activating{position:absolute;opacity:0;transition:opacity .2s ease-out}.nfdk-6-0-394-s .pynr-model-item-hot-
zone.active{border-color:#2e84ca;box-shadow:0 2px 8px rgba(0,0,0,.16);position:absolute;z-index:9999;padding:0
4px;max-width:unset;display:flex}.nfdk-6-0-394-s .pynr-model-item-hot-zone.active>*{margin:-3px;text-
decoration:none!important;padding:3px}.nfdk-6-0-394-s .pynr-model-item-hot-
zone.active>.actions{display:flex;margin-left:5px}.nfdk-6-0-394-s .pynr-model-item-hot-zone.active>.actions .pynr-
action{width:16px;height:16px;min-width:16px}.nfdk-6-0-394-s .pynr-model-item-hot-zone.active>.actions .pynr-
action .title:before{font-size:16px;width:unset;height:unset}.nfdk-6-0-394-s .pynr-model-item-hot-
zone.active>.actions .pynr-action:not(:last-child){margin-right:5px}.nfdk-6-0-394-s .pynr-model-item-hot-
zone.active>.actions .pynr-action:hover{background-color:#e8eaee}.nfdk-6-0-394-s .pynr-model-item-hot-
zone.active>.actions .pynr-action.icon-star_filled{color:#fbae13}.nfdk-6-0-394-s .pynr-model-item-hot-
zone.active>.actions .open-new-tab{color:#383f50;text-decoration:none;margin-right:5px;display:flex}.nfdk-6-0-
394-s .pynr-model-item-hot-zone.active>.actions .open-new-tab:before{font-family:Material Icons;font-
weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-
spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-
rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";font-
size:16px;content:"open_in_new"}.nfdk-6-0-394-s .pynr-model-item-hot-zone.active>.actions .open-new-
tab:hover:before{background-color:#e8eaee}.nfdk-6-0-394-s .pynr-model-item-hot-zone.empty{border-
style:dashed;pointer-events:none;color:#6e7b9a}.nfdk-6-0-394-s .pynr-tooltip-placeholder{background:#fff}.nfdk-
6-0-394-s .row>.pynr-tag-item-wrapper{padding-top:0;padding-bottom:0;padding-left:6px;display:flex;flex-
direction:column;justify-content:center}.nfdk-6-0-394-s .row>.pynr-tag-item-wrapper .pynr-tag-
item{display:flex;overflow:hidden}.nfdk-6-0-394-s .row>.pynr-tag-item-wrapper .pynr-tag-item>.tag-chip{flex:0 0
auto}.nfdk-6-0-394-s .pynr-item-list>.header{height:40px;line-height:40px;padding-left:10px;font-
size:.8rem;color:silver;text-transform:uppercase;white-space:nowrap}.nfdk-6-0-394-s .pynr-item-list>.items{user-
select:none}.nfdk-6-0-394-s .pynr-item-list>.items>.loader{text-align:center;color:silver;margin-top:20px}.nfdk-6-
0-394-s .pynr-item-list>.items>.item{min-height:40px;padding-left:10px;cursor:pointer;transition-
property:color,background-color,padding;transition-duration:.2s;transition-timing-function:ease-out}.nfdk-6-0-394-s
.pynr-item-list>.items>.item.str{height:40px;line-height:40px;text-overflow:ellipsis;overflow:hidden;white-
space:nowrap}.nfdk-6-0-394-s .pynr-item-list.selectable>.items>.item:hover{background-color:#eee}.nfdk-6-0-394-
s .pynr-item-list.selectable>.items>.item.selected{color:#4084ce;padding-left:12px;font-weight:600}.nfdk-6-0-394-s
.pynr-model-selector>.dialog>.content{position:relative;width:80vw;height:80vh;display:flex;flex-
direction:column;min-height:0}.nfdk-6-0-394-s .pynr-model-selector>.dialog>.content>.actions{flex:0 0
45px;justify-content:flex-end;display:flex;border-top:1px solid #e8eaee;align-items:center;padding-
right:10px}.nfdk-6-0-394-s .pynr-model-selector .starred-items{border-radius:5px;height:28px;padding-
right:5px;padding-left:5px;display:flex;align-items:center;position:absolute;left:7px;top:9px;box-shadow:0 2px 8px
#9fa6b8;color:#9fa6b8;background-color:#fff}.nfdk-6-0-394-s .pynr-model-selector .starred-items:before{font-
family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-
transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-
smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-
settings:"liga";content:"star";font-size:20px}.nfdk-6-0-394-s .pynr-model-selector .starred-

items.enabled{cursor:pointer;color:#fbae12}.nfdk-6-0-394-s .pynr-model-selector .starred-items.enabled:hover{box-shadow:0 2px 8px #5c657c}.nfdk-6-0-394-s .pynr-model-selector .starred-items.enabled:active{box-shadow:0 2px 4px #828ba2}.nfdk-6-0-394-s .pynr-model-selector .starred-items.enabled:after{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";content:"expand_more";font-size:20px}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup{position:absolute;top:30px;left:0;background-color:#fff;border-radius:5px;overflow:hidden;min-width:200px;box-shadow:0 2px 4px #9fa6b8}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item{height:35px;line-height:35px;padding-left:5px;padding-right:10px;white-space:nowrap;align-items:center;display:flex;color:#383f50}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item:hover{background-color:#f7f8f9}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item:hover .remove{visibility:visible;pointer-events:auto}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .icon{margin-right:3px}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .icon:before{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";font-size:15px}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .icon.site:before{content:"place"}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .icon.srlg:before{content:"security"}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .icon.inventory:before{content:"memory"}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .icon.link:before{content:"link"}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .icon.port:before{content:"settings_ethernet"}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .icon.sitelink:before{content:"swap_horiz"}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .icon.service:before{content:"cloud"}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .name{flex:1 1 auto}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .remove{visibility:hidden;pointer-events:none;color:#9fa6b8;width:17px;height:17px;line-height:18px;text-align:center;border-radius:50%;margin-left:10px}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .remove:before{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";content:"clear";font-size:14px;line-height:17px}.nfdk-6-0-394-s .pynr-model-selector .starred-items .starred-items-popup .starred-item .remove:hover{color:#5c657c;background-color:#dadce3}.nfdk-6-0-394-s .pynr-model-selector .main-view-tabs{background-color:#9fa6b8;height:35px;padding-top:10px;padding-left:35px;padding-right:35px}.nfdk-6-0-394-s .pynr-model-selector .main-view-tabs>.tabs{height:35px;flex:0 0 35px}.nfdk-6-0-394-s .pynr-model-selector .main-view-tabs>.tabs>.tab{line-height:35px}.nfdk-6-0-394-s .pynr-model-selector .main-view,.nfdk-6-0-394-s .pynr-model-selector .main-view>.subview{display:flex;flex-direction:column;min-height:0;flex:1 1 100%}.nfdk-6-0-394-s .pynr-model-selector .main-view .advanced-view .pynr-tab-view>.tabs>.tab{font-size:.8rem;text-transform:uppercase}.nfdk-6-0-394-s .pynr-model-selector .main-view .advanced-view .table-wrapper{display:flex;flex-direction:column;min-height:0;border-top:1px solid #e8eaee;flex:1 1 100%}.nfdk-6-0-394-s .pynr-model-selector .main-view .advanced-view .table-wrapper .pynr-sstable .row{font-size:.8rem}.nfdk-6-0-394-s .pynr-model-selector .main-view .advanced-view .table-wrapper .pynr-sstable .row>*{padding:4px 4px 4px 8px}.nfdk-6-0-394-s .tag-selector{display:flex;min-height:0}.nfdk-6-0-394-s .tag-selector>.left{flex:0 0 300px;height:100%;border-right:1px solid #e8eaee;display:flex;flex-direction:column}.nfdk-6-0-394-s .tag-selector>.left>.header{flex:0 0 auto;border-bottom:1px solid #e8eaee;padding:5px 10px 10px}.nfdk-6-0-394-s .tag-selector>.left>.body{flex:1 1 auto;overflow-

y:auto;padding:5px}.nfdk-6-0-394-s .tag-selector>.left>.body .pynr-multi-select{font-size:13px;margin-
bottom:5px;flex-direction:row;flex-wrap:wrap}.nfdk-6-0-394-s .tag-selector>.left>.body .pynr-multi-
select>.header{display:flex;flex:1 1 100%}.nfdk-6-0-394-s .tag-selector>.left>.body .pynr-multi-
select>.header>.title{flex:1 1 auto}.nfdk-6-0-394-s .tag-selector>.left>.body .material-checkbox.pynr-multi-
select>label,.nfdk-6-0-394-s .tag-selector>.left>.body .pynr-multi-select>.material-checkbox{flex:0 0 auto;line-
height:20px;height:20px;overflow:hidden;padding:5px;margin:5px;border-radius:4px;background-color:#eee}.nfdk-
6-0-394-s .tag-selector>.left>.body .material-checkbox.pynr-multi-select>label input,.nfdk-6-0-394-s .tag-
selector>.left>.body .pynr-multi-select>.material-checkbox input{width:16px;height:16px;margin-right:5px}.nfdk-
6-0-394-s .tag-selector>.left>.body .material-checkbox.pynr-multi-select>label input:before,.nfdk-6-0-394-s .tag-
selector>.left>.body .pynr-multi-select>.material-checkbox input:before{line-height:15px;font-size:14px}.nfdk-6-0-
394-s .tag-selector>.left>.body .material-checkbox.pynr-multi-select>label .title,.nfdk-6-0-394-s .tag-
selector>.left>.body .pynr-multi-select>.material-checkbox .title{text-overflow:ellipsis;overflow:hidden;white-
space:nowrap}.nfdk-6-0-394-s .tag-selector>.left>.footer{flex:0 0 auto;padding:5px;display:flex;justify-
content:flex-end}.nfdk-6-0-394-s .tag-selector>.right{flex:1 1 auto;padding:0;display:flex;flex-
direction:column;min-height:0}.nfdk-6-0-394-s .tag-selector>.right>.pynr-tab-view>.tabs>.tab{font-size:.8rem;text-
transform:uppercase}.nfdk-6-0-394-s .tag-selector>.right>.pynr-sstable{border-top:1px solid #e8eaee;flex:1 1
auto}.nfdk-6-0-394-s .tag-selector>.right>.pynr-sstable .row{font-size:.8rem;min-height:25px}.nfdk-6-0-394-s .tag-
selector>.right>.pynr-sstable .row>*{padding:4px 4px 4px 8px;min-height:25px}.nfdk-6-0-394-s .tag-
selector.collapsed>.left{flex:1 1 auto}.nfdk-6-0-394-s .tag-selector.collapsed>.right{width:0;flex:0 0 0}.nfdk-6-0-
394-s .pynr-tooltip .tooltip{position:absolute;z-index:9999;padding:5px;border-radius:5px;min-width:200px;max-
width:500px;background-color:#434a5b;color:#fff;font-size:14px;line-height:25px;box-shadow:0 1px 4px
rgba(0,0,0,.16);opacity:0;visibility:hidden;transition:opacity .3s ease-in-out;user-select:text}.nfdk-6-0-394-s .pynr-
tooltip .tooltip .arrow{position:absolute;border:8px solid;pointer-events:none}.nfdk-6-0-394-s .pynr-tooltip
.tooltip.top .arrow{top:100%;left:50%;margin-left:-8px;border-color:#434a5b transparent transparent}.nfdk-6-0-
394-s .pynr-tooltip .tooltip.bottom .arrow{bottom:100%;left:50%;margin-left:-8px;border-color:transparent
transparent #434a5b}.nfdk-6-0-394-s .pynr-tooltip .tooltip.left .arrow{top:50%;left:100%;margin-top:-8px;border-
color:transparent transparent transparent #434a5b}.nfdk-6-0-394-s .pynr-tooltip .tooltip.right
.arrow{top:50%;right:100%;margin-top:-8px;border-color:transparent #434a5b transparent transparent}.nfdk-6-0-
394-s .pynr-tooltip .tooltip.show{opacity:1;visibility:visible}.nfdk-6-0-394-s .pynr-tooltip
.tooltip.animate{transition:left .3s ease-in-out;transition:top .3s ease-in-out}.nfdk-6-0-394-s .new-model-
item{display:flex;padding:3px;box-sizing:border-box;text-overflow:ellipsis;overflow:hidden;white-
space:nowrap}.nfdk-6-0-394-s .new-model-item:hover{overflow:unset;padding:2px;border:1px solid
#ddd;background-color:#fff;border-radius:4px;position:fixed}.nfdk-6-0-394-s .pynr-model-tooltip .pynr-map-
view>.explorer{height:100%;width:100%}.nfdk-6-0-394-s .basic-markdown.md-header-1,.nfdk-6-0-394-s .basic-
markdown .md-header-1{font-size:1.3rem}.nfdk-6-0-394-s .basic-markdown.md-header-2,.nfdk-6-0-394-s .basic-
markdown .md-header-2{font-size:1.2rem}.nfdk-6-0-394-s .basic-markdown.md-header-3,.nfdk-6-0-394-s .basic-
markdown .md-header-3{font-size:1.1rem}.nfdk-6-0-394-s .basic-markdown.md-header-4,.nfdk-6-0-394-s .basic-
markdown .md-header-4{font-size:1rem}.nfdk-6-0-394-s .basic-markdown.md-bold,.nfdk-6-0-394-s .basic-
markdown .md-bold{font-weight:700}.nfdk-6-0-394-s .basic-markdown.md-monospace,.nfdk-6-0-394-s .basic-
markdown .md-monospace{font-family:Inconsolata,monospace}.nfdk-6-0-394-s .basic-markdown.md-
hyperlink,.nfdk-6-0-394-s .basic-markdown .md-hyperlink{color:#383f50;text-decoration:none}.nfdk-6-0-394-s
.basic-markdown.md-hyperlink:active,.nfdk-6-0-394-s .basic-markdown .md-hyperlink:active,.nfdk-6-0-394-s
.basic-markdown.md-hyperlink:hover,.nfdk-6-0-394-s .basic-markdown .md-hyperlink:hover,.nfdk-6-0-394-s
.basic-markdown.md-hyperlink:link,.nfdk-6-0-394-s .basic-markdown .md-hyperlink:link,.nfdk-6-0-394-s .basic-
markdown.md-hyperlink:visited,.nfdk-6-0-394-s .basic-markdown .md-hyperlink:visited{outline:transparent}.nfdk-
6-0-394-s .basic-markdown.md-hyperlink:hover,.nfdk-6-0-394-s .basic-markdown .md-hyperlink:hover{text-
decoration:underline}.nfdk-6-0-394-s .CodeMirror{font-
family:monospace;height:300px;color:#000;direction:ltr}.nfdk-6-0-394-s .CodeMirror-lines{padding:4px 0}.nfdk-6-

0-394-s .CodeMirror pre.CodeMirror-line,.nfdk-6-0-394-s .CodeMirror pre.CodeMirror-line-like{padding:0 4px}.nfdk-6-0-394-s .CodeMirror-gutter-filler,.nfdk-6-0-394-s .CodeMirror-scrollbar-filler{background-color:#fff}.nfdk-6-0-394-s .CodeMirror-gutters{border-right:1px solid #ddd;background-color:#f7f7f7;white-space:nowrap}.nfdk-6-0-394-s .CodeMirror-linenumber{padding:0 3px 0 5px;min-width:20px;text-align:right;color:#999;white-space:nowrap}.nfdk-6-0-394-s .CodeMirror-guttermarker{color:#000}.nfdk-6-0-394-s .CodeMirror-guttermarker-subtle{color:#999}.nfdk-6-0-394-s .CodeMirror-cursor{border-left:1px solid #000;border-right:none;width:0}.nfdk-6-0-394-s .CodeMirror div.CodeMirror-secondarycursor{border-left:1px solid silver}.nfdk-6-0-394-s .cm-fat-cursor .CodeMirror-cursor{width:auto;border:0!important;background:#7e7}.nfdk-6-0-394-s .cm-fat-cursor div.CodeMirror-cursors{z-index:1}.nfdk-6-0-394-s .cm-fat-cursor .CodeMirror-line::selection,.nfdk-6-0-394-s .cm-fat-cursor .CodeMirror-line>span::selection,.nfdk-6-0-394-s .cm-fat-cursor .CodeMirror-line>span>span::selection{background:transparent}.nfdk-6-0-394-s .cm-fat-cursor .CodeMirror-line::-moz-selection,.nfdk-6-0-394-s .cm-fat-cursor .CodeMirror-line>span::-moz-selection,.nfdk-6-0-394-s .cm-fat-cursor .CodeMirror-line>span>span::-moz-selection{background:transparent}.nfdk-6-0-394-s .cm-fat-cursor{caret-color:transparent}@-moz-keyframes blink{50%{background-color:transparent}}@-webkit-keyframes blink{50%{background-color:transparent}}@keyframes blink{50%{background-color:transparent}}.nfdk-6-0-394-s .cm-tab{display:inline-block;text-decoration:inherit}.nfdk-6-0-394-s .CodeMirror-rulers{position:absolute;left:0;right:0;top:-50px;bottom:0;overflow:hidden}.nfdk-6-0-394-s .CodeMirror-ruler{border-left:1px solid #ccc;top:0;bottom:0;position:absolute}.nfdk-6-0-394-s .cm-s-default .cm-header{color:#00f}.nfdk-6-0-394-s .cm-s-default .cm-quote{color:#090}.nfdk-6-0-394-s .cm-negative{color:#d44}.nfdk-6-0-394-s .cm-positive{color:#292}.nfdk-6-0-394-s .cm-header,.nfdk-6-0-394-s .cm-strong{font-weight:700}.nfdk-6-0-394-s .cm-em{font-style:italic}.nfdk-6-0-394-s .cm-link{text-decoration:underline}.nfdk-6-0-394-s .cm-strikethrough{text-decoration:line-through}.nfdk-6-0-394-s .cm-s-default .cm-keyword{color:#708}.nfdk-6-0-394-s .cm-s-default .cm-atom{color:#219}.nfdk-6-0-394-s .cm-s-default .cm-number{color:#164}.nfdk-6-0-394-s .cm-s-default .cm-def{color:#00f}.nfdk-6-0-394-s .cm-s-default .cm-variable-2{color:#05a}.nfdk-6-0-394-s .cm-s-default .cm-type,.nfdk-6-0-394-s .cm-s-default .cm-variable-3{color:#085}.nfdk-6-0-394-s .cm-s-default .cm-comment{color:#a50}.nfdk-6-0-394-s .cm-s-default .cm-string{color:#a11}.nfdk-6-0-394-s .cm-s-default .cm-string-2{color:#f50}.nfdk-6-0-394-s .cm-s-default .cm-meta,.nfdk-6-0-394-s .cm-s-default .cm-qualifier{color:#555}.nfdk-6-0-394-s .cm-s-default .cm-builtin{color:#30a}.nfdk-6-0-394-s .cm-s-default .cm-bracket{color:#997}.nfdk-6-0-394-s .cm-s-default .cm-tag{color:#170}.nfdk-6-0-394-s .cm-s-default .cm-attribute{color:#00c}.nfdk-6-0-394-s .cm-s-default .cm-hr{color:#999}.nfdk-6-0-394-s .cm-s-default .cm-link{color:#00c}.nfdk-6-0-394-s .cm-invalidchar,.nfdk-6-0-394-s .cm-s-default .cm-error{color:red}.nfdk-6-0-394-s .CodeMirror-composing{border-bottom:2px solid}.nfdk-6-0-394-s div.CodeMirror span.CodeMirror-matchingbracket{color:#0b0}.nfdk-6-0-394-s div.CodeMirror span.CodeMirror-nonmatchingbracket{color:#a22}.nfdk-6-0-394-s .CodeMirror-matchingtag{background:rgba(255,150,0,.3)}.nfdk-6-0-394-s .CodeMirror-activeline-background{background:#e8f2ff}.nfdk-6-0-394-s .CodeMirror{position:relative;overflow:hidden;background:#fff}.nfdk-6-0-394-s .CodeMirror-scroll{overflow:scroll!important;margin-bottom:-50px;margin-right:-50px;padding-bottom:50px;height:100%;outline:none;position:relative;z-index:0}.nfdk-6-0-394-s .CodeMirror-sizer{position:relative;border-right:50px solid transparent}.nfdk-6-0-394-s .CodeMirror-gutter-filler,.nfdk-6-0-394-s .CodeMirror-hscrollbar,.nfdk-6-0-394-s .CodeMirror-scrollbar-filler,.nfdk-6-0-394-s .CodeMirror-vscrollbar{position:absolute;z-index:6;display:none;outline:none}.nfdk-6-0-394-s .CodeMirror-vscrollbar{right:0;top:0;overflow-x:hidden;overflow-y:scroll}.nfdk-6-0-394-s .CodeMirror-hscrollbar{bottom:0;left:0;overflow-y:hidden;overflow-x:scroll}.nfdk-6-0-394-s .CodeMirror-scrollbar-filler{right:0;bottom:0}.nfdk-6-0-394-s .CodeMirror-gutter-filler{left:0;bottom:0}.nfdk-6-0-394-s .CodeMirror-gutters{position:absolute;left:0;top:0;min-height:100%;z-index:3}.nfdk-6-0-394-s .CodeMirror-gutter{white-space:normal;height:100%;display:inline-block;vertical-align:top;margin-bottom:-50px}.nfdk-6-0-394-s .CodeMirror-gutter-wrapper{position:absolute;z-index:4;background:none!important;border:none!important}.nfdk-

6-0-394-s .CodeMirror-gutter-background{position:absolute;top:0;bottom:0;z-index:4}.nfdk-6-0-394-s
.CodeMirror-gutter-elt{position:absolute;cursor:default;z-index:4}.nfdk-6-0-394-s .CodeMirror-gutter-wrapper
::selection{background-color:transparent}.nfdk-6-0-394-s .CodeMirror-gutter-wrapper ::-moz-
selection{background-color:transparent}.nfdk-6-0-394-s .CodeMirror-lines{cursor:text;min-height:1px}.nfdk-6-0-
394-s .CodeMirror pre.CodeMirror-line,.nfdk-6-0-394-s .CodeMirror pre.CodeMirror-line-like{-moz-border-
radius:0;-webkit-border-radius:0;border-radius:0;border-width:0;background:transparent;font-family:inherit;font-
size:inherit;margin:0;white-space:pre;word-wrap:normal;line-height:inherit;color:inherit;z-
index:2;position:relative;overflow:visible;-webkit-tap-highlight-color:transparent;-webkit-font-variant-
ligatures:contextual;font-variant-ligatures:contextual}.nfdk-6-0-394-s .CodeMirror-wrap pre.CodeMirror-line,.nfdk-
6-0-394-s .CodeMirror-wrap pre.CodeMirror-line-like{word-wrap:break-word;white-space:pre-wrap;word-
break:normal}.nfdk-6-0-394-s .CodeMirror-linebackground{position:absolute;left:0;right:0;top:0;bottom:0;z-
index:0}.nfdk-6-0-394-s .CodeMirror-linewidget{position:relative;z-index:2;padding:.1px}.nfdk-6-0-394-s
.CodeMirror-rtl pre{direction:rtl}.nfdk-6-0-394-s .CodeMirror-code{outline:none}.nfdk-6-0-394-s .CodeMirror-
gutter,.nfdk-6-0-394-s .CodeMirror-gutters,.nfdk-6-0-394-s .CodeMirror-linenumber,.nfdk-6-0-394-s .CodeMirror-
scroll,.nfdk-6-0-394-s .CodeMirror-sizer{-moz-box-sizing:content-box;box-sizing:content-box}.nfdk-6-0-394-s
.CodeMirror-measure{position:absolute;width:100%;height:0;overflow:hidden;visibility:hidden}.nfdk-6-0-394-s
.CodeMirror-cursor{position:absolute;pointer-events:none}.nfdk-6-0-394-s .CodeMirror-measure
pre{position:static}.nfdk-6-0-394-s div.CodeMirror-cursors{visibility:hidden;position:relative;z-index:3}.nfdk-6-0-
394-s .CodeMirror-focused div.CodeMirror-cursors,.nfdk-6-0-394-s div.CodeMirror-
dragcursors{visibility:visible}.nfdk-6-0-394-s .CodeMirror-selected{background:#d9d9d9}.nfdk-6-0-394-s
.CodeMirror-focused .CodeMirror-selected{background:#d7d4f0}.nfdk-6-0-394-s .CodeMirror-
crosshair{cursor:crosshair}.nfdk-6-0-394-s .CodeMirror-line::selection,.nfdk-6-0-394-s .CodeMirror-
line>span::selection,.nfdk-6-0-394-s .CodeMirror-line>span>span::selection{background:#d7d4f0}.nfdk-6-0-394-s
.CodeMirror-line::-moz-selection,.nfdk-6-0-394-s .CodeMirror-line>span::-moz-selection,.nfdk-6-0-394-s
.CodeMirror-line>span>span::-moz-selection{background:#d7d4f0}.nfdk-6-0-394-s .cm-searching{background-
color:#ffa;background-color:rgba(255,255,0,.4)}.nfdk-6-0-394-s .cm-force-border{padding-right:.1px}@media
print{.nfdk-6-0-394-s .CodeMirror div.CodeMirror-cursors{visibility:hidden}}.nfdk-6-0-394-s .cm-tab-wrap-
hack:after{content:""}.nfdk-6-0-394-s span.CodeMirror-selectedtext{background:none}.nfdk-6-0-394-s
.CodeMirror-foldmarker{color:#00f;text-shadow:#b9f 1px 1px 2px,#b9f -1px -1px 2px,#b9f 1px -1px 2px,#b9f -
1px 1px 2px;font-family:arial;line-height:.3;cursor:pointer}.nfdk-6-0-394-s .CodeMirror-
foldgutter{width:.7em}.nfdk-6-0-394-s .CodeMirror-foldgutter-folded,.nfdk-6-0-394-s .CodeMirror-foldgutter-
open{cursor:pointer}.nfdk-6-0-394-s .CodeMirror-foldgutter-open:after{content:""}.nfdk-6-0-394-s .CodeMirror-
foldgutter-folded:after{content:""}.nfdk-6-0-394-s .CodeMirror-lint-markers{width:16px}.nfdk-6-0-394-s
.CodeMirror-lint-tooltip{background-color:#ffd;border:1px solid #000;border-radius:4px 4px 4px
4px;color:#000;font-family:monospace;font-size:10pt;overflow:hidden;padding:2px 5px;position:fixed;white-
space:pre;white-space:pre-wrap;z-index:100;max-width:600px;opacity:0;transition:opacity .4s;-moz-
transition:opacity .4s;-webkit-transition:opacity .4s;-o-transition:opacity .4s;-ms-transition:opacity .4s}.nfdk-6-0-
394-s .CodeMirror-lint-mark{background-position:0 100%;background-repeat:repeat-x}.nfdk-6-0-394-s
.CodeMirror-lint-mark-warning{background-
image:url("data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAAQAAAADCAYAAAC09K7GAAAAA
XNSR0IArs4c6QAAAAZiS0dEAP8A/wD/oL2nkwAAAAlwSFlzAAALEwAACxMBAJqcGAAAAAd0SU1FB9sJ
FhQXEbhTg7YAAAAZdEVYdENvbW1lbnQAQ3JlYXRlZCB3aXRoIEdJTVBXgQ4XAAAAMklEQVQI12NkgII
vJ3QXMjAwdDN+OaEbysDA4MPAwNDNwMCwiOHLCd1zX07o6kBVGQEAKBANtobskNMAAAAASUVOR
K5CYII=")}.nfdk-6-0-394-s .CodeMirror-lint-mark-error{background-
image:url("data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAAQAAAADCAYAAAC09K7GAAAAA
XNSR0IArs4c6QAAAAZiS0dEAP8A/wD/oL2nkwAAAAlwSFlzAAALEwAACxMBAJqcGAAAAAd0SU1FB9sJ
Dw4cOCW1/KIAAAAZdEVYdENvbW1lbnQAQ3JlYXRlZCB3aXRoIEdJTVBXgQ4XAAAAHElEQVQI12NggI
L/DAz/GdA5/xkY/qPKMDAwAADLZwf5rvm+LQAAAABJRU5ErkJggg==")}.nfdk-6-0-394-s .CodeMirror-lint-

marker{background-position:50%;background-repeat:no-repeat;cursor:pointer;display:inline-block;height:16px;width:16px;vertical-align:middle;position:relative}.nfdk-6-0-394-s .CodeMirror-lint-message{padding-left:18px;background-position:0 0;background-repeat:no-repeat}.nfdk-6-0-394-s .CodeMirror-lint-marker-warning,.nfdk-6-0-394-s .CodeMirror-lint-message-warning{background-image:url("data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAABAAAAAQCAMAAAAoLQ9TAAAANlBMVEX/uwDvrwD/uwD/uwD/uwD/uwD/uwD/uwD/uwD6twD/uwAAAADurwD2tQD7uAD+ugAAAAD/uwDhmeTRAAAADHRSTlMJ8mN1EYcbmiixgACm7WbuAAAAVklEQVR42n3PUQqAIBBFUU1LLc3u/jdbOJoW1P08DA9Gba8+YWJ6gNJoNYIBzAA2chBth5kLmG9YUoG0NHAUwFXwO9LuBQL1giCQb8gC9Oro2vp5rncCIY8L8uEx5ZkAAAAASUVORK5CYII=")}.nfdk-6-0-394-s .CodeMirror-lint-marker-error,.nfdk-6-0-394-s .CodeMirror-lint-message-error{background-image:url("data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAABAAAAAQCAMAAAAoLQ9TAAAAHlBMVEW7AAC7AACxAAC7AAC7AAAAAAC4AAC5AAD///+7AAAUdclpAAAABnRSTlMXnORSiwCK0ZKSAAAATUlEQVR42mWPOQ7AQAgDuQLx/z8csYRmPRIFIwRGnosRrpamvkKi0FTIiMASR3hhKW+hAN6/tIWhu9PDWiTGNEkTtIOucA5Oyr9ckPgAWm0GPBog6v4AAAAASUVORK5CYII=")}.nfdk-6-0-394-s .CodeMirror-lint-marker-multiple{background-image:url("data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAAcAAAAHCAMAAADzjKfhAAAACVBMVEUAAAAAAAC/v7914kyHAAAAAXRSTlMAQObYZgAAACNJREFUeNo1ioEJAAAIwmz/H90iFFSGJgFMe3gaLZ0od+9/AQZ0ADosbYraAAAAAElFTkSuQmCC");background-repeat:no-repeat;background-position:100% 100%;width:100%;height:100%}.nfdk-6-0-394-s .CodeMirror-lint-line-error{background-color:rgba(183,76,81,.08)}.nfdk-6-0-394-s .CodeMirror-lint-line-warning{background-color:rgba(255,211,0,.1)}.nfdk-6-0-394-s .CodeMirror-hints{position:absolute;z-index:10;overflow:hidden;list-style:none;margin:0;padding:2px;-webkit-box-shadow:2px 3px 5px rgba(0,0,0,.2);-moz-box-shadow:2px 3px 5px rgba(0,0,0,.2);box-shadow:2px 3px 5px rgba(0,0,0,.2);border-radius:3px;border:1px solid silver;background:#fff;font-size:90%;font-family:monospace;max-height:20em;overflow-y:auto;box-sizing:border-box}.nfdk-6-0-394-s .CodeMirror-hint{margin:0;padding:0 4px;border-radius:2px;white-space:pre;color:#000;cursor:pointer}.nfdk-6-0-394-s li.CodeMirror-hint-active{background:#08f;color:#fff}.nfdk-6-0-394-s .CodeMirror-Shql-completion-alias{padding-left:22px;position:relative;line-height:1.5}.nfdk-6-0-394-s .CodeMirror-Shql-completion-alias:before{position:absolute;left:2px;bottom:4px;border-radius:50%;font-size:.8rem;font-weight:700;height:15px;width:15px;line-height:16px;text-align:center;vertical-align:text-bottom;color:#fff;-moz-box-sizing:border-box;box-sizing:border-box;content:"A";background:#c66}.nfdk-6-0-394-s .CodeMirror-Shql-completion-table{padding-left:22px;position:relative;line-height:1.5}.nfdk-6-0-394-s .CodeMirror-Shql-completion-table:before{position:absolute;left:2px;bottom:4px;border-radius:50%;font-size:.8rem;font-weight:700;height:15px;width:15px;line-height:16px;text-align:center;vertical-align:text-bottom;color:#fff;-moz-box-sizing:border-box;box-sizing:border-box;content:"T";background:#77c}.nfdk-6-0-394-s .CodeMirror-Shql-completion-field{padding-left:22px;position:relative;line-height:1.5}.nfdk-6-0-394-s .CodeMirror-Shql-completion-field:before{position:absolute;left:2px;bottom:4px;border-radius:50%;font-size:.8rem;font-weight:700;height:15px;width:15px;line-height:16px;text-align:center;vertical-align:text-bottom;color:#fff;-moz-box-sizing:border-box;box-sizing:border-box;content:"F";background:#999}.nfdk-6-0-394-s .CodeMirror-Shql-completion-value{padding-left:22px;position:relative;line-height:1.5}.nfdk-6-0-394-s .CodeMirror-Shql-completion-value:before{position:absolute;left:2px;bottom:4px;border-radius:50%;font-size:.8rem;font-weight:700;height:15px;width:15px;line-height:16px;text-align:center;vertical-align:text-bottom;color:#fff;-moz-box-sizing:border-box;box-sizing:border-box;content:"V";background:#7c7}.nfdk-6-0-394-s .CodeMirror-Shql-completion-builtin{padding-left:22px;position:relative;line-height:1.5}.nfdk-6-0-394-s .CodeMirror-Shql-completion-builtin:before{position:absolute;left:2px;bottom:4px;border-radius:50%;font-size:.8rem;font-weight:700;height:15px;width:15px;line-height:16px;text-align:center;vertical-align:text-bottom;color:#fff;-moz-box-sizing:border-box;box-sizing:border-box;content:"B";background:#ccb866}.nfdk-6-0-394-s .pynr-code-editor{display:flex;flex-direction:column}.nfdk-6-0-394-s .pynr-code-editor>.title{order:-1;z-index:4;flex:0 0 auto;margin:0;align-self:start;position:relative;border-

radius:2px;top:28px;left:6px;color:#9fa6b8;pointer-events:none;background:#fff;padding-left:5px;padding-right:5px;transform-origin:0 0;font-size:1rem}.nfdk-6-0-394-s .pynr-code-editor>.CodeMirror{box-sizing:border-box;border:1px solid #dadce3;border-radius:4px;height:auto;min-height:40px;line-height:1.75em}.nfdk-6-0-394-s .pynr-code-editor>.CodeMirror.cm-s-filled+.title{transform:scale(.8) translateY(-20px);color:#9fa6b8}.nfdk-6-0-394-s .pynr-code-editor>.CodeMirror .CodeMirror-matchingbracket{border-bottom:1px solid #2e84ca;color:#2e84ca;font-weight:700}.nfdk-6-0-394-s .pynr-code-editor>.CodeMirror .CodeMirror-foldmarker{color:#fff;text-shadow:-1px 0 #383f50,0 1px #383f50,1px 0 #383f50,0 -1px #383f50}.nfdk-6-0-394-s .pynr-code-editor pre.CodeMirror-line{font-family:Inconsolata;padding-left:10px}.nfdk-6-0-394-s .pynr-code-editor .CodeMirror-focused{transition:border-color .1s ease-in-out;border-color:#2e84ca;outline:none;box-shadow:0 4px 5px -1px #e8eaee}.nfdk-6-0-394-s .pynr-code-editor .CodeMirror-focused .CodeMirror-foldmarker{text-shadow:-1px 0 #2e84ca,0 1px #2e84ca,1px 0 #2e84ca,0 -1px #2e84ca}.nfdk-6-0-394-s .pynr-code-editor .CodeMirror-focused .CodeMirror-linenumber{color:#2e84ca}.nfdk-6-0-394-s .pynr-code-editor .CodeMirror-focused .CodeMirror-selected{background-color:#ffebcd}.nfdk-6-0-394-s .pynr-code-editor .CodeMirror-focused+.title{transform:scale(.8) translateY(-20px);color:#2e84ca!important}.nfdk-6-0-394-s .pynr-code-editor .CodeMirror-lines{padding-top:10px}.nfdk-6-0-394-s .pynr-code-editor>.CodeMirror-hints{z-index:1001}.nfdk-6-0-394-s .pynr-code-editor>.CodeMirror-hints .CodeMirror-hint{font-family:Inconsolata}.nfdk-6-0-394-s .pynr-code-editor>.CodeMirror-hints .CodeMirror-lint-tooltip{font-family:Inconsolata;font-size:1rem}.nfdk-6-0-394-s .multi-layer-link-view{display:grid;position:relative;grid-auto-rows:35px;row-gap:5px;overflow-x:auto;padding:40px 10px;box-sizing:border-box;margin-top:auto;margin-bottom:auto}.nfdk-6-0-394-s .multi-layer-link-view .layer{display:flex;align-items:center;justify-content:center;width:39px;margin-right:20px;border:1px solid #ccc;border-radius:5px;padding:5px 10px;font-size:14px;text-overflow:ellipsis;overflow:hidden;white-space:nowrap;background-color:#fff}.nfdk-6-0-394-s .multi-layer-link-view .layer:hover .clear{transform:scale(1);width:100%;height:100%;opacity:1}.nfdk-6-0-394-s .multi-layer-link-view .layer:hover .text{opacity:0;width:0;height:0}.nfdk-6-0-394-s .multi-layer-link-view .layer.hidden{color:#ccc}.nfdk-6-0-394-s .multi-layer-link-view .layer.hidden .clear:before{content:"check"}.nfdk-6-0-394-s .multi-layer-link-view .layer>.text{opacity:1}.nfdk-6-0-394-s .multi-layer-link-view .layer>.clear{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";color:#ccc;font-size:20px;display:flex;justify-content:center;align-items:center;transform:scaleX(0);transition:transform .2s linear 0s;opacity:0;width:0;height:0}.nfdk-6-0-394-s .multi-layer-link-view .layer>.clear:before{content:"clear"}.nfdk-6-0-394-s .multi-layer-link-view .layer>.line{content:"";position:absolute;width:calc(100% - 50px);height:2px;grid-column:1/-1;background:#ccc;z-index:0;left:61px}.nfdk-6-0-394-s .multi-layer-link-view .site{background:#d4d4d4;font-size:.9rem;color:#9098ad;position:absolute;left:-10px;width:calc(100% + 20px);height:100%;border-radius:10px;text-align:center}.nfdk-6-0-394-s .multi-layer-link-view .site .name{text-overflow:ellipsis;overflow:hidden;white-space:nowrap;margin:5px}.nfdk-6-0-394-s .multi-layer-link-view .node{border:2px solid #6381b0;background:#a8bfe1;border-radius:5px;z-index:1;padding-left:5px;padding-right:5px;font-size:.8rem;cursor:pointer;display:flex;align-items:center;justify-content:center}.nfdk-6-0-394-s .multi-layer-link-view .node .name{text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .multi-layer-link-view .node.selected{border-color:orange}.nfdk-6-0-394-s .multi-layer-link-view .port{color:#fff;background:#f0f8ff;border-radius:50%;border:2px solid #1e90ff;height:7px;width:7px;align-self:center;cursor:pointer;z-index:2;position:absolute}.nfdk-6-0-394-s .multi-layer-link-view .port.left{left:-7px}.nfdk-6-0-394-s .multi-layer-link-view .port.right{right:-7px}.nfdk-6-0-394-s .multi-layer-link-view .port.selected{border-color:orange}.nfdk-6-0-394-s .multi-layer-link-view .cross-link{position:relative;stroke:green}.nfdk-6-0-394-s .multi-layer-link-view .cross-link.hidden{opacity:0}.nfdk-6-0-394-s .multi-layer-link-view .cross-link.down{stroke:#eb1f3d}.nfdk-6-0-394-s .multi-layer-link-view .cross-link.selected{stroke:orange}.nfdk-6-0-394-s .multi-layer-link-view .cross-link svg{position:absolute;top:21px;overflow:visible;fill:none;stroke-width:4px}.nfdk-6-0-394-s .multi-layer-link-view .cross-link svg>path{cursor:pointer}.nfdk-6-0-394-s .multi-layer-link-view .cross-link>.port{position:absolute;top:51px}.nfdk-6-0-394-s .multi-layer-link-view .cross-link>.port.right{left:97px}.nfdk-6-0-394-s .multi-layer-link-view .link{display:flex;height:4px;align-self:center;justify-content:center;z-index:2;cursor:pointer;position:relative;color:green;background:green}.nfdk-6-0-394-s .multi-layer-link-view .link.hidden{opacity:0}.nfdk-6-0-394-s .multi-layer-link-view .link.down{background:#eb1f3d;color:#eb1f3d}.nfdk-6-0-394-s .multi-layer-link-view .link.selected{color:orange;border-top:1px solid;border-bottom:1px solid}.nfdk-6-0-394-s .multi-layer-link-view .link.bundle{background:#fff;border-top:1px solid;border-bottom:1px solid}.nfdk-6-0-394-s .multi-layer-link-view .link .link-label{position:absolute;top:-5px;border-radius:2px;border:1px solid #9fa6b8;padding:2px;line-height:8px;color:#828ba2;background:#fff;pointer-events:none;max-width:60px;font-size:.7rem;text-overflow:ellipsis;overflow:hidden;white-space:nowrap;z-index:2}.nfdk-6-0-394-s .multi-layer-link-view .link .link-label .muted{color:#9fa6b8}.nfdk-6-0-394-s .multi-layer-link-view .link .link-visual{width:100%;position:relative}.nfdk-6-0-394-s .multi-layer-link-view .link .link-visual>.arrow{position:absolute;width:0;height:0;left:calc(50% - 5px)}.nfdk-6-0-394-s .multi-layer-link-view .link .link-visual>.arrow.disabled{pointer-events:none;color:#dadce3}.nfdk-6-0-394-s .multi-layer-link-view .link .link-visual>.arrow.top{bottom:6px;border-left:5px solid transparent;border-right:5px solid transparent;border-bottom:5px solid}.nfdk-6-0-394-s .multi-layer-link-view .link .link-visual>.arrow.bottom{top:6px;border-left:5px solid transparent;border-right:5px solid transparent;border-top:5px solid}.nfdk-6-0-394-s .pynr-multi-layer-link-view{position:relative;overflow-x:auto;margin-top:auto;margin-bottom:auto;margin-right:10px}.nfdk-6-0-394-s .pynr-graph{position:relative;overflow:hidden}.nfdk-6-0-394-s .schema-form form{margin:0}.nfdk-6-0-394-s .schema-form .config-block{padding:10px;background-color:#fff}.nfdk-6-0-394-s .schema-form .config-block:not(:last-child){margin-bottom:20px}.nfdk-6-0-394-s .schema-form .config-block>.header{font-size:.9rem;text-transform:uppercase;color:#9fa6b8}.nfdk-6-0-394-s .schema-form .config-block>.inner{display:flex;align-items:flex-start;margin-top:20px;margin-bottom:20px}.nfdk-6-0-394-s .schema-form .config-block .fields{flex:1 1 auto;display:flex;flex-wrap:wrap;padding-left:20px;padding-right:20px;margin-right:-20px}.nfdk-6-0-394-s .schema-form .config-block .fields .header{display:block;margin-bottom:10px;flex:1 1 100%}.nfdk-6-0-394-s .schema-form .config-block .fields .field{width:400px;margin-right:20px;margin-top:10px;position:relative;box-sizing:border-box}.nfdk-6-0-394-s .schema-form .config-block .fields .field .description{margin-top:10px;margin-bottom:5px;font-weight:600;font-size:.8rem;color:#aeb4c3;display:flex;vertical-align:middle;justify-content:space-between}.nfdk-6-0-394-s .schema-form .config-block .fields .field.multiline-string{width:100%;margin-top:0}.nfdk-6-0-394-s .schema-form .config-block .fields .field.number input::-webkit-inner-spin-button,.nfdk-6-0-394-s .schema-form .config-block .fields .field.number input::-webkit-outer-spin-button{display:none}.nfdk-6-0-394-s .schema-form .config-block .fields .field.number input:required+.title:after{content:"*";color:#f51745}.nfdk-6-0-394-s .schema-form .config-block .fields .field.boolean{padding-top:16px}.nfdk-6-0-394-s .schema-form .config-block .fields .field.boolean input:required+.title:after{content:"*";color:#f51745}.nfdk-6-0-394-s .schema-form .config-block .fields .field.boolean .description{padding-top:5px}.nfdk-6-0-394-s .schema-form .config-block .fields .field .more-info{color:#aeb4c3;font-size:1rem!important;margin-left:5px;cursor:pointer;font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga"}.nfdk-6-0-394-s .schema-form .config-block .fields .field .more-info:before{content:"help_outline"}.nfdk-6-0-394-s .schema-form .config-block .fields .field .more-info:hover{color:#9098ad}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item .hidden-input{position:absolute;width:100%;height:55px;z-index:-1;opacity:0;pointer-events:none;top:0;left:0}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item .input-zone{display:flex}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item .input-zone .drop-zone{flex:1 1 auto;width:0}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item .input-zone

.title{text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item .input-zone.required .title:after{content:"*";color:#f51745}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item .input-zone .model-selector-launcher{flex:0 0 30px;font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";margin-top:5px;margin-left:5px;height:50px;width:30px;background-color:#dadce3;line-height:50px!important;text-align:center;border-radius:4px;cursor:pointer}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item .input-zone .model-selector-launcher:before{content:"search";color:#fff}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item .input-zone .model-selector-launcher:hover{background-color:#cbcfd9}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item .input-zone .model-selector-launcher:active{background-color:#bcc1ce}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item:not(.pristine).invalid .drop-zone{border-color:#f51745;color:#f51745}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item:not(.pristine).invalid .drop-zone .model-link{color:#f51745}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item:not(.pristine).invalid .model-selector-launcher{background-color:#f51745}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item:not(.pristine).invalid .model-selector-launcher:hover{background-color:#f7486c}.nfdk-6-0-394-s .schema-form .config-block .fields .field.model-item:not(.pristine).invalid .model-selector-launcher:active{background-color:#f62f59}.nfdk-6-0-394-s .schema-form .config-block.array .inner{margin-left:20px;margin-right:20px}.nfdk-6-0-394-s .schema-form .config-block.array .inner .list{flex:0 0 300px;width:300px;border:1px solid #e8eaee;border-radius:4px;overflow:hidden;align-self:stretch;min-height:200px;max-height:500px;display:flex;flex-direction:column}.nfdk-6-0-394-s .schema-form .config-block.array .inner .list .list-items{flex:1 1 auto;overflow:auto;background-color:#f7f8f9}.nfdk-6-0-394-s .schema-form .config-block.array .inner .list .list-items .list-item{height:50px;line-height:50px;padding-left:10px;border-bottom:1px solid #e8eaee;background-color:#fff;font-size:1.1rem;cursor:pointer;text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .schema-form .config-block.array .inner .list .list-items .list-item:hover{background-color:#e8eaee}.nfdk-6-0-394-s .schema-form .config-block.array .inner .list .list-items .list-item.selected{background-color:#dadce3}.nfdk-6-0-394-s .schema-form .config-block.array .inner .list .list-actions{border-top:1px solid #e8eaee;height:30px}.nfdk-6-0-394-s .schema-form .config-block.array .inner .list .list-actions .action-btn{height:30px;width:30px;float:right;color:#aaa;text-align:center;line-height:30px;border-left:1px solid #e8eaee;font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga"}.nfdk-6-0-394-s .schema-form .config-block.array .inner .list .list-actions .action-btn:hover{background-color:#f7f8f9}.nfdk-6-0-394-s .schema-form .config-block.array .inner .list .list-actions .action-btn:active{color:#828ba2}.nfdk-6-0-394-s .schema-form .config-block.array .inner .list .list-actions .action-btn.add:before{content:"add"}.nfdk-6-0-394-s .schema-form .config-block.array .inner .list .list-actions .action-btn.remove:before{content:"remove"}.nfdk-6-0-394-s .schema-form .config-block.array .fields{flex:2 2 auto}.nfdk-6-0-394-s .schema-form .config-block.array .fields.no-selected{display:flex;align-items:center;justify-content:center}.nfdk-6-0-394-s .schema-form .config-block.array .fields .no-selected-msg{color:#9fa6b8}.nfdk-6-0-394-s .drag-placeholder{background-color:#1587e3;color:#fff;border-radius:5px;box-shadow:0 1px 4px rgba(0,0,0,.4);top:-100%;left:-100%;z-index:9999;position:absolute;text-align:left;font-size:1rem;opacity:1;padding:10px;cursor:grabbing;cursor:-webkit-grabbing;max-width:300px;text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .drag-placeholder:before{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";content:"drag_handle";margin-right:5px;vertical-align:text-bottom}.nfdk-6-0-394-s [draggable=true].dragging{position:relative;cursor:grabbing;cursor:-webkit-grabbing;box-shadow:inset 0 0 0 2px

#b7bcc8!important}.nfdk-6-0-394-s .drop-zone{height:50px;border:2px dashed #cbcfd9;border-radius:4px;color:#bcc1ce;text-align:center;overflow:hidden;margin-top:5px;box-sizing:border-box}.nfdk-6-0-394-s .drop-zone.drag-over{border-width:3px;border-color:#9fa6b8;background-image:repeating-linear-gradient(-45deg,transparent,transparent 25px,#f7f8f9 0,#f7f8f9 50px);animation:progress 4s linear infinite;background-size:150% 100%}@keyframes progress{0%{background-position:0 0}to{background-position:-70px 0}}.nfdk-6-0-394-s .drop-zone.dragging{border-color:#9fa6b8}.nfdk-6-0-394-s .drop-zone .title{pointer-events:none;line-height:46px;text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .drop-zone .title .current-item-link{margin-left:5px}.nfdk-6-0-394-s .drop-zone .title .current-item-link a{color:#2e84ca;pointer-events:auto;cursor:pointer}.nfdk-6-0-394-s .drop-zone .title .current-item-link a:hover{text-decoration:underline}.nfdk-6-0-394-s .drop-zone .item-container{display:flex;align-items:center;margin-top:15px;margin-left:10px;margin-right:6px;pointer-events:none}.nfdk-6-0-394-s .drop-zone .item-container .model-link{display:block;flex:1 1 auto;text-decoration:none;text-overflow:ellipsis;overflow:hidden;white-space:nowrap;color:#000;text-align:left;pointer-events:auto}.nfdk-6-0-394-s .drop-zone .item-container .model-link:hover{text-decoration:underline}.nfdk-6-0-394-s .drop-zone .item-container .clear{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";flex:0 0 auto;width:20px;height:20px;border-radius:50%;cursor:pointer;font-size:18px!important;line-height:20px!important;pointer-events:auto}.nfdk-6-0-394-s .drop-zone .item-container .clear:before{content:"clear"}.nfdk-6-0-394-s .drop-zone .item-container .clear:hover{background-color:#eee}.nfdk-6-0-394-s .drop-zone.occupied{border-style:solid;border-width:1px}.nfdk-6-0-394-s .drop-zone.occupied .title{transform:scale(.8);top:-3px;left:6px;line-height:normal;position:absolute;transition:all .1s ease-in-out;transform-origin:0 0;background:#fff;padding-left:5px;padding-right:5px}.nfdk-6-0-394-s .drop-zone.blocked{background-color:rgba(245,23,69,.1);border-color:#f51745;color:#f51745}.nfdk-6-0-394-s .inline-help{position:relative}.nfdk-6-0-394-s .inline-help.visible>.inline-help-popup{position:absolute;top:0;width:100%;margin-left:-10px;min-height:200px;background-color:#fff;border-radius:5px;z-index:500;padding:10px;box-sizing:border-box;display:flex;flex-direction:column}.nfdk-6-0-394-s .inline-help.visible>.inline-help-popup>.title{color:#9fa6b8;height:25px;font-weight:600;line-height:25px;flex:0 0 25px}.nfdk-6-0-394-s .inline-help.visible>.inline-help-popup>.help{flex:1 1 auto;overflow-y:auto;margin-top:10px;max-height:400px}.nfdk-6-0-394-s .inline-help.visible>.inline-help-popup>.help .basic-markdown{white-space:normal}.nfdk-6-0-394-s .inline-help.visible>.inline-help-popup>.help .basic-markdown a{color:#2e84ca}.nfdk-6-0-394-s .inline-help.visible>.inline-help-popup>.field{margin-top:0}.nfdk-6-0-394-s .inline-help.visible>.inline-help-popup>.actions{display:flex;justify-content:flex-end}.nfdk-6-0-394-s .inline-help.visible>.inline-help-popup>.actions .dismiss{font-weight:700}.nfdk-6-0-394-s .inline-help.visible>.inline-help-popup:after{animation:fadein .15s ease-out;position:fixed;content:"";top:0;left:0;bottom:0;right:0;background:rgba(0,0,0,.3);z-index:-2}.nfdk-6-0-394-s .inline-help.visible>.inline-help-popup:before{position:absolute;content:"";top:0;left:0;bottom:0;right:0;background:#fff;border-radius:5px;z-index:-1;box-shadow:0 2px 8px rgba(0,0,0,.16)}.nfdk-6-0-394-s .explorer-container.loading{width:100%;height:100%;display:flex;justify-content:center;align-items:center}.nfdk-6-0-394-s .explorer-container .footer{position:absolute;right:0;bottom:0;display:flex;justify-content:flex-end}.nfdk-6-0-394-s .explorer-container .footer .toolbox{display:flex;margin-bottom:10px;margin-right:10px}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filters-wrapper{width:34px;height:34px;justify-content:center;color:#cacaca;transition:all .1s ease-in-out}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filters-wrapper:before{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";content:"menu";align-self:center}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filters-wrapper .panel{position:absolute;font-size:.9rem;bottom:100%;display:none;transform-origin:bottom center;animation:grow .2s ease-in-out forwards}@keyframes grow{0%{transform:scaleY(0)}80%{transform:scaleY(1.1)}to{transform:scaleY(1)}}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filters-wrapper .panel.visible{display:block}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filters-wrapper .panel .toggle{position:relative;cursor:pointer;display:flex;align-items:center;justify-content:center;background-color:#fff;border:1px solid #ddd;border-radius:5px;box-shadow:0 1px 4px rgba(0,0,0,.16);margin-bottom:1px;width:34px;height:34px}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filters-wrapper .panel .toggle>.name{position:absolute;pointer-events:none;box-sizing:border-box;right:calc(100% + 5px);background-color:#3b4150;padding:5px 10px;color:#fff;border-radius:5px;opacity:0;transition:opacity .1s linear;z-index:800;white-space:nowrap}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filters-wrapper .panel .toggle svg{transition:fill .1s ease-in-out;fill:#cacaca}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filters-wrapper .panel .toggle.active{background-color:#3896d2}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filters-wrapper .panel .toggle.active svg{fill:#fff}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filters-wrapper .panel .toggle:hover:not(.active) svg{fill:#62acdb}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filters-wrapper .panel .toggle:hover>.name{opacity:1}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper{display:flex;flex:0 0 auto;align-self:center}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu{width:270px;height:400px;position:absolute;display:none;background-color:#fff;bottom:100%;right:50%;box-shadow:0 4px 5px -1px #dfe2ea;border:1px solid #d2d6e1;border-radius:4px;color:#383f50;max-height:300px;overflow-y:auto;padding:17px}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu.open{display:block}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu .header{display:flex;justify-content:space-between;font-size:14px;line-height:25px;letter-spacing:.28px;color:#808799;font-weight:600;border-bottom:1px solid #eaeef5;padding-bottom:5px}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu .header .action{color:#434a5b;letter-spacing:.2px;cursor:pointer}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu .category{margin-top:10px;font-size:.9rem}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu .category:not(:last-child){border-bottom:1px solid #eaeef5}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu .category.muted .expandable-header{opacity:.6}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu .category:not(.muted) .category-title{color:#3896d2}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu .category .category-title{font-weight:700;margin-left:20px}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu .category .content{padding:unset;padding-left:unset}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu .category .category-select{font-size:13px}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu .category .category-select>.placeholder{display:none}.nfdk-6-0-394-s .explorer-container .footer .toolbox .tags-wrapper .tags-menu .category .category-select>.options{position:relative;box-shadow:unset;border:0;padding:0}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group{display:flex;flex:0 0 auto;align-self:center;background-color:#fff;border:1px solid #ddd;border-radius:5px;box-shadow:0 1px 4px rgba(0,0,0,.16)}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group:not(:last-child){margin-right:10px}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group .selector{display:flex;flex:1;min-width:34px;height:34px;align-items:center;justify-content:center}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.themes .selector svg{transition:fill .1s ease-in-out;fill:#cacaca}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.themes .selector.selected svg{fill:#3896d2}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.themes .selector:hover:not(.selected) svg{fill:#62acdb}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.l1 .l3-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.l3 .l1-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector .middle-layer{transition:fill .1s ease-in-out;fill:#cacaca}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.both .l1-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.both .l3-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.l1 .l1-

layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.l3 .l3-layer{transition:fill .1s ease-in-out;fill:#b5d8ee}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.selected.l1 .l3-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.selected.l3 .l1-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.selected .middle-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector:hover.l1 .l3-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector:hover.l3 .l1-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector:hover .middle-layer{fill:#b1b1b1}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.selected.both .l1-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.selected.both .l3-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.selected.l1 .l1-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector.selected.l3 .l3-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector:hover.both .l1-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector:hover.both .l3-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector:hover.l1 .l1-layer,.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.layers .selector:hover.l3 .l3-layer{fill:#3896d2}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.tags{position:relative;margin-right:10px}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.tags .tags-count{position:absolute;pointer-events:none;color:#626a7c;font-size:14px;font-weight:600;bottom:calc(100% + 12px);left:50%;transform:translateX(-50%);text-align:center;white-space:nowrap;padding:5px 10px;border:1px solid #ddd;border-radius:5px;background-color:#fff;box-shadow:0 1px 1px 0 rgba(0,0,0,.08);z-index:800}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.tags .tags-count:after{position:absolute;content:"";width:0;height:0;top:calc(100% - 5px);left:50%;margin-left:-5px;border-color:transparent transparent #fff #fff;border-style:solid;border-width:5px;transform:rotate(-45deg);box-shadow:-1px 1px 0 0 rgba(0,0,0,.08)}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.tags .selector svg{transition:fill .1s ease-in-out;fill:#cacaca}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.tags .selector.active{background-color:#3896d2}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.tags .selector.active svg{fill:#fff}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.tags .selector:hover:not(.active) svg{fill:#62acdb}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.filters-wrapper.active{color:#fff;background-color:#3896d2}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.filters-wrapper:hover:not(.active){color:#62acdb}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.fixed-category{display:flex;align-items:center;flex:1 0 auto;align-content:center;justify-content:center}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.fixed-category .selector{text-transform:uppercase;font-weight:700;font-size:.8rem;padding:0 10px;color:rgba(56,63,80,.6)}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.fixed-category .selector:hover{background-color:#e8eaee}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.fixed-category .selector.active{color:#2569a0}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.fixed-category .selector:not(:last-child){border-right:1px solid #e8eaee}.nfdk-6-0-394-s .explorer-container .footer .toolbox .filter-group.fixed-category .ribbon{position:absolute;top:-10px;text-align:center;padding-left:5px;padding-right:5px;font-size:.8rem;font-weight:700;line-height:1.5;color:#fff;border-radius:3px;background-color:#5bc0de}.nfdk-6-0-394-s .explorer-container .footer .map-legend{position:absolute;bottom:0;left:0;z-index:100;color:#383f50;margin-left:10px;margin-bottom:10px;font-size:.8rem}.nfdk-6-0-394-s .explorer-container .footer .map-legend ul{list-style:none;display:flex;flex-direction:column;padding:0;margin:0}.nfdk-6-0-394-s .explorer-container .footer .map-legend ul li{text-shadow:-1px -1px 0 #fff,1px -1px 0 #fff,-1px 1px 0 #fff,1px 1px 0 #fff;display:flex;align-items:center}.nfdk-6-0-394-s .explorer-container .footer .map-legend ul li:before{content:"";display:inline-block;height:10px;width:10px;border-radius:50%;margin-right:5px}.nfdk-6-0-394-s .explorer-container .footer .map-legend ul li.down:before{background:#eb1f3d;border:1px solid #970d22}.nfdk-6-0-394-s .explorer-container .footer .map-legend ul li.high:before{background:#6432a0;border:1px solid #331a52}.nfdk-6-0-394-s .explorer-container .footer .map-legend ul li.medium:before{background:#feeb3b;border:1px solid #d2be01}.nfdk-6-0-394-s .layer-selector{width:300px;display:flex}.nfdk-6-0-394-s .layer-selector .layer{height:40px;line-height:40px;text-align:center;flex:1 1 100%;color:hsla(0,0%,100%,.7);cursor:pointer}.nfdk-6-0-394-s .layer-selector .layer.active{background-color:#828ba2;color:#fff}.nfdk-6-0-394-s .layer-selector .layer:hover:not(.active){background-color:#828ba2}.nfdk-6-0-394-s .searchbox-wrapper{margin-left:10px;z-index:700;position:absolute;white-space:nowrap;margin-top:10px;width:calc(100% - 20px)}.nfdk-6-0-394-s .searchbox-wrapper .searchbox{display:flex;min-height:30px;background-color:#828ba2;overflow:hidden;border-radius:5px;margin-bottom:5px;width:100%}.nfdk-6-0-394-s .searchbox-wrapper .searchbox .search-icon{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";line-height:30px;flex:0 0 auto;color:#fff;margin-left:5px;margin-right:2px}.nfdk-6-0-394-s .searchbox-wrapper .searchbox .search-icon:before{content:"search"}.nfdk-6-0-394-s .searchbox-wrapper .searchbox input{font-family:Source Sans Pro,Helvetica,sans-serif;flex:1 1 auto;font-size:1rem;border:none;background-color:transparent;color:#fff;padding-right:10px}.nfdk-6-0-394-s .searchbox-wrapper .searchbox input::placeholder{color:#fff!important}.nfdk-6-0-394-s .searchbox-wrapper .searchbox input:-ms-input-placeholder{color:#fff!important}.nfdk-6-0-394-s .searchbox-wrapper .searchbox input:focus{outline:none}.nfdk-6-0-394-s .searchbox-wrapper .searchbox .indeterminate-loader-circular{width:20px;height:20px;margin:5px}.nfdk-6-0-394-s .searchbox-wrapper .searchbox .indeterminate-loader-circular circle{stroke:#fff;stroke-width:4px}.nfdk-6-0-394-s .searchbox-wrapper .highlight{font-weight:800;background-color:rgba(217,232,248,.8);border-radius:2px;padding-left:2px;padding-right:2px;margin-left:-2px;margin-right:-2px;box-shadow:inset 0 -2px 0 rgba(131,180,232,.4)}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper{display:flex;max-height:30vh;border:1px solid #b7bcc8;border-radius:5px;overflow:hidden}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results{background-color:#fff;color:#000;overflow:hidden;overflow-y:auto;max-height:30vh;width:100%;flex:0 0 100%;z-index:20;box-shadow:0 2px 8px rgba(0,0,0,.16)}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results::-webkit-scrollbar{width:5px}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results::-webkit-scrollbar-thumb{background:#aaa}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .no-results{color:#9fa6b8;text-align:center;height:40px;line-height:40px}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .header{color:grey;margin:10px}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line{min-height:40px;display:block;text-decoration:none}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line.selected{background-color:#e8eaee}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line.selected .title{box-shadow:inset 3px 0 0 0 #7d869c}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line.selected .details{box-shadow:inset 3px 0 0 0 #9aa1b2}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line.expanded .details{display:block}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line.sites .title .icon:before{content:"place"}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line.srlgs .title .icon:before{content:"security"}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line.inventory .title .icon:before{content:"memory"}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line.connections .title .icon:before,.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line.links .title .icon:before{content:"link"}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line.services .title .icon:before{content:"cloud"}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line.ports .title .icon:before{content:"settings_ethernet"}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line.crosslinks .title .icon:before{content:"swap_horiz"}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line .title{line-height:40px;display:flex;align-items:center;padding-left:10px;text-decoration:none}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line .title .icon{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";flex:0 0 auto;width:16px;height:16px;font-size:16px;text-align:center;color:#9fa6b8;margin-right:5px}.nfdk-6-0-394-s

.searchbox-wrapper .results-wrapper .results .result-line .title .name{flex:1 1 auto;text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line .title .info{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";flex:0 0 auto;width:16px;height:16px;font-size:16px;margin-right:5px;color:#bcc1ce;cursor:pointer}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line .title .info:before{content:"info"}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line .title .info:hover{color:#9fa6b8}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line:not(:last-child){border-bottom:1px solid #eee}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line .details{font-size:.8rem;background-color:#eee;display:none}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line .details .header{text-overflow:ellipsis;overflow:hidden;white-space:nowrap;height:30px;font-weight:800;border-bottom:1px solid #ddd;text-align:center}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line .details .match{padding:10px}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line .details .match .name{font-weight:800}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line .details .match .string{margin-left:5px;display:flex}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line .details .match .string span{text-overflow:ellipsis;overflow:hidden;white-space:nowrap;flex:0 1 auto}.nfdk-6-0-394-s .searchbox-wrapper .results-wrapper .results .result-line .details .match .string span.highlight{flex:0 0 auto}.nfdk-6-0-394-s .sidebar-wrapper{position:absolute;top:20px;left:20px;user-select:text;-ms-user-select:text;width:400px;display:flex;flex-direction:column;max-height:calc(100% - 40px)}.nfdk-6-0-394-s .sidebar-wrapper.fit-width{min-width:400px;width:unset!important}.nfdk-6-0-394-s .sidebar-wrapper.closed .searchbox{background-color:#b7bcc8;border:1px solid #a9afbd}.nfdk-6-0-394-s .sidebar-wrapper>.resizer{position:absolute;width:8px;right:-8px;top:0;height:100%;display:flex;background-color:hsla(0,0%,50.2%,.1);opacity:0;cursor:col-resize;z-index:1;transition:opacity .2s ease-in-out;transition-delay:.1s}.nfdk-6-0-394-s .sidebar-wrapper>.resizer .handle{height:40px;background-color:grey;width:4px;margin-left:2px;margin-top:auto;margin-bottom:auto;border-radius:5px}.nfdk-6-0-394-s .sidebar-wrapper>.resizer:active,.nfdk-6-0-394-s .sidebar-wrapper>.resizer:hover{opacity:1}.nfdk-6-0-394-s .sidebar{width:100%;display:flex;flex-direction:column;background-color:#fff;transition:height 5s ease-in-out;box-shadow:0 0 2px 0 rgba(56,63,80,.12),0 4px 12px -4px rgba(56,63,80,.24);border-radius:5px;overflow:hidden}.nfdk-6-0-394-s .sidebar>.header{padding:50px 10px 0;background-color:#9fa6b8;color:#fff;flex:0 0 auto;height:60px}.nfdk-6-0-394-s .sidebar>.header .locate-item,.nfdk-6-0-394-s .sidebar>.header .star-item{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";cursor:pointer;color:#fff;font-size:.9rem;flex:0 0 auto;height:25px;width:25px;text-align:center;line-height:25px;display:inline-block;border-radius:5px;font-size:16px}.nfdk-6-0-394-s .sidebar>.header .locate-item:hover,.nfdk-6-0-394-s .sidebar>.header .star-item:hover{background-color:#9098ad}.nfdk-6-0-394-s .sidebar>.header .locate-item:active,.nfdk-6-0-394-s .sidebar>.header .star-item:active{background-color:#828ba2}.nfdk-6-0-394-s .sidebar>.header .star-item:before{content:"star_border"}.nfdk-6-0-394-s .sidebar>.header .star-item.starred:before{content:"star"}.nfdk-6-0-394-s .sidebar>.header .locate-item:before{content:"near_me"}.nfdk-6-0-394-s .sidebar>.header .name-container{display:flex;align-items:center;animation:fadein .1s}.nfdk-6-0-394-s .sidebar>.header .name-container .item-type{color:#fff;font-size:.8rem;margin-right:5px;flex:0 0 auto;background-color:#828ba2;display:inline-flex;align-items:center;border-radius:5px;line-height:0;padding:5px;max-width:12px;height:12px;overflow:hidden;white-space:nowrap;transition:max-width .2s ease-in-out}.nfdk-6-0-394-s .sidebar>.header .name-container .item-type span{vertical-align:middle}.nfdk-6-0-394-s .sidebar>.header .name-container .item-type .icon{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";margin-right:5px;font-size:13px;text-align:center}.nfdk-6-0-394-s .sidebar>.header .name-container .item-type .icon.site:before{content:"place"}.nfdk-6-0-394-s .sidebar>.header .name-container .item-type .icon.srlg:before{content:"security"}.nfdk-6-0-394-s .sidebar>.header .name-container .item-type .icon.inventory:before{content:"memory"}.nfdk-6-0-394-s .sidebar>.header .name-container .item-type .icon.link:before{content:"link"}.nfdk-6-0-394-s .sidebar>.header .name-container .item-type .icon.port:before{content:"settings_ethernet"}.nfdk-6-0-394-s .sidebar>.header .name-container .item-type .icon.sitelink:before{content:"swap_horiz"}.nfdk-6-0-394-s .sidebar>.header .name-container .item-type .icon.service:before{content:"cloud"}.nfdk-6-0-394-s .sidebar>.header .name-container .item-type:hover{max-width:200px}.nfdk-6-0-394-s .sidebar>.header .name-container .item-name{text-overflow:ellipsis;overflow:hidden;white-space:nowrap;font-size:1.5rem;font-weight:600;flex:1 1 auto}.nfdk-6-0-394-s .sidebar>.header .name-container .sidebar-layer-select{flex:0 0 auto;display:flex;font-size:.9rem;margin-right:10px}.nfdk-6-0-394-s .sidebar>.header .name-container .sidebar-layer-select .layer{padding:5px 10px;height:15px;line-height:15px;cursor:pointer;border-radius:5px;color:#fff;font-weight:700}.nfdk-6-0-394-s .sidebar>.header .name-container .sidebar-layer-select .layer:not(:last-child){margin-right:2px}.nfdk-6-0-394-s .sidebar>.header .name-container .sidebar-layer-select .layer.active{background-color:#828ba2;color:#fff}.nfdk-6-0-394-s .sidebar>.header .name-container .sidebar-layer-select .layer:hover:not(.active){background-color:#9098ad}.nfdk-6-0-394-s .sidebar>.header .name-container.full{height:50px}.nfdk-6-0-394-s .sidebar>.header .breadcrumbs{display:flex;align-items:center;height:20px}.nfdk-6-0-394-s .sidebar>.header .breadcrumbs .crumb{color:#fff;font-size:.8rem;display:flex;align-items:center;min-width:25px;flex:0 1 auto;text-decoration:none;transition:flex .2s;text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .sidebar>.header .breadcrumbs .crumb:hover{border-bottom:1px solid hsla(0,0%,100%,.7);flex:0 0 auto}.nfdk-6-0-394-s .sidebar>.header .breadcrumbs .crumb:before{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";font-size:12px;margin-right:2px;height:12px;display:inline-block}.nfdk-6-0-394-s .sidebar>.header .breadcrumbs .crumb.site:before{content:"place"}.nfdk-6-0-394-s .sidebar>.header .breadcrumbs .crumb.device:before,.nfdk-6-0-394-s .sidebar>.header .breadcrumbs .crumb.inventory:before{content:"memory"}.nfdk-6-0-394-s .sidebar>.header .breadcrumbs .crumb.link:before{content:"link"}.nfdk-6-0-394-s .sidebar>.header .breadcrumbs .crumb.port:before{content:"settings_ethernet"}.nfdk-6-0-394-s .sidebar>.header .breadcrumbs .crumb-seperator{width:0;height:0;border-top:4px solid transparent;border-bottom:4px solid transparent;border-left:5px solid hsla(0,0%,100%,.5);margin-left:5px;margin-right:5px}.nfdk-6-0-394-s .sidebar .filter-bar{display:flex;align-items:center;color:#cbcfd9;border-bottom:1px solid #e8eaee;transition:color .15s ease-in-out}.nfdk-6-0-394-s .sidebar .filter-bar .icon{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";flex:0 0 auto;margin-left:5px;width:12px;height:12px;text-align:center;line-height:12px;font-size:12px}.nfdk-6-0-394-s .sidebar .filter-bar .icon:before{content:"filter_list"}.nfdk-6-0-394-s .sidebar .filter-bar input{-webkit-appearance:none!important;outline:none;flex:1 1 auto;border-width:0;height:30px;line-height:30px;padding-left:5px;font-size:14px;font-family:Source Sans Pro,Helvetica,sans-serif}.nfdk-6-0-394-s .sidebar .filter-bar input::-webkit-input-placeholder{color:#cbcfd9}.nfdk-6-0-394-s .sidebar .filter-bar input:-ms-input-placeholder{color:#cbcfd9}.nfdk-6-0-394-s .sidebar .filter-bar .results{flex:0 0 auto;font-size:14px;line-height:14px;text-align:right;padding-right:5px;margin-left:5px;cursor:text}.nfdk-6-0-394-s .sidebar .filter-bar.active,.nfdk-6-0-394-s .sidebar .filter-bar.active input{color:#9fa6b8}.nfdk-6-0-394-s .sidebar>.tabs{height:35px;line-height:35px;display:flex;flex:0 0 auto;background-color:#9fa6b8;overflow:hidden}.nfdk-6-0-394-s .sidebar>.tabs>.tab{color:hsla(0,0%,100%,.7);position:relative;border-top-left-radius:10px;border-top-right-radius:10px}.nfdk-6-0-394-s .sidebar>.tabs>.tab:first-child{margin-left:10px}.nfdk-6-0-394-s .sidebar>.tabs>.tab:last-child{margin-right:10px}.nfdk-6-0-394-s .sidebar>.tabs>.tab .title{flex:1 1 auto;padding-left:10px;padding-right:10px}.nfdk-6-0-394-s .sidebar>.tabs>.tab:after,.nfdk-6-0-394-s .sidebar>.tabs>.tab:before{position:absolute;bottom:-1px;width:10px;height:10px;content:" "}.nfdk-6-0-394-s .sidebar>.tabs>.tab:before{left:-10px;border-bottom-right-radius:10px;border-width:0 1px 1px 0;box-shadow:2px 2px 0 #9fa6b8}.nfdk-6-0-394-s .sidebar>.tabs>.tab:after{right:-10px;border-bottom-left-radius:10px;border-width:0 0 1px 1px;box-shadow:-2px 2px 0 #9fa6b8}.nfdk-6-0-394-s .sidebar>.tabs>.tab.active{background-color:#fff;color:#9fa6b8;z-index:3}.nfdk-6-0-394-s .sidebar>.tabs>.tab.active:before{box-shadow:3px 2px 0 #fff}.nfdk-6-0-394-s .sidebar>.tabs>.tab.active:after{box-shadow:-3px 2px 0 #fff}.nfdk-6-0-394-s .sidebar>.tabs>.tab:hover:not(.active){z-index:2;background-color:#aeb4c3;color:#fff}.nfdk-6-0-394-s .sidebar>.tabs>.tab:hover:not(.active):before{box-shadow:2px 2px 0 #aeb4c3}.nfdk-6-0-394-s .sidebar>.tabs>.tab:hover:not(.active):after{box-shadow:-2px 2px 0 #aeb4c3}.nfdk-6-0-394-s .sidebar>.tabs .tab{flex:1 1 100%;text-align:center;cursor:pointer;display:flex}.nfdk-6-0-394-s .sidebar>.content{overflow-y:auto;overflow-x:hidden}.nfdk-6-0-394-s .sidebar>.content .base-line-item,.nfdk-6-0-394-s .sidebar>.content .device-item,.nfdk-6-0-394-s .sidebar>.content .link-item,.nfdk-6-0-394-s .sidebar>.content .port-item{font-size:14px;padding:5px;border-bottom:1px solid #f0f1f4}.nfdk-6-0-394-s .sidebar>.content .base-line-item:hover,.nfdk-6-0-394-s .sidebar>.content .device-item:hover,.nfdk-6-0-394-s .sidebar>.content .link-item:hover,.nfdk-6-0-394-s .sidebar>.content .port-item:hover{background-color:#f0f1f4}.nfdk-6-0-394-s .sidebar>.content .base-line-item.tagged,.nfdk-6-0-394-s .sidebar>.content .tagged.device-item,.nfdk-6-0-394-s .sidebar>.content .tagged.link-item,.nfdk-6-0-394-s .sidebar>.content .tagged.port-item{box-shadow:inset 0 0 0 1px #a6cceb}.nfdk-6-0-394-s .sidebar>.content .base-line-item.tagged:not(:hover),.nfdk-6-0-394-s .sidebar>.content .tagged.device-item:not(:hover),.nfdk-6-0-394-s .sidebar>.content .tagged.link-item:not(:hover),.nfdk-6-0-394-s .sidebar>.content .tagged.port-item:not(:hover){background-color:#e5f0f9}.nfdk-6-0-394-s .sidebar>.content .base-line-item .expander,.nfdk-6-0-394-s .sidebar>.content .device-item .expander,.nfdk-6-0-394-s .sidebar>.content .link-item .expander,.nfdk-6-0-394-s .sidebar>.content .port-item .expander{fill:grey;cursor:pointer;margin-right:5px}.nfdk-6-0-394-s .sidebar>.content .base-line-item .text-badge,.nfdk-6-0-394-s .sidebar>.content .device-item .text-badge,.nfdk-6-0-394-s .sidebar>.content .link-item .layer-badge,.nfdk-6-0-394-s .sidebar>.content .link-item .text-badge,.nfdk-6-0-394-s .sidebar>.content .port-item .port-line .type-badge,.nfdk-6-0-394-s .sidebar>.content .port-item .text-badge{border:1px solid #9fa6b8;color:#9fa6b8;border-radius:2px;line-height:9px;height:10px;padding:2px}.nfdk-6-0-394-s .sidebar>.content .item-info{position:relative;padding:10px;user-select:text;-ms-user-select:text}.nfdk-6-0-394-s .sidebar>.content .item-info .key-value{display:flex;height:20px;visibility:visible;opacity:1;transition:height .2s ease,visibility .2s linear .2s,opacity .2s linear .2s}.nfdk-6-0-394-s .sidebar>.content .item-info .key-value .title{font-weight:700;margin-right:5px;white-space:nowrap}.nfdk-6-0-394-s .sidebar>.content .item-info .key-value .value{text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .sidebar>.content .item-info .key-value .value.link{text-decoration:underline}.nfdk-6-0-394-s .sidebar>.content .item-info .key-value.kv-pair-hidden{visibility:hidden;opacity:0;height:0;transition:height .2s ease .2s,visibility .2s,opacity .2s linear;overflow:hidden}.nfdk-6-0-394-s .sidebar>.content .item-info .show-more-toggle{font-size:.8rem;text-align:end;color:#9fa6b8;border:none;user-select:none}.nfdk-6-0-394-s .sidebar>.content .item-info .show-more-toggle span{cursor:pointer}.nfdk-6-0-394-s .sidebar>.content .item-info .show-more-toggle:hover{color:#9098ad}.nfdk-6-0-394-s .sidebar>.content .item-info .show-more-toggle:focus{outline:0}.nfdk-6-0-394-s .sidebar>.content .device-item{animation:fadein .3s;display:flex;align-items:center;height:40px;padding-left:10px;padding-right:10px}.nfdk-6-0-394-s .sidebar>.content .device-item:active,.nfdk-6-0-394-s .sidebar>.content .device-item:hover{text-decoration:none}.nfdk-6-0-394-s .sidebar>.content .device-item .state{flex:0 0 auto;font-size:12px;border:1px solid #9fa6b8;border-radius:5px;color:#9fa6b8;width:40px;height:21px;line-height:21px;text-align:center}.nfdk-6-0-394-s .sidebar>.content .device-item .name{text-overflow:ellipsis;overflow:hidden;white-space:nowrap;flex:1 1 auto;margin-left:10px}.nfdk-6-0-394-s .sidebar>.content .device-item .vendor{flex:0 0 auto;font-size:12px;background-color:#e0e0e0;border-radius:2px;padding-left:5px;padding-right:5px}.nfdk-6-0-394-s .sidebar>.content .device-item.stale .state{border-color:#fb3;color:#fb3}.nfdk-6-0-394-s .sidebar>.content .device-item.place-holder{display:flex;align-items:center;flex-direction:row}.nfdk-6-0-394-s .sidebar>.content .device-item.place-holder .expand,.nfdk-6-0-394-s .sidebar>.content .device-item.place-holder .gray-line{animation:pulseAnimation 1s ease-in-out infinite;height:15px}.nfdk-6-0-394-s .sidebar>.content .device-item.place-holder .expand{background-color:#e8eaee;width:20px;border-radius:20px;animation-delay:.4s}.nfdk-6-0-394-s .sidebar>.content .device-item.place-holder .gray-line{border-radius:10px;background-color:#e8eaee;width:70%;margin-left:10px}.nfdk-6-0-394-s .sidebar>.content .link-expansion{height:auto;overflow:hidden;display:flex;flex:1 1 auto;font-size:12px;align-items:center;flex-wrap:wrap}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line{display:inherit;width:100%;border-top:1px solid #e6e6e6;padding-top:10px;padding-bottom:10px;padding-left:15px;align-items:inherit}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line .left-text,.nfdk-6-0-394-s .sidebar>.content .link-expansion .line .right-text{flex:1 0 auto;width:auto;align-items:inherit}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line .left-text{text-align:left}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line .right-text{text-align:right}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line .gray-line{flex:1 1 auto;height:1px;width:100%;align-self:center;margin-bottom:1px;border-bottom:1px solid #a9a9a9;align-items:inherit}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line .arrow{flex:0 0 auto;height:10px;width:10px;border:1px solid #a9a9a9;border-width:1px 1px 0 0;position:relative;align-items:inherit}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line .arrow.right{transform:rotate(45deg);right:12px}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line .arrow.left{transform:rotate(-135deg);left:12px}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line.unmapped{display:block;color:grey}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line.unmapped .ports-container{display:flex;margin-bottom:5px}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line.unmapped .ports-container .left,.nfdk-6-0-394-s .sidebar>.content .link-expansion .line.unmapped .ports-container .right{flex:1 1 100%;display:block;margin:0;padding:0}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line.unmapped .ports-container .left li,.nfdk-6-0-394-s .sidebar>.content .link-expansion .line.unmapped .ports-container .right li{list-style:none}.nfdk-6-0-394-s .sidebar>.content .link-expansion .line.unmapped .ports-container .right{text-align:right}.nfdk-6-0-394-s .sidebar>.content .link-item{min-height:80px;padding-bottom:0;box-shadow:inset 0 0 0 0 #9fa6b8;transition:box-shadow .1s ease-in-out}.nfdk-6-0-394-s .sidebar>.content .link-item:not(.place-holder){animation:fadein .3s}.nfdk-6-0-394-s .sidebar>.content .link-item.open:hover{box-shadow:inset 2px 0 0 0 #9098ad}.nfdk-6-0-394-s .sidebar>.content .link-item .layer-badge{flex:0 0 auto;margin-right:5px}.nfdk-6-0-394-s .sidebar>.content .link-item .lsp-role{flex:0 0 auto;text-transform:uppercase;font-size:.6rem;padding-left:3px;padding-right:3px;border-radius:2px;line-height:.9rem;background-color:#828ba2;color:#fff}.nfdk-6-0-394-s .sidebar>.content .link-item .text-line{display:flex;align-items:center;font-size:12px}.nfdk-6-0-394-s .sidebar>.content .link-item .text-line .left,.nfdk-6-0-394-s .sidebar>.content .link-item .text-line .right{flex:1 1 100%}.nfdk-6-0-394-s .sidebar>.content .link-item .text-line .right{text-align:right}.nfdk-6-0-394-s .sidebar>.content .link-item .text-line.full-left .left{text-overflow:ellipsis;overflow:hidden;white-space:nowrap;flex:1 1 auto;padding-right:5px}.nfdk-6-0-394-s .sidebar>.content .link-item .text-line.full-left .right{flex:0 0 auto}.nfdk-6-0-394-s .sidebar>.content .link-item .text-line.secondary{font-size:10px}.nfdk-6-0-394-s .sidebar>.content .link-item .text-line.secondary a{color:#9fa6b8}.nfdk-6-0-394-s .sidebar>.content .link-item .padded{padding-left:15px;padding-bottom:8px}.nfdk-6-0-394-s .sidebar>.content .link-item .padded .visual{height:24px;margin-top:2px;margin-bottom:2px;display:flex;align-items:center;justify-content:space-around;position:relative}.nfdk-6-0-394-s .sidebar>.content .link-item .padded .visual .expander{margin-left:-20px}.nfdk-6-0-394-s .sidebar>.content .link-item .padded .visual .device{width:16px;height:16px;background-color:#737d97;position:absolute;top:calc(50% - 8px)}.nfdk-6-0-394-s .sidebar>.content .link-item .padded .visual .device.left{left:0}.nfdk-6-0-394-s .sidebar>.content .link-item .padded .visual .device.right{right:0}.nfdk-6-0-394-s .sidebar>.content .link-item .padded .visual .device.igp,.nfdk-6-0-394-s .sidebar>.content .link-item .padded .visual .device.router{border-radius:50%}.nfdk-6-0-394-s .sidebar>.content .link-item .padded .visual .link{height:10px;width:100%;margin-left:5px;margin-right:5px;background-color:#dadce3}.nfdk-6-0-394-s

.sidebar>.content .link-item.utilization.medium .padded .visual .link{background-color:#feeb3b}.nfdk-6-0-394-s .sidebar>.content .link-item.utilization.high .padded .visual .link{background-color:#6432a0}.nfdk-6-0-394-s .sidebar>.content .link-item.down .padded .visual .link{background-color:#e97472}.nfdk-6-0-394-s .sidebar>.content .link-item.place-holder{display:flex;flex-direction:column}.nfdk-6-0-394-s .sidebar>.content .link-item.place-holder .line{height:15px;border-radius:10px;background-color:#e8eaee;margin-bottom:5px;margin-top:5px;animation:pulseAnimation 1s ease-in-out infinite;animation-delay:.2s}.nfdk-6-0-394-s .sidebar>.content .link-item.place-holder .line-wrapper,.nfdk-6-0-394-s .sidebar>.content .link-item.place-holder .line.full-width{width:100%}.nfdk-6-0-394-s .sidebar>.content .link-item.place-holder .line-wrapper .left,.nfdk-6-0-394-s .sidebar>.content .link-item.place-holder .line-wrapper .right{width:15%}.nfdk-6-0-394-s .sidebar>.content .link-item.place-holder .line-wrapper .right{animation-delay:.4s;float:right}.nfdk-6-0-394-s .sidebar>.content .link-item.place-holder .line-wrapper .left{animation-delay:.1s;float:left}.nfdk-6-0-394-s .sidebar>.content .port-item{min-height:40px;display:flex;flex-direction:column;justify-content:flex-start;align-items:flex-start}.nfdk-6-0-394-s .sidebar>.content .port-item:not(.place-holder){animation:fadein .5s}.nfdk-6-0-394-s .sidebar>.content .port-item .port-line{width:100%;align-items:center;display:flex;margin-bottom:5px}.nfdk-6-0-394-s .sidebar>.content .port-item .port-line .type-badge{flex:0 0 auto;margin-right:5px;min-width:25px;text-align:center;font-size:12px}.nfdk-6-0-394-s .sidebar>.content .port-item .port-line .name{flex:1 1 auto;text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.nfdk-6-0-394-s .sidebar>.content .port-item .port-line .props{flex:0 0 auto;margin-left:10px;display:flex}.nfdk-6-0-394-s .sidebar>.content .port-item .port-line .props>:not(:last-child){margin-right:5px}.nfdk-6-0-394-s .sidebar>.content .port-item .port-line .props .port-speed{color:#737d97}.nfdk-6-0-394-s .sidebar>.content .port-item .port-line .props .port-status{color:#fb3;font-weight:600}.nfdk-6-0-394-s .sidebar>.content .port-item .port-line .props .port-status.down{color:#e97472}.nfdk-6-0-394-s .sidebar>.content .port-item.down .type-badge{border-color:#e97472;color:#e97472}.nfdk-6-0-394-s .sidebar>.content .port-item.down .port-line .props .port-status{color:#e97472}.nfdk-6-0-394-s .sidebar>.content .port-item .related-link{padding-left:35px;display:flex;font-size:12px}.nfdk-6-0-394-s .sidebar>.content .port-item .related-link>.title{color:#9fa6b8;flex:0 0 auto;margin-right:2px}.nfdk-6-0-394-s .sidebar>.content .port-item .related-link>.link-name{text-overflow:ellipsis;overflow:hidden;white-space:nowrap;flex:1 1 auto;color:#737d97}.nfdk-6-0-394-s .sidebar>.content .port-item .related-link>.link-name:before{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";content:"link";font-size:12px;vertical-align:middle;margin-right:3px;color:#9fa6b8}.nfdk-6-0-394-s .sidebar>.content .port-item.place-holder{display:flex;align-items:center;flex-direction:row}.nfdk-6-0-394-s .sidebar>.content .port-item.place-holder .expand,.nfdk-6-0-394-s .sidebar>.content .port-item.place-holder .gray-line{animation:pulseAnimation 1s ease-in-out infinite;height:15px}@keyframes pulseAnimation{0%{opacity:1}50%{opacity:.4}to{opacity:1}}.nfdk-6-0-394-s .sidebar>.content .port-item.place-holder .expand{background-color:#e8eaee;width:20px;border-radius:20px;animation-delay:.4s}.nfdk-6-0-394-s .sidebar>.content .port-item.place-holder .gray-line{border-radius:10px;background-color:#e8eaee;width:70%;margin-left:10px}.nfdk-6-0-394-s .sidebar>.content .metro-path{height:100%;max-height:inherit;position:relative;background:linear-gradient(#fff 2px,transparent 0),linear-gradient(90deg,#fff 39px,#9fa6b8 40px);background-size:100% 4px,40px 35px;background-position-x:9px}.nfdk-6-0-394-s .sidebar>.content .metro-path .metro-path-options{position:absolute;top:40px;right:5px;height:30px;width:100px;z-index:50;display:flex;justify-content:space-evenly;align-items:center;font-size:13px;color:#9fa6b8;background-color:#f7f8f9;border-radius:5px;border:1px solid #dfdfdf}.nfdk-6-0-394-s .sidebar>.content .metro-path .metro-path-options .material-slider>label,.nfdk-6-0-394-s .sidebar>.content .metro-path .metro-path-options .material-switch{height:20px}.nfdk-6-0-394-s .sidebar>.content .metro-path .headers-overlay{position:absolute;top:-1px;left:0;height:100%;width:100%;pointer-events:none}.nfdk-6-0-394-s .sidebar>.content .metro-path .headers-overlay>.layers{pointer-events:auto}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers{height:30px;display:flex;padding-left:9px;box-shadow:inset 0 -1px 0 0 #eee}.nfdk-6-0-394-s

.sidebar>.content .metro-path .layers .col{flex:0 0 auto;width:39px;font-size:12px;text-overflow:ellipsis;overflow:hidden;white-space:nowrap;text-align:center;line-height:30px;cursor:default;border-right:1px solid #eee}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .col:first-child{width:38px;border-left:1px solid #eee}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .hidden-indicator{flex:0 0 auto;position:relative}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .hidden-indicator:before{content:" ";display:block;position:absolute;left:-2px;width:3px;top:2px;height:26px;background-color:#828ba2;transition:background-color .15s}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .hidden-indicator:hover:before{background-color:#5c657c}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .hidden-indicator:after{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";content:"unfold_more";transform:rotate(90deg);position:absolute;font-size:19px;left:-10px;top:6px;color:#5c657c;opacity:0;transition:opacity .15s}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .hidden-indicator:hover:after{opacity:1}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options{flex:0 0 auto;border-left:1px solid #eee;position:absolute;right:0;background-color:#fff}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options>.indicator{font-size:1.2rem;font-weight:700;text-align:center;width:20px;height:29px;line-height:29px;cursor:pointer}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options:hover{background-color:#f7f8f9}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options:active{background-color:#e8eaee}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options{position:absolute;width:80%;top:calc(100% + 5px);right:5px;background-color:#fff;max-height:400px;overflow-y:auto;width:180px;box-sizing:border-box;padding:10px;border:1px solid #eee;border-radius:3px;box-shadow:0 3px 6px -1px rgba(67,74,91,.27)}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options.open{display:block}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions{padding-top:5px;padding-bottom:5px;margin-bottom:5px;display:flex;justify-content:space-between;border-bottom:1px solid #e8eaee}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action{height:30px;min-width:50px;padding-left:5px;padding-right:5px;text-align:center;border-radius:3px;line-height:30px;cursor:pointer;font-size:.9rem;color:#2e84ca;box-sizing:border-box;color:#5c657c;font-size:.8rem;display:flex;align-items:center}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action:hover:not(:active){background-color:#f7f8f9}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.disabled{pointer-events:none}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.primary{background-color:#2e84ca;color:#fff;box-shadow:0 1px 8px rgba(0,0,0,.16)}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.primary:hover:not(:active){background-color:#539cd8}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.primary.disabled{background-color:#aaa!important}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.primary.critical{background-color:#f51745}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.primary.critical:hover:not(:active){background-color:#f7486c}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.outlined{border:1px solid #2e84ca}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.outlined:hover:not(:active){background-color:#edf4fa}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.outlined.critical{color:#f51745;border-color:#f51745}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.outlined.critical:hover:not(:active){background-color:rgba(245,23,69,.1)}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.outlined.disabled{border:1px solid #ddd;color:#ddd}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers

.options .header-options .layers-selector>.actions>.filter-action.flat.disabled{color:#ddd}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.flat.critical{color:#f51745}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.flat.critical:hover:not(:active){background-color:rgba(245,23,69,.1)}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action:not(:last-child){margin-right:10px}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action:before{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";font-size:12px;margin-right:5px}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.select:before{content:"check"}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.actions>.filter-action.clear:before{content:"clear"}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.layers-list{max-height:300px;overflow-y:auto}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.layers-list .material-checkbox,.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.layers-list .material-checkbox>label{flex:1 1 auto;line-height:20px;height:20px;overflow:hidden;margin-right:5px}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.layers-list .material-checkbox input{width:16px;height:16px;margin-right:5px}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.layers-list .material-checkbox input:before{line-height:15px;font-size:14px}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.layers-list .material-checkbox .title{text-overflow:ellipsis;overflow:hidden;white-space:nowrap;font-size:.8rem}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.layers-list .count{flex:0 0 auto;line-height:20px}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers .options .header-options .layers-selector>.layers-list.muted{color:#bcc1ce}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers{background-color:#fff;position:sticky;z-index:200;top:-1px;margin-top:-1px;margin-bottom:2px;border-top:1px solid #eee}.nfdk-6-0-394-s .sidebar>.content .metro-path .layers.fixed{background-color:grey;position:sticky}.nfdk-6-0-394-s .sidebar>.content .metro-path .header{position:absolute;background-color:#fff;z-index:100;width:100%}.nfdk-6-0-394-s .sidebar>.content .metro-path .path{position:relative;padding-top:10px}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer{margin-left:30px;margin-top:10px;padding:0 0 10px}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .layer-name{position:absolute;top:0;left:-20px}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element{list-style:none;position:relative;padding-left:10px;min-height:110px;line-height:8px;white-space:nowrap;font-size:12px;animation:fadein .2s ease-out}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element.with-header{margin-top:33px}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element.reduced-element-section{min-height:55px}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element.reduced-element-section .name .link-label.hidden-layer-label,.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element.reduced-element-section .name .unresolved.model-link-port-hidden{opacity:0}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .name{transition:opacity .25s}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .name .device,.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .name .port{display:block}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .name .port{position:absolute;color:#9fa6b8;transition:color .2s ease-in-out}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .name .port.top{top:14px}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .name .port.bottom{bottom:6px}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .name .port:before{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-

settings:"liga";content:"settings_ethernet";font-size:12px;vertical-align:-2;margin-right:5px}.nfdk-6-0-394-s
.sidebar>.content .metro-path .path .layer .element .name .link-label{transform:translateX(-50%) rotate(-
90deg);position:absolute;top:calc(50% - 4px);margin-left:-12px;border-radius:2px;border:1px solid
#9fa6b8;padding:2px;line-height:8px;background:#fff;pointer-events:none;max-width:60px;font-size:.7rem;text-
overflow:ellipsis;overflow:hidden;white-space:nowrap;z-index:2}.nfdk-6-0-394-s .sidebar>.content .metro-path
.path .layer .element .name .link-label .muted{color:#9fa6b8}.nfdk-6-0-394-s .sidebar>.content .metro-path .path
.layer .element .name:hover .port{color:#000}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer
.element:last-of-type{min-height:auto}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer
.element:before{position:absolute;content:" ";background-color:#fff;border:1px solid #9fa6b8;left:-
8px;height:10px;top:-2px;width:10px;z-index:10}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer
.element.router:before{border-radius:50%}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer
.element.unknown:before{border-style:dashed}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element
.link{height:100%;left:-4px;position:absolute;overflow:visible;z-index:1}.nfdk-6-0-394-s .sidebar>.content .metro-
path .path .layer .element .link .selector{width:10px;height:100%;display:inline-block;position:relative}.nfdk-6-0-
394-s .sidebar>.content .metro-path .path .layer .element .link .selector.left{margin-left:-10px}.nfdk-6-0-394-s
.sidebar>.content .metro-path .path .layer .element .link .selector.left>.arrow{border-width:5px 7px 5px 0;border-
color:transparent currentColor transparent transparent}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer
.element .link .selector.right{text-align:right}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element
.link .selector.right>.arrow{border-width:5px 0 5px 7px;border-color:transparent transparent transparent
currentColor;margin-left:2px}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .link .selector
.arrow{margin-top:auto;margin-bottom:auto;position:absolute;border-style:solid;top:calc(50% -
5px);color:#bcc1ce}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .link
.selector.disabled{pointer-events:none}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .link
.selector.disabled .arrow{color:#dadce3}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .link
.selector:hover{background-color:rgba(247,248,249,.8)}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer
.element .link .selector:hover .arrow{color:#9098ad}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer
.element .link .selector:active .arrow{color:#828ba2}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer
.element .link .link-visual{background-color:#9fa6b8;display:inline-block;height:100%;width:4px}.nfdk-6-0-394-s
.sidebar>.content .metro-path .path .layer .element .link .link-visual.down{background-color:#f09f9e}.nfdk-6-0-
394-s .sidebar>.content .metro-path .path .layer .element .link .link-
visual.bundle{background:#fff;width:2px;margin-left:-1px;border-left:2px solid #9fa6b8;border-right:2px solid
#9fa6b8}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .link .link-visual.bundle.down{border-
color:#f09f9e}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .link .link-
visual.unknown{background:#fff;width:2px;margin-left:-1px;border-left:2px dotted #9fa6b8;border-right:2px
dotted #9fa6b8;pointer-events:none}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .link .link-
visual:hover:not(.unknown){background-color:#737d97}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer
.element .link .link-visual:hover:not(.unknown).down{background-color:#e24946}.nfdk-6-0-394-s .sidebar>.content
.metro-path .path .layer .element .link .link-visual:hover:not(.unknown).bundle{background-color:#fff;border-
color:#737d97}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .element .link .link-
visual:hover:not(.unknown).bundle.down{border-color:#e24946}.nfdk-6-0-394-s .sidebar>.content .metro-path
.path .layer .element.hidden{min-height:0;border-width:0;margin-left:-40px;font-size:0;line-height:0}.nfdk-6-0-394-
s .sidebar>.content .metro-path .path .layer .element.hidden>.link,.nfdk-6-0-394-s .sidebar>.content .metro-path
.path .layer .element.hidden>.name{display:none}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer
.element.hidden>.layer{margin-top:0;padding-bottom:0}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer
.element.hidden:before{display:none;opacity:0}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer
.element.hidden.with-header{min-height:50px}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .cross-
link{width:30px;height:50px;display:block;overflow:visible;margin-left:-30px;fill:none;stroke:#9fa6b8;stroke-
width:4px}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .cross-link.unknown{stroke:#9fa6b8;stroke-

dasharray:3 4}.nfdk-6-0-394-s .sidebar>.content .metro-path .path .layer .cross-link.hidden{display:none}.nfdk-6-0-394-s .sidebar>.content .metro-path .path>.layer{margin-top:0}.nfdk-6-0-394-s .sidebar>.content .metro-path .path>.layer>.layers{margin-bottom:10px}.nfdk-6-0-394-s .sidebar>.content .service-topology{padding:20px;width:calc(100% - 40px);height:300px;overflow:visible;animation:fadein .15s}@keyframes fadein{0%{opacity:0}to{opacity:1}}.nfdk-6-0-394-s .sidebar>.content .service-topology .link{stroke:#b7bcc8;stroke-width:5;transition:opacity .2s ease-in-out;opacity:.2}.nfdk-6-0-394-s .sidebar>.content .service-topology .link.selected{opacity:1}.nfdk-6-0-394-s .sidebar>.content .service-topology .link.hub{stroke-width:6;stroke:#646d82}.nfdk-6-0-394-s .sidebar>.content .service-topology .node{cursor:pointer;text-decoration:none}.nfdk-6-0-394-s .sidebar>.content .service-topology .node .icon{transition:all .2s ease-in-out;opacity:.2;fill:#9aa1b2}.nfdk-6-0-394-s .sidebar>.content .service-topology .node .label{stroke:#fff;stroke-width:2;paint-order:stroke;text-anchor:middle;font-size:30px}.nfdk-6-0-394-s .sidebar>.content .service-topology .node.hub .icon{transform:scale(1.2);fill:#4e5565}.nfdk-6-0-394-s .sidebar>.content .service-topology .node.selected .icon{opacity:1}.nfdk-6-0-394-s .sidebar>.content .service-topology .node:hover .icon{transform:scale(1.3);fill:#2e84ca}.nfdk-6-0-394-s .sidebar>.content .service-topology .node:hover .label{font-weight:700}.nfdk-6-0-394-s .sidebar>.content a{text-decoration:none}.nfdk-6-0-394-s .sidebar>.content a:hover{text-decoration:underline}.nfdk-6-0-394-s .sidebar-message{height:58px;line-height:58px;text-align:center;color:#bcc1ce}.nfdk-6-0-394-s .sidebar-message.error{color:#9fa6b8}.nfdk-6-0-394-s .sidebar-message .retry-button{color:#b7bcc8;cursor:pointer;margin-left:5px}.nfdk-6-0-394-s .item-issues{border:1px solid #fb3;border-radius:5px;padding:5px;font-size:14px;margin:10px 10px 0}.nfdk-6-0-394-s .item-issues>.expandable-header polygon{fill:#fa0}.nfdk-6-0-394-s .item-issues>.expandable-header .title{color:#fa0;user-select:none;cursor:pointer;padding-left:20px}.nfdk-6-0-394-s .item-issues>.content{padding:0;margin-left:10px}.nfdk-6-0-394-s .item-issues>.content .issues{padding-left:14px;padding-right:15px;margin:0}.issue:not(.nfdk-6-0-394-s .item-issues>.content .issues:last-item){margin-bottom:5px}.nfdk-6-0-394-s .item-issues>.content .model-link{text-decoration:underline}.nfdk-6-0-394-s .device-issues{border-radius:5px;padding:10px;font-size:14px;margin:10px 10px 0;border:1px solid #fb3;color:#fa0}.nfdk-6-0-394-s .device-issues.info{border-color:#9fa6b8;color:#828ba2}.nfdk-6-0-394-s .device-issues.error{border-color:#e97472;color:#e24946}.nfdk-6-0-394-s .tags-container{border-top:1px solid #e8eaee;margin-left:10px;margin-right:10px;padding-top:10px;font-size:14px}.nfdk-6-0-394-s .tags-container .tags{display:flex;flex-wrap:wrap}.nfdk-6-0-394-s .tags-container .tags .tag{background-color:#e8eaee;color:#9fa6b8;border-radius:5px;padding:5px;margin-right:10px;margin-bottom:10px;display:flex;align-items:center}.nfdk-6-0-394-s .tags-container .tags .tag:before{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";content:"label";color:#828ba2;margin-right:3px;font-size:14px}.nfdk-6-0-394-s .tags-container .tags .tag .category{color:#828ba2;margin-right:3px;margin-bottom:1px}.nfdk-6-0-394-s .tags-container .tags .tag .value{color:#66718b;font-weight:700;margin-bottom:1px}.nfdk-6-0-394-s .srlg-container{border-top:1px solid #e8eaee;margin-left:10px;margin-right:10px;padding-top:10px;font-size:14px}.nfdk-6-0-394-s .srlg-container .srlgs{display:flex;flex-wrap:wrap}.nfdk-6-0-394-s .srlg-container .srlgs .chip{background-color:#e8eaee;color:#9fa6b8;border-radius:5px;padding:5px;margin-right:10px;margin-bottom:10px;display:flex;align-items:center;color:#828ba2}.nfdk-6-0-394-s .srlg-container .srlgs .chip:hover{text-decoration:none;color:#51596d}.nfdk-6-0-394-s .srlg-container .srlgs .chip:before{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";content:"security";color:#828ba2;margin-right:3px;font-size:14px;display:inline-block}.nfdk-6-0-394-s .pynr-explorer-view{width:100%;height:100%;position:relative}.nfdk-6-0-394-s .pynr-explorer-view .sidebar a{color:#000}.nfdk-6-0-394-s .pynr-explorer-view .sidebar a:active,.nfdk-6-0-394-s .pynr-explorer-view .sidebar

a:hover,.nfdk-6-0-394-s .pynr-explorer-view .sidebar a:link,.nfdk-6-0-394-s .pynr-explorer-view .sidebar
a:visited{outline:transparent}.nfdk-6-0-394-s .explorer .sd-scene{width:100%;height:100%;position:relative}.nfdk-
6-0-394-s .explorer .sd-scene .mapboxgl-canary{background-color:salmon}.nfdk-6-0-394-s .explorer .sd-scene
.mapboxgl-ctrl-bottom-left{position:absolute;pointer-events:none;z-index:2;bottom:0;left:0}.nfdk-6-0-394-s
.explorer .sd-scene .mapboxgl-ctrl-bottom-left .mapboxgl-ctrl{clear:both;pointer-events:auto;margin:0 0 10px
10px;float:left;transform:translate(0)}.nfdk-6-0-394-s .explorer .sd-scene .mapboxgl-canvas{outline:none}.nfdk-6-
0-394-s .explorer .sd-scene .mapboxgl-ctrl-logo{width:88px;height:23px;margin:0 0 -4px -
4px;display:block;background-repeat:no-repeat;cursor:pointer;overflow:hidden;background-
image:url("data:image/svg+xml,%3Csvg width='88' height='23' viewBox='0 0 88 23'
xmlns='http://www.w3.org/2000/svg' xmlns:xlink='http://www.w3.org/1999/xlink' fill-rule='evenodd'%3E
%3Cdefs%3E %3Cpath id='logo' d='M11.5 2.25c5.105 0 9.25 4.145 9.25 9.25s-4.145 9.25-9.25 9.25-9.25-4.145-
9.25-9.25 4.145-9.25 9.25-9.25zM6.997 15.983c-.051-.338-.828-5.802 2.233-8.873a4.395 4.395 0 013.13-1.28c1.27
0 2.49.51 3.39 1.42.91.9 1.42 2.12 1.42 3.39 0 1.18-.449 2.301-1.28 3.13C12.72 16.93 7 16 7 16l-.003-.017zM15.3
10.5l-2 .8-.8 2-.8-2-2-.8 2-.8.8-2 .8 2 2 .8z' /%3E %3Cpath id='text' d='M50.63 8c.13 0 .23.1.23.23V9c.7-.76 1.7-
1.18 2.73-1.18 2.17 0 3.95 1.85 3.95 4.17s-1.77 4.19-3.94 4.19c-1.04 0-2.03-.43-2.74-1.18v3.77c0 .13-.1.23-
.23.23h-1.4c-.13 0-.23-.1-.23-.23V8.23c0-.12.1-.23.23-.23h1.4zm-3.86.01c.01 0 .01 0 .01-.01.13 0
.22.1.22.22v7.55c0 .12-.1.23-.23.23h-1.4c-.13 0-.23-.1-.23-.23V15c-.7.76-1.69 1.19-2.73 1.19-2.17 0-3.94-1.87-
3.94-4.19 0-2.32 1.77-4.19 3.94-4.19 1.03 0 2.02.43 2.73 1.18v-.75c0-.12.1-.23.23-.23h1.4zm26.375-.19a4.24 4.24
0 00-4.16 3.29c-.13.59-.13 1.19 0 1.77a4.233 4.233 0 004.17 3.3c2.35 0 4.26-1.87 4.26-4.19 0-2.32-1.9-4.17-4.27-
4.17zM60.63 5c.13 0 .23.1.23.23v3.76c.7-.76 1.7-1.18 2.73-1.18 1.88 0 3.45 1.4 3.84 3.28.13.59.13 1.2 0 1.8-.39
1.88-1.96 3.29-3.84 3.29-1.03 0-2.02-.43-2.73-1.18v.77c0 .12-.1.23-.23.23h-1.4c-.13 0-.23-.1-.23-.23V5.23c0-.12.1-
.23.23-.23h1.4zm-34 11h-1.4c-.13 0-.23-.11-.23-.23V8.22c.01-.13.1-.22.23-.22h1.4c.13 0 .22.11.23.22v.68c.5-.68
1.3-1.09 2.16-1.1h.03c1.09 0 2.09.6 2.6 1.55.45-.95 1.4-1.55 2.44-1.56 1.62 0 2.93 1.25 2.9 2.78l.03 5.2c0 .13-.1.23-
.23.23h-1.41c-.13 0-.23-.11-.23-.23v-4.59c0-.98-.74-1.71-1.62-1.71-.8 0-1.46.7-1.59 1.62l.01 4.68c0 .13-.11.23-
.23.23h-1.41c-.13 0-.23-.11-.23-.23v-4.59c0-.98-.74-1.71-1.62-1.71-.85 0-1.54.79-1.6 1.8v4.5c0 .13-.1.23-
.23.23zm53.615 0h-1.61c-.04 0-.08-.01-.12-.03-.09-.06-.13-.19-.06-.28l2.43-3.71-2.39-3.65a.213.213 0 01-.03-
.12c0-.12.09-.21.21-.21h1.61c.13 0 .24.06.3.17l1.41 2.37 1.4-2.37a.34.34 0 01.3-.17h1.6c.04 0
.08.01.12.03.09.06.13.19.06.28l-2.37 3.65 2.43 3.7c0 .05.01.09.01.13 0 .12-.09.21-.21.21h-1.61c-.13 0-.24-.06-.3-
.17l-1.44-2.42-1.44 2.42a.34.34 0 01-.3.17zm-7.12-1.49c-1.33 0-2.42-1.12-2.42-2.51 0-1.39 1.08-2.52 2.42-2.52
1.33 0 2.42 1.12 2.42 2.51 0 1.39-1.08 2.51-2.42 2.52zm-19.865 0c-1.32 0-2.39-1.11-2.42-2.48v-.07c.02-1.38 1.09-
2.49 2.4-2.49 1.32 0 2.41 1.12 2.41 2.51 0 1.39-1.07 2.52-2.39 2.53zm-8.11-2.48c-.01 1.37-1.09 2.47-2.41 2.47s-
2.42-1.12-2.42-2.51c0-1.39 1.08-2.52 2.4-2.52 1.33 0 2.39 1.11 2.41 2.48l.02.08zm18.12 2.47c-1.32 0-2.39-1.11-
2.41-2.48v-.06c.02-1.38 1.09-2.48 2.41-2.48s2.42 1.12 2.42 2.51c0 1.39-1.09 2.51-2.42 2.51z' /%3E %3C/defs%3E
%3Cmask id='clip'%3E %3Crect x='0' y='0' width='100%25' height='100%25' fill='white' /%3E %3Cuse
xlink:href='%23logo' /%3E %3Cuse xlink:href='%23text' /%3E %3C/mask%3E %3Cg id='outline' opacity='0.3'
stroke='%23000' stroke-width='3'%3E %3Ccircle mask='url(%23clip)' cx='11.5' cy='11.5' r='9.25' /%3E %3Cuse
xlink:href='%23text' mask='url(%23clip)' /%3E %3C/g%3E %3Cg id='fill' opacity='0.9' fill='%23fff' %3E %3Cuse
xlink:href='%23logo' /%3E %3Cuse xlink:href='%23text' /%3E %3C/g%3E %3C/svg%3E")}.nfdk-6-0-394-s
.explorer .sd-scene .map-attribution{position:absolute;bottom:0;left:50%;transform:translateX(-
50%);height:30px;line-height:30px;z-index:0}.nfdk-6-0-394-s .explorer .sd-scene .map-attribution .attribute{font-
size:.8rem;text-decoration:none;color:#ddd;transition:color .2s ease-in-out;text-shadow:-1px -1px 0 #fff,1px -1px 0
#fff,-1px 1px 0 #fff,1px 1px 0 #fff}.nfdk-6-0-394-s .explorer .sd-scene .map-attribution
.attribute:hover{color:grey}.nfdk-6-0-394-s .pynr-map-view{width:100%;height:100%;position:relative}.nfdk-6-0-
394-s .pynr-map-view.loading{width:100%;height:100%;display:flex;justify-content:center;align-
items:center}.nfdk-6-0-394-s .material-input{position:relative;padding-top:9px}.nfdk-6-0-394-s .material-input
input,.nfdk-6-0-394-s .material-input textarea{font-family:inherit;font-size:1rem;transition:border-color .1s ease-in-
out;border:1px solid #dadce3;border-radius:4px;width:100%;height:40px;padding-
left:10px;background:transparent;box-shadow:none;color:#383f50}.nfdk-6-0-394-s .material-input

input:active,.nfdk-6-0-394-s .material-input input:focus,.nfdk-6-0-394-s .material-input textarea:active,.nfdk-6-0-394-s .material-input textarea:focus{outline:none;border-color:#2e84ca;color:#2e84ca;box-shadow:0 4px 5px -1px #e8eaee}.nfdk-6-0-394-s .material-input input:focus~.clear,.nfdk-6-0-394-s .material-input input:focus~.title,.nfdk-6-0-394-s .material-input textarea:focus~.clear,.nfdk-6-0-394-s .material-input textarea:focus~.title{color:#2e84ca}.nfdk-6-0-394-s .material-input input:required+.title:after,.nfdk-6-0-394-s .material-input textarea:required+.title:after{content:"*";color:#f51745}.nfdk-6-0-394-s .material-input input:disabled,.nfdk-6-0-394-s .material-input textarea:disabled{border-style:dotted;border-color:#ddd;color:#ddd;background:#f8f8f8}.nfdk-6-0-394-s .material-input input:disabled~.title,.nfdk-6-0-394-s .material-input textarea:disabled~.title{background:transparent;color:#dadce3}.nfdk-6-0-394-s .material-input:not(.pristine) input:invalid,.nfdk-6-0-394-s .material-input:not(.pristine) textarea:invalid{border-color:#f51745;color:#f51745}.nfdk-6-0-394-s .material-input:not(.pristine) input:invalid+.title,.nfdk-6-0-394-s .material-input:not(.pristine) textarea:invalid+.title{color:#f51745}.nfdk-6-0-394-s .material-input.filled .title,.nfdk-6-0-394-s .material-input input:focus+.title,.nfdk-6-0-394-s .material-input textarea:focus+.title{transform:scale(.8);transform-origin:0 0;top:0}.nfdk-6-0-394-s .material-input .title{position:absolute;transition:left .1s ease-in-out,top .1s ease-in-out,transform .1s ease-in-out;transform-origin:0 0;left:6px;top:18px;color:#9fa6b8;pointer-events:none;background:#fff;padding-left:5px;padding-right:5px}.nfdk-6-0-394-s .material-input .title:before{content:"";position:absolute;border-top:5px solid #fff;left:0;right:0;top:11px;z-index:-1}.nfdk-6-0-394-s .material-input .clear{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";position:absolute;right:10px;top:calc(50% - 2px);height:15px;width:15px;font-size:.8rem;border-radius:50%;color:#dadce3;text-align:center;line-height:15px}.nfdk-6-0-394-s .material-input .clear:hover{background:#eee}.nfdk-6-0-394-s .material-input.multiline{padding-top:25px;padding-left:10px;border:1px solid #dadce3;border-radius:4px}.nfdk-6-0-394-s .material-input.multiline textarea{min-height:200px;max-height:50vh;resize:vertical;border:none;padding-left:0}.nfdk-6-0-394-s .material-input.multiline textarea:active,.nfdk-6-0-394-s .material-input.multiline textarea:focus{color:inherit;box-shadow:none}.nfdk-6-0-394-s .material-input.multiline textarea+.title{left:6px;top:10px}.nfdk-6-0-394-s .material-input.multiline textarea+.title:before{display:none}.nfdk-6-0-394-s .material-input.multiline.focused{border-color:#2e84ca;box-shadow:0 4px 5px -1px #e8eaee}.nfdk-6-0-394-s .material-input.multiline.filled .title,.nfdk-6-0-394-s .material-input.multiline.focused .title{transform:scale(.8);transform-origin:0 0;left:6px;top:5px}.nfdk-6-0-394-s .material-input.multiline.disabled{border-style:dotted;border-color:#ddd;color:#ddd;background-color:#f8f8f8}.nfdk-6-0-394-s .material-input.multiline.disabled .title{background:transparent;color:#dadce3}.nfdk-6-0-394-s .material-enum{position:relative;padding-top:9px}.nfdk-6-0-394-s .material-enum:not(.pristine) select:invalid{border-color:#f51745;color:#f51745;background-image:linear-gradient(45deg,transparent 50%,#f51745 0),linear-gradient(135deg,#f51745 50%,transparent 0)}.nfdk-6-0-394-s .material-enum:not(.pristine) select:invalid+.title{color:#f51745}.nfdk-6-0-394-s .material-enum select{-webkit-appearance:none;-moz-appearance:none;display:inline-block;background:transparent;font-size:1rem;border:1px solid #dadce3;border-radius:4px;padding-left:10px;width:100%;height:40px;background-image:linear-gradient(45deg,transparent 50%,#9fa6b8 0),linear-gradient(135deg,#9fa6b8 50%,transparent 0);background-position:calc(100% - 15px) 17px,calc(100% - 10px) 17px;background-size:5px 5px,5px 6px;background-repeat:no-repeat;transition:border-color .1s ease-in-out}.nfdk-6-0-394-s .material-enum select:active,.nfdk-6-0-394-s .material-enum select:focus{border-color:#2e84ca;color:#2e84ca;outline:none;box-shadow:0 4px 5px -1px #e8eaee;background-image:linear-gradient(45deg,transparent 50%,#2e84ca 0),linear-gradient(135deg,#2e84ca 50%,transparent 0)}.nfdk-6-0-394-s .material-enum select.filled+.title,.nfdk-6-0-394-s .material-enum select:focus+.title{transform:scale(.8);transform-origin:0 0;top:0}.nfdk-6-0-394-s .material-enum select:focus+.title{color:#2e84ca}.nfdk-6-0-394-s .material-enum select:required+.title:after{content:"*";color:#f51745}.nfdk-6-0-394-s .material-enum select::-ms-

expand{display:none}.nfdk-6-0-394-s .material-enum select:disabled{border-style:dotted;border-color:#ddd;color:#ddd;background-color:#f8f8f8}.nfdk-6-0-394-s .material-enum select:disabled~.title{background:transparent;color:#dadce3}.nfdk-6-0-394-s .material-enum .title{position:absolute;transition:left .1s ease-in-out,top .1s ease-in-out,transform .1s ease-in-out;transform-origin:0 0;left:8px;top:18px;color:#9fa6b8;pointer-events:none;background:#fff;padding-left:5px;padding-right:5px}.nfdk-6-0-394-s .material-enum .title:before{content:"";position:absolute;border-top:5px solid #fff;left:0;right:0;top:11px;z-index:-1}.nfdk-6-0-394-s .material-button{height:30px;min-width:50px;padding-left:5px;padding-right:5px;text-align:center;border-radius:3px;line-height:30px;cursor:pointer;font-size:.9rem;color:#2e84ca;box-sizing:border-box}.nfdk-6-0-394-s .material-button:hover:not(:active){background-color:#f7f8f9}.nfdk-6-0-394-s .material-button.disabled{pointer-events:none}.nfdk-6-0-394-s .material-button.primary{background-color:#2e84ca;color:#fff;box-shadow:0 1px 8px rgba(0,0,0,.16)}.nfdk-6-0-394-s .material-button.primary:hover:not(:active){background-color:#539cd8}.nfdk-6-0-394-s .material-button.primary.disabled{background-color:#aaa!important}.nfdk-6-0-394-s .material-button.primary.critical{background-color:#f51745}.nfdk-6-0-394-s .material-button.primary.critical:hover:not(:active){background-color:#f7486c}.nfdk-6-0-394-s .material-button.outlined{border:1px solid #2e84ca}.nfdk-6-0-394-s .material-button.outlined:hover:not(:active){background-color:#edf4fa}.nfdk-6-0-394-s .material-button.outlined.critical{color:#f51745;border-color:#f51745}.nfdk-6-0-394-s .material-button.outlined.critical:hover:not(:active){background-color:rgba(245,23,69,.1)}.nfdk-6-0-394-s .material-button.outlined.disabled{border:1px solid #ddd;color:#ddd}.nfdk-6-0-394-s .material-button.flat.disabled{color:#ddd}.nfdk-6-0-394-s .material-button.flat.critical{color:#f51745}.nfdk-6-0-394-s .material-button.flat.critical:hover:not(:active){background-color:rgba(245,23,69,.1)}.nfdk-6-0-394-s .material-button:not(:last-child){margin-right:10px}.nfdk-6-0-394-s .material-slider>label,.nfdk-6-0-394-s .material-switch{float:right;width:35px;height:12px;position:relative}.nfdk-6-0-394-s .material-slider>label input,.nfdk-6-0-394-s .material-switch input{display:none}.nfdk-6-0-394-s .material-slider>label input:checked+.slider,.nfdk-6-0-394-s .material-switch input:checked+.slider{background-color:#a3d9a6}.nfdk-6-0-394-s .material-slider>label input:checked+.slider:after,.nfdk-6-0-394-s .material-switch input:checked+.slider:after{left:19px;background-color:#43a047}.nfdk-6-0-394-s .material-slider>label .slider,.nfdk-6-0-394-s .material-switch .slider{width:35px;height:12px;background-color:grey;border-radius:5px;display:inline-block;margin-top:5px;position:absolute;transition:background-color .15s ease-in-out;top:0}.nfdk-6-0-394-s .material-slider>label .slider:after,.nfdk-6-0-394-s .material-switch .slider:after{transition:left .15s ease-in-out,background-color .15s ease-in-out;content:" ";width:20px;height:20px;top:-4px;left:-4px;border-radius:50%;box-shadow:0 1px 4px rgba(0,0,0,.16);background-color:#ccc;position:absolute}.nfdk-6-0-394-s .material-radio-btn{display:flex;line-height:25px;flex:1 1 auto;align-items:center}.nfdk-6-0-394-s .material-radio-btn label{display:flex;align-items:center;cursor:pointer}.nfdk-6-0-394-s .material-radio-btn input{-moz-appearance:none;-webkit-appearance:none;appearance:none;outline:none;cursor:pointer;width:20px;height:20px;border:1px solid #dadce3;margin-right:10px;text-align:center;transition-property:background-color,border-color;transition-duration:.1s;transition-timing-function:ease-in;margin-left:0;border-radius:50%;background-color:transparent;position:relative}.nfdk-6-0-394-s .material-radio-btn input:before{font-family:Material Icons;font-size:15px;line-height:18px;color:#fff;content:"
";position:absolute;width:10px;height:10px;transform:scale(0);opacity:0;background-color:#2e84ca;border-radius:50%;right:4px;top:4px;transition:transform .1s ease-in;transition:opacity .2s ease-in}.nfdk-6-0-394-s .material-radio-btn input:checked{border-color:#2e84ca;transition-timing-function:ease-out}.nfdk-6-0-394-s .material-radio-btn input:checked:before{transform:scale(1);opacity:1}.nfdk-6-0-394-s .material-radio-btn input:hover:not(:checked){border-color:#9098ad}.nfdk-6-0-394-s .material-radio-btn input:hover:checked{border-color:#2e84ca}.nfdk-6-0-394-s .material-checkbox,.nfdk-6-0-394-s .material-checkbox>label{display:flex;line-height:25px;flex:1 1 auto;align-items:center}.nfdk-6-0-394-s .material-checkbox>label label,.nfdk-6-0-394-s .material-checkbox label{display:flex;align-items:center;cursor:pointer}.nfdk-6-0-394-s .material-checkbox>label input,.nfdk-6-0-394-s .material-checkbox input{-moz-appearance:none;-webkit-

appearance:none;appearance:none;outline:none;width:20px;height:20px;border:1px solid #dadce3;border-radius:2px;margin-right:10px;text-align:center;transition-property:background-color,border-color;transition-duration:.1s;transition-timing-function:ease-in;margin-left:0;cursor:pointer}.nfdk-6-0-394-s .material-checkbox>label input:before,.nfdk-6-0-394-s .material-checkbox input:before{font-family:Material Icons;font-size:15px;line-height:18px;color:#fff}.nfdk-6-0-394-s .material-checkbox>label input:checked,.nfdk-6-0-394-s .material-checkbox input:checked{background-color:#2e84ca;border-color:#2e84ca;transition-timing-function:ease-out}.nfdk-6-0-394-s .material-checkbox>label input:checked:before,.nfdk-6-0-394-s .material-checkbox input:checked:before{content:"check"}.nfdk-6-0-394-s .material-checkbox input:hover:not(:checked,:disabled){border-color:#9098ad}.nfdk-6-0-394-s .material-checkbox input:hover:checked{border-color:#2e84ca}.nfdk-6-0-394-s .material-checkbox>label input:disabled,.nfdk-6-0-394-s .material-checkbox input:disabled{border-style:dotted;border-color:#ddd;background-color:#f8f8f8}.nfdk-6-0-394-s .material-checkbox input:disabled+.title{color:#dadce3}.nfdk-6-0-394-s .material-checkbox>label input:disabled:before,.nfdk-6-0-394-s .material-checkbox input:disabled:before{color:#ddd}.nfdk-6-0-394-s .material-checkbox:not(.pristine) input:invalid,.nfdk-6-0-394-s .material-checkbox>label:not(.pristine) input:invalid{border-color:#f51745;color:#f51745}.nfdk-6-0-394-s .material-checkbox:not(.pristine) input:invalid:checked,.nfdk-6-0-394-s .material-checkbox>label:not(.pristine) input:invalid:checked{background-color:#f51745}.nfdk-6-0-394-s .material-checkbox:not(.pristine) input:invalid+.title,.nfdk-6-0-394-s .material-checkbox>label:not(.pristine) input:invalid+.title{color:#f51745}.nfdk-6-0-394-s .material-checkbox:hover,.nfdk-6-0-394-s .material-checkbox>label:hover{cursor:pointer}.nfdk-6-0-394-s .material-multi-select{position:relative}.nfdk-6-0-394-s .material-multi-select>.placeholder{height:40px;border:1px solid #eee;border-radius:2px;padding-left:10px;line-height:40px;box-sizing:border-box}.nfdk-6-0-394-s .material-multi-select>.placeholder>.title{line-height:normal;position:absolute;top:14px;left:10px;color:grey;transition:left .1s ease-in-out,top .1s ease-in-out,transform .1s ease-in-out;transform-origin:0 0}.nfdk-6-0-394-s .material-multi-select>.placeholder:after{font-family:Material Icons;position:absolute;top:16px;right:5px;font-size:24px;line-height:18px;color:grey;content:"arrow_drop_down"}.nfdk-6-0-394-s .material-multi-select>.options{position:absolute;overflow:hidden;width:100%;margin-top:2px;display:none;background-color:#fff;box-sizing:border-box;padding:10px;border:1px solid #eee;box-shadow:0 2px 8px rgba(0,0,0,.16)}.nfdk-6-0-394-s .material-multi-select>.options>.actions{display:flex;justify-content:space-between;margin-bottom:5px}.nfdk-6-0-394-s .material-multi-select>.options>.actions .filter-actions{cursor:pointer}.nfdk-6-0-394-s .material-multi-select>.options>.actions .filter-actions:hover{color:#000}.nfdk-6-0-394-s .material-multi-select>.options>.options-list{max-height:300px;overflow-y:auto}.nfdk-6-0-394-s .material-multi-select>.options>.options-list .material-checkbox .count{margin-left:auto}.nfdk-6-0-394-s .material-multi-select>.options>.options-list .material-checkbox.muted,.nfdk-6-0-394-s .material-multi-select>.options>.options-list .material-checkbox>label.muted{opacity:.5}.nfdk-6-0-394-s .material-multi-select>.options>.option{display:flex;line-height:25px;flex:1 1 50%}.nfdk-6-0-394-s .material-multi-select>.options>.option:hover{color:#000;cursor:pointer}.nfdk-6-0-394-s .material-multi-select.open>.options{display:flex;flex-direction:column}.nfdk-6-0-394-s .material-multi-select.filled>.placeholder,.nfdk-6-0-394-s .material-multi-select.open>.placeholder{border:2px solid #2e84ca;color:#2e84ca}.nfdk-6-0-394-s .material-multi-select.filled>.placeholder>.title,.nfdk-6-0-394-s .material-multi-select.open>.placeholder>.title{top:-3px;left:8px;transform:scale(.8);transform-origin:0 0;background:#fff;padding-left:5px;padding-right:5px;color:#2e84ca}.nfdk-6-0-394-s .material-multi-select.filled>.placeholder:after,.nfdk-6-0-394-s .material-multi-select.open>.placeholder:after{color:#2e84ca}.nfdk-6-0-394-s .flatpickr-calendar{background:transparent;opacity:0;display:none;text-align:center;visibility:hidden;padding:0;-webkit-animation:none;animation:none;direction:ltr;border:0;font-size:14px;line-height:24px;border-radius:5px;position:absolute;width:307.875px;-webkit-box-sizing:border-box;box-sizing:border-box;-ms-touch-action:manipulation;touch-action:manipulation;background:#fff;-webkit-box-shadow:1px 0 0 #e6e6e6,-1px 0 0 #e6e6e6,0 1px 0 #e6e6e6,0 -1px 0 #e6e6e6,0 3px 13px rgba(0,0,0,.08);box-shadow:1px 0 0 #e6e6e6,-1px 0 0 #e6e6e6,0 1px 0 #e6e6e6,0 -1px 0 #e6e6e6,0 3px 13px rgba(0,0,0,.08)}.nfdk-6-0-

394-s .flatpickr-calendar.inline,.nfdk-6-0-394-s .flatpickr-calendar.open{opacity:1;max-height:640px;visibility:visible}.nfdk-6-0-394-s .flatpickr-calendar.open{display:inline-block;z-index:99999}.nfdk-6-0-394-s .flatpickr-calendar.animate.open{-webkit-animation:fpFadeInDown .3s cubic-bezier(.23,1,.32,1);animation:fpFadeInDown .3s cubic-bezier(.23,1,.32,1)}.nfdk-6-0-394-s .flatpickr-calendar.inline{display:block;position:relative;top:2px}.nfdk-6-0-394-s .flatpickr-calendar.static{position:absolute;top:calc(100% + 2px)}.nfdk-6-0-394-s .flatpickr-calendar.static.open{z-index:999;display:block}.nfdk-6-0-394-s .flatpickr-calendar.multiMonth .flatpickr-days .dayContainer:nth-child(n+1) .flatpickr-day.inRange:nth-child(7n+7){-webkit-box-shadow:none!important;box-shadow:none!important}.nfdk-6-0-394-s .flatpickr-calendar.multiMonth .flatpickr-days .dayContainer:nth-child(n+2) .flatpickr-day.inRange:nth-child(7n+1){-webkit-box-shadow:-2px 0 0 #e6e6e6,5px 0 0 #e6e6e6;box-shadow:-2px 0 0 #e6e6e6,5px 0 0 #e6e6e6}.nfdk-6-0-394-s .flatpickr-calendar .hasTime .dayContainer,.nfdk-6-0-394-s .flatpickr-calendar .hasWeeks .dayContainer{border-bottom:0;border-bottom-right-radius:0;border-bottom-left-radius:0}.nfdk-6-0-394-s .flatpickr-calendar .hasWeeks .dayContainer{border-left:0}.nfdk-6-0-394-s .flatpickr-calendar.hasTime .flatpickr-time{height:40px;border-top:1px solid #e6e6e6}.nfdk-6-0-394-s .flatpickr-calendar.noCalendar.hasTime .flatpickr-time{height:auto}.nfdk-6-0-394-s .flatpickr-calendar:after,.nfdk-6-0-394-s .flatpickr-calendar:before{position:absolute;display:block;pointer-events:none;border:solid transparent;content:"";height:0;width:0;left:22px}.nfdk-6-0-394-s .flatpickr-calendar.arrowRight:after,.nfdk-6-0-394-s .flatpickr-calendar.arrowRight:before,.nfdk-6-0-394-s .flatpickr-calendar.rightMost:after,.nfdk-6-0-394-s .flatpickr-calendar.rightMost:before{left:auto;right:22px}.nfdk-6-0-394-s .flatpickr-calendar.arrowCenter:after,.nfdk-6-0-394-s .flatpickr-calendar.arrowCenter:before{left:50%;right:50%}.nfdk-6-0-394-s .flatpickr-calendar:before{border-width:5px;margin:0 -5px}.nfdk-6-0-394-s .flatpickr-calendar:after{border-width:4px;margin:0 -4px}.nfdk-6-0-394-s .flatpickr-calendar.arrowTop:after,.nfdk-6-0-394-s .flatpickr-calendar.arrowTop:before{bottom:100%}.nfdk-6-0-394-s .flatpickr-calendar.arrowTop:before{border-bottom-color:#e6e6e6}.nfdk-6-0-394-s .flatpickr-calendar.arrowTop:after{border-bottom-color:#fff}.nfdk-6-0-394-s .flatpickr-calendar.arrowBottom:after,.nfdk-6-0-394-s .flatpickr-calendar.arrowBottom:before{top:100%}.nfdk-6-0-394-s .flatpickr-calendar.arrowBottom:before{border-top-color:#e6e6e6}.nfdk-6-0-394-s .flatpickr-calendar.arrowBottom:after{border-top-color:#fff}.nfdk-6-0-394-s .flatpickr-calendar:focus{outline:0}.nfdk-6-0-394-s .flatpickr-wrapper{position:relative;display:inline-block}.nfdk-6-0-394-s .flatpickr-months{display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex}.nfdk-6-0-394-s .flatpickr-months .flatpickr-month{background:transparent;color:rgba(0,0,0,.9);fill:rgba(0,0,0,.9);height:34px;line-height:1;text-align:center;position:relative;-webkit-user-select:none;-moz-user-select:none;-ms-user-select:none;user-select:none;overflow:hidden;-webkit-box-flex:1;-webkit-flex:1;-ms-flex:1;flex:1}.nfdk-6-0-394-s .flatpickr-months .flatpickr-next-month,.nfdk-6-0-394-s .flatpickr-months .flatpickr-prev-month{text-decoration:none;cursor:pointer;position:absolute;top:0;height:34px;padding:10px;z-index:3;color:rgba(0,0,0,.9);fill:rgba(0,0,0,.9)}.nfdk-6-0-394-s .flatpickr-months .flatpickr-next-month.flatpickr-disabled,.nfdk-6-0-394-s .flatpickr-months .flatpickr-prev-month.flatpickr-disabled{display:none}.nfdk-6-0-394-s .flatpickr-months .flatpickr-next-month i,.nfdk-6-0-394-s .flatpickr-months .flatpickr-prev-month i{position:relative}.nfdk-6-0-394-s .flatpickr-months .flatpickr-next-month.flatpickr-prev-month,.nfdk-6-0-394-s .flatpickr-months .flatpickr-prev-month.flatpickr-prev-month{left:0}.nfdk-6-0-394-s .flatpickr-months .flatpickr-next-month.flatpickr-next-month,.nfdk-6-0-394-s .flatpickr-months .flatpickr-prev-month.flatpickr-next-month{right:0}.nfdk-6-0-394-s .flatpickr-months .flatpickr-next-month:hover,.nfdk-6-0-394-s .flatpickr-months .flatpickr-prev-month:hover{color:#959ea9}.nfdk-6-0-394-s .flatpickr-months .flatpickr-next-month:hover svg,.nfdk-6-0-394-s .flatpickr-months .flatpickr-prev-month:hover svg{fill:#f64747}.nfdk-6-0-394-s .flatpickr-months .flatpickr-next-month svg,.nfdk-6-0-394-s .flatpickr-months .flatpickr-prev-month svg{width:14px;height:14px}.nfdk-6-0-394-s .flatpickr-months .flatpickr-next-month svg path,.nfdk-6-0-394-s .flatpickr-months .flatpickr-prev-month svg path{-webkit-transition:fill .1s;transition:fill .1s;fill:inherit}.nfdk-6-0-394-s .numInputWrapper{position:relative;height:auto}.nfdk-6-0-394-s .numInputWrapper input,.nfdk-6-0-394-s .numInputWrapper span{display:inline-block}.nfdk-6-0-394-s .numInputWrapper input{width:100%}.nfdk-6-0-

394-s .numInputWrapper input::-ms-clear{display:none}.nfdk-6-0-394-s .numInputWrapper input::-webkit-inner-spin-button,.nfdk-6-0-394-s .numInputWrapper input::-webkit-outer-spin-button{margin:0;-webkit-appearance:none}.nfdk-6-0-394-s .numInputWrapper span{position:absolute;right:0;width:14px;padding:0 4px 0 2px;height:50%;line-height:50%;opacity:0;cursor:pointer;border:1px solid rgba(57,57,57,.15);-webkit-box-sizing:border-box;box-sizing:border-box}.nfdk-6-0-394-s .numInputWrapper span:hover{background:rgba(0,0,0,.1)}.nfdk-6-0-394-s .numInputWrapper span:active{background:rgba(0,0,0,.2)}.nfdk-6-0-394-s .numInputWrapper span:after{display:block;content:"";position:absolute}.nfdk-6-0-394-s .numInputWrapper span.arrowUp{top:0;border-bottom:0}.nfdk-6-0-394-s .numInputWrapper span.arrowUp:after{border-left:4px solid transparent;border-right:4px solid transparent;border-bottom:4px solid rgba(57,57,57,.6);top:26%}.nfdk-6-0-394-s .numInputWrapper span.arrowDown{top:50%}.nfdk-6-0-394-s .numInputWrapper span.arrowDown:after{border-left:4px solid transparent;border-right:4px solid transparent;border-top:4px solid rgba(57,57,57,.6);top:40%}.nfdk-6-0-394-s .numInputWrapper span svg{width:inherit;height:auto}.nfdk-6-0-394-s .numInputWrapper span svg path{fill:rgba(0,0,0,.5)}.nfdk-6-0-394-s .numInputWrapper:hover{background:rgba(0,0,0,.05)}.nfdk-6-0-394-s .numInputWrapper:hover span{opacity:1}.nfdk-6-0-394-s .flatpickr-current-month{font-size:135%;line-height:inherit;font-weight:300;color:inherit;position:absolute;width:75%;left:12.5%;padding:7.48px 0 0;line-height:1;height:34px;display:inline-block;text-align:center;-webkit-transform:translateZ(0);transform:translateZ(0)}.nfdk-6-0-394-s .flatpickr-current-month span.cur-month{font-family:inherit;font-weight:700;color:inherit;display:inline-block;margin-left:.5ch;padding:0}.nfdk-6-0-394-s .flatpickr-current-month span.cur-month:hover{background:rgba(0,0,0,.05)}.nfdk-6-0-394-s .flatpickr-current-month .numInputWrapper{width:6ch;width:7ch\0 ;display:inline-block}.nfdk-6-0-394-s .flatpickr-current-month .numInputWrapper span.arrowUp:after{border-bottom-color:rgba(0,0,0,.9)}.nfdk-6-0-394-s .flatpickr-current-month .numInputWrapper span.arrowDown:after{border-top-color:rgba(0,0,0,.9)}.nfdk-6-0-394-s .flatpickr-current-month input.cur-year{background:transparent;-webkit-box-sizing:border-box;box-sizing:border-box;color:inherit;cursor:text;padding:0 0 0 .5ch;margin:0;display:inline-block;font-size:inherit;font-family:inherit;font-weight:300;line-height:inherit;height:auto;border:0;border-radius:0;vertical-align:initial;-webkit-appearance:textfield;-moz-appearance:textfield;appearance:textfield}.nfdk-6-0-394-s .flatpickr-current-month input.cur-year:focus{outline:0}.nfdk-6-0-394-s .flatpickr-current-month input.cur-year[disabled],.nfdk-6-0-394-s .flatpickr-current-month input.cur-year[disabled]:hover{font-size:100%;color:rgba(0,0,0,.5);background:transparent;pointer-events:none}.nfdk-6-0-394-s .flatpickr-current-month .flatpickr-monthDropdown-months{appearance:menulist;background:transparent;border:none;border-radius:0;box-sizing:border-box;color:inherit;cursor:pointer;font-size:inherit;font-family:inherit;font-weight:300;height:auto;line-height:inherit;margin:-1px 0 0;outline:none;padding:0 0 0 .5ch;position:relative;vertical-align:initial;-webkit-box-sizing:border-box;-webkit-appearance:menulist;-moz-appearance:menulist;width:auto}.nfdk-6-0-394-s .flatpickr-current-month .flatpickr-monthDropdown-months:active,.nfdk-6-0-394-s .flatpickr-current-month .flatpickr-monthDropdown-months:focus{outline:none}.nfdk-6-0-394-s .flatpickr-current-month .flatpickr-monthDropdown-months:hover{background:rgba(0,0,0,.05)}.nfdk-6-0-394-s .flatpickr-current-month .flatpickr-monthDropdown-months .flatpickr-monthDropdown-month{background-color:transparent;outline:none;padding:0}.nfdk-6-0-394-s .flatpickr-weekdays{background:transparent;text-align:center;overflow:hidden;width:100%;display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;-webkit-box-align:center;-webkit-align-items:center;-ms-flex-align:center;align-items:center;height:28px}.nfdk-6-0-394-s .flatpickr-weekdays .flatpickr-weekdaycontainer{display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;-webkit-box-flex:1;-webkit-flex:1;-ms-flex:1;flex:1}.nfdk-6-0-394-s span.flatpickr-weekday{cursor:default;font-size:90%;background:transparent;color:rgba(0,0,0,.54);line-height:1;margin:0;text-align:center;display:block;-webkit-box-flex:1;-webkit-flex:1;-ms-flex:1;flex:1;font-weight:bolder}.nfdk-6-0-394-s .dayContainer,.nfdk-6-0-394-s .flatpickr-weeks{padding:1px 0 0}.nfdk-6-0-394-s .flatpickr-days{position:relative;overflow:hidden;display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;-webkit-box-align:start;-webkit-align-items:flex-start;-ms-flex-align:start;align-items:flex-start;width:307.875px}.nfdk-6-0-394-s .flatpickr-days:focus{outline:0}.nfdk-6-0-394-s .dayContainer{padding:0;outline:0;text-align:left;width:307.875px;min-width:307.875px;max-width:307.875px;-webkit-box-sizing:border-box;box-sizing:border-box;display:inline-block;display:-ms-flexbox;display:-webkit-box;display:-webkit-flex;display:flex;-webkit-flex-wrap:wrap;flex-wrap:wrap;-ms-flex-wrap:wrap;-ms-flex-pack:justify;-webkit-justify-content:space-around;justify-content:space-around;-webkit-transform:translateZ(0);transform:translateZ(0);opacity:1}.nfdk-6-0-394-s .dayContainer+.dayContainer{-webkit-box-shadow:-1px 0 0 #e6e6e6;box-shadow:-1px 0 0 #e6e6e6}.nfdk-6-0-394-s .flatpickr-day{background:none;border:1px solid transparent;border-radius:150px;-webkit-box-sizing:border-box;box-sizing:border-box;color:#393939;cursor:pointer;font-weight:400;width:14.2857143%;-webkit-flex-basis:14.2857143%;-ms-flex-preferred-size:14.2857143%;flex-basis:14.2857143%;max-width:39px;height:39px;line-height:39px;margin:0;display:inline-block;position:relative;-webkit-box-pack:center;-webkit-justify-content:center;-ms-flex-pack:center;justify-content:center;text-align:center}.nfdk-6-0-394-s .flatpickr-day.inRange,.nfdk-6-0-394-s .flatpickr-day.nextMonthDay.inRange,.nfdk-6-0-394-s .flatpickr-day.nextMonthDay.today.inRange,.nfdk-6-0-394-s .flatpickr-day.nextMonthDay:focus,.nfdk-6-0-394-s .flatpickr-day.nextMonthDay:hover,.nfdk-6-0-394-s .flatpickr-day.prevMonthDay.inRange,.nfdk-6-0-394-s .flatpickr-day.prevMonthDay.today.inRange,.nfdk-6-0-394-s .flatpickr-day.prevMonthDay:focus,.nfdk-6-0-394-s .flatpickr-day.prevMonthDay:hover,.nfdk-6-0-394-s .flatpickr-day.today.inRange,.nfdk-6-0-394-s .flatpickr-day:focus,.nfdk-6-0-394-s .flatpickr-day:hover{cursor:pointer;outline:0;background:#e6e6e6;border-color:#e6e6e6}.nfdk-6-0-394-s .flatpickr-day.today{border-color:#959ea9}.nfdk-6-0-394-s .flatpickr-day.today:focus,.nfdk-6-0-394-s .flatpickr-day.today:hover{border-color:#959ea9;background:#959ea9;color:#fff}.nfdk-6-0-394-s .flatpickr-day.endRange,.nfdk-6-0-394-s .flatpickr-day.endRange.inRange,.nfdk-6-0-394-s .flatpickr-day.endRange.nextMonthDay,.nfdk-6-0-394-s .flatpickr-day.endRange.prevMonthDay,.nfdk-6-0-394-s .flatpickr-day.endRange:focus,.nfdk-6-0-394-s .flatpickr-day.endRange:hover,.nfdk-6-0-394-s .flatpickr-day.selected,.nfdk-6-0-394-s .flatpickr-day.selected.inRange,.nfdk-6-0-394-s .flatpickr-day.selected.nextMonthDay,.nfdk-6-0-394-s .flatpickr-day.selected.prevMonthDay,.nfdk-6-0-394-s .flatpickr-day.selected:focus,.nfdk-6-0-394-s .flatpickr-day.selected:hover,.nfdk-6-0-394-s .flatpickr-day.startRange,.nfdk-6-0-394-s .flatpickr-day.startRange.inRange,.nfdk-6-0-394-s .flatpickr-day.startRange.nextMonthDay,.nfdk-6-0-394-s .flatpickr-day.startRange.prevMonthDay,.nfdk-6-0-394-s .flatpickr-day.startRange:focus,.nfdk-6-0-394-s .flatpickr-day.startRange:hover{background:#569ff7;-webkit-box-shadow:none;box-shadow:none;color:#fff;border-color:#569ff7}.nfdk-6-0-394-s .flatpickr-day.endRange.startRange,.nfdk-6-0-394-s .flatpickr-day.selected.startRange,.nfdk-6-0-394-s .flatpickr-day.startRange.startRange{border-radius:50px 0 0 50px}.nfdk-6-0-394-s .flatpickr-day.endRange.endRange,.nfdk-6-0-394-s .flatpickr-day.selected.endRange,.nfdk-6-0-394-s .flatpickr-day.startRange.endRange{border-radius:0 50px 50px 0}.nfdk-6-0-394-s .flatpickr-day.endRange.startRange+.endRange:not(:nth-child(7n+1)),.nfdk-6-0-394-s .flatpickr-day.selected.startRange+.endRange:not(:nth-child(7n+1)),.nfdk-6-0-394-s .flatpickr-day.startRange.startRange+.endRange:not(:nth-child(7n+1)){-webkit-box-shadow:-10px 0 0 #569ff7;box-shadow:-10px 0 0 #569ff7}.nfdk-6-0-394-s .flatpickr-day.endRange.startRange.endRange,.nfdk-6-0-394-s .flatpickr-day.selected.startRange.endRange,.nfdk-6-0-394-s .flatpickr-day.startRange.startRange.endRange{border-radius:50px}.nfdk-6-0-394-s .flatpickr-day.inRange{border-radius:0;-webkit-box-shadow:-5px 0 0 #e6e6e6,5px 0 0 #e6e6e6;box-shadow:-5px 0 0 #e6e6e6,5px 0 0 #e6e6e6}.nfdk-6-0-394-s .flatpickr-day.flatpickr-disabled,.nfdk-6-0-394-s .flatpickr-day.flatpickr-disabled:hover,.nfdk-6-0-394-s .flatpickr-day.nextMonthDay,.nfdk-6-0-394-s .flatpickr-day.notAllowed,.nfdk-6-0-394-s .flatpickr-day.notAllowed.nextMonthDay,.nfdk-6-0-394-s .flatpickr-day.notAllowed.prevMonthDay,.nfdk-6-0-394-s .flatpickr-day.prevMonthDay{color:rgba(57,57,57,.3);background:transparent;border-color:transparent;cursor:default}.nfdk-6-0-394-s .flatpickr-day.flatpickr-disabled,.nfdk-6-0-394-s .flatpickr-day.flatpickr-disabled:hover{cursor:not-allowed;color:rgba(57,57,57,.1)}.nfdk-6-0-394-s .flatpickr-day.week.selected{border-radius:0;-webkit-box-shadow:-5px 0 0 #569ff7,5px 0 0 #569ff7;box-shadow:-5px 0 0 #569ff7,5px 0 0 #569ff7}.nfdk-6-0-394-s .flatpickr-day.hidden{visibility:hidden}.nfdk-6-0-394-s .rangeMode .flatpickr-day{margin-top:1px}.nfdk-6-0-394-s .flatpickr-

weekwrapper{float:left}.nfdk-6-0-394-s .flatpickr-weekwrapper .flatpickr-weeks{padding:0 12px;-webkit-box-
shadow:1px 0 0 #e6e6e6;box-shadow:1px 0 0 #e6e6e6}.nfdk-6-0-394-s .flatpickr-weekwrapper .flatpickr-
weekday{float:none;width:100%;line-height:28px}.nfdk-6-0-394-s .flatpickr-weekwrapper span.flatpickr-day,.nfdk-
6-0-394-s .flatpickr-weekwrapper span.flatpickr-day:hover{display:block;width:100%;max-
width:none;color:rgba(57,57,57,.3);background:transparent;cursor:default;border:none}.nfdk-6-0-394-s .flatpickr-
innerContainer{display:block;display:-webkit-box;display:-webkit-flex;display:-ms-flexbox;display:flex;-webkit-
box-sizing:border-box;box-sizing:border-box;overflow:hidden}.nfdk-6-0-394-s .flatpickr-rContainer{display:inline-
block;padding:0;-webkit-box-sizing:border-box;box-sizing:border-box}.nfdk-6-0-394-s .flatpickr-time{text-
align:center;outline:0;display:block;height:0;line-height:40px;max-height:40px;-webkit-box-sizing:border-box;box-
sizing:border-box;overflow:hidden;display:-webkit-box;display:-webkit-flex;display:-ms-
flexbox;display:flex}.nfdk-6-0-394-s .flatpickr-time:after{content:"";display:table;clear:both}.nfdk-6-0-394-s
.flatpickr-time .numInputWrapper{-webkit-box-flex:1;-webkit-flex:1;-ms-
flex:1;flex:1;width:40%;height:40px;float:left}.nfdk-6-0-394-s .flatpickr-time .numInputWrapper
span.arrowUp:after{border-bottom-color:#393939}.nfdk-6-0-394-s .flatpickr-time .numInputWrapper
span.arrowDown:after{border-top-color:#393939}.nfdk-6-0-394-s .flatpickr-time.hasSeconds
.numInputWrapper{width:26%}.nfdk-6-0-394-s .flatpickr-time.time24hr .numInputWrapper{width:49%}.nfdk-6-0-
394-s .flatpickr-time input{background:transparent;-webkit-box-shadow:none;box-shadow:none;border:0;border-
radius:0;text-align:center;margin:0;padding:0;height:inherit;line-height:inherit;color:#393939;font-
size:14px;position:relative;-webkit-box-sizing:border-box;box-sizing:border-box;-webkit-appearance:textfield;-
moz-appearance:textfield;appearance:textfield}.nfdk-6-0-394-s .flatpickr-time input.flatpickr-hour{font-
weight:700}.nfdk-6-0-394-s .flatpickr-time input.flatpickr-minute,.nfdk-6-0-394-s .flatpickr-time input.flatpickr-
second{font-weight:400}.nfdk-6-0-394-s .flatpickr-time input:focus{outline:0;border:0}.nfdk-6-0-394-s .flatpickr-
time .flatpickr-am-pm,.nfdk-6-0-394-s .flatpickr-time .flatpickr-time-separator{height:inherit;float:left;line-
height:inherit;color:#393939;font-weight:700;width:2%;-webkit-user-select:none;-moz-user-select:none;-ms-user-
select:none;user-select:none;-webkit-align-self:center;-ms-flex-item-align:center;align-self:center}.nfdk-6-0-394-s
.flatpickr-time .flatpickr-am-pm{outline:0;width:18%;cursor:pointer;text-align:center;font-weight:400}.nfdk-6-0-
394-s .flatpickr-time .flatpickr-am-pm:focus,.nfdk-6-0-394-s .flatpickr-time .flatpickr-am-pm:hover,.nfdk-6-0-394-s
.flatpickr-time input:focus,.nfdk-6-0-394-s .flatpickr-time input:hover{background:#eee}.nfdk-6-0-394-s .flatpickr-
input[readonly]{cursor:pointer}@-webkit-keyframes fpFadeInDown{0%{opacity:0;-webkit-
transform:translate3d(0,-20px,0);transform:translate3d(0,-20px,0)}to{opacity:1;-webkit-
transform:translateZ(0);transform:translateZ(0)}}@keyframes fpFadeInDown{0%{opacity:0;-webkit-
transform:translate3d(0,-20px,0);transform:translate3d(0,-20px,0)}to{opacity:1;-webkit-
transform:translateZ(0);transform:translateZ(0)}}.nfdk-6-0-394-s .flatpickr-calendar{margin-left:-10px}.nfdk-6-0-
394-s .flatpickr-calendar .timezone{font-size:.7rem;font-weight:600;text-align:right;margin-right:5px}.nfdk-6-0-
394-s .flatpickr-calendar .confirm{margin:5px;user-select:none}.nfdk-6-0-394-s .material-enum,.nfdk-6-0-394-s
.material-input{background-color:#fff;border-radius:4px}.nfdk-6-0-394-s .material-enum .title:empty:before,.nfdk-
6-0-394-s .material-input .title:empty:before{content:none}.nfdk-6-0-394-s .material-
input>.clear{color:#9fa6b8}.nfdk-6-0-394-s .material-input>.clear:hover{background:#e8eaee}.nfdk-6-0-394-s
.material-checkbox>input,.nfdk-6-0-394-s .material-checkbox>label>input{background-color:#fff}.nfdk-6-0-394-s
.material-slider{display:flex;flex:1 1 auto;align-items:center}.nfdk-6-0-394-s .material-
slider>label{float:none;height:20px}.nfdk-6-0-394-s .material-slider>.title{margin-left:10px}.nfdk-6-0-394-s .pynr-
basic-input{box-sizing:border-box;display:flex;position:relative;align-items:center;margin-top:10px;border:1px
solid #dadce3;border-radius:4px;width:100%;min-height:40px;padding-
left:10px;background:transparent;color:#383f50}.nfdk-6-0-394-s .pynr-basic-
input>.title{position:absolute;transition:transform .1s ease-in-out;transform-origin:0 0;color:#9fa6b8;pointer-
events:none;background:#fff;padding-left:5px;padding-right:5px;left:6px}.nfdk-6-0-394-s .pynr-basic-
input>.title:before{content:"";position:absolute;border-top:5px solid #fff;left:0;right:0;top:11px;z-index:-1}.nfdk-6-
0-394-s .pynr-basic-input>.value{flex:1 1 auto;pointer-events:none;text-overflow:ellipsis;overflow:hidden;white-

space:nowrap;margin-right:20px}.nfdk-6-0-394-s .pynr-basic-input>.action-button{flex:0 0 30px;height:34px;min-width:unset;margin-right:2px;border-radius:4px;background-color:#dadce3;color:#fff;text-align:center;cursor:pointer}.nfdk-6-0-394-s .pynr-basic-input>.action-button .icon{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";line-height:35px}.nfdk-6-0-394-s .pynr-basic-input>.action-button:hover{background-color:#cbcfd9}.nfdk-6-0-394-s .pynr-basic-input>.action-button:active{background-color:#bcc1ce}.nfdk-6-0-394-s .pynr-basic-input.filled>.title{transform:scale(.8) translateY(-20px)}.nfdk-6-0-394-s .pynr-basic-input.open,.nfdk-6-0-394-s .pynr-basic-input:focus{border-color:#2e84ca;color:#2e84ca;outline:none;box-shadow:0 4px 5px -1px #e8eaee}.nfdk-6-0-394-s .pynr-basic-input.open>.title,.nfdk-6-0-394-s .pynr-basic-input:focus>.title{color:#2e84ca!important}.nfdk-6-0-394-s .pynr-basic-input.open>.action-button,.nfdk-6-0-394-s .pynr-basic-input:focus>.action-button{background-color:#2e84ca}.nfdk-6-0-394-s .pynr-date-input>.flatpickr-input{height:34px;width:31px;position:absolute;right:0;pointer-events:none}.nfdk-6-0-394-s .pynr-date-input>.clear-item{display:none;flex:0 0 auto;min-width:20px;width:20px;height:20px;border-radius:50%;padding:0}.nfdk-6-0-394-s .pynr-date-input>.clear-item>.title:before{font-size:14px;line-height:20px;width:21px;height:20px}.nfdk-6-0-394-s .pynr-date-input>.clear-item:hover{color:#000;background-color:#e8eaee}.nfdk-6-0-394-s .pynr-date-input.filled>.title{top:6px;left:6px}.nfdk-6-0-394-s .pynr-date-input.filled>.clear-item{display:block}.nfdk-6-0-394-s .pynr-date-input.disabled{border-style:dotted;border-color:#ddd;color:#ddd;background-color:#f8f8f8;pointer-events:none}.nfdk-6-0-394-s .pynr-date-input.disabled>.title{background:transparent;color:#dadce3}.nfdk-6-0-394-s .pynr-model-input.required>.title:after{content:"*";color:#f51745}.nfdk-6-0-394-s .pynr-model-input.invalid{border-color:#f51745}.nfdk-6-0-394-s .pynr-model-input.invalid .icon-clear,.nfdk-6-0-394-s .pynr-model-input.invalid .value,.nfdk-6-0-394-s .pynr-model-input.invalid>.title{color:#f51745}.nfdk-6-0-394-s .pynr-model-input.invalid>.title{color:#f51745!important}.nfdk-6-0-394-s .pynr-model-input.invalid>.action-button{background:rgba(245,23,69,.9)}.nfdk-6-0-394-s .pynr-model-input>.clear-item{display:none;flex:0 0 auto;min-width:20px;width:20px;height:20px;border-radius:50%;padding:0}.nfdk-6-0-394-s .pynr-model-input>.clear-item>.title:before{font-size:14px;line-height:20px;width:21px;height:20px}.nfdk-6-0-394-s .pynr-model-input>.clear-item:hover{color:#000;background-color:#e8eaee}.nfdk-6-0-394-s .pynr-model-input>.title{left:6px}.nfdk-6-0-394-s .pynr-model-input>.title:before{content:"";position:absolute;border-top:5px solid #fff;left:0;right:0;top:11px;z-index:-1}.nfdk-6-0-394-s .pynr-model-input>.value{display:flex;flex-wrap:wrap;padding-top:5px;padding-bottom:5px}.nfdk-6-0-394-s .pynr-model-input.filled>.title{top:6px;left:6px}.nfdk-6-0-394-s .pynr-model-input.filled>.clear-item{display:block}.nfdk-6-0-394-s .pynr-model-input.disabled{border-style:dotted;border-color:#ddd;color:#ddd;background-color:#f8f8f8;pointer-events:none}.nfdk-6-0-394-s .pynr-model-input.disabled>.title{background:transparent;color:#dadce3}.nfdk-6-0-394-s .tag-chip{display:flex;background-color:#e8eaee;border:1px solid #fff;border-radius:5px;padding:3px 5px;margin-right:5px;font-size:.8rem;flex:0 1 auto;overflow:hidden}.nfdk-6-0-394-s .tag-chip>.table{font-weight:700;margin-right:5px}.nfdk-6-0-394-s .tag-chip>.spec{white-space:normal}.nfdk-6-0-394-s .pynr-file-input{box-sizing:border-box;display:flex;position:relative;align-items:center;margin-top:10px;border:1px solid #dadce3;border-radius:4px;width:100%;height:40px;padding-left:10px;background:transparent;color:#383f50}.nfdk-6-0-394-s .pynr-file-input.file-name-present>.title{top:6px;transform:scale(.8) translateY(-20px)}.nfdk-6-0-394-s .pynr-file-input.upload-aborted .loading-icon,.nfdk-6-0-394-s .pynr-file-input.upload-failed .loading-icon,.nfdk-6-0-394-s .pynr-file-input.upload-loading .loading-icon,.nfdk-6-0-394-s .pynr-file-input.upload-successful .loading-icon{opacity:1;font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";line-height:20px;vertical-align:bottom;font-size:1.1rem}.nfdk-6-0-394-s .pynr-file-input.upload-loading .loading-icon{animation:spin-loader 1s linear infinite}@keyframes spin-loader{to{transform:rotate(-1turn)}}.nfdk-6-0-394-s .pynr-file-input.upload-loading .loading-icon:before{content:"sync"}.nfdk-6-0-394-s .pynr-file-input.upload-failed .loading-icon:before{content:"error_outline";color:#f51745}.nfdk-6-0-394-s .pynr-file-input.upload-successful .loading-icon:before{content:"done";color:green}.nfdk-6-0-394-s .pynr-file-input>.title{position:absolute;transition:transform .1s ease-in-out;transform-origin:0 0;left:6px;top:8px;color:#9fa6b8;pointer-events:none;background:#fff;padding-left:5px;padding-right:5px}.nfdk-6-0-394-s .pynr-file-input>.title:before{content:"";position:absolute;border-top:5px solid #fff;left:0;right:0;top:11px;z-index:-1}.nfdk-6-0-394-s .pynr-file-input .filename{flex:1 1 auto;text-overflow:ellipsis;overflow:hidden;white-space:nowrap;margin-right:20px}.nfdk-6-0-394-s .pynr-file-input .pynr-hidden-file-input{display:none}.nfdk-6-0-394-s .pynr-file-input .loading-icon{opacity:0;margin-right:10px;font-size:1.1rem}.nfdk-6-0-394-s .pynr-file-input .pynr-upload-btn{flex:0 0 34px;height:34px;min-width:unset;margin-right:2px;border-radius:4px;background-color:#dadce3;color:#fff;text-align:center;cursor:pointer}.nfdk-6-0-394-s .pynr-file-input .pynr-upload-btn .icon{font-family:Material Icons;font-weight:400;font-style:normal;font-size:24px;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";line-height:35px}.nfdk-6-0-394-s .pynr-file-input .pynr-upload-btn:hover{background-color:#cbcfd9}.nfdk-6-0-394-s .pynr-file-input .pynr-upload-btn:active{background-color:#bcc1ce}.nfdk-6-0-394-s .pynr-file-input.disabled{border-style:dotted;border-color:#ddd;color:#ddd;background-color:#f8f8f8;pointer-events:none}.nfdk-6-0-394-s .pynr-file-input.disabled>.title{background:transparent;color:#dadce3}.nfdk-6-0-394-s .summary-box-container{display:flex;flex-wrap:wrap;margin-top:10px}.nfdk-6-0-394-s .summary-box-container .summary-box{flex:0 0 auto;height:80px;border:1px solid #dadce3;border-radius:4px;margin-bottom:15px;display:flex;padding-left:15px;padding-right:15px;margin-right:15px;position:relative}.nfdk-6-0-394-s .summary-box-container .summary-box .title{position:absolute;background:#fff;top:-9px;padding-left:5px;padding-right:3px;color:#9fa6b8;font-size:12px;font-weight:400}.nfdk-6-0-394-s .summary-box-container .summary-box .stat-container{display:flex;flex-direction:column;justify-content:center;align-items:center}.nfdk-6-0-394-s .summary-box-container .summary-box .stat-container:not(:last-child){margin-right:15px}.nfdk-6-0-394-s .summary-box-container .summary-box .stat-container .text{font-size:35px;line-height:35px;font-weight:200}.nfdk-6-0-394-s .summary-box-container .summary-box .stat-container .text.highlighted{color:#0288d1}.nfdk-6-0-394-s .summary-box-container .summary-box .stat-container .text.normal{color:#66718b}.nfdk-6-0-394-s .summary-box-container .summary-box .stat-container .text.error{color:#ef6b6c}.nfdk-6-0-394-s .summary-box-container .summary-box .stat-container .text.ok{color:green}.nfdk-6-0-394-s .summary-box-container .summary-box .stat-container .description{font-size:11px;font-weight:400;letter-spacing:.8px;color:#9fa6b8}.nfdk-6-0-394-s .summary-box-container .pynr-action{line-height:unset;height:unset}.nfdk-6-0-394-s .summary-box-container .selected{background-color:#e9f2fa;transition:background-color .15s}.nfdk-6-0-394-s .help-box .visible>.dialog{max-width:750px}.nfdk-6-0-394-s .help-box .visible>.dialog .content{padding-bottom:25px}.nfdk-6-0-394-s .help-box .visible>.dialog .content .basic-markdown{color:#383f50;letter-spacing:-.25px}.nfdk-6-0-394-s .help-box .visible>.dialog>.header>.pyoneer-action.close{color:#66718b;font-size:1.3rem}.nfdk-6-0-394-s .help-box .visible>.dialog>.header>.title{color:#2e84ca;font-size:1.5rem}.nfdk-6-0-394-s .pynr-notification{position:fixed;pointer-events:none;bottom:100px;left:calc(50% - 200px);width:400px;background-color:rgba(0,0,0,.7);color:#fff;border-radius:10px;height:40px;line-height:40px;text-align:center;box-shadow:0 1px 8px rgba(0,0,0,.16);opacity:0;transition:opacity .2s}.nfdk-6-0-394-s .pynr-notification.visible{opacity:1}.nfdk-6-0-394-s .pynr-wizard{height:100%;box-sizing:border-box;min-width:400px;min-height:400px;flex-grow:1;flex-shrink:1}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet{height:100%}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet>.actions{padding:10px 0;margin-left:15px;margin-right:15px}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet>.actions .btn-wizard-cancel{margin-right:auto;color:#383f50;font-weight:550}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet>.actions .btn-wizard-cancel>.basic-markdown:before{vertical-align:text-bottom}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet .children{min-height:0;display:flex;flex-direction:column}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet .wizard-tab-view{width:100%;min-height:0}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet .wizard-tab-view>.steps{user-select:none;height:75px;flex-basis:75px;padding-top:10px;background-color:#f0f1f6;justify-content:center;flex-grow:0;flex-shrink:0}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet .wizard-tab-view>.steps>.step{display:flex;width:85px;flex-direction:column;justify-content:center;align-items:center}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet .wizard-tab-view>.steps>.step .number{flex:1 1 auto;display:flex;align-items:center}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet .wizard-tab-view>.steps>.step .number .basic-markdown{width:35px;height:35px;background-color:#fff;line-height:34px;font-size:1rem;text-align:center;border-radius:50%;font-weight:600;color:#b7bdcb}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet .wizard-tab-view>.steps>.step .name{flex:0 0 25px;height:25px;color:#b7bdcb;font-size:.7rem;font-weight:600;text-transform:uppercase}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet .wizard-tab-view>.steps>.step.active .number .basic-markdown{transition:all .1s;border:2px solid #2e84ca;color:#2e84ca;font-weight:700;box-shadow:0 4px 5px -2px rgba(46,132,202,.4)}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet .wizard-tab-view>.steps>.step.active .name{transition:color .1s;color:#2e84ca}.nfdk-6-0-394-s .pynr-wizard>.pyoneer-action-sheet .wizard-tab-view>.content{padding:0 15px;margin:10px 0;min-height:0;overflow:auto}.nfdk-6-0-394-s .pynr-popup-wizard.pynr-dialog-box>.dialog>.header{user-select:none;background-color:#2e84ca;margin:0;padding:0 15px;border:inherit}.nfdk-6-0-394-s .pynr-popup-wizard.pynr-dialog-box>.dialog>.header>.basic-markdown{text-align:center;font-weight:400;color:#fff}.nfdk-6-0-394-s .detailed-layout-container{--pane-bg-color:#f0f1f7;--pane-txt-over-bg-color:#d3d7de;--default-txt-color:#383f50;border:1px solid #e8eaee;box-sizing:border-box;border-radius:5px;overflow:hidden;height:100%;min-height:0}.nfdk-6-0-394-s .detailed-layout-container .left{overflow:hidden;position:relative}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-list{overflow-y:auto;display:flex;flex-direction:column;height:100%;width:100%;background:#fff;margin-left:0;transition-timing-function:cubic-bezier(.165,.84,.44,1);transition:margin-left .3s,filter .3s;filter:brightness(100%)}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-list .pynr-sstable.selectable .row{cursor:pointer}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-list .main-left-table-top{border-bottom:1px solid #dadce3;background-color:#f7f8f9;display:flex;justify-content:space-between;align-items:center;padding:9px}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-list .main-left-table-top .main-left-table-top-title{color:#383f50;font-size:18px;font-weight:300}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-list .main-left-table-top .filter-container{position:relative;display:flex}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-list .main-left-table-top .filter-container>.pynr-action{margin-right:0;border-radius:30px;color:#fff;background-color:#0288d1;box-shadow:0 7px 10px -4px rgba(0,132,203,.52);width:30px;height:30px;min-width:unset}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-list .main-left-table-top .filter-container>.pynr-action:hover{background-color:#0190dd}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-list .main-left-table-top .filter-container>.pynr-action:active{background-color:#027abc;box-shadow:none}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-list .main-left-table-top .filter-container .filter-popup:not(.visible){display:none}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-list .main-left-table-top .filter-container .filter-popup{position:absolute;top:50px;right:20px;z-index:100;width:240px;background-color:#fff;border:1px solid #d2d6e1;border-radius:4px;box-shadow:0 4px 5px -1px #dfe2ea;padding:13px;display:flex;flex-direction:column}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-list .main-left-table-top .filter-container .filter-popup .schema-form .fields .field{width:unset;margin-right:0;flex-grow:1}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-list .main-left-table-top .filter-container .filter-popup .separator{margin-top:13px;margin-bottom:13px;height:1px;background-color:#eaeef5}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-item-details{position:absolute;left:100%;top:0;width:100%;height:100%;transition-timing-function:cubic-bezier(.165,.84,.44,1);transition:left .3s;background:#fff;display:flex}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-item-details .details-container{flex-grow:1;max-width:100%;display:flex;flex-direction:column}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-item-details .details-container .details-title-container{border-bottom:1px solid #dadce3;background-color:#f7f8f9;display:flex;align-items:center;padding:9px 9px 9px 0}.nfdk-

6-0-394-s .detailed-layout-container .left .main-left-item-details .details-container .details-title-container .pynr-action{flex:0 0 22px;min-width:unset;height:23px;width:22px}.nfdk-6-0-394-s .detailed-layout-container .left .main-left-item-details .details-container .details-title-container>.title{font-size:18px;font-weight:300;letter-spacing:-.4px;text-overflow:ellipsis;overflow:auto}.nfdk-6-0-394-s .detailed-layout-container .left.details-mode>.main-left-list{transition:margin-left .3s,filter .3s;margin-left:-40px;filter:brightness(70%)}.nfdk-6-0-394-s .detailed-layout-container .left.details-mode>.main-left-item-details{transition:left .3s;left:0}.nfdk-6-0-394-s .item-details{position:relative;display:flex;flex-direction:column;flex:0 0 auto;width:0;transition:width .15s ease-out .15s;box-shadow:-9px 9px 18px -10px rgba(67,74,91,.27);border-left:0 solid #dadce3;border-top:0 solid #dadce3;background-color:#e8eaee}.nfdk-6-0-394-s .item-details *{opacity:0;transition:opacity .15s ease-out}.nfdk-6-0-394-s .item-details.show{width:400px;border-left-width:1px;border-top-width:1px;transition-delay:0s}.nfdk-6-0-394-s .item-details.show *{opacity:1;transition-delay:.15s}.nfdk-6-0-394-s .item-details .pynr-action.item-details-close-action{position:absolute;right:0;top:0;padding:0}.nfdk-6-0-394-s .item-details .pynr-action.item-details-close-action>.title:before{font-size:20px;width:20px;height:20px}.nfdk-6-0-394-s .item-details .item-details-title-container{padding:10px 10px 10px 15px}.nfdk-6-0-394-s .item-details .item-details-title-container>*{color:#383f50;font-size:.8rem}.nfdk-6-0-394-s .item-details .item-details-title-container>:nth-child(2){color:#2e84ca;font-size:1.6rem}.nfdk-6-0-394-s .expandable-tree-view .pynr-expandable{position:relative}.nfdk-6-0-394-s .expandable-tree-view .pynr-expandable>.basic-markdown:last-child{margin-bottom:10px}.nfdk-6-0-394-s .expandable-tree-view .pynr-expandable .header{align-items:flex-start;flex-basis:auto!important;padding-bottom:10px}.nfdk-6-0-394-s .expandable-tree-view .pynr-expandable .header:before{width:17px;height:17px;font-size:17px;color:#2e84ca}.nfdk-6-0-394-s .expandable-tree-view .pynr-expandable .header.expanded:after{content:" ";position:absolute;left:8px;top:20px;background-color:#eceef5;width:1px;height:calc(100% - 35px)}.nfdk-6-0-394-s .expandable-tree-view .pynr-expandable .header.expanded:before,.nfdk-6-0-394-s .expandable-tree-view .pynr-expandable .header:hover .basic-markdown,.nfdk-6-0-394-s .expandable-tree-view .pynr-expandable .header:hover:before{color:#2e84ca}.nfdk-6-0-394-s .expandable-tree-view .basic-markdown{color:#434a5b;font-size:.9rem}.nfdk-6-0-394-s .expandable-tree-view .basic-markdown .md-italic{color:#9fa6b8;font-size:.8rem}.nfdk-6-0-394-s .expandable-tree-view .basic-markdown:hover{color:#2e84ca}.nfdk-6-0-394-s .expandable-tree-view.empty-results div{color:#e8eaee;font-size:1.5rem;display:flex;flex-direction:column;text-align:center;margin:30% auto}.nfdk-6-0-394-s .expandable-tree-view.empty-results div:before{content:"find_in_page";font-family:Material Icons;font-size:3rem;margin-bottom:10px}.nfdk-6-0-394-s .validation-msg{color:red;padding:10px;font-size:.9rem}.nfdk-6-0-394-s .tab-2-content-container{width:100%}.nfdk-6-0-394-s .removable-list-item{padding-right:unset;padding-left:5px;width:100%;box-sizing:border-box}.nfdk-6-0-394-s .removable-list-item .pynr-tab-view .content{flex-direction:unset}.nfdk-6-0-394-s .removable-list-item .pynr-tab-view .content .pynr-tab-view .pynr-container,.nfdk-6-0-394-s .removable-list-item .pynr-tab-view .content .underline .pynr-tab-view .pynr-container{width:100%}.nfdk-6-0-394-s .removable-list-item .header{display:flex;height:fit-context;align-items:center;padding:5px 5px 5px 10px;background-color:#e8eaee}.nfdk-6-0-394-s .removable-list-item .header>div:first-child{flex:1 1 auto}.nfdk-6-0-394-s .removable-list-item>.content{flex-direction:row}.nfdk-6-0-394-s .removable-list-item>.content .inline-help-popup{top:-10px;padding:10px!important}.nfdk-6-0-394-s .removable-list-item>.content .schema-form{width:calc(100% - 35px);box-sizing:border-box}.nfdk-6-0-394-s .removable-list-item>.content .schema-form .config-block{padding:unset}.nfdk-6-0-394-s .removable-list-item>.content .schema-form .config-block .inner{margin:unset}.nfdk-6-0-394-s .removable-list-item>.content .schema-form .config-block .inner .fields{width:100%;padding:unset;margin:unset;box-sizing:border-box}.nfdk-6-0-394-s .removable-list-item>.content .schema-form .config-block .inner .fields .field{width:100%;padding:0!important;margin:0}.nfdk-6-0-394-s .removable-list-item>.content .schema-form .config-block .inner .fields .model-item,.nfdk-6-0-394-s .removable-list-item>.content .schema-form .config-block .inner .fields .string{width:100%;margin-right:unset;padding-right:unset}.nfdk-6-0-394-s .removable-list-item>.content .pynr-action{margin-top:25px;padding:unset;margin-left:5px}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content .content-cont .metric-text-and_desc .text-number-desc{color:#808799;font-family:Source Sans Pro;letter-spacing:-.22px;line-height:17px}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content .content-cont .metric-text-and_desc>.negative-sum-number,.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content .content-cont .metric-text-and_desc>.positive-sum-number{font-size:40px;font-weight:300;letter-spacing:.17px;line-height:50px}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.dual-content-container>.left-metric-content,.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.dual-content-container>.right-metric-content,.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.metric-content{display:flex;flex-direction:column;align-items:center;flex:1 0 0}.nfdk-6-0-394-s .pynr-dashboard-base-widget{overflow:hidden;text-overflow:ellipsis;white-space:nowrap;flex-direction:column;padding:15px;box-sizing:border-box;flex-grow:1;align-self:stretch}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header{display:flex;justify-content:start;align-items:center}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.basic-markdown{white-space:nowrap;margin-right:5px;font-size:17px;letter-spacing:.11px;line-height:20px;color:#4b5167}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side{display:flex;align-items:center;margin-left:auto;overflow-x:hidden}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.graph-legend{display:flex;overflow-x:auto}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.graph-legend .legend-text{display:flex;align-items:center;padding-right:15px;font-size:14px;font-weight:600}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.graph-legend .legend-text:before{font-family:Material Icons;font-size:large;content:"fiber_manual_record";text-transform:unset;text-decoration:none;display:inline-block;white-space:pre-wrap;padding-right:5px;font-size:15px}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.graph-legend .pynr-action{margin-right:unset;min-width:fit-content;min-width:0}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side .legend-item:last-child{padding-right:10px}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.header-elem{border-right:1px solid #e5e5e5;border-left:1px solid #dadce3;padding:0 9px}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.header-elem>.full-details-hyperlink{color:#2e84ca;margin-left:2px;font-family:Source Sans Pro;font-size:14px;font-weight:600;letter-spacing:0}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.header-elem>.icon-help.pynr-action.icon-only{color:#808799}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.header-elem>.icon-help.pynr-action.icon-only .title:before{font-size:18px;width:18px;height:18px}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.header-elem .icon-help.pynr-action.icon-only:hover{color:#2e84ca;background-color:#fff}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.header-elem .pynr-action{min-width:0;height:unset;margin-right:unset;padding-left:unset;padding-right:unset}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.header-elem:nth-last-child(2){border-right:unset;padding-right:unset}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.help-config-popup{position:absolute;top:35px;right:230px;box-sizing:border-box;width:0;height:0;display:none}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.help-config-popup.open{display:block}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.help-config-popup>.popup-hc-inner{width:80%;margin-top:5px;margin-right:5px;margin-left:auto;padding:10px;min-width:200px;max-width:250px;background:#fff;border:1px solid #eee;border-radius:5px;box-shadow:0 3px 6px -1px rgba(67,74,91,.27)}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.help-config-popup>.popup-hc-inner>.basic-markdown{white-space:normal}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.help-config-popup>.popup-hc-inner>.config-content{display:flex;flex-direction:column}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.help-config-popup>.popup-hc-inner>.config-content>.pynr-sstable .row{border-bottom:unset}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.help-config-popup>.popup-hc-inner>.config-content>.pynr-sstable .basic-markdown{align-self:center;border-right:unset}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.help-config-popup>.popup-hc-inner>.config-content>.pynr-sstable .config-key{padding-left:unset}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.help-config-popup>.popup-hc-inner>.config-content>.pynr-sstable .config-val{padding-right:unset}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header>.header-right-side>.help-config-popup>.popup-hc-inner>.config-content .primary.pynr-action.save-

cnfg{width:fit-content;align-self:flex-end}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header:last-
child{border:none}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header:last-child .help-
popup{left:unset;width:calc(100% - 10px)}.nfdk-6-0-394-s .pynr-dashboard-base-widget>.header:last-child .help-
popup .help-inner{float:right}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content{min-width:0;min-
height:0;display:flex;flex-grow:1}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.metric-
content{font-size:150px;height:100%;justify-content:center}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-
content>.dual-content-container{display:flex;font-size:65px;justify-content:space-between;align-items:center;flex-
grow:1}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.data-object-content{padding-
top:5px;margin-top:10px;border-top:1px solid #dadce3;display:flex;justify-content:center;min-height:0;min-
width:0;flex-grow:1}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.data-object-
content>.tiles{display:flex;flex-flow:row wrap;flex:1 1 0;overflow-x:scroll}.nfdk-6-0-394-s .pynr-dashboard-base-
widget .widget-content>.data-object-content>.tiles>.tile{border-left:1px solid #e5e5e5;margin-right:50px;padding-
left:30px;min-width:290px;min-height:0;display:flex;flex-direction:column;line-height:35px;box-sizing:border-
box;margin-bottom:15px;display:inline-table}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.data-
object-content>.tiles>.tile>.title-text{font-family:Source Sans Pro;font-weight:600;letter-spacing:-.25px;line-
height:19px;padding-bottom:5px;color:#383f50;font-size:15px}.nfdk-6-0-394-s .pynr-dashboard-base-widget
.widget-content>.data-object-content>.tiles>.tile>.key-value-container{display:flex;justify-content:space-
between;padding-top:7px}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.data-object-
content>.tiles>.tile>.key-value-container>.key-label{font-size:15px;color:#808799;font-family:Source Sans
Pro;letter-spacing:-.22px;line-height:17px}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.data-
object-content>.tiles>.tile>.key-value-container>.value-label{padding-left:10px;color:#383f50;font-size:15px;font-
family:Source Sans Pro;letter-spacing:-.22px;line-height:17px}.nfdk-6-0-394-s .pynr-dashboard-base-widget
.widget-content>.data-object-content>.tiles .tile:first-child{border-left:unset;padding-left:5px;min-
width:260px}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.data-object-content>.tiles .tile:last-
child{margin-right:unset}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.data-object-content>.pynr-
sstable{border:unset;overflow-x:unset;height:100%;overflow-y:auto}.nfdk-6-0-394-s .pynr-dashboard-base-widget
.widget-content>.data-object-content>.pynr-sstable * .row .basic-markdown{border-right:unset;color:#383f50;letter-
spacing:-.23px;line-height:27px}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.data-object-
content>.pynr-sstable .row:last-child{border:unset}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-
content>.data-object-content>.pynr-sstable .headers .headers-internal .header{border-right:unset;padding-
right:5px;box-shadow:unset}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.data-object-
content>.pynr-sstable .headers .headers-internal .header .actions-button{display:None}.nfdk-6-0-394-s .pynr-
dashboard-base-widget .widget-content>.data-object-content>.pynr-sstable .headers .headers-internal .header
.title{color:#808799}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.data-object-content>.pynr-
sstable .headers .summary{display:None}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content>.data-
object-content>.pynr-graph{display:flex;flex-grow:1}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content
.content-cont{display:flex;align-items:center}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content
.content-cont .metric-text-and_desc{display:flex;flex-direction:column;align-items:baseline;padding-
bottom:5px}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content .content-cont .metric-text-
and_desc>.negative-sum-number{color:#ef6b6c}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content
.content-cont .metric-text-and_desc>.positive-sum-number{color:#71c38c}.nfdk-6-0-394-s .pynr-dashboard-base-
widget .widget-content .content-cont .metric-text-and_desc .text-number-desc{font-size:13px}.nfdk-6-0-394-s
.pynr-dashboard-base-widget .widget-content .content-cont>.arrow-action.pynr-action.icon-
only{width:48px;height:48px;border-radius:50%;color:#fff}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-
content .content-cont>.arrow-action.pynr-action.icon-only.icon-arrow_down{background:#ef6b6c;box-shadow:inset
0 -2px 3px 0 #d95152}.nfdk-6-0-394-s .pynr-dashboard-base-widget .widget-content .content-cont>.arrow-
action.pynr-action.icon-only.icon-arrow_up{background:#71c38c;box-shadow:inset 0 -2px 3px 0 #5fad79}.nfdk-6-
0-394-s .model_selection_list{display:flex;flex-direction:column;transition:margin .12s ease-out;flex:1 1 0;padding-

top:5px}.nfdk-6-0-394-s .model_selection_list .add-resource-action{flex-direction:row;color:#2e84ca;border:1px
dashed #0288d1;border-radius:4px;width:100%;height:40px}.nfdk-6-0-394-s .model_selection_list .resource-item-
list{padding:5px 0}.nfdk-6-0-394-s .model_selection_list .resource-item-list:empty{color:grey;display:flex;justify-
content:center;align-items:center;flex-direction:column}.nfdk-6-0-394-s .model_selection_list .resource-item-list
.row-with-underline{flex-direction:column}.nfdk-6-0-394-s .model_selection_list .resource-item-list .row-with-
underline .resource-item{margin:3px 0;padding:3px 0;display:flex;align-items:center;justify-content:space-
between;font-size:.9rem}.nfdk-6-0-394-s .model_selection_list .resource-item-list .row-with-underline .resource-
item .left-resource-line{padding-left:10px;max-width:85%}.nfdk-6-0-394-s .model_selection_list .resource-item-list
.row-with-underline .resource-item .left-resource-line .icon-error_outline{color:#ef6b6c}.nfdk-6-0-394-s
.model_selection_list .resource-item-list .row-with-underline .resource-item .left-resource-line .pynr-action{margin-
right:unset;padding-left:unset}.nfdk-6-0-394-s .model_selection_list .resource-item-list .row-with-underline
.resource-item .left-resource-line .resource-item-name{color:#4b5167;font-family:Source Sans Pro;font-
size:15px;letter-spacing:.1px;text-overflow:ellipsis}.nfdk-6-0-394-s .model_selection_list .resource-item-list .row-
with-underline .resource-item .pynr-action.icon-clear,.nfdk-6-0-394-s .model_selection_list .resource-item-list .row-
with-underline .resource-item .pynr-action.icon-delete,.nfdk-6-0-394-s .model_selection_list .resource-item-list
.row-with-underline .resource-item .pynr-action.icon-remove{transition:color .2s ease-
out;color:grey;width:24px;height:24px;min-width:unset}.nfdk-6-0-394-s .model_selection_list .resource-item-list
.row-with-underline .resource-item .pynr-action.icon-clear:hover,.nfdk-6-0-394-s .model_selection_list .resource-
item-list .row-with-underline .resource-item .pynr-action.icon-delete:hover,.nfdk-6-0-394-s .model_selection_list
.resource-item-list .row-with-underline .resource-item .pynr-action.icon-remove:hover{color:inherit}.nfdk-6-0-394-s
.model_selection_list .resource-item-list .row-with-underline .resource-item .pynr-action.icon-
clear>.title:before,.nfdk-6-0-394-s .model_selection_list .resource-item-list .row-with-underline .resource-item
.pynr-action.icon-delete>.title:before,.nfdk-6-0-394-s .model_selection_list .resource-item-list .row-with-underline
.resource-item .pynr-action.icon-remove>.title:before{height:1.1rem;width:1.1rem;font-size:1.1rem}.nfdk-6-0-394-s
.model_selection_list .resource-item-list .row-with-underline .invalid-item{background-
color:rgba(239,107,108,.11)}.nfdk-6-0-394-s .model_selection_list .resource-item-list .row-with-underline .invalid-
item .pynr-action{height:unset;line-height:unset;color:red}.nfdk-6-0-394-s .model_selection_list .resource-item-list
.row-with-underline .underline{box-sizing:border-box;height:1px;width:402px;border:1px solid
#d2d6e1;width:100%}.nfdk-6-0-394-s .model_selection_list .invalid-content-message{color:red;padding:5px
2px;color:#ef6b6c;font-family:Source Sans Pro;font-size:.9rem;letter-spacing:.2px;line-height:24px}.nfdk-6-0-394-s
.model_selection_list.tags-list-selector .icon-error_outline.pynr-action.icon-only{display:none}.nfdk-6-0-394-s
.model-selection-list-v2{display:flex;flex-direction:column;transition:margin .12s ease-out;flex:1 1 0;padding-
top:5px}.nfdk-6-0-394-s .model-selection-list-v2 .add-resource-action{flex-direction:row;color:#2e84ca;border:1px
dashed #0288d1;border-radius:4px;width:100%;height:40px}.nfdk-6-0-394-s .model-selection-list-v2 .resource-
item-list{padding:5px 0}.nfdk-6-0-394-s .model-selection-list-v2 .resource-item-
list:empty{color:grey;display:flex;justify-content:center;align-items:center;flex-direction:column}.nfdk-6-0-394-s
.model-selection-list-v2 .resource-item-list .row-with-underline{flex-direction:column}.nfdk-6-0-394-s .model-
selection-list-v2 .resource-item-list .row-with-underline .resource-item{margin:3px 0;padding:3px
0;display:flex;align-items:center;justify-content:space-between;font-size:.9rem}.nfdk-6-0-394-s .model-selection-
list-v2 .resource-item-list .row-with-underline .resource-item .basic-markdown{overflow:hidden;text-
overflow:hidden}.nfdk-6-0-394-s .model-selection-list-v2 .resource-item-list .row-with-underline .resource-item
.left-resource-line{padding-left:10px}.nfdk-6-0-394-s .model-selection-list-v2 .resource-item-list .row-with-
underline .resource-item .left-resource-line .icon-error_outline{color:#ef6b6c}.nfdk-6-0-394-s .model-selection-list-
v2 .resource-item-list .row-with-underline .resource-item .left-resource-line .pynr-action{margin-
right:unset;padding-left:unset}.nfdk-6-0-394-s .model-selection-list-v2 .resource-item-list .row-with-underline
.resource-item .left-resource-line .resource-item-name{color:#4b5167;font-family:Source Sans Pro;font-
size:15px;letter-spacing:.1px}.nfdk-6-0-394-s .model-selection-list-v2 .resource-item-list .row-with-underline
.resource-item .pynr-action.icon-delete{transition:color .2s ease-out;color:grey;width:24px;height:24px;min-

width:unset}.nfdk-6-0-394-s .model-selection-list-v2 .resource-item-list .row-with-underline .resource-item .pynr-
action.icon-delete:hover{color:inherit}.nfdk-6-0-394-s .model-selection-list-v2 .resource-item-list .row-with-
underline .resource-item .pynr-action.icon-delete>.title:before{height:1.1rem;width:1.1rem;font-size:1.1rem}.nfdk-
6-0-394-s .model-selection-list-v2 .resource-item-list .row-with-underline .invalid-item{background-
color:rgba(239,107,108,.11)}.nfdk-6-0-394-s .model-selection-list-v2 .resource-item-list .row-with-underline
.invalid-item .pynr-action{height:unset;line-height:unset;color:red}.nfdk-6-0-394-s .model-selection-list-v2
.resource-item-list .row-with-underline .underline{box-sizing:border-box;height:1px;width:402px;border:1px solid
#d2d6e1;width:100%}.nfdk-6-0-394-s .model-selection-list-v2 .invalid-content-message{color:red;padding:5px
2px;color:#ef6b6c;font-family:Source Sans Pro;font-size:.9rem;letter-spacing:.2px;line-height:24px}.nfdk-6-0-394-s
.tags-selector .list-categories .items .removable-tags-container{border:1px solid #dadce3;padding:5px;border-
radius:4px;margin-bottom:5px;margin-top:5px}.nfdk-6-0-394-s .tags-selector .list-categories .items .removable-
tags-container .tag-values-popup{left:50px;width:auto;margin:5px;padding:5px}.nfdk-6-0-394-s .tags-selector .list-
categories .items .removable-tags-container .tag-values-popup .dialog .header{display:flex;flex-direction:row;flex:0
0 40px;background-color:unset}.nfdk-6-0-394-s .tags-selector .list-categories .items .removable-tags-container .tag-
values-popup .dialog .header>.title{font-size:.9rem}.nfdk-6-0-394-s .tags-selector .list-categories .items .removable-
tags-container .tag-values-popup .dialog .header .pynr-action{margin:unset;padding:unset}.nfdk-6-0-394-s .tags-
selector .list-categories .items .removable-tags-container .tag-values-popup .dialog>.content{display:flex;flex-
direction:column}.nfdk-6-0-394-s .tags-selector .list-categories .items .removable-tags-container .tag-values-popup
.dialog>.content .tag-values-container{border:1px solid #dadce3;border-
radius:4px;margin:5px;padding:5px;overflow-y:auto;overflow-x:hidden}.nfdk-6-0-394-s .tags-selector .list-
categories .items .removable-tags-container .tag-values-popup .dialog>.content .pyoneer-action-
sheet>.actions{padding:2px;margin-right:10px}.nfdk-6-0-394-s .tags-selector .list-categories .items .removable-
tags-container .tag-values-popup .dialog>.content .pyoneer-action-sheet>.actions .pynr-action{margin-
top:unset}.nfdk-6-0-394-s .tags-selector .list-categories .items .removable-tags-container .removable-tag-actions-
container{align-items:center;padding-bottom:5px}.nfdk-6-0-394-s .tags-selector .list-categories .items .removable-
tags-container .removable-tag-actions-container .drop-down-category{min-width:80%}.nfdk-6-0-394-s .tags-
selector .list-categories .items .removable-tags-container .removable-tag-actions-container .drop-down-category
select{font-size:.9rem;color:#383f50}.nfdk-6-0-394-s .tags-selector .list-categories .items .removable-tags-container
.removable-tag-actions-container .drop-down-category.required-not-fulfilled{min-width:80%}.nfdk-6-0-394-s .tags-
selector .list-categories .items .removable-tags-container .removable-tag-actions-container .drop-down-
category.required-not-fulfilled select{font-size:.9rem;border-
color:rgba(245,23,69,.9);color:rgba(245,23,69,.9);background-image:linear-gradient(45deg,transparent
50%,rgba(245,23,69,.9) 0),linear-gradient(135deg,rgba(245,23,69,.9) 50%,transparent 0)}.nfdk-6-0-394-s .tags-
selector .list-categories .items .removable-tags-container .removable-tag-actions-container .drop-down-
category.required-not-fulfilled select>option{color:#383f50}.nfdk-6-0-394-s .tags-selector .list-categories .items
.removable-tags-container .removable-tag-actions-container .drop-down-category.required-not-
fulfilled>.title{color:rgba(245,23,69,.9)}.nfdk-6-0-394-s .tags-selector .list-categories .items .removable-tags-
container .removable-tag-actions-container .pynr-action.icon-only{width:.6rem;min-width:10%;min-
height:unset;font-size:unset;padding:unset;margin:unset}.nfdk-6-0-394-s .tags-selector .list-categories .items
.removable-tags-container .pynr-sstable>.no-items-msg{padding:5px}.nfdk-6-0-394-s .tags-selector .list-categories
.items .removable-tags-container .pynr-sstable>.row{font-size:14px;line-height:15px;min-height:unset;background-
color:#fff;border-top:1px solid #dadce3;padding-right:5px;color:#383f50}.nfdk-6-0-394-s .tags-selector .list-
categories .items .removable-tags-container .pynr-sstable>.row.selected,.nfdk-6-0-394-s .tags-selector .list-
categories .items .removable-tags-container .pynr-sstable>.row:hover{background-color:#dadce3}.nfdk-6-0-394-s
.tags-selector .list-categories .items .removable-tags-container .basic-markdown{border-right:unset}.nfdk-6-0-394-s
.tags-selector .list-categories .items .removable-tags-container .pynr-action.icon-only{width:.6rem;min-
width:unset;min-height:unset;font-size:unset;padding:unset;margin:unset}.nfdk-6-0-394-s .menu-popup-
action{display:flex;flex-direction:column;justify-content:start;align-items:stretch;position:relative}.nfdk-6-0-394-s

.menu-popup-action>.menu-header{display:flex;flex-direction:row;justify-content:start;align-items:stretch}.nfdk-6-0-394-s .menu-popup-action>.menu-header>.pynr-action{height:unset;line-height:unset;min-width:unset}.nfdk-6-0-394-s .menu-popup-action>.menu-header>.pynr-action.default-action{border-right:1px solid #e8eaee;border-top-right-radius:0;border-bottom-right-radius:0;padding:0 10px}.nfdk-6-0-394-s .menu-popup-action>.menu-header>.pynr-action.default-action.outlined{border-right-width:0}.nfdk-6-0-394-s .menu-popup-action>.menu-header>.pynr-action.default-action:not(:last-child){margin-right:0}.nfdk-6-0-394-s .menu-popup-action>.menu-header>.pynr-action.menu-toggler{text-align:center;font-size:.9rem;min-width:0;padding:0 3px;cursor:pointer}.nfdk-6-0-394-s .menu-popup-action>.menu-header>.pynr-action.menu-toggler:not(:first-child){border-top-left-radius:0;border-bottom-left-radius:0}.nfdk-6-0-394-s .menu-popup-action>.menu-header>.pynr-action.menu-toggler:after{font-family:Material Icons;content:"play_arrow";font-size:1.2rem;transform:rotate(0deg);transition:transform .1s ease-out}.nfdk-6-0-394-s .menu-popup-action>.menu-header>.pynr-action.menu-toggler.selected:after{transform:rotate(90deg)}.nfdk-6-0-394-s .menu-popup-action .menu-popup{box-sizing:border-box;position:absolute;display:flex;flex-direction:column;justify-content:start;align-items:stretch;flex:1 1 100%;gap:5px;order:2;left:0;top:100%;width:fit-content;min-width:100%;padding:5px 8px 5px 5px;margin-top:5px;border-radius:3px;background-color:#fff;border:1px solid #d3d3d3;box-shadow:-9px 9px 18px -10px rgba(67,74,91,.27)}.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option{display:flex;position:relative;flex-direction:row;justify-content:start;align-items:center;flex:1 1 100%;min-height:30px;padding:0 5px;font-size:.9rem;border-radius:3px;user-select:none;cursor:pointer}.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option .material-checkbox>.title,.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option .material-checkbox>label>.title,.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option>.basic-markdown{display:inline-block;overflow:hidden;text-overflow:ellipsis;white-space:nowrap;color:#383f50}.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option:not(:last-child):before{content:" ";position:absolute;left:0;top:105%;width:100%;height:1px;background-color:#d3d3d3}.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option.sub-menu:after{font-family:Material Icons;content:"chevron_right";margin-left:auto}.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option.sub-menu:hover:after{color:#fff}.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option.sub-menu:hover>.menu-popup{display:flex}.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option.sub-menu>.menu-popup{position:absolute;left:100%;top:1px;overflow:auto;max-height:150px;box-shadow:0 9px 18px -10px rgba(67,74,91,.27);display:none}.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option.selected .material-checkbox>.title,.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option.selected .material-checkbox>label>.title,.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option.selected>.basic-markdown,.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option:active .material-checkbox>.title,.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option:active .material-checkbox>label>.title,.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option:active>.basic-markdown,.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option:hover .material-checkbox>.title,.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option:hover .material-checkbox>label>.title,.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option:hover>.basic-markdown{color:#fff}.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option.selected,.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option:hover{background-color:#539cd8}.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option.critical:hover{background-color:#de2534}.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option:active{background-color:#2e84ca}.nfdk-6-0-394-s .menu-popup-action .menu-popup .menu-option.critical:active{background-color:#9f1924}.nfdk-6-0-394-s.pynr-date-input-picker .actions{display:flex;justify-content:flex-end;padding:5px;margin-top:5px}.nfdk-6-0-394-s .pynr-app{width:100%;height:100%}.nfdk-6-0-394-s .pynr-app>.header{padding-left:20px;padding-right:20px;line-height:54px;border-bottom:1px solid #dadce3;flex:0 0 55px}.nfdk-6-0-394-s .pynr-app>.header>.title{font-weight:300;font-size:1.5rem;color:#383f50;flex:0 0 auto}.nfdk-6-0-394-s .pynr-app>.content{flex:1 1 auto;min-height:0}.nfdk-6-0-394-s .pynr-app.tabbed>.header>.title{margin-right:60px}.nfdk-6-0-394-s .pynr-app.tabbed>.header>.pynr-tab-view{flex-direction:row}.nfdk-6-0-394-s .pynr-app.tabbed>.header>.pynr-tab-view>.tabs{flex:0 0 auto;height:55px;justify-content:flex-start;width:unset}.nfdk-6-

0-394-s .pynr-app.tabbed>.header>.pynr-tab-view>.tabs>.tab{height:55px;line-height:55px}.nfdk-6-0-394-s .results-right-container{height:calc(100% - 21px);display:flex;margin:10px;border:1px solid #d2d6e1;border-radius:4px;overflow-x:hidden;flex-direction:column}.nfdk-6-0-394-s .results-right-container .welcome-instructions{color:#dadce3}.nfdk-6-0-394-s .results-right-container .welcome-instructions:hover{color:#aeb3c2}.nfdk-6-0-394-s .results-right-container .welcome-instructions:before{content:"find_in_page"}.nfdk-6-0-394-s .results-right-container .error-msg{color:rgba(245,23,69,.6)}.nfdk-6-0-394-s .results-right-container .error-msg:hover{color:#f51745}.nfdk-6-0-394-s .results-right-container .error-msg:before{content:"error_outline"}.nfdk-6-0-394-s .results-right-container .warning-msg{color:rgba(244,156,66,.5)}.nfdk-6-0-394-s .results-right-container .warning-msg:hover{color:rgba(244,156,66,.9)}.nfdk-6-0-394-s .results-right-container .warning-msg:before{content:"warning"}.nfdk-6-0-394-s .results-right-container .loading-container{display:flex;flex-direction:column;justify-content:center;height:100%;width:50%;font-weight:300;padding:100px;align-self:center}.nfdk-6-0-394-s .results-right-container .loading-container .loading-text{display:flex;align-self:center}.nfdk-6-0-394-s .results-right-container .error-msg,.nfdk-6-0-394-s .results-right-container .warning-msg,.nfdk-6-0-394-s .results-right-container .welcome-instructions{display:flex;flex-direction:column;margin:200px auto;max-width:600px;height:min-content;text-align:center;font-size:1rem;transition:color .3s ease-out}.nfdk-6-0-394-s .results-right-container .error-msg:before,.nfdk-6-0-394-s .results-right-container .warning-msg:before,.nfdk-6-0-394-s .results-right-container .welcome-instructions:before{font-family:Material Icons;font-size:3rem}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split{overflow:hidden}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .right{padding:unset;min-width:0;min-height:0;overflow-y:unset}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container{min-width:0}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list>.headers{background:#fff}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list>.headers>.headers-internal{flex-wrap:wrap;padding:10px 10px 5px}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list>.headers>.headers-internal .header{flex:0 0 auto;border:1px solid #dadce3;border-radius:5px;margin-right:5px;margin-bottom:5px;box-shadow:none!important;padding-right:10px!important}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list>.headers>.headers-internal .header:last-child{display:none;border-right:1px solid #e3e4e4!important}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list>.headers>.headers-internal .header:hover{border-color:#bdc1cd}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable{padding-left:unset;border-radius:3px;margin:7px;border:1px solid #ddd}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .header{flex:1 1 45px;margin-left:unset;background-color:#d2d6e1;padding-left:8px}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .header .item-header-container{flex:1 1 auto;display:flex;flex-direction:row;justify-content:space-between;background-color:#d2d6e1;border-radius:inherit;min-width:0}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .header .item-header-container .test-name{display:flex;align-self:center;font-weight:600;font-size:17px;text-overflow:ellipsis;overflow:hidden;white-space:nowrap;margin-right:10px}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .header .item-header-container .test-actions-cont{display:flex;flex-direction:row;flex-grow:1;justify-content:flex-end;align-items:center}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .header .item-header-container .test-actions-cont .scheduled-lbl{font-size:14px;font-weight:700;color:#fff;background-color:#9fa6b8;padding:0 5px}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .header .item-header-container .test-actions-cont .pynr-action{border-right:1px solid #fff;padding:0 10px;margin-right:unset;border-radius:0}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .header .item-header-container .test-actions-cont .pynr-action .title{color:#2e84ca;font-family:Material Icons}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .header .item-header-container .test-actions-cont .pynr-action.duplicate-test .title:before{content:"content_copy"}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .header .item-header-container .test-actions-cont .pynr-action.schedule-test .title:before{content:"edit_calendar"}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .header .item-header-container .test-actions-cont .pynr-action.schedule-test.disabled .title:before{color:#9fa6b8}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .header .item-header-container .test-actions-cont .pynr-action:last-child{border-right:unset}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable:before{font-size:22px;color:#2e84ca}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont{display:flex;flex-direction:column;padding:8px}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .config-desc .conf-header{font-weight:600;padding:5px 0}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-headers{display:flex;align-items:center;justify-content:space-between;border-bottom:1px solid #383f50;padding:10px 0 5px}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-headers .run-num-lbl{font-weight:600}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-headers .pynr-action{padding-right:8px;border-radius:4px;min-width:110px;margin-left:10px;margin-right:unset}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-headers .pynr-action.save-result-act.unshow,.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-tests .headers-internal,.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-tests .summary{display:none}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-tests .history-result-item{display:flex;flex:1 1 auto;align-items:center;justify-content:space-between;padding:10px;border-bottom:1px solid #ddd}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-tests .history-result-item .timestamp{font-weight:600}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-tests .history-result-item .test-result-params{display:flex;flex-direction:column-reverse;align-items:center}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-tests .history-result-item .test-result-params .param-name{font-size:11px}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-tests .history-result-item .test-result-params .param-value{font-size:25px;font-weight:500}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-tests .history-result-item:hover{background-color:#e9f2fa;cursor:pointer}.nfdk-6-0-394-s .pynr-split-view.main-saved-tests-split .left .left-container .saved-tests-list .pynr-expandable .expanded-test-cont .results-tests .selected{background-color:#e9f2fa}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog>.dialog{width:350px;min-height:220px}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog>.dialog>.content{flex-direction:column;padding:10px;justify-content:space-between}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog>.dialog>.content .input-container{height:140px}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog>.dialog>.content .input-container .build-duration-cont{display:flex}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog>.dialog>.content .input-container .build-duration-cont .dd-build-duration{width:160px;padding-right:20px}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog>.dialog>.content .input-container .build-duration-cont .dd-build-day{width:130px}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog>.dialog>.content .input-container .build-duration-cont .dd-build-day.unshow{width:120px;display:none}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog>.dialog>.content .input-container .schema-form .config-block{padding:unset}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog>.dialog>.content .input-container .schema-form .config-block .fields{padding:unset;margin:unset}.nfdk-6-0-

394-s .pynr-dialog-box.schedule-dialog>.dialog>.content .input-container .schema-form .config-block .fields .field{margin:unset;width:160px}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog>.dialog>.content .status-message{color:red;background-color:transparent(#f51745,.1);padding:5px}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog>.dialog>.content .schema-form.unshow,.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog>.dialog>.content>.removable-list-item>.header{display:none}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog .saving-container{display:flex;flex-direction:column;flex:1 1 auto;font-weight:300;justify-content:center}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog .saving-container .saving-text{display:flex;align-self:center}.nfdk-6-0-394-s .pynr-dialog-box.schedule-dialog .saving-container .pynr-action{align-self:center}.nfdk-6-0-394-s .pynr-dashboard-chart-widget{width:150px;height:150px;position:relative;display:flex;align-items:center;justify-content:center}.nfdk-6-0-394-s .pynr-dashboard-chart-widget .chart{transform:rotate(-90deg);position:absolute;top:0;left:0;height:100%;width:100%}.nfdk-6-0-394-s .pynr-dashboard-chart-widget .chart circle{stroke-width:8;transition:stroke-dashoffset 1s ease-in-out;fill:none}.nfdk-6-0-394-s .pynr-dashboard-chart-widget .chart .meter{stroke:#f0f1f8}.nfdk-6-0-394-s .pynr-dashboard-chart-widget .chart .value{stroke-linecap:round}.nfdk-6-0-394-s .pynr-dashboard-chart-widget .text-container{flex:0 0 auto;z-index:1}.nfdk-6-0-394-s .pynr-dashboard-chart-widget .text-container .value{font-weight:300;font-size:2rem;line-height:1.5rem}.nfdk-6-0-394-s .pynr-dashboard-chart-widget .text-container .title{color:#9fa6b8;letter-spacing:.87px;font-size:.8rem;font-weight:600}.nfdk-6-0-394-s .pynr-dashboard-chart-widget.normal .chart .value{stroke:#71c38c}.nfdk-6-0-394-s .pynr-dashboard-chart-widget.normal .text-container .value{color:#71c38c}.nfdk-6-0-394-s .pynr-dashboard-chart-widget.warning .chart .value{stroke:#fdc023}.nfdk-6-0-394-s .pynr-dashboard-chart-widget.warning .text-container .value{color:#fdc023}.nfdk-6-0-394-s .pynr-dashboard-chart-widget.error .chart .value{stroke:#ef6b6c}.nfdk-6-0-394-s .pynr-dashboard-chart-widget.error .text-container .value{color:#ef6b6c}.nfdk-6-0-394-s .pynr-dashboard-text-widget{display:flex;flex-direction:row;align-items:center}.nfdk-6-0-394-s .pynr-dashboard-text-widget .value{font-weight:300;font-size:2rem}.nfdk-6-0-394-s .pynr-dashboard-text-widget .title{color:#9fa6b8;letter-spacing:.87px;font-size:1.5rem;font-weight:400;margin-right:2%}.nfdk-6-0-394-s .pynr-dashboard-text-widget.neutral .value{color:#383f50}.nfdk-6-0-394-s .pynr-dashboard-text-widget.normal .value{color:#71c38c}.nfdk-6-0-394-s .pynr-dashboard-text-widget.warning .value{color:#fdc023}.nfdk-6-0-394-s .pynr-dashboard-text-widget.error .value{color:#ef6b6c}.nfdk-6-0-394-s .pynr-app.dashboard-widget{padding:20px;display:flex;flex-direction:column;overflow:hidden;box-sizing:border-box;height:100%;justify-content:space-between}.nfdk-6-0-394-s .pynr-app.dashboard-widget>.header{height:20px;line-height:20px;padding:0;flex:0 0 auto}.nfdk-6-0-394-s .pynr-app.dashboard-widget>.header .title{letter-spacing:.2px;font-size:1rem;color:#383f50;border:none;font-weight:400}.nfdk-6-0-394-s .pynr-app.dashboard-widget>.children{display:flex;flex-direction:column;flex:1 1 auto;height:unset;justify-content:flex-end}.nfdk-6-0-394-s .pynr-app.dashboard-widget>.children .dashboard-widget-container{display:flex;align-items:center}.nfdk-6-0-394-s .pynr-app.dashboard-widget>.children .dashboard-widget-container>*{flex:1 1 100%}.nfdk-6-0-394-s .pynr-app.dashboard-widget>.children .dashboard-widget-container:not(:last-child){margin-bottom:5px}.nfdk-6-0-394-s .pynr-app.dashboard-widget>.children .dashboard-widget-container.chart{flex:1 1 auto;justify-content:center}.nfdk-6-0-394-s .pynr-server-disconnected-msg{box-sizing:border-box;position:fixed;width:300px;height:120px;top:calc(50% - 80px);left:calc(50% - 170px);background-color:#fff;box-shadow:0 2px 8px rgba(0,0,0,.16);padding:20px;z-index:999;display:flex;flex-direction:column;justify-content:space-between;pointer-events:auto;height:80px;z-index:9999;top:calc(50% - 40px);flex-direction:row}.nfdk-6-0-394-s .pynr-server-disconnected-msg>.title{font-weight:800}.nfdk-6-0-394-s .pynr-server-disconnected-msg .buttons{display:flex;justify-content:flex-end}.nfdk-6-0-394-s .pynr-server-disconnected-msg:after{position:fixed;content:"";top:0;left:0;bottom:0;right:0;background:rgba(59,65,80,.5);pointer-events:none;z-index:-2}.nfdk-6-0-394-s .pynr-server-disconnected-msg:before{position:absolute;content:"";top:0;left:0;bottom:0;right:0;background:#fff;border-radius:4px;z-index:-1}.nfdk-6-0-394-s .pynr-server-disconnected-msg>.icon{font-family:Material Icons;font-weight:400;font-style:normal;display:inline-block;line-height:1;text-transform:none;letter-spacing:normal;word-wrap:normal;white-space:nowrap;direction:ltr;-webkit-font-smoothing:antialiased;text-rendering:optimizeLegibility;-moz-osx-font-smoothing:grayscale;font-feature-settings:"liga";flex:0 0 auto;margin-right:20px;font-size:24px;line-height:40px}.nfdk-6-0-394-s .pynr-server-disconnected-msg>.text{flex:1 1 auto;display:flex;flex-direction:column}.nfdk-6-0-394-s .pynr-server-disconnected-msg>.text>.title{font-weight:800;flex:1 1 auto}.nfdk-6-0-394-s .pynr-server-disconnected-msg:after{pointer-events:auto}

Found in path(s):
* /opt/cola/permits/1452505804_1666900483.3341312/0/nfdk-6-0-394-tar-gz/nfdk-6.0.394/nfdk/pyoneer_s/static/components/components.aeaa5c1160ed28355054.css
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Found in path(s):
* /opt/cola/permits/1452505804_1666900483.3341312/0/nfdk-6-0-394-tar-gz/nfdk-6.0.394/nfdk/pyoneer_s/static/components/code_editor.ad5b7294a3bbc924263c.js
No license file was found, but licenses were detected in source scan.

Metadata-Version: 2.1
Name: nfdk
Version: 6.0.394
Summary: Python sdk for NetFusion
Home-page: https://bitbucket.org/sedonasys/nfdk
Author: Sedona Systems
Author-email: info@sedonasys.com
License: UNKNOWN
Platform: UNKNOWN
Requires-Python: >=3.8

UNKNOWN

Found in path(s):
* /opt/cola/permits/1452505804_1666900483.3341312/0/nfdk-6-0-394-tar-gz/nfdk-6.0.394/PKG-INFO
* /opt/cola/permits/1452505804_1666900483.3341312/0/nfdk-6-0-394-tar-gz/nfdk-6.0.394/nfdk.egg-info/PKG-INFO

1.287 send 0.18.0

1.287.1 Available under license :

(The MIT License)

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Copyright (c) 2014-2022 Douglas Christopher Wilson

1.288 jooq 3.17.2

1.288.1 Available under license :

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/**
* A very simple CSV parser released under a commercial-friendly license. This
* just implements splitting a single line into fields.
*
* @author Glen Smith
* @author Rainer Pruy
*/

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/csv/CSVParser.java
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*/

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/StringUtils.java
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*/

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/reflect/Reflect.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/reflect/Compile.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/reflect/CompileOptions.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-

jar/org/jooq/tools/reflect/ReflectException.java
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/**
* This package contains parts of JSON Simple.
* <p>
* jOOQ has no external dependencies. Nevertheless, some libraries that are
* compatible with jOOQ's Apache License 2.0 are embedded into jOOQ. See the
* JSON Simple website for more details about JSON Simple:
* <p>
* <a href=
* "http://code.google.com/p/json-simple/">http://code.google.com/p/json-simple/
*/

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/json/package-info.java
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* Commercial licenses for this work are available. These replace the above
* ASL 2.0 and offer limited warranties, support, maintenance, and commercial
* database integrations.
*
* For more information, please visit: http://www.jooq.org/licenses
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*/
/**
 * Get a set of supported dialect versions and predecessors given a dialect
 * version.
 * <p>
 * The resulting set of dialects contain all the families and dialect
 * versions that precede the argument dialect, including the argument
 * dialect.
 */

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/SQLDialect.java
No license file was found, but licenses were detected in source scan.

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* the License.
*/

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/Ints.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/Longs.java
No license file was found, but licenses were detected in source scan.

<name>Apache License, Version 2.0</name>

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/META-INF/maven/org.jooq/jooq/pom.xml
No license file was found, but licenses were detected in source scan.

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*/
/**
* A very simple CSV reader released under a commercial-friendly license.
*
* @author Glen Smith
*/

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/csv/CSVReader.java
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*
*

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*/
/**
   * Create a "plain SQL" field.
   * <p>
   * A PlainSQLField is a field that can contain user-defined plain SQL,
   * because sometimes it is easier to express things directly in SQL, for
   * instance complex proprietary functions. There must not be any binding
   * variables contained in the SQL.
   * <p>
   * Example:
   * <p>
   * <pre><code>
   * String sql = "DECODE(MY_FIELD, 1, 100, 200)";
   * </code></pre>
   * <p>
   * <b>NOTE</b>: When inserting plain SQL into jOOQ objects, you must
   * guarantee syntax integrity. You may also create the possibility of
   * malicious SQL injection. Be sure to properly use bind variables and/or
   * escape literals when concatenated into SQL clauses!
   *
   * @param sql The SQL
   * @return A field wrapping the plain SQL
   * @see SQL
   */
/**
   * Create a "plain SQL" field.
   * <p>
   * A PlainSQLField is a field that can contain user-defined plain SQL,
   * because sometimes it is easier to express things directly in SQL, for
   * instance complex proprietary functions. There must be as many binding
   * variables contained in the SQL, as passed in the bindings parameter
   * <p>
   * Example:
   * <p>
```

* <pre><code>
* String sql = "DECODE(MY_FIELD, ?, ?, ?)";
* Object[] bindings = new Object[] { 1, 100, 200 };</code></pre>
* <p>
* NOTE: When inserting plain SQL into jOOQ objects, you must
* guarantee syntax integrity. You may also create the possibility of
* malicious SQL injection. Be sure to properly use bind variables and/or
* escape literals when concatenated into SQL clauses!
*
* @param sql The SQL
* @param bindings The bindings for the field
* @return A field wrapping the plain SQL
* @see SQL
* @see DSL#sql(String, Object...)
*/

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/DSL.java
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*/

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/FlywayVersion.java
No license file was found, but licenses were detected in source scan.

public DomainConstraint createDomainConstraint() {
public Domain createDomain() {

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/util/xml/jaxb/ObjectFactory.java
No license file was found, but licenses were detected in source scan.

public Domain withDomainCatalog(String value) {
public Domain withDomainSchema(String value) {
public Domain withDomainName(String value) {
public Domain withDataType(String value) {
public Domain withCharacterMaximumLength(Integer value) {
public Domain withNumericPrecision(Integer value) {
public Domain withNumericScale(Integer value) {
public Domain withDomainDefault(String value) {

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/util/xml/jaxb/Domain.java
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Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/types/ULong.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/types/UShort.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/types/UByte.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/types/Unsigned.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/types/UInteger.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/types/UNumber.java
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/**
* This package contains parts of OpenCSV.
* <p>
* jOOQ has no external dependencies. Nevertheless, some libraries that are
* compatible with jOOQ's Apache License 2.0 are embedded into jOOQ. See the
* OpenCSV website for more details about OpenCSV:
* <p>
* http://opencsv.sourceforge.net/
*/

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/csv/package-info.java
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Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/json/JSONObject.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/json/JSONArray.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/json/JSONValue.java
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*/
/**
 * Clean up blobs, clobs and the local configuration.
 * <p>
 * <h5>BLOBS and CLOBS</h5>
 * <p>
 * [#1326] This is necessary in those dialects that have long-lived
 * temporary lob objects, which can cause memory leaks in certain contexts,
 * where the lobs' underlying session / connection is long-lived as well.
 * Specifically, Oracle and ojdbc have some trouble when streaming temporary
 * lobs to UDTs:
 *
 * The lob cannot have a call-scoped life time with UDTs
 * Freeing the lob after binding will cause an ORA-22275
 * Not freeing the lob after execution will cause an
 * {@link OutOfMemoryError}
 *
 * <p>
 * <h5>Local configuration</h5>
 * <p>
 * [#1544] There exist some corner-cases regarding the {@link SQLOutput}
 * API, used for UDT serialisation / deserialisation, which have no elegant
 * solutions of obtaining a {@link Configuration} and thus a JDBC
 * {@link Connection} object short of:

*
* Making assumptions about the JDBC driver and using proprietary API,
* e.g. that of ojdbc
* Dealing with this problem globally by using such a local
* configuration
*
*
* @see <a
*   href="http://stackoverflow.com/q/11439543/521799">http://stackoverflow.com/q/11439543/521799
*/

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/DefaultExecuteContext.java
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public DomainConstraint withConstraintCatalog(String value) {
public DomainConstraint withConstraintSchema(String value) {
public DomainConstraint withConstraintName(String value) {
public DomainConstraint withDomainCatalog(String value) {
public DomainConstraint withDomainSchema(String value) {
public DomainConstraint withDomainName(String value) {

Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/util/xml/jaxb/DomainConstraint.java
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Found in path(s):
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/DerivedColumnList9.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/WithAsStep13.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/jdbc/MockConnection.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/SelectSeekStep12.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/RecordImpl16.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/MergeKeyStep7.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/AlterTableRenameColumnToStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Null.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/exception/DataChangedException.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/BetweenCondition.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/MergeNotMatchedSetStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/NotInList.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/AliasedSelect.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/ConstraintForeignKeyReferencesStep11.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Row9.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Function18.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/CreateSequenceFlagsStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/WithAsStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-

jar/org/jooq/impl/PartitionJoinTable.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/LazySupplier.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/MergeMatchedThenStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/Abs.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/DateDiff.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/XMLasDOMBinding.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/SelectLimitPercentAfterOffsetStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Row2.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/SelectStartWithStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/WithAsStep15.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/CursorImpl.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/InsertSetStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/WithTable.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Domain.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/XMLTableColumnsStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/ConnectionRunnable.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/WithAsStep16.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/Diff.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/PlusJoin.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Row22.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/BetweenAndStep2.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Record1.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/CreateViewAsStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/TransactionProvider.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/And.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Spatial.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/TableNe.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/BindingSetStatementContext.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/EmbeddableTableField.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/PivotForStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/RecordImpl12.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/util/h2/H2DataType.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Replacers.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Field.java

* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/LoaderFieldMapper.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Function5.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/MergeMatchedSetMoreStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/MergeValuesStep12.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/QualifiedRowid.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/SelectFieldOrAsterisk.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/XMLTablePassingStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/BitNandAgg.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/DropDomainCascadeStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/LazyName.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/RecordImplN.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Constants.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/ExitWhenStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/DerivedColumnList2.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/WindowDefinitionImpl.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/TableElement.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/CovarPop.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/Substring.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/ArrayTableEmulation.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/LazyVal.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/SQLCondition.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/XMLPi.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/StNumInteriorRings.java
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* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/exception/DataAccessException.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/InformationSchemaMetaImpl.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/SelectQualifyStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/RecordImpl17.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Condition.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/DeleteFinalStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/RowImpl11.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/BatchedRunnable.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/SQLImpl.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/MergeKeyStep2.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Row21.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/LocalDateAsLocalDateTimeBinding.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/CreateTriggerImpl.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/AbstractMeta.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/ArrayRecord.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/StInteriorRingN.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/SQL.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/Collated.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/JSONEntry.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/jdbc/JDBCUtils.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/BetweenAndStep8.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/MergeValuesStep9.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/jdbc/MockArray.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/CreateTriggerWhenStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/exception/NoDataFoundException.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/CreateTriggerEventStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/CloseableQuery.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/BitOrAgg.java

* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/NullStatement.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Row1.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/jdbc/SingleConnectionDataSource.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/LoaderLoadStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/AbstractDelegatingDMLQuery.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/TransactionListener.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/util/h2/H2DSL.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/AbstractNamed.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/AbstractResultQuery.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/WithAsStep7.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/Identifiers.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/MergeValuesStep14.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Param.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/RecordImpl14.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Version.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Records.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/GenerateSeries.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Record6.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/DeleteQuery.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Parameter.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/StDisjoint.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/SelectSeekStep18.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/AbstractFunction.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/InsertOnDuplicateSetStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/jdbc/DefaultCallableStatement.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/WithAsStep2.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/BatchMultiple.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/WindowSpecificationFinalStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/QOM.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/Level.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/StSrid.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/CallArgsStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/DefaultRecordListenerProvider.java

* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/RecordImpl6.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/util/mysql/MySQLDSL.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/CharacterSet.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/Contains.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/Function16.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/ReferenceImpl.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/FieldsImpl.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/SelectConnectByAfterStartWithStep.java
* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/impl/AbstractDMLQuery.java

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* This package contains parts of jOOR.
* <p>
* jOOQ has no external dependencies. Nevertheless, some libraries that are
* compatible with jOOQ's Apache License 2.0 are embedded into jOOQ. See the
* jOOR website for more details about jOOR:
* <p>
* https://github.com/jOOQ/jOOR
*/

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* /opt/cola/permits/1452682050_1666815544.8658907/0/jooq-3-17-2-sources-1-jar/org/jooq/tools/reflect/package-info.java

1.289 normalize-path 3.0.0

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1.290 is-fullwidth-code-point 3.0.0

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1.291 vertx-web-proxy 4.3.2

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* /opt/cola/permits/1452682056_1666815537.6252985/0/vertx-web-proxy-4-3-2-sources-1-jar/io/vertx/ext/web/proxy/handler/ProxyHandler.java

1.292 libtirpc 1.3.2-r1

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1.293 go.opentelemetry.io-otel 1.0.1

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// Based on ISO/IEC 9899:TC2 Committee draft (May 6, 2005) WG14/N1124
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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6.

Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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That's all there is to it!
DRuntime: Runtime Library for the D Programming Language
==

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GCC RUNTIME LIBRARY EXCEPTION

Version 3.1, 31 March 2009

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Version 3, 29 June 2007

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Version 3, 29 June 2007

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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1.309 jackc-pgproto 2.3.0

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1.310 grpc-gateway 1.16.0

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1.311 libuv 1.43.0

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1.319 pyparsing 3.0.9

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1.320 fs.realpath 1.0.0

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1.321 backports-abc 0.5

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the

software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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1.322 libgomp 11.2.1_git20220219-r2

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Version 3, 29 June 2007

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Version 2, June 1991

[This is the first released version of the library GPL. It is
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1.324 iproute2-minimal 5.17.0-r0

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1.330 slf4j 1.7.36

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URL: https://github.com/jeroen/openssl#readme
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SystemRequirements: OpenSSL >= 1.0.1
RoxygenNote: 6.1.1
VignetteBuilder: knitr
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Version: 1.1
Suggests: testthat, digest, knitr, rmarkdown, jsonlite, jose
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1.333 py3-ordered-set 4.0.2-r3

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1.334 libcap 2.64-r0

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1.335 libgpg-error 1.45-r0

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1.336 tre 0.8.0

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1.337 musl 1.2.3-r0

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1.338 go-grpc-prometheus 1.2.0

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1.339 musl-obstack 1.2.3-r0

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1.340 py3-parsing 2.4.7-r3

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1.341 lru-cache 6.0.0

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1.342 agentkeepalive 4.2.1

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1.343 afero 1.0.5

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1.344 gssapi 1.7.3

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1.345 zlib 1.2.12-r3

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1.346 ssl-client 1.35.0-r17

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Name: itsdangerous
Version: 2.1.2
Summary: Safely pass data to untrusted environments and back.

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ItsDangerous
============

... so better sign this

Various helpers to pass data to untrusted environments and to get it
back safe and sound. Data is cryptographically signed to ensure that a
token has not been tampered with.

It's possible to customize how data is serialized. Data is compressed as
needed. A timestamp can be added and verified automatically while
loading a token.

Installing

Install and update using `pip`_:

.. code-block:: text

    pip install -U itsdangerous

.. _pip: https://pip.pypa.io/en/stable/getting-started/

A Simple Example

Here's how you could generate a token for transmitting a user's id and
name between web requests.

.. code-block:: python

```
from itsdangerous import URLSafeSerializer
auth_s = URLSafeSerializer("secret key", "auth")
token = auth_s.dumps({"id": 5, "name": "itsdangerous"})

print(token)
# eyJpZCI6NSwibmFtZSI6Iml0c2Rhbmdlcm91cyJ9.6YP6T0BaO67XP--9UzTrmurXSmg

data = auth_s.loads(token)
print(data["name"])
# itsdangerous
```

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- Chat: https://discord.gg/pallets

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* /opt/cola/permits/1294198813_1649055045.06/0/itsdangerous-2-1-2-tar-gz/itsdangerous-2.1.2/src/itsdangerous.egg-info/PKG-INFO
* /opt/cola/permits/1294198813_1649055045.06/0/itsdangerous-2-1-2-tar-gz/itsdangerous-2.1.2/PKG-INFO

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Found in path(s):
* /opt/cola/permits/1294198813_1649055045.06/0/itsdangerous-2-1-2-tar-gz/itsdangerous-2.1.2/LICENSE.rst
No license file was found, but licenses were detected in source scan.

[metadata]
name = itsdangerous
version = attr: itsdangerous.__version__
url = https://palletsprojects.com/p/itsdangerous/
project_urls =
 Donate = https://palletsprojects.com/donate
 Documentation = https://itsdangerous.palletsprojects.com/
 Changes = https://itsdangerous.palletsprojects.com/changes/
 Source Code = https://github.com/pallets/itsdangerous/
 Issue Tracker = https://github.com/pallets/itsdangerous/issues/
 Twitter = https://twitter.com/PalletsTeam
 Chat = https://discord.gg/pallets
license = BSD-3-Clause

```
license_files = LICENSE.rst
author = Armin Ronacher
author_email = armin.ronacher@active-4.com
maintainer = Pallets
maintainer_email = contact@palletsprojects.com
description = Safely pass data to untrusted environments and back.
long_description = file: README.rst
long_description_content_type = text/x-rst
classifiers =
 Development Status :: 5 - Production/Stable
 Intended Audience :: Developers
 License :: OSI Approved :: BSD License
 Operating System :: OS Independent
 Programming Language :: Python

[options]
packages = find:
package_dir = = src
include_package_data = True
python_requires = >= 3.7

[options.packages.find]
where = src

[tool:pytest]
testpaths = tests
filterwarnings =
 error

[coverage:run]
branch = True
source =
 itsdangerous
 tests

[coverage:paths]
source =
 src
 */site-packages

[flake8]
select = B, E, F, W, B9, ISC
ignore =
 E203
 E501
 E722
 W503
max-line-length = 80
```

per-file-ignores =
 src/itsdangerous/__init__.py: F401

[mypy]
files = src/itsdangerous
python_version = 3.7
show_error_codes = True
disallow_subclassing_any = True
disallow_untyped_calls = True
disallow_untyped_defs = True
disallow_incomplete_defs = True
no_implicit_optional = True
local_partial_types = True
no_implicit_reexport = True
strict_equality = True
warn_redundant_casts = True
warn_unused_configs = True
warn_unused_ignores = True
warn_return_any = True
warn_unreachable = True

[mypy-itsdangerous.jws]
disallow_untyped_defs = False

[egg_info]
tag_build =
tag_date = 0

Found in path(s):
* /opt/cola/permits/1294198813_1649055045.06/0/itsdangerous-2-1-2-tar-gz/itsdangerous-2.1.2/setup.cfg

1.358 postgre-sql 13.8

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1.359 sqlalchemy 1.4.42

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Metadata-Version: 2.1
Name: types-SQLAlchemy
Version: 1.4.42
Summary: Typing stubs for SQLAlchemy
Home-page: https://github.com/python/typeshed
License: Apache-2.0 license
Project-URL: GitHub, https://github.com/python/typeshed
Project-URL: Changes, https://github.com/typeshed-internal/stub_uploader/blob/main/data/changelogs/SQLAlchemy.md
Project-URL: Issue tracker, https://github.com/python/typeshed/issues
Project-URL: Chat, https://gitter.im/python/typing
Platform: UNKNOWN
Classifier: License :: OSI Approved :: Apache Software License
Classifier: Programming Language :: Python :: 3
Classifier: Typing :: Stubs Only
Description-Content-Type: text/markdown

Typing stubs for SQLAlchemy

This is a PEP 561 type stub package for the `SQLAlchemy` package.
It can be used by type-checking tools like mypy, PyCharm, pytype etc. to check code
that uses `SQLAlchemy`. The source for this package can be found at
https://github.com/python/typeshed/tree/master/stubs/SQLAlchemy. All fixes for
types and metadata should be contributed there.

The `sqlalchemy-stubs` package is an alternative to this package and also includes a mypy plugin for more precise types.

See https://github.com/python/typeshed/blob/master/README.md for more details.
This package was generated from typeshed commit `9ccf4589a0cc8f0c5a8cc2c07c485da6d7118767`.

Found in path(s):
* /opt/cola/permits/1444582911_1666813582.1409414/0/types-sqlalchemy-1-4-42-tar-gz/types-SQLAlchemy-1.4.42/types_SQLAlchemy.egg-info/PKG-INFO
* /opt/cola/permits/1444582911_1666813582.1409414/0/types-sqlalchemy-1-4-42-tar-gz/types-SQLAlchemy-1.4.42/PKG-INFO

1.360 request 2.88.2

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1.361 gauge 4.0.4

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1.362 asyncssh 2.10.1

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1.363 ca-certificates 20220614-r0

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#
# certdata.txt
#
# This file contains the object definitions for the certs and other
# information "built into" NSS.
#
# Object definitions:
#
#    Certificates
#
#  -- Attribute --               -- type --          -- value --
#  CKA_CLASS                     CK_OBJECT_CLASS     CKO_CERTIFICATE
#  CKA_TOKEN                     CK_BBOOL            CK_TRUE
#  CKA_PRIVATE                   CK_BBOOL            CK_FALSE
#  CKA_MODIFIABLE                CK_BBOOL            CK_FALSE
#  CKA_LABEL                     UTF8                (varies)
#  CKA_CERTIFICATE_TYPE          CK_CERTIFICATE_TYPE CKC_X_509
#  CKA_SUBJECT                   DER+base64          (varies)
#  CKA_ID                        byte array          (varies)
#  CKA_ISSUER                    DER+base64          (varies)
#  CKA_SERIAL_NUMBER             DER+base64          (varies)
#  CKA_VALUE                     DER+base64          (varies)
```

```
#  CKA_NSS_EMAIL                 ASCII7             (unused here)
#  CKA_NSS_SERVER_DISTRUST_AFTER DER+base64         (varies)
#  CKA_NSS_EMAIL_DISTRUST_AFTER  DER+base64         (varies)
#
#    Trust
#
#  -- Attribute --              -- type --          -- value --
#  CKA_CLASS                  CK_OBJECT_CLASS     CKO_TRUST
#  CKA_TOKEN                  CK_BBOOL          CK_TRUE
#  CKA_PRIVATE                CK_BBOOL          CK_FALSE
#  CKA_MODIFIABLE             CK_BBOOL          CK_FALSE
#  CKA_LABEL                  UTF8              (varies)
#  CKA_ISSUER                 DER+base64         (varies)
#  CKA_SERIAL_NUMBER           DER+base64         (varies)
#  CKA_CERT_HASH              binary+base64      (varies)
#  CKA_EXPIRES                CK_DATE            (not used here)
#  CKA_TRUST_DIGITAL_SIGNATURE  CK_TRUST          (varies)
#  CKA_TRUST_NON_REPUDIATION    CK_TRUST          (varies)
#  CKA_TRUST_KEY_ENCIPHERMENT   CK_TRUST          (varies)
#  CKA_TRUST_DATA_ENCIPHERMENT  CK_TRUST          (varies)
#  CKA_TRUST_KEY_AGREEMENT     CK_TRUST          (varies)
#  CKA_TRUST_KEY_CERT_SIGN     CK_TRUST          (varies)
#  CKA_TRUST_CRL_SIGN          CK_TRUST          (varies)
#  CKA_TRUST_SERVER_AUTH       CK_TRUST          (varies)
#  CKA_TRUST_CLIENT_AUTH       CK_TRUST          (varies)
#  CKA_TRUST_CODE_SIGNING      CK_TRUST          (varies)
#  CKA_TRUST_EMAIL_PROTECTION   CK_TRUST          (varies)
#  CKA_TRUST_IPSEC_END_SYSTEM   CK_TRUST          (varies)
#  CKA_TRUST_IPSEC_TUNNEL      CK_TRUST          (varies)
#  CKA_TRUST_IPSEC_USER        CK_TRUST          (varies)
#  CKA_TRUST_TIME_STAMPING     CK_TRUST          (varies)
#  CKA_TRUST_STEP_UP_APPROVED   CK_BBOOL          (varies)
#  (other trust attributes can be defined)
#

#
# The object to tell NSS that this is a root list and we don't
# have to go looking for others.
#
BEGINDATA
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_BUILTIN_ROOT_LIST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Mozilla Builtin Roots"

#
# Certificate "GlobalSign Root CA"
```

#
Issuer: CN=GlobalSign Root CA,OU=Root CA,O=GlobalSign nv-sa,C=BE
Serial Number:04:00:00:00:00:01:15:4b:5a:c3:94
Subject: CN=GlobalSign Root CA,OU=Root CA,O=GlobalSign nv-sa,C=BE
Not Valid Before: Tue Sep 01 12:00:00 1998
Not Valid After : Fri Jan 28 12:00:00 2028
Fingerprint (SHA-256):
EB:D4:10:40:E4:BB:3E:C7:42:C9:E3:81:D3:1E:F2:A4:1A:48:B6:68:5C:96:E7:CE:F3:C1:DF:6C:D4:33:1C:99
Fingerprint (SHA1): B1:BC:96:8B:D4:F4:9D:62:2A:A8:9A:81:F2:15:01:52:A4:1D:82:9C
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\020\060\016\006\003
\125\004\013\023\007\122\157\157\164\040\103\101\061\033\060\031
\006\003\125\004\003\023\022\107\154\157\142\141\154\123\151\147
\156\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\020\060\016\006\003
\125\004\013\023\007\122\157\157\164\040\103\101\061\033\060\031
\006\003\125\004\003\023\022\107\154\157\142\141\154\123\151\147
\156\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\025\113\132\303\224
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\165\060\202\002\135\240\003\002\001\002\002\013\004
\000\000\000\000\001\025\113\132\303\224\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\060\127\061\013\060\011\006
\003\125\004\006\023\002\102\105\061\031\060\027\006\003\125\004
\012\023\020\107\154\157\142\141\154\123\151\147\156\040\156\166
\055\163\141\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\033\060\031\006\003\125\004\003\023\022
\107\154\157\142\141\154\123\151\147\156\040\122\157\157\164\040
\103\101\060\036\027\015\071\070\060\071\060\061\061\062\060\060
\060\060\132\027\015\062\070\060\061\062\070\061\062\060\060\060
\060\132\060\127\061\013\060\011\006\003\125\004\006\023\002\102
\105\061\031\060\027\006\003\125\004\012\023\020\107\154\157\142

\141\154\123\151\147\156\040\156\166\055\163\141\061\020\060\016
\006\003\125\004\013\023\007\122\157\157\164\040\103\101\061\033
\060\031\006\003\125\004\003\023\022\107\154\157\142\141\154\123
\151\147\156\040\122\157\157\164\040\103\101\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\332\016\346\231
\215\316\243\343\117\212\176\373\361\213\203\045\153\352\110\037
\361\052\260\271\225\021\004\275\360\143\321\342\147\146\317\034
\335\317\033\110\053\356\215\211\216\232\257\051\200\145\253\351
\307\055\022\313\253\034\114\160\007\241\075\012\060\315\025\215
\117\370\335\324\214\120\025\034\357\120\356\304\056\367\374\351
\122\362\221\175\340\155\325\065\060\216\136\103\163\362\101\351
\325\152\343\262\211\072\126\071\070\157\006\074\210\151\133\052
\115\305\247\124\270\154\211\314\233\371\074\312\345\375\211\365
\022\074\222\170\226\326\334\164\156\223\104\141\321\215\307\106
\262\165\016\206\350\031\212\325\155\154\325\170\026\225\242\351
\310\012\070\353\362\044\023\117\163\124\223\023\205\072\033\274
\036\064\265\213\005\214\271\167\213\261\333\037\040\221\253\011
\123\156\220\316\173\067\164\271\160\107\221\042\121\143\026\171
\256\261\256\101\046\010\310\031\053\321\106\252\110\326\144\052
\327\203\064\377\054\052\301\154\031\103\112\007\205\347\323\174
\366\041\150\357\352\362\122\237\177\223\220\317\002\003\001\000
\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\140\173\146\032\105\015\227\312\211\120\057\175\004\315\064
\250\377\374\375\113\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\001\001\000\326\163\347\174\117\166\320
\215\277\354\272\242\276\064\305\050\062\265\174\374\154\234\054
\053\275\011\236\123\277\153\136\252\021\110\266\345\010\243\263
\312\075\141\115\323\106\011\263\076\303\240\343\143\125\033\362
\272\357\255\071\341\103\271\070\243\346\057\212\046\073\357\240
\120\126\371\306\012\375\070\315\304\013\160\121\224\227\230\004
\337\303\137\224\325\025\311\024\101\234\304\135\165\144\025\015
\377\125\060\354\206\217\377\015\357\054\271\143\106\366\252\374
\337\274\151\375\056\022\110\144\232\340\225\360\246\357\051\217
\001\261\025\265\014\035\245\376\151\054\151\044\170\036\263\247
\034\161\142\356\312\310\227\254\027\135\212\302\370\107\206\156
\052\304\126\061\225\320\147\211\205\053\371\154\246\135\106\235
\014\252\202\344\231\121\335\160\267\333\126\075\141\344\152\341
\134\326\366\376\075\336\101\314\007\256\143\122\277\123\123\364
\053\351\307\375\266\367\202\137\205\322\101\030\333\201\263\004
\034\305\037\244\200\157\025\040\311\336\014\210\012\035\326\146
\125\342\374\110\311\051\046\151\340
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root CA"
Issuer: CN=GlobalSign Root CA,OU=Root CA,O=GlobalSign nv-sa,C=BE
Serial Number:04:00:00:00:00:01:15:4b:5a:c3:94
Subject: CN=GlobalSign Root CA,OU=Root CA,O=GlobalSign nv-sa,C=BE
Not Valid Before: Tue Sep 01 12:00:00 1998
Not Valid After : Fri Jan 28 12:00:00 2028
Fingerprint (SHA-256):
EB:D4:10:40:E4:BB:3E:C7:42:C9:E3:81:D3:1E:F2:A4:1A:48:B6:68:5C:96:E7:CE:F3:C1:DF:6C:D4:33:1C:99
Fingerprint (SHA1): B1:BC:96:8B:D4:F4:9D:62:2A:A8:9A:81:F2:15:01:52:A4:1D:82:9C
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\261\274\226\213\324\364\235\142\052\250\232\201\362\025\001\122
\244\035\202\234
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\076\105\122\025\011\121\222\341\267\135\067\237\261\207\051\212
END
CKA_ISSUER MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\020\060\016\006\003
\125\004\013\023\007\122\157\157\164\040\103\101\061\033\060\031
\006\003\125\004\003\023\022\107\154\157\142\141\154\123\151\147
\156\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\025\113\132\303\224
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Verisign Class 1 Public Primary Certification Authority - G3"
#
Issuer: CN=VeriSign Class 1 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Serial Number:00:8b:5b:75:56:84:54:85:0b:00:cf:af:38:48:ce:b1:a4
Subject: CN=VeriSign Class 1 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Not Valid Before: Fri Oct 01 00:00:00 1999
Not Valid After : Wed Jul 16 23:59:59 2036

Fingerprint (SHA-256):
CB:B5:AF:18:5E:94:2A:24:02:F9:EA:CB:C0:ED:5B:B8:76:EE:A3:C1:22:36:23:D0:04:47:E4:F3:BA:55:4B:65
Fingerprint (SHA1): 20:42:85:DC:F7:EB:76:41:95:57:8E:13:6B:D4:B7:D1:E9:8E:46:A5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Verisign Class 1 Public Primary Certification Authority - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\061\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\061\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\213\133\165\126\204\124\205\013\000\317\257\070\110
\316\261\244
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\032\060\202\003\002\002\021\000\213\133\165\126\204
\124\205\013\000\317\257\070\110\316\261\244\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\060\201\312\061\013\060

\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\126\145\162\151\123\151\147\156\054\040\111
\156\143\056\061\037\060\035\006\003\125\004\013\023\026\126\145
\162\151\123\151\147\156\040\124\162\165\163\164\040\116\145\164
\167\157\162\153\061\072\060\070\006\003\125\004\013\023\061\050
\143\051\040\061\071\071\071\040\126\145\162\151\123\151\147\156
\054\040\111\156\143\056\040\055\040\106\157\162\040\141\165\164
\150\157\162\151\172\145\144\040\165\163\145\040\157\156\154\171
\061\105\060\103\006\003\125\004\003\023\074\126\145\162\151\123
\151\147\156\040\103\154\141\163\163\040\061\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\063\060\036\027\015\071\071\061\060\060
\061\060\060\060\060\060\060\132\027\015\063\066\060\067\061\066
\062\063\065\071\065\071\132\060\201\312\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\027\060\025\006\003\125\004\012
\023\016\126\145\162\151\123\151\147\156\054\040\111\156\143\056
\061\037\060\035\006\003\125\004\013\023\026\126\145\162\151\123
\151\147\156\040\124\162\165\163\164\040\116\145\164\167\157\162
\153\061\072\060\070\006\003\125\004\013\023\061\050\143\051\040
\061\071\071\071\040\126\145\162\151\123\151\147\156\054\040\111
\156\143\056\040\055\040\106\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\105\060
\103\006\003\125\004\003\023\074\126\145\162\151\123\151\147\156
\040\103\154\141\163\163\040\061\040\120\165\142\154\151\143\040
\120\162\151\155\141\162\171\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040
\055\040\107\063\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\335\204\324\271\264\371\247\330\363\004\170
\234\336\075\334\154\023\026\331\172\335\044\121\146\300\307\046
\131\015\254\006\010\302\224\321\063\037\360\203\065\037\156\033
\310\336\252\156\025\116\124\047\357\304\155\032\354\013\343\016
\360\104\245\127\307\100\130\036\243\107\037\161\354\140\366\155
\224\310\030\071\355\376\102\030\126\337\344\114\111\020\170\116
\001\166\065\143\022\066\335\146\274\001\004\066\243\125\150\325
\242\066\011\254\253\041\046\124\006\255\077\312\024\340\254\312
\255\006\035\225\342\370\235\361\340\140\377\302\177\165\053\114
\314\332\376\207\231\041\352\272\376\076\124\327\322\131\170\333
\074\156\317\240\023\000\032\270\047\241\344\276\147\226\312\240
\305\263\234\335\311\165\236\353\060\232\137\243\315\331\256\170
\031\077\043\351\134\333\051\275\255\125\310\033\124\214\143\366
\350\246\352\307\067\022\134\243\051\036\002\331\333\037\073\264
\327\017\126\107\201\025\004\112\257\203\047\321\305\130\210\301
\335\366\252\247\243\030\332\150\252\155\021\121\341\277\145\153
\237\226\166\321\075\002\003\001\000\001\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\253\146
\215\327\263\272\307\232\266\346\125\320\005\361\237\061\215\132

\252\331\252\106\046\017\161\355\245\255\123\126\142\001\107\052
\104\351\376\077\164\013\023\233\271\364\115\033\262\321\137\262
\266\322\210\134\263\237\315\313\324\247\331\140\225\204\072\370
\301\067\035\141\312\347\260\305\345\221\332\124\246\254\061\201
\256\227\336\315\010\254\270\300\227\200\177\156\162\244\347\151
\023\225\145\037\304\223\074\375\171\217\004\324\076\117\352\367
\236\316\315\147\174\117\145\002\377\221\205\124\163\307\377\066
\367\206\055\354\320\136\117\377\021\237\162\006\326\270\032\361
\114\015\046\145\342\104\200\036\307\237\343\335\350\012\332\354
\245\040\200\151\150\241\117\176\341\153\317\007\101\372\203\216
\274\070\335\260\056\021\261\153\262\102\314\232\274\371\110\042
\171\112\031\017\262\034\076\040\164\331\152\303\276\362\050\170
\023\126\171\117\155\120\352\033\260\265\127\261\067\146\130\043
\363\334\017\337\012\207\304\357\206\005\325\070\024\140\231\243
\113\336\006\226\161\054\362\333\266\037\244\357\077\356
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
For Email Distrust After: Wed Aug 31 00:00:00 2022
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\062\060\070\063\061\060\060\060\060\060\060\132
END

Trust for "Verisign Class 1 Public Primary Certification Authority - G3"
Issuer: CN=VeriSign Class 1 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Serial Number:00:8b:5b:75:56:84:54:85:0b:00:cf:af:38:48:ce:b1:a4
Subject: CN=VeriSign Class 1 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Not Valid Before: Fri Oct 01 00:00:00 1999
Not Valid After : Wed Jul 16 23:59:59 2036
Fingerprint (SHA-256):
CB:B5:AF:18:5E:94:2A:24:02:F9:EA:CB:C0:ED:5B:B8:76:EE:A3:C1:22:36:23:D0:04:47:E4:F3:BA:55:4B:65
Fingerprint (SHA1): 20:42:85:DC:F7:EB:76:41:95:57:8E:13:6B:D4:B7:D1:E9:8E:46:A5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Verisign Class 1 Public Primary Certification Authority - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\040\102\205\334\367\353\166\101\225\127\216\023\153\324\267\321
\351\216\106\245
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\261\107\274\030\127\321\030\240\170\055\354\161\350\052\225\163
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123

\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\061\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\213\133\165\126\204\124\205\013\000\317\257\070\110
\316\261\244
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Verisign Class 2 Public Primary Certification Authority - G3"
#
Issuer: CN=VeriSign Class 2 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Serial Number:61:70:cb:49:8c:5f:98:45:29:e7:b0:a6:d9:50:5b:7a
Subject: CN=VeriSign Class 2 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Not Valid Before: Fri Oct 01 00:00:00 1999
Not Valid After : Wed Jul 16 23:59:59 2036
Fingerprint (SHA-256):
92:A9:D9:83:3F:E1:94:4D:B3:66:E8:BF:AE:7A:95:B6:48:0C:2D:6C:6C:2A:1B:E6:5D:42:36:B6:08:FC:A1:BB
Fingerprint (SHA1): 61:EF:43:D7:7F:CA:D4:61:51:BC:98:E0:C3:59:12:AF:9F:EB:63:11
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Verisign Class 2 Public Primary Certification Authority - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145

\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\062\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\062\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\141\160\313\111\214\137\230\105\051\347\260\246\331\120
\133\172
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\031\060\202\003\001\002\020\141\160\313\111\214\137
\230\105\051\347\260\246\331\120\133\172\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\060\201\312\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003\125
\004\012\023\016\126\145\162\151\123\151\147\156\054\040\111\156
\143\056\061\037\060\035\006\003\125\004\013\023\026\126\145\162
\151\123\151\147\156\040\124\162\165\163\164\040\116\145\164\167
\157\162\153\061\072\060\070\006\003\125\004\013\023\061\050\143
\051\040\061\071\071\071\040\126\145\162\151\123\151\147\156\054
\040\111\156\143\056\040\055\040\106\157\162\040\141\165\164\150
\157\162\151\172\145\144\040\165\163\145\040\157\156\154\171\061
\105\060\103\006\003\125\004\003\023\074\126\145\162\151\123\151
\147\156\040\103\154\141\163\163\040\062\040\120\165\142\154\151
\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\063\060\036\027\015\071\071\061\060\060\061
\060\060\060\060\060\060\132\027\015\063\066\060\067\061\066\062
\063\065\071\065\071\132\060\201\312\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\027\060\025\006\003\125\004\012\023

\016\126\145\162\151\123\151\147\156\054\040\111\156\143\056\061
\037\060\035\006\003\125\004\013\023\026\126\145\162\151\123\151
\147\156\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\072\060\070\006\003\125\004\013\023\061\050\143\051\040\061
\071\071\071\040\126\145\162\151\123\151\147\156\054\040\111\156
\143\056\040\055\040\106\157\162\040\141\165\164\150\157\162\151
\172\145\144\040\165\163\145\040\157\156\154\171\061\105\060\103
\006\003\125\004\003\023\074\126\145\162\151\123\151\147\156\040
\103\154\141\163\163\040\062\040\120\165\142\154\151\143\040\120
\162\151\155\141\162\171\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\055
\040\107\063\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\257\012\015\302\325\054\333\147\271\055\345\224
\047\335\245\276\340\260\115\217\263\141\126\074\326\174\303\364
\315\076\206\313\242\210\342\341\330\244\151\305\265\342\277\301
\246\107\120\136\106\071\213\325\226\272\265\157\024\277\020\316
\047\023\236\005\107\233\061\172\023\330\037\331\323\002\067\213
\255\054\107\360\216\201\006\247\015\060\014\353\367\074\017\040
\035\334\162\106\356\245\002\310\133\303\311\126\151\114\305\030
\301\221\173\013\325\023\000\233\274\357\303\110\076\106\140\040
\205\052\325\220\266\315\213\240\314\062\335\267\375\100\125\262
\120\034\126\256\314\215\167\115\307\040\115\247\061\166\357\150
\222\212\220\036\010\201\126\262\255\151\243\122\320\313\034\304
\043\075\037\231\376\114\350\026\143\216\306\010\216\366\061\366
\322\372\345\166\335\265\034\222\243\111\315\315\001\315\150\315
\251\151\272\243\353\035\015\234\244\040\246\301\240\305\321\106
\114\027\155\322\254\146\077\226\214\340\204\324\066\377\042\131
\305\371\021\140\250\137\004\175\362\032\366\045\102\141\017\304
\112\270\076\211\002\003\001\000\001\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\001\001\000\064\046\025
\074\300\215\115\103\111\035\275\351\041\222\327\146\234\267\336
\305\270\320\344\135\137\166\042\300\046\371\204\072\072\371\214
\265\373\354\140\361\350\316\004\260\310\335\247\003\217\060\363
\230\337\244\346\244\061\337\323\034\013\106\334\162\040\077\256
\356\005\074\244\063\077\013\071\254\160\170\163\113\231\053\337
\060\302\124\260\250\073\125\241\376\026\050\315\102\275\164\156
\200\333\047\104\247\316\104\135\324\033\220\230\015\036\102\224
\261\000\054\004\320\164\243\002\005\042\143\143\315\203\265\373
\301\155\142\153\151\165\375\135\160\101\271\365\277\174\337\276
\301\062\163\042\041\213\130\201\173\025\221\172\272\343\144\110
\260\177\373\066\045\332\225\320\361\044\024\027\335\030\200\153
\106\043\071\124\365\216\142\011\004\035\224\220\246\233\346\045
\342\102\105\252\270\220\255\276\010\217\251\013\102\030\224\317
\162\071\341\261\103\340\050\317\267\347\132\154\023\153\111\263
\377\343\030\174\211\213\063\135\254\063\327\247\371\332\072\125
\311\130\020\371\252\357\132\266\317\113\113\337\052
END

CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
For Email Distrust After: Wed Aug 31 00:00:00 2022
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\062\060\070\063\061\060\060\060\060\060\060\132
END

Trust for "Verisign Class 2 Public Primary Certification Authority - G3"
Issuer: CN=VeriSign Class 2 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Serial Number:61:70:cb:49:8c:5f:98:45:29:e7:b0:a6:d9:50:5b:7a
Subject: CN=VeriSign Class 2 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Not Valid Before: Fri Oct 01 00:00:00 1999
Not Valid After : Wed Jul 16 23:59:59 2036
Fingerprint (SHA-256):
92:A9:D9:83:3F:E1:94:4D:B3:66:E8:BF:AE:7A:95:B6:48:0C:2D:6C:6C:2A:1B:E6:5D:42:36:B6:08:FC:A1:BB
Fingerprint (SHA1): 61:EF:43:D7:7F:CA:D4:61:51:BC:98:E0:C3:59:12:AF:9F:EB:63:11
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Verisign Class 2 Public Primary Certification Authority - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\141\357\103\327\177\312\324\141\121\274\230\340\303\131\022\257
\237\353\143\021
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\370\276\304\143\042\311\250\106\164\213\270\035\036\112\053\366
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\062\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\141\160\313\111\214\137\230\105\051\347\260\246\331\120
\133\172

END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust.net Premium 2048 Secure Server CA"
#
Issuer: CN=Entrust.net Certification Authority (2048),OU=(c) 1999 Entrust.net Limited,OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.),O=Entrust.net
Serial Number: 946069240 (0x3863def8)
Subject: CN=Entrust.net Certification Authority (2048),OU=(c) 1999 Entrust.net Limited,OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.),O=Entrust.net
Not Valid Before: Fri Dec 24 17:50:51 1999
Not Valid After : Tue Jul 24 14:15:12 2029
Fingerprint (SHA-256):
6D:C4:71:72:E0:1C:BC:B0:BF:62:58:0D:89:5F:E2:B8:AC:9A:D4:F8:73:80:1E:0C:10:B9:C8:37:D2:1E:B1:77
Fingerprint (SHA1): 50:30:06:09:1D:97:D4:F5:AE:39:F7:CB:E7:92:7D:7D:65:2D:34:31
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust.net Premium 2048 Secure Server CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\264\061\024\060\022\006\003\125\004\012\023\013\105\156
\164\162\165\163\164\056\156\145\164\061\100\060\076\006\003\125
\004\013\024\067\167\167\167\056\145\156\164\162\165\163\164\056
\156\145\164\057\103\120\123\137\062\060\064\070\040\151\156\143
\157\162\160\056\040\142\171\040\162\145\146\056\040\050\154\151
\155\151\164\163\040\154\151\141\142\056\051\061\045\060\043\006
\003\125\004\013\023\034\050\143\051\040\061\071\071\071\040\105
\156\164\162\165\163\164\056\156\145\164\040\114\151\155\151\164
\145\144\061\063\060\061\006\003\125\004\003\023\052\105\156\164
\162\165\163\164\056\156\145\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\050\062\060\064\070\051
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\264\061\024\060\022\006\003\125\004\012\023\013\105\156
\164\162\165\163\164\056\156\145\164\061\100\060\076\006\003\125
\004\013\024\067\167\167\167\056\145\156\164\162\165\163\164\056
\156\145\164\057\103\120\123\137\062\060\064\070\040\151\156\143
\157\162\160\056\040\142\171\040\162\145\146\056\040\050\154\151
\155\151\164\163\040\154\151\141\142\056\051\061\045\060\043\006
\003\125\004\013\023\034\050\143\051\040\061\071\071\071\040\105

\156\164\162\165\163\164\056\156\145\164\040\114\151\155\151\164
\145\144\061\063\060\061\006\003\125\004\003\023\052\105\156\164
\162\165\163\164\056\156\145\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\050\062\060\064\070\051
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\070\143\336\370
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\052\060\202\003\022\240\003\002\001\002\002\004\070
\143\336\370\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\201\264\061\024\060\022\006\003\125\004\012\023\013
\105\156\164\162\165\163\164\056\156\145\164\061\100\060\076\006
\003\125\004\013\024\067\167\167\167\056\145\156\164\162\165\163
\164\056\156\145\164\057\103\120\123\137\062\060\064\070\040\151
\156\143\157\162\160\056\040\142\171\040\162\145\146\056\040\050
\154\151\155\151\164\163\040\154\151\141\142\056\051\061\045\060
\043\006\003\125\004\013\023\034\050\143\051\040\061\071\071\071
\040\105\156\164\162\165\163\164\056\156\145\164\040\114\151\155
\151\164\145\144\061\063\060\061\006\003\125\004\003\023\052\105
\156\164\162\165\163\164\056\156\145\164\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\050\062\060\064\070\051\060\036\027\015\071\071\061
\062\062\064\061\067\065\060\065\061\132\027\015\062\071\060\067
\062\064\061\064\061\065\061\062\132\060\201\264\061\024\060\022
\006\003\125\004\012\023\013\105\156\164\162\165\163\164\056\156
\145\164\061\100\060\076\006\003\125\004\013\024\067\167\167\167
\056\145\156\164\162\165\163\164\056\156\145\164\057\103\120\123
\137\062\060\064\070\040\151\156\143\157\162\160\056\040\142\171
\040\162\145\146\056\040\050\154\151\155\151\164\163\040\154\151
\141\142\056\051\061\045\060\043\006\003\125\004\013\023\034\050
\143\051\040\061\071\071\071\040\105\156\164\162\165\163\164\056
\156\145\164\040\114\151\155\151\164\145\144\061\063\060\061\006
\003\125\004\003\023\052\105\156\164\162\165\163\164\056\156\145
\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\040\050\062\060\064\070\051
\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001
\000\255\115\113\251\022\206\262\352\243\040\007\025\026\144\052
\053\113\321\277\013\112\115\216\355\200\166\245\147\267\170\100
\300\163\102\310\150\300\333\123\053\335\136\270\166\230\065\223
\213\032\235\174\023\072\016\037\133\267\036\317\345\044\024\036
\261\201\251\215\175\270\314\153\113\003\361\002\014\334\253\245
\100\044\000\177\164\224\241\235\010\051\263\210\013\365\207\167
\235\125\315\344\303\176\327\152\144\253\205\024\206\225\133\227
\062\120\157\075\310\272\146\014\343\374\275\270\111\301\166\211
\111\031\375\300\250\275\211\243\147\057\306\237\274\161\031\140

\270\055\351\054\311\220\166\146\173\224\342\257\170\326\145\123
\135\074\326\234\262\317\051\003\371\057\244\120\262\324\110\316
\005\062\125\212\375\262\144\114\016\344\230\007\165\333\177\337
\271\010\125\140\205\060\051\371\173\110\244\151\206\343\065\077
\036\206\135\172\172\025\275\357\000\216\025\042\124\027\000\220
\046\223\274\016\111\150\221\277\370\107\323\235\225\102\301\016
\115\337\157\046\317\303\030\041\142\146\103\160\326\325\300\007
\341\002\003\001\000\001\243\102\060\100\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\125\344\201\321\021\200\276\330\211\271
\010\243\061\371\241\044\011\026\271\160\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\073\233
\217\126\233\060\347\123\231\174\172\171\247\115\227\327\031\225
\220\373\006\037\312\063\174\106\143\217\226\146\044\372\100\033
\041\047\312\346\162\163\362\117\376\061\231\375\310\014\114\150
\123\306\200\202\023\230\372\266\255\332\135\075\361\316\156\366
\025\021\224\202\014\356\077\225\257\021\253\017\327\057\336\037
\003\217\127\054\036\311\273\232\032\104\225\353\030\117\246\037
\315\175\127\020\057\233\004\011\132\204\265\156\330\035\072\341
\326\236\321\154\171\136\171\034\024\305\343\320\114\223\073\145
\074\355\337\075\276\246\345\225\032\303\265\031\303\275\136\133
\273\377\043\357\150\031\313\022\223\047\134\003\055\157\060\320
\036\266\032\254\336\132\367\321\252\250\047\246\376\171\201\304
\171\231\063\127\272\022\260\251\340\102\154\223\312\126\336\376
\155\204\013\010\213\176\215\352\327\230\041\306\363\347\074\171
\057\136\234\321\114\025\215\341\354\042\067\314\232\103\013\227
\334\200\220\215\263\147\233\157\110\010\025\126\317\277\361\053
\174\136\232\166\351\131\220\305\174\203\065\021\145\121
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Entrust.net Premium 2048 Secure Server CA"
Issuer: CN=Entrust.net Certification Authority (2048),OU=(c) 1999 Entrust.net Limited,OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.),O=Entrust.net
Serial Number: 946069240 (0x3863def8)
Subject: CN=Entrust.net Certification Authority (2048),OU=(c) 1999 Entrust.net Limited,OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.),O=Entrust.net
Not Valid Before: Fri Dec 24 17:50:51 1999
Not Valid After : Tue Jul 24 14:15:12 2029
Fingerprint (SHA-256):
6D:C4:71:72:E0:1C:BC:B0:BF:62:58:0D:89:5F:E2:B8:AC:9A:D4:F8:73:80:1E:0C:10:B9:C8:37:D2:1E:B1:77
Fingerprint (SHA1): 50:30:06:09:1D:97:D4:F5:AE:39:F7:CB:E7:92:7D:7D:65:2D:34:31
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

```
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust.net Premium 2048 Secure Server CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\120\060\006\011\035\227\324\365\256\071\367\313\347\222\175\175
\145\055\064\061
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\356\051\061\274\062\176\232\346\350\265\367\121\264\064\161\220
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\264\061\024\060\022\006\003\125\004\012\023\013\105\156
\164\162\165\163\164\056\156\145\164\061\100\060\076\006\003\125
\004\013\024\067\167\167\167\056\145\156\164\162\165\163\164\056
\156\145\164\057\103\120\123\137\062\060\064\070\040\151\156\143
\157\162\160\056\040\142\171\040\162\145\146\056\040\050\154\151
\155\151\164\163\040\154\151\141\142\056\051\061\045\060\043\006
\003\125\004\013\023\034\050\143\051\040\061\071\071\071\040\105
\156\164\162\165\163\164\056\156\145\164\040\114\151\155\151\164
\145\144\061\063\060\061\006\003\125\004\003\023\052\105\156\164
\162\165\163\164\056\156\145\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\050\062\060\064\070\051
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\070\143\336\370
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "Baltimore CyberTrust Root"
#
# Issuer: CN=Baltimore CyberTrust Root,OU=CyberTrust,O=Baltimore,C=IE
# Serial Number: 33554617 (0x20000b9)
# Subject: CN=Baltimore CyberTrust Root,OU=CyberTrust,O=Baltimore,C=IE
# Not Valid Before: Fri May 12 18:46:00 2000
# Not Valid After : Mon May 12 23:59:00 2025
# Fingerprint (SHA-256):
16:AF:57:A9:F6:76:B0:AB:12:60:95:AA:5E:BA:DE:F2:2A:B3:11:19:D6:44:AC:95:CD:4B:93:DB:F3:F2:6A:EB
# Fingerprint (SHA1): D4:DE:20:D0:5E:66:FC:53:FE:1A:50:88:2C:78:DB:28:52:CA:E4:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Baltimore CyberTrust Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
```

CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\111\105\061
\022\060\020\006\003\125\004\012\023\011\102\141\154\164\151\155
\157\162\145\061\023\060\021\006\003\125\004\013\023\012\103\171
\142\145\162\124\162\165\163\164\061\042\060\040\006\003\125\004
\003\023\031\102\141\154\164\151\155\157\162\145\040\103\171\142
\145\162\124\162\165\163\164\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\111\105\061
\022\060\020\006\003\125\004\012\023\011\102\141\154\164\151\155
\157\162\145\061\023\060\021\006\003\125\004\013\023\012\103\171
\142\145\162\124\162\165\163\164\061\042\060\040\006\003\125\004
\003\023\031\102\141\154\164\151\155\157\162\145\040\103\171\142
\145\162\124\162\165\163\164\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\002\000\000\271
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\167\060\202\002\137\240\003\002\001\002\002\004\002
\000\000\271\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\132\061\013\060\011\006\003\125\004\006\023\002\111
\105\061\022\060\020\006\003\125\004\012\023\011\102\141\154\164
\151\155\157\162\145\061\023\060\021\006\003\125\004\013\023\012
\103\171\142\145\162\124\162\165\163\164\061\042\060\040\006\003
\125\004\003\023\031\102\141\154\164\151\155\157\162\145\040\103
\171\142\145\162\124\162\165\163\164\040\122\157\157\164\060\036
\027\015\060\060\060\065\061\062\061\070\064\066\060\060\132\027
\015\062\065\060\065\061\062\062\063\065\071\060\060\132\060\132
\061\013\060\011\006\003\125\004\006\023\002\111\105\061\022\060
\020\006\003\125\004\012\023\011\102\141\154\164\151\155\157\162
\145\061\023\060\021\006\003\125\004\013\023\012\103\171\142\145
\162\124\162\165\163\164\061\042\060\040\006\003\125\004\003\023
\031\102\141\154\164\151\155\157\162\145\040\103\171\142\145\162
\124\162\165\163\164\040\122\157\157\164\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\243\004\273\042\253
\230\075\127\350\046\162\232\265\171\324\051\342\341\350\225\200
\261\260\343\133\216\053\051\232\144\337\241\135\355\260\011\005
\155\333\050\056\316\142\242\142\376\264\210\332\022\353\070\353
\041\235\300\101\053\001\122\173\210\167\323\034\217\307\272\271
\210\265\152\011\347\163\350\021\100\247\321\314\312\142\215\055
\345\217\013\246\120\322\250\120\303\050\352\365\253\045\207\212
\232\226\034\251\147\270\077\014\325\367\371\122\023\057\302\033
\325\160\160\360\217\300\022\312\006\313\232\341\331\312\063\172
\167\326\370\354\271\361\150\104\102\110\023\322\300\302\244\256

\136\140\376\266\246\005\374\264\335\007\131\002\324\131\030\230
\143\365\245\143\340\220\014\175\135\262\006\172\363\205\352\353
\324\003\256\136\204\076\137\377\025\355\151\274\371\071\066\162
\165\317\167\122\115\363\311\220\054\271\075\345\311\043\123\077
\037\044\230\041\134\007\231\051\275\306\072\354\347\156\206\072
\153\227\164\143\063\275\150\030\061\360\170\215\166\277\374\236
\216\135\052\206\247\115\220\334\047\032\071\002\003\001\000\001
\243\105\060\103\060\035\006\003\125\035\016\004\026\004\024\345
\235\131\060\202\107\130\314\254\372\010\124\066\206\173\072\265
\004\115\360\060\022\006\003\125\035\023\001\001\377\004\010\060
\006\001\001\377\002\001\003\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\006\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\001\001\000\205\014\135\216\344
\157\121\150\102\005\240\335\273\117\047\045\204\003\275\367\144
\375\055\327\060\343\244\020\027\353\332\051\051\266\171\077\166
\366\031\023\043\270\020\012\371\130\244\324\141\160\275\004\141
\152\022\212\027\325\012\275\305\274\060\174\326\351\014\045\215
\206\100\117\354\314\243\176\070\306\067\021\117\355\335\150\061
\216\114\322\263\001\164\356\276\165\136\007\110\032\177\160\377
\026\134\204\300\171\205\270\005\375\177\276\145\021\243\017\300
\002\264\370\122\067\071\004\325\251\061\172\030\277\240\052\364
\022\231\367\243\105\202\343\074\136\365\235\236\265\310\236\174
\056\310\244\236\116\010\024\113\155\375\160\155\153\032\143\275
\144\346\037\267\316\360\362\237\056\273\033\267\362\120\210\163
\222\302\342\343\026\215\232\062\002\253\216\030\335\351\020\021
\356\176\065\253\220\257\076\060\224\172\320\063\075\247\145\017
\365\374\216\236\142\317\107\104\054\001\135\273\035\265\062\322
\107\322\070\056\320\376\201\334\062\152\036\265\356\074\325\374
\347\201\035\031\303\044\102\352\143\071\251
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Baltimore CyberTrust Root"
Issuer: CN=Baltimore CyberTrust Root,OU=CyberTrust,O=Baltimore,C=IE
Serial Number: 33554617 (0x20000b9)
Subject: CN=Baltimore CyberTrust Root,OU=CyberTrust,O=Baltimore,C=IE
Not Valid Before: Fri May 12 18:46:00 2000
Not Valid After : Mon May 12 23:59:00 2025
Fingerprint (SHA-256):
16:AF:57:A9:F6:76:B0:AB:12:60:95:AA:5E:BA:DE:F2:2A:B3:11:19:D6:44:AC:95:CD:4B:93:DB:F3:F2:6A:EB
Fingerprint (SHA1): D4:DE:20:D0:5E:66:FC:53:FE:1A:50:88:2C:78:DB:28:52:CA:E4:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Baltimore CyberTrust Root"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\324\336\040\320\136\146\374\123\376\032\120\210\054\170\333\050
\122\312\344\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\254\266\224\245\234\027\340\327\221\122\233\261\227\006\246\344
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\111\105\061
\022\060\020\006\003\125\004\012\023\011\102\141\154\164\151\155
\157\162\145\061\023\060\021\006\003\125\004\013\023\012\103\171
\142\145\162\124\162\165\163\164\061\042\060\040\006\003\125\004
\003\023\031\102\141\154\164\151\155\157\162\145\040\103\171\142
\145\162\124\162\165\163\164\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\002\000\000\271
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust Root Certification Authority"
#
Issuer: CN=Entrust Root Certification Authority,OU="(c) 2006 Entrust, Inc.",OU=www.entrust.net/CPS is incorporated by reference,O="Entrust, Inc.",C=US
Serial Number: 1164660820 (0x456b5054)
Subject: CN=Entrust Root Certification Authority,OU="(c) 2006 Entrust, Inc.",OU=www.entrust.net/CPS is incorporated by reference,O="Entrust, Inc.",C=US
Not Valid Before: Mon Nov 27 20:23:42 2006
Not Valid After : Fri Nov 27 20:53:42 2026
Fingerprint (SHA-256):
73:C1:76:43:4F:1B:C6:D5:AD:F4:5B:0E:76:E7:27:28:7C:8D:E5:76:16:C1:E6:E6:14:1A:2B:2C:BC:7D:8E:4C
Fingerprint (SHA1): B3:1E:B1:B7:40:E3:6C:84:02:DA:DC:37:D4:4D:F5:D4:67:49:52:F9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\260\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\167\167\167\056\145\156\164\162\165\163\164\056\156
\145\164\057\103\120\123\040\151\163\040\151\156\143\157\162\160

\157\162\141\164\145\144\040\142\171\040\162\145\146\145\162\145
\156\143\145\061\037\060\035\006\003\125\004\013\023\026\050\143
\051\040\062\060\060\066\040\105\156\164\162\165\163\164\054\040
\111\156\143\056\061\055\060\053\006\003\125\004\003\023\044\105
\156\164\162\165\163\164\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\260\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\167\167\167\056\145\156\164\162\165\163\164\056\156
\145\164\057\103\120\123\040\151\163\040\151\156\143\157\162\160
\157\162\141\164\145\144\040\142\171\040\162\145\146\145\162\145
\156\143\145\061\037\060\035\006\003\125\004\013\023\026\050\143
\051\040\062\060\060\066\040\105\156\164\162\165\163\164\054\040
\111\156\143\056\061\055\060\053\006\003\125\004\003\023\044\105
\156\164\162\165\163\164\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\105\153\120\124
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\221\060\202\003\171\240\003\002\001\002\002\004\105
\153\120\124\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\201\260\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\026\060\024\006\003\125\004\012\023\015\105\156\164
\162\165\163\164\054\040\111\156\143\056\061\071\060\067\006\003
\125\004\013\023\060\167\167\167\056\145\156\164\162\165\163\164
\056\156\145\164\057\103\120\123\040\151\163\040\151\156\143\157
\162\160\157\162\141\164\145\144\040\142\171\040\162\145\146\145
\162\145\156\143\145\061\037\060\035\006\003\125\004\013\023\026
\050\143\051\040\062\060\060\066\040\105\156\164\162\165\163\164
\054\040\111\156\143\056\061\055\060\053\006\003\125\004\003\023
\044\105\156\164\162\165\163\164\040\122\157\157\164\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\060\036\027\015\060\066\061\061\062\067\062
\060\062\063\064\062\132\027\015\062\066\061\061\062\067\062\060
\065\063\064\062\132\060\201\260\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\026\060\024\006\003\125\004\012\023\015
\105\156\164\162\165\163\164\054\040\111\156\143\056\061\071\060
\067\006\003\125\004\013\023\060\167\167\167\056\145\156\164\162
\165\163\164\056\156\145\164\057\103\120\123\040\151\163\040\151
\156\143\157\162\160\157\162\141\164\145\144\040\142\171\040\162

\145\146\145\162\145\156\143\145\061\037\060\035\006\003\125\004
\013\023\026\050\143\051\040\062\060\060\066\040\105\156\164\162
\165\163\164\054\040\111\156\143\056\061\055\060\053\006\003\125
\004\003\023\044\105\156\164\162\165\163\164\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\266\225\266\103\102\372\306
\155\052\157\110\337\224\114\071\127\005\356\303\171\021\101\150
\066\355\354\376\232\001\217\241\070\050\374\367\020\106\146\056
\115\036\032\261\032\116\306\321\300\225\210\260\311\377\061\213
\063\003\333\267\203\173\076\040\204\136\355\262\126\050\247\370
\340\271\100\161\067\305\313\107\016\227\052\150\300\042\225\142
\025\333\107\331\365\320\053\377\202\113\311\255\076\336\114\333
\220\200\120\077\011\212\204\000\354\060\012\075\030\315\373\375
\052\131\232\043\225\027\054\105\236\037\156\103\171\155\014\134
\230\376\110\247\305\043\107\134\136\375\156\347\036\264\366\150
\105\321\206\203\133\242\212\215\261\343\051\200\376\045\161\210
\255\276\274\217\254\122\226\113\252\121\215\344\023\061\031\350
\116\115\237\333\254\263\152\325\274\071\124\161\312\172\172\177
\220\335\175\035\200\331\201\273\131\046\302\021\376\346\223\342
\367\200\344\145\373\064\067\016\051\200\160\115\257\070\206\056
\236\177\127\257\236\027\256\353\034\313\050\041\137\266\034\330
\347\242\004\042\371\323\332\330\313\002\003\001\000\001\243\201
\260\060\201\255\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\053\006\003\125\035\020\004\044\060\042
\200\017\062\060\060\066\061\061\062\067\062\060\062\063\064\062
\132\201\017\062\060\062\066\061\061\062\067\062\060\065\063\064
\062\132\060\037\006\003\125\035\043\004\030\060\026\200\024\150
\220\344\147\244\246\123\200\307\206\146\244\361\367\113\103\373
\204\275\155\060\035\006\003\125\035\016\004\026\004\024\150\220
\344\147\244\246\123\200\307\206\146\244\361\367\113\103\373\204
\275\155\060\035\006\011\052\206\110\206\366\175\007\101\000\004
\020\060\016\033\010\126\067\056\061\072\064\056\060\003\002\004
\220\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\001\001\000\223\324\060\260\327\003\040\052\320\371\143
\350\221\014\005\040\251\137\031\312\173\162\116\324\261\333\320
\226\373\124\132\031\054\014\010\367\262\274\205\250\235\177\155
\073\122\263\052\333\347\324\204\214\143\366\017\313\046\001\221
\120\154\364\137\024\342\223\164\300\023\236\060\072\120\343\264
\140\305\034\360\042\104\215\161\107\254\310\032\311\351\233\232
\000\140\023\377\160\176\137\021\115\111\033\263\025\122\173\311
\124\332\277\235\225\257\153\232\330\236\351\361\344\103\215\342
\021\104\072\277\257\275\203\102\163\122\213\252\273\247\051\317
\365\144\034\012\115\321\274\252\254\237\052\320\377\177\177\332
\175\352\261\355\060\045\301\204\332\064\322\133\170\203\126\354
\234\066\303\046\342\021\366\147\111\035\222\253\214\373\353\377

\172\356\205\112\247\120\200\360\247\134\112\224\056\137\005\231
\074\122\101\340\315\264\143\317\001\103\272\234\203\334\217\140
\073\363\132\264\264\173\256\332\013\220\070\165\357\201\035\146
\322\367\127\160\066\263\277\374\050\257\161\045\205\133\023\376
\036\177\132\264\074
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Entrust Root Certification Authority"
Issuer: CN=Entrust Root Certification Authority,OU="(c) 2006 Entrust, Inc.",OU=www.entrust.net/CPS is incorporated by reference,O="Entrust, Inc.",C=US
Serial Number: 1164660820 (0x456b5054)
Subject: CN=Entrust Root Certification Authority,OU="(c) 2006 Entrust, Inc.",OU=www.entrust.net/CPS is incorporated by reference,O="Entrust, Inc.",C=US
Not Valid Before: Mon Nov 27 20:23:42 2006
Not Valid After : Fri Nov 27 20:53:42 2026
Fingerprint (SHA-256):
73:C1:76:43:4F:1B:C6:D5:AD:F4:5B:0E:76:E7:27:28:7C:8D:E5:76:16:C1:E6:E6:14:1A:2B:2C:BC:7D:8E:4C
Fingerprint (SHA1): B3:1E:B1:B7:40:E3:6C:84:02:DA:DC:37:D4:4D:F5:D4:67:49:52:F9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\263\036\261\267\100\343\154\204\002\332\334\067\324\115\365\324
\147\111\122\371
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\326\245\303\355\135\335\076\000\301\075\207\222\037\035\077\344
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\260\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\167\167\167\056\145\156\164\162\165\163\164\056\156
\145\164\057\103\120\123\040\151\163\040\151\156\143\157\162\160
\157\162\141\164\145\144\040\142\171\040\162\145\146\145\162\145
\156\143\145\061\037\060\035\006\003\125\004\013\023\026\050\143
\051\040\062\060\060\066\040\105\156\164\162\165\163\164\054\040
\111\156\143\056\061\055\060\053\006\003\125\004\003\023\044\105
\156\164\162\165\163\164\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\004\105\153\120\124
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum Root CA"
#
Issuer: CN=Certum CA,O=Unizeto Sp. z o.o.,C=PL
Serial Number: 65568 (0x10020)
Subject: CN=Certum CA,O=Unizeto Sp. z o.o.,C=PL
Not Valid Before: Tue Jun 11 10:46:39 2002
Not Valid After : Fri Jun 11 10:46:39 2027
Fingerprint (SHA-256):
D8:E0:FE:BC:1D:B2:E3:8D:00:94:0F:37:D2:7D:41:34:4D:99:3E:73:4B:99:D5:65:6D:97:78:D4:D8:14:36:24
Fingerprint (SHA1): 62:52:DC:40:F7:11:43:A2:2F:DE:9E:F7:34:8E:06:42:51:B1:81:18
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145\164
\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060\020
\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145\164
\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060\020
\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\001\000\040
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\014\060\202\001\364\240\003\002\001\002\002\003\001
\000\040\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145
\164\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060
\020\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103
\101\060\036\027\015\060\062\060\066\061\061\061\060\064\066\063

\071\132\027\015\062\067\060\066\061\061\061\060\064\066\063\071
\132\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145
\164\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060
\020\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103
\101\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\316\261\301\056\323\117\174\315\045\316\030\076\117\304
\214\157\200\152\163\310\133\121\370\233\322\334\273\000\134\261
\240\374\165\003\356\201\360\210\356\043\122\351\346\025\063\215
\254\055\011\305\166\371\053\071\200\211\344\227\113\220\245\250
\170\370\163\103\173\244\141\260\330\130\314\341\154\146\176\234
\363\011\136\125\143\204\325\250\357\363\261\056\060\150\263\304
\074\330\254\156\215\231\132\220\116\064\334\066\232\217\201\210
\120\267\155\226\102\011\363\327\225\203\015\101\113\260\152\153
\370\374\017\176\142\237\147\304\355\046\137\020\046\017\010\117
\360\244\127\050\316\217\270\355\105\366\156\356\045\135\252\156
\071\276\344\223\057\331\107\240\162\353\372\246\133\257\312\123
\077\342\016\306\226\126\021\156\367\351\146\251\046\330\177\225
\123\355\012\205\210\272\117\051\245\102\214\136\266\374\205\040
\000\252\150\013\241\032\205\001\234\304\106\143\202\210\266\042
\261\356\376\252\106\131\176\317\065\054\325\266\332\135\367\110
\063\024\124\266\353\331\157\316\315\210\326\253\033\332\226\073
\035\131\002\003\001\000\001\243\023\060\021\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\270\215\316\357\347\024\272\317\356\260\104\222\154\264\071\076
\242\204\156\255\270\041\167\322\324\167\202\207\346\040\101\201
\356\342\370\021\267\143\321\027\067\276\031\166\044\034\004\032
\114\353\075\252\147\157\055\324\315\376\145\061\160\305\033\246
\002\012\272\140\173\155\130\302\232\111\376\143\062\013\153\343
\072\300\254\253\073\260\350\323\011\121\214\020\203\306\064\340
\305\053\340\032\266\140\024\047\154\062\167\214\274\262\162\230
\317\315\314\077\271\310\044\102\024\326\127\374\346\046\103\251
\035\345\200\220\316\003\124\050\076\367\077\323\370\115\355\152
\012\072\223\023\233\073\024\043\023\143\234\077\321\207\047\171
\345\114\121\343\001\255\205\135\032\073\261\325\163\020\244\323
\362\274\156\144\365\132\126\220\250\307\016\114\164\017\056\161
\073\367\310\107\364\151\157\025\362\021\136\203\036\234\174\122
\256\375\002\332\022\250\131\147\030\333\274\160\335\233\261\151
\355\200\316\211\100\110\152\016\065\312\051\146\025\041\224\054
\350\140\052\233\205\112\100\363\153\212\044\354\006\026\054\163
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum Root CA"

Issuer: CN=Certum CA,O=Unizeto Sp. z o.o.,C=PL
Serial Number: 65568 (0x10020)
Subject: CN=Certum CA,O=Unizeto Sp. z o.o.,C=PL
Not Valid Before: Tue Jun 11 10:46:39 2002
Not Valid After : Fri Jun 11 10:46:39 2027
Fingerprint (SHA-256):
D8:E0:FE:BC:1D:B2:E3:8D:00:94:0F:37:D2:7D:41:34:4D:99:3E:73:4B:99:D5:65:6D:97:78:D4:D8:14:36:24
Fingerprint (SHA1): 62:52:DC:40:F7:11:43:A2:2F:DE:9E:F7:34:8E:06:42:51:B1:81:18
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\142\122\334\100\367\021\103\242\057\336\236\367\064\216\006\102
\121\261\201\030
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\054\217\237\146\035\030\220\261\107\046\235\216\206\202\214\251
END
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145\164
\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060\020
\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\001\000\040
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Comodo AAA Services root"
#
Issuer: CN=AAA Certificate Services,O=Comodo CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number: 1 (0x1)
Subject: CN=AAA Certificate Services,O=Comodo CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Thu Jan 01 00:00:00 2004
Not Valid After : Sun Dec 31 23:59:59 2028
Fingerprint (SHA-256):
D7:A7:A0:FB:5D:7E:27:31:D7:71:E9:48:4E:BC:DE:F7:1D:5F:0C:3E:0A:29:48:78:2B:C8:3E:E0:EA:69:9E:F4
Fingerprint (SHA1): D1:EB:23:A4:6D:17:D6:8F:D9:25:64:C2:F1:F1:60:17:64:D8:E3:49
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Comodo AAA Services root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\173\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\033\060\031\006\003\125\004\010\014\022\107\162\145\141\164\145
\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016
\006\003\125\004\007\014\007\123\141\154\146\157\162\144\061\032
\060\030\006\003\125\004\012\014\021\103\157\155\157\144\157\040
\103\101\040\114\151\155\151\164\145\144\061\041\060\037\006\003
\125\004\003\014\030\101\101\101\040\103\145\162\164\151\146\151
\143\141\164\145\040\123\145\162\166\151\143\145\163
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\173\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\033\060\031\006\003\125\004\010\014\022\107\162\145\141\164\145
\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016
\006\003\125\004\007\014\007\123\141\154\146\157\162\144\061\032
\060\030\006\003\125\004\012\014\021\103\157\155\157\144\157\040
\103\101\040\114\151\155\151\164\145\144\061\041\060\037\006\003
\125\004\003\014\030\101\101\101\040\103\145\162\164\151\146\151
\143\141\164\145\040\123\145\162\166\151\143\145\163
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\062\060\202\003\032\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\173\061\013\060\011\006\003\125\004\006\023\002\107\102\061\033
\060\031\006\003\125\004\010\014\022\107\162\145\141\164\145\162
\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016\006
\003\125\004\007\014\007\123\141\154\146\157\162\144\061\032\060
\030\006\003\125\004\012\014\021\103\157\155\157\144\157\040\103
\101\040\114\151\155\151\164\145\144\061\041\060\037\006\003\125
\004\003\014\030\101\101\101\040\103\145\162\164\151\146\151\143
\141\164\145\040\123\145\162\166\151\143\145\163\060\036\027\015
\060\064\060\061\060\061\060\060\060\060\060\060\132\027\015\062
\070\061\062\063\061\062\063\065\071\065\071\132\060\173\061\013
\060\011\006\003\125\004\006\023\002\107\102\061\033\060\031\006
\003\125\004\010\014\022\107\162\145\141\164\145\162\040\115\141
\156\143\150\145\163\164\145\162\061\020\060\016\006\003\125\004
\007\014\007\123\141\154\146\157\162\144\061\032\060\030\006\003
\125\004\012\014\021\103\157\155\157\144\157\040\103\101\040\114
\151\155\151\164\145\144\061\041\060\037\006\003\125\004\003\014
\030\101\101\101\040\103\145\162\164\151\146\151\143\141\164\145
\040\123\145\162\166\151\143\145\163\060\202\001\042\060\015\006

\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\276\100\235\364\156\341
\352\166\207\034\115\105\104\216\276\106\310\203\006\235\301\052
\376\030\037\216\344\002\372\363\253\135\120\212\026\061\013\232
\006\320\305\160\042\315\111\055\124\143\314\266\156\150\106\013
\123\352\313\114\044\300\274\162\116\352\361\025\256\364\124\232
\022\012\303\172\262\063\140\342\332\211\125\363\042\130\363\336
\334\317\357\203\206\242\214\224\117\237\150\362\230\220\106\204
\047\307\166\277\343\314\065\054\213\136\007\144\145\202\300\110
\260\250\221\371\141\237\166\040\120\250\221\307\146\265\353\170
\142\003\126\360\212\032\023\352\061\243\036\240\231\375\070\366
\366\047\062\130\157\007\365\153\270\373\024\053\257\267\252\314
\326\143\137\163\214\332\005\231\250\070\250\313\027\170\066\121
\254\351\236\364\170\072\215\317\017\331\102\342\230\014\253\057
\237\016\001\336\357\237\231\111\361\055\337\254\164\115\033\230
\265\107\305\345\051\321\371\220\030\307\142\234\276\203\307\046
\173\076\212\045\307\300\335\235\346\065\150\020\040\235\217\330
\336\322\303\204\234\015\136\350\057\311\002\003\001\000\001\243
\201\300\060\201\275\060\035\006\003\125\035\016\004\026\004\024
\240\021\012\043\076\226\361\007\354\342\257\051\357\202\245\177
\320\060\244\264\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\173\006\003\125\035\037\004\164\060\162
\060\070\240\066\240\064\206\062\150\164\164\160\072\057\057\143
\162\154\056\143\157\155\157\144\157\143\141\056\143\157\155\057
\101\101\101\103\145\162\164\151\146\151\143\141\164\145\123\145
\162\166\151\143\145\163\056\143\162\154\060\066\240\064\240\062
\206\060\150\164\164\160\072\057\057\143\162\154\056\143\157\155
\157\144\157\056\156\145\164\057\101\101\101\103\145\162\164\151
\146\151\143\141\164\145\123\145\162\166\151\143\145\163\056\143
\162\154\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\003\202\001\001\000\010\126\374\002\360\233\350\377\244\372
\326\173\306\104\200\316\117\304\305\366\000\130\314\246\266\274
\024\111\150\004\166\350\346\356\135\354\002\017\140\326\215\120
\030\117\046\116\001\343\346\260\245\356\277\274\164\124\101\277
\375\374\022\270\307\117\132\364\211\140\005\177\140\267\005\112
\363\366\361\302\277\304\271\164\206\266\055\175\153\314\322\363
\106\335\057\306\340\152\303\303\064\003\054\175\226\335\132\302
\016\247\012\231\301\005\213\253\014\057\363\134\072\317\154\067
\125\011\207\336\123\100\154\130\357\374\266\253\145\156\004\366
\033\334\074\340\132\025\306\236\331\361\131\110\060\041\145\003
\154\354\351\041\163\354\233\003\241\340\067\255\240\025\030\217
\372\272\002\316\247\054\251\020\023\054\324\345\010\046\253\042
\227\140\370\220\136\164\324\242\232\123\275\362\251\150\340\242
\156\302\327\154\261\243\017\236\277\353\150\347\126\362\256\362
\343\053\070\072\011\201\265\153\205\327\276\055\355\077\032\267
\262\143\342\365\142\054\202\324\152\000\101\120\361\071\203\237
\225\351\066\226\230\156

END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Comodo AAA Services root"
Issuer: CN=AAA Certificate Services,O=Comodo CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number: 1 (0x1)
Subject: CN=AAA Certificate Services,O=Comodo CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Thu Jan 01 00:00:00 2004
Not Valid After : Sun Dec 31 23:59:59 2028
Fingerprint (SHA-256):
D7:A7:A0:FB:5D:7E:27:31:D7:71:E9:48:4E:BC:DE:F7:1D:5F:0C:3E:0A:29:48:78:2B:C8:3E:E0:EA:69:9E:F4
Fingerprint (SHA1): D1:EB:23:A4:6D:17:D6:8F:D9:25:64:C2:F1:F1:60:17:64:D8:E3:49
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Comodo AAA Services root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\321\353\043\244\155\027\326\217\331\045\144\302\361\361\140\027
\144\330\343\111
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\111\171\004\260\353\207\031\254\107\260\274\021\121\233\164\320
END
CKA_ISSUER MULTILINE_OCTAL
\060\173\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\033\060\031\006\003\125\004\010\014\022\107\162\145\141\164\145
\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016
\006\003\125\004\007\014\007\123\141\154\146\157\162\144\061\032
\060\030\006\003\125\004\012\014\021\103\157\155\157\144\157\040
\103\101\040\114\151\155\151\164\145\144\061\041\060\037\006\003
\125\004\003\014\030\101\101\101\040\103\145\162\164\151\146\151
\143\141\164\145\040\123\145\162\166\151\143\145\163
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "QuoVadis Root CA 2"
#
Issuer: CN=QuoVadis Root CA 2,O=QuoVadis Limited,C=BM

Serial Number: 1289 (0x509)
Subject: CN=QuoVadis Root CA 2,O=QuoVadis Limited,C=BM
Not Valid Before: Fri Nov 24 18:27:00 2006
Not Valid After : Mon Nov 24 18:23:33 2031
Fingerprint (SHA-256):
85:A0:DD:7D:D7:20:AD:B7:FF:05:F8:3D:54:2B:20:9D:C7:FF:45:28:F7:D6:77:B1:83:89:FE:A5:E5:C4:9E:86
Fingerprint (SHA1): CA:3A:FB:CF:12:40:36:4B:44:B2:16:20:88:80:48:39:19:93:7C:F7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\005\011
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\267\060\202\003\237\240\003\002\001\002\002\002\005
\011\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062\060\036\027\015\060\066\061\061\062
\064\061\070\062\067\060\060\132\027\015\063\061\061\061\062\064
\061\070\062\063\063\063\132\060\105\061\013\060\011\006\003\125
\004\006\023\002\102\115\061\031\060\027\006\003\125\004\012\023
\020\121\165\157\126\141\144\151\163\040\114\151\155\151\164\145
\144\061\033\060\031\006\003\125\004\003\023\022\121\165\157\126
\141\144\151\163\040\122\157\157\164\040\103\101\040\062\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\232
\030\312\113\224\015\000\055\257\003\051\212\360\017\201\310\256

\114\031\205\035\010\237\253\051\104\205\363\057\201\255\062\036
\220\106\277\243\206\046\032\036\376\176\034\030\072\134\234\140
\027\052\072\164\203\063\060\175\141\124\021\313\355\253\340\346
\322\242\176\365\153\157\030\267\012\013\055\375\351\076\357\012
\306\263\020\351\334\302\106\027\370\135\375\244\332\377\236\111
\132\234\346\063\346\044\226\367\077\272\133\053\034\172\065\302
\326\147\376\253\146\120\213\155\050\140\053\357\327\140\303\307
\223\274\215\066\221\363\177\370\333\021\023\304\234\167\166\301
\256\267\002\152\201\172\251\105\203\342\005\346\271\126\301\224
\067\217\110\161\143\042\354\027\145\007\225\212\113\337\217\306
\132\012\345\260\343\137\136\153\021\253\014\371\205\353\104\351
\370\004\163\362\351\376\134\230\214\365\163\257\153\264\176\315
\324\134\002\053\114\071\341\262\225\225\055\102\207\327\325\263
\220\103\267\154\023\361\336\335\366\304\370\211\077\321\165\365
\222\303\221\325\212\210\320\220\354\334\155\336\211\302\145\161
\226\213\015\003\375\234\277\133\026\254\222\333\352\376\171\174
\255\353\257\367\026\313\333\315\045\053\345\037\373\232\237\342
\121\314\072\123\014\110\346\016\275\311\264\166\006\122\346\021
\023\205\162\143\003\004\340\004\066\053\040\031\002\350\164\247
\037\266\311\126\146\360\165\045\334\147\301\016\141\140\210\263
\076\321\250\374\243\332\035\260\321\261\043\124\337\104\166\155
\355\101\330\301\262\042\266\123\034\337\065\035\334\241\167\052
\061\344\055\365\345\345\333\310\340\377\345\200\327\013\143\240
\377\063\241\017\272\054\025\025\352\227\263\322\242\265\276\362
\214\226\036\032\217\035\154\244\141\067\271\206\163\063\327\227
\226\236\043\175\202\244\114\201\342\241\321\272\147\137\225\007
\243\047\021\356\026\020\173\274\105\112\114\262\004\322\253\357
\325\375\014\121\316\120\152\010\061\371\221\332\014\217\144\134
\003\303\072\213\040\077\156\215\147\075\072\326\376\175\133\210
\311\136\373\314\141\334\213\063\167\323\104\062\065\011\142\004
\222\026\020\330\236\047\107\373\073\041\343\370\353\035\133\002
\003\001\000\001\243\201\260\060\201\255\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\013\006\003\125
\035\017\004\004\003\002\001\006\060\035\006\003\125\035\016\004
\026\004\024\032\204\142\274\110\114\063\045\004\324\356\320\366
\003\304\031\106\321\224\153\060\156\006\003\125\035\043\004\147
\060\145\200\024\032\204\142\274\110\114\063\045\004\324\356\320
\366\003\304\031\106\321\224\153\241\111\244\107\060\105\061\013
\060\011\006\003\125\004\006\023\002\102\115\061\031\060\027\006
\003\125\004\012\023\020\121\165\157\126\141\144\151\163\040\114
\151\155\151\164\145\144\061\033\060\031\006\003\125\004\003\023
\022\121\165\157\126\141\144\151\163\040\122\157\157\164\040\103
\101\040\062\202\002\005\011\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\002\001\000\076\012\026\115\237
\006\133\250\256\161\135\057\005\057\147\346\023\105\203\304\066
\366\363\300\046\014\015\265\107\144\135\370\264\162\311\106\245
\003\030\047\125\211\170\175\166\352\226\064\200\027\040\334\347
\203\370\215\374\007\270\332\137\115\056\147\262\204\375\331\104

\374\167\120\201\346\174\264\311\015\013\162\123\370\166\007\007
\101\107\226\014\373\340\202\046\223\125\214\376\042\037\140\145
\174\137\347\046\263\367\062\220\230\120\324\067\161\125\366\222
\041\170\367\225\171\372\370\055\046\207\146\126\060\167\246\067
\170\063\122\020\130\256\077\141\216\362\152\261\357\030\176\112
\131\143\312\215\242\126\325\247\057\274\126\037\317\071\301\342
\373\012\250\025\054\175\115\172\143\306\154\227\104\074\322\157
\303\112\027\012\370\220\322\127\242\031\121\245\055\227\101\332
\007\117\251\120\332\220\215\224\106\341\076\360\224\375\020\000
\070\365\073\350\100\341\264\156\126\032\040\314\157\130\215\355
\056\105\217\326\351\223\077\347\261\054\337\072\326\042\214\334
\204\273\042\157\320\370\344\306\071\351\004\210\074\303\272\353
\125\172\155\200\231\044\365\154\001\373\370\227\260\224\133\353
\375\322\157\361\167\150\015\065\144\043\254\270\125\241\003\321
\115\102\031\334\370\165\131\126\243\371\250\111\171\370\257\016
\271\021\240\174\267\152\355\064\320\266\046\142\070\032\207\014
\370\350\375\056\323\220\177\007\221\052\035\326\176\134\205\203
\231\260\070\010\077\351\136\371\065\007\344\311\142\156\127\177
\247\120\225\367\272\310\233\346\216\242\001\305\326\146\277\171
\141\363\074\034\341\271\202\134\135\240\303\351\330\110\275\031
\242\021\024\031\156\262\206\033\150\076\110\067\032\210\267\135
\226\136\234\307\357\047\142\010\342\221\031\134\322\361\041\335
\272\027\102\202\227\161\201\123\061\251\237\366\175\142\277\162
\341\243\223\035\314\212\046\132\011\070\320\316\327\015\200\026
\264\170\245\072\207\114\215\212\245\325\106\227\362\054\020\271
\274\124\042\300\001\120\151\103\236\364\262\357\155\370\354\332
\361\343\261\357\337\221\217\124\052\013\045\301\046\031\304\122
\020\005\145\325\202\020\352\302\061\315\056
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 2"
Issuer: CN=QuoVadis Root CA 2,O=QuoVadis Limited,C=BM
Serial Number: 1289 (0x509)
Subject: CN=QuoVadis Root CA 2,O=QuoVadis Limited,C=BM
Not Valid Before: Fri Nov 24 18:27:00 2006
Not Valid After : Mon Nov 24 18:23:33 2031
Fingerprint (SHA-256):
85:A0:DD:7D:D7:20:AD:B7:FF:05:F8:3D:54:2B:20:9D:C7:FF:45:28:F7:D6:77:B1:83:89:FE:A5:E5:C4:9E:86
Fingerprint (SHA1): CA:3A:FB:CF:12:40:36:4B:44:B2:16:20:88:80:48:39:19:93:7C:F7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\312\072\373\317\022\100\066\113\104\262\026\040\210\200\110\071
\031\223\174\367
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\136\071\173\335\370\272\354\202\351\254\142\272\014\124\000\053
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\005\011
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "QuoVadis Root CA 3"
#
Issuer: CN=QuoVadis Root CA 3,O=QuoVadis Limited,C=BM
Serial Number: 1478 (0x5c6)
Subject: CN=QuoVadis Root CA 3,O=QuoVadis Limited,C=BM
Not Valid Before: Fri Nov 24 19:11:23 2006
Not Valid After : Mon Nov 24 19:06:44 2031
Fingerprint (SHA-256):
18:F1:FC:7F:20:5D:F8:AD:DD:EB:7F:E0:07:DD:57:E3:AF:37:5A:9C:4D:8D:73:54:6B:F4:F1:FE:D1:E1:8D:35
Fingerprint (SHA1): 1F:49:14:F7:D8:74:95:1D:DD:AE:02:C0:BE:FD:3A:2D:82:75:51:85
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061

\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\005\306
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\235\060\202\004\205\240\003\002\001\002\002\002\005
\306\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063\060\036\027\015\060\066\061\061\062
\064\061\071\061\061\062\063\132\027\015\063\061\061\061\062\064
\061\071\060\066\064\064\132\060\105\061\013\060\011\006\003\125
\004\006\023\002\102\115\061\031\060\027\006\003\125\004\012\023
\020\121\165\157\126\141\144\151\163\040\114\151\155\151\164\145
\144\061\033\060\031\006\003\125\004\003\023\022\121\165\157\126
\141\144\151\163\040\122\157\157\164\040\103\101\040\063\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\314
\127\102\026\124\234\346\230\323\323\115\356\376\355\307\237\103
\071\112\145\263\350\026\210\064\333\015\131\221\164\317\222\270
\004\100\255\002\113\061\253\274\215\221\150\330\040\016\032\001
\342\032\173\116\027\135\342\212\267\077\231\032\315\353\141\253
\302\145\246\037\267\267\275\267\217\374\375\160\217\013\240\147
\276\001\242\131\317\161\346\017\051\166\377\261\126\171\105\053
\037\236\172\124\350\243\051\065\150\244\001\117\017\244\056\067
\357\033\277\343\217\020\250\162\253\130\127\347\124\206\310\311
\363\133\332\054\332\135\216\156\074\243\076\332\373\202\345\335
\362\134\262\005\063\157\212\066\316\320\023\116\377\277\112\014
\064\114\246\303\041\275\120\004\125\353\261\273\235\373\105\036
\144\025\336\125\001\214\002\166\265\313\241\077\102\151\274\057
\275\150\103\026\126\211\052\067\141\221\375\246\256\116\300\313
\024\145\224\067\113\222\006\357\004\320\310\234\210\333\013\173
\201\257\261\075\052\304\145\072\170\266\356\334\200\261\322\323
\231\234\072\356\153\132\153\263\215\267\325\316\234\302\276\245
\113\057\026\261\236\150\073\006\157\256\175\237\370\336\354\314
\051\247\230\243\045\103\057\357\361\137\046\341\210\115\370\136
\156\327\331\024\156\031\063\151\247\073\204\211\223\304\123\125
\023\241\121\170\100\370\270\311\242\356\173\272\122\102\203\236
\024\355\005\122\132\131\126\247\227\374\235\077\012\051\330\334
\117\221\016\023\274\336\225\244\337\213\231\276\254\233\063\210
\357\265\201\257\033\306\042\123\310\366\307\356\227\024\260\305
\174\170\122\310\360\316\156\167\140\204\246\351\052\166\040\355

\130\001\027\060\223\351\032\213\340\163\143\331\152\222\224\111
\116\264\255\112\205\304\243\042\060\374\011\355\150\042\163\246
\210\014\125\041\130\305\341\072\237\052\335\312\341\220\340\331
\163\253\154\200\270\350\013\144\223\240\234\214\031\377\263\322
\014\354\221\046\207\212\263\242\341\160\217\054\012\345\315\155
\150\121\353\332\077\005\177\213\062\346\023\134\153\376\137\100
\342\042\310\264\264\144\117\326\272\175\110\076\250\151\014\327
\273\206\161\311\163\270\077\073\235\045\113\332\377\100\353\002
\003\001\000\001\243\202\001\225\060\202\001\221\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\201\341
\006\003\125\035\040\004\201\331\060\201\326\060\201\323\006\011
\053\006\001\004\001\276\130\000\003\060\201\305\060\201\223\006
\010\053\006\001\005\005\007\002\002\060\201\206\032\201\203\101
\156\171\040\165\163\145\040\157\146\040\164\150\151\163\040\103
\145\162\164\151\146\151\143\141\164\145\040\143\157\156\163\164
\151\164\165\164\145\163\040\141\143\143\145\160\164\141\156\143
\145\040\157\146\040\164\150\145\040\121\165\157\126\141\144\151
\163\040\122\157\157\164\040\103\101\040\063\040\103\145\162\164
\151\146\151\143\141\164\145\040\120\157\154\151\143\171\040\057
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\120
\162\141\143\164\151\143\145\040\123\164\141\164\145\155\145\156
\164\056\060\055\006\010\053\006\001\005\005\007\002\001\026\041
\150\164\164\160\072\057\057\167\167\167\056\161\165\157\166\141
\144\151\163\147\154\157\142\141\154\056\143\157\155\057\143\160
\163\060\013\006\003\125\035\017\004\004\003\002\001\006\060\035
\006\003\125\035\016\004\026\004\024\362\300\023\340\202\103\076
\373\356\057\147\062\226\065\134\333\270\313\002\320\060\156\006
\003\125\035\043\004\147\060\145\200\024\362\300\023\340\202\103
\076\373\356\057\147\062\226\065\134\333\270\313\002\320\241\111
\244\107\060\105\061\013\060\011\006\003\125\004\006\023\002\102
\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\033\060\031
\006\003\125\004\003\023\022\121\165\157\126\141\144\151\163\040
\122\157\157\164\040\103\101\040\063\202\002\005\306\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\002\001
\000\117\255\240\054\114\372\300\362\157\367\146\125\253\043\064
\356\347\051\332\303\133\266\260\203\331\320\320\342\041\373\363
\140\247\073\135\140\123\047\242\233\366\010\042\052\347\277\240
\162\345\234\044\152\061\261\220\172\047\333\204\021\211\047\246
\167\132\070\327\277\254\206\374\356\135\203\274\006\306\321\167
\153\017\155\044\057\113\172\154\247\007\226\312\343\204\237\255
\210\213\035\253\026\215\133\146\027\331\026\364\213\200\322\335
\370\262\166\303\374\070\023\252\014\336\102\151\053\156\363\074
\353\200\047\333\365\246\104\015\237\132\125\131\013\325\015\122
\110\305\256\237\362\057\200\305\352\062\120\065\022\227\056\301
\341\377\361\043\210\121\070\237\362\146\126\166\347\017\121\227
\245\122\014\115\111\121\225\066\075\277\242\113\014\020\035\206
\231\114\252\363\162\021\223\344\352\366\233\332\250\135\247\115

\267\236\002\256\163\000\310\332\043\003\350\371\352\031\164\142
\000\224\313\042\040\276\224\247\131\265\202\152\276\231\171\172
\251\362\112\044\122\367\164\375\272\116\346\250\035\002\156\261
\015\200\104\301\256\323\043\067\137\273\205\174\053\222\056\350
\176\245\213\335\231\341\277\047\157\055\135\252\173\207\376\012
\335\113\374\216\365\046\344\156\160\102\156\063\354\061\236\173
\223\301\344\311\151\032\075\300\153\116\042\155\356\253\130\115
\306\320\101\301\053\352\117\022\207\136\353\105\330\154\365\230
\002\323\240\330\125\212\006\231\031\242\240\167\321\060\236\254
\314\165\356\203\365\260\142\071\317\154\127\342\114\322\221\013
\016\165\050\033\232\277\375\032\103\361\312\167\373\073\217\141
\270\151\050\026\102\004\136\160\052\034\041\330\217\341\275\043
\133\055\164\100\222\331\143\031\015\163\335\151\274\142\107\274
\340\164\053\262\353\175\276\101\033\265\300\106\305\241\042\313
\137\116\301\050\222\336\030\272\325\052\050\273\021\213\027\223
\230\231\140\224\134\043\317\132\047\227\136\013\005\006\223\067
\036\073\151\066\353\251\236\141\035\217\062\332\216\014\326\164
\076\173\011\044\332\001\167\107\304\073\315\064\214\231\365\312
\341\045\141\063\262\131\033\342\156\327\067\127\266\015\251\022
\332
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 3"
Issuer: CN=QuoVadis Root CA 3,O=QuoVadis Limited,C=BM
Serial Number: 1478 (0x5c6)
Subject: CN=QuoVadis Root CA 3,O=QuoVadis Limited,C=BM
Not Valid Before: Fri Nov 24 19:11:23 2006
Not Valid After : Mon Nov 24 19:06:44 2031
Fingerprint (SHA-256):
18:F1:FC:7F:20:5D:F8:AD:DD:EB:7F:E0:07:DD:57:E3:AF:37:5A:9C:4D:8D:73:54:6B:F4:F1:FE:D1:E1:8D:35
Fingerprint (SHA1): 1F:49:14:F7:D8:74:95:1D:DD:AE:02:C0:BE:FD:3A:2D:82:75:51:85
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\037\111\024\367\330\164\225\035\335\256\002\300\276\375\072\055
\202\165\121\205
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\061\205\074\142\224\227\143\271\252\375\211\116\257\157\340\317
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061

\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\005\306
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Security Communication Root CA"
#
Issuer: OU=Security Communication RootCA1,O=SECOM Trust.net,C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication RootCA1,O=SECOM Trust.net,C=JP
Not Valid Before: Tue Sep 30 04:20:49 2003
Not Valid After : Sat Sep 30 04:20:49 2023
Fingerprint (SHA-256):
E7:5E:72:ED:9F:56:0E:EC:6E:B4:80:00:73:A4:3F:C3:AD:19:19:5A:39:22:82:01:78:95:97:4A:99:02:6B:6C
Fingerprint (SHA1): 36:B1:2B:49:F9:81:9E:D7:4C:9E:BC:38:0F:C6:56:8F:5D:AC:B2:F7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\030\060\026\006\003\125\004\012\023\017\123\105\103\117\115\040
\124\162\165\163\164\056\156\145\164\061\047\060\045\006\003\125
\004\013\023\036\123\145\143\165\162\151\164\171\040\103\157\155
\155\165\156\151\143\141\164\151\157\156\040\122\157\157\164\103
\101\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\030\060\026\006\003\125\004\012\023\017\123\105\103\117\115\040
\124\162\165\163\164\056\156\145\164\061\047\060\045\006\003\125
\004\013\023\036\123\145\143\165\162\151\164\171\040\103\157\155
\155\165\156\151\143\141\164\151\157\156\040\122\157\157\164\103
\101\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\132\060\202\002\102\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\120\061\013\060\011\006\003\125\004\006\023\002\112\120\061\030
\060\026\006\003\125\004\012\023\017\123\105\103\117\115\040\124
\162\165\163\164\056\156\145\164\061\047\060\045\006\003\125\004
\013\023\036\123\145\143\165\162\151\164\171\040\103\157\155\155
\165\156\151\143\141\164\151\157\156\040\122\157\157\164\103\101
\061\060\036\027\015\060\063\060\071\063\060\060\064\062\060\064
\071\132\027\015\062\063\060\071\063\060\060\064\062\060\064\071
\132\060\120\061\013\060\011\006\003\125\004\006\023\002\112\120
\061\030\060\026\006\003\125\004\012\023\017\123\105\103\117\115
\040\124\162\165\163\164\056\156\145\164\061\047\060\045\006\003
\125\004\013\023\036\123\145\143\165\162\151\164\171\040\103\157
\155\155\165\156\151\143\141\164\151\157\156\040\122\157\157\164
\103\101\061\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\263\263\376\177\323\155\261\357\026\174\127\245
\014\155\166\212\057\113\277\144\373\114\356\212\360\363\051\174
\365\377\356\052\340\351\351\272\133\144\042\232\232\157\054\072
\046\151\121\005\231\046\334\325\034\152\161\306\232\175\036\235
\335\174\154\306\214\147\147\112\076\370\161\260\031\047\251\011
\014\246\225\277\113\214\014\372\125\230\073\330\350\042\241\113
\161\070\171\254\227\222\151\263\211\176\352\041\150\006\230\024
\226\207\322\141\066\274\155\047\126\236\127\356\300\300\126\375
\062\317\244\331\216\302\043\327\215\250\363\330\045\254\227\344
\160\070\364\266\072\264\235\073\227\046\103\243\241\274\111\131
\162\114\043\060\207\001\130\366\116\276\034\150\126\146\257\315
\101\135\310\263\115\052\125\106\253\037\332\036\342\100\075\333
\315\175\271\222\200\234\067\335\014\226\144\235\334\042\367\144
\213\337\141\336\025\224\122\025\240\175\122\311\113\250\041\311
\306\261\355\313\303\225\140\321\017\360\253\160\370\337\313\115
\176\354\326\372\253\331\275\177\124\362\245\351\171\372\331\326
\166\044\050\163\002\003\001\000\001\243\077\060\075\060\035\006
\003\125\035\016\004\026\004\024\240\163\111\231\150\334\205\133
\145\343\233\050\057\127\237\275\063\274\007\110\060\013\006\003
\125\035\017\004\004\003\002\001\006\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\150\100
\251\250\273\344\117\135\171\263\005\265\027\263\140\023\353\306
\222\135\340\321\323\152\376\373\276\233\155\277\307\005\155\131
\040\304\034\360\267\332\204\130\002\143\372\110\026\357\117\245
\013\367\112\230\362\077\236\033\255\107\153\143\316\010\107\353
\122\077\170\234\257\115\256\370\325\117\317\232\230\052\020\101
\071\122\304\335\331\233\016\357\223\001\256\262\056\312\150\102
\044\102\154\260\263\072\076\315\351\332\110\304\025\313\351\371

\007\017\222\120\111\212\335\061\227\137\311\351\067\252\073\131
\145\227\224\062\311\263\237\076\072\142\130\305\111\255\142\016
\161\245\062\252\057\306\211\166\103\100\023\023\147\075\242\124
\045\020\313\361\072\362\331\372\333\111\126\273\246\376\247\101
\065\303\340\210\141\311\210\307\337\066\020\042\230\131\352\260
\112\373\126\026\163\156\254\115\367\042\241\117\255\035\172\055
\105\047\345\060\301\136\362\332\023\313\045\102\121\225\107\003
\214\154\041\314\164\102\355\123\377\063\213\217\017\127\001\026
\057\317\246\356\311\160\042\024\275\375\276\154\013\003
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Security Communication Root CA"
Issuer: OU=Security Communication RootCA1,O=SECOM Trust.net,C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication RootCA1,O=SECOM Trust.net,C=JP
Not Valid Before: Tue Sep 30 04:20:49 2003
Not Valid After : Sat Sep 30 04:20:49 2023
Fingerprint (SHA-256):
E7:5E:72:ED:9F:56:0E:EC:6E:B4:80:00:73:A4:3F:C3:AD:19:19:5A:39:22:82:01:78:95:97:4A:99:02:6B:6C
Fingerprint (SHA1): 36:B1:2B:49:F9:81:9E:D7:4C:9E:BC:38:0F:C6:56:8F:5D:AC:B2:F7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\066\261\053\111\371\201\236\327\114\236\274\070\017\306\126\217
\135\254\262\367
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\361\274\143\152\124\340\265\047\365\315\347\032\343\115\156\112
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\030\060\026\006\003\125\004\012\023\017\123\105\103\117\115\040
\124\162\165\163\164\056\156\145\164\061\047\060\045\006\003\125
\004\013\023\036\123\145\143\165\162\151\164\171\040\103\157\155
\155\165\156\151\143\141\164\151\157\156\040\122\157\157\164\103
\101\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Camerfirma Chambers of Commerce Root"
#
Issuer: CN=Chambers of Commerce Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Serial Number: 0 (0x0)
Subject: CN=Chambers of Commerce Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Not Valid Before: Tue Sep 30 16:13:43 2003
Not Valid After : Wed Sep 30 16:13:44 2037
Fingerprint (SHA-256):
0C:25:8A:12:A5:67:4A:EF:25:F2:8B:A7:DC:FA:EC:EE:A3:48:E5:41:E6:F5:CC:4E:E6:3B:71:B3:61:60:6A:C3
Fingerprint (SHA1): 6E:3A:55:A4:19:0C:19:5C:93:84:3C:C0:DB:72:2E:31:30:61:F0:B1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Camerfirma Chambers of Commerce Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060
\040\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060
\040\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END

CKA_VALUE MULTILINE_OCTAL
\060\202\004\275\060\202\003\245\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061\047
\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155\145
\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101\070
\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004\013
\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150\141
\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060\040
\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163\040
\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157\164
\060\036\027\015\060\063\060\071\063\060\061\066\061\063\064\063
\132\027\015\063\067\060\071\063\060\061\066\061\063\064\064\132
\060\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060
\040\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164\060\202\001\040\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\015\000\060\202\001\010\002\202\001
\001\000\267\066\125\345\245\135\030\060\340\332\211\124\221\374
\310\307\122\370\057\120\331\357\261\165\163\145\107\175\033\133
\272\165\305\374\241\210\044\372\057\355\312\010\112\071\124\304
\121\172\265\332\140\352\070\074\201\262\313\361\273\331\221\043
\077\110\001\160\165\251\005\052\255\037\161\363\311\124\075\035
\006\152\100\076\263\014\205\356\134\033\171\302\142\304\270\066
\216\065\135\001\014\043\004\107\065\252\233\140\116\240\146\075
\313\046\012\234\100\241\364\135\230\277\161\253\245\000\150\052
\355\203\172\017\242\024\265\324\042\263\200\260\074\014\132\121
\151\055\130\030\217\355\231\236\361\256\342\225\346\366\107\250
\326\014\017\260\130\130\333\303\146\067\236\233\221\124\063\067
\322\224\034\152\110\311\311\362\245\332\245\014\043\367\043\016
\234\062\125\136\161\234\204\005\121\232\055\375\346\116\052\064
\132\336\312\100\067\147\014\124\041\125\167\332\012\014\314\227
\256\200\334\224\066\112\364\076\316\066\023\036\123\344\254\116
\072\005\354\333\256\162\234\070\213\320\071\073\211\012\076\167
\376\165\002\001\003\243\202\001\104\060\202\001\100\060\022\006
\003\125\035\023\001\001\377\004\010\060\006\001\001\377\002\001
\014\060\074\006\003\125\035\037\004\065\060\063\060\061\240\057
\240\055\206\053\150\164\164\160\072\057\057\143\162\154\056\143
\150\141\155\142\145\162\163\151\147\156\056\157\162\147\057\143
\150\141\155\142\145\162\163\162\157\157\164\056\143\162\154\060
\035\006\003\125\035\016\004\026\004\024\343\224\365\261\115\351
\333\241\051\133\127\213\115\166\006\166\341\321\242\212\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\021

\006\011\140\206\110\001\206\370\102\001\001\004\004\003\002\000
\007\060\047\006\003\125\035\021\004\040\060\036\201\034\143\150
\141\155\142\145\162\163\162\157\157\164\100\143\150\141\155\142
\145\162\163\151\147\156\056\157\162\147\060\047\006\003\125\035
\022\004\040\060\036\201\034\143\150\141\155\142\145\162\163\162
\157\157\164\100\143\150\141\155\142\145\162\163\151\147\156\056
\157\162\147\060\130\006\003\125\035\040\004\121\060\117\060\115
\006\013\053\006\001\004\001\201\207\056\012\003\001\060\076\060
\074\006\010\053\006\001\005\005\007\002\001\026\060\150\164\164
\160\072\057\057\143\160\163\056\143\150\141\155\142\145\162\163
\151\147\156\056\157\162\147\057\143\160\163\057\143\150\141\155
\142\145\162\163\162\157\157\164\056\150\164\155\154\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\014\101\227\302\032\206\300\042\174\237\373\220\363\032\321
\003\261\357\023\371\041\137\004\234\332\311\245\215\047\154\226
\207\221\276\101\220\001\162\223\347\036\175\137\366\211\306\135
\247\100\011\075\254\111\105\105\334\056\215\060\150\262\011\272
\373\303\057\314\272\013\337\077\167\173\106\175\072\022\044\216
\226\217\074\005\012\157\322\224\050\035\155\014\300\056\210\042
\325\330\317\035\023\307\360\110\327\327\005\247\317\307\107\236
\073\074\064\310\200\117\324\024\273\374\015\120\367\372\263\354
\102\137\251\335\155\310\364\165\317\173\301\162\046\261\001\034
\134\054\375\172\116\264\001\305\005\127\271\347\074\252\005\331
\210\351\007\106\101\316\357\101\201\256\130\337\203\242\256\312
\327\167\037\347\000\074\235\157\216\344\062\011\035\115\170\064
\170\064\074\224\233\046\355\117\161\306\031\172\275\040\042\110
\132\376\113\175\003\267\347\130\276\306\062\116\164\036\150\335
\250\150\133\263\076\356\142\175\331\200\350\012\165\172\267\356
\264\145\232\041\220\340\252\320\230\274\070\265\163\074\213\370
\334
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
For Email Distrust After: Mon Mar 01 00:00:00 2021
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\061\060\063\060\061\060\060\060\060\060\060\132
END

Trust for "Camerfirma Chambers of Commerce Root"
Issuer: CN=Chambers of Commerce Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Serial Number: 0 (0x0)
Subject: CN=Chambers of Commerce Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Not Valid Before: Tue Sep 30 16:13:43 2003
Not Valid After : Wed Sep 30 16:13:44 2037
Fingerprint (SHA-256):
0C:25:8A:12:A5:67:4A:EF:25:F2:8B:A7:DC:FA:EC:EE:A3:48:E5:41:E6:F5:CC:4E:E6:3B:71:B3:61:60:6A:C3

Fingerprint (SHA1): 6E:3A:55:A4:19:0C:19:5C:93:84:3C:C0:DB:72:2E:31:30:61:F0:B1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Camerfirma Chambers of Commerce Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\156\072\125\244\031\014\031\134\223\204\074\300\333\162\056\061
\060\141\360\261
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\260\001\356\024\331\257\051\030\224\166\216\361\151\063\052\204
END
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060
\040\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Camerfirma Global Chambersign Root"
#
Issuer: CN=Global Chambersign Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Serial Number: 0 (0x0)
Subject: CN=Global Chambersign Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Not Valid Before: Tue Sep 30 16:14:18 2003
Not Valid After : Wed Sep 30 16:14:18 2037
Fingerprint (SHA-256):
EF:3C:B4:17:FC:8E:BF:6F:97:87:6C:9E:4E:CE:39:DE:1E:A5:FE:64:91:41:D1:02:8B:7D:11:C0:B2:29:8C:ED
Fingerprint (SHA1): 33:9B:6B:14:50:24:9B:55:7A:01:87:72:84:D9:E0:2F:C3:D2:D8:E9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Camerfirma Global Chambersign Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\175\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\040\060
\036\006\003\125\004\003\023\027\107\154\157\142\141\154\040\103
\150\141\155\142\145\162\163\151\147\156\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\175\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\040\060
\036\006\003\125\004\003\023\027\107\154\157\142\141\154\040\103
\150\141\155\142\145\162\163\151\147\156\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\305\060\202\003\255\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\175\061\013\060\011\006\003\125\004\006\023\002\105\125\061\047
\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155\145
\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101\070
\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004\013
\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150\141
\155\142\145\162\163\151\147\156\056\157\162\147\061\040\060\036
\006\003\125\004\003\023\027\107\154\157\142\141\154\040\103\150
\141\155\142\145\162\163\151\147\156\040\122\157\157\164\060\036
\027\015\060\063\060\071\063\060\061\066\061\064\061\070\132\027
\015\063\067\060\071\063\060\061\066\061\064\061\070\132\060\175
\061\013\060\011\006\003\125\004\006\023\002\105\125\061\047\060
\045\006\003\125\004\012\023\036\101\103\040\103\141\155\145\162
\146\151\162\155\141\040\123\101\040\103\111\106\040\101\070\062
\067\064\063\062\070\067\061\043\060\041\006\003\125\004\013\023
\032\150\164\164\160\072\057\057\167\167\167\056\143\150\141\155
\142\145\162\163\151\147\156\056\157\162\147\061\040\060\036\006
\003\125\004\003\023\027\107\154\157\142\141\154\040\103\150\141
\155\142\145\162\163\151\147\156\040\122\157\157\164\060\202\001

\040\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\001\015\000\060\202\001\010\002\202\001\001\000\242\160
\242\320\237\102\256\133\027\307\330\175\317\024\203\374\117\311
\241\267\023\257\212\327\236\076\004\012\222\213\140\126\372\264
\062\057\210\115\241\140\010\364\267\011\116\240\111\057\111\326
\323\337\235\227\132\237\224\004\160\354\077\131\331\267\314\146
\213\230\122\050\011\002\337\305\057\204\215\172\227\167\277\354
\100\235\045\162\253\265\077\062\230\373\267\267\374\162\204\345
\065\207\371\125\372\243\037\016\157\056\050\335\151\240\331\102
\020\306\370\265\104\302\320\103\177\333\274\344\242\074\152\125
\170\012\167\251\330\352\031\062\267\057\376\134\077\033\356\261
\230\354\312\255\172\151\105\343\226\017\125\366\346\355\165\352
\145\350\062\126\223\106\211\250\045\212\145\006\356\153\277\171
\007\320\361\267\257\355\054\115\222\273\300\250\137\247\147\175
\004\362\025\010\160\254\222\326\175\004\322\063\373\114\266\013
\013\373\032\311\304\215\003\251\176\134\362\120\253\022\245\241
\317\110\120\245\357\322\310\032\023\372\260\177\261\202\034\167
\152\017\137\334\013\225\217\357\103\176\346\105\011\045\002\001
\003\243\202\001\120\060\202\001\114\060\022\006\003\125\035\023
\001\001\377\004\010\060\006\001\001\377\002\001\014\060\077\006
\003\125\035\037\004\070\060\066\060\064\240\062\240\060\206\056
\150\164\164\160\072\057\057\143\162\154\056\143\150\141\155\142
\145\162\163\151\147\156\056\157\162\147\057\143\150\141\155\142
\145\162\163\151\147\156\162\157\157\164\056\143\162\154\060\035
\006\003\125\035\016\004\026\004\024\103\234\066\237\260\236\060
\115\306\316\137\255\020\253\345\003\245\372\251\024\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\021\006
\011\140\206\110\001\206\370\102\001\001\004\004\003\002\000\007
\060\052\006\003\125\035\021\004\043\060\041\201\037\143\150\141
\155\142\145\162\163\151\147\156\162\157\157\164\100\143\150\141
\155\142\145\162\163\151\147\156\056\157\162\147\060\052\006\003
\125\035\022\004\043\060\041\201\037\143\150\141\155\142\145\162
\163\151\147\156\162\157\157\164\100\143\150\141\155\142\145\162
\163\151\147\156\056\157\162\147\060\133\006\003\125\035\040\004
\124\060\122\060\120\006\013\053\006\001\004\001\201\207\056\012
\001\001\060\101\060\077\006\010\053\006\001\005\005\007\002\001
\026\063\150\164\164\160\072\057\057\143\160\163\056\143\150\141
\155\142\145\162\163\151\147\156\056\157\162\147\057\143\160\163
\057\143\150\141\155\142\145\162\163\151\147\156\162\157\157\164
\056\150\164\155\154\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\001\001\000\074\073\160\221\371\004\124
\047\221\341\355\355\376\150\177\141\135\345\101\145\117\062\361
\030\005\224\152\034\336\037\160\333\076\173\062\002\064\265\014
\154\241\212\174\245\364\217\377\324\330\255\027\325\055\004\321
\077\130\200\342\201\131\210\276\300\343\106\223\044\376\220\275
\046\242\060\055\350\227\046\127\065\211\164\226\030\366\025\342
\257\044\031\126\002\002\262\272\017\024\352\306\212\146\301\206
\105\125\213\276\222\276\234\244\004\307\111\074\236\350\051\172

\211\327\376\257\377\150\365\245\027\220\275\254\231\314\245\206
\127\011\147\106\333\326\026\302\106\361\344\251\120\365\217\321
\222\025\323\137\076\306\000\111\072\156\130\262\321\321\047\015
\045\310\062\370\040\021\315\175\062\063\110\224\124\114\335\334
\171\304\060\237\353\216\270\125\265\327\210\134\305\152\044\075
\262\323\005\003\121\306\007\357\314\024\162\164\075\156\162\316
\030\050\214\112\240\167\345\011\053\105\104\107\254\267\147\177
\001\212\005\132\223\276\241\301\377\370\347\016\147\244\107\111
\166\135\165\220\032\365\046\217\360
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
For Email Distrust After: Mon Mar 01 00:00:00 2021
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\061\060\063\060\061\060\060\060\060\060\060\132
END

Trust for "Camerfirma Global Chambersign Root"
Issuer: CN=Global Chambersign Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Serial Number: 0 (0x0)
Subject: CN=Global Chambersign Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Not Valid Before: Tue Sep 30 16:14:18 2003
Not Valid After : Wed Sep 30 16:14:18 2037
Fingerprint (SHA-256):
EF:3C:B4:17:FC:8E:BF:6F:97:87:6C:9E:4E:CE:39:DE:1E:A5:FE:64:91:41:D1:02:8B:7D:11:C0:B2:29:8C:ED
Fingerprint (SHA1): 33:9B:6B:14:50:24:9B:55:7A:01:87:72:84:D9:E0:2F:C3:D2:D8:E9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Camerfirma Global Chambersign Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\063\233\153\024\120\044\233\125\172\001\207\162\204\331\340\057
\303\322\330\351
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\346\173\277\006\320\117\103\355\304\172\145\212\373\153\031
END
CKA_ISSUER MULTILINE_OCTAL
\060\175\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\040\060
\036\006\003\125\004\003\023\027\107\154\157\142\141\154\040\103

\150\141\155\142\145\162\163\151\147\156\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "XRamp Global CA Root"
#
Issuer: CN=XRamp Global Certification Authority,O=XRamp Security Services Inc,OU=www.xrampsecurity.com,C=US
Serial Number:50:94:6c:ec:18:ea:d5:9c:4d:d5:97:ef:75:8f:a0:ad
Subject: CN=XRamp Global Certification Authority,O=XRamp Security Services Inc,OU=www.xrampsecurity.com,C=US
Not Valid Before: Mon Nov 01 17:14:04 2004
Not Valid After : Mon Jan 01 05:37:19 2035
Fingerprint (SHA-256):
CE:CD:DC:90:50:99:D8:DA:DF:C5:B1:D2:09:B7:37:CB:E2:C1:8C:FB:2C:10:C0:FF:0B:CF:0D:32:86:FC:1A:A2
Fingerprint (SHA1): B8:01:86:D1:EB:9C:86:A5:41:04:CF:30:54:F3:4C:52:B7:E5:58:C6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "XRamp Global CA Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\036\060\034\006\003\125\004\013\023\025\167\167\167\056\170
\162\141\155\160\163\145\143\165\162\151\164\171\056\143\157\155
\061\044\060\042\006\003\125\004\012\023\033\130\122\141\155\160
\040\123\145\143\165\162\151\164\171\040\123\145\162\166\151\143
\145\163\040\111\156\143\061\055\060\053\006\003\125\004\003\023
\044\130\122\141\155\160\040\107\154\157\142\141\154\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\036\060\034\006\003\125\004\013\023\025\167\167\167\056\170
\162\141\155\160\163\145\143\165\162\151\164\171\056\143\157\155
\061\044\060\042\006\003\125\004\012\023\033\130\122\141\155\160
\040\123\145\143\165\162\151\164\171\040\123\145\162\166\151\143
\145\163\040\111\156\143\061\055\060\053\006\003\125\004\003\023

\044\130\122\141\155\160\040\107\154\157\142\141\154\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\120\224\154\354\030\352\325\234\115\325\227\357\165\217
\240\255
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\060\060\202\003\030\240\003\002\001\002\002\020\120
\224\154\354\030\352\325\234\115\325\227\357\165\217\240\255\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\202\061\013\060\011\006\003\125\004\006\023\002\125\123\061\036
\060\034\006\003\125\004\013\023\025\167\167\167\056\170\162\141
\155\160\163\145\143\165\162\151\164\171\056\143\157\155\061\044
\060\042\006\003\125\004\012\023\033\130\122\141\155\160\040\123
\145\143\165\162\151\164\171\040\123\145\162\166\151\143\145\163
\040\111\156\143\061\055\060\053\006\003\125\004\003\023\044\130
\122\141\155\160\040\107\154\157\142\141\154\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\060\036\027\015\060\064\061\061\060\061\061\067\061
\064\060\064\132\027\015\063\065\060\061\060\061\060\065\063\067
\061\071\132\060\201\202\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\036\060\034\006\003\125\004\013\023\025\167\167
\167\056\170\162\141\155\160\163\145\143\165\162\151\164\171\056
\143\157\155\061\044\060\042\006\003\125\004\012\023\033\130\122
\141\155\160\040\123\145\143\165\162\151\164\171\040\123\145\162
\166\151\143\145\163\040\111\156\143\061\055\060\053\006\003\125
\004\003\023\044\130\122\141\155\160\040\107\154\157\142\141\154
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\230\044\036\275\025\264\272
\337\307\214\245\047\266\070\013\151\363\266\116\250\054\056\041
\035\134\104\337\041\135\176\043\164\376\136\176\264\112\267\246
\255\037\256\340\006\026\342\233\133\331\147\164\153\135\200\217
\051\235\206\033\331\234\015\230\155\166\020\050\130\344\145\260
\177\112\230\171\237\340\303\061\176\200\053\265\214\300\100\073
\021\206\320\313\242\206\066\140\244\325\060\202\155\331\156\320
\017\022\004\063\227\137\117\141\132\360\344\371\221\253\347\035
\073\274\350\317\364\153\055\064\174\342\110\141\034\216\363\141
\104\314\157\240\112\251\224\260\115\332\347\251\064\172\162\070
\250\101\314\074\224\021\175\353\310\246\214\267\206\313\312\063
\073\331\075\067\213\373\172\076\206\054\347\163\327\012\127\254
\144\233\031\353\364\017\004\010\212\254\003\027\031\144\364\132
\045\042\215\064\054\262\366\150\035\022\155\323\212\036\024\332
\304\217\246\342\043\205\325\172\015\275\152\340\351\354\354\027
\273\102\033\147\252\045\355\105\203\041\374\301\311\174\325\142

\076\372\362\305\055\323\375\324\145\002\003\001\000\001\243\201
\237\060\201\234\060\023\006\011\053\006\001\004\001\202\067\024
\002\004\006\036\004\000\103\000\101\060\013\006\003\125\035\017
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\306\117\242\075\006\143\204\011\234\316\142\344\004\254
\215\134\265\351\266\033\060\066\006\003\125\035\037\004\057\060
\055\060\053\240\051\240\047\206\045\150\164\164\160\072\057\057
\143\162\154\056\170\162\141\155\160\163\145\143\165\162\151\164
\171\056\143\157\155\057\130\107\103\101\056\143\162\154\060\020
\006\011\053\006\001\004\001\202\067\025\001\004\003\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\221\025\071\003\001\033\147\373\112\034\371\012
\140\133\241\332\115\227\142\371\044\123\047\327\202\144\116\220
\056\303\111\033\053\232\334\374\250\170\147\065\361\035\360\021
\275\267\110\343\020\366\015\337\077\322\311\266\252\125\244\110
\272\002\333\336\131\056\025\133\073\235\026\175\107\327\067\352
\137\115\166\022\066\273\037\327\241\201\004\106\040\243\054\155
\251\236\001\176\077\051\316\000\223\337\375\311\222\163\211\211
\144\236\347\053\344\034\221\054\322\271\316\175\316\157\061\231
\323\346\276\322\036\220\360\011\024\171\134\043\253\115\322\332
\041\037\115\231\171\235\341\317\047\237\020\233\034\210\015\260
\212\144\101\061\270\016\154\220\044\244\233\134\161\217\272\273
\176\034\033\333\152\200\017\041\274\351\333\246\267\100\364\262
\213\251\261\344\357\232\032\320\075\151\231\356\250\050\243\341
\074\263\360\262\021\234\317\174\100\346\335\347\103\175\242\330
\072\265\251\215\362\064\231\304\324\020\341\006\375\011\204\020
\073\356\304\114\364\354\047\174\102\302\164\174\202\212\011\311
\264\003\045\274
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "XRamp Global CA Root"
Issuer: CN=XRamp Global Certification Authority,O=XRamp Security Services Inc,OU=www.xrampsecurity.com,C=US
Serial Number:50:94:6c:ec:18:ea:d5:9c:4d:d5:97:ef:75:8f:a0:ad
Subject: CN=XRamp Global Certification Authority,O=XRamp Security Services Inc,OU=www.xrampsecurity.com,C=US
Not Valid Before: Mon Nov 01 17:14:04 2004
Not Valid After : Mon Jan 01 05:37:19 2035
Fingerprint (SHA-256): CE:CD:DC:90:50:99:D8:DA:DF:C5:B1:D2:09:B7:37:CB:E2:C1:8C:FB:2C:10:C0:FF:0B:CF:0D:32:86:FC:1A:A2
Fingerprint (SHA1): B8:01:86:D1:EB:9C:86:A5:41:04:CF:30:54:F3:4C:52:B7:E5:58:C6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "XRamp Global CA Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\270\001\206\321\353\234\206\245\101\004\317\060\124\363\114\122
\267\345\130\306
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\241\013\104\263\312\020\330\000\156\235\017\330\017\222\012\321
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\036\060\034\006\003\125\004\013\023\025\167\167\167\056\170
\162\141\155\160\163\145\143\165\162\151\164\171\056\143\157\155
\061\044\060\042\006\003\125\004\012\023\033\130\122\141\155\160
\040\123\145\143\165\162\151\164\171\040\123\145\162\166\151\143
\145\163\040\111\156\143\061\055\060\053\006\003\125\004\003\023
\044\130\122\141\155\160\040\107\154\157\142\141\154\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\120\224\154\354\030\352\325\234\115\325\227\357\165\217
\240\255
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Go Daddy Class 2 CA"
#
Issuer: OU=Go Daddy Class 2 Certification Authority,O="The Go Daddy Group, Inc.",C=US
Serial Number: 0 (0x0)
Subject: OU=Go Daddy Class 2 Certification Authority,O="The Go Daddy Group, Inc.",C=US
Not Valid Before: Tue Jun 29 17:06:20 2004
Not Valid After : Thu Jun 29 17:06:20 2034
Fingerprint (SHA-256):
C3:84:6B:F2:4B:9E:93:CA:64:27:4C:0E:C6:7C:1E:CC:5E:02:4F:FC:AC:D2:D7:40:19:35:0E:81:FE:54:6A:E4
Fingerprint (SHA1): 27:96:BA:E6:3F:18:01:E2:77:26:1B:A0:D7:77:70:02:8F:20:EE:E4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Go Daddy Class 2 CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061

\041\060\037\006\003\125\004\012\023\030\124\150\145\040\107\157
\040\104\141\144\144\171\040\107\162\157\165\160\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\013\023\050\107\157\040
\104\141\144\144\171\040\103\154\141\163\163\040\062\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\124\150\145\040\107\157
\040\104\141\144\144\171\040\107\162\157\165\160\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\013\023\050\107\157\040
\104\141\144\144\171\040\103\154\141\163\163\040\062\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\000\060\202\002\350\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061\041
\060\037\006\003\125\004\012\023\030\124\150\145\040\107\157\040
\104\141\144\144\171\040\107\162\157\165\160\054\040\111\156\143
\056\061\061\060\057\006\003\125\004\013\023\050\107\157\040\104
\141\144\144\171\040\103\154\141\163\163\040\062\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\060\036\027\015\060\064\060\066\062\071\061\067
\060\066\062\060\132\027\015\063\064\060\066\062\071\061\067\060
\066\062\060\132\060\143\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\041\060\037\006\003\125\004\012\023\030\124\150
\145\040\107\157\040\104\141\144\144\171\040\107\162\157\165\160
\054\040\111\156\143\056\061\061\060\057\006\003\125\004\013\023
\050\107\157\040\104\141\144\144\171\040\103\154\141\163\163\040
\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\060\202\001\040\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\015
\000\060\202\001\010\002\202\001\001\000\336\235\327\352\127\030
\111\241\133\353\327\137\110\206\352\276\335\377\344\357\147\034
\364\145\150\263\127\161\240\136\167\273\355\233\111\351\160\200
\075\126\030\143\010\157\332\362\314\320\077\177\002\124\042\124
\020\330\262\201\324\300\165\075\113\177\307\167\303\076\170\253
\032\003\265\040\153\057\152\053\261\305\210\176\304\273\036\260
\301\330\105\047\157\252\067\130\367\207\046\327\330\055\366\251
\027\267\037\162\066\116\246\027\077\145\230\222\333\052\156\135
\242\376\210\340\013\336\177\345\215\025\341\353\313\072\325\342

\022\242\023\055\330\216\257\137\022\075\240\010\005\010\266\134
\245\145\070\004\105\231\036\243\140\140\164\305\101\245\162\142
\033\142\305\037\157\137\032\102\276\002\121\145\250\256\043\030
\152\374\170\003\251\115\177\200\303\372\253\132\374\241\100\244
\312\031\026\376\262\310\357\136\163\015\356\167\275\232\366\171
\230\274\261\007\147\242\025\015\335\240\130\306\104\173\012\076
\142\050\137\272\101\007\123\130\317\021\176\070\164\305\370\377
\265\151\220\217\204\164\352\227\033\257\002\001\003\243\201\300
\060\201\275\060\035\006\003\125\035\016\004\026\004\024\322\304
\260\322\221\324\114\021\161\263\141\313\075\241\376\335\250\152
\324\343\060\201\215\006\003\125\035\043\004\201\205\060\201\202
\200\024\322\304\260\322\221\324\114\021\161\263\141\313\075\241
\376\335\250\152\324\343\241\147\244\145\060\143\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\041\060\037\006\003\125
\004\012\023\030\124\150\145\040\107\157\040\104\141\144\144\171
\040\107\162\157\165\160\054\040\111\156\143\056\061\061\060\057
\006\003\125\004\013\023\050\107\157\040\104\141\144\144\171\040
\103\154\141\163\163\040\062\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\202
\001\000\060\014\006\003\125\035\023\004\005\060\003\001\001\377
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\062\113\363\262\312\076\221\374\022\306\241\007
\214\216\167\240\063\006\024\134\220\036\030\367\010\246\075\012
\031\371\207\200\021\156\151\344\226\027\060\377\064\221\143\162
\070\356\314\034\001\243\035\224\050\244\061\366\172\304\124\327
\366\345\061\130\003\242\314\316\142\333\224\105\163\265\277\105
\311\044\265\325\202\002\255\043\171\151\215\270\266\115\316\317
\114\312\063\043\350\034\210\252\235\213\101\156\026\311\040\345
\211\236\315\073\332\160\367\176\231\046\040\024\124\045\253\156
\163\205\346\233\041\235\012\154\202\016\250\370\302\014\372\020
\036\154\226\357\207\015\304\017\141\213\255\356\203\053\225\370
\216\222\204\162\071\353\040\352\203\355\203\315\227\156\010\274
\353\116\046\266\163\053\344\323\366\114\376\046\161\342\141\021
\164\112\377\127\032\207\017\165\110\056\317\121\151\027\240\002
\022\141\225\325\321\100\262\020\114\356\304\254\020\103\246\245
\236\012\325\225\142\232\015\317\210\202\305\062\014\344\053\237
\105\346\015\237\050\234\261\271\052\132\127\255\067\017\257\035
\177\333\275\237
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Go Daddy Class 2 CA"
Issuer: OU=Go Daddy Class 2 Certification Authority,O="The Go Daddy Group, Inc.",C=US
Serial Number: 0 (0x0)
Subject: OU=Go Daddy Class 2 Certification Authority,O="The Go Daddy Group, Inc.",C=US
Not Valid Before: Tue Jun 29 17:06:20 2004

Not Valid After : Thu Jun 29 17:06:20 2034
Fingerprint (SHA-256):
C3:84:6B:F2:4B:9E:93:CA:64:27:4C:0E:C6:7C:1E:CC:5E:02:4F:FC:AC:D2:D7:40:19:35:0E:81:FE:54:6A:E4
Fingerprint (SHA1): 27:96:BA:E6:3F:18:01:E2:77:26:1B:A0:D7:77:70:02:8F:20:EE:E4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Go Daddy Class 2 CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\047\226\272\346\077\030\001\342\167\046\033\240\327\167\160\002
\217\040\356\344
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\221\336\006\045\253\332\375\062\027\014\273\045\027\052\204\147
END
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\124\150\145\040\107\157
\040\104\141\144\144\171\040\107\162\157\165\160\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\013\023\050\107\157\040
\104\141\144\144\171\040\103\154\141\163\163\040\062\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Starfield Class 2 CA"
#
Issuer: OU=Starfield Class 2 Certification Authority,O="Starfield Technologies, Inc.",C=US
Serial Number: 0 (0x0)
Subject: OU=Starfield Class 2 Certification Authority,O="Starfield Technologies, Inc.",C=US
Not Valid Before: Tue Jun 29 17:39:16 2004
Not Valid After : Thu Jun 29 17:39:16 2034
Fingerprint (SHA-256):
14:65:FA:20:53:97:B8:76:FA:A6:F0:A9:95:8E:55:90:E4:0F:CC:7F:AA:4F:B7:C2:C8:67:75:21:FB:5F:B6:58
Fingerprint (SHA1): AD:7E:1C:28:B0:64:EF:8F:60:03:40:20:14:C3:D0:E3:37:0E:B5:8A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "Starfield Class 2 CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\045\060\043\006\003\125\004\012\023\034\123\164\141\162\146\151
\145\154\144\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\062\060\060\006\003\125\004\013\023
\051\123\164\141\162\146\151\145\154\144\040\103\154\141\163\163
\040\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\045\060\043\006\003\125\004\012\023\034\123\164\141\162\146\151
\145\154\144\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\062\060\060\006\003\125\004\013\023
\051\123\164\141\162\146\151\145\154\144\040\103\154\141\163\163
\040\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\017\060\202\002\367\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\150\061\013\060\011\006\003\125\004\006\023\002\125\123\061\045
\060\043\006\003\125\004\012\023\034\123\164\141\162\146\151\145
\154\144\040\124\145\143\150\156\157\154\157\147\151\145\163\054
\040\111\156\143\056\061\062\060\060\006\003\125\004\013\023\051
\123\164\141\162\146\151\145\154\144\040\103\154\141\163\163\040
\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\060\036\027\015\060\064\060
\066\062\071\061\067\063\071\061\066\132\027\015\063\064\060\066
\062\071\061\067\063\071\061\066\132\060\150\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\045\060\043\006\003\125\004
\012\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143
\150\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061
\062\060\060\006\003\125\004\013\023\051\123\164\141\162\146\151
\145\154\144\040\103\154\141\163\163\040\062\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\060\202\001\040\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\015\000\060\202\001\010\002
\202\001\001\000\267\062\310\376\351\161\246\004\205\255\014\021
\144\337\316\115\357\310\003\030\207\077\241\253\373\074\246\237
\360\303\241\332\324\330\156\053\123\220\373\044\244\076\204\360
\236\350\137\354\345\047\104\365\050\246\077\173\336\340\052\360

\310\257\123\057\236\312\005\001\223\036\217\146\034\071\247\115
\372\132\266\163\004\045\146\353\167\177\347\131\306\112\231\045
\024\124\353\046\307\363\177\031\325\060\160\217\257\260\106\052
\377\255\353\051\355\327\237\252\004\207\243\324\371\211\245\064
\137\333\103\221\202\066\331\146\074\261\270\271\202\375\234\072
\076\020\310\073\357\006\145\146\172\233\031\030\075\377\161\121
\074\060\056\137\276\075\167\163\262\135\006\154\303\043\126\232
\053\205\046\222\034\247\002\263\344\077\015\257\010\171\202\270
\066\075\352\234\323\065\263\274\151\312\365\314\235\350\375\144
\215\027\200\063\156\136\112\135\231\311\036\207\264\235\032\300
\325\156\023\065\043\136\337\233\137\075\357\326\367\166\302\352
\076\273\170\015\034\102\147\153\004\330\370\326\332\157\213\362
\104\240\001\253\002\001\003\243\201\305\060\201\302\060\035\006
\003\125\035\016\004\026\004\024\277\137\267\321\316\335\037\206
\364\133\125\254\334\327\020\302\016\251\210\347\060\201\222\006
\003\125\035\043\004\201\212\060\201\207\200\024\277\137\267\321
\316\335\037\206\364\133\125\254\334\327\020\302\016\251\210\347
\241\154\244\152\060\150\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\045\060\043\006\003\125\004\012\023\034\123\164
\141\162\146\151\145\154\144\040\124\145\143\150\156\157\154\157
\147\151\145\163\054\040\111\156\143\056\061\062\060\060\006\003
\125\004\013\023\051\123\164\141\162\146\151\145\154\144\040\103
\154\141\163\163\040\062\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\202\001
\000\060\014\006\003\125\035\023\004\005\060\003\001\001\377\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\001\001\000\005\235\077\210\235\321\311\032\125\241\254\151\363
\363\131\332\233\001\207\032\117\127\251\241\171\011\052\333\367
\057\262\036\314\307\136\152\330\203\207\241\227\357\111\065\076
\167\006\101\130\142\277\216\130\270\012\147\077\354\263\335\041
\146\037\311\124\372\162\314\075\114\100\330\201\257\167\236\203
\172\273\242\307\365\064\027\216\331\021\100\364\374\054\052\115
\025\177\247\142\135\056\045\323\000\013\040\032\035\150\371\027
\270\364\275\213\355\050\131\335\115\026\213\027\203\310\262\145
\307\055\172\245\252\274\123\206\155\335\127\244\312\370\040\101
\013\150\360\364\373\164\276\126\135\172\171\365\371\035\205\343
\055\225\276\365\161\220\103\314\215\037\232\000\012\207\051\351
\125\042\130\000\043\352\343\022\103\051\133\107\010\335\214\101
\152\145\006\250\345\041\252\101\264\225\041\225\271\175\321\064
\253\023\326\255\274\334\342\075\071\315\275\076\165\160\241\030
\131\003\311\042\264\217\234\325\136\052\327\245\266\324\012\155
\370\267\100\021\106\232\037\171\016\142\277\017\227\354\340\057
\037\027\224
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Starfield Class 2 CA"
Issuer: OU=Starfield Class 2 Certification Authority,O="Starfield Technologies, Inc.",C=US
Serial Number: 0 (0x0)
Subject: OU=Starfield Class 2 Certification Authority,O="Starfield Technologies, Inc.",C=US
Not Valid Before: Tue Jun 29 17:39:16 2004
Not Valid After : Thu Jun 29 17:39:16 2034
Fingerprint (SHA-256):
14:65:FA:20:53:97:B8:76:FA:A6:F0:A9:95:8E:55:90:E4:0F:CC:7F:AA:4F:B7:C2:C8:67:75:21:FB:5F:B6:58
Fingerprint (SHA1): AD:7E:1C:28:B0:64:EF:8F:60:03:40:20:14:C3:D0:E3:37:0E:B5:8A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Class 2 CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\255\176\034\050\260\144\357\217\140\003\100\040\024\303\320\343
\067\016\265\212
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\062\112\113\273\310\143\151\233\276\164\232\306\335\035\106\044
END
CKA_ISSUER MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\045\060\043\006\003\125\004\012\023\034\123\164\141\162\146\151
\145\154\144\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\062\060\060\006\003\125\004\013\023
\051\123\164\141\162\146\151\145\154\144\040\103\154\141\163\163
\040\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Assured ID Root CA"
#
Issuer: CN=DigiCert Assured ID Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0c:e7:e0:e5:17:d8:46:fe:8f:e5:60:fc:1b:f0:30:39
Subject: CN=DigiCert Assured ID Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
3E:90:99:B5:01:5E:8F:48:6C:00:BC:EA:9D:11:1E:E7:21:FA:BA:35:5A:89:BC:F1:DF:69:56:1E:3D:C6:32:5C

Fingerprint (SHA1): 05:63:B8:63:0D:62:D7:5A:BB:C8:AB:1E:4B:DF:B5:A8:99:B2:4D:43
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\014\347\340\345\027\330\106\376\217\345\140\374\033\360
\060\071
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\267\060\202\002\237\240\003\002\001\002\002\020\014
\347\340\345\027\330\106\376\217\345\140\374\033\360\060\071\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\145
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\044\060\042\006\003\125\004\003\023\033\104\151\147\151\103\145
\162\164\040\101\163\163\165\162\145\144\040\111\104\040\122\157
\157\164\040\103\101\060\036\027\015\060\066\061\061\061\060\060
\060\060\060\060\060\132\027\015\063\061\061\061\061\060\060\060
\060\060\060\060\132\060\145\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\025\060\023\006\003\125\004\012\023\014\104
\151\147\151\103\145\162\164\040\111\156\143\061\031\060\027\006
\003\125\004\013\023\020\167\167\167\056\144\151\147\151\143\145
\162\164\056\143\157\155\061\044\060\042\006\003\125\004\003\023
\033\104\151\147\151\103\145\162\164\040\101\163\163\165\162\145

\144\040\111\104\040\122\157\157\164\040\103\101\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\255\016\025
\316\344\103\200\134\261\207\363\267\140\371\161\022\245\256\334
\046\224\210\252\364\316\365\040\071\050\130\140\014\370\200\332
\251\025\225\062\141\074\265\261\050\204\212\212\334\237\012\014
\203\027\172\217\220\254\212\347\171\123\134\061\204\052\366\017
\230\062\066\166\314\336\335\074\250\242\357\152\373\041\362\122
\141\337\237\040\327\037\342\261\331\376\030\144\322\022\133\137
\371\130\030\065\274\107\315\241\066\371\153\177\324\260\070\076
\301\033\303\214\063\331\330\057\030\376\050\017\263\247\203\326
\303\156\104\300\141\065\226\026\376\131\234\213\166\155\327\361
\242\113\015\053\377\013\162\332\236\140\320\216\220\065\306\170
\125\207\040\241\317\345\155\012\310\111\174\061\230\063\154\042
\351\207\320\062\132\242\272\023\202\021\355\071\027\235\231\072
\162\241\346\372\244\331\325\027\061\165\256\205\175\042\256\077
\001\106\206\366\050\171\310\261\332\344\127\027\304\176\034\016
\260\264\222\246\126\263\275\262\227\355\252\247\360\267\305\250
\077\225\026\320\377\241\226\353\010\137\030\167\117\002\003\001
\000\001\243\143\060\141\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\105\353\242\257\364\222\313\202\061\055\121\213\247\247
\041\235\363\155\310\017\060\037\006\003\125\035\043\004\030\060
\026\200\024\105\353\242\257\364\222\313\202\061\055\121\213\247
\247\041\235\363\155\310\017\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\001\001\000\242\016\274\337\342
\355\360\343\162\163\172\144\224\277\367\162\146\330\062\344\102
\165\142\256\207\353\362\325\331\336\126\263\237\314\316\024\050
\271\015\227\140\134\022\114\130\344\323\075\203\111\105\130\227
\065\151\032\250\107\352\126\306\171\253\022\330\147\201\204\337
\177\011\074\224\346\270\046\054\040\275\075\263\050\211\367\137
\377\042\342\227\204\037\351\145\357\207\340\337\301\147\111\263
\135\353\262\011\052\353\046\355\170\276\175\077\053\363\267\046
\065\155\137\211\001\266\111\133\237\001\005\233\253\075\045\301
\314\266\177\302\361\157\206\306\372\144\150\353\201\055\224\353
\102\267\372\214\036\335\142\361\276\120\147\267\154\275\363\361
\037\153\014\066\007\026\177\067\174\251\133\155\172\361\022\106
\140\203\327\047\004\276\113\316\227\276\303\147\052\150\021\337
\200\347\014\063\146\277\023\015\024\156\363\177\037\143\020\036
\372\215\033\045\155\154\217\245\267\141\001\261\322\243\046\241
\020\161\235\255\342\303\371\303\231\121\267\053\007\010\316\056
\346\120\262\247\372\012\105\057\242\360\362
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Assured ID Root CA"
Issuer: CN=DigiCert Assured ID Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0c:e7:e0:e5:17:d8:46:fe:8f:e5:60:fc:1b:f0:30:39
Subject: CN=DigiCert Assured ID Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
3E:90:99:B5:01:5E:8F:48:6C:00:BC:EA:9D:11:1E:E7:21:FA:BA:35:5A:89:BC:F1:DF:69:56:1E:3D:C6:32:5C
Fingerprint (SHA1): 05:63:B8:63:0D:62:D7:5A:BB:C8:AB:1E:4B:DF:B5:A8:99:B2:4D:43
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\005\143\270\143\015\142\327\132\273\310\253\036\113\337\265\250
\231\262\115\103
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\207\316\013\173\052\016\111\000\341\130\161\233\067\250\223\162
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\014\347\340\345\027\330\106\376\217\345\140\374\033\360
\060\071
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Global Root CA"
#
Issuer: CN=DigiCert Global Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:08:3b:e0:56:90:42:46:b1:a1:75:6a:c9:59:91:c7:4a
Subject: CN=DigiCert Global Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):

43:48:A0:E9:44:4C:78:CB:26:5E:05:8D:5E:89:44:B4:D8:4F:96:62:BD:26:DB:25:7F:89:34:A4:43:C7:01:61
Fingerprint (SHA1): A8:98:5D:3A:65:E5:E5:C4:B2:D7:D6:6D:40:C6:DD:2F:B1:9C:54:36
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\010\073\340\126\220\102\106\261\241\165\152\311\131\221
\307\112
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\257\060\202\002\227\240\003\002\001\002\002\020\010
\073\340\126\220\102\106\261\241\165\152\311\131\221\307\112\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\141
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\040\060\036\006\003\125\004\003\023\027\104\151\147\151\103\145
\162\164\040\107\154\157\142\141\154\040\122\157\157\164\040\103
\101\060\036\027\015\060\066\061\061\061\060\060\060\060\060\060
\060\132\027\015\063\061\061\061\061\060\060\060\060\060\060\060
\132\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103
\145\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013
\023\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143
\157\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147

\151\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157
\164\040\103\101\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\342\073\341\021\162\336\250\244\323\243\127
\252\120\242\217\013\167\220\311\242\245\356\022\316\226\133\001
\011\040\314\001\223\247\116\060\267\123\367\103\304\151\000\127
\235\342\215\042\335\207\006\100\000\201\011\316\316\033\203\277
\337\315\073\161\106\342\326\146\307\005\263\166\047\026\217\173
\236\036\225\175\356\267\110\243\010\332\326\257\172\014\071\006
\145\177\112\135\037\274\027\370\253\276\356\050\327\164\177\172
\170\231\131\205\150\156\134\043\062\113\277\116\300\350\132\155
\343\160\277\167\020\277\374\001\366\205\331\250\104\020\130\062
\251\165\030\325\321\242\276\107\342\047\152\364\232\063\370\111
\010\140\213\324\137\264\072\204\277\241\252\112\114\175\076\317
\117\137\154\166\136\240\113\067\221\236\334\042\346\155\316\024
\032\216\152\313\376\315\263\024\144\027\307\133\051\236\062\277
\362\356\372\323\013\102\324\253\267\101\062\332\014\324\357\370
\201\325\273\215\130\077\265\033\350\111\050\242\160\332\061\004
\335\367\262\026\362\114\012\116\007\250\355\112\075\136\265\177
\243\220\303\257\047\002\003\001\000\001\243\143\060\141\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\035\006\003\125\035\016\004\026\004\024\003\336\120\065\126\321
\114\273\146\360\243\342\033\033\303\227\262\075\321\125\060\037
\006\003\125\035\043\004\030\060\026\200\024\003\336\120\065\126
\321\114\273\146\360\243\342\033\033\303\227\262\075\321\125\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\001\001\000\313\234\067\252\110\023\022\012\372\335\104\234\117
\122\260\364\337\256\004\365\171\171\010\243\044\030\374\113\053
\204\300\055\271\325\307\376\364\301\037\130\313\270\155\234\172
\164\347\230\051\253\021\265\343\160\240\241\315\114\210\231\223
\214\221\160\342\253\017\034\276\223\251\377\143\325\344\007\140
\323\243\277\235\133\011\361\325\216\343\123\364\216\143\372\077
\247\333\264\146\337\142\146\326\321\156\101\215\362\055\265\352
\167\112\237\235\130\342\053\131\300\100\043\355\055\050\202\105
\076\171\124\222\046\230\340\200\110\250\067\357\360\326\171\140
\026\336\254\350\016\315\156\254\104\027\070\057\111\332\341\105
\076\052\271\066\123\317\072\120\006\367\056\350\304\127\111\154
\141\041\030\325\004\255\170\074\054\072\200\153\247\353\257\025
\024\351\330\211\301\271\070\154\342\221\154\212\377\144\271\167
\045\127\060\300\033\044\243\341\334\351\337\107\174\265\264\044
\010\005\060\354\055\275\013\277\105\277\120\271\251\363\353\230
\001\022\255\310\210\306\230\064\137\215\012\074\306\351\325\225
\225\155\336
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Global Root CA"
Issuer: CN=DigiCert Global Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:08:3b:e0:56:90:42:46:b1:a1:75:6a:c9:59:91:c7:4a
Subject: CN=DigiCert Global Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
43:48:A0:E9:44:4C:78:CB:26:5E:05:8D:5E:89:44:B4:D8:4F:96:62:BD:26:DB:25:7F:89:34:A4:43:C7:01:61
Fingerprint (SHA1): A8:98:5D:3A:65:E5:E5:C4:B2:D7:D6:6D:40:C6:DD:2F:B1:9C:54:36
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\250\230\135\072\145\345\345\304\262\327\326\155\100\306\335\057
\261\234\124\066
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\171\344\251\204\015\175\072\226\327\300\117\342\103\114\211\056
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\010\073\340\126\220\102\106\261\241\165\152\311\131\221
\307\112
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert High Assurance EV Root CA"
#
Issuer: CN=DigiCert High Assurance EV Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:02:ac:5c:26:6a:0b:40:9b:8f:0b:79:f2:ae:46:25:77
Subject: CN=DigiCert High Assurance EV Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031

Fingerprint (SHA-256):
74:31:E5:F4:C3:C1:CE:46:90:77:4F:0B:61:E0:54:40:88:3B:A9:A0:1E:D0:0B:A6:AB:D7:80:6E:D3:B1:18:CF
Fingerprint (SHA1): 5F:B7:EE:06:33:E2:59:DB:AD:0C:4C:9A:E6:D3:8F:1A:61:C7:DC:25
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert High Assurance EV Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\053\060\051\006\003\125\004\003\023\042\104\151\147\151
\103\145\162\164\040\110\151\147\150\040\101\163\163\165\162\141
\156\143\145\040\105\126\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\053\060\051\006\003\125\004\003\023\042\104\151\147\151
\103\145\162\164\040\110\151\147\150\040\101\163\163\165\162\141
\156\143\145\040\105\126\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\002\254\134\046\152\013\100\233\217\013\171\362\256\106
\045\167
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\305\060\202\002\255\240\003\002\001\002\002\020\002
\254\134\046\152\013\100\233\217\013\171\362\256\106\045\167\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\154
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\053\060\051\006\003\125\004\003\023\042\104\151\147\151\103\145
\162\164\040\110\151\147\150\040\101\163\163\165\162\141\156\143
\145\040\105\126\040\122\157\157\164\040\103\101\060\036\027\015
\060\066\061\061\061\060\060\060\060\060\060\060\132\027\015\063
\061\061\061\061\060\060\060\060\060\060\060\132\060\154\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\025\060\023\006
\003\125\004\012\023\014\104\151\147\151\103\145\162\164\040\111
\156\143\061\031\060\027\006\003\125\004\013\023\020\167\167\167

\056\144\151\147\151\143\145\162\164\056\143\157\155\061\053\060
\051\006\003\125\004\003\023\042\104\151\147\151\103\145\162\164
\040\110\151\147\150\040\101\163\163\165\162\141\156\143\145\040
\105\126\040\122\157\157\164\040\103\101\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\306\314\345\163\346
\373\324\273\345\055\055\062\246\337\345\201\077\311\315\045\111
\266\161\052\303\325\224\064\147\242\012\034\260\137\151\246\100
\261\304\267\262\217\320\230\244\251\101\131\072\323\334\224\326
\074\333\164\070\244\112\314\115\045\202\367\112\245\123\022\070
\356\363\111\155\161\221\176\143\266\253\246\137\303\244\204\370
\117\142\121\276\370\305\354\333\070\222\343\006\345\010\221\014
\304\050\101\125\373\313\132\211\025\176\161\350\065\277\115\162
\011\075\276\072\070\120\133\167\061\033\215\263\307\044\105\232
\247\254\155\000\024\132\004\267\272\023\353\121\012\230\101\101
\042\116\145\141\207\201\101\120\246\171\134\211\336\031\112\127
\325\056\346\135\034\123\054\176\230\315\032\006\026\244\150\163
\320\064\004\023\134\241\161\323\132\174\125\333\136\144\341\067
\207\060\126\004\345\021\264\051\200\022\361\171\071\210\242\002
\021\174\047\146\267\210\267\170\362\312\012\250\070\253\012\144
\302\277\146\135\225\204\301\241\045\036\207\135\032\120\013\040
\022\314\101\273\156\013\121\070\270\113\313\002\003\001\000\001
\243\143\060\141\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\261\076\303\151\003\370\277\107\001\324\230\046\032\010\002\357
\143\144\053\303\060\037\006\003\125\035\043\004\030\060\026\200
\024\261\076\303\151\003\370\277\107\001\324\230\046\032\010\002
\357\143\144\053\303\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\001\001\000\034\032\006\227\334\327\234
\237\074\210\146\006\010\127\041\333\041\107\370\052\147\252\277
\030\062\166\100\020\127\301\212\363\172\331\021\145\216\065\372
\236\374\105\265\236\331\114\061\113\270\221\350\103\054\216\263
\170\316\333\343\123\171\161\326\345\041\224\001\332\125\207\232
\044\144\366\212\146\314\336\234\067\315\250\064\261\151\233\043
\310\236\170\042\053\160\103\343\125\107\061\141\031\357\130\305
\205\057\116\060\366\240\061\026\043\310\347\342\145\026\063\313
\277\032\033\240\075\370\312\136\213\061\213\140\010\211\055\014
\006\134\122\267\304\371\012\230\321\025\137\237\022\276\174\066
\143\070\275\104\244\177\344\046\053\012\304\227\151\015\351\214
\342\300\020\127\270\310\166\022\221\125\362\110\151\330\274\052
\002\133\017\104\324\040\061\333\364\272\160\046\135\220\140\236
\274\113\027\011\057\264\313\036\103\150\311\007\047\301\322\134
\367\352\041\271\150\022\234\074\234\277\236\374\200\134\233\143
\315\354\107\252\045\047\147\240\067\363\000\202\175\124\327\251
\370\351\056\023\243\167\350\037\112
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE

CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert High Assurance EV Root CA"
Issuer: CN=DigiCert High Assurance EV Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:02:ac:5c:26:6a:0b:40:9b:8f:0b:79:f2:ae:46:25:77
Subject: CN=DigiCert High Assurance EV Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
74:31:E5:F4:C3:C1:CE:46:90:77:4F:0B:61:E0:54:40:88:3B:A9:A0:1E:D0:0B:A6:AB:D7:80:6E:D3:B1:18:CF
Fingerprint (SHA1): 5F:B7:EE:06:33:E2:59:DB:AD:0C:4C:9A:E6:D3:8F:1A:61:C7:DC:25
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert High Assurance EV Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\137\267\356\006\063\342\131\333\255\014\114\232\346\323\217\032
\141\307\334\045
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\324\164\336\127\134\071\262\323\234\205\203\305\300\145\111\212
END
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\053\060\051\006\003\125\004\003\023\042\104\151\147\151
\103\145\162\164\040\110\151\147\150\040\101\163\163\165\162\141
\156\143\145\040\105\126\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\002\254\134\046\152\013\100\233\217\013\171\362\256\106
\045\167
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SwissSign Platinum CA - G2"
#
Issuer: CN=SwissSign Platinum CA - G2,O=SwissSign AG,C=CH
Serial Number:4e:b2:00:67:0c:03:5d:4f
Subject: CN=SwissSign Platinum CA - G2,O=SwissSign AG,C=CH

Not Valid Before: Wed Oct 25 08:36:00 2006
Not Valid After : Sat Oct 25 08:36:00 2036
Fingerprint (SHA-256):
3B:22:2E:56:67:11:E9:92:30:0D:C0:B1:5A:B9:47:3D:AF:DE:F8:C8:4D:0C:EF:7D:33:17:B4:C1:82:1D:14:36
Fingerprint (SHA1): 56:E0:FA:C0:3B:8F:18:23:55:18:E5:D3:11:CA:E8:C2:43:31:AB:66
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Platinum CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\043\060\041\006\003\125\004\003\023
\032\123\167\151\163\163\123\151\147\156\040\120\154\141\164\151
\156\165\155\040\103\101\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\043\060\041\006\003\125\004\003\023
\032\123\167\151\163\163\123\151\147\156\040\120\154\141\164\151
\156\165\155\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\116\262\000\147\014\003\135\117
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\301\060\202\003\251\240\003\002\001\002\002\010\116
\262\000\147\014\003\135\117\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\111\061\013\060\011\006\003\125\004
\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023\014
\123\167\151\163\163\123\151\147\156\040\101\107\061\043\060\041
\006\003\125\004\003\023\032\123\167\151\163\163\123\151\147\156
\040\120\154\141\164\151\156\165\155\040\103\101\040\055\040\107
\062\060\036\027\015\060\066\061\060\062\065\060\070\063\066\060
\060\132\027\015\063\066\061\060\062\065\060\070\063\066\060\060
\132\060\111\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163
\123\151\147\156\040\101\107\061\043\060\041\006\003\125\004\003
\023\032\123\167\151\163\163\123\151\147\156\040\120\154\141\164
\151\156\165\155\040\103\101\040\055\040\107\062\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\312\337\242
\002\342\332\370\374\007\026\261\336\140\252\336\226\134\144\037
\307\057\176\317\147\372\104\102\326\166\143\225\256\353\257\162

\040\212\105\107\206\142\170\206\326\040\071\046\364\256\243\375
\043\347\245\234\265\042\041\031\267\067\223\042\300\120\234\202
\173\324\325\004\104\134\313\264\302\237\222\276\044\330\173\147
\042\342\151\137\345\005\170\324\207\331\161\160\063\045\123\264
\207\073\051\220\050\066\232\125\104\060\150\244\203\227\177\015
\036\234\166\377\025\235\140\227\000\215\212\205\003\354\200\276
\352\054\156\020\121\222\314\176\325\243\063\330\326\111\336\130
\052\257\366\026\353\113\173\220\062\227\271\272\235\130\361\370
\127\111\004\036\242\135\006\160\335\161\333\371\335\213\232\033
\214\317\075\243\115\316\313\174\366\273\234\240\372\011\316\043
\142\262\351\015\037\342\162\050\217\237\254\150\040\175\157\073
\250\205\061\011\177\013\307\350\145\351\343\170\016\011\147\060
\213\064\202\373\135\340\314\235\201\155\142\356\010\036\004\054
\116\233\354\376\251\117\137\375\151\170\357\011\037\241\264\277
\372\363\357\220\036\114\005\213\036\352\172\221\172\303\327\345
\373\060\274\154\033\020\130\230\367\032\137\320\051\062\003\023
\106\115\141\152\205\114\122\164\057\006\037\173\021\342\204\227
\306\231\363\155\177\327\147\203\176\023\150\330\161\050\132\330
\316\335\350\020\024\232\376\155\043\207\156\216\132\160\074\325
\215\011\000\247\252\274\260\061\067\155\310\204\024\036\133\275
\105\143\040\153\113\164\214\275\333\072\016\301\317\132\026\217
\245\230\362\166\211\262\023\022\073\013\167\167\254\273\345\074
\051\112\222\162\312\141\032\053\136\114\342\203\164\167\372\065
\110\172\205\115\215\232\123\304\337\170\312\227\221\110\053\105
\053\001\367\034\032\242\355\030\272\012\275\203\372\157\274\215
\127\223\073\324\324\246\316\036\361\240\261\316\253\375\053\050
\232\117\033\327\303\162\333\244\304\277\135\114\365\335\173\226
\151\356\150\200\346\347\230\272\066\267\376\156\355\053\275\040
\370\145\031\332\125\011\176\045\334\376\141\142\162\371\176\030
\002\357\143\264\320\373\257\345\073\143\214\147\217\002\003\001
\000\001\243\201\254\060\201\251\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\120\257\314\007\207\025\107\157\070\305\264\145
\321\336\225\252\351\337\234\314\060\037\006\003\125\035\043\004
\030\060\026\200\024\120\257\314\007\207\025\107\157\070\305\264
\145\321\336\225\252\351\337\234\314\060\106\006\003\125\035\040
\004\077\060\075\060\073\006\011\140\205\164\001\131\001\001\001
\001\060\056\060\054\006\010\053\006\001\005\005\007\002\001\026
\040\150\164\164\160\072\057\057\162\145\160\157\163\151\164\157
\162\171\056\163\167\151\163\163\163\151\147\156\056\143\157\155
\057\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\002\001\000\010\205\246\365\026\014\374\104\032\301\143
\340\371\125\106\010\374\160\034\102\050\226\216\267\305\301\101
\165\116\011\161\171\345\155\226\312\113\245\210\140\320\060\164
\270\312\010\334\264\060\236\100\007\026\153\145\225\167\001\256
\244\267\065\013\201\332\161\025\251\164\027\070\173\130\312\371
\057\373\300\145\166\215\133\001\271\175\336\202\075\144\270\276

\024\164\243\012\124\323\054\225\030\027\065\365\121\153\077\217
\242\226\141\071\170\153\113\345\246\240\370\123\337\121\020\223
\142\347\200\057\342\321\340\274\216\066\106\167\063\354\270\373
\216\232\054\211\115\061\021\017\046\236\004\273\267\004\215\013
\362\271\374\132\235\073\026\267\057\310\230\253\376\212\120\131
\056\243\073\374\051\135\213\301\113\311\342\212\023\035\261\277
\273\102\035\122\335\116\330\024\136\020\306\061\007\357\161\047
\367\033\071\011\334\202\352\213\263\225\206\136\375\365\332\135
\061\246\340\061\266\224\346\104\111\164\305\026\345\367\037\003
\141\050\305\310\313\022\240\102\113\371\153\210\010\215\264\062
\030\363\165\237\304\177\000\117\005\225\234\243\027\002\303\263
\123\233\252\040\071\051\053\146\372\235\257\136\263\222\322\265
\246\341\032\371\055\101\151\201\024\264\264\265\355\211\075\316
\373\251\235\065\102\104\261\034\024\163\201\317\052\001\065\232
\061\325\055\217\155\204\337\200\115\127\343\077\305\204\165\332
\211\306\060\273\353\217\313\042\010\240\256\252\361\003\154\072
\113\115\011\245\016\162\306\126\153\041\102\116\043\045\024\150
\256\166\012\174\014\007\160\144\371\232\057\366\005\071\046\306
\014\217\031\177\103\136\156\364\133\025\057\333\141\135\346\147
\057\077\010\224\371\140\264\230\061\332\164\361\204\223\161\115
\137\373\140\130\321\373\304\301\155\211\242\273\040\037\235\161
\221\313\062\233\023\075\076\175\222\122\065\254\222\224\242\323
\030\302\174\307\352\257\166\005\026\335\147\047\302\176\034\007
\042\041\363\100\012\033\064\007\104\023\302\204\152\216\337\031
\132\277\177\353\035\342\032\070\321\134\257\107\222\153\200\265
\060\245\311\215\330\253\061\201\037\337\302\146\067\323\223\251
\205\206\171\145\322
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SwissSign Platinum CA - G2"
Issuer: CN=SwissSign Platinum CA - G2,O=SwissSign AG,C=CH
Serial Number:4e:b2:00:67:0c:03:5d:4f
Subject: CN=SwissSign Platinum CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:36:00 2006
Not Valid After : Sat Oct 25 08:36:00 2036
Fingerprint (SHA-256):
3B:22:2E:56:67:11:E9:92:30:0D:C0:B1:5A:B9:47:3D:AF:DE:F8:C8:4D:0C:EF:7D:33:17:B4:C1:82:1D:14:36
Fingerprint (SHA1): 56:E0:FA:C0:3B:8F:18:23:55:18:E5:D3:11:CA:E8:C2:43:31:AB:66
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Platinum CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\126\340\372\300\073\217\030\043\125\030\345\323\021\312\350\302

\103\061\253\146
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\311\230\047\167\050\036\075\016\025\074\204\000\270\205\003\346
END
CKA_ISSUER MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\043\060\041\006\003\125\004\003\023
\032\123\167\151\163\163\123\151\147\156\040\120\154\141\164\151
\156\165\155\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\116\262\000\147\014\003\135\117
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SwissSign Gold CA - G2"
#
Issuer: CN=SwissSign Gold CA - G2,O=SwissSign AG,C=CH
Serial Number:00:bb:40:1c:43:f5:5e:4f:b0
Subject: CN=SwissSign Gold CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:30:35 2006
Not Valid After : Sat Oct 25 08:30:35 2036
Fingerprint (SHA-256):
62:DD:0B:E9:B9:F5:0A:16:3E:A0:F8:E7:5C:05:3B:1E:CA:57:EA:55:C8:68:8F:64:7C:68:81:F2:C8:35:7B:95
Fingerprint (SHA1): D8:C5:38:8A:B7:30:1B:1B:6E:D4:7A:E6:45:25:3A:6F:9F:1A:27:61
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Gold CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\037\060\035\006\003\125\004\003\023
\026\123\167\151\163\163\123\151\147\156\040\107\157\154\144\040
\103\101\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123

\151\147\156\040\101\107\061\037\060\035\006\003\125\004\003\023
\026\123\167\151\163\163\123\151\147\156\040\107\157\154\144\040
\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\273\100\034\103\365\136\117\260
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\272\060\202\003\242\240\003\002\001\002\002\011\000
\273\100\034\103\365\136\117\260\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\060\105\061\013\060\011\006\003\125
\004\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023
\014\123\167\151\163\163\123\151\147\156\040\101\107\061\037\060
\035\006\003\125\004\003\023\026\123\167\151\163\163\123\151\147
\156\040\107\157\154\144\040\103\101\040\055\040\107\062\060\036
\027\015\060\066\061\060\062\065\060\070\063\060\063\065\132\027
\015\063\066\061\060\062\065\060\070\063\060\063\065\132\060\105
\061\013\060\011\006\003\125\004\006\023\002\103\110\061\025\060
\023\006\003\125\004\012\023\014\123\167\151\163\163\123\151\147
\156\040\101\107\061\037\060\035\006\003\125\004\003\023\026\123
\167\151\163\163\123\151\147\156\040\107\157\154\144\040\103\101
\040\055\040\107\062\060\202\002\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002
\012\002\202\002\001\000\257\344\356\176\213\044\016\022\156\251
\120\055\026\104\073\222\222\134\312\270\135\204\222\102\023\052
\274\145\127\202\100\076\127\044\315\120\213\045\052\267\157\374
\357\242\320\300\037\002\044\112\023\226\217\043\023\346\050\130
\000\243\107\307\006\247\204\043\053\273\275\226\053\177\125\314
\213\301\127\037\016\142\145\017\335\075\126\212\163\332\256\176
\155\272\201\034\176\102\214\040\065\331\103\115\204\372\204\333
\122\054\363\016\047\167\013\153\277\021\057\162\170\237\056\330
\076\346\030\067\132\052\162\371\332\142\220\222\225\312\037\234
\351\263\074\053\313\363\001\023\277\132\317\301\265\012\140\275
\335\265\231\144\123\270\240\226\263\157\342\046\167\221\214\340
\142\020\002\237\064\017\244\325\222\063\121\336\276\215\272\204
\172\140\074\152\333\237\053\354\336\336\001\077\156\115\345\120
\206\313\264\257\355\104\100\305\312\132\214\332\322\053\174\250
\356\276\246\345\012\252\016\245\337\005\122\267\125\307\042\135
\062\152\227\227\143\023\333\311\333\171\066\173\205\072\112\305
\122\211\371\044\347\235\167\251\202\377\125\034\245\161\151\053
\321\002\044\362\263\046\324\153\332\004\125\345\301\012\307\155
\060\067\220\052\344\236\024\063\136\026\027\125\305\133\265\313
\064\211\222\361\235\046\217\241\007\324\306\262\170\120\333\014
\014\013\174\013\214\101\327\271\351\335\214\210\367\243\115\262
\062\314\330\027\332\315\267\316\146\235\324\375\136\377\275\227
\076\051\165\347\176\247\142\130\257\045\064\245\101\307\075\274
\015\120\312\003\003\017\010\132\037\225\163\170\142\277\257\162
\024\151\016\245\345\003\016\170\216\046\050\102\360\007\013\142

\040\020\147\071\106\372\251\003\314\004\070\172\146\357\040\203
\265\214\112\126\216\221\000\374\216\134\202\336\210\240\303\342
\150\156\175\215\357\074\335\145\364\135\254\121\357\044\200\256
\252\126\227\157\371\255\175\332\141\077\230\167\074\245\221\266
\034\214\046\332\145\242\011\155\301\342\124\343\271\312\114\114
\200\217\167\173\140\232\036\337\266\362\110\036\016\272\116\124
\155\230\340\341\242\032\242\167\120\317\304\143\222\354\107\031
\235\353\346\153\316\301\002\003\001\000\001\243\201\254\060\201
\251\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\035\006\003\125\035\016\004\026\004\024\133\045\173
\226\244\145\121\176\270\071\363\300\170\146\136\350\072\347\360
\356\060\037\006\003\125\035\043\004\030\060\026\200\024\133\045
\173\226\244\145\121\176\270\071\363\300\170\146\136\350\072\347
\360\356\060\106\006\003\125\035\040\004\077\060\075\060\073\006
\011\140\205\164\001\131\001\002\001\001\060\056\060\054\006\010
\053\006\001\005\005\007\002\001\026\040\150\164\164\160\072\057
\057\162\145\160\157\163\151\164\157\162\171\056\163\167\151\163
\163\163\151\147\156\056\143\157\155\057\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\002\001\000\047\272
\343\224\174\361\256\300\336\027\346\345\330\325\365\124\260\203
\364\273\315\136\005\173\117\237\165\146\257\074\350\126\176\374
\162\170\070\003\331\053\142\033\000\271\370\351\140\315\314\316
\121\212\307\120\061\156\341\112\176\030\057\151\131\266\075\144
\201\053\343\203\204\346\042\207\216\175\340\356\002\231\141\270
\036\364\270\053\210\022\026\204\302\061\223\070\226\061\246\271
\073\123\077\303\044\223\126\133\151\222\354\305\301\273\070\000
\343\354\027\251\270\334\307\174\001\203\237\062\107\272\122\042
\064\035\062\172\011\126\247\174\045\066\251\075\113\332\300\202
\157\012\273\022\310\207\113\047\021\371\036\055\307\223\077\236
\333\137\046\153\122\331\056\212\361\024\306\104\215\025\251\267
\277\275\336\246\032\356\256\055\373\110\167\027\376\273\354\257
\030\365\052\121\360\071\204\227\225\154\156\033\303\053\304\164
\140\171\045\260\012\047\337\337\136\322\071\317\105\175\102\113
\337\263\054\036\305\306\135\312\125\072\240\234\151\232\217\332
\357\262\260\074\237\207\154\022\053\145\160\025\122\061\032\044
\317\157\061\043\120\037\214\117\217\043\303\164\101\143\034\125
\250\024\335\076\340\121\120\317\361\033\060\126\016\222\260\202
\205\330\203\313\042\144\274\055\270\045\325\124\242\270\006\352
\255\222\244\044\240\301\206\265\112\023\152\107\317\056\013\126
\225\124\313\316\232\333\152\264\246\262\333\101\010\206\047\167
\367\152\240\102\154\013\070\316\327\165\120\062\222\302\337\053
\060\042\110\320\325\101\070\045\135\244\351\135\237\306\224\165
\320\105\375\060\227\103\217\220\253\012\307\206\163\140\112\151
\055\336\245\170\327\006\332\152\236\113\076\167\072\040\023\042
\001\320\277\150\236\143\140\153\065\115\013\155\272\241\075\300
\223\340\177\043\263\125\255\162\045\116\106\371\322\026\357\260
\144\301\001\236\351\312\240\152\230\016\317\330\140\362\057\111

\270\344\102\341\070\065\026\364\310\156\117\367\201\126\350\272
\243\276\043\257\256\375\157\003\340\002\073\060\166\372\033\155
\101\317\001\261\351\270\311\146\364\333\046\363\072\244\164\362
\111\044\133\311\260\320\127\301\372\076\172\341\227\311
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SwissSign Gold CA - G2"
Issuer: CN=SwissSign Gold CA - G2,O=SwissSign AG,C=CH
Serial Number:00:bb:40:1c:43:f5:5e:4f:b0
Subject: CN=SwissSign Gold CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:30:35 2006
Not Valid After : Sat Oct 25 08:30:35 2036
Fingerprint (SHA-256):
62:DD:0B:E9:B9:F5:0A:16:3E:A0:F8:E7:5C:05:3B:1E:CA:57:EA:55:C8:68:8F:64:7C:68:81:F2:C8:35:7B:95
Fingerprint (SHA1): D8:C5:38:8A:B7:30:1B:1B:6E:D4:7A:E6:45:25:3A:6F:9F:1A:27:61
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Gold CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\330\305\070\212\267\060\033\033\156\324\172\346\105\045\072\157
\237\032\047\141
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\044\167\331\250\221\321\073\372\210\055\302\377\370\315\063\223
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\037\060\035\006\003\125\004\003\023
\026\123\167\151\163\163\123\151\147\156\040\107\157\154\144\040
\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\273\100\034\103\365\136\117\260
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SwissSign Silver CA - G2"
#

Issuer: CN=SwissSign Silver CA - G2,O=SwissSign AG,C=CH
Serial Number:4f:1b:d4:2f:54:bb:2f:4b
Subject: CN=SwissSign Silver CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:32:46 2006
Not Valid After : Sat Oct 25 08:32:46 2036
Fingerprint (SHA-256):
BE:6C:4D:A2:BB:B9:BA:59:B6:F3:93:97:68:37:42:46:C3:C0:05:99:3F:A9:8F:02:0D:1D:ED:BE:D4:8A:81:D5
Fingerprint (SHA1): 9B:AA:E5:9F:56:EE:21:CB:43:5A:BE:25:93:DF:A7:F0:40:D1:1D:CB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Silver CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\041\060\037\006\003\125\004\003\023
\030\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145
\162\040\103\101\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\041\060\037\006\003\125\004\003\023
\030\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145
\162\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\117\033\324\057\124\273\057\113
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\275\060\202\003\245\240\003\002\001\002\002\010\117
\033\324\057\124\273\057\113\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\107\061\013\060\011\006\003\125\004
\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023\014
\123\167\151\163\163\123\151\147\156\040\101\107\061\041\060\037
\006\003\125\004\003\023\030\123\167\151\163\163\123\151\147\156
\040\123\151\154\166\145\162\040\103\101\040\055\040\107\062\060
\036\027\015\060\066\061\060\062\065\060\070\063\062\064\066\132
\027\015\063\066\061\060\062\065\060\070\063\062\064\066\132\060
\107\061\013\060\011\006\003\125\004\006\023\002\103\110\061\025
\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123\151
\147\156\040\101\107\061\041\060\037\006\003\125\004\003\023\030
\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145\162
\040\103\101\040\055\040\107\062\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000

\060\202\002\012\002\202\002\001\000\304\361\207\177\323\170\061
\367\070\311\370\303\231\103\274\307\367\274\067\347\116\161\272
\113\217\245\163\035\134\156\230\256\003\127\256\070\067\103\057
\027\075\037\310\316\150\020\301\170\256\031\003\053\020\372\054
\171\203\366\350\271\150\271\125\362\004\104\247\071\371\374\004
\213\036\361\242\115\047\371\141\173\272\267\345\242\023\266\353
\141\076\320\154\321\346\373\372\136\355\035\264\236\240\065\133
\241\222\313\360\111\222\376\205\012\005\076\346\331\013\342\117
\273\334\225\067\374\221\351\062\065\042\321\037\072\116\047\205
\235\260\025\224\062\332\141\015\107\115\140\102\256\222\107\350
\203\132\120\130\351\212\213\271\135\241\334\335\231\112\037\066
\147\273\110\344\203\266\067\353\110\072\257\017\147\217\027\007
\350\004\312\357\152\061\207\324\300\266\371\224\161\173\147\144
\270\266\221\112\102\173\145\056\060\152\014\365\220\356\225\346
\362\315\202\354\331\241\112\354\366\262\113\345\105\205\346\155
\170\223\004\056\234\202\155\066\251\304\061\144\037\206\203\013
\052\364\065\012\170\311\125\317\101\260\107\351\060\237\231\276
\141\250\006\204\271\050\172\137\070\331\033\251\070\260\203\177
\163\301\303\073\110\052\202\017\041\233\270\314\250\065\303\204
\033\203\263\076\276\244\225\151\001\072\211\000\170\004\331\311
\364\231\031\253\126\176\133\213\206\071\025\221\244\020\054\011
\062\200\140\263\223\300\052\266\030\013\235\176\215\111\362\020
\112\177\371\325\106\057\031\222\243\231\247\046\254\273\214\074
\346\016\274\107\007\334\163\121\361\160\144\057\010\371\264\107
\035\060\154\104\352\051\067\205\222\150\146\274\203\070\376\173
\071\056\323\120\360\037\373\136\140\266\251\246\372\047\101\361
\233\030\162\362\365\204\164\112\311\147\304\124\256\110\144\337
\214\321\156\260\035\341\007\217\010\036\231\234\161\351\114\330
\245\367\107\022\037\164\321\121\236\206\363\302\242\043\100\013
\163\333\113\246\347\163\006\214\301\240\351\301\131\254\106\372
\346\057\370\317\161\234\106\155\271\304\025\215\070\171\003\105
\110\357\304\135\327\010\356\207\071\042\206\262\015\017\130\103
\367\161\251\110\056\375\352\326\037\002\003\001\000\001\243\201
\254\060\201\251\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\027\240\315\301\344\101\266\072\133\073\313\105\235\275\034\302
\230\372\206\130\060\037\006\003\125\035\043\004\030\060\026\200
\024\027\240\315\301\344\101\266\072\133\073\313\105\235\275\034
\302\230\372\206\130\060\106\006\003\125\035\040\004\077\060\075
\060\073\006\011\140\205\164\001\131\001\003\001\001\060\056\060
\054\006\010\053\006\001\005\005\007\002\001\026\040\150\164\164
\160\072\057\057\162\145\160\157\163\151\164\157\162\171\056\163
\167\151\163\163\163\151\147\156\056\143\157\155\057\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\002\001
\000\163\306\201\340\047\322\055\017\340\225\060\342\232\101\177
\120\054\137\137\142\141\251\206\152\151\030\014\164\111\326\135
\204\352\101\122\030\157\130\255\120\126\040\152\306\275\050\151

\130\221\334\221\021\065\251\072\035\274\032\245\140\236\330\037
\177\105\221\151\331\176\273\170\162\301\006\017\052\316\217\205
\160\141\254\240\315\013\270\071\051\126\204\062\116\206\273\075
\304\052\331\327\037\162\356\376\121\241\042\101\261\161\002\143
\032\202\260\142\253\136\127\022\037\337\313\335\165\240\300\135
\171\220\214\033\340\120\346\336\061\376\230\173\160\137\245\220
\330\255\370\002\266\157\323\140\335\100\113\042\305\075\255\072
\172\237\032\032\107\221\171\063\272\202\334\062\151\003\226\156
\037\113\360\161\376\343\147\162\240\261\277\134\213\344\372\231
\042\307\204\271\033\215\043\227\077\355\045\340\317\145\273\365
\141\004\357\335\036\262\132\101\042\132\241\237\135\054\350\133
\311\155\251\014\014\170\252\140\306\126\217\001\132\014\150\274
\151\031\171\304\037\176\227\005\277\305\351\044\121\136\324\325
\113\123\355\331\043\132\066\003\145\243\301\003\255\101\060\363
\106\033\205\220\257\145\265\325\261\344\026\133\170\165\035\227
\172\155\131\251\052\217\173\336\303\207\211\020\231\111\163\170
\310\075\275\121\065\164\052\325\361\176\151\033\052\273\073\275
\045\270\232\132\075\162\141\220\146\207\356\014\326\115\324\021
\164\013\152\376\013\003\374\243\125\127\211\376\112\313\256\133
\027\005\310\362\215\043\061\123\070\322\055\152\077\202\271\215
\010\152\367\136\101\164\156\303\021\176\007\254\051\140\221\077
\070\312\127\020\015\275\060\057\307\245\346\101\240\332\256\005
\207\232\240\244\145\154\114\011\014\211\272\270\323\271\300\223
\212\060\372\215\345\232\153\025\001\116\147\252\332\142\126\076
\204\010\146\322\304\066\175\247\076\020\374\210\340\324\200\345
\000\275\252\363\116\006\243\172\152\371\142\162\343\011\117\353
\233\016\001\043\361\237\273\174\334\334\154\021\227\045\262\362
\264\143\024\322\006\052\147\214\203\365\316\352\007\330\232\152
\036\354\344\012\273\052\114\353\011\140\071\316\312\142\330\056
\156
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SwissSign Silver CA - G2"
Issuer: CN=SwissSign Silver CA - G2,O=SwissSign AG,C=CH
Serial Number:4f:1b:d4:2f:54:bb:2f:4b
Subject: CN=SwissSign Silver CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:32:46 2006
Not Valid After : Sat Oct 25 08:32:46 2036
Fingerprint (SHA-256):
BE:6C:4D:A2:BB:B9:BA:59:B6:F3:93:97:68:37:42:46:C3:C0:05:99:3F:A9:8F:02:0D:1D:ED:BE:D4:8A:81:D5
Fingerprint (SHA1): 9B:AA:E5:9F:56:EE:21:CB:43:5A:BE:25:93:DF:A7:F0:40:D1:1D:CB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "SwissSign Silver CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\233\252\345\237\126\356\041\313\103\132\276\045\223\337\247\360
\100\321\035\313
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\340\006\241\311\175\317\311\374\015\300\126\165\226\330\142\023
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\041\060\037\006\003\125\004\003\023
\030\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145
\162\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\117\033\324\057\124\273\057\113
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SecureTrust CA"
#
Issuer: CN=SecureTrust CA,O=SecureTrust Corporation,C=US
Serial Number:0c:f0:8e:5c:08:16:a5:ad:42:7f:f0:eb:27:18:59:d0
Subject: CN=SecureTrust CA,O=SecureTrust Corporation,C=US
Not Valid Before: Tue Nov 07 19:31:18 2006
Not Valid After : Mon Dec 31 19:40:55 2029
Fingerprint (SHA-256):
F1:C1:B5:0A:E5:A2:0D:D8:03:0E:C9:F6:BC:24:82:3D:D3:67:B5:25:57:59:B4:E7:1B:61:FC:E9:F7:37:5D:73
Fingerprint (SHA1): 87:82:C6:C3:04:35:3B:CF:D2:96:92:D2:59:3E:7D:44:D9:34:FF:11
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SecureTrust CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\027\060\025\006\003\125\004\003\023\016\123\145\143\165
\162\145\124\162\165\163\164\040\103\101
END
CKA_ID UTF8 "0"

CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\027\060\025\006\003\125\004\003\023\016\123\145\143\165
\162\145\124\162\165\163\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\014\360\216\134\010\026\245\255\102\177\360\353\047\030
\131\320
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\270\060\202\002\240\240\003\002\001\002\002\020\014
\360\216\134\010\026\245\255\102\177\360\353\047\030\131\320\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\110
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\040\060
\036\006\003\125\004\012\023\027\123\145\143\165\162\145\124\162
\165\163\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\027\060\025\006\003\125\004\003\023\016\123\145\143\165\162\145
\124\162\165\163\164\040\103\101\060\036\027\015\060\066\061\061
\060\067\061\071\063\061\061\070\132\027\015\062\071\061\062\063
\061\061\071\064\060\065\065\132\060\110\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\040\060\036\006\003\125\004\012
\023\027\123\145\143\165\162\145\124\162\165\163\164\040\103\157
\162\160\157\162\141\164\151\157\156\061\027\060\025\006\003\125
\004\003\023\016\123\145\143\165\162\145\124\162\165\163\164\040
\103\101\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\253\244\201\345\225\315\365\366\024\216\302\117\312
\324\342\170\225\130\234\101\341\015\231\100\044\027\071\221\063
\146\351\276\341\203\257\142\134\211\321\374\044\133\141\263\340
\021\021\101\034\035\156\360\270\273\370\336\247\201\272\246\110
\306\237\035\275\276\216\251\101\076\270\224\355\051\032\324\216
\322\003\035\003\357\155\015\147\034\127\327\006\255\312\310\365
\376\016\257\146\045\110\004\226\013\135\243\272\026\303\010\117
\321\106\370\024\134\362\310\136\001\231\155\375\210\314\206\250
\301\157\061\102\154\122\076\150\313\363\031\064\337\273\207\030
\126\200\046\304\320\334\300\157\337\336\240\302\221\026\240\144
\021\113\104\274\036\366\347\372\143\336\146\254\166\244\161\243
\354\066\224\150\172\167\244\261\347\016\057\201\172\342\265\162
\206\357\242\153\213\360\017\333\323\131\077\272\162\274\104\044
\234\343\163\263\367\257\127\057\102\046\235\251\164\272\000\122
\362\113\315\123\174\107\013\066\205\016\146\251\010\227\026\064
\127\301\146\367\200\343\355\160\124\307\223\340\056\050\025\131
\207\272\273\002\003\001\000\001\243\201\235\060\201\232\060\023
\006\011\053\006\001\004\001\202\067\024\002\004\006\036\004\000
\103\000\101\060\013\006\003\125\035\017\004\004\003\002\001\206
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001

\377\060\035\006\003\125\035\016\004\026\004\024\102\062\266\026
\372\004\375\376\135\113\172\303\375\367\114\100\035\132\103\257
\060\064\006\003\125\035\037\004\055\060\053\060\051\240\047\240
\045\206\043\150\164\164\160\072\057\057\143\162\154\056\163\145
\143\165\162\145\164\162\165\163\164\056\143\157\155\057\123\124
\103\101\056\143\162\154\060\020\006\011\053\006\001\004\001\202
\067\025\001\004\003\002\001\000\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\001\001\000\060\355\117\112
\341\130\072\122\162\133\265\246\243\145\030\246\273\121\073\167
\351\235\352\323\237\134\340\105\145\173\015\312\133\342\160\120
\262\224\005\024\256\111\307\215\101\007\022\163\224\176\014\043
\041\375\274\020\177\140\020\132\162\365\230\016\254\354\271\177
\335\172\157\135\323\034\364\377\210\005\151\102\251\005\161\310
\267\254\046\350\056\264\214\152\377\161\334\270\261\337\231\274
\174\041\124\053\344\130\242\273\127\051\256\236\251\243\031\046
\017\231\056\010\260\357\375\151\317\231\032\011\215\343\247\237
\053\311\066\064\173\044\263\170\114\225\027\244\006\046\036\266
\144\122\066\137\140\147\331\234\305\005\164\013\347\147\043\322
\010\374\210\351\256\213\177\341\060\364\067\176\375\306\062\332
\055\236\104\060\060\154\356\007\336\322\064\374\322\377\100\366
\113\364\146\106\006\124\246\362\062\012\143\046\060\153\233\321
\334\213\107\272\341\271\325\142\320\242\240\364\147\005\170\051
\143\032\157\004\326\370\306\114\243\232\261\067\264\215\345\050
\113\035\236\054\302\270\150\274\355\002\356\061
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SecureTrust CA"
Issuer: CN=SecureTrust CA,O=SecureTrust Corporation,C=US
Serial Number:0c:f0:8e:5c:08:16:a5:ad:42:7f:f0:eb:27:18:59:d0
Subject: CN=SecureTrust CA,O=SecureTrust Corporation,C=US
Not Valid Before: Tue Nov 07 19:31:18 2006
Not Valid After : Mon Dec 31 19:40:55 2029
Fingerprint (SHA-256):
F1:C1:B5:0A:E5:A2:0D:D8:03:0E:C9:F6:BC:24:82:3D:D3:67:B5:25:57:59:B4:E7:1B:61:FC:E9:F7:37:5D:73
Fingerprint (SHA1): 87:82:C6:C3:04:35:3B:CF:D2:96:92:D2:59:3E:7D:44:D9:34:FF:11
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SecureTrust CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\207\202\306\303\004\065\073\317\322\226\222\322\131\076\175\104
\331\064\377\021
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL

\334\062\303\247\155\045\127\307\150\011\235\352\055\251\242\321
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\027\060\025\006\003\125\004\003\023\016\123\145\143\165
\162\145\124\162\165\163\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\014\360\216\134\010\026\245\255\102\177\360\353\047\030
\131\320
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Secure Global CA"
#
Issuer: CN=Secure Global CA,O=SecureTrust Corporation,C=US
Serial Number:07:56:22:a4:e8:d4:8a:89:4d:f4:13:c8:f0:f8:ea:a5
Subject: CN=Secure Global CA,O=SecureTrust Corporation,C=US
Not Valid Before: Tue Nov 07 19:42:28 2006
Not Valid After : Mon Dec 31 19:52:06 2029
Fingerprint (SHA-256):
42:00:F5:04:3A:C8:59:0E:BB:52:7D:20:9E:D1:50:30:29:FB:CB:D4:1C:A1:B5:06:EC:27:F1:5A:DE:7D:AC:69
Fingerprint (SHA1): 3A:44:73:5A:E5:81:90:1F:24:86:61:46:1E:3B:9C:C4:5F:F5:3A:1B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Secure Global CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\031\060\027\006\003\125\004\003\023\020\123\145\143\165
\162\145\040\107\154\157\142\141\154\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\031\060\027\006\003\125\004\003\023\020\123\145\143\165

\162\145\040\107\154\157\142\141\154\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\007\126\042\244\350\324\212\211\115\364\023\310\360\370
\352\245
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\274\060\202\002\244\240\003\002\001\002\002\020\007
\126\042\244\350\324\212\211\115\364\023\310\360\370\352\245\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\112
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\040\060
\036\006\003\125\004\012\023\027\123\145\143\165\162\145\124\162
\165\163\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\031\060\027\006\003\125\004\003\023\020\123\145\143\165\162\145
\040\107\154\157\142\141\154\040\103\101\060\036\027\015\060\066
\061\061\060\067\061\071\064\062\062\070\132\027\015\062\071\061
\062\063\061\061\071\065\062\060\066\132\060\112\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\040\060\036\006\003\125
\004\012\023\027\123\145\143\165\162\145\124\162\165\163\164\040
\103\157\162\160\157\162\141\164\151\157\156\061\031\060\027\006
\003\125\004\003\023\020\123\145\143\165\162\145\040\107\154\157
\142\141\154\040\103\101\060\202\001\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\257\065\056\330\254\154\125\151\006
\161\345\023\150\044\263\117\330\314\041\107\370\361\140\070\211
\211\003\351\275\352\136\106\123\011\334\134\365\132\350\367\105
\052\002\353\061\141\327\051\063\114\316\307\174\012\067\176\017
\272\062\230\341\035\227\257\217\307\334\311\070\226\363\333\032
\374\121\355\150\306\320\156\244\174\044\321\256\102\310\226\120
\143\056\340\376\165\376\230\247\137\111\056\225\343\071\063\144
\216\036\244\137\220\322\147\074\262\331\376\101\271\125\247\011
\216\162\005\036\213\335\104\205\202\102\320\111\300\035\140\360
\321\027\054\225\353\366\245\301\222\243\305\302\247\010\140\015
\140\004\020\226\171\236\026\064\346\251\266\372\045\105\071\310
\036\145\371\223\365\252\361\122\334\231\230\075\245\206\032\014
\065\063\372\113\245\004\006\025\034\061\200\357\252\030\153\302
\173\327\332\316\371\063\040\325\365\275\152\063\055\201\004\373
\260\134\324\234\243\342\134\035\343\251\102\165\136\173\324\167
\357\071\124\272\311\012\030\033\022\231\111\057\210\113\375\120
\142\321\163\347\217\172\103\002\003\001\000\001\243\201\235\060
\201\232\060\023\006\011\053\006\001\004\001\202\067\024\002\004
\006\036\004\000\103\000\101\060\013\006\003\125\035\017\004\004
\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\257\104\004\302\101\176\110\203\333\116\071\002\354\354\204\172
\346\316\311\244\060\064\006\003\125\035\037\004\055\060\053\060
\051\240\047\240\045\206\043\150\164\164\160\072\057\057\143\162
\154\056\163\145\143\165\162\145\164\162\165\163\164\056\143\157

\155\057\123\107\103\101\056\143\162\154\060\020\006\011\053\006
\001\004\001\202\067\025\001\004\003\002\001\000\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\143\032\010\100\175\244\136\123\015\167\330\172\256\037\015\013
\121\026\003\357\030\174\310\343\257\152\130\223\024\140\221\262
\204\334\210\116\276\071\212\072\363\346\202\211\135\001\067\263
\253\044\244\025\016\222\065\132\112\104\136\116\127\372\165\316
\037\110\316\146\364\074\100\046\222\230\154\033\356\044\106\014
\027\263\122\245\333\245\221\221\317\067\323\157\347\047\010\072
\116\031\037\072\247\130\134\027\317\171\077\213\344\247\323\046
\043\235\046\017\130\151\374\107\176\262\320\215\213\223\277\051
\117\103\151\164\166\147\113\317\007\214\346\002\367\265\341\264
\103\265\113\055\024\237\371\334\046\015\277\246\107\164\006\330
\210\321\072\051\060\204\316\322\071\200\142\033\250\307\127\111
\274\152\125\121\147\025\112\276\065\007\344\325\165\230\067\171
\060\024\333\051\235\154\305\151\314\107\125\242\060\367\314\134
\177\302\303\230\034\153\116\026\200\353\172\170\145\105\242\000
\032\257\014\015\125\144\064\110\270\222\271\361\264\120\051\362
\117\043\037\332\154\254\037\104\341\335\043\170\121\133\307\026
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Secure Global CA"
Issuer: CN=Secure Global CA,O=SecureTrust Corporation,C=US
Serial Number:07:56:22:a4:e8:d4:8a:89:4d:f4:13:c8:f0:f8:ea:a5
Subject: CN=Secure Global CA,O=SecureTrust Corporation,C=US
Not Valid Before: Tue Nov 07 19:42:28 2006
Not Valid After : Mon Dec 31 19:52:06 2029
Fingerprint (SHA-256):
42:00:F5:04:3A:C8:59:0E:BB:52:7D:20:9E:D1:50:30:29:FB:CB:D4:1C:A1:B5:06:EC:27:F1:5A:DE:7D:AC:69
Fingerprint (SHA1): 3A:44:73:5A:E5:81:90:1F:24:86:61:46:1E:3B:9C:C4:5F:F5:3A:1B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Secure Global CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\072\104\163\132\345\201\220\037\044\206\141\106\036\073\234\304
\137\365\072\033
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\317\364\047\015\324\355\334\145\026\111\155\075\332\277\156\336
END
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145

\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\031\060\027\006\003\125\004\003\023\020\123\145\143\165
\162\145\040\107\154\157\142\141\154\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\007\126\042\244\350\324\212\211\115\364\023\310\360\370
\352\245
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "COMODO Certification Authority"
#
Issuer: CN=COMODO Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:4e:81:2d:8a:82:65:e0:0b:02:ee:3e:35:02:46:e5:3d
Subject: CN=COMODO Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Fri Dec 01 00:00:00 2006
Not Valid After : Mon Dec 31 23:59:59 2029
Fingerprint (SHA-256):
0C:2C:D6:3D:F7:80:6F:A3:99:ED:E8:09:11:6B:57:5B:F8:79:89:F0:65:18:F9:80:8C:86:05:03:17:8B:AF:66
Fingerprint (SHA1): 66:31:BF:9E:F7:4F:9E:B6:C9:D5:A6:0C:BA:6A:BE:D1:F7:BD:EF:7B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\201\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\047\060\045\006
\003\125\004\003\023\036\103\117\115\117\104\117\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\201\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060

\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\047\060\045\006
\003\125\004\003\023\036\103\117\115\117\104\117\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\116\201\055\212\202\145\340\013\002\356\076\065\002\106
\345\075
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\035\060\202\003\005\240\003\002\001\002\002\020\116
\201\055\212\202\145\340\013\002\356\076\065\002\106\345\075\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\201\061\013\060\011\006\003\125\004\006\023\002\107\102\061\033
\060\031\006\003\125\004\010\023\022\107\162\145\141\164\145\162
\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016\006
\003\125\004\007\023\007\123\141\154\146\157\162\144\061\032\060
\030\006\003\125\004\012\023\021\103\117\115\117\104\117\040\103
\101\040\114\151\155\151\164\145\144\061\047\060\045\006\003\125
\004\003\023\036\103\117\115\117\104\117\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\060\036\027\015\060\066\061\062\060\061\060\060\060\060
\060\060\132\027\015\062\071\061\062\063\061\062\063\065\071\065
\071\132\060\201\201\061\013\060\011\006\003\125\004\006\023\002
\107\102\061\033\060\031\006\003\125\004\010\023\022\107\162\145
\141\164\145\162\040\115\141\156\143\150\145\163\164\145\162\061
\020\060\016\006\003\125\004\007\023\007\123\141\154\146\157\162
\144\061\032\060\030\006\003\125\004\012\023\021\103\117\115\117
\104\117\040\103\101\040\114\151\155\151\164\145\144\061\047\060
\045\006\003\125\004\003\023\036\103\117\115\117\104\117\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\060\202\001\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\320\100\213\213\162\343\221\033\367
\121\301\033\124\004\230\323\251\277\301\346\212\135\073\207\373
\273\210\316\015\343\057\077\006\226\360\242\051\120\231\256\333
\073\241\127\260\164\121\161\315\355\102\221\115\101\376\251\310
\330\152\206\167\104\273\131\146\227\120\136\264\324\054\160\104
\317\332\067\225\102\151\074\060\304\161\263\122\360\041\115\241
\330\272\071\174\034\236\243\044\235\362\203\026\230\252\026\174
\103\233\025\133\267\256\064\221\376\324\142\046\030\106\232\077
\353\301\371\361\220\127\353\254\172\015\213\333\162\060\152\146
\325\340\106\243\160\334\150\331\377\004\110\211\167\336\265\351
\373\147\155\101\351\274\071\275\062\331\142\002\361\261\250\075
\156\067\234\342\057\342\323\242\046\213\306\270\125\103\210\341
\043\076\245\322\044\071\152\107\253\000\324\241\263\251\045\376

\015\077\247\035\272\323\121\301\013\244\332\254\070\357\125\120
\044\005\145\106\223\064\117\055\215\255\306\324\041\031\322\216
\312\005\141\161\007\163\107\345\212\031\022\275\004\115\316\116
\234\245\110\254\273\046\367\002\003\001\000\001\243\201\216\060
\201\213\060\035\006\003\125\035\016\004\026\004\024\013\130\345
\213\306\114\025\067\244\100\251\060\251\041\276\107\066\132\126
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\111\006\003\125\035\037\004\102\060\100\060\076\240
\074\240\072\206\070\150\164\164\160\072\057\057\143\162\154\056
\143\157\155\157\144\157\143\141\056\143\157\155\057\103\117\115
\117\104\117\103\145\162\164\151\146\151\143\141\164\151\157\156
\101\165\164\150\157\162\151\164\171\056\143\162\154\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\076\230\236\233\366\033\351\327\071\267\170\256\035\162\030
\111\323\207\344\103\202\353\077\311\252\365\250\265\357\125\174
\041\122\145\371\325\015\341\154\364\076\214\223\163\221\056\002
\304\116\007\161\157\300\217\070\141\010\250\036\201\012\300\057
\040\057\101\213\221\334\110\105\274\361\306\336\272\166\153\063
\310\000\055\061\106\114\355\347\235\317\210\224\377\063\300\126
\350\044\206\046\270\330\070\070\337\052\153\335\022\314\307\077
\107\027\114\242\302\006\226\011\326\333\376\077\074\106\101\337
\130\342\126\017\074\073\301\034\223\065\331\070\122\254\356\310
\354\056\060\116\224\065\264\044\037\113\170\151\332\362\002\070
\314\225\122\223\360\160\045\131\234\040\147\304\356\371\213\127
\141\364\222\166\175\077\204\215\125\267\350\345\254\325\361\365
\031\126\246\132\373\220\034\257\223\353\345\034\324\147\227\135
\004\016\276\013\203\246\027\203\271\060\022\240\305\063\025\005
\271\015\373\307\005\166\343\330\112\215\374\064\027\243\306\041
\050\276\060\105\061\036\307\170\276\130\141\070\254\073\342\001
\145
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "COMODO Certification Authority"
Issuer: CN=COMODO Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:4e:81:2d:8a:82:65:e0:0b:02:ee:3e:35:02:46:e5:3d
Subject: CN=COMODO Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Fri Dec 01 00:00:00 2006
Not Valid After : Mon Dec 31 23:59:59 2029
Fingerprint (SHA-256):
0C:2C:D6:3D:F7:80:6F:A3:99:ED:E8:09:11:6B:57:5B:F8:79:89:F0:65:18:F9:80:8C:86:05:03:17:8B:AF:66
Fingerprint (SHA1): 66:31:BF:9E:F7:4F:9E:B6:C9:D5:A6:0C:BA:6A:BE:D1:F7:BD:EF:7B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\146\061\277\236\367\117\236\266\311\325\246\014\272\152\276\321
\367\275\357\173
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\134\110\334\367\102\162\354\126\224\155\034\314\161\065\200\165
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\201\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\047\060\045\006
\003\125\004\003\023\036\103\117\115\117\104\117\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\116\201\055\212\202\145\340\013\002\356\076\065\002\106
\345\075
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Network Solutions Certificate Authority"
#
Issuer: CN=Network Solutions Certificate Authority,O=Network Solutions L.L.C.,C=US
Serial Number:57:cb:33:6f:c2:5c:16:e6:47:16:17:e3:90:31:68:e0
Subject: CN=Network Solutions Certificate Authority,O=Network Solutions L.L.C.,C=US
Not Valid Before: Fri Dec 01 00:00:00 2006
Not Valid After : Mon Dec 31 23:59:59 2029
Fingerprint (SHA-256):
15:F0:BA:00:A3:AC:7A:F3:AC:88:4C:07:2B:10:11:A0:77:BD:77:C0:97:F4:01:64:B2:F8:59:8A:BD:83:86:0C
Fingerprint (SHA1): 74:F8:A3:C3:EF:E7:B3:90:06:4B:83:90:3C:21:64:60:20:E5:DF:CE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Network Solutions Certificate Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509

CKA_SUBJECT MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\116\145\164\167\157\162
\153\040\123\157\154\165\164\151\157\156\163\040\114\056\114\056
\103\056\061\060\060\056\006\003\125\004\003\023\047\116\145\164
\167\157\162\153\040\123\157\154\165\164\151\157\156\163\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\116\145\164\167\157\162
\153\040\123\157\154\165\164\151\157\156\163\040\114\056\114\056
\103\056\061\060\060\056\006\003\125\004\003\023\047\116\145\164
\167\157\162\153\040\123\157\154\165\164\151\157\156\163\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\127\313\063\157\302\134\026\346\107\026\027\343\220\061
\150\340
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\346\060\202\002\316\240\003\002\001\002\002\020\127
\313\063\157\302\134\026\346\107\026\027\343\220\061\150\340\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\142
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\041\060
\037\006\003\125\004\012\023\030\116\145\164\167\157\162\153\040
\123\157\154\165\164\151\157\156\163\040\114\056\114\056\103\056
\061\060\060\056\006\003\125\004\003\023\047\116\145\164\167\157
\162\153\040\123\157\154\165\164\151\157\156\163\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\060\036\027\015\060\066\061\062\060\061\060\060\060\060
\060\060\132\027\015\062\071\061\062\063\061\062\063\065\071\065
\071\132\060\142\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\041\060\037\006\003\125\004\012\023\030\116\145\164\167
\157\162\153\040\123\157\154\165\164\151\157\156\163\040\114\056
\114\056\103\056\061\060\060\056\006\003\125\004\003\023\047\116
\145\164\167\157\162\153\040\123\157\154\165\164\151\157\156\163
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\060\202\001\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\344\274\176\222\060\155\306\330\216
\053\013\274\106\316\340\047\226\336\336\371\372\022\323\074\063
\163\263\004\057\274\161\214\345\237\266\042\140\076\137\135\316
\011\377\202\014\033\232\121\120\032\046\211\335\325\141\135\031
\334\022\017\055\012\242\103\135\027\320\064\222\040\352\163\317

\070\054\006\046\011\172\162\367\372\120\062\370\302\223\323\151
\242\043\316\101\261\314\344\325\037\066\321\212\072\370\214\143
\342\024\131\151\355\015\323\177\153\350\270\003\345\117\152\345
\230\143\151\110\005\276\056\377\063\266\351\227\131\151\370\147
\031\256\223\141\226\104\025\323\162\260\077\274\152\175\354\110
\177\215\303\253\252\161\053\123\151\101\123\064\265\260\271\305
\006\012\304\260\105\365\101\135\156\211\105\173\075\073\046\214
\164\302\345\322\321\175\262\021\324\373\130\062\042\232\200\311
\334\375\014\351\177\136\003\227\316\073\000\024\207\047\160\070
\251\216\156\263\047\166\230\121\340\005\343\041\253\032\325\205
\042\074\051\265\232\026\305\200\250\364\273\153\060\217\057\106
\002\242\261\014\042\340\323\002\003\001\000\001\243\201\227\060
\201\224\060\035\006\003\125\035\016\004\026\004\024\041\060\311
\373\000\327\116\230\332\207\252\052\320\247\056\261\100\061\247
\114\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\122\006\003\125\035\037\004\113\060\111\060\107\240
\105\240\103\206\101\150\164\164\160\072\057\057\143\162\154\056
\156\145\164\163\157\154\163\163\154\056\143\157\155\057\116\145
\164\167\157\162\153\123\157\154\165\164\151\157\156\163\103\145
\162\164\151\146\151\143\141\164\145\101\165\164\150\157\162\151
\164\171\056\143\162\154\060\015\006\011\052\206\110\206\367\015
\001\001\005\005\000\003\202\001\001\000\273\256\113\347\267\127
\353\177\252\055\267\163\107\205\152\301\344\245\035\344\347\074
\351\364\131\145\167\265\172\133\132\215\045\066\340\172\227\056
\070\300\127\140\203\230\006\203\237\271\166\172\156\120\340\272
\210\054\374\105\314\030\260\231\225\121\016\354\035\270\210\377
\207\120\034\202\302\343\340\062\200\277\240\013\107\310\303\061
\357\231\147\062\200\117\027\041\171\014\151\134\336\136\064\256
\002\265\046\352\120\337\177\030\145\054\311\362\143\341\251\007
\376\174\161\037\153\063\044\152\036\005\367\005\150\300\152\022
\313\056\136\141\313\256\050\323\176\302\264\146\221\046\137\074
\056\044\137\313\130\017\353\050\354\257\021\226\363\334\173\157
\300\247\210\362\123\167\263\140\136\256\256\050\332\065\054\157
\064\105\323\046\341\336\354\133\117\047\153\026\174\275\104\004
\030\202\263\211\171\027\020\161\075\172\242\026\116\365\001\315
\244\154\145\150\241\111\166\134\103\311\330\274\066\147\154\245
\224\265\324\314\271\275\152\065\126\041\336\330\303\353\373\313
\244\140\114\260\125\240\240\173\127\262
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Network Solutions Certificate Authority"
Issuer: CN=Network Solutions Certificate Authority,O=Network Solutions L.L.C.,C=US
Serial Number:57:cb:33:6f:c2:5c:16:e6:47:16:17:e3:90:31:68:e0
Subject: CN=Network Solutions Certificate Authority,O=Network Solutions L.L.C.,C=US

Not Valid Before: Fri Dec 01 00:00:00 2006
Not Valid After : Mon Dec 31 23:59:59 2029
Fingerprint (SHA-256):
15:F0:BA:00:A3:AC:7A:F3:AC:88:4C:07:2B:10:11:A0:77:BD:77:C0:97:F4:01:64:B2:F8:59:8A:BD:83:86:0C
Fingerprint (SHA1): 74:F8:A3:C3:EF:E7:B3:90:06:4B:83:90:3C:21:64:60:20:E5:DF:CE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Network Solutions Certificate Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\164\370\243\303\357\347\263\220\006\113\203\220\074\041\144\140
\040\345\337\316
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\323\363\246\026\300\372\153\035\131\261\055\226\115\016\021\056
END
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\116\145\164\167\157\162
\153\040\123\157\154\165\164\151\157\156\163\040\114\056\114\056
\103\056\061\060\060\056\006\003\125\004\003\023\047\116\145\164
\167\157\162\153\040\123\157\154\165\164\151\157\156\163\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\127\313\063\157\302\134\026\346\107\026\027\343\220\061
\150\340
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "COMODO ECC Certification Authority"
#
Issuer: CN=COMODO ECC Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:1f:47:af:aa:62:00:70:50:54:4c:01:9e:9b:63:99:2a
Subject: CN=COMODO ECC Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Thu Mar 06 00:00:00 2008
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
17:93:92:7A:06:14:54:97:89:AD:CE:2F:8F:34:F7:F0:B6:6D:0F:3A:E3:A3:B8:4D:21:EC:15:DB:BA:4F:AD:C7
Fingerprint (SHA1): 9F:74:4E:9F:2B:4D:BA:EC:0F:31:2C:50:B6:56:3B:8E:2D:93:C3:11

CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO ECC Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\105\103\103
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\105\103\103
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\037\107\257\252\142\000\160\120\124\114\001\236\233\143
\231\052
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\211\060\202\002\017\240\003\002\001\002\002\020\037
\107\257\252\142\000\160\120\124\114\001\236\233\143\231\052\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\205\061\013
\060\011\006\003\125\004\006\023\002\107\102\061\033\060\031\006
\003\125\004\010\023\022\107\162\145\141\164\145\162\040\115\141
\156\143\150\145\163\164\145\162\061\020\060\016\006\003\125\004
\007\023\007\123\141\154\146\157\162\144\061\032\060\030\006\003
\125\004\012\023\021\103\117\115\117\104\117\040\103\101\040\114
\151\155\151\164\145\144\061\053\060\051\006\003\125\004\003\023
\042\103\117\115\117\104\117\040\105\103\103\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\060\036\027\015\060\070\060\063\060\066\060\060\060
\060\060\060\132\027\015\063\070\060\061\061\070\062\063\065\071
\065\071\132\060\201\205\061\013\060\011\006\003\125\004\006\023

\002\107\102\061\033\060\031\006\003\125\004\010\023\022\107\162
\145\141\164\145\162\040\115\141\156\143\150\145\163\164\145\162
\061\020\060\016\006\003\125\004\007\023\007\123\141\154\146\157
\162\144\061\032\060\030\006\003\125\004\012\023\021\103\117\115
\117\104\117\040\103\101\040\114\151\155\151\164\145\144\061\053
\060\051\006\003\125\004\003\023\042\103\117\115\117\104\117\040
\105\103\103\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\060\166\060\020\006
\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003
\142\000\004\003\107\173\057\165\311\202\025\205\373\165\344\221
\026\324\253\142\231\365\076\122\013\006\316\101\000\177\227\341
\012\044\074\035\001\004\356\075\322\215\011\227\014\340\165\344
\372\373\167\212\052\365\003\140\113\066\213\026\043\026\255\011
\161\364\112\364\050\120\264\376\210\034\156\077\154\057\057\011
\131\133\245\133\013\063\231\342\303\075\211\371\152\054\357\262
\323\006\351\243\102\060\100\060\035\006\003\125\035\016\004\026
\004\024\165\161\247\031\110\031\274\235\235\352\101\107\337\224
\304\110\167\231\323\171\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\061\000\357\003\133\172\254
\267\170\012\162\267\210\337\377\265\106\024\011\012\372\240\346
\175\010\306\032\207\275\030\250\163\275\046\312\140\014\235\316
\231\237\317\134\017\060\341\276\024\061\352\002\060\024\364\223
\074\111\247\063\172\220\106\107\263\143\175\023\233\116\267\157
\030\067\200\123\376\335\040\340\065\232\066\321\307\001\271\346
\334\335\363\377\035\054\072\026\127\331\222\071\326
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "COMODO ECC Certification Authority"
Issuer: CN=COMODO ECC Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:1f:47:af:aa:62:00:70:50:54:4c:01:9e:9b:63:99:2a
Subject: CN=COMODO ECC Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Thu Mar 06 00:00:00 2008
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
17:93:92:7A:06:14:54:97:89:AD:CE:2F:8F:34:F7:F0:B6:6D:0F:3A:E3:A3:B8:4D:21:EC:15:DB:BA:4F:AD:C7
Fingerprint (SHA1): 9F:74:4E:9F:2B:4D:BA:EC:0F:31:2C:50:B6:56:3B:8E:2D:93:C3:11
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO ECC Certification Authority"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\237\164\116\237\053\115\272\354\017\061\054\120\266\126\073\216
\055\223\303\021
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\174\142\377\164\235\061\123\136\150\112\325\170\252\036\277\043
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\105\103\103
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\037\107\257\252\142\000\160\120\124\114\001\236\233\143
\231\052
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "OISTE WISeKey Global Root GA CA"
#
Issuer: CN=OISTE WISeKey Global Root GA CA,OU=OISTE Foundation Endorsed,OU=Copyright (c) 2005,O=WISeKey,C=CH
Serial Number:41:3d:72:c7:f4:6b:1f:81:43:7d:f1:d2:28:54:df:9a
Subject: CN=OISTE WISeKey Global Root GA CA,OU=OISTE Foundation Endorsed,OU=Copyright (c) 2005,O=WISeKey,C=CH
Not Valid Before: Sun Dec 11 16:03:44 2005
Not Valid After : Fri Dec 11 16:09:51 2037
Fingerprint (SHA-256):
41:C9:23:86:6A:B4:CA:D6:B7:AD:57:80:81:58:2E:02:07:97:A6:CB:DF:4F:FF:78:CE:83:96:B3:89:37:D7:F5
Fingerprint (SHA1): 59:22:A1:E1:5A:EA:16:35:21:F8:98:39:6A:46:46:B0:44:1B:0F:A9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GA CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\103\110

\061\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113
\145\171\061\033\060\031\006\003\125\004\013\023\022\103\157\160
\171\162\151\147\150\164\040\050\143\051\040\062\060\060\065\061
\042\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040
\106\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162
\163\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111
\123\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142
\141\154\040\122\157\157\164\040\107\101\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113
\145\171\061\033\060\031\006\003\125\004\013\023\022\103\157\160
\171\162\151\147\150\164\040\050\143\051\040\062\060\060\065\061
\042\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040
\106\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162
\163\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111
\123\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142
\141\154\040\122\157\157\164\040\107\101\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\101\075\162\307\364\153\037\201\103\175\361\322\050\124
\337\232
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\361\060\202\002\331\240\003\002\001\002\002\020\101
\075\162\307\364\153\037\201\103\175\361\322\050\124\337\232\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\212\061\013\060\011\006\003\125\004\006\023\002\103\110\061\020
\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145\171
\061\033\060\031\006\003\125\004\013\023\022\103\157\160\171\162
\151\147\150\164\040\050\143\051\040\062\060\060\065\061\042\060
\040\006\003\125\004\013\023\031\117\111\123\124\105\040\106\157
\165\156\144\141\164\151\157\156\040\105\156\144\157\162\163\145
\144\061\050\060\046\006\003\125\004\003\023\037\117\111\123\124
\105\040\127\111\123\145\113\145\171\040\107\154\157\142\141\154
\040\122\157\157\164\040\107\101\040\103\101\060\036\027\015\060
\065\061\062\061\061\061\066\060\063\064\064\132\027\015\063\067
\061\062\061\061\061\066\060\071\065\061\132\060\201\212\061\013
\060\011\006\003\125\004\006\023\002\103\110\061\020\060\016\006
\003\125\004\012\023\007\127\111\123\145\113\145\171\061\033\060
\031\006\003\125\004\013\023\022\103\157\160\171\162\151\147\150
\164\040\050\143\051\040\062\060\060\065\061\042\060\040\006\003
\125\004\013\023\031\117\111\123\124\105\040\106\157\165\156\144
\141\164\151\157\156\040\105\156\144\157\162\163\145\144\061\050
\060\046\006\003\125\004\003\023\037\117\111\123\124\105\040\127
\111\123\145\113\145\171\040\107\154\157\142\141\154\040\122\157

\157\164\040\107\101\040\103\101\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\313\117\263\000\233\075\066
\335\371\321\111\152\153\020\111\037\354\330\053\262\306\370\062
\201\051\103\225\114\232\031\043\041\025\105\336\343\310\034\121
\125\133\256\223\350\067\377\053\153\351\324\352\276\052\335\250
\121\053\327\146\303\141\134\140\002\310\365\316\162\173\073\270
\362\116\145\010\232\315\244\152\031\301\001\273\163\246\327\366
\303\335\315\274\244\213\265\231\141\270\001\242\243\324\115\324
\005\075\221\255\370\264\010\161\144\257\160\361\034\153\176\366
\303\167\235\044\163\173\344\014\214\341\331\066\341\231\213\005
\231\013\355\105\061\011\312\302\000\333\367\162\240\226\252\225
\207\320\216\307\266\141\163\015\166\146\214\334\033\264\143\242
\237\177\223\023\060\361\241\047\333\331\377\054\125\210\221\240
\340\117\007\260\050\126\214\030\033\227\104\216\211\335\340\027
\156\347\052\357\217\071\012\061\204\202\330\100\024\111\056\172
\101\344\247\376\343\144\314\301\131\161\113\054\041\247\133\175
\340\035\321\056\201\233\303\330\150\367\275\226\033\254\160\261
\026\024\013\333\140\271\046\001\005\002\003\001\000\001\243\121
\060\117\060\013\006\003\125\035\017\004\004\003\002\001\206\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\263\003\176\256\066
\274\260\171\321\334\224\046\266\021\276\041\262\151\206\224\060
\020\006\011\053\006\001\004\001\202\067\025\001\004\003\002\001
\000\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\001\001\000\113\241\377\013\207\156\263\371\301\103\261
\110\363\050\300\035\056\311\011\101\372\224\000\034\244\244\253
\111\117\217\075\036\357\115\157\275\274\244\366\362\046\060\311
\020\312\035\210\373\164\031\037\205\105\275\260\154\121\371\066
\176\333\365\114\062\072\101\117\133\107\317\350\013\055\266\304
\031\235\164\305\107\306\073\152\017\254\024\333\074\364\163\234
\251\005\337\000\334\164\170\372\370\065\140\131\002\023\030\174
\274\373\115\260\040\155\103\273\140\060\172\147\063\134\305\231
\321\370\055\071\122\163\373\214\252\227\045\134\162\331\010\036
\253\116\074\343\201\061\237\003\246\373\300\376\051\210\125\332
\204\325\120\003\266\342\204\243\246\066\252\021\072\001\341\030
\113\326\104\150\263\075\371\123\164\204\263\106\221\106\226\000
\267\200\054\266\341\343\020\342\333\242\347\050\217\001\226\142
\026\076\000\343\034\245\066\201\030\242\114\122\166\300\021\243
\156\346\035\272\343\132\276\066\123\305\076\165\217\206\151\051
\130\123\265\234\273\157\237\134\305\030\354\335\057\341\230\311
\374\276\337\012\015
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "OISTE WISeKey Global Root GA CA"

Issuer: CN=OISTE WISeKey Global Root GA CA,OU=OISTE Foundation Endorsed,OU=Copyright (c) 2005,O=WISeKey,C=CH
Serial Number:41:3d:72:c7:f4:6b:1f:81:43:7d:f1:d2:28:54:df:9a
Subject: CN=OISTE WISeKey Global Root GA CA,OU=OISTE Foundation Endorsed,OU=Copyright (c) 2005,O=WISeKey,C=CH
Not Valid Before: Sun Dec 11 16:03:44 2005
Not Valid After : Fri Dec 11 16:09:51 2037
Fingerprint (SHA-256):
41:C9:23:86:6A:B4:CA:D6:B7:AD:57:80:81:58:2E:02:07:97:A6:CB:DF:4F:FF:78:CE:83:96:B3:89:37:D7:F5
Fingerprint (SHA1): 59:22:A1:E1:5A:EA:16:35:21:F8:98:39:6A:46:46:B0:44:1B:0F:A9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GA CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\131\042\241\341\132\352\026\065\041\370\230\071\152\106\106\260
\104\033\017\251
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\274\154\121\063\247\351\323\146\143\124\025\162\033\041\222\223
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113
\145\171\061\033\060\031\006\003\125\004\013\023\022\103\157\160
\171\162\151\147\150\164\040\050\143\051\040\062\060\060\065\061
\042\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040
\106\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162
\163\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111
\123\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142
\141\154\040\122\157\157\164\040\107\101\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\101\075\162\307\364\153\037\201\103\175\361\322\050\124
\337\232
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certigna"
#
Issuer: CN=Certigna,O=Dhimyotis,C=FR
Serial Number:00:fe:dc:e3:01:0f:c9:48:ff
Subject: CN=Certigna,O=Dhimyotis,C=FR

Not Valid Before: Fri Jun 29 15:13:05 2007
Not Valid After : Tue Jun 29 15:13:05 2027
Fingerprint (SHA-256):
E3:B6:A2:DB:2E:D7:CE:48:84:2F:7A:C5:32:41:C7:B7:1D:54:14:4B:FB:40:C1:1F:3F:1D:0B:42:F5:EE:A1:2D
Fingerprint (SHA1): B1:2E:13:63:45:86:A4:6F:1A:B2:60:68:37:58:2D:C4:AC:FD:94:97
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certigna"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\064\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\021\060\017\006\003\125\004\003\014\010\103\145
\162\164\151\147\156\141
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\064\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\021\060\017\006\003\125\004\003\014\010\103\145
\162\164\151\147\156\141
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\376\334\343\001\017\311\110\377
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\250\060\202\002\220\240\003\002\001\002\002\011\000
\376\334\343\001\017\311\110\377\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\060\064\061\013\060\011\006\003\125
\004\006\023\002\106\122\061\022\060\020\006\003\125\004\012\014
\011\104\150\151\155\171\157\164\151\163\061\021\060\017\006\003
\125\004\003\014\010\103\145\162\164\151\147\156\141\060\036\027
\015\060\067\060\066\062\071\061\065\061\063\060\065\132\027\015
\062\067\060\066\062\071\061\065\061\063\060\065\132\060\064\061
\013\060\011\006\003\125\004\006\023\002\106\122\061\022\060\020
\006\003\125\004\012\014\011\104\150\151\155\171\157\164\151\163
\061\021\060\017\006\003\125\004\003\014\010\103\145\162\164\151
\147\156\141\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\310\150\361\311\326\326\263\064\165\046\202\036
\354\264\276\352\134\341\046\355\021\107\141\341\242\174\026\170
\100\041\344\140\236\132\310\143\341\304\261\226\222\377\030\155
\151\043\341\053\142\367\335\342\066\057\221\007\271\110\317\016
\354\171\266\054\347\064\113\160\010\045\243\074\207\033\031\362
\201\007\017\070\220\031\323\021\376\206\264\362\321\136\036\036
\226\315\200\154\316\073\061\223\266\362\240\320\251\225\022\175

\245\232\314\153\310\204\126\212\063\251\347\042\025\123\026\360
\314\027\354\127\137\351\242\012\230\011\336\343\137\234\157\334
\110\343\205\013\025\132\246\272\237\254\110\343\011\262\367\364
\062\336\136\064\276\034\170\135\102\133\316\016\042\217\115\220
\327\175\062\030\263\013\054\152\277\216\077\024\021\211\040\016
\167\024\265\075\224\010\207\367\045\036\325\262\140\000\354\157
\052\050\045\156\052\076\030\143\027\045\077\076\104\040\026\366
\046\310\045\256\005\112\264\347\143\054\363\214\026\123\176\134
\373\021\032\010\301\106\142\237\042\270\361\302\215\151\334\372
\072\130\006\337\002\003\001\000\001\243\201\274\060\201\271\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\032\355\376\101\071
\220\264\044\131\276\001\362\122\325\105\366\132\071\334\021\060
\144\006\003\125\035\043\004\135\060\133\200\024\032\355\376\101
\071\220\264\044\131\276\001\362\122\325\105\366\132\071\334\021
\241\070\244\066\060\064\061\013\060\011\006\003\125\004\006\023
\002\106\122\061\022\060\020\006\003\125\004\012\014\011\104\150
\151\155\171\157\164\151\163\061\021\060\017\006\003\125\004\003
\014\010\103\145\162\164\151\147\156\141\202\011\000\376\334\343
\001\017\311\110\377\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\021\006\011\140\206\110\001\206\370\102
\001\001\004\004\003\002\000\007\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\001\001\000\205\003\036\222
\161\366\102\257\341\243\141\236\353\363\300\017\362\245\324\332
\225\346\326\276\150\066\075\176\156\037\114\212\357\321\017\041
\155\136\245\122\143\316\022\370\357\052\332\157\353\067\376\023
\002\307\313\073\076\042\153\332\141\056\177\324\162\075\335\060
\341\036\114\100\031\214\017\327\234\321\203\060\173\230\131\334
\175\306\271\014\051\114\241\063\242\353\147\072\145\204\323\226
\342\355\166\105\160\217\265\053\336\371\043\326\111\156\074\024
\265\306\237\065\036\120\320\301\217\152\160\104\002\142\313\256
\035\150\101\247\252\127\350\123\252\007\322\006\366\325\024\006
\013\221\003\165\054\154\162\265\141\225\232\015\213\271\015\347
\365\337\124\315\336\346\330\326\011\010\227\143\345\301\056\260
\267\104\046\300\046\300\257\125\060\236\073\325\066\052\031\004
\364\134\036\377\317\054\267\377\320\375\207\100\021\325\021\043
\273\110\300\041\251\244\050\055\375\025\370\260\116\053\364\060
\133\041\374\021\221\064\276\101\357\173\235\227\165\377\227\225
\300\226\130\057\352\273\106\327\273\344\331\056
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certigna"
Issuer: CN=Certigna,O=Dhimyotis,C=FR
Serial Number:00:fe:dc:e3:01:0f:c9:48:ff
Subject: CN=Certigna,O=Dhimyotis,C=FR

Not Valid Before: Fri Jun 29 15:13:05 2007
Not Valid After : Tue Jun 29 15:13:05 2027
Fingerprint (SHA-256):
E3:B6:A2:DB:2E:D7:CE:48:84:2F:7A:C5:32:41:C7:B7:1D:54:14:4B:FB:40:C1:1F:3F:1D:0B:42:F5:EE:A1:2D
Fingerprint (SHA1): B1:2E:13:63:45:86:A4:6F:1A:B2:60:68:37:58:2D:C4:AC:FD:94:97
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certigna"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\261\056\023\143\105\206\244\157\032\262\140\150\067\130\055\304
\254\375\224\227
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\253\127\246\133\175\102\202\031\265\330\130\046\050\136\375\377
END
CKA_ISSUER MULTILINE_OCTAL
\060\064\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\021\060\017\006\003\125\004\003\014\010\103\145
\162\164\151\147\156\141
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\376\334\343\001\017\311\110\377
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ePKI Root Certification Authority"
#
Issuer: OU=ePKI Root Certification Authority,O="Chunghwa Telecom Co., Ltd.",C=TW
Serial Number:15:c8:bd:65:47:5c:af:b8:97:00:5e:e4:06:d2:bc:9d
Subject: OU=ePKI Root Certification Authority,O="Chunghwa Telecom Co., Ltd.",C=TW
Not Valid Before: Mon Dec 20 02:31:27 2004
Not Valid After : Wed Dec 20 02:31:27 2034
Fingerprint (SHA-256):
C0:A6:F4:DC:63:A2:4B:FD:CF:54:EF:2A:6A:08:2A:0A:72:DE:35:80:3E:2F:F5:FF:52:7A:E5:D8:72:06:DF:D5
Fingerprint (SHA1): 67:65:0D:F1:7E:8E:7E:5B:82:40:A4:F4:56:4B:CF:E2:3D:69:C6:F0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ePKI Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509

CKA_SUBJECT MULTILINE_OCTAL
\060\136\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\052\060\050\006\003\125\004\013\014\041\145
\120\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\136\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\052\060\050\006\003\125\004\013\014\041\145
\120\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\025\310\275\145\107\134\257\270\227\000\136\344\006\322
\274\235
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\260\060\202\003\230\240\003\002\001\002\002\020\025
\310\275\145\107\134\257\270\227\000\136\344\006\322\274\235\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\136
\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043\060
\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167\141
\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114\164
\144\056\061\052\060\050\006\003\125\004\013\014\041\145\120\113
\111\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060\036
\027\015\060\064\061\062\062\060\060\062\063\061\062\067\132\027
\015\063\064\061\062\062\060\060\062\063\061\062\067\132\060\136
\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043\060
\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167\141
\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114\164
\144\056\061\052\060\050\006\003\125\004\013\014\041\145\120\113
\111\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\341
\045\017\356\215\333\210\063\165\147\315\255\037\175\072\116\155
\235\323\057\024\363\143\164\313\001\041\152\067\352\204\120\007
\113\046\133\011\103\154\041\236\152\310\325\003\365\140\151\217
\314\360\042\344\037\347\367\152\042\061\267\054\025\362\340\376
\000\152\103\377\207\145\306\265\032\301\247\114\155\042\160\041
\212\061\362\227\164\211\011\022\046\034\236\312\331\022\242\225
\074\332\351\147\277\010\240\144\343\326\102\267\105\357\227\364

\366\365\327\265\112\025\002\130\175\230\130\113\140\274\315\327
\015\232\023\063\123\321\141\371\172\325\327\170\263\232\063\367
\000\206\316\035\115\224\070\257\250\354\170\121\160\212\134\020
\203\121\041\367\021\075\064\206\136\345\110\315\227\201\202\065
\114\031\354\145\366\153\305\005\241\356\107\023\326\263\041\047
\224\020\012\331\044\073\272\276\104\023\106\060\077\227\074\330
\327\327\152\356\073\070\343\053\324\227\016\271\033\347\007\111
\177\067\052\371\167\170\317\124\355\133\106\235\243\200\016\221
\103\301\326\133\137\024\272\237\246\215\044\107\100\131\277\162
\070\262\066\154\067\377\231\321\135\016\131\012\253\151\367\300
\262\004\105\172\124\000\256\276\123\366\265\347\341\370\074\243
\061\322\251\376\041\122\144\305\246\147\360\165\007\006\224\024
\201\125\306\047\344\001\217\027\301\152\161\327\276\113\373\224
\130\175\176\021\063\261\102\367\142\154\030\326\317\011\150\076
\177\154\366\036\217\142\255\245\143\333\011\247\037\042\102\101
\036\157\231\212\076\327\371\077\100\172\171\260\245\001\222\322
\235\075\010\025\245\020\001\055\263\062\166\250\225\015\263\172
\232\373\007\020\170\021\157\341\217\307\272\017\045\032\164\052
\345\034\230\101\231\337\041\207\350\225\006\152\012\263\152\107
\166\145\366\072\317\217\142\027\031\173\012\050\315\032\322\203
\036\041\307\054\277\276\377\141\150\267\147\033\273\170\115\215
\316\147\345\344\301\216\267\043\146\342\235\220\165\064\230\251
\066\053\212\232\224\271\235\354\314\212\261\370\045\211\134\132
\266\057\214\037\155\171\044\247\122\150\303\204\065\342\146\215
\143\016\045\115\325\031\262\346\171\067\247\042\235\124\061\002
\003\001\000\001\243\152\060\150\060\035\006\003\125\035\016\004
\026\004\024\036\014\367\266\147\362\341\222\046\011\105\300\125
\071\056\167\077\102\112\242\060\014\006\003\125\035\023\004\005
\060\003\001\001\377\060\071\006\004\147\052\007\000\004\061\060
\057\060\055\002\001\000\060\011\006\005\053\016\003\002\032\005
\000\060\007\006\005\147\052\003\000\000\004\024\105\260\302\307
\012\126\174\356\133\170\014\225\371\030\123\301\246\034\330\020
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\002\001\000\011\263\203\123\131\001\076\225\111\271\361\201
\272\371\166\040\043\265\047\140\164\324\152\231\064\136\154\000
\123\331\237\362\246\261\044\007\104\152\052\306\245\216\170\022
\350\107\331\130\033\023\052\136\171\233\237\012\052\147\246\045
\077\006\151\126\163\303\212\146\110\373\051\201\127\164\006\312
\234\352\050\350\070\147\046\053\361\325\265\077\145\223\370\066
\135\216\215\215\100\040\207\031\352\357\047\300\075\264\071\017
\045\173\150\120\164\125\234\014\131\175\132\075\101\224\045\122
\010\340\107\054\025\061\031\325\277\007\125\306\273\022\265\227
\364\137\203\205\272\161\301\331\154\201\021\166\012\012\260\277
\202\227\367\352\075\372\372\354\055\251\050\224\073\126\335\322
\121\056\256\300\275\010\025\214\167\122\064\226\326\233\254\323
\035\216\141\017\065\173\233\256\071\151\013\142\140\100\040\066
\217\257\373\066\356\055\010\112\035\270\277\233\134\370\352\245
\033\240\163\246\330\370\156\340\063\004\137\150\252\047\207\355

\331\301\220\234\355\275\343\152\065\257\143\337\253\030\331\272
\346\351\112\352\120\212\017\141\223\036\342\055\031\342\060\224
\065\222\135\016\266\007\257\031\200\217\107\220\121\113\056\115
\335\205\342\322\012\122\012\027\232\374\032\260\120\002\345\001
\243\143\067\041\114\104\304\233\121\231\021\016\163\234\006\217
\124\056\247\050\136\104\071\207\126\055\067\275\205\104\224\341
\014\113\054\234\303\222\205\064\141\313\017\270\233\112\103\122
\376\064\072\175\270\351\051\334\166\251\310\060\370\024\161\200
\306\036\066\110\164\042\101\134\207\202\350\030\161\213\101\211
\104\347\176\130\133\250\270\215\023\351\247\154\303\107\355\263
\032\235\142\256\215\202\352\224\236\335\131\020\303\255\335\342
\115\343\061\325\307\354\350\362\260\376\222\036\026\012\032\374
\331\363\370\047\266\311\276\035\264\154\144\220\177\364\344\304
\133\327\067\256\102\016\335\244\032\157\174\210\124\305\026\156
\341\172\150\056\370\072\277\015\244\074\211\073\170\247\116\143
\203\004\041\010\147\215\362\202\111\320\133\375\261\315\017\203
\204\324\076\040\205\367\112\075\053\234\375\052\012\011\115\352
\201\370\021\234
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ePKI Root Certification Authority"
Issuer: OU=ePKI Root Certification Authority,O="Chunghwa Telecom Co., Ltd.",C=TW
Serial Number:15:c8:bd:65:47:5c:af:b8:97:00:5e:e4:06:d2:bc:9d
Subject: OU=ePKI Root Certification Authority,O="Chunghwa Telecom Co., Ltd.",C=TW
Not Valid Before: Mon Dec 20 02:31:27 2004
Not Valid After : Wed Dec 20 02:31:27 2034
Fingerprint (SHA-256):
C0:A6:F4:DC:63:A2:4B:FD:CF:54:EF:2A:6A:08:2A:0A:72:DE:35:80:3E:2F:F5:FF:52:7A:E5:D8:72:06:DF:D5
Fingerprint (SHA1): 67:65:0D:F1:7E:8E:7E:5B:82:40:A4:F4:56:4B:CF:E2:3D:69:C6:F0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ePKI Root Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\147\145\015\361\176\216\176\133\202\100\244\364\126\113\317\342
\075\151\306\360
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\033\056\000\312\046\006\220\075\255\376\157\025\150\323\153\263
END
CKA_ISSUER MULTILINE_OCTAL
\060\136\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040

\114\164\144\056\061\052\060\050\006\003\125\004\013\014\041\145
\120\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\025\310\275\145\107\134\257\270\227\000\136\344\006\322
\274\235
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "certSIGN ROOT CA"
#
Issuer: OU=certSIGN ROOT CA,O=certSIGN,C=RO
Serial Number:20:06:05:16:70:02
Subject: OU=certSIGN ROOT CA,O=certSIGN,C=RO
Not Valid Before: Tue Jul 04 17:20:04 2006
Not Valid After : Fri Jul 04 17:20:04 2031
Fingerprint (SHA-256):
EA:A9:62:C4:FA:4A:6B:AF:EB:E4:15:19:6D:35:1C:CD:88:8D:4F:53:F3:FA:8A:E6:D7:C4:66:A9:4E:60:42:BB
Fingerprint (SHA1): FA:B7:EE:36:97:26:62:FB:2D:B0:2A:F6:BF:03:FD:E8:7C:4B:2F:9B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "certSIGN ROOT CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\021\060\017\006\003\125\004\012\023\010\143\145\162\164\123\111
\107\116\061\031\060\027\006\003\125\004\013\023\020\143\145\162
\164\123\111\107\116\040\122\117\117\124\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\021\060\017\006\003\125\004\012\023\010\143\145\162\164\123\111
\107\116\061\031\060\027\006\003\125\004\013\023\020\143\145\162
\164\123\111\107\116\040\122\117\117\124\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\006\040\006\005\026\160\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\070\060\202\002\040\240\003\002\001\002\002\006\040

\006\005\026\160\002\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\060\073\061\013\060\011\006\003\125\004\006\023
\002\122\117\061\021\060\017\006\003\125\004\012\023\010\143\145
\162\164\123\111\107\116\061\031\060\027\006\003\125\004\013\023
\020\143\145\162\164\123\111\107\116\040\122\117\117\124\040\103
\101\060\036\027\015\060\066\060\067\060\064\061\067\062\060\060
\064\132\027\015\063\061\060\067\060\064\061\067\062\060\060\064
\132\060\073\061\013\060\011\006\003\125\004\006\023\002\122\117
\061\021\060\017\006\003\125\004\012\023\010\143\145\162\164\123
\111\107\116\061\031\060\027\006\003\125\004\013\023\020\143\145
\162\164\123\111\107\116\040\122\117\117\124\040\103\101\060\202
\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000\267
\063\271\176\310\045\112\216\265\333\264\050\033\252\127\220\350
\321\042\323\144\272\323\223\350\324\254\206\141\100\152\140\127
\150\124\204\115\274\152\124\002\005\377\337\233\232\052\256\135
\007\217\112\303\050\177\357\373\053\372\171\361\307\255\360\020
\123\044\220\213\146\311\250\210\253\257\132\243\000\351\276\272
\106\356\133\163\173\054\027\202\201\136\142\054\241\002\145\263
\275\305\053\000\176\304\374\003\063\127\015\355\342\372\316\135
\105\326\070\315\065\266\262\301\320\234\201\112\252\344\262\001
\134\035\217\137\231\304\261\255\333\210\041\353\220\010\202\200
\363\060\243\103\346\220\202\256\125\050\111\355\133\327\251\020
\070\016\376\217\114\133\233\106\352\101\365\260\010\164\303\320
\210\063\266\174\327\164\337\334\204\321\103\016\165\071\241\045
\100\050\352\170\313\016\054\056\071\235\214\213\156\026\034\057
\046\202\020\342\343\145\224\012\004\300\136\367\135\133\370\020
\342\320\272\172\113\373\336\067\000\000\032\133\050\343\322\234
\163\076\062\207\230\241\311\121\057\327\336\254\063\263\117\002
\003\001\000\001\243\102\060\100\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\306\060\035\006\003\125\035\016
\004\026\004\024\340\214\233\333\045\111\263\361\174\206\326\262
\102\207\013\320\153\240\331\344\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\001\001\000\076\322\034\211
\056\065\374\370\165\335\346\177\145\210\364\162\114\311\054\327
\062\116\363\335\031\171\107\275\216\073\133\223\017\120\111\044
\023\153\024\006\162\357\011\323\241\241\343\100\204\311\347\030
\062\164\074\110\156\017\237\113\324\367\036\323\223\206\144\124
\227\143\162\120\325\125\317\372\040\223\002\242\233\303\043\223
\116\026\125\166\240\160\171\155\315\041\037\317\057\055\274\031
\343\210\061\370\131\032\201\011\310\227\246\164\307\140\304\133
\314\127\216\262\165\375\033\002\011\333\131\157\162\223\151\367
\061\101\326\210\070\277\207\262\275\026\171\371\252\344\276\210
\045\335\141\047\043\034\265\061\007\004\066\264\032\220\275\240
\164\161\120\211\155\274\024\343\017\206\256\361\253\076\307\240
\011\314\243\110\321\340\333\144\347\222\265\317\257\162\103\160
\213\371\303\204\074\023\252\176\222\233\127\123\223\372\160\302

\221\016\061\371\233\147\135\351\226\070\136\137\263\163\116\210
\025\147\336\236\166\020\142\040\276\125\151\225\103\000\071\115
\366\356\260\132\116\111\104\124\130\137\102\203
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "certSIGN ROOT CA"
Issuer: OU=certSIGN ROOT CA,O=certSIGN,C=RO
Serial Number:20:06:05:16:70:02
Subject: OU=certSIGN ROOT CA,O=certSIGN,C=RO
Not Valid Before: Tue Jul 04 17:20:04 2006
Not Valid After : Fri Jul 04 17:20:04 2031
Fingerprint (SHA-256):
EA:A9:62:C4:FA:4A:6B:AF:EB:E4:15:19:6D:35:1C:CD:88:8D:4F:53:F3:FA:8A:E6:D7:C4:66:A9:4E:60:42:BB
Fingerprint (SHA1): FA:B7:EE:36:97:26:62:FB:2D:B0:2A:F6:BF:03:FD:E8:7C:4B:2F:9B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "certSIGN ROOT CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\372\267\356\066\227\046\142\373\055\260\052\366\277\003\375\350
\174\113\057\233
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\030\230\300\326\351\072\374\371\260\365\014\367\113\001\104\027
END
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\021\060\017\006\003\125\004\012\023\010\143\145\162\164\123\111
\107\116\061\031\060\027\006\003\125\004\013\023\020\143\145\162
\164\123\111\107\116\040\122\117\117\124\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\006\040\006\005\026\160\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "NetLock Arany (Class Gold) Ftanúsítvány"
#
Issuer: CN=NetLock Arany (Class Gold) F..tan..s..tv..ny,OU=Tan..s..tv..nykiad..k (Certification Services),O=NetLock Kft.,L=Budapest,C=HU

Serial Number:49:41:2c:e4:00:10
Subject: CN=NetLock Arany (Class Gold) F..tan..s..tv..ny,OU=Tan..s..tv..nykiad..k (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Not Valid Before: Thu Dec 11 15:08:21 2008
Not Valid After : Wed Dec 06 15:08:21 2028
Fingerprint (SHA-256):
6C:61:DA:C3:A2:DE:F0:31:50:6B:E0:36:D2:A6:FE:40:19:94:FB:D1:3D:F9:C8:D4:66:59:92:74:C4:46:EC:98
Fingerprint (SHA1): 06:08:3F:59:3F:15:A1:04:A0:69:A4:6B:A9:03:D0:06:B7:97:09:91
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NetLock Arany (Class Gold) Ftanúsítvány"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\247\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\025\060\023\006\003\125\004\012\014\014\116\145
\164\114\157\143\153\040\113\146\164\056\061\067\060\065\006\003
\125\004\013\014\056\124\141\156\303\272\163\303\255\164\166\303
\241\156\171\153\151\141\144\303\263\153\040\050\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\051\061\065\060\063\006\003\125\004\003\014\054\116\145
\164\114\157\143\153\040\101\162\141\156\171\040\050\103\154\141
\163\163\040\107\157\154\144\051\040\106\305\221\164\141\156\303
\272\163\303\255\164\166\303\241\156\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\247\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\025\060\023\006\003\125\004\012\014\014\116\145
\164\114\157\143\153\040\113\146\164\056\061\067\060\065\006\003
\125\004\013\014\056\124\141\156\303\272\163\303\255\164\166\303
\241\156\171\153\151\141\144\303\263\153\040\050\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\051\061\065\060\063\006\003\125\004\003\014\054\116\145
\164\114\157\143\153\040\101\162\141\156\171\040\050\103\154\141
\163\163\040\107\157\154\144\051\040\106\305\221\164\141\156\303
\272\163\303\255\164\166\303\241\156\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\006\111\101\054\344\000\020
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\025\060\202\002\375\240\003\002\001\002\002\006\111
\101\054\344\000\020\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\060\201\247\061\013\060\011\006\003\125\004\006

\023\002\110\125\061\021\060\017\006\003\125\004\007\014\010\102
\165\144\141\160\145\163\164\061\025\060\023\006\003\125\004\012
\014\014\116\145\164\114\157\143\153\040\113\146\164\056\061\067
\060\065\006\003\125\004\013\014\056\124\141\156\303\272\163\303
\255\164\166\303\241\156\171\153\151\141\144\303\263\153\040\050
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\051\061\065\060\063\006\003\125\004\003
\014\054\116\145\164\114\157\143\153\040\101\162\141\156\171\040
\050\103\154\141\163\163\040\107\157\154\144\051\040\106\305\221
\164\141\156\303\272\163\303\255\164\166\303\241\156\171\060\036
\027\015\060\070\061\062\061\061\061\065\060\070\062\061\132\027
\015\062\070\061\062\060\066\061\065\060\070\062\061\132\060\201
\247\061\013\060\011\006\003\125\004\006\023\002\110\125\061\021
\060\017\006\003\125\004\007\014\010\102\165\144\141\160\145\163
\164\061\025\060\023\006\003\125\004\012\014\014\116\145\164\114
\157\143\153\040\113\146\164\056\061\067\060\065\006\003\125\004
\013\014\056\124\141\156\303\272\163\303\255\164\166\303\241\156
\171\153\151\141\144\303\263\153\040\050\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\123\145\162\166\151\143\145\163
\051\061\065\060\063\006\003\125\004\003\014\054\116\145\164\114
\157\143\153\040\101\162\141\156\171\040\050\103\154\141\163\163
\040\107\157\154\144\051\040\106\305\221\164\141\156\303\272\163
\303\255\164\166\303\241\156\171\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\304\044\136\163\276\113\155
\024\303\241\364\343\227\220\156\322\060\105\036\074\356\147\331
\144\340\032\212\177\312\060\312\203\343\040\301\343\364\072\323
\224\137\032\174\133\155\277\060\117\204\047\366\237\037\111\274
\306\231\012\220\362\017\365\177\103\204\067\143\121\213\172\245
\160\374\172\130\315\216\233\355\303\106\154\204\160\135\332\363
\001\220\043\374\116\060\251\176\341\047\143\347\355\144\074\240
\270\311\063\143\376\026\220\377\260\270\375\327\250\300\300\224
\103\013\266\325\131\246\236\126\320\044\037\160\171\257\333\071
\124\015\145\165\331\025\101\224\001\257\136\354\366\215\361\377
\255\144\376\040\232\327\134\353\376\246\037\010\144\243\213\166
\125\255\036\073\050\140\056\207\045\350\252\257\037\306\144\106
\040\267\160\177\074\336\110\333\226\123\267\071\167\344\032\342
\307\026\204\166\227\133\057\273\031\025\205\370\151\205\365\231
\247\251\362\064\247\251\266\246\003\374\157\206\075\124\174\166
\004\233\153\371\100\135\000\064\307\056\231\165\235\345\210\003
\252\115\370\003\322\102\166\300\033\002\003\000\250\213\243\105
\060\103\060\022\006\003\125\035\023\001\001\377\004\010\060\006
\001\001\377\002\001\004\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004
\024\314\372\147\223\360\266\270\320\245\300\036\363\123\375\214
\123\337\203\327\226\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\003\202\001\001\000\253\177\356\034\026\251\234
\074\121\000\240\300\021\010\005\247\231\346\157\001\210\124\141

\156\361\271\030\255\112\255\376\201\100\043\224\057\373\165\174
\057\050\113\142\044\201\202\013\365\141\361\034\156\270\141\070
\353\201\372\142\241\073\132\142\323\224\145\304\341\346\155\202
\370\057\045\160\262\041\046\301\162\121\037\214\054\303\204\220
\303\132\217\272\317\364\247\145\245\353\230\321\373\005\262\106
\165\025\043\152\157\205\143\060\200\360\325\236\037\051\034\302
\154\260\120\131\135\220\133\073\250\015\060\317\277\175\177\316
\361\235\203\275\311\106\156\040\246\371\141\121\272\041\057\173
\276\245\025\143\241\324\225\207\361\236\271\363\211\363\075\205
\270\270\333\276\265\271\051\371\332\067\005\000\111\224\003\204
\104\347\277\103\061\317\165\213\045\321\364\246\144\365\222\366
\253\005\353\075\351\245\013\066\142\332\314\006\137\066\213\266
\136\061\270\052\373\136\366\161\337\104\046\236\304\346\015\221
\264\056\165\225\200\121\152\113\060\246\260\142\241\223\361\233
\330\316\304\143\165\077\131\107\261
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "NetLock Arany (Class Gold) Ftanúsítvány"
Issuer: CN=NetLock Arany (Class Gold) F..tan..s..tv..ny,OU=Tan..s..tv..nykiad..k (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Serial Number:49:41:2c:e4:00:10
Subject: CN=NetLock Arany (Class Gold) F..tan..s..tv..ny,OU=Tan..s..tv..nykiad..k (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Not Valid Before: Thu Dec 11 15:08:21 2008
Not Valid After : Wed Dec 06 15:08:21 2028
Fingerprint (SHA-256):
6C:61:DA:C3:A2:DE:F0:31:50:6B:E0:36:D2:A6:FE:40:19:94:FB:D1:3D:F9:C8:D4:66:59:92:74:C4:46:EC:98
Fingerprint (SHA1): 06:08:3F:59:3F:15:A1:04:A0:69:A4:6B:A9:03:D0:06:B7:97:09:91
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NetLock Arany (Class Gold) Ftanúsítvány"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\006\010\077\131\077\025\241\004\240\151\244\153\251\003\320\006
\267\227\011\221
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\241\267\377\163\335\326\327\064\062\030\337\374\074\255\210
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\247\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\025\060\023\006\003\125\004\012\014\014\116\145
\164\114\157\143\153\040\113\146\164\056\061\067\060\065\006\003

\125\004\013\014\056\124\141\156\303\272\163\303\255\164\166\303
\241\156\171\153\151\141\144\303\263\153\040\050\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\051\061\065\060\063\006\003\125\004\003\014\054\116\145
\164\114\157\143\153\040\101\162\141\156\171\040\050\103\154\141
\163\163\040\107\157\154\144\051\040\106\305\221\164\141\156\303
\272\163\303\255\164\166\303\241\156\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\006\111\101\054\344\000\020
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Hongkong Post Root CA 1"
#
Issuer: CN=Hongkong Post Root CA 1,O=Hongkong Post,C=HK
Serial Number: 1000 (0x3e8)
Subject: CN=Hongkong Post Root CA 1,O=Hongkong Post,C=HK
Not Valid Before: Thu May 15 05:13:14 2003
Not Valid After : Mon May 15 04:52:29 2023
Fingerprint (SHA-256):
F9:E6:7D:33:6C:51:00:2A:C0:54:C6:32:02:2D:66:DD:A2:E7:E3:FF:F1:0A:D0:61:ED:31:D8:BB:B4:10:CF:B2
Fingerprint (SHA1): D6:DA:A8:20:8D:09:D2:15:4D:24:B5:2F:CB:34:6E:B2:58:B2:8A:58
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hongkong Post Root CA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\026\060\024\006\003\125\004\012\023\015\110\157\156\147\153\157
\156\147\040\120\157\163\164\061\040\060\036\006\003\125\004\003
\023\027\110\157\156\147\153\157\156\147\040\120\157\163\164\040
\122\157\157\164\040\103\101\040\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\026\060\024\006\003\125\004\012\023\015\110\157\156\147\153\157
\156\147\040\120\157\163\164\061\040\060\036\006\003\125\004\003
\023\027\110\157\156\147\153\157\156\147\040\120\157\163\164\040
\122\157\157\164\040\103\101\040\061
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\003\350
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\060\060\202\002\030\240\003\002\001\002\002\002\003
\350\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\060\107\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\026\060\024\006\003\125\004\012\023\015\110\157\156\147\153\157
\156\147\040\120\157\163\164\061\040\060\036\006\003\125\004\003
\023\027\110\157\156\147\153\157\156\147\040\120\157\163\164\040
\122\157\157\164\040\103\101\040\061\060\036\027\015\060\063\060
\065\061\065\060\065\061\063\061\064\132\027\015\062\063\060\065
\061\065\060\064\065\062\062\071\132\060\107\061\013\060\011\006
\003\125\004\006\023\002\110\113\061\026\060\024\006\003\125\004
\012\023\015\110\157\156\147\153\157\156\147\040\120\157\163\164
\061\040\060\036\006\003\125\004\003\023\027\110\157\156\147\153
\157\156\147\040\120\157\163\164\040\122\157\157\164\040\103\101
\040\061\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\254\377\070\266\351\146\002\111\343\242\264\341\220
\371\100\217\171\371\342\275\171\376\002\275\356\044\222\035\042
\366\332\205\162\151\376\327\077\011\324\335\221\265\002\234\320
\215\132\341\125\303\120\206\271\051\046\302\343\331\240\361\151
\003\050\040\200\105\042\055\126\247\073\124\225\126\042\131\037
\050\337\037\040\075\155\242\066\276\043\240\261\156\265\261\047
\077\071\123\011\352\253\152\350\164\262\302\145\134\216\277\174
\303\170\204\315\236\026\374\365\056\117\040\052\010\237\167\363
\305\036\304\232\122\146\036\110\136\343\020\006\217\042\230\341
\145\216\033\135\043\146\073\270\245\062\121\310\206\252\241\251
\236\177\166\224\302\246\154\267\101\360\325\310\006\070\346\324
\014\342\363\073\114\155\120\214\304\203\047\301\023\204\131\075
\236\165\164\266\330\002\136\072\220\172\300\102\066\162\354\152
\115\334\357\304\000\337\023\030\127\137\046\170\310\326\012\171
\167\277\367\257\267\166\271\245\013\204\027\135\020\352\157\341
\253\225\021\137\155\074\243\134\115\203\133\362\263\031\212\200
\213\013\207\002\003\001\000\001\243\046\060\044\060\022\006\003
\125\035\023\001\001\377\004\010\060\006\001\001\377\002\001\003
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\306
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\016\106\325\074\256\342\207\331\136\201\213\002
\230\101\010\214\114\274\332\333\356\047\033\202\347\152\105\354
\026\213\117\205\240\363\262\160\275\132\226\272\312\156\155\356
\106\213\156\347\052\056\226\263\031\063\353\264\237\250\262\067
\356\230\250\227\266\056\266\147\047\324\246\111\375\034\223\145
\166\236\102\057\334\042\154\232\117\362\132\025\071\261\161\327
\053\121\350\155\034\230\300\331\052\364\241\202\173\325\311\101
\242\043\001\164\070\125\213\017\271\056\147\242\040\004\067\332
\234\013\323\027\041\340\217\227\171\064\157\204\110\002\040\063

\033\346\064\104\237\221\160\364\200\136\204\103\302\051\322\154
\022\024\344\141\215\254\020\220\236\204\120\273\360\226\157\105
\237\212\363\312\154\117\372\021\072\025\025\106\303\315\037\203
\133\055\101\022\355\120\147\101\023\075\041\253\224\212\252\116
\174\301\261\373\247\326\265\047\057\227\253\156\340\035\342\321
\034\054\037\104\342\374\276\221\241\234\373\326\051\123\163\206
\237\123\330\103\016\135\326\143\202\161\035\200\164\312\366\342
\002\153\331\132
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Hongkong Post Root CA 1"
Issuer: CN=Hongkong Post Root CA 1,O=Hongkong Post,C=HK
Serial Number: 1000 (0x3e8)
Subject: CN=Hongkong Post Root CA 1,O=Hongkong Post,C=HK
Not Valid Before: Thu May 15 05:13:14 2003
Not Valid After : Mon May 15 04:52:29 2023
Fingerprint (SHA-256):
F9:E6:7D:33:6C:51:00:2A:C0:54:C6:32:02:2D:66:DD:A2:E7:E3:FF:F1:0A:D0:61:ED:31:D8:BB:B4:10:CF:B2
Fingerprint (SHA1): D6:DA:A8:20:8D:09:D2:15:4D:24:B5:2F:CB:34:6E:B2:58:B2:8A:58
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hongkong Post Root CA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\326\332\250\040\215\011\322\025\115\044\265\057\313\064\156\262
\130\262\212\130
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\250\015\157\071\170\271\103\155\167\102\155\230\132\314\043\312
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\026\060\024\006\003\125\004\012\023\015\110\157\156\147\153\157
\156\147\040\120\157\163\164\061\040\060\036\006\003\125\004\003
\023\027\110\157\156\147\153\157\156\147\040\120\157\163\164\040
\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\003\350
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SecureSign RootCA11"
#
Issuer: CN=SecureSign RootCA11,O="Japan Certification Services, Inc.",C=JP
Serial Number: 1 (0x1)
Subject: CN=SecureSign RootCA11,O="Japan Certification Services, Inc.",C=JP
Not Valid Before: Wed Apr 08 04:56:47 2009
Not Valid After : Sun Apr 08 04:56:47 2029
Fingerprint (SHA-256):
BF:0F:EE:FB:9E:3A:58:1A:D5:F9:E9:DB:75:89:98:57:43:D2:61:08:5C:4D:31:4F:6F:5D:72:59:AA:42:16:12
Fingerprint (SHA1): 3B:C4:9F:48:F8:F3:73:A0:9C:1E:BD:F8:5B:B1:C3:65:C7:D8:11:B3
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SecureSign RootCA11"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\053\060\051\006\003\125\004\012\023\042\112\141\160\141\156\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\054\040\111\156\143\056\061\034\060\032
\006\003\125\004\003\023\023\123\145\143\165\162\145\123\151\147
\156\040\122\157\157\164\103\101\061\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\053\060\051\006\003\125\004\012\023\042\112\141\160\141\156\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\054\040\111\156\143\056\061\034\060\032
\006\003\125\004\003\023\023\123\145\143\165\162\145\123\151\147
\156\040\122\157\157\164\103\101\061\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\155\060\202\002\125\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061\053
\060\051\006\003\125\004\012\023\042\112\141\160\141\156\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145\162
\166\151\143\145\163\054\040\111\156\143\056\061\034\060\032\006
\003\125\004\003\023\023\123\145\143\165\162\145\123\151\147\156
\040\122\157\157\164\103\101\061\061\060\036\027\015\060\071\060
\064\060\070\060\064\065\066\064\067\132\027\015\062\071\060\064

\060\070\060\064\065\066\064\067\132\060\130\061\013\060\011\006
\003\125\004\006\023\002\112\120\061\053\060\051\006\003\125\004
\012\023\042\112\141\160\141\156\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\123\145\162\166\151\143\145\163\054
\040\111\156\143\056\061\034\060\032\006\003\125\004\003\023\023
\123\145\143\165\162\145\123\151\147\156\040\122\157\157\164\103
\101\061\061\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\375\167\252\245\034\220\005\073\313\114\233\063
\213\132\024\105\244\347\220\026\321\337\127\322\041\020\244\027
\375\337\254\326\037\247\344\333\174\367\354\337\270\003\332\224
\130\375\135\162\174\214\077\137\001\147\164\025\226\343\002\074
\207\333\256\313\001\216\302\363\146\306\205\105\364\002\306\072
\265\142\262\257\372\234\277\244\346\324\200\060\230\363\015\266
\223\217\251\324\330\066\362\260\374\212\312\054\241\025\063\225
\061\332\300\033\362\356\142\231\206\143\077\277\335\223\052\203
\250\166\271\023\037\267\316\116\102\205\217\042\347\056\032\362
\225\011\262\005\265\104\116\167\241\040\275\251\362\116\012\175
\120\255\365\005\015\105\117\106\161\375\050\076\123\373\004\330
\055\327\145\035\112\033\372\317\073\260\061\232\065\156\310\213
\006\323\000\221\362\224\010\145\114\261\064\006\000\172\211\342
\360\307\003\131\317\325\326\350\247\062\263\346\230\100\206\305
\315\047\022\213\314\173\316\267\021\074\142\140\007\043\076\053
\100\156\224\200\011\155\266\263\157\167\157\065\010\120\373\002
\207\305\076\211\002\003\001\000\001\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\133\370\115\117\262\245\206\324
\072\322\361\143\232\240\276\011\366\127\267\336\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\240\241\070\026\146\056\247\126\037\041\234\006\372\035\355
\271\042\305\070\046\330\116\117\354\243\177\171\336\106\041\241
\207\167\217\007\010\232\262\244\305\257\017\062\230\013\174\146
\051\266\233\175\045\122\111\103\253\114\056\053\156\172\160\257
\026\016\343\002\154\373\102\346\030\235\105\330\125\310\350\073
\335\347\341\364\056\013\034\064\134\154\130\112\373\214\210\120
\137\225\034\277\355\253\042\265\145\263\205\272\236\017\270\255
\345\172\033\212\120\072\035\275\015\274\173\124\120\013\271\102
\257\125\240\030\201\255\145\231\357\276\344\234\277\304\205\253
\101\262\124\157\334\045\315\355\170\342\216\014\215\011\111\335
\143\173\132\151\226\002\041\250\275\122\131\351\175\065\313\310
\122\312\177\201\376\331\153\323\367\021\355\045\337\370\347\371
\244\372\162\227\204\123\015\245\320\062\030\121\166\131\024\154
\017\353\354\137\200\214\165\103\203\303\205\230\377\114\236\055
\015\344\167\203\223\116\265\226\007\213\050\023\233\214\031\215
\101\047\111\100\356\336\346\043\104\071\334\241\042\326\272\003
\362
END

CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SecureSign RootCA11"
Issuer: CN=SecureSign RootCA11,O="Japan Certification Services, Inc.",C=JP
Serial Number: 1 (0x1)
Subject: CN=SecureSign RootCA11,O="Japan Certification Services, Inc.",C=JP
Not Valid Before: Wed Apr 08 04:56:47 2009
Not Valid After : Sun Apr 08 04:56:47 2029
Fingerprint (SHA-256):
BF:0F:EE:FB:9E:3A:58:1A:D5:F9:E9:DB:75:89:98:57:43:D2:61:08:5C:4D:31:4F:6F:5D:72:59:AA:42:16:12
Fingerprint (SHA1): 3B:C4:9F:48:F8:F3:73:A0:9C:1E:BD:F8:5B:B1:C3:65:C7:D8:11:B3
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SecureSign RootCA11"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\073\304\237\110\370\363\163\240\234\036\275\370\133\261\303\145
\307\330\021\263
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\267\122\164\342\222\264\200\223\362\165\344\314\327\362\352\046
END
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\053\060\051\006\003\125\004\012\023\042\112\141\160\141\156\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\054\040\111\156\143\056\061\034\060\032
\006\003\125\004\003\023\023\123\145\143\165\162\145\123\151\147
\156\040\122\157\157\164\103\101\061\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Microsec e-Szigno Root CA 2009"
#
Issuer: E=info@e-szigno.hu,CN=Microsec e-Szigno Root CA 2009,O=Microsec Ltd.,L=Budapest,C=HU
Serial Number:00:c2:7e:43:04:4e:47:3f:19
Subject: E=info@e-szigno.hu,CN=Microsec e-Szigno Root CA 2009,O=Microsec Ltd.,L=Budapest,C=HU
Not Valid Before: Tue Jun 16 11:30:18 2009

Not Valid After : Sun Dec 30 11:30:18 2029
Fingerprint (SHA-256):
3C:5F:81:FE:A5:FA:B8:2C:64:BF:A2:EA:EC:AF:CD:E8:E0:77:FC:86:20:A7:CA:E5:37:16:3D:F3:6E:DB:F3:78
Fingerprint (SHA1): 89:DF:74:FE:5C:F4:0F:4A:80:F9:E3:37:7D:54:DA:91:E1:01:31:8E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsec e-Szigno Root CA 2009"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151
\143\162\157\163\145\143\040\114\164\144\056\061\047\060\045\006
\003\125\004\003\014\036\115\151\143\162\157\163\145\143\040\145
\055\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040
\062\060\060\071\061\037\060\035\006\011\052\206\110\206\367\015
\001\011\001\026\020\151\156\146\157\100\145\055\163\172\151\147
\156\157\056\150\165
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151
\143\162\157\163\145\143\040\114\164\144\056\061\047\060\045\006
\003\125\004\003\014\036\115\151\143\162\157\163\145\143\040\145
\055\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040
\062\060\060\071\061\037\060\035\006\011\052\206\110\206\367\015
\001\011\001\026\020\151\156\146\157\100\145\055\163\172\151\147
\156\157\056\150\165
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\302\176\103\004\116\107\077\031
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\012\060\202\002\362\240\003\002\001\002\002\011\000
\302\176\103\004\116\107\077\031\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\201\202\061\013\060\011\006\003
\125\004\006\023\002\110\125\061\021\060\017\006\003\125\004\007
\014\010\102\165\144\141\160\145\163\164\061\026\060\024\006\003
\125\004\012\014\015\115\151\143\162\157\163\145\143\040\114\164
\144\056\061\047\060\045\006\003\125\004\003\014\036\115\151\143
\162\157\163\145\143\040\145\055\123\172\151\147\156\157\040\122
\157\157\164\040\103\101\040\062\060\060\071\061\037\060\035\006
\011\052\206\110\206\367\015\001\011\001\026\020\151\156\146\157
\100\145\055\163\172\151\147\156\157\056\150\165\060\036\027\015

\060\071\060\066\061\066\061\061\063\060\061\070\132\027\015\062
\071\061\062\063\060\061\061\063\060\061\070\132\060\201\202\061
\013\060\011\006\003\125\004\006\023\002\110\125\061\021\060\017
\006\003\125\004\007\014\010\102\165\144\141\160\145\163\164\061
\026\060\024\006\003\125\004\012\014\015\115\151\143\162\157\163
\145\143\040\114\164\144\056\061\047\060\045\006\003\125\004\003
\014\036\115\151\143\162\157\163\145\143\040\145\055\123\172\151
\147\156\157\040\122\157\157\164\040\103\101\040\062\060\060\071
\061\037\060\035\006\011\052\206\110\206\367\015\001\011\001\026
\020\151\156\146\157\100\145\055\163\172\151\147\156\157\056\150
\165\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\351\370\217\363\143\255\332\206\330\247\340\102\373\317
\221\336\246\046\370\231\245\143\160\255\233\256\312\063\100\175
\155\226\156\241\016\104\356\341\023\235\224\102\122\232\275\165
\205\164\054\250\016\035\223\266\030\267\214\054\250\317\373\134
\161\271\332\354\376\350\176\217\344\057\035\262\250\165\207\330
\267\241\345\073\317\231\112\106\320\203\031\175\300\241\022\034
\225\155\112\364\330\307\245\115\063\056\205\071\100\165\176\024
\174\200\022\230\120\307\101\147\270\240\200\141\124\246\154\116
\037\340\235\016\007\351\311\272\063\347\376\300\125\050\054\002
\200\247\031\365\236\334\125\123\003\227\173\007\110\377\231\373
\067\212\044\304\131\314\120\020\143\216\252\251\032\260\204\032
\206\371\137\273\261\120\156\244\321\012\314\325\161\176\037\247
\033\174\365\123\156\042\137\313\053\346\324\174\135\256\326\302
\306\114\345\005\001\331\355\127\374\301\043\171\374\372\310\044
\203\225\363\265\152\121\001\320\167\326\351\022\241\371\032\203
\373\202\033\271\260\227\364\166\006\063\103\111\240\377\013\265
\372\265\002\003\001\000\001\243\201\200\060\176\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006
\003\125\035\016\004\026\004\024\313\017\306\337\102\103\314\075
\313\265\110\043\241\032\172\246\052\273\064\150\060\037\006\003
\125\035\043\004\030\060\026\200\024\313\017\306\337\102\103\314
\075\313\265\110\043\241\032\172\246\052\273\064\150\060\033\006
\003\125\035\021\004\024\060\022\201\020\151\156\146\157\100\145
\055\163\172\151\147\156\157\056\150\165\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\001\001\000\311\321
\016\136\056\325\314\263\174\076\313\374\075\377\015\050\225\223
\004\310\277\332\315\171\270\103\220\360\244\276\357\362\357\041
\230\274\324\324\135\006\366\356\102\354\060\154\240\252\251\312
\361\257\212\372\077\013\163\152\076\352\056\100\176\037\256\124
\141\171\353\056\010\067\327\043\363\214\237\276\035\261\341\244
\165\333\240\342\124\024\261\272\034\051\244\030\366\022\272\242
\024\024\343\061\065\310\100\377\267\340\005\166\127\301\034\131
\362\370\277\344\355\045\142\134\204\360\176\176\037\263\276\371
\267\041\021\314\003\001\126\160\247\020\222\036\033\064\201\036
\255\234\032\303\004\074\355\002\141\326\036\006\363\137\072\207

\362\053\361\105\207\345\075\254\321\307\127\204\275\153\256\334
\330\371\266\033\142\160\013\075\066\311\102\362\062\327\172\141
\346\322\333\075\317\310\251\311\233\334\333\130\104\327\157\070
\257\177\170\323\243\255\032\165\272\034\301\066\174\217\036\155
\034\303\165\106\256\065\005\246\366\134\075\041\356\126\360\311
\202\042\055\172\124\253\160\303\175\042\145\202\160\226
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Microsec e-Szigno Root CA 2009"
Issuer: E=info@e-szigno.hu,CN=Microsec e-Szigno Root CA 2009,O=Microsec Ltd.,L=Budapest,C=HU
Serial Number:00:c2:7e:43:04:4e:47:3f:19
Subject: E=info@e-szigno.hu,CN=Microsec e-Szigno Root CA 2009,O=Microsec Ltd.,L=Budapest,C=HU
Not Valid Before: Tue Jun 16 11:30:18 2009
Not Valid After : Sun Dec 30 11:30:18 2029
Fingerprint (SHA-256):
3C:5F:81:FE:A5:FA:B8:2C:64:BF:A2:EA:EC:AF:CD:E8:E0:77:FC:86:20:A7:CA:E5:37:16:3D:F3:6E:DB:F3:78
Fingerprint (SHA1): 89:DF:74:FE:5C:F4:0F:4A:80:F9:E3:37:7D:54:DA:91:E1:01:31:8E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsec e-Szigno Root CA 2009"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\211\337\164\376\134\364\017\112\200\371\343\067\175\124\332\221
\341\001\061\216
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\370\111\364\003\274\104\055\203\276\110\151\175\051\144\374\261
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151
\143\162\157\163\145\143\040\114\164\144\056\061\047\060\045\006
\003\125\004\003\014\036\115\151\143\162\157\163\145\143\040\145
\055\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040
\062\060\060\071\061\037\060\035\006\011\052\206\110\206\367\015
\001\011\001\026\020\151\156\146\157\100\145\055\163\172\151\147
\156\157\056\150\165
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\302\176\103\004\116\107\077\031
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Root CA - R3"
#
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R3
Serial Number:04:00:00:00:00:01:21:58:53:08:a2
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R3
Not Valid Before: Wed Mar 18 10:00:00 2009
Not Valid After : Sun Mar 18 10:00:00 2029
Fingerprint (SHA-256):
CB:B5:22:D7:B7:F1:27:AD:6A:01:13:86:5B:DF:1C:D4:10:2E:7D:07:59:AF:63:5A:7C:F4:72:0D:C9:63:C5:3B
Fingerprint (SHA1): D6:9B:56:11:48:F0:1C:77:C5:45:78:C1:09:26:DF:5B:85:69:76:AD
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA - R3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\063\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\063\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\041\130\123\010\242
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\137\060\202\002\107\240\003\002\001\002\002\013\004
\000\000\000\000\001\041\130\123\010\242\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\060\114\061\040\060\036\006
\003\125\004\013\023\027\107\154\157\142\141\154\123\151\147\156
\040\122\157\157\164\040\103\101\040\055\040\122\063\061\023\060
\021\006\003\125\004\012\023\012\107\154\157\142\141\154\123\151
\147\156\061\023\060\021\006\003\125\004\003\023\012\107\154\157
\142\141\154\123\151\147\156\060\036\027\015\060\071\060\063\061
\070\061\060\060\060\060\060\132\027\015\062\071\060\063\061\070

\061\060\060\060\060\060\132\060\114\061\040\060\036\006\003\125
\004\013\023\027\107\154\157\142\141\154\123\151\147\156\040\122
\157\157\164\040\103\101\040\055\040\122\063\061\023\060\021\006
\003\125\004\012\023\012\107\154\157\142\141\154\123\151\147\156
\061\023\060\021\006\003\125\004\003\023\012\107\154\157\142\141
\154\123\151\147\156\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\314\045\166\220\171\006\170\042\026\365
\300\203\266\204\312\050\236\375\005\166\021\305\255\210\162\374
\106\002\103\307\262\212\235\004\137\044\313\056\113\341\140\202
\106\341\122\253\014\201\107\160\154\335\144\321\353\365\054\243
\017\202\075\014\053\256\227\327\266\024\206\020\171\273\073\023
\200\167\214\010\341\111\322\152\142\057\037\136\372\226\150\337
\211\047\225\070\237\006\327\076\311\313\046\131\015\163\336\260
\310\351\046\016\203\025\306\357\133\213\322\004\140\312\111\246
\050\366\151\073\366\313\310\050\221\345\235\212\141\127\067\254
\164\024\334\164\340\072\356\162\057\056\234\373\320\273\277\365
\075\000\341\006\063\350\202\053\256\123\246\072\026\163\214\335
\101\016\040\072\300\264\247\241\351\262\117\220\056\062\140\351
\127\313\271\004\222\150\150\345\070\046\140\165\262\237\167\377
\221\024\357\256\040\111\374\255\100\025\110\321\002\061\141\031
\136\270\227\357\255\167\267\144\232\172\277\137\301\023\357\233
\142\373\015\154\340\124\151\026\251\003\332\156\351\203\223\161
\166\306\151\205\202\027\002\003\001\000\001\243\102\060\100\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\217\360\113\177\250
\056\105\044\256\115\120\372\143\232\213\336\342\335\033\274\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\001\001\000\113\100\333\300\120\252\376\310\014\357\367\226\124
\105\111\273\226\000\011\101\254\263\023\206\206\050\007\063\312
\153\346\164\271\272\000\055\256\244\012\323\365\361\361\017\212
\277\163\147\112\203\307\104\173\170\340\257\156\154\157\003\051
\216\063\071\105\303\216\344\271\127\154\252\374\022\226\354\123
\306\055\344\044\154\271\224\143\373\334\123\150\147\126\076\203
\270\317\065\041\303\311\150\376\316\332\302\123\252\314\220\212
\351\360\135\106\214\225\335\172\130\050\032\057\035\336\315\000
\067\101\217\355\104\155\327\123\050\227\176\363\147\004\036\025
\327\212\226\264\323\336\114\047\244\114\033\163\163\166\364\027
\231\302\037\172\016\343\055\010\255\012\034\054\377\074\253\125
\016\017\221\176\066\353\303\127\111\276\341\056\055\174\140\213
\303\101\121\023\043\235\316\367\062\153\224\001\250\231\347\054
\063\037\072\073\045\322\206\100\316\073\054\206\170\311\141\057
\024\272\356\333\125\157\337\204\356\005\011\115\275\050\330\162
\316\323\142\120\145\036\353\222\227\203\061\331\263\265\312\107
\130\077\137
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE

CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root CA - R3"
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R3
Serial Number:04:00:00:00:00:01:21:58:53:08:a2
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R3
Not Valid Before: Wed Mar 18 10:00:00 2009
Not Valid After : Sun Mar 18 10:00:00 2029
Fingerprint (SHA-256):
CB:B5:22:D7:B7:F1:27:AD:6A:01:13:86:5B:DF:1C:D4:10:2E:7D:07:59:AF:63:5A:7C:F4:72:0D:C9:63:C5:3B
Fingerprint (SHA1): D6:9B:56:11:48:F0:1C:77:C5:45:78:C1:09:26:DF:5B:85:69:76:AD
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA - R3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\326\233\126\021\110\360\034\167\305\105\170\301\011\046\337\133
\205\151\166\255
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\337\270\111\312\005\023\125\356\055\272\032\303\076\260\050
END
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\063\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\041\130\123\010\242
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Autoridad de Certificacion Firmaprofesional CIF A62634068"
#
Issuer: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Serial Number:53:ec:3b:ee:fb:b2:48:5f
Subject: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Not Valid Before: Wed May 20 08:38:15 2009
Not Valid After : Tue Dec 31 08:38:15 2030
Fingerprint (SHA-256):

04:04:80:28:BF:1F:28:64:D4:8F:9A:D4:D8:32:94:36:6A:82:88:56:55:3F:3B:14:30:3F:90:14:7F:5D:40:EF
Fingerprint (SHA1): AE:C5:FB:3F:C8:E1:BF:C4:E5:4F:03:07:5A:9A:E8:00:B7:F7:B6:FA
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion Firmaprofesional CIF A62634068"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\123\354\073\356\373\262\110\137
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\024\060\202\003\374\240\003\002\001\002\002\010\123
\354\073\356\373\262\110\137\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\121\061\013\060\011\006\003\125\004
\006\023\002\105\123\061\102\060\100\006\003\125\004\003\014\071
\101\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\040\106\151\162\155\141
\160\162\157\146\145\163\151\157\156\141\154\040\103\111\106\040
\101\066\062\066\063\064\060\066\070\060\036\027\015\060\071\060
\065\062\060\060\070\063\070\061\065\132\027\015\063\060\061\062
\063\061\060\070\063\070\061\065\132\060\121\061\013\060\011\006
\003\125\004\006\023\002\105\123\061\102\060\100\006\003\125\004
\003\014\071\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\040\106\151
\162\155\141\160\162\157\146\145\163\151\157\156\141\154\040\103
\111\106\040\101\066\062\066\063\064\060\066\070\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\312\226\153
\216\352\370\373\361\242\065\340\177\114\332\340\303\122\327\175
\266\020\310\002\136\263\103\052\304\117\152\262\312\034\135\050

\232\170\021\032\151\131\127\257\265\040\102\344\213\017\346\337
\133\246\003\222\057\365\021\344\142\327\062\161\070\331\004\014
\161\253\075\121\176\017\007\337\143\005\134\351\277\224\157\301
\051\202\300\264\332\121\260\301\074\273\255\067\112\134\312\361
\113\066\016\044\253\277\303\204\167\375\250\120\364\261\347\306
\057\322\055\131\215\172\012\116\226\151\122\002\252\066\230\354
\374\372\024\203\014\067\037\311\222\067\177\327\201\055\345\304
\271\340\076\064\376\147\364\076\146\321\323\364\100\317\136\142
\064\017\160\006\076\040\030\132\316\367\162\033\045\154\223\164
\024\223\243\163\261\016\252\207\020\043\131\137\040\005\031\107
\355\150\216\222\022\312\135\374\326\053\262\222\074\040\317\341
\137\257\040\276\240\166\177\166\345\354\032\206\141\063\076\347
\173\264\077\240\017\216\242\271\152\157\271\207\046\157\101\154
\210\246\120\375\152\143\013\365\223\026\033\031\217\262\355\233
\233\311\220\365\001\014\337\031\075\017\076\070\043\311\057\217
\014\321\002\376\033\125\326\116\320\215\074\257\117\244\363\376
\257\052\323\005\235\171\010\241\313\127\061\264\234\310\220\262
\147\364\030\026\223\072\374\107\330\321\170\226\061\037\272\053
\014\137\135\231\255\143\211\132\044\040\166\330\337\375\253\116
\246\042\252\235\136\346\047\212\175\150\051\243\347\212\270\332
\021\273\027\055\231\235\023\044\106\367\305\342\330\237\216\177
\307\217\164\155\132\262\350\162\365\254\356\044\020\255\057\024
\332\377\055\232\106\161\107\276\102\337\273\001\333\364\177\323
\050\217\061\131\133\323\311\002\246\264\122\312\156\227\373\103
\305\010\046\157\212\364\273\375\237\050\252\015\325\105\363\023
\072\035\330\300\170\217\101\147\074\036\224\144\256\173\013\305
\350\331\001\210\071\032\227\206\144\101\325\073\207\014\156\372
\017\306\275\110\024\277\071\115\324\236\101\266\217\226\035\143
\226\223\331\225\006\170\061\150\236\067\006\073\200\211\105\141
\071\043\307\033\104\243\025\345\034\370\222\060\273\002\003\001
\000\001\243\201\357\060\201\354\060\022\006\003\125\035\023\001
\001\377\004\010\060\006\001\001\377\002\001\001\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\145\315\353\253\065\036\000\076\176
\325\164\300\034\264\163\107\016\032\144\057\060\201\246\006\003
\125\035\040\004\201\236\060\201\233\060\201\230\006\004\125\035
\040\000\060\201\217\060\057\006\010\053\006\001\005\005\007\002
\001\026\043\150\164\164\160\072\057\057\167\167\167\056\146\151
\162\155\141\160\162\157\146\145\163\151\157\156\141\154\056\143
\157\155\057\143\160\163\060\134\006\010\053\006\001\005\005\007
\002\002\060\120\036\116\000\120\000\141\000\163\000\145\000\157
\000\040\000\144\000\145\000\040\000\154\000\141\000\040\000\102
\000\157\000\156\000\141\000\156\000\157\000\166\000\141\000\040
\000\064\000\067\000\040\000\102\000\141\000\162\000\143\000\145
\000\154\000\157\000\156\000\141\000\040\000\060\000\070\000\060
\000\061\000\067\060\015\006\011\052\206\110\206\367\015\001\001
\005\005\000\003\202\002\001\000\027\175\240\371\264\335\305\305
\353\255\113\044\265\241\002\253\335\245\210\112\262\017\125\113

\053\127\214\073\345\061\335\376\304\062\361\347\133\144\226\066
\062\030\354\245\062\167\327\343\104\266\300\021\052\200\271\075
\152\156\174\233\323\255\374\303\326\243\346\144\051\174\321\341
\070\036\202\053\377\047\145\257\373\026\025\304\056\161\204\345
\265\377\372\244\107\275\144\062\273\366\045\204\242\047\102\365
\040\260\302\023\020\021\315\020\025\272\102\220\052\322\104\341
\226\046\353\061\110\022\375\052\332\311\006\317\164\036\251\113
\325\207\050\371\171\064\222\076\056\104\350\366\217\117\217\065
\077\045\263\071\334\143\052\220\153\040\137\304\122\022\116\227
\054\052\254\235\227\336\110\362\243\146\333\302\322\203\225\246
\146\247\236\045\017\351\013\063\221\145\012\132\303\331\124\022
\335\257\303\116\016\037\046\136\015\334\263\215\354\325\201\160
\336\322\117\044\005\363\154\116\365\114\111\146\215\321\377\322
\013\045\101\110\376\121\204\306\102\257\200\004\317\320\176\144
\111\344\362\337\242\354\261\114\300\052\035\347\264\261\145\242
\304\274\361\230\364\252\160\007\143\264\270\332\073\114\372\100
\042\060\133\021\246\360\005\016\306\002\003\110\253\206\233\205
\335\333\335\352\242\166\200\163\175\365\234\004\304\105\215\347
\271\034\213\236\352\327\165\321\162\261\336\165\104\347\102\175
\342\127\153\175\334\231\274\075\203\050\352\200\223\215\305\114
\145\301\160\201\270\070\374\103\061\262\366\003\064\107\262\254
\373\042\006\313\036\335\027\107\034\137\146\271\323\032\242\332
\021\261\244\274\043\311\344\276\207\377\271\224\266\370\135\040
\112\324\137\347\275\150\173\145\362\025\036\322\072\251\055\351
\330\153\044\254\227\130\104\107\255\131\030\361\041\145\160\336
\316\064\140\250\100\361\363\074\244\303\050\043\214\376\047\063
\103\100\240\027\074\353\352\073\260\162\246\243\271\112\113\136
\026\110\364\262\274\310\214\222\305\235\237\254\162\066\274\064
\200\064\153\251\213\222\300\270\027\355\354\166\123\365\044\001
\214\263\042\350\113\174\125\306\235\372\243\024\273\145\205\156
\156\117\022\176\012\074\235\225
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Autoridad de Certificacion Firmaprofesional CIF A62634068"
Issuer: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Serial Number:53:ec:3b:ee:fb:b2:48:5f
Subject: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Not Valid Before: Wed May 20 08:38:15 2009
Not Valid After : Tue Dec 31 08:38:15 2030
Fingerprint (SHA-256):
04:04:80:28:BF:1F:28:64:D4:8F:9A:D4:D8:32:94:36:6A:82:88:56:55:3F:3B:14:30:3F:90:14:7F:5D:40:EF
Fingerprint (SHA1): AE:C5:FB:3F:C8:E1:BF:C4:E5:4F:03:07:5A:9A:E8:00:B7:F7:B6:FA
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion Firmaprofesional CIF A62634068"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\256\305\373\077\310\341\277\304\345\117\003\007\132\232\350\000
\267\367\266\372
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\163\072\164\172\354\273\243\226\246\302\344\342\310\233\300\303
END
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\123\354\073\356\373\262\110\137
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Izenpe.com"
#
Issuer: CN=Izenpe.com,O=IZENPE S.A.,C=ES
Serial Number:00:b0:b7:5a:16:48:5f:bf:e1:cb:f5:8b:d7:19:e6:7d
Subject: CN=Izenpe.com,O=IZENPE S.A.,C=ES
Not Valid Before: Thu Dec 13 13:08:28 2007
Not Valid After : Sun Dec 13 08:27:25 2037
Fingerprint (SHA-256):
25:30:CC:8E:98:32:15:02:BA:D9:6F:9B:1F:BA:1B:09:9E:2D:29:9E:0F:45:48:BB:91:4F:36:3B:C0:D4:53:1F
Fingerprint (SHA1): 2F:78:3D:25:52:18:A7:4A:65:39:71:B5:2C:A2:9C:45:15:6F:E9:19
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Izenpe.com"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\070\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\024\060\022\006\003\125\004\012\014\013\111\132\105\116\120\105
\040\123\056\101\056\061\023\060\021\006\003\125\004\003\014\012
\111\172\145\156\160\145\056\143\157\155
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\070\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\024\060\022\006\003\125\004\012\014\013\111\132\105\116\120\105
\040\123\056\101\056\061\023\060\021\006\003\125\004\003\014\012
\111\172\145\156\160\145\056\143\157\155
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\000\260\267\132\026\110\137\277\341\313\365\213\327\031
\346\175
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\361\060\202\003\331\240\003\002\001\002\002\020\000
\260\267\132\026\110\137\277\341\313\365\213\327\031\346\175\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\070
\061\013\060\011\006\003\125\004\006\023\002\105\123\061\024\060
\022\006\003\125\004\012\014\013\111\132\105\116\120\105\040\123
\056\101\056\061\023\060\021\006\003\125\004\003\014\012\111\172
\145\156\160\145\056\143\157\155\060\036\027\015\060\067\061\062
\061\063\061\063\060\070\062\070\132\027\015\063\067\061\062\061
\063\060\070\062\067\062\065\132\060\070\061\013\060\011\006\003
\125\004\006\023\002\105\123\061\024\060\022\006\003\125\004\012
\014\013\111\132\105\116\120\105\040\123\056\101\056\061\023\060
\021\006\003\125\004\003\014\012\111\172\145\156\160\145\056\143
\157\155\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\311\323\172\312\017\036\254\247\206\350\026\145\152
\261\302\033\105\062\161\225\331\376\020\133\314\257\347\245\171
\001\217\211\303\312\362\125\161\367\167\276\167\224\363\162\244
\054\104\330\236\222\233\024\072\241\347\044\220\012\012\126\216
\305\330\046\224\341\331\110\341\055\076\332\012\162\335\243\231
\025\332\201\242\207\364\173\156\046\167\211\130\255\326\353\014
\262\101\172\163\156\155\333\172\170\101\351\010\210\022\176\207
\056\146\021\143\154\124\373\074\235\162\300\274\056\377\302\267
\335\015\166\343\072\327\367\264\150\276\242\365\343\201\156\301
\106\157\135\215\340\115\306\124\125\211\032\063\061\012\261\127
\271\243\212\230\303\354\073\064\305\225\101\151\176\165\302\074
\040\305\141\272\121\107\240\040\220\223\241\220\113\363\116\174
\205\105\124\232\321\005\046\101\260\265\115\035\063\276\304\003
\310\045\174\301\160\333\073\364\011\055\124\047\110\254\057\341
\304\254\076\310\313\222\114\123\071\067\043\354\323\001\371\340
\011\104\115\115\144\300\341\015\132\207\042\274\255\033\243\376
\046\265\025\363\247\374\204\031\351\354\241\210\264\104\151\204
\203\363\211\321\164\006\251\314\013\326\302\336\047\205\120\046
\312\027\270\311\172\207\126\054\032\001\036\154\276\023\255\020
\254\265\044\365\070\221\241\326\113\332\361\273\322\336\107\265
\361\274\201\366\131\153\317\031\123\351\215\025\313\112\313\251
\157\104\345\033\101\317\341\206\247\312\320\152\237\274\114\215

\006\063\132\242\205\345\220\065\240\142\134\026\116\360\343\242
\372\003\032\264\054\161\263\130\054\336\173\013\333\032\017\353
\336\041\037\006\167\006\003\260\311\357\231\374\300\271\117\013
\206\050\376\322\271\352\343\332\245\303\107\151\022\340\333\360
\366\031\213\355\173\160\327\002\326\355\207\030\050\054\004\044
\114\167\344\110\212\032\306\073\232\324\017\312\372\165\322\001
\100\132\215\171\277\213\317\113\317\252\026\301\225\344\255\114
\212\076\027\221\324\261\142\345\202\345\200\004\244\003\176\215
\277\332\177\242\017\227\117\014\323\015\373\327\321\345\162\176
\034\310\167\377\133\232\017\267\256\005\106\345\361\250\026\354
\107\244\027\002\003\001\000\001\243\201\366\060\201\363\060\201
\260\006\003\125\035\021\004\201\250\060\201\245\201\017\151\156
\146\157\100\151\172\145\156\160\145\056\143\157\155\244\201\221
\060\201\216\061\107\060\105\006\003\125\004\012\014\076\111\132
\105\116\120\105\040\123\056\101\056\040\055\040\103\111\106\040
\101\060\061\063\063\067\062\066\060\055\122\115\145\162\143\056
\126\151\164\157\162\151\141\055\107\141\163\164\145\151\172\040
\124\061\060\065\065\040\106\066\062\040\123\070\061\103\060\101
\006\003\125\004\011\014\072\101\166\144\141\040\144\145\154\040
\115\145\144\151\164\145\162\162\141\156\145\157\040\105\164\157
\162\142\151\144\145\141\040\061\064\040\055\040\060\061\060\061
\060\040\126\151\164\157\162\151\141\055\107\141\163\164\145\151
\172\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\035\006\003\125\035\016\004\026\004\024\035\034\145
\016\250\362\045\173\264\221\317\344\261\261\346\275\125\164\154
\005\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\003\202\002\001\000\170\246\014\026\112\237\114\210\072\300\313
\016\245\026\175\237\271\110\137\030\217\015\142\066\366\315\031
\153\254\253\325\366\221\175\256\161\363\077\263\016\170\205\233
\225\244\047\041\107\102\112\174\110\072\365\105\174\263\014\216
\121\170\254\225\023\336\306\375\175\270\032\220\114\253\222\003
\307\355\102\001\316\017\330\261\372\242\222\341\140\155\256\172
\153\011\252\306\051\356\150\111\147\060\200\044\172\061\026\071
\133\176\361\034\056\335\154\011\255\362\061\301\202\116\271\273
\371\276\277\052\205\077\300\100\243\072\131\374\131\113\074\050
\044\333\264\025\165\256\015\210\272\056\163\300\275\130\207\345
\102\362\353\136\356\036\060\042\231\313\067\321\304\041\154\201
\354\276\155\046\346\034\344\102\040\236\107\260\254\203\131\160
\054\065\326\257\066\064\264\315\073\370\062\250\357\343\170\211
\373\215\105\054\332\234\270\176\100\034\141\347\076\242\222\054
\113\362\315\372\230\266\051\377\363\362\173\251\037\056\240\223
\127\053\336\205\003\371\151\067\313\236\170\152\005\264\305\061
\170\211\354\172\247\205\341\271\173\074\336\276\036\171\204\316
\237\160\016\131\302\065\056\220\052\061\331\344\105\172\101\244
\056\023\233\064\016\146\173\111\253\144\227\320\106\303\171\235
\162\120\143\246\230\133\006\275\110\155\330\071\203\160\350\065
\360\005\321\252\274\343\333\310\002\352\174\375\202\332\302\133

\122\065\256\230\072\255\272\065\223\043\247\037\110\335\065\106
\230\262\020\150\344\245\061\302\012\130\056\031\201\020\311\120
\165\374\352\132\026\316\021\327\356\357\120\210\055\141\377\077
\102\163\005\224\103\325\216\074\116\001\072\031\245\037\106\116
\167\320\135\345\201\042\041\207\376\224\175\204\330\223\255\326
\150\103\110\262\333\353\163\044\347\221\177\124\244\266\200\076
\235\243\074\114\162\302\127\304\240\324\314\070\047\316\325\006
\236\242\110\331\351\237\316\202\160\066\223\232\073\337\226\041
\343\131\267\014\332\221\067\360\375\131\132\263\231\310\151\154
\103\046\001\065\143\140\125\211\003\072\165\330\272\112\331\124
\377\356\336\200\330\055\321\070\325\136\055\013\230\175\076\154
\333\374\046\210\307
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Izenpe.com"
Issuer: CN=Izenpe.com,O=IZENPE S.A.,C=ES
Serial Number:00:b0:b7:5a:16:48:5f:bf:e1:cb:f5:8b:d7:19:e6:7d
Subject: CN=Izenpe.com,O=IZENPE S.A.,C=ES
Not Valid Before: Thu Dec 13 13:08:28 2007
Not Valid After : Sun Dec 13 08:27:25 2037
Fingerprint (SHA-256):
25:30:CC:8E:98:32:15:02:BA:D9:6F:9B:1F:BA:1B:09:9E:2D:29:9E:0F:45:48:BB:91:4F:36:3B:C0:D4:53:1F
Fingerprint (SHA1): 2F:78:3D:25:52:18:A7:4A:65:39:71:B5:2C:A2:9C:45:15:6F:E9:19
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Izenpe.com"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\057\170\075\045\122\030\247\112\145\071\161\265\054\242\234\105
\025\157\351\031
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\246\260\315\205\200\332\134\120\064\243\071\220\057\125\147\163
END
CKA_ISSUER MULTILINE_OCTAL
\060\070\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\024\060\022\006\003\125\004\012\014\013\111\132\105\116\120\105
\040\123\056\101\056\061\023\060\021\006\003\125\004\003\014\012
\111\172\145\156\160\145\056\143\157\155
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\000\260\267\132\026\110\137\277\341\313\365\213\327\031
\346\175
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Chambers of Commerce Root - 2008"
#
Issuer: CN=Chambers of Commerce Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Serial Number:00:a3:da:42:7e:a4:b1:ae:da
Subject: CN=Chambers of Commerce Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Not Valid Before: Fri Aug 01 12:29:50 2008
Not Valid After : Sat Jul 31 12:29:50 2038
Fingerprint (SHA-256):
06:3E:4A:FA:C4:91:DF:D3:32:F3:08:9B:85:42:E9:46:17:D8:93:D7:FE:94:4E:10:A7:93:7E:E2:9D:96:93:C0
Fingerprint (SHA1): 78:6A:74:AC:76:AB:14:7F:9C:6A:30:50:BA:9E:A8:7E:FE:9A:CE:3C
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Chambers of Commerce Root - 2008"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\051\060\047\006\003\125\004\003\023
\040\103\150\141\155\142\145\162\163\040\157\146\040\103\157\155
\155\145\162\143\145\040\122\157\157\164\040\055\040\062\060\060
\070
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155

\141\040\123\056\101\056\061\051\060\047\006\003\125\004\003\023
\040\103\150\141\155\142\145\162\163\040\157\146\040\103\157\155
\155\145\162\143\145\040\122\157\157\164\040\055\040\062\060\060
\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\243\332\102\176\244\261\256\332
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\117\060\202\005\067\240\003\002\001\002\002\011\000
\243\332\102\176\244\261\256\332\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\060\201\256\061\013\060\011\006\003
\125\004\006\023\002\105\125\061\103\060\101\006\003\125\004\007
\023\072\115\141\144\162\151\144\040\050\163\145\145\040\143\165
\162\162\145\156\164\040\141\144\144\162\145\163\163\040\141\164
\040\167\167\167\056\143\141\155\145\162\146\151\162\155\141\056
\143\157\155\057\141\144\144\162\145\163\163\051\061\022\060\020
\006\003\125\004\005\023\011\101\070\062\067\064\063\062\070\067
\061\033\060\031\006\003\125\004\012\023\022\101\103\040\103\141
\155\145\162\146\151\162\155\141\040\123\056\101\056\061\051\060
\047\006\003\125\004\003\023\040\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164\040\055\040\062\060\060\070\060\036\027\015\060\070\060\070
\060\061\061\062\062\071\065\060\132\027\015\063\070\060\067\063
\061\061\062\062\071\065\060\132\060\201\256\061\013\060\011\006
\003\125\004\006\023\002\105\125\061\103\060\101\006\003\125\004
\007\023\072\115\141\144\162\151\144\040\050\163\145\145\040\143
\165\162\162\145\156\164\040\141\144\144\162\145\163\163\040\141
\164\040\167\167\167\056\143\141\155\145\162\146\151\162\155\141
\056\143\157\155\057\141\144\144\162\145\163\163\051\061\022\060
\020\006\003\125\004\005\023\011\101\070\062\067\064\063\062\070
\067\061\033\060\031\006\003\125\004\012\023\022\101\103\040\103
\141\155\145\162\146\151\162\155\141\040\123\056\101\056\061\051
\060\047\006\003\125\004\003\023\040\103\150\141\155\142\145\162
\163\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157
\157\164\040\055\040\062\060\060\070\060\202\002\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017
\000\060\202\002\012\002\202\002\001\000\257\000\313\160\067\053
\200\132\112\072\154\170\224\175\243\177\032\037\366\065\325\275
\333\313\015\104\162\076\046\262\220\122\272\143\073\050\130\157
\245\263\155\224\246\363\335\144\014\125\366\366\347\362\042\042
\200\136\341\142\306\266\051\341\201\154\362\277\345\175\062\152
\124\240\062\031\131\376\037\213\327\075\140\206\205\044\157\343
\021\263\167\076\040\226\065\041\153\263\010\331\160\056\144\367
\204\222\123\326\016\260\220\212\212\343\207\215\006\323\275\220
\016\342\231\241\033\206\016\332\232\012\273\013\141\120\006\122
\361\236\177\166\354\313\017\320\036\015\317\231\060\075\034\304
\105\020\130\254\326\323\350\327\345\352\305\001\007\167\326\121

\346\003\177\212\110\245\115\150\165\271\351\274\236\116\031\161
\365\062\113\234\155\140\031\013\373\314\235\165\334\277\046\315
\217\223\170\071\171\163\136\045\016\312\134\353\167\022\007\313
\144\101\107\162\223\253\120\303\353\011\166\144\064\322\071\267
\166\021\011\015\166\105\304\251\256\075\152\257\265\175\145\057
\224\130\020\354\134\174\257\176\342\266\030\331\320\233\116\132
\111\337\251\146\013\314\074\306\170\174\247\234\035\343\316\216
\123\276\005\336\140\017\153\345\032\333\077\343\341\041\311\051
\301\361\353\007\234\122\033\001\104\121\074\173\045\327\304\345
\122\124\135\045\007\312\026\040\270\255\344\101\356\172\010\376
\231\157\203\246\221\002\260\154\066\125\152\347\175\365\226\346
\312\201\326\227\361\224\203\351\355\260\261\153\022\151\036\254
\373\135\251\305\230\351\264\133\130\172\276\075\242\104\072\143
\131\324\013\045\336\033\117\275\345\001\236\315\322\051\325\237
\027\031\012\157\277\014\220\323\011\137\331\343\212\065\314\171
\132\115\031\067\222\267\304\301\255\257\364\171\044\232\262\001
\013\261\257\134\226\363\200\062\373\134\075\230\361\240\077\112
\336\276\257\224\056\331\125\232\027\156\140\235\143\154\270\143
\311\256\201\134\030\065\340\220\273\276\074\117\067\042\271\176
\353\317\236\167\041\246\075\070\201\373\110\332\061\075\053\343
\211\365\320\265\275\176\340\120\304\022\211\263\043\232\020\061
\205\333\256\157\357\070\063\030\166\021\002\003\001\000\001\243
\202\001\154\060\202\001\150\060\022\006\003\125\035\023\001\001
\377\004\010\060\006\001\001\377\002\001\014\060\035\006\003\125
\035\016\004\026\004\024\371\044\254\017\262\265\370\171\300\372
\140\210\033\304\331\115\002\236\027\031\060\201\343\006\003\125
\035\043\004\201\333\060\201\330\200\024\371\044\254\017\262\265
\370\171\300\372\140\210\033\304\331\115\002\236\027\031\241\201
\264\244\201\261\060\201\256\061\013\060\011\006\003\125\004\006
\023\002\105\125\061\103\060\101\006\003\125\004\007\023\072\115
\141\144\162\151\144\040\050\163\145\145\040\143\165\162\162\145
\156\164\040\141\144\144\162\145\163\163\040\141\164\040\167\167
\167\056\143\141\155\145\162\146\151\162\155\141\056\143\157\155
\057\141\144\144\162\145\163\163\051\061\022\060\020\006\003\125
\004\005\023\011\101\070\062\067\064\063\062\070\067\061\033\060
\031\006\003\125\004\012\023\022\101\103\040\103\141\155\145\162
\146\151\162\155\141\040\123\056\101\056\061\051\060\047\006\003
\125\004\003\023\040\103\150\141\155\142\145\162\163\040\157\146
\040\103\157\155\155\145\162\143\145\040\122\157\157\164\040\055
\040\062\060\060\070\202\011\000\243\332\102\176\244\261\256\332
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\075\006\003\125\035\040\004\066\060\064\060\062\006\004\125
\035\040\000\060\052\060\050\006\010\053\006\001\005\005\007\002
\001\026\034\150\164\164\160\072\057\057\160\157\154\151\143\171
\056\143\141\155\145\162\146\151\162\155\141\056\143\157\155\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\002\001\000\220\022\257\042\065\302\243\071\360\056\336\351\265
\351\170\174\110\276\077\175\105\222\136\351\332\261\031\374\026

\074\237\264\133\146\236\152\347\303\271\135\210\350\017\255\317
\043\017\336\045\072\136\314\117\245\301\265\055\254\044\322\130
\007\336\242\317\151\204\140\063\350\020\015\023\251\043\320\205
\345\216\173\246\236\075\162\023\162\063\365\252\175\306\143\037
\010\364\376\001\177\044\317\053\054\124\011\336\342\053\155\222
\306\071\117\026\352\074\176\172\106\324\105\152\106\250\353\165
\202\126\247\253\240\174\150\023\063\366\235\060\360\157\047\071
\044\043\052\220\375\220\051\065\362\223\337\064\245\306\367\370
\357\214\017\142\112\174\256\323\365\124\370\215\266\232\126\207
\026\202\072\063\253\132\042\010\367\202\272\352\056\340\107\232
\264\265\105\243\005\073\331\334\056\105\100\073\352\334\177\350
\073\353\321\354\046\330\065\244\060\305\072\254\127\236\263\166
\245\040\173\371\036\112\005\142\001\246\050\165\140\227\222\015
\156\076\115\067\103\015\222\025\234\030\042\315\121\231\240\051
\032\074\137\212\062\063\133\060\307\211\057\107\230\017\243\003
\306\366\361\254\337\062\360\331\201\032\344\234\275\366\200\024
\360\321\054\271\205\365\330\243\261\310\245\041\345\034\023\227
\356\016\275\337\051\251\357\064\123\133\323\344\152\023\204\006
\266\062\002\304\122\256\042\322\334\262\041\102\032\332\100\360
\051\311\354\012\014\134\342\320\272\314\110\323\067\012\314\022
\012\212\171\260\075\003\177\151\113\364\064\040\175\263\064\352
\216\113\144\365\076\375\263\043\147\025\015\004\270\360\055\301
\011\121\074\262\154\025\360\245\043\327\203\164\344\345\056\311
\376\230\047\102\306\253\306\236\260\320\133\070\245\233\120\336
\176\030\230\265\105\073\366\171\264\350\367\032\173\006\203\373
\320\213\332\273\307\275\030\253\010\157\074\200\153\100\077\031
\031\272\145\212\346\276\325\134\323\066\327\357\100\122\044\140
\070\147\004\061\354\217\363\202\306\336\271\125\363\073\061\221
\132\334\265\010\025\255\166\045\012\015\173\056\207\342\014\246
\006\274\046\020\155\067\235\354\335\170\214\174\200\305\360\331
\167\110\320
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Chambers of Commerce Root - 2008"
Issuer: CN=Chambers of Commerce Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Serial Number:00:a3:da:42:7e:a4:b1:ae:da
Subject: CN=Chambers of Commerce Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Not Valid Before: Fri Aug 01 12:29:50 2008
Not Valid After : Sat Jul 31 12:29:50 2038
Fingerprint (SHA-256):
06:3E:4A:FA:C4:91:DF:D3:32:F3:08:9B:85:42:E9:46:17:D8:93:D7:FE:94:4E:10:A7:93:7E:E2:9D:96:93:C0
Fingerprint (SHA1): 78:6A:74:AC:76:AB:14:7F:9C:6A:30:50:BA:9E:A8:7E:FE:9A:CE:3C
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Chambers of Commerce Root - 2008"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\170\152\164\254\166\253\024\177\234\152\060\120\272\236\250\176
\376\232\316\074
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\136\200\236\204\132\016\145\013\027\002\363\125\030\052\076\327
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\051\060\047\006\003\125\004\003\023
\040\103\150\141\155\142\145\162\163\040\157\146\040\103\157\155
\155\145\162\143\145\040\122\157\157\164\040\055\040\062\060\060
\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\243\332\102\176\244\261\256\332
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Global Chambersign Root - 2008"
#
Issuer: CN=Global Chambersign Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Serial Number:00:c9:cd:d3:e9:d5:7d:23:ce
Subject: CN=Global Chambersign Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Not Valid Before: Fri Aug 01 12:31:40 2008
Not Valid After : Sat Jul 31 12:31:40 2038
Fingerprint (SHA-256):
13:63:35:43:93:34:A7:69:80:16:A0:D3:24:DE:72:28:4E:07:9D:7B:52:20:BB:8F:BD:74:78:16:EE:BE:BA:CA
Fingerprint (SHA1): 4A:BD:EE:EC:95:0D:35:9C:89:AE:C7:52:A1:2C:5B:29:F6:D6:AA:0C
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Global Chambersign Root - 2008"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\254\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\047\060\045\006\003\125\004\003\023
\036\107\154\157\142\141\154\040\103\150\141\155\142\145\162\163
\151\147\156\040\122\157\157\164\040\055\040\062\060\060\070
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\254\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\047\060\045\006\003\125\004\003\023
\036\107\154\157\142\141\154\040\103\150\141\155\142\145\162\163
\151\147\156\040\122\157\157\164\040\055\040\062\060\060\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\311\315\323\351\325\175\043\316
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\111\060\202\005\061\240\003\002\001\002\002\011\000
\311\315\323\351\325\175\043\316\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\060\201\254\061\013\060\011\006\003
\125\004\006\023\002\105\125\061\103\060\101\006\003\125\004\007
\023\072\115\141\144\162\151\144\040\050\163\145\145\040\143\165
\162\162\145\156\164\040\141\144\144\162\145\163\163\040\141\164
\040\167\167\167\056\143\141\155\145\162\146\151\162\155\141\056
\143\157\155\057\141\144\144\162\145\163\163\051\061\022\060\020
\006\003\125\004\005\023\011\101\070\062\067\064\063\062\070\067
\061\033\060\031\006\003\125\004\012\023\022\101\103\040\103\141
\155\145\162\146\151\162\155\141\040\123\056\101\056\061\047\060
\045\006\003\125\004\003\023\036\107\154\157\142\141\154\040\103
\150\141\155\142\145\162\163\151\147\156\040\122\157\157\164\040

\055\040\062\060\060\070\060\036\027\015\060\070\060\070\060\061
\061\062\063\061\064\060\132\027\015\063\070\060\067\063\061\061
\062\063\061\064\060\132\060\201\254\061\013\060\011\006\003\125
\004\006\023\002\105\125\061\103\060\101\006\003\125\004\007\023
\072\115\141\144\162\151\144\040\050\163\145\145\040\143\165\162
\162\145\156\164\040\141\144\144\162\145\163\163\040\141\164\040
\167\167\167\056\143\141\155\145\162\146\151\162\155\141\056\143
\157\155\057\141\144\144\162\145\163\163\051\061\022\060\020\006
\003\125\004\005\023\011\101\070\062\067\064\063\062\070\067\061
\033\060\031\006\003\125\004\012\023\022\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\056\101\056\061\047\060\045
\006\003\125\004\003\023\036\107\154\157\142\141\154\040\103\150
\141\155\142\145\162\163\151\147\156\040\122\157\157\164\040\055
\040\062\060\060\070\060\202\002\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002
\012\002\202\002\001\000\300\337\126\323\344\072\233\166\105\264
\023\333\377\301\266\031\213\067\101\030\225\122\107\353\027\235
\051\210\216\065\154\006\062\056\107\142\363\111\004\277\175\104
\066\261\161\314\275\132\011\163\325\331\205\104\377\221\127\045
\337\136\066\216\160\321\134\161\103\035\331\332\357\134\322\373
\033\275\072\265\313\255\243\314\104\247\015\256\041\025\077\271
\172\133\222\165\330\244\022\070\211\031\212\267\200\322\342\062
\157\126\234\221\326\210\020\013\263\164\144\222\164\140\363\366
\317\030\117\140\262\043\320\307\073\316\141\113\231\217\302\014
\320\100\262\230\334\015\250\116\243\271\012\256\140\240\255\105
\122\143\272\146\275\150\340\371\276\032\250\201\273\036\101\170
\165\323\301\376\000\125\260\207\124\350\047\220\065\035\114\063
\255\227\374\227\056\230\204\277\054\311\243\277\321\230\021\024
\355\143\370\312\230\210\130\027\231\355\105\003\227\176\074\206
\036\210\214\276\362\221\204\217\145\064\330\000\114\175\267\061
\027\132\051\172\012\030\044\060\243\067\265\172\251\001\175\046
\326\371\016\216\131\361\375\033\063\265\051\073\027\073\101\266
\041\335\324\300\075\245\237\237\037\103\120\311\273\274\154\172
\227\230\356\315\214\037\373\234\121\256\213\160\275\047\237\161
\300\153\254\175\220\146\350\327\135\072\015\260\325\302\215\325
\310\235\235\301\155\320\320\277\121\344\343\370\303\070\066\256
\326\247\165\346\257\204\103\135\223\222\014\152\007\336\073\035
\230\042\326\254\301\065\333\243\240\045\377\162\265\166\035\336
\155\351\054\146\054\122\204\320\105\222\316\034\345\345\063\035
\334\007\123\124\243\252\202\073\232\067\057\334\335\240\144\351
\346\335\275\256\374\144\205\035\074\247\311\006\336\204\377\153
\350\153\032\074\305\242\263\102\373\213\011\076\137\010\122\307
\142\304\324\005\161\277\304\144\344\370\241\203\350\076\022\233
\250\036\324\066\115\057\161\366\215\050\366\203\251\023\322\141
\301\221\273\110\300\064\217\101\214\113\114\333\151\022\377\120
\224\234\040\203\131\163\355\174\241\362\361\375\335\367\111\323
\103\130\240\126\143\312\075\075\345\065\126\131\351\016\312\040
\314\053\113\223\051\017\002\003\001\000\001\243\202\001\152\060

\202\001\146\060\022\006\003\125\035\023\001\001\377\004\010\060
\006\001\001\377\002\001\014\060\035\006\003\125\035\016\004\026
\004\024\271\011\312\234\036\333\323\154\072\153\256\355\124\361
\133\223\006\065\056\136\060\201\341\006\003\125\035\043\004\201
\331\060\201\326\200\024\271\011\312\234\036\333\323\154\072\153
\256\355\124\361\133\223\006\065\056\136\241\201\262\244\201\257
\060\201\254\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\047\060\045\006\003\125\004\003\023
\036\107\154\157\142\141\154\040\103\150\141\155\142\145\162\163
\151\147\156\040\122\157\157\164\040\055\040\062\060\060\070\202
\011\000\311\315\323\351\325\175\043\316\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\075\006\003\125\035
\040\004\066\060\064\060\062\006\004\125\035\040\000\060\052\060
\050\006\010\053\006\001\005\005\007\002\001\026\034\150\164\164
\160\072\057\057\160\157\154\151\143\171\056\143\141\155\145\162
\146\151\162\155\141\056\143\157\155\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\002\001\000\200\210\177
\160\336\222\050\331\005\224\106\377\220\127\251\361\057\337\032
\015\153\372\174\016\034\111\044\171\047\330\106\252\157\051\131
\122\210\160\022\352\335\075\365\233\123\124\157\341\140\242\250
\011\271\354\353\131\174\306\065\361\334\030\351\361\147\345\257
\272\105\340\011\336\312\104\017\302\027\016\167\221\105\172\063
\137\137\226\054\150\213\301\107\217\230\233\075\300\354\313\365
\325\202\222\204\065\321\276\066\070\126\162\061\133\107\055\252
\027\244\143\121\353\012\001\255\177\354\165\236\313\241\037\361
\177\022\261\271\344\144\177\147\326\043\052\364\270\071\135\230
\350\041\247\341\275\075\102\032\164\232\160\257\150\154\120\135
\111\317\377\373\016\135\346\054\107\327\201\072\131\000\265\163
\153\143\040\366\061\105\010\071\016\364\160\176\100\160\132\077
\320\153\102\251\164\075\050\057\002\155\165\162\225\011\215\110
\143\306\306\043\127\222\223\136\065\301\215\371\012\367\054\235
\142\034\366\255\174\335\246\061\036\266\261\307\176\205\046\372
\244\152\265\332\143\060\321\357\223\067\262\146\057\175\005\367
\347\267\113\230\224\065\300\331\072\051\301\235\262\120\063\035
\112\251\132\246\311\003\357\355\364\347\250\156\212\264\127\204
\353\244\077\320\356\252\252\207\133\143\350\223\342\153\250\324
\270\162\170\153\033\355\071\344\135\313\233\252\207\325\117\116
\000\376\331\152\237\074\061\017\050\002\001\175\230\350\247\260
\242\144\236\171\370\110\362\025\251\314\346\310\104\353\077\170
\231\362\173\161\076\074\361\230\247\305\030\022\077\346\273\050
\063\102\351\105\012\174\155\362\206\171\057\305\202\031\175\011

\211\174\262\124\166\210\256\336\301\363\314\341\156\333\061\326
\223\256\231\240\357\045\152\163\230\211\133\072\056\023\210\036
\277\300\222\224\064\033\343\047\267\213\036\157\102\377\347\351
\067\233\120\035\055\242\371\002\356\313\130\130\072\161\274\150
\343\252\301\257\034\050\037\242\334\043\145\077\201\352\256\231
\323\330\060\317\023\015\117\025\311\204\274\247\110\055\370\060
\043\167\330\106\113\171\155\366\214\355\072\177\140\021\170\364
\351\233\256\325\124\300\164\200\321\013\102\237\301
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Global Chambersign Root - 2008"
Issuer: CN=Global Chambersign Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Serial Number:00:c9:cd:d3:e9:d5:7d:23:ce
Subject: CN=Global Chambersign Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Not Valid Before: Fri Aug 01 12:31:40 2008
Not Valid After : Sat Jul 31 12:31:40 2038
Fingerprint (SHA-256):
13:63:35:43:93:34:A7:69:80:16:A0:D3:24:DE:72:28:4E:07:9D:7B:52:20:BB:8F:BD:74:78:16:EE:BE:BA:CA
Fingerprint (SHA1): 4A:BD:EE:EC:95:0D:35:9C:89:AE:C7:52:A1:2C:5B:29:F6:D6:AA:0C
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Global Chambersign Root - 2008"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\112\275\356\354\225\015\065\234\211\256\307\122\241\054\133\051
\366\326\252\014
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\236\200\377\170\001\014\056\301\066\275\376\226\220\156\010\363
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\254\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\047\060\045\006\003\125\004\003\023
\036\107\154\157\142\141\154\040\103\150\141\155\142\145\162\163
\151\147\156\040\122\157\157\164\040\055\040\062\060\060\070

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\311\315\323\351\325\175\043\316
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Go Daddy Root Certificate Authority - G2"
#
Issuer: CN=Go Daddy Root Certificate Authority - G2,O="GoDaddy.com, Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Go Daddy Root Certificate Authority - G2,O="GoDaddy.com,
Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
45:14:0B:32:47:EB:9C:C8:C5:B4:F0:D7:B5:30:91:F7:32:92:08:9E:6E:5A:63:E2:74:9D:D3:AC:A9:19:8E:DA
Fingerprint (SHA1): 47:BE:AB:C9:22:EA:E8:0E:78:78:34:62:A7:9F:45:C2:54:FD:E6:8B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Go Daddy Root Certificate Authority - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\203\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\032\060\030\006\003\125\004\012
\023\021\107\157\104\141\144\144\171\056\143\157\155\054\040\111
\156\143\056\061\061\060\057\006\003\125\004\003\023\050\107\157
\040\104\141\144\144\171\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\203\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\032\060\030\006\003\125\004\012
\023\021\107\157\104\141\144\144\171\056\143\157\155\054\040\111
\156\143\056\061\061\060\057\006\003\125\004\003\023\050\107\157
\040\104\141\144\144\171\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164

\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\305\060\202\002\255\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\203\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157\156
\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157\164
\164\163\144\141\154\145\061\032\060\030\006\003\125\004\012\023
\021\107\157\104\141\144\144\171\056\143\157\155\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\003\023\050\107\157\040
\104\141\144\144\171\040\122\157\157\164\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\062\060\036\027\015\060\071\060\071\060\061\060
\060\060\060\060\060\132\027\015\063\067\061\062\063\061\062\063
\065\071\065\071\132\060\201\203\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\020\060\016\006\003\125\004\010\023\007
\101\162\151\172\157\156\141\061\023\060\021\006\003\125\004\007
\023\012\123\143\157\164\164\163\144\141\154\145\061\032\060\030
\006\003\125\004\012\023\021\107\157\104\141\144\144\171\056\143
\157\155\054\040\111\156\143\056\061\061\060\057\006\003\125\004
\003\023\050\107\157\040\104\141\144\144\171\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\277\161\142\010
\361\372\131\064\367\033\311\030\243\367\200\111\130\351\042\203
\023\246\305\040\103\001\073\204\361\346\205\111\237\047\352\366
\204\033\116\240\264\333\160\230\307\062\001\261\005\076\007\116
\356\364\372\117\057\131\060\042\347\253\031\126\153\342\200\007
\374\363\026\165\200\071\121\173\345\371\065\266\164\116\251\215
\202\023\344\266\077\251\003\203\372\242\276\212\025\152\177\336
\013\303\266\031\024\005\312\352\303\250\004\224\073\106\174\062
\015\363\000\146\042\310\215\151\155\066\214\021\030\267\323\262
\034\140\264\070\372\002\214\316\323\335\106\007\336\012\076\353
\135\174\310\174\373\260\053\123\244\222\142\151\121\045\005\141
\032\104\201\214\054\251\103\226\043\337\254\072\201\232\016\051
\305\034\251\351\135\036\266\236\236\060\012\071\316\361\210\200
\373\113\135\314\062\354\205\142\103\045\064\002\126\047\001\221
\264\073\160\052\077\156\261\350\234\210\001\175\237\324\371\333
\123\155\140\235\277\054\347\130\253\270\137\106\374\316\304\033
\003\074\011\353\111\061\134\151\106\263\340\107\002\003\001\000
\001\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004

\024\072\232\205\007\020\147\050\266\357\366\275\005\101\156\040
\301\224\332\017\336\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\003\202\001\001\000\231\333\135\171\325\371\227
\131\147\003\141\361\176\073\006\061\165\055\241\040\216\117\145
\207\264\367\246\234\274\330\351\057\320\333\132\356\317\164\214
\163\264\070\102\332\005\173\370\002\165\270\375\245\261\327\256
\366\327\336\023\313\123\020\176\212\106\321\227\372\267\056\053
\021\253\220\260\047\200\371\350\237\132\351\067\237\253\344\337
\154\263\205\027\235\075\331\044\117\171\221\065\326\137\004\353
\200\203\253\232\002\055\265\020\364\330\220\307\004\163\100\355
\162\045\240\251\237\354\236\253\150\022\231\127\306\217\022\072
\011\244\275\104\375\006\025\067\301\233\344\062\243\355\070\350
\330\144\363\054\176\024\374\002\352\237\315\377\007\150\027\333
\042\220\070\055\172\215\321\124\361\151\343\137\063\312\172\075
\173\012\343\312\177\137\071\345\342\165\272\305\166\030\063\316
\054\360\057\114\255\367\261\347\316\117\250\304\233\112\124\006
\305\177\175\325\010\017\342\034\376\176\027\270\254\136\366\324
\026\262\103\011\014\115\366\247\153\264\231\204\145\312\172\210
\342\342\104\276\134\367\352\034\365
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Go Daddy Root Certificate Authority - G2"
Issuer: CN=Go Daddy Root Certificate Authority - G2,O="GoDaddy.com, Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Go Daddy Root Certificate Authority - G2,O="GoDaddy.com, Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256): 45:14:0B:32:47:EB:9C:C8:C5:B4:F0:D7:B5:30:91:F7:32:92:08:9E:6E:5A:63:E2:74:9D:D3:AC:A9:19:8E:DA
Fingerprint (SHA1): 47:BE:AB:C9:22:EA:E8:0E:78:78:34:62:A7:9F:45:C2:54:FD:E6:8B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Go Daddy Root Certificate Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\107\276\253\311\042\352\350\016\170\170\064\142\247\237\105\302
\124\375\346\213
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\200\072\274\042\301\346\373\215\233\073\047\112\062\033\232\001
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\203\061\013\060\011\006\003\125\004\006\023\002\125\123

\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\032\060\030\006\003\125\004\012
\023\021\107\157\104\141\144\144\171\056\143\157\155\054\040\111
\156\143\056\061\061\060\057\006\003\125\004\003\023\050\107\157
\040\104\141\144\144\171\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Starfield Root Certificate Authority - G2"
#
Issuer: CN=Starfield Root Certificate Authority - G2,O="Starfield Technologies, Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Starfield Root Certificate Authority - G2,O="Starfield Technologies, Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
2C:E1:CB:0B:F9:D2:F9:E1:02:99:3F:BE:21:51:52:C3:B2:DD:0C:AB:DE:1C:68:E5:31:9B:83:91:54:DB:B7:F5
Fingerprint (SHA1): B5:1C:06:7C:EE:2B:0C:3D:F8:55:AB:2D:92:F4:FE:39:D4:E7:0F:0E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Root Certificate Authority - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\062
\060\060\006\003\125\004\003\023\051\123\164\141\162\146\151\145
\154\144\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\062
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\062
\060\060\006\003\125\004\003\023\051\123\164\141\162\146\151\145
\154\144\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\335\060\202\002\305\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157\156
\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157\164
\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012\023
\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150\156
\157\154\157\147\151\145\163\054\040\111\156\143\056\061\062\060
\060\006\003\125\004\003\023\051\123\164\141\162\146\151\145\154
\144\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062\060\036\027\015\060\071\060\071\060\061\060\060\060\060\060
\060\132\027\015\063\067\061\062\063\061\062\063\065\071\065\071
\132\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172
\157\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143
\157\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004
\012\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143
\150\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061
\062\060\060\006\003\125\004\003\023\051\123\164\141\162\146\151
\145\154\144\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055
\040\107\062\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\275\355\301\003\374\366\217\374\002\261\157\133
\237\110\331\235\171\342\242\267\003\141\126\030\303\107\266\327
\312\075\065\056\211\103\367\241\151\233\336\212\032\375\023\040
\234\264\111\167\062\051\126\375\271\354\214\335\042\372\162\334
\047\141\227\356\366\132\204\354\156\031\271\211\054\334\204\133
\325\164\373\153\137\305\211\245\020\122\211\106\125\364\270\165
\034\346\177\344\124\256\113\370\125\162\127\002\031\370\027\161

\131\353\036\050\007\164\305\235\110\276\154\264\364\244\260\363
\144\067\171\222\300\354\106\136\177\341\155\123\114\142\257\315
\037\013\143\273\072\235\373\374\171\000\230\141\164\317\046\202
\100\143\363\262\162\152\031\015\231\312\324\016\165\314\067\373
\213\211\301\131\361\142\177\137\263\137\145\060\370\247\267\115
\166\132\036\166\136\064\300\350\226\126\231\212\263\360\177\244
\315\275\334\062\061\174\221\317\340\137\021\370\153\252\111\134
\321\231\224\321\242\343\143\133\011\166\265\126\142\341\113\164
\035\226\324\046\324\010\004\131\320\230\016\016\346\336\374\303
\354\037\220\361\002\003\001\000\001\243\102\060\100\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035
\006\003\125\035\016\004\026\004\024\174\014\062\037\247\331\060
\177\304\175\150\243\142\250\241\316\253\007\133\047\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001\001
\000\021\131\372\045\117\003\157\224\231\073\232\037\202\205\071
\324\166\005\224\136\341\050\223\155\142\135\011\302\240\250\324
\260\165\070\361\064\152\235\344\237\212\206\046\121\346\054\321
\306\055\156\225\040\112\222\001\354\270\212\147\173\061\342\147
\056\214\225\003\046\056\103\235\112\061\366\016\265\014\273\267
\342\067\177\042\272\000\243\016\173\122\373\153\273\073\304\323
\171\121\116\315\220\364\147\007\031\310\074\106\172\015\001\175
\305\130\347\155\346\205\060\027\232\044\304\020\340\004\367\340
\362\177\324\252\012\377\102\035\067\355\224\345\144\131\022\040
\167\070\323\062\076\070\201\165\226\163\372\150\217\261\313\316
\037\305\354\372\234\176\317\176\261\361\007\055\266\374\277\312
\244\277\320\227\005\112\274\352\030\050\002\220\275\124\170\011
\041\161\323\321\175\035\331\026\260\251\141\075\320\012\000\042
\374\307\173\313\011\144\105\013\073\100\201\367\175\174\062\365
\230\312\130\216\175\052\356\220\131\163\144\371\066\164\136\045
\241\365\146\005\056\177\071\025\251\052\373\120\213\216\205\151
\364
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Starfield Root Certificate Authority - G2"
Issuer: CN=Starfield Root Certificate Authority - G2,O="Starfield Technologies, Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Starfield Root Certificate Authority - G2,O="Starfield Technologies, Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
2C:E1:CB:0B:F9:D2:F9:E1:02:99:3F:BE:21:51:52:C3:B2:DD:0C:AB:DE:1C:68:E5:31:9B:83:91:54:DB:B7:F5
Fingerprint (SHA1): B5:1C:06:7C:EE:2B:0C:3D:F8:55:AB:2D:92:F4:FE:39:D4:E7:0F:0E

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Root Certificate Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\265\034\006\174\356\053\014\075\370\125\253\055\222\364\376\071
\324\347\017\016
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\326\071\201\306\122\176\226\151\374\374\312\146\355\005\362\226
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\062
\060\060\006\003\125\004\003\023\051\123\164\141\162\146\151\145
\154\144\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Starfield Services Root Certificate Authority - G2"
#
Issuer: CN=Starfield Services Root Certificate Authority - G2,O="Starfield Technologies,
Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Starfield Services Root Certificate Authority - G2,O="Starfield Technologies,
Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
56:8D:69:05:A2:C8:87:08:A4:B3:02:51:90:ED:CF:ED:B1:97:4A:60:6A:13:C6:E5:29:0F:CB:2A:E6:3E:DA:B5
Fingerprint (SHA1): 92:5A:8F:8D:2C:6D:04:E0:66:5F:59:6A:FF:22:D8:63:E8:25:6F:3F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Services Root Certificate Authority - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\073
\060\071\006\003\125\004\003\023\062\123\164\141\162\146\151\145
\154\144\040\123\145\162\166\151\143\145\163\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\073
\060\071\006\003\125\004\003\023\062\123\164\141\162\146\151\145
\154\144\040\123\145\162\166\151\143\145\163\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\357\060\202\002\327\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157\156
\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157\164
\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012\023
\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150\156
\157\154\157\147\151\145\163\054\040\111\156\143\056\061\073\060
\071\006\003\125\004\003\023\062\123\164\141\162\146\151\145\154
\144\040\123\145\162\166\151\143\145\163\040\122\157\157\164\040
\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150
\157\162\151\164\171\040\055\040\107\062\060\036\027\015\060\071
\060\071\060\061\060\060\060\060\060\060\132\027\015\063\067\061
\062\063\061\062\063\065\071\065\071\132\060\201\230\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\020\060\016\006\003
\125\004\010\023\007\101\162\151\172\157\156\141\061\023\060\021

\006\003\125\004\007\023\012\123\143\157\164\164\163\144\141\154
\145\061\045\060\043\006\003\125\004\012\023\034\123\164\141\162
\146\151\145\154\144\040\124\145\143\150\156\157\154\157\147\151
\145\163\054\040\111\156\143\056\061\073\060\071\006\003\125\004
\003\023\062\123\164\141\162\146\151\145\154\144\040\123\145\162
\166\151\143\145\163\040\122\157\157\164\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\062\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\325\014\072\304\052\371\116\342\365\276
\031\227\137\216\210\123\261\037\077\313\317\237\040\023\155\051
\072\310\017\175\074\367\153\166\070\143\331\066\140\250\233\136
\134\000\200\262\057\131\177\366\207\371\045\103\206\347\151\033
\122\232\220\341\161\343\330\055\015\116\157\366\310\111\331\266
\363\032\126\256\053\266\164\024\353\317\373\046\343\032\272\035
\226\056\152\073\130\224\211\107\126\377\045\240\223\160\123\203
\332\204\164\024\303\147\236\004\150\072\337\216\100\132\035\112
\116\317\103\221\073\347\126\326\000\160\313\122\356\173\175\256
\072\347\274\061\371\105\366\302\140\317\023\131\002\053\200\314
\064\107\337\271\336\220\145\155\002\317\054\221\246\246\347\336
\205\030\111\174\146\116\243\072\155\251\265\356\064\056\272\015
\003\270\063\337\107\353\261\153\215\045\331\233\316\201\321\105
\106\062\226\160\207\336\002\016\111\103\205\266\154\163\273\144
\352\141\101\254\311\324\124\337\207\057\307\042\262\046\314\237
\131\124\150\237\374\276\052\057\304\125\034\165\100\140\027\205
\002\125\071\213\177\005\002\003\001\000\001\243\102\060\100\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\035\006\003\125\035\016\004\026\004\024\234\137\000\337\252
\001\327\060\053\070\210\242\270\155\112\234\362\021\221\203\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\001\001\000\113\066\246\204\167\151\335\073\031\237\147\043\010
\157\016\141\311\375\204\334\137\330\066\201\315\330\033\101\055
\237\140\335\307\032\150\331\321\156\206\341\210\043\317\023\336
\103\317\342\064\263\004\235\037\051\325\277\370\136\310\325\301
\275\356\222\157\062\164\362\221\202\057\275\202\102\172\255\052
\267\040\175\115\274\172\125\022\302\025\352\275\367\152\225\056
\154\164\237\317\034\264\362\305\001\243\205\320\162\076\255\163
\253\013\233\165\014\155\105\267\216\224\254\226\067\265\240\320
\217\025\107\016\343\350\203\335\217\375\357\101\001\167\314\047
\251\142\205\063\362\067\010\357\161\317\167\006\336\310\031\035
\210\100\317\175\106\035\377\036\307\341\316\377\043\333\306\372
\215\125\116\251\002\347\107\021\106\076\364\375\275\173\051\046
\273\251\141\142\067\050\266\055\052\366\020\206\144\311\160\247
\322\255\267\051\160\171\352\074\332\143\045\237\375\150\267\060
\354\160\373\165\212\267\155\140\147\262\036\310\271\351\330\250
\157\002\213\147\015\115\046\127\161\332\040\374\301\112\120\215
\261\050\272

END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Starfield Services Root Certificate Authority - G2"
Issuer: CN=Starfield Services Root Certificate Authority - G2,O="Starfield Technologies, Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Starfield Services Root Certificate Authority - G2,O="Starfield Technologies, Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
56:8D:69:05:A2:C8:87:08:A4:B3:02:51:90:ED:CF:ED:B1:97:4A:60:6A:13:C6:E5:29:0F:CB:2A:E6:3E:DA:B5
Fingerprint (SHA1): 92:5A:8F:8D:2C:6D:04:E0:66:5F:59:6A:FF:22:D8:63:E8:25:6F:3F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Services Root Certificate Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\222\132\217\215\054\155\004\340\146\137\131\152\377\042\330\143
\350\045\157\077
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\027\065\164\257\173\141\034\353\364\371\074\342\356\100\371\242
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\073
\060\071\006\003\125\004\003\023\062\123\164\141\162\146\151\145
\154\144\040\123\145\162\166\151\143\145\163\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AffirmTrust Commercial"
#
Issuer: CN=AffirmTrust Commercial,O=AffirmTrust,C=US
Serial Number:77:77:06:27:26:a9:b1:7c
Subject: CN=AffirmTrust Commercial,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:06:06 2010
Not Valid After : Tue Dec 31 14:06:06 2030
Fingerprint (SHA-256):
03:76:AB:1D:54:C5:F9:80:3C:E4:B2:E2:01:A0:EE:7E:EF:7B:57:B6:36:E8:A9:3C:9B:8D:48:60:C9:6F:5F:A7
Fingerprint (SHA1): F9:B5:B6:32:45:5F:9C:BE:EC:57:5F:80:DC:E9:6E:2C:C7:B2:78:B7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Commercial"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\103\157\155\155
\145\162\143\151\141\154
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\103\157\155\155
\145\162\143\151\141\154
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\167\167\006\047\046\251\261\174
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\114\060\202\002\064\240\003\002\001\002\002\010\167
\167\006\047\046\251\261\174\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\104\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\024\060\022\006\003\125\004\012\014\013
\101\146\146\151\162\155\124\162\165\163\164\061\037\060\035\006
\003\125\004\003\014\026\101\146\146\151\162\155\124\162\165\163
\164\040\103\157\155\155\145\162\143\151\141\154\060\036\027\015
\061\060\060\061\062\071\061\064\060\066\060\066\132\027\015\063
\060\061\062\063\061\061\064\060\066\060\066\132\060\104\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\024\060\022\006
\003\125\004\012\014\013\101\146\146\151\162\155\124\162\165\163
\164\061\037\060\035\006\003\125\004\003\014\026\101\146\146\151

\162\155\124\162\165\163\164\040\103\157\155\155\145\162\143\151
\141\154\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\366\033\117\147\007\053\241\025\365\006\042\313\037
\001\262\343\163\105\006\104\111\054\273\111\045\024\326\316\303
\267\253\054\117\306\101\062\224\127\372\022\247\133\016\342\217
\037\036\206\031\247\252\265\055\271\137\015\212\302\257\205\065
\171\062\055\273\034\142\067\362\261\133\112\075\312\315\161\137
\351\102\276\224\350\310\336\371\042\110\144\306\345\253\306\053
\155\255\005\360\372\325\013\317\232\345\360\120\244\213\073\107
\245\043\133\172\172\370\063\077\270\357\231\227\343\040\301\326
\050\211\317\224\373\271\105\355\343\100\027\021\324\164\360\013
\061\342\053\046\152\233\114\127\256\254\040\076\272\105\172\005
\363\275\233\151\025\256\175\116\040\143\304\065\166\072\007\002
\311\067\375\307\107\356\350\361\166\035\163\025\362\227\244\265
\310\172\171\331\102\252\053\177\134\376\316\046\117\243\146\201
\065\257\104\272\124\036\034\060\062\145\235\346\074\223\136\120
\116\172\343\072\324\156\314\032\373\371\322\067\256\044\052\253
\127\003\042\050\015\111\165\177\267\050\332\165\277\216\343\334
\016\171\061\002\003\001\000\001\243\102\060\100\060\035\006\003
\125\035\016\004\026\004\024\235\223\306\123\213\136\312\257\077
\237\036\017\345\231\225\274\044\366\224\217\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011
\052\206\110\206\367\015\001\001\013\005\000\003\202\001\001\000
\130\254\364\004\016\315\300\015\377\012\375\324\272\026\137\051
\275\173\150\231\130\111\322\264\035\067\115\177\047\175\106\006
\135\103\306\206\056\076\163\262\046\175\117\223\251\266\304\052
\232\253\041\227\024\261\336\214\323\253\211\025\330\153\044\324
\361\026\256\330\244\134\324\177\121\216\355\030\001\261\223\143
\275\274\370\141\200\232\236\261\316\102\160\342\251\175\006\045
\175\047\241\376\157\354\263\036\044\332\343\113\125\032\000\073
\065\264\073\331\327\135\060\375\201\023\211\362\302\006\053\355
\147\304\216\311\103\262\134\153\025\211\002\274\142\374\116\362
\265\063\252\262\157\323\012\242\120\343\366\073\350\056\104\302
\333\146\070\251\063\126\110\361\155\033\063\215\015\214\077\140
\067\235\323\312\155\176\064\176\015\237\162\166\213\033\237\162
\375\122\065\101\105\002\226\057\034\262\232\163\111\041\261\111
\107\105\107\264\357\152\064\021\311\115\232\314\131\267\326\002
\236\132\116\145\265\224\256\033\337\051\260\026\361\277\000\236
\007\072\027\144\265\004\265\043\041\231\012\225\073\227\174\357
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AffirmTrust Commercial"
Issuer: CN=AffirmTrust Commercial,O=AffirmTrust,C=US

Serial Number:77:77:06:27:26:a9:b1:7c
Subject: CN=AffirmTrust Commercial,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:06:06 2010
Not Valid After : Tue Dec 31 14:06:06 2030
Fingerprint (SHA-256):
03:76:AB:1D:54:C5:F9:80:3C:E4:B2:E2:01:A0:EE:7E:EF:7B:57:B6:36:E8:A9:3C:9B:8D:48:60:C9:6F:5F:A7
Fingerprint (SHA1): F9:B5:B6:32:45:5F:9C:BE:EC:57:5F:80:DC:E9:6E:2C:C7:B2:78:B7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Commercial"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\371\265\266\062\105\137\234\276\354\127\137\200\334\351\156\054
\307\262\170\267
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\202\222\272\133\357\315\212\157\246\075\125\371\204\366\326\267
END
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\103\157\155\155
\145\162\143\151\141\154
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\167\167\006\047\046\251\261\174
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AffirmTrust Networking"
#
Issuer: CN=AffirmTrust Networking,O=AffirmTrust,C=US
Serial Number:7c:4f:04:39:1c:d4:99:2d
Subject: CN=AffirmTrust Networking,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:08:24 2010
Not Valid After : Tue Dec 31 14:08:24 2030
Fingerprint (SHA-256):
0A:81:EC:5A:92:97:77:F1:45:90:4A:F3:8D:5D:50:9F:66:B5:E2:C5:8F:CD:B5:31:05:8B:0E:17:F3:F0:B4:1B
Fingerprint (SHA1): 29:36:21:02:8B:20:ED:02:F5:66:C5:32:D1:D6:ED:90:9F:45:00:2F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Networking"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\116\145\164\167
\157\162\153\151\156\147
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\116\145\164\167
\157\162\153\151\156\147
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\174\117\004\071\034\324\231\055
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\114\060\202\002\064\240\003\002\001\002\002\010\174
\117\004\071\034\324\231\055\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\104\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\024\060\022\006\003\125\004\012\014\013
\101\146\146\151\162\155\124\162\165\163\164\061\037\060\035\006
\003\125\004\003\014\026\101\146\146\151\162\155\124\162\165\163
\164\040\116\145\164\167\157\162\153\151\156\147\060\036\027\015
\061\060\060\061\062\071\061\064\060\070\062\064\132\027\015\063
\060\061\062\063\061\061\064\060\070\062\064\132\060\104\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\024\060\022\006
\003\125\004\012\014\013\101\146\146\151\162\155\124\162\165\163
\164\061\037\060\035\006\003\125\004\003\014\026\101\146\146\151
\162\155\124\162\165\163\164\040\116\145\164\167\157\162\153\151
\156\147\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\264\204\314\063\027\056\153\224\154\153\141\122\240
\353\243\317\171\224\114\345\224\200\231\313\125\144\104\145\217
\147\144\342\006\343\134\067\111\366\057\233\204\204\036\055\362
\140\235\060\116\314\204\205\342\054\317\036\236\376\066\253\063
\167\065\104\330\065\226\032\075\066\350\172\016\330\325\107\241
\152\151\213\331\374\273\072\256\171\132\325\364\326\161\273\232
\220\043\153\232\267\210\164\207\014\036\137\271\236\055\372\253
\123\053\334\273\166\076\223\114\010\010\214\036\242\043\034\324
\152\255\042\272\231\001\056\155\145\313\276\044\146\125\044\113
\100\104\261\033\327\341\302\205\300\336\020\077\075\355\270\374
\361\361\043\123\334\277\145\227\157\331\371\100\161\215\175\275

\225\324\316\276\240\136\047\043\336\375\246\320\046\016\000\051
\353\074\106\360\075\140\277\077\120\322\334\046\101\121\236\024
\067\102\004\243\160\127\250\033\207\355\055\372\173\356\214\012
\343\251\146\211\031\313\101\371\335\104\066\141\317\342\167\106
\310\175\366\364\222\201\066\375\333\064\361\162\176\363\014\026
\275\264\025\002\003\001\000\001\243\102\060\100\060\035\006\003
\125\035\016\004\026\004\024\007\037\322\347\234\332\302\156\242
\100\264\260\172\120\020\120\164\304\310\275\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\211\127\262\026\172\250\302\375\326\331\233\233\064\302\234\264
\062\024\115\247\244\337\354\276\247\276\370\103\333\221\067\316
\264\062\056\120\125\032\065\116\166\103\161\040\357\223\167\116
\025\160\056\207\303\301\035\155\334\313\265\047\324\054\126\321
\122\123\072\104\322\163\310\304\033\005\145\132\142\222\234\356
\101\215\061\333\347\064\352\131\041\325\001\172\327\144\270\144
\071\315\311\355\257\355\113\003\110\247\240\231\001\200\334\145
\243\066\256\145\131\110\117\202\113\310\145\361\127\035\345\131
\056\012\077\154\330\321\365\345\011\264\154\124\000\012\340\025
\115\207\165\155\267\130\226\132\335\155\322\000\240\364\233\110
\276\303\067\244\272\066\340\174\207\205\227\032\025\242\336\056
\242\133\275\257\030\371\220\120\315\160\131\370\047\147\107\313
\307\240\007\072\175\321\054\135\154\031\072\146\265\175\375\221
\157\202\261\276\010\223\333\024\107\361\242\067\307\105\236\074
\307\167\257\144\250\223\337\366\151\203\202\140\362\111\102\064
\355\132\000\124\205\034\026\066\222\014\134\372\246\255\277\333
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AffirmTrust Networking"
Issuer: CN=AffirmTrust Networking,O=AffirmTrust,C=US
Serial Number:7c:4f:04:39:1c:d4:99:2d
Subject: CN=AffirmTrust Networking,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:08:24 2010
Not Valid After : Tue Dec 31 14:08:24 2030
Fingerprint (SHA-256):
0A:81:EC:5A:92:97:77:F1:45:90:4A:F3:8D:5D:50:9F:66:B5:E2:C5:8F:CD:B5:31:05:8B:0E:17:F3:F0:B4:1B
Fingerprint (SHA1): 29:36:21:02:8B:20:ED:02:F5:66:C5:32:D1:D6:ED:90:9F:45:00:2F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Networking"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\051\066\041\002\213\040\355\002\365\146\305\062\321\326\355\220

\237\105\000\057
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\102\145\312\276\001\232\232\114\251\214\101\111\315\300\325\177
END
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\116\145\164\167
\157\162\153\151\156\147
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\174\117\004\071\034\324\231\055
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AffirmTrust Premium"
#
Issuer: CN=AffirmTrust Premium,O=AffirmTrust,C=US
Serial Number:6d:8c:14:46:b1:a6:0a:ee
Subject: CN=AffirmTrust Premium,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:10:36 2010
Not Valid After : Mon Dec 31 14:10:36 2040
Fingerprint (SHA-256):
70:A7:3F:7F:37:6B:60:07:42:48:90:45:34:B1:14:82:D5:BF:0E:69:8E:CC:49:8D:F5:25:77:EB:F2:E9:3B:9A
Fingerprint (SHA1): D8:A6:33:2C:E0:03:6F:B1:85:F6:63:4F:7D:6A:06:65:26:32:28:27
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Premium"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\034\060\032\006\003\125\004\003\014\023
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155

\124\162\165\163\164\061\034\060\032\006\003\125\004\003\014\023
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\155\214\024\106\261\246\012\356
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\106\060\202\003\056\240\003\002\001\002\002\010\155
\214\024\106\261\246\012\356\060\015\006\011\052\206\110\206\367
\015\001\001\014\005\000\060\101\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\024\060\022\006\003\125\004\012\014\013
\101\146\146\151\162\155\124\162\165\163\164\061\034\060\032\006
\003\125\004\003\014\023\101\146\146\151\162\155\124\162\165\163
\164\040\120\162\145\155\151\165\155\060\036\027\015\061\060\060
\061\062\071\061\064\061\060\063\066\132\027\015\064\060\061\062
\063\061\061\064\061\060\063\066\132\060\101\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\024\060\022\006\003\125\004
\012\014\013\101\146\146\151\162\155\124\162\165\163\164\061\034
\060\032\006\003\125\004\003\014\023\101\146\146\151\162\155\124
\162\165\163\164\040\120\162\145\155\151\165\155\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\304\022\337
\251\137\376\101\335\335\365\237\212\343\366\254\341\074\170\232
\274\330\360\177\172\240\063\052\334\215\040\133\256\055\157\347
\223\331\066\160\152\150\317\216\121\243\205\133\147\004\240\020
\044\157\135\050\202\301\227\127\330\110\051\023\266\341\276\221
\115\337\205\014\123\030\232\036\044\242\117\217\360\242\205\013
\313\364\051\177\322\244\130\356\046\115\311\252\250\173\232\331
\372\070\336\104\127\025\345\370\214\310\331\110\342\015\026\047
\035\036\310\203\205\045\267\272\252\125\101\314\003\042\113\055
\221\215\213\346\211\257\146\307\351\377\053\351\074\254\332\322
\263\303\341\150\234\211\370\172\000\126\336\364\125\225\154\373
\272\144\335\142\213\337\013\167\062\353\142\314\046\232\233\273
\252\142\203\114\264\006\172\060\310\051\277\355\006\115\227\271
\034\304\061\053\325\137\274\123\022\027\234\231\127\051\146\167
\141\041\061\007\056\045\111\235\030\362\356\363\053\161\214\265
\272\071\007\111\167\374\357\056\222\220\005\215\055\057\167\173
\357\103\277\065\273\232\330\371\163\247\054\362\320\127\356\050
\116\046\137\217\220\150\011\057\270\370\334\006\351\056\232\076
\121\247\321\042\304\012\247\070\110\154\263\371\377\175\253\206
\127\343\272\326\205\170\167\272\103\352\110\177\366\330\276\043
\155\036\277\321\066\154\130\134\361\356\244\031\124\032\365\003
\322\166\346\341\214\275\074\263\323\110\113\342\310\370\177\222
\250\166\106\234\102\145\076\244\036\301\007\003\132\106\055\270
\227\363\267\325\262\125\041\357\272\334\114\000\227\373\024\225
\047\063\277\350\103\107\106\322\010\231\026\140\073\232\176\322
\346\355\070\352\354\001\036\074\110\126\111\011\307\114\067\000

\236\210\016\300\163\341\157\146\351\162\107\060\076\020\345\013
\003\311\232\102\000\154\305\224\176\141\304\212\337\177\202\032
\013\131\304\131\062\167\263\274\140\151\126\071\375\264\006\173
\054\326\144\066\331\275\110\355\204\037\176\245\042\217\052\270
\102\364\202\267\324\123\220\170\116\055\032\375\201\157\104\327
\073\001\164\226\102\340\000\342\056\153\352\305\356\162\254\273
\277\376\352\252\250\370\334\366\262\171\212\266\147\002\003\001
\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026\004
\024\235\300\147\246\014\042\331\046\365\105\253\246\145\122\021
\047\330\105\254\143\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\015\006\011\052\206\110\206\367\015
\001\001\014\005\000\003\202\002\001\000\263\127\115\020\142\116
\072\344\254\352\270\034\257\062\043\310\263\111\132\121\234\166
\050\215\171\252\127\106\027\325\365\122\366\267\104\350\010\104
\277\030\204\322\013\200\315\305\022\375\000\125\005\141\207\101
\334\265\044\236\074\304\330\310\373\160\236\057\170\226\203\040
\066\336\174\017\151\023\210\245\165\066\230\010\246\306\337\254
\316\343\130\326\267\076\336\272\363\353\064\100\330\242\201\365
\170\077\057\325\245\374\331\242\324\136\004\016\027\255\376\101
\360\345\262\162\372\104\202\063\102\350\055\130\367\126\214\142
\077\272\102\260\234\014\134\176\056\145\046\134\123\117\000\262
\170\176\241\015\231\055\215\270\035\216\242\304\260\375\140\320
\060\244\216\310\004\142\251\304\355\065\336\172\227\355\016\070
\136\222\057\223\160\245\251\234\157\247\175\023\035\176\306\010
\110\261\136\147\353\121\010\045\351\346\045\153\122\051\221\234
\322\071\163\010\127\336\231\006\264\133\235\020\006\341\302\000
\250\270\034\112\002\012\024\320\301\101\312\373\214\065\041\175
\202\070\362\251\124\221\031\065\223\224\155\152\072\305\262\320
\273\211\206\223\350\233\311\017\072\247\172\270\241\360\170\106
\372\374\067\057\345\212\204\363\337\376\004\331\241\150\240\057
\044\342\011\225\006\325\225\312\341\044\226\353\174\366\223\005
\273\355\163\351\055\321\165\071\327\347\044\333\330\116\137\103
\217\236\320\024\071\277\125\160\110\231\127\061\264\234\356\112
\230\003\226\060\037\140\006\356\033\043\376\201\140\043\032\107
\142\205\245\314\031\064\200\157\263\254\032\343\237\360\173\110
\255\325\001\331\147\266\251\162\223\352\055\146\265\262\270\344
\075\074\262\357\114\214\352\353\007\277\253\065\232\125\206\274
\030\246\265\250\136\264\203\154\153\151\100\323\237\334\361\303
\151\153\271\341\155\011\364\361\252\120\166\012\172\175\172\027
\241\125\226\102\231\061\011\335\140\021\215\005\060\176\346\216
\106\321\235\024\332\307\027\344\005\226\214\304\044\265\033\317
\024\007\262\100\370\243\236\101\206\274\004\320\153\226\310\052
\200\064\375\277\357\006\243\335\130\305\205\075\076\217\376\236
\051\340\266\270\011\150\031\034\030\103
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE

CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AffirmTrust Premium"
Issuer: CN=AffirmTrust Premium,O=AffirmTrust,C=US
Serial Number:6d:8c:14:46:b1:a6:0a:ee
Subject: CN=AffirmTrust Premium,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:10:36 2010
Not Valid After : Mon Dec 31 14:10:36 2040
Fingerprint (SHA-256):
70:A7:3F:7F:37:6B:60:07:42:48:90:45:34:B1:14:82:D5:BF:0E:69:8E:CC:49:8D:F5:25:77:EB:F2:E9:3B:9A
Fingerprint (SHA1): D8:A6:33:2C:E0:03:6F:B1:85:F6:63:4F:7D:6A:06:65:26:32:28:27
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Premium"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\330\246\063\054\340\003\157\261\205\366\143\117\175\152\006\145
\046\062\050\047
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\304\135\016\110\266\254\050\060\116\012\274\371\070\026\207\127
END
CKA_ISSUER MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\034\060\032\006\003\125\004\003\014\023
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\155\214\024\106\261\246\012\356
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AffirmTrust Premium ECC"
#
Issuer: CN=AffirmTrust Premium ECC,O=AffirmTrust,C=US
Serial Number:74:97:25:8a:c7:3f:7a:54
Subject: CN=AffirmTrust Premium ECC,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:20:24 2010
Not Valid After : Mon Dec 31 14:20:24 2040
Fingerprint (SHA-256):
BD:71:FD:F6:DA:97:E4:CF:62:D1:64:7A:DD:25:81:B0:7D:79:AD:F8:39:7E:B4:EC:BA:9C:5E:84:88:82:14:23

Fingerprint (SHA1): B8:23:6B:00:2F:1D:16:86:53:01:55:6C:11:A4:37:CA:EB:FF:C3:BB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Premium ECC"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\040\060\036\006\003\125\004\003\014\027
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155\040\105\103\103
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\040\060\036\006\003\125\004\003\014\027
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155\040\105\103\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\164\227\045\212\307\077\172\124
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\376\060\202\001\205\240\003\002\001\002\002\010\164
\227\045\212\307\077\172\124\060\012\006\010\052\206\110\316\075
\004\003\003\060\105\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\024\060\022\006\003\125\004\012\014\013\101\146\146
\151\162\155\124\162\165\163\164\061\040\060\036\006\003\125\004
\003\014\027\101\146\146\151\162\155\124\162\165\163\164\040\120
\162\145\155\151\165\155\040\105\103\103\060\036\027\015\061\060
\060\061\062\071\061\064\062\060\062\064\132\027\015\064\060\061
\062\063\061\061\064\062\060\062\064\132\060\105\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\024\060\022\006\003\125
\004\012\014\013\101\146\146\151\162\155\124\162\165\163\164\061
\040\060\036\006\003\125\004\003\014\027\101\146\146\151\162\155
\124\162\165\163\164\040\120\162\145\155\151\165\155\040\105\103
\103\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\015\060\136\033\025\235\003
\320\241\171\065\267\072\074\222\172\312\025\034\315\142\363\234
\046\134\007\075\345\124\372\243\326\314\022\352\364\024\137\350
\216\031\253\057\056\110\346\254\030\103\170\254\320\067\303\275
\262\315\054\346\107\342\032\346\143\270\075\056\057\170\304\117
\333\364\017\244\150\114\125\162\153\225\035\116\030\102\225\170
\314\067\074\221\342\233\145\053\051\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\232\257\051\172\300\021\065\065

\046\121\060\000\303\152\376\100\325\256\326\074\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\012\006
\010\052\206\110\316\075\004\003\003\003\147\000\060\144\002\060
\027\011\363\207\210\120\132\257\310\300\102\277\107\137\365\154
\152\206\340\304\047\164\344\070\123\327\005\177\033\064\343\306
\057\263\312\011\074\067\235\327\347\270\106\361\375\241\342\161
\002\060\102\131\207\103\324\121\337\272\323\011\062\132\316\210
\176\127\075\234\137\102\153\365\007\055\265\360\202\223\371\131
\157\256\144\372\130\345\213\036\343\143\276\265\201\315\157\002
\214\171
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AffirmTrust Premium ECC"
Issuer: CN=AffirmTrust Premium ECC,O=AffirmTrust,C=US
Serial Number:74:97:25:8a:c7:3f:7a:54
Subject: CN=AffirmTrust Premium ECC,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:20:24 2010
Not Valid After : Mon Dec 31 14:20:24 2040
Fingerprint (SHA-256):
BD:71:FD:F6:DA:97:E4:CF:62:D1:64:7A:DD:25:81:B0:7D:79:AD:F8:39:7E:B4:EC:BA:9C:5E:84:88:82:14:23
Fingerprint (SHA1): B8:23:6B:00:2F:1D:16:86:53:01:55:6C:11:A4:37:CA:EB:FF:C3:BB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Premium ECC"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\270\043\153\000\057\035\026\206\123\001\125\154\021\244\067\312
\353\377\303\273
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\144\260\011\125\317\261\325\231\342\276\023\253\246\135\352\115
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\040\060\036\006\003\125\004\003\014\027
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155\040\105\103\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\164\227\045\212\307\077\172\124
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum Trusted Network CA"
#
Issuer: CN=Certum Trusted Network CA,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Serial Number: 279744 (0x444c0)
Subject: CN=Certum Trusted Network CA,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Not Valid Before: Wed Oct 22 12:07:37 2008
Not Valid After : Mon Dec 31 12:07:37 2029
Fingerprint (SHA-256):
5C:58:46:8D:55:F5:8E:49:7E:74:39:82:D2:B5:00:10:B6:D1:65:37:4A:CF:83:A7:D4:A3:2D:B7:68:C4:40:8E
Fingerprint (SHA1): 07:E0:32:E0:20:B7:2C:3F:19:2F:06:28:A2:59:3A:19:A7:0F:06:9E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Network CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145\164
\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040\123
\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145
\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060\040
\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124\162
\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145\164
\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040\123
\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145
\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060\040
\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124\162
\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\004\104\300
END
CKA_VALUE MULTILINE_OCTAL

\060\202\003\273\060\202\002\243\240\003\002\001\002\002\003\004
\104\300\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060
\040\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\060\036\027\015\060\070\061\060\062\062\061\062\060\067\063
\067\132\027\015\062\071\061\062\063\061\061\062\060\067\063\067
\132\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060
\040\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\343\373\175\243\162\272\302\360\311\024\207\365\153\001
\116\341\156\100\007\272\155\047\135\177\367\133\055\263\132\307
\121\137\253\244\062\246\141\207\266\156\017\206\322\060\002\227
\370\327\151\127\241\030\071\135\152\144\171\306\001\131\254\074
\061\112\070\174\322\004\322\113\050\350\040\137\073\007\242\314
\115\163\333\363\256\117\307\126\325\132\247\226\211\372\363\253
\150\324\043\206\131\047\317\011\047\274\254\156\162\203\034\060
\162\337\340\242\351\322\341\164\165\031\275\052\236\173\025\124
\004\033\327\103\071\255\125\050\305\342\032\273\364\300\344\256
\070\111\063\314\166\205\237\071\105\322\244\236\362\022\214\121
\370\174\344\055\177\365\254\137\353\026\237\261\055\321\272\314
\221\102\167\114\045\311\220\070\157\333\360\314\373\216\036\227
\131\076\325\140\116\346\005\050\355\111\171\023\113\272\110\333
\057\371\162\323\071\312\376\037\330\064\162\365\264\100\317\061
\001\303\354\336\021\055\027\135\037\270\120\321\136\031\247\151
\336\007\063\050\312\120\225\371\247\124\313\124\206\120\105\251
\371\111\002\003\001\000\001\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\010\166\315\313\007\377\044\366\305
\315\355\273\220\274\342\204\067\106\165\367\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000\246
\250\255\042\316\001\075\246\243\377\142\320\110\235\213\136\162
\260\170\104\343\334\034\257\011\375\043\110\372\275\052\304\271
\125\004\265\020\243\215\047\336\013\202\143\320\356\336\014\067
\171\101\133\042\262\260\232\101\134\246\160\340\324\320\167\313

\043\323\000\340\154\126\057\341\151\015\015\331\252\277\041\201
\120\331\006\245\250\377\225\067\320\252\376\342\263\365\231\055
\105\204\212\345\102\011\327\164\002\057\367\211\330\231\351\274
\047\324\107\215\272\015\106\034\167\317\024\244\034\271\244\061
\304\234\050\164\003\064\377\063\031\046\245\351\015\164\267\076
\227\306\166\350\047\226\243\146\335\341\256\362\101\133\312\230
\126\203\163\160\344\206\032\322\061\101\272\057\276\055\023\132
\166\157\116\350\116\201\016\077\133\003\042\240\022\276\146\130
\021\112\313\003\304\264\052\052\055\226\027\340\071\124\274\110
\323\166\047\235\232\055\006\246\311\354\071\322\253\333\237\232
\013\047\002\065\051\261\100\225\347\371\350\234\125\210\031\106
\326\267\064\365\176\316\071\232\331\070\361\121\367\117\054
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum Trusted Network CA"
Issuer: CN=Certum Trusted Network CA,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Serial Number: 279744 (0x444c0)
Subject: CN=Certum Trusted Network CA,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Not Valid Before: Wed Oct 22 12:07:37 2008
Not Valid After : Mon Dec 31 12:07:37 2029
Fingerprint (SHA-256):
5C:58:46:8D:55:F5:8E:49:7E:74:39:82:D2:B5:00:10:B6:D1:65:37:4A:CF:83:A7:D4:A3:2D:B7:68:C4:40:8E
Fingerprint (SHA1): 07:E0:32:E0:20:B7:2C:3F:19:2F:06:28:A2:59:3A:19:A7:0F:06:9E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Network CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\007\340\062\340\040\267\054\077\031\057\006\050\242\131\072\031
\247\017\006\236
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\325\351\201\100\305\030\151\374\106\054\211\165\142\017\252\170
END
CKA_ISSUER MULTILINE_OCTAL
\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145\164
\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040\123
\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145
\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060\040
\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124\162

\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\004\104\300
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TWCA Root Certification Authority"
#
Issuer: CN=TWCA Root Certification Authority,OU=Root CA,O=TAIWAN-CA,C=TW
Serial Number: 1 (0x1)
Subject: CN=TWCA Root Certification Authority,OU=Root CA,O=TAIWAN-CA,C=TW
Not Valid Before: Thu Aug 28 07:24:33 2008
Not Valid After : Tue Dec 31 15:59:59 2030
Fingerprint (SHA-256):
BF:D8:8F:E1:10:1C:41:AE:3E:80:1B:F8:BE:56:35:0E:E9:BA:D1:A6:B9:BD:51:5E:DC:5C:6D:5B:87:11:AC:44
Fingerprint (SHA1): CF:9E:87:6D:D3:EB:FC:42:26:97:A3:B5:A3:7A:A0:76:A9:06:23:48
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TWCA Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157
\157\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041
\124\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157
\157\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041
\124\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001

END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\173\060\202\002\143\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061\022
\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116\055
\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157\157
\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041\124
\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\060\036\027\015\060\070\060\070\062\070\060\067\062\064\063\063
\132\027\015\063\060\061\062\063\061\061\065\065\071\065\071\132
\060\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157
\157\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041
\124\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\260\176\162\270\244\003\224\346\247\336\011\070\221\112
\021\100\207\247\174\131\144\024\173\265\021\020\335\376\277\325
\300\273\126\342\205\045\364\065\162\017\370\123\320\101\341\104
\001\302\264\034\303\061\102\026\107\205\063\042\166\262\012\157
\017\345\045\120\117\205\206\276\277\230\056\020\147\036\276\021
\005\206\005\220\304\131\320\174\170\020\260\200\134\267\341\307
\053\165\313\174\237\256\265\321\235\043\067\143\247\334\102\242
\055\222\004\033\120\301\173\270\076\033\311\126\004\213\057\122
\233\255\251\126\351\301\377\255\251\130\207\060\266\201\367\227
\105\374\031\127\073\053\157\344\107\364\231\105\376\035\361\370
\227\243\210\035\067\034\134\217\340\166\045\232\120\370\240\124
\377\104\220\166\043\322\062\306\303\253\006\277\374\373\277\363
\255\175\222\142\002\133\051\323\065\243\223\232\103\144\140\135
\262\372\062\377\073\004\257\115\100\152\371\307\343\357\043\375
\153\313\345\017\213\070\015\356\012\374\376\017\230\237\060\061
\335\154\122\145\371\213\201\276\042\341\034\130\003\272\221\033
\211\007\002\003\001\000\001\243\102\060\100\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\152\070\133\046\215\336\213\132\362
\117\172\124\203\031\030\343\010\065\246\272\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000\074
\325\167\075\332\337\211\272\207\014\010\124\152\040\120\222\276
\260\101\075\271\046\144\203\012\057\350\100\300\227\050\047\202
\060\112\311\223\377\152\347\246\000\177\211\102\232\326\021\345
\123\316\057\314\362\332\005\304\376\342\120\304\072\206\175\314
\332\176\020\011\073\222\065\052\123\262\376\353\053\005\331\154
\135\346\320\357\323\152\146\236\025\050\205\172\350\202\000\254

\036\247\011\151\126\102\323\150\121\030\276\124\232\277\104\101
\272\111\276\040\272\151\134\356\270\167\315\316\154\037\255\203
\226\030\175\016\265\024\071\204\361\050\351\055\243\236\173\036
\172\162\132\203\263\171\157\357\264\374\320\012\245\130\117\106
\337\373\155\171\131\362\204\042\122\256\017\314\373\174\073\347
\152\312\107\141\303\172\370\323\222\004\037\270\040\204\341\066
\124\026\307\100\336\073\212\163\334\337\306\011\114\337\354\332
\377\324\123\102\241\311\362\142\035\042\203\074\227\305\371\031
\142\047\254\145\042\327\323\074\306\345\216\262\123\314\111\316
\274\060\376\173\016\063\220\373\355\322\024\221\037\007\257
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TWCA Root Certification Authority"
Issuer: CN=TWCA Root Certification Authority,OU=Root CA,O=TAIWAN-CA,C=TW
Serial Number: 1 (0x1)
Subject: CN=TWCA Root Certification Authority,OU=Root CA,O=TAIWAN-CA,C=TW
Not Valid Before: Thu Aug 28 07:24:33 2008
Not Valid After : Tue Dec 31 15:59:59 2030
Fingerprint (SHA-256):
BF:D8:8F:E1:10:1C:41:AE:3E:80:1B:F8:BE:56:35:0E:E9:BA:D1:A6:B9:BD:51:5E:DC:5C:6D:5B:87:11:AC:44
Fingerprint (SHA1): CF:9E:87:6D:D3:EB:FC:42:26:97:A3:B5:A3:7A:A0:76:A9:06:23:48
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TWCA Root Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\317\236\207\155\323\353\374\102\046\227\243\265\243\172\240\166
\251\006\043\110
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\252\010\217\366\371\173\267\362\261\247\036\233\352\352\275\171
END
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157
\157\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041
\124\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Explicitly Distrust DigiNotar Root CA"
#
Issuer: E=info@diginotar.nl,CN=DigiNotar Root CA,O=DigiNotar,C=NL
Serial Number:0f:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff
Subject: E=info@diginotar.nl,CN=DigiNotar Root CA,O=DigiNotar,C=NL
Not Valid Before: Fri Jul 27 17:19:37 2007
Not Valid After : Mon Mar 31 18:19:22 2025
Fingerprint (MD5): 0A:A4:D5:CC:BA:B4:FB:A3:59:E3:E6:01:DD:53:D9:4E
Fingerprint (SHA1): C1:77:CB:4B:E0:B4:26:8E:F5:C7:CF:45:99:22:B9:B0:CE:BA:21:2F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Explicitly Distrust DigiNotar Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\022\060\020\006\003\125\004\012\023\011\104\151\147\151\116\157
\164\141\162\061\032\060\030\006\003\125\004\003\023\021\104\151
\147\151\116\157\164\141\162\040\122\157\157\164\040\103\101\061
\040\060\036\006\011\052\206\110\206\367\015\001\011\001\026\021
\151\156\146\157\100\144\151\147\151\156\157\164\141\162\056\156
\154
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\022\060\020\006\003\125\004\012\023\011\104\151\147\151\116\157
\164\141\162\061\032\060\030\006\003\125\004\003\023\021\104\151
\147\151\116\157\164\141\162\040\122\157\157\164\040\103\101\061
\040\060\036\006\011\052\206\110\206\367\015\001\011\001\026\021
\151\156\146\157\100\144\151\147\151\156\157\164\141\162\056\156
\154
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\017\377\377\377\377\377\377\377\377\377\377\377\377\377
\377\377
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\212\060\202\003\162\240\003\002\001\002\002\020\017
\377\377\377\377\377\377\377\377\377\377\377\377\377\377\377\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\137

\061\013\060\011\006\003\125\004\006\023\002\116\114\061\022\060
\020\006\003\125\004\012\023\011\104\151\147\151\116\157\164\141
\162\061\032\060\030\006\003\125\004\003\023\021\104\151\147\151
\116\157\164\141\162\040\122\157\157\164\040\103\101\061\040\060
\036\006\011\052\206\110\206\367\015\001\011\001\026\021\151\156
\146\157\100\144\151\147\151\156\157\164\141\162\056\156\154\060
\036\027\015\060\067\060\067\062\067\061\067\061\071\063\067\132
\027\015\062\065\060\063\063\061\061\070\061\071\062\062\132\060
\137\061\013\060\011\006\003\125\004\006\023\002\116\114\061\022
\060\020\006\003\125\004\012\023\011\104\151\147\151\116\157\164
\141\162\061\032\060\030\006\003\125\004\003\023\021\104\151\147
\151\116\157\164\141\162\040\122\157\157\164\040\103\101\061\040
\060\036\006\011\052\206\110\206\367\015\001\011\001\026\021\151
\156\146\157\100\144\151\147\151\156\157\164\141\162\056\156\154
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\254\260\130\301\000\275\330\041\010\013\053\232\376\156\126
\060\005\237\033\167\220\020\101\134\303\015\207\021\167\216\201
\361\312\174\351\214\152\355\070\164\065\273\332\337\371\273\300
\011\067\264\226\163\201\175\063\032\230\071\367\223\157\225\177
\075\271\261\165\207\272\121\110\350\213\160\076\225\004\305\330
\266\303\026\331\210\260\261\207\035\160\332\206\264\017\024\213
\172\317\020\321\164\066\242\022\173\167\206\112\171\346\173\337
\002\021\150\245\116\206\256\064\130\233\044\023\170\126\042\045
\036\001\213\113\121\161\373\202\314\131\226\151\210\132\150\123
\305\271\015\002\067\313\113\274\146\112\220\176\052\013\005\007
\355\026\137\125\220\165\330\106\311\033\203\342\010\276\361\043
\314\231\035\326\052\017\203\040\025\130\047\202\056\372\342\042
\302\111\261\271\001\201\152\235\155\235\100\167\150\166\116\041
\052\155\204\100\205\116\166\231\174\202\363\363\267\002\131\324
\046\001\033\216\337\255\123\006\321\256\030\335\342\262\072\313
\327\210\070\216\254\133\051\271\031\323\230\371\030\003\317\110
\202\206\146\013\033\151\017\311\353\070\210\172\046\032\005\114
\222\327\044\324\226\362\254\122\055\243\107\325\122\366\077\376
\316\204\006\160\246\252\076\242\362\266\126\064\030\127\242\344
\201\155\347\312\360\152\323\307\221\153\002\203\101\174\025\357
\153\232\144\136\343\320\074\345\261\353\173\135\206\373\313\346
\167\111\315\243\145\334\367\271\234\270\344\013\137\223\317\314
\060\032\062\034\316\034\143\225\245\371\352\341\164\213\236\351
\053\251\060\173\240\030\037\016\030\013\345\133\251\323\321\154
\036\007\147\217\221\113\251\212\274\322\146\252\223\001\210\262
\221\372\061\134\325\246\301\122\010\011\315\012\143\242\323\042
\246\350\241\331\071\006\227\365\156\215\002\220\214\024\173\077
\200\315\033\234\272\304\130\162\043\257\266\126\237\306\172\102
\063\051\007\077\202\311\346\037\005\015\315\114\050\066\213\323
\310\076\034\306\210\357\136\356\211\144\351\035\353\332\211\176
\062\246\151\321\335\314\210\237\321\320\311\146\041\334\006\147
\305\224\172\232\155\142\114\175\314\340\144\200\262\236\107\216

\243\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003\125
\035\016\004\026\004\024\210\150\277\340\216\065\304\073\070\153
\142\367\050\073\204\201\310\014\327\115\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\002\001\000\073\002
\215\313\074\060\350\156\240\255\362\163\263\137\236\045\023\004
\005\323\366\343\213\273\013\171\316\123\336\344\226\305\321\257
\163\274\325\303\320\100\125\174\100\177\315\033\137\011\325\362
\174\237\150\035\273\135\316\172\071\302\214\326\230\173\305\203
\125\250\325\175\100\312\340\036\367\211\136\143\135\241\023\302
\135\212\266\212\174\000\363\043\303\355\205\137\161\166\360\150
\143\252\105\041\071\110\141\170\066\334\361\103\223\324\045\307
\362\200\145\341\123\002\165\121\374\172\072\357\067\253\204\050
\127\014\330\324\324\231\126\154\343\242\376\131\204\264\061\350
\063\370\144\224\224\121\227\253\071\305\113\355\332\335\200\013
\157\174\051\015\304\216\212\162\015\347\123\024\262\140\101\075
\204\221\061\150\075\047\104\333\345\336\364\372\143\105\310\114
\076\230\365\077\101\272\116\313\067\015\272\146\230\361\335\313
\237\134\367\124\066\202\153\054\274\023\141\227\102\370\170\273
\314\310\242\237\312\360\150\275\153\035\262\337\215\157\007\235
\332\216\147\307\107\036\312\271\277\052\102\221\267\143\123\146
\361\102\243\341\364\132\115\130\153\265\344\244\063\255\134\160
\035\334\340\362\353\163\024\221\232\003\301\352\000\145\274\007
\374\317\022\021\042\054\256\240\275\072\340\242\052\330\131\351
\051\323\030\065\244\254\021\137\031\265\265\033\377\042\112\134
\306\172\344\027\357\040\251\247\364\077\255\212\247\232\004\045
\235\016\312\067\346\120\375\214\102\051\004\232\354\271\317\113
\162\275\342\010\066\257\043\057\142\345\312\001\323\160\333\174
\202\043\054\026\061\014\306\066\007\220\172\261\037\147\130\304
\073\130\131\211\260\214\214\120\263\330\206\313\150\243\304\012
\347\151\113\040\316\301\036\126\113\225\251\043\150\330\060\330
\303\353\260\125\121\315\345\375\053\270\365\273\021\237\123\124
\366\064\031\214\171\011\066\312\141\027\045\027\013\202\230\163
\014\167\164\303\325\015\307\250\022\114\307\247\124\161\107\056
\054\032\175\311\343\053\073\110\336\047\204\247\143\066\263\175
\217\240\144\071\044\015\075\173\207\257\146\134\164\033\113\163
\262\345\214\360\206\231\270\345\305\337\204\301\267\353
END

Trust for Certificate "Explicitly Distrust DigiNotar Root CA"
Issuer: E=info@diginotar.nl,CN=DigiNotar Root CA,O=DigiNotar,C=NL
Serial Number:0f:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff
Subject: E=info@diginotar.nl,CN=DigiNotar Root CA,O=DigiNotar,C=NL
Not Valid Before: Fri Jul 27 17:19:37 2007
Not Valid After : Mon Mar 31 18:19:22 2025
Fingerprint (MD5): 0A:A4:D5:CC:BA:B4:FB:A3:59:E3:E6:01:DD:53:D9:4E
Fingerprint (SHA1): C1:77:CB:4B:E0:B4:26:8E:F5:C7:CF:45:99:22:B9:B0:CE:BA:21:2F

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Explicitly Distrust DigiNotar Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\301\167\313\113\340\264\046\216\365\307\317\105\231\042\271\260
\316\272\041\057
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\012\244\325\314\272\264\373\243\131\343\346\001\335\123\331\116
END
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\022\060\020\006\003\125\004\012\023\011\104\151\147\151\116\157
\164\141\162\061\032\060\030\006\003\125\004\003\023\021\104\151
\147\151\116\157\164\141\162\040\122\157\157\164\040\103\101\061
\040\060\036\006\011\052\206\110\206\367\015\001\011\001\026\021
\151\156\146\157\100\144\151\147\151\156\157\164\141\162\056\156
\154
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\017\377\377\377\377\377\377\377\377\377\377\377\377\377
\377\377
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_NOT_TRUSTED
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_NOT_TRUSTED
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_NOT_TRUSTED
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Security Communication RootCA2"
#
Issuer: OU=Security Communication RootCA2,O="SECOM Trust Systems CO.,LTD.",C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication RootCA2,O="SECOM Trust Systems CO.,LTD.",C=JP
Not Valid Before: Fri May 29 05:00:39 2009
Not Valid After : Tue May 29 05:00:39 2029
Fingerprint (SHA-256):
51:3B:2C:EC:B8:10:D4:CD:E5:DD:85:39:1A:DF:C6:C2:DD:60:D8:7B:B7:36:D2:B5:21:48:4A:A4:7A:0E:BE:F6
Fingerprint (SHA1): 5F:3B:8C:F2:F8:10:B3:7D:78:B4:CE:EC:19:19:C3:73:34:B9:C7:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication RootCA2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\047\060\045\006\003\125\004\013\023
\036\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\122\157\157\164\103\101\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\047\060\045\006\003\125\004\013\023
\036\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\122\157\157\164\103\101\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\167\060\202\002\137\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061\045
\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040\124
\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117\056
\054\114\124\104\056\061\047\060\045\006\003\125\004\013\023\036
\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156\151
\143\141\164\151\157\156\040\122\157\157\164\103\101\062\060\036
\027\015\060\071\060\065\062\071\060\065\060\060\063\071\132\027
\015\062\071\060\065\062\071\060\065\060\060\063\071\132\060\135
\061\013\060\011\006\003\125\004\006\023\002\112\120\061\045\060
\043\006\003\125\004\012\023\034\123\105\103\117\115\040\124\162
\165\163\164\040\123\171\163\164\145\155\163\040\103\117\056\054
\114\124\104\056\061\047\060\045\006\003\125\004\013\023\036\123
\145\143\165\162\151\164\171\040\103\157\155\155\165\156\151\143
\141\164\151\157\156\040\122\157\157\164\103\101\062\060\202\001
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\001\017\000\060\202\001\012\002\202\001\001\000\320\025
\071\122\261\122\263\272\305\131\202\304\135\122\256\072\103\145
\200\113\307\362\226\274\333\066\227\326\246\144\214\250\136\360
\343\012\034\367\337\227\075\113\256\366\135\354\041\265\101\253
\315\271\176\166\237\276\371\076\066\064\240\073\301\366\061\021
\105\164\223\075\127\200\305\371\211\231\312\345\253\152\324\265
\332\101\220\020\301\326\326\102\211\302\277\364\070\022\225\114
\124\005\367\066\344\105\203\173\024\145\326\334\014\115\321\336
\176\014\253\073\304\025\276\072\126\246\132\157\166\151\122\251
\172\271\310\353\152\232\135\122\320\055\012\153\065\026\011\020
\204\320\152\312\072\006\000\067\107\344\176\127\117\077\213\353

\147\270\210\252\305\276\123\125\262\221\304\175\271\260\205\031
\006\170\056\333\141\032\372\205\365\112\221\241\347\026\325\216
\242\071\337\224\270\160\037\050\077\213\374\100\136\143\203\074
\203\052\032\231\153\317\336\131\152\073\374\157\026\327\037\375
\112\020\353\116\202\026\072\254\047\014\123\361\255\325\044\260
\153\003\120\301\055\074\026\335\104\064\047\032\165\373\002\003
\001\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026
\004\024\012\205\251\167\145\005\230\174\100\201\370\017\227\054
\070\361\012\354\074\317\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\001\001\000\114\072\243\104\254
\271\105\261\307\223\176\310\013\012\102\337\144\352\034\356\131
\154\010\272\211\137\152\312\112\225\236\172\217\007\305\332\105
\162\202\161\016\072\322\314\157\247\264\241\043\273\366\044\237
\313\027\376\214\246\316\302\322\333\314\215\374\161\374\003\051
\301\154\135\063\137\144\266\145\073\211\157\030\166\170\365\334
\242\110\037\031\077\216\223\353\361\372\027\356\315\116\343\004
\022\125\326\345\344\335\373\076\005\174\342\035\136\306\247\274
\227\117\150\072\365\351\056\012\103\266\257\127\134\142\150\174
\267\375\243\212\204\240\254\142\276\053\011\207\064\360\152\001
\273\233\051\126\074\376\000\067\317\043\154\361\116\252\266\164
\106\022\154\221\356\064\325\354\232\221\347\104\276\220\061\162
\325\111\002\366\002\345\364\037\353\174\331\226\125\251\377\354
\212\371\231\107\377\065\132\002\252\004\313\212\133\207\161\051
\221\275\244\264\172\015\275\232\365\127\043\000\007\041\027\077
\112\071\321\005\111\013\247\266\067\201\245\135\214\252\063\136
\201\050\174\247\175\047\353\000\256\215\067
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Security Communication RootCA2"
Issuer: OU=Security Communication RootCA2,O="SECOM Trust Systems CO.,LTD.",C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication RootCA2,O="SECOM Trust Systems CO.,LTD.",C=JP
Not Valid Before: Fri May 29 05:00:39 2009
Not Valid After : Tue May 29 05:00:39 2029
Fingerprint (SHA-256):
51:3B:2C:EC:B8:10:D4:CD:E5:DD:85:39:1A:DF:C6:C2:DD:60:D8:7B:B7:36:D2:B5:21:48:4A:A4:7A:0E:BE:F6
Fingerprint (SHA1): 5F:3B:8C:F2:F8:10:B3:7D:78:B4:CE:EC:19:19:C3:73:34:B9:C7:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication RootCA2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\137\073\214\362\370\020\263\175\170\264\316\354\031\031\303\163
\064\271\307\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\154\071\175\244\016\125\131\262\077\326\101\261\022\120\336\103
END
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\047\060\045\006\003\125\004\013\023
\036\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\122\157\157\164\103\101\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "EC-ACC"
#
Issuer: CN=EC-ACC,OU=Jerarquia Entitats de Certificacio Catalanes,OU=Vegeu https://www.catcert.net/verarrel (c)03,OU=Serveis Publics de Certificacio,O=Agencia Catalana de Certificacio (NIF Q-0801176-I),C=ES
Serial Number:ee:2b:3d:eb:d4:21:de:14:a8:62:ac:04:f3:dd:c4:01
Subject: CN=EC-ACC,OU=Jerarquia Entitats de Certificacio Catalanes,OU=Vegeu https://www.catcert.net/verarrel (c)03,OU=Serveis Publics de Certificacio,O=Agencia Catalana de Certificacio (NIF Q-0801176-I),C=ES
Not Valid Before: Tue Jan 07 23:00:00 2003
Not Valid After : Tue Jan 07 22:59:59 2031
Fingerprint (SHA-256):
88:49:7F:01:60:2F:31:54:24:6A:E2:8C:4D:5A:EF:10:F1:D8:7E:BB:76:62:6F:4A:E0:B7:F9:5B:A7:96:87:99
Fingerprint (SHA1): 28:90:3A:63:5B:52:80:FA:E6:77:4C:0B:6D:A7:D6:BA:A6:4A:F2:E8
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "EC-ACC"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\363\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\073\060\071\006\003\125\004\012\023\062\101\147\145\156\143
\151\141\040\103\141\164\141\154\141\156\141\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\050\116\111\106
\040\121\055\060\070\060\061\061\067\066\055\111\051\061\050\060

\046\006\003\125\004\013\023\037\123\145\162\166\145\151\163\040
\120\165\142\154\151\143\163\040\144\145\040\103\145\162\164\151
\146\151\143\141\143\151\157\061\065\060\063\006\003\125\004\013
\023\054\126\145\147\145\165\040\150\164\164\160\163\072\057\057
\167\167\167\056\143\141\164\143\145\162\164\056\156\145\164\057
\166\145\162\141\162\162\145\154\040\050\143\051\060\063\061\065
\060\063\006\003\125\004\013\023\054\112\145\162\141\162\161\165
\151\141\040\105\156\164\151\164\141\164\163\040\144\145\040\103
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\061\073\060\071\006\003\125\004\012\023\062\101\147\145\156\143
\151\141\040\103\141\164\141\154\141\156\141\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\050\116\111\106
\040\121\055\060\070\060\061\061\067\066\055\111\051\061\050\060
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\023\054\126\145\147\145\165\040\150\164\164\160\163\072\057\057
\167\167\167\056\143\141\164\143\145\162\164\056\156\145\164\057
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\060\063\006\003\125\004\013\023\054\112\145\162\141\162\161\165
\151\141\040\105\156\164\151\164\141\164\163\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\103\141\164\141
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\363\061\013\060\011\006\003\125\004\006\023\002\105\123\061\073
\060\071\006\003\125\004\012\023\062\101\147\145\156\143\151\141
\040\103\141\164\141\154\141\156\141\040\144\145\040\103\145\162
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\055\060\070\060\061\061\067\066\055\111\051\061\050\060\046\006
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\142\154\151\143\163\040\144\145\040\103\145\162\164\151\146\151
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\162\141\162\162\145\154\040\050\143\051\060\063\061\065\060\063
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\040\105\156\164\151\164\141\164\163\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\040\103\141\164\141\154\141
\156\145\163\061\017\060\015\006\003\125\004\003\023\006\105\103
\055\101\103\103\060\036\027\015\060\063\060\061\060\067\062\063
\060\060\060\060\132\027\015\063\061\060\061\060\067\062\062\065
\071\065\071\132\060\201\363\061\013\060\011\006\003\125\004\006
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\340\050\017\272\102\343\156\216\367\024\047\223\151\356\221\016
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\135\202\024\223\330\300\344\377\263\120\162\362\166\366\263\135
\102\120\171\320\224\076\153\014\000\276\330\153\016\116\052\354
\076\322\314\202\242\030\145\063\023\167\236\232\135\032\023\330
\303\333\075\310\227\172\356\160\355\247\346\174\333\161\317\055
\224\142\337\155\326\365\070\276\077\245\205\012\031\270\250\330
\011\165\102\160\304\352\357\313\016\310\064\250\022\042\230\014
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\164\056\156\145\164\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
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\060\164\006\013\053\006\001\004\001\365\170\001\003\001\012\060
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\145\147\145\165\040\150\164\164\160\163\072\057\057\167\167\167
\056\143\141\164\143\145\162\164\056\156\145\164\057\166\145\162
\141\162\162\145\154\040\060\015\006\011\052\206\110\206\367\015
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\073\314\071\011\224\136\326\332\357\276\001\133\135\323\036\330
\375\175\117\315\240\101\340\064\223\277\313\342\206\234\067\222
\220\126\034\334\353\051\005\345\304\236\307\065\337\212\014\315
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\176\154\052\113\152\005\105\214\362\041\244\061\220\207\154\145
\234\235\245\140\225\072\122\177\365\321\253\010\156\363\356\133
\371\210\075\176\270\157\156\003\344\102
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
For Server Distrust After: Sat Dec 28 00:00:00 2019
CKA_NSS_SERVER_DISTRUST_AFTER MULTILINE_OCTAL
\061\071\061\062\062\070\060\060\060\060\060\060\132
END
For Email Distrust After: Wed Aug 31 00:00:00 2022
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\062\060\070\063\061\060\060\060\060\060\060\132
END

Trust for "EC-ACC"
Issuer: CN=EC-ACC,OU=Jerarquia Entitats de Certificacio Catalanes,OU=Vegeu https://www.catcert.net/verarrel (c)03,OU=Serveis Publics de Certificacio,O=Agencia Catalana de Certificacio (NIF Q-0801176-I),C=ES
Serial Number:ee:2b:3d:eb:d4:21:de:14:a8:62:ac:04:f3:dd:c4:01
Subject: CN=EC-ACC,OU=Jerarquia Entitats de Certificacio Catalanes,OU=Vegeu https://www.catcert.net/verarrel (c)03,OU=Serveis Publics de Certificacio,O=Agencia Catalana de Certificacio (NIF Q-0801176-I),C=ES
Not Valid Before: Tue Jan 07 23:00:00 2003
Not Valid After : Tue Jan 07 22:59:59 2031
Fingerprint (SHA-256): 88:49:7F:01:60:2F:31:54:24:6A:E2:8C:4D:5A:EF:10:F1:D8:7E:BB:76:62:6F:4A:E0:B7:F9:5B:A7:96:87:99

Fingerprint (SHA1): 28:90:3A:63:5B:52:80:FA:E6:77:4C:0B:6D:A7:D6:BA:A6:4A:F2:E8
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "EC-ACC"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\050\220\072\143\133\122\200\372\346\167\114\013\155\247\326\272
\246\112\362\350
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\151\141\040\103\141\164\141\154\141\156\141\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\050\116\111\106
\040\121\055\060\070\060\061\061\067\066\055\111\051\061\050\060
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\120\165\142\154\151\143\163\040\144\145\040\103\145\162\164\151
\146\151\143\141\143\151\157\061\065\060\063\006\003\125\004\013
\023\054\126\145\147\145\165\040\150\164\164\160\163\072\057\057
\167\167\167\056\143\141\164\143\145\162\164\056\156\145\164\057
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\060\063\006\003\125\004\013\023\054\112\145\162\141\162\161\165
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CKA_SERIAL_NUMBER MULTILINE_OCTAL
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CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Actalis Authentication Root CA"
#
Issuer: CN=Actalis Authentication Root CA,O=Actalis S.p.A./03358520967,L=Milan,C=IT
Serial Number:57:0a:11:97:42:c4:e3:cc
Subject: CN=Actalis Authentication Root CA,O=Actalis S.p.A./03358520967,L=Milan,C=IT
Not Valid Before: Thu Sep 22 11:22:02 2011
Not Valid After : Sun Sep 22 11:22:02 2030

Fingerprint (SHA-256):
55:92:60:84:EC:96:3A:64:B9:6E:2A:BE:01:CE:0B:A8:6A:64:FB:FE:BC:C7:AA:B5:AF:C1:55:B3:7F:D7:60:66
Fingerprint (SHA1): F3:73:B3:87:06:5A:28:84:8A:F2:F3:4A:CE:19:2B:DD:C7:8E:9C:AC
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Actalis Authentication Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\124\061
\016\060\014\006\003\125\004\007\014\005\115\151\154\141\156\061
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\060\071\066\067\061\047\060\045\006\003\125\004\003\014\036\101
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END
CKA_ID UTF8 "0"
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\043\060\041\006\003\125\004\012\014\032\101\143\164\141\154\151
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\060\071\066\067\061\047\060\045\006\003\125\004\003\014\036\101
\143\164\141\154\151\163\040\101\165\164\150\145\156\164\151\143
\141\164\151\157\156\040\122\157\157\164\040\103\101
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\015\001\001\013\005\000\060\153\061\013\060\011\006\003\125\004
\006\023\002\111\124\061\016\060\014\006\003\125\004\007\014\005
\115\151\154\141\156\061\043\060\041\006\003\125\004\012\014\032
\101\143\164\141\154\151\163\040\123\056\160\056\101\056\057\060
\063\063\065\070\065\062\060\071\066\067\061\047\060\045\006\003
\125\004\003\014\036\101\143\164\141\154\151\163\040\101\165\164
\150\145\156\164\151\143\141\164\151\157\156\040\122\157\157\164
\040\103\101\060\036\027\015\061\061\060\071\062\062\061\061\062
\062\060\062\132\027\015\063\060\060\071\062\062\061\061\062\062
\060\062\132\060\153\061\013\060\011\006\003\125\004\006\023\002
\111\124\061\016\060\014\006\003\125\004\007\014\005\115\151\154
\141\156\061\043\060\041\006\003\125\004\012\014\032\101\143\164
\141\154\151\163\040\123\056\160\056\101\056\057\060\063\063\065
\070\065\062\060\071\066\067\061\047\060\045\006\003\125\004\003

\014\036\101\143\164\141\154\151\163\040\101\165\164\150\145\156
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\057\300\104\176\243\016\344\221\315\130\356\334\373\307\036\105
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\050\255\340\212\255\042\264\126\145\216\206\124\217\223\103\051
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\203\153\110\114\304\253\237\200\132\133\072\275\311\247\042\077
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\107\042\104\065\305\314\314\056\216\335\052\355\267\175\146\015
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\257\024\310\133\241\314\211\033\341\060\046\374\240\233\037\201
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\213\131\342\002\254\173\222\320\116\024\117\131\105\366\014\136
\050\137\260\350\077\105\317\317\257\233\157\373\204\323\167\132
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\211\363\173\070\160\224\311\002\002\066\320\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\013
\173\162\207\300\140\246\111\114\210\130\346\035\210\367\024\144
\110\246\330\130\012\016\117\023\065\337\065\035\324\355\006\061
\310\201\076\152\325\335\073\032\062\356\220\075\021\322\056\364
\216\303\143\056\043\146\260\147\276\157\266\300\023\071\140\252

\242\064\045\223\165\122\336\247\235\255\016\207\211\122\161\152
\026\074\031\035\203\370\232\051\145\276\364\077\232\331\360\363
\132\207\041\161\200\115\313\340\070\233\077\273\372\340\060\115
\317\206\323\145\020\031\030\321\227\002\261\053\162\102\150\254
\240\275\116\132\332\030\277\153\230\201\320\375\232\276\136\025
\110\315\021\025\271\300\051\134\264\350\210\367\076\066\256\267
\142\375\036\142\336\160\170\020\034\110\133\332\274\244\070\272
\147\355\125\076\136\127\337\324\003\100\114\201\244\322\117\143
\247\011\102\011\024\374\000\251\302\200\163\117\056\300\100\331
\021\173\110\352\172\002\300\323\353\050\001\046\130\164\301\300
\163\042\155\223\225\375\071\175\273\052\343\366\202\343\054\227
\137\116\037\221\224\372\376\054\243\330\166\032\270\115\262\070
\117\233\372\035\110\140\171\046\342\363\375\251\320\232\350\160
\217\111\172\326\345\275\012\016\333\055\363\215\277\353\343\244
\175\313\307\225\161\350\332\243\174\305\302\370\164\222\004\033
\206\254\244\042\123\100\266\254\376\114\166\317\373\224\062\300
\065\237\166\077\156\345\220\156\240\246\046\242\270\054\276\321
\053\205\375\247\150\310\272\001\053\261\154\164\035\270\163\225
\347\356\267\307\045\360\000\114\000\262\176\266\013\213\034\363
\300\120\236\045\271\340\010\336\066\146\377\067\245\321\273\124
\144\054\311\047\265\113\222\176\145\377\323\055\341\271\116\274
\177\244\101\041\220\101\167\246\071\037\352\236\343\237\320\146
\157\005\354\252\166\176\277\153\026\240\353\265\307\374\222\124
\057\053\021\047\045\067\170\114\121\152\260\363\314\130\135\024
\361\152\110\025\377\302\007\266\261\215\017\216\134\120\106\263
\075\277\001\230\117\262\131\124\107\076\064\173\170\155\126\223
\056\163\352\146\050\170\315\035\024\277\240\217\057\056\270\056
\216\362\024\212\314\351\265\174\373\154\235\014\245\341\226
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Actalis Authentication Root CA"
Issuer: CN=Actalis Authentication Root CA,O=Actalis S.p.A./03358520967,L=Milan,C=IT
Serial Number:57:0a:11:97:42:c4:e3:cc
Subject: CN=Actalis Authentication Root CA,O=Actalis S.p.A./03358520967,L=Milan,C=IT
Not Valid Before: Thu Sep 22 11:22:02 2011
Not Valid After : Sun Sep 22 11:22:02 2030
Fingerprint (SHA-256):
55:92:60:84:EC:96:3A:64:B9:6E:2A:BE:01:CE:0B:A8:6A:64:FB:FE:BC:C7:AA:B5:AF:C1:55:B3:7F:D7:60:66
Fingerprint (SHA1): F3:73:B3:87:06:5A:28:84:8A:F2:F3:4A:CE:19:2B:DD:C7:8E:9C:AC
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Actalis Authentication Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\363\163\263\207\006\132\050\204\212\362\363\112\316\031\053\335
\307\216\234\254
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\151\301\015\117\007\243\033\303\376\126\075\004\274\021\366\246
END
CKA_ISSUER MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\124\061
\016\060\014\006\003\125\004\007\014\005\115\151\154\141\156\061
\043\060\041\006\003\125\004\012\014\032\101\143\164\141\154\151
\163\040\123\056\160\056\101\056\057\060\063\063\065\070\065\062
\060\071\066\067\061\047\060\045\006\003\125\004\003\014\036\101
\143\164\141\154\151\163\040\101\165\164\150\145\156\164\151\143
\141\164\151\157\156\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\127\012\021\227\102\304\343\314
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Buypass Class 2 Root CA"
#
Issuer: CN=Buypass Class 2 Root CA,O=Buypass AS-983163327,C=NO
Serial Number: 2 (0x2)
Subject: CN=Buypass Class 2 Root CA,O=Buypass AS-983163327,C=NO
Not Valid Before: Tue Oct 26 08:38:03 2010
Not Valid After : Fri Oct 26 08:38:03 2040
Fingerprint (SHA-256):
9A:11:40:25:19:7C:5B:B9:5D:94:E6:3D:55:CD:43:79:08:47:B6:46:B2:3C:DF:11:AD:A4:A0:0E:FF:15:FB:48
Fingerprint (SHA1): 49:0A:75:74:DE:87:0A:47:FE:58:EE:F6:C7:6B:EB:C6:0B:12:40:99
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Buypass Class 2 Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"

CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\131\060\202\003\101\240\003\002\001\002\002\001\002
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061\035
\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163\163
\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040\060
\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163\040
\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101\060
\036\027\015\061\060\061\060\062\066\060\070\063\070\060\063\132
\027\015\064\060\061\060\062\066\060\070\063\070\060\063\132\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061\035
\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163\163
\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040\060
\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163\040
\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101\060
\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000
\327\307\136\367\301\007\324\167\373\103\041\364\364\365\151\344
\356\062\001\333\243\206\037\344\131\015\272\347\165\203\122\353
\352\034\141\025\110\273\035\007\312\214\256\260\334\226\235\352
\303\140\222\206\202\050\163\234\126\006\377\113\144\360\014\052
\067\111\265\345\317\014\174\356\361\112\273\163\060\145\363\325
\057\203\266\176\343\347\365\236\253\140\371\323\361\235\222\164
\212\344\034\226\254\133\200\351\265\364\061\207\243\121\374\307
\176\241\157\216\123\167\324\227\301\125\063\222\076\030\057\165
\324\255\206\111\313\225\257\124\006\154\330\006\023\215\133\377
\341\046\031\131\300\044\272\201\161\171\220\104\120\150\044\224
\137\270\263\021\361\051\101\141\243\101\313\043\066\325\301\361
\062\120\020\116\177\364\206\223\354\204\323\216\274\113\277\134
\001\116\007\075\334\024\212\224\012\244\352\163\373\013\121\350
\023\007\030\372\016\361\053\321\124\025\175\074\341\367\264\031
\102\147\142\136\167\340\242\125\354\266\331\151\027\325\072\257
\104\355\112\305\236\344\172\047\174\345\165\327\252\313\045\347
\337\153\012\333\017\115\223\116\250\240\315\173\056\362\131\001
\152\267\015\270\007\201\176\213\070\033\070\346\012\127\231\075
\356\041\350\243\365\014\026\335\213\354\064\216\234\052\034\000
\025\027\215\150\203\322\160\237\030\010\315\021\150\325\311\153
\122\315\304\106\217\334\265\363\330\127\163\036\351\224\071\004

\277\323\336\070\336\264\123\354\151\034\242\176\304\217\344\033
\160\255\362\242\371\373\367\026\144\146\151\237\111\121\242\342
\025\030\147\006\112\177\325\154\265\115\263\063\340\141\353\135
\276\351\230\017\062\327\035\113\074\056\132\001\122\221\011\362
\337\352\215\330\006\100\143\252\021\344\376\303\067\236\024\122
\077\364\342\314\362\141\223\321\375\147\153\327\122\256\277\150
\253\100\103\240\127\065\123\170\360\123\370\141\102\007\144\306
\327\157\233\114\070\015\143\254\142\257\066\213\242\163\012\015
\365\041\275\164\252\115\352\162\003\111\333\307\137\035\142\143
\307\375\335\221\354\063\356\365\155\264\156\060\150\336\310\326
\046\260\165\136\173\264\007\040\230\241\166\062\270\115\154\117
\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\311\200\167\340\142\222\202\365\106\234\363
\272\367\114\303\336\270\243\255\071\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\002\001\000\123\137\041
\365\272\260\072\122\071\054\222\260\154\000\311\357\316\040\357
\006\362\226\236\351\244\164\177\172\026\374\267\365\266\373\025
\033\077\253\246\300\162\135\020\261\161\356\274\117\343\255\254
\003\155\056\161\056\257\304\343\255\243\275\014\021\247\264\377
\112\262\173\020\020\037\247\127\101\262\300\256\364\054\131\326
\107\020\210\363\041\121\051\060\312\140\206\257\106\253\035\355
\072\133\260\224\336\104\343\101\010\242\301\354\035\326\375\117
\266\326\107\320\024\013\312\346\312\265\173\167\176\101\037\136
\203\307\266\214\071\226\260\077\226\201\101\157\140\220\342\350
\371\373\042\161\331\175\263\075\106\277\264\204\257\220\034\017
\217\022\152\257\357\356\036\172\256\002\112\212\027\053\166\376
\254\124\211\044\054\117\077\266\262\247\116\214\250\221\227\373
\051\306\173\134\055\271\313\146\266\267\250\133\022\121\205\265
\011\176\142\170\160\376\251\152\140\266\035\016\171\014\375\312
\352\044\200\162\303\227\077\362\167\253\103\042\012\307\353\266
\014\204\202\054\200\153\101\212\010\300\353\245\153\337\231\022
\313\212\325\136\200\014\221\340\046\010\066\110\305\372\070\021
\065\377\045\203\055\362\172\277\332\375\216\376\245\313\105\054
\037\304\210\123\256\167\016\331\232\166\305\216\054\035\243\272
\325\354\062\256\300\252\254\367\321\172\115\353\324\007\342\110
\367\042\216\260\244\237\152\316\216\262\262\140\364\243\042\320
\043\353\224\132\172\151\335\017\277\100\127\254\153\131\120\331
\243\231\341\156\376\215\001\171\047\043\025\336\222\235\173\011
\115\132\347\113\110\060\132\030\346\012\155\346\217\340\322\273
\346\337\174\156\041\202\301\150\071\115\264\230\130\146\142\314
\112\220\136\303\372\047\004\261\171\025\164\231\314\276\255\040
\336\046\140\034\353\126\121\246\243\352\344\243\077\247\377\141
\334\361\132\115\154\062\043\103\356\254\250\356\356\112\022\011
\074\135\161\302\276\171\372\302\207\150\035\013\375\134\151\314
\006\320\232\175\124\231\052\311\071\032\031\257\113\052\103\363
\143\135\132\130\342\057\343\035\344\251\326\320\012\320\236\277

\327\201\011\361\311\307\046\015\254\230\026\126\240
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Buypass Class 2 Root CA"
Issuer: CN=Buypass Class 2 Root CA,O=Buypass AS-983163327,C=NO
Serial Number: 2 (0x2)
Subject: CN=Buypass Class 2 Root CA,O=Buypass AS-983163327,C=NO
Not Valid Before: Tue Oct 26 08:38:03 2010
Not Valid After : Fri Oct 26 08:38:03 2040
Fingerprint (SHA-256):
9A:11:40:25:19:7C:5B:B9:5D:94:E6:3D:55:CD:43:79:08:47:B6:46:B2:3C:DF:11:AD:A4:A0:0E:FF:15:FB:48
Fingerprint (SHA1): 49:0A:75:74:DE:87:0A:47:FE:58:EE:F6:C7:6B:EB:C6:0B:12:40:99
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Buypass Class 2 Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\111\012\165\164\336\207\012\107\376\130\356\366\307\153\353\306
\013\022\100\231
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\106\247\322\376\105\373\144\132\250\131\220\233\170\104\233\051
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Buypass Class 3 Root CA"
#
Issuer: CN=Buypass Class 3 Root CA,O=Buypass AS-983163327,C=NO
Serial Number: 2 (0x2)
Subject: CN=Buypass Class 3 Root CA,O=Buypass AS-983163327,C=NO

Not Valid Before: Tue Oct 26 08:28:58 2010
Not Valid After : Fri Oct 26 08:28:58 2040
Fingerprint (SHA-256):
ED:F7:EB:BC:A2:7A:2A:38:4D:38:7B:7D:40:10:C6:66:E2:ED:B4:84:3E:4C:29:B4:AE:1D:5B:93:32:E6:B2:4D
Fingerprint (SHA1): DA:FA:F7:FA:66:84:EC:06:8F:14:50:BD:C7:C2:81:A5:BC:A9:64:57
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Buypass Class 3 Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\131\060\202\003\101\240\003\002\001\002\002\001\002
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061\035
\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163\163
\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040\060
\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163\040
\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101\060
\036\027\015\061\060\061\060\062\066\060\070\062\070\065\070\132
\027\015\064\060\061\060\062\066\060\070\062\070\065\070\132\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061\035
\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163\163
\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040\060
\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163\040
\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101\060
\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000
\245\332\012\225\026\120\343\225\362\136\235\166\061\006\062\172
\233\361\020\166\270\000\232\265\122\066\315\044\107\260\237\030

\144\274\232\366\372\325\171\330\220\142\114\042\057\336\070\075
\326\340\250\351\034\054\333\170\021\351\216\150\121\025\162\307
\363\063\207\344\240\135\013\134\340\127\007\052\060\365\315\304
\067\167\050\115\030\221\346\277\325\122\375\161\055\160\076\347
\306\304\212\343\360\050\013\364\166\230\241\213\207\125\262\072
\023\374\267\076\047\067\216\042\343\250\117\052\357\140\273\075
\267\071\303\016\001\107\231\135\022\117\333\103\372\127\241\355
\371\235\276\021\107\046\133\023\230\253\135\026\212\260\067\034
\127\235\105\377\210\226\066\277\273\312\007\173\157\207\143\327
\320\062\152\326\135\154\014\361\263\156\071\342\153\061\056\071
\000\047\024\336\070\300\354\031\146\206\022\350\235\162\026\023
\144\122\307\251\067\034\375\202\060\355\204\030\035\364\256\134
\377\160\023\000\353\261\365\063\172\113\326\125\370\005\215\113
\151\260\365\263\050\066\134\024\304\121\163\115\153\013\361\064
\007\333\027\071\327\334\050\173\153\365\237\363\056\301\117\027
\052\020\363\314\312\350\353\375\153\253\056\232\237\055\202\156
\004\324\122\001\223\055\075\206\374\176\374\337\357\102\035\246
\153\357\271\040\306\367\275\240\247\225\375\247\346\211\044\330
\314\214\064\154\342\043\057\331\022\032\041\271\125\221\157\013
\221\171\031\014\255\100\210\013\160\342\172\322\016\330\150\110
\273\202\023\071\020\130\351\330\052\007\306\022\333\130\333\322
\073\125\020\107\005\025\147\142\176\030\143\246\106\077\011\016
\124\062\136\277\015\142\172\047\357\200\350\333\331\113\006\132
\067\132\045\320\010\022\167\324\157\011\120\227\075\310\035\303
\337\214\105\060\126\306\323\144\253\146\363\300\136\226\234\303
\304\357\303\174\153\213\072\171\177\263\111\317\075\342\211\237
\240\060\113\205\271\234\224\044\171\217\175\153\251\105\150\017
\053\320\361\332\034\313\151\270\312\111\142\155\310\320\143\142
\335\140\017\130\252\217\241\274\005\245\146\242\317\033\166\262
\204\144\261\114\071\122\300\060\272\360\214\113\002\260\266\267
\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\107\270\315\377\345\157\356\370\262\354\057
\116\016\371\045\260\216\074\153\303\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\002\001\000\000\040\043
\101\065\004\220\302\100\142\140\357\342\065\114\327\077\254\342
\064\220\270\241\157\166\372\026\026\244\110\067\054\351\220\302
\362\074\370\012\237\330\201\345\273\133\332\045\054\244\247\125
\161\044\062\366\310\013\362\274\152\370\223\254\262\007\302\137
\237\333\314\310\212\252\276\152\157\341\111\020\314\061\327\200
\273\273\310\330\242\016\144\127\352\242\365\302\251\061\025\322
\040\152\354\374\042\001\050\317\206\270\200\036\251\314\021\245
\074\362\026\263\107\235\374\322\200\041\304\313\320\107\160\101
\241\312\203\031\010\054\155\362\135\167\234\212\024\023\324\066
\034\222\360\345\006\067\334\246\346\220\233\070\217\134\153\033
\106\206\103\102\137\076\001\007\123\124\135\145\175\367\212\163
\241\232\124\132\037\051\103\024\047\302\205\017\265\210\173\032

\073\224\267\035\140\247\265\234\347\051\151\127\132\233\223\172
\103\060\033\003\327\142\310\100\246\252\374\144\344\112\327\221
\123\001\250\040\210\156\234\137\104\271\313\140\201\064\354\157
\323\175\332\110\137\353\264\220\274\055\251\034\013\254\034\325
\242\150\040\200\004\326\374\261\217\057\273\112\061\015\112\206
\034\353\342\066\051\046\365\332\330\304\362\165\141\317\176\256
\166\143\112\172\100\145\223\207\370\036\200\214\206\345\206\326
\217\016\374\123\054\140\350\026\141\032\242\076\103\173\315\071
\140\124\152\365\362\211\046\001\150\203\110\242\063\350\311\004
\221\262\021\064\021\076\352\320\103\031\037\003\223\220\014\377
\121\075\127\364\101\156\341\313\240\276\353\311\143\315\155\314
\344\370\066\252\150\235\355\275\135\227\160\104\015\266\016\065
\334\341\014\135\273\240\121\224\313\176\026\353\021\057\243\222
\105\310\114\161\331\274\311\231\122\127\106\057\120\317\275\065
\151\364\075\025\316\006\245\054\017\076\366\201\272\224\273\303
\273\277\145\170\322\206\171\377\111\073\032\203\014\360\336\170
\354\310\362\115\114\032\336\202\051\370\301\132\332\355\356\346
\047\136\350\105\320\235\034\121\250\150\253\104\343\320\213\152
\343\370\073\273\334\115\327\144\362\121\276\346\252\253\132\351
\061\356\006\274\163\277\023\142\012\237\307\271\227
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Buypass Class 3 Root CA"
Issuer: CN=Buypass Class 3 Root CA,O=Buypass AS-983163327,C=NO
Serial Number: 2 (0x2)
Subject: CN=Buypass Class 3 Root CA,O=Buypass AS-983163327,C=NO
Not Valid Before: Tue Oct 26 08:28:58 2010
Not Valid After : Fri Oct 26 08:28:58 2040
Fingerprint (SHA-256):
ED:F7:EB:BC:A2:7A:2A:38:4D:38:7B:7D:40:10:C6:66:E2:ED:B4:84:3E:4C:29:B4:AE:1D:5B:93:32:E6:B2:4D
Fingerprint (SHA1): DA:FA:F7:FA:66:84:EC:06:8F:14:50:BD:C7:C2:81:A5:BC:A9:64:57
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Buypass Class 3 Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\332\372\367\372\146\204\354\006\217\024\120\275\307\302\201\245
\274\251\144\127
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\075\073\030\236\054\144\132\350\325\210\316\016\371\067\302\354
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061

\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "T-TeleSec GlobalRoot Class 3"
#
Issuer: CN=T-TeleSec GlobalRoot Class 3,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Serial Number: 1 (0x1)
Subject: CN=T-TeleSec GlobalRoot Class 3,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Not Valid Before: Wed Oct 01 10:29:56 2008
Not Valid After : Sat Oct 01 23:59:59 2033
Fingerprint (SHA-256):
FD:73:DA:D3:1C:64:4F:F1:B4:3B:EF:0C:CD:DA:96:71:0B:9C:D9:87:5E:CA:7E:31:70:7A:F3:E9:6D:52:2B:BD
Fingerprint (SHA1): 55:A6:72:3E:CB:F2:EC:CD:C3:23:74:70:19:9D:2A:BE:11:E3:81:D1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "T-TeleSec GlobalRoot Class 3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040

\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\303\060\202\002\253\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163\164
\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040\123
\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060\035
\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155\163
\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045\060
\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123\145
\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154\141
\163\163\040\063\060\036\027\015\060\070\061\060\060\061\061\060
\062\071\065\066\132\027\015\063\063\061\060\060\061\062\063\065
\071\065\071\132\060\201\202\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\053\060\051\006\003\125\004\012\014\042\124
\055\123\171\163\164\145\155\163\040\105\156\164\145\162\160\162
\151\163\145\040\123\145\162\166\151\143\145\163\040\107\155\142
\110\061\037\060\035\006\003\125\004\013\014\026\124\055\123\171
\163\164\145\155\163\040\124\162\165\163\164\040\103\145\156\164
\145\162\061\045\060\043\006\003\125\004\003\014\034\124\055\124
\145\154\145\123\145\143\040\107\154\157\142\141\154\122\157\157
\164\040\103\154\141\163\163\040\063\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\275\165\223\360\142\042
\157\044\256\340\172\166\254\175\275\331\044\325\270\267\374\315
\360\102\340\353\170\210\126\136\233\232\124\035\115\014\212\366
\323\317\160\364\122\265\330\223\004\343\106\206\161\101\112\053
\360\052\054\125\003\326\110\303\340\071\070\355\362\134\074\077
\104\274\223\075\141\253\116\315\015\276\360\040\047\130\016\104
\177\004\032\207\245\327\226\024\066\220\320\111\173\241\165\373
\032\153\163\261\370\316\251\011\054\362\123\325\303\024\104\270
\206\245\366\213\053\071\332\243\063\124\331\372\162\032\367\042
\025\034\210\221\153\177\146\345\303\152\200\260\044\363\337\206
\105\210\375\031\177\165\207\037\037\261\033\012\163\044\133\271
\145\340\054\124\310\140\323\146\027\077\341\314\124\063\163\221
\002\072\246\177\173\166\071\242\037\226\266\070\256\265\310\223
\164\035\236\271\264\345\140\235\057\126\321\340\353\136\133\114
\022\160\014\154\104\040\253\021\330\364\031\366\322\234\122\067

\347\372\266\302\061\073\112\324\024\231\255\307\032\365\135\137
\372\007\270\174\015\037\326\203\036\263\002\003\001\000\001\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\265
\003\367\166\073\141\202\152\022\252\030\123\353\003\041\224\277
\376\316\312\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\126\075\357\224\325\275\332\163\262
\130\276\256\220\255\230\047\227\376\001\261\260\122\000\270\115
\344\033\041\164\033\176\300\356\136\151\052\045\257\134\326\035
\332\322\171\311\363\227\051\340\206\207\336\004\131\017\361\131
\324\144\205\113\231\257\045\004\036\311\106\251\227\336\202\262
\033\160\237\234\366\257\161\061\335\173\005\245\054\323\271\312
\107\366\312\362\366\347\255\271\110\077\274\026\267\301\155\364
\352\011\257\354\363\265\347\005\236\246\036\212\123\121\326\223
\201\314\164\223\366\271\332\246\045\005\164\171\132\176\100\076
\202\113\046\021\060\156\341\077\101\307\107\000\065\325\365\323
\367\124\076\201\075\332\111\152\232\263\357\020\075\346\353\157
\321\310\042\107\313\314\317\001\061\222\331\030\343\042\276\011
\036\032\076\132\262\344\153\014\124\172\175\103\116\270\211\245
\173\327\242\075\226\206\314\362\046\064\055\152\222\235\232\032
\320\060\342\135\116\004\260\137\213\040\176\167\301\075\225\202
\321\106\232\073\074\170\270\157\241\320\015\144\242\170\036\051
\116\223\303\244\124\024\133
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "T-TeleSec GlobalRoot Class 3"
Issuer: CN=T-TeleSec GlobalRoot Class 3,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Serial Number: 1 (0x1)
Subject: CN=T-TeleSec GlobalRoot Class 3,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Not Valid Before: Wed Oct 01 10:29:56 2008
Not Valid After : Sat Oct 01 23:59:59 2033
Fingerprint (SHA-256):
FD:73:DA:D3:1C:64:4F:F1:B4:3B:EF:0C:CD:DA:96:71:0B:9C:D9:87:5E:CA:7E:31:70:7A:F3:E9:6D:52:2B:BD
Fingerprint (SHA1): 55:A6:72:3E:CB:F2:EC:CD:C3:23:74:70:19:9D:2A:BE:11:E3:81:D1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "T-TeleSec GlobalRoot Class 3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\125\246\162\076\313\362\354\315\303\043\164\160\031\235\052\276
\021\343\201\321

END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\312\373\100\250\116\071\222\212\035\376\216\057\304\047\352\357
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST Root Class 3 CA 2 2009"
#
Issuer: CN=D-TRUST Root Class 3 CA 2 2009,O=D-Trust GmbH,C=DE
Serial Number: 623603 (0x983f3)
Subject: CN=D-TRUST Root Class 3 CA 2 2009,O=D-Trust GmbH,C=DE
Not Valid Before: Thu Nov 05 08:35:58 2009
Not Valid After : Mon Nov 05 08:35:58 2029
Fingerprint (SHA-256):
49:E7:A4:42:AC:F0:EA:62:87:05:00:54:B5:25:64:B6:50:E4:F4:9E:42:E3:48:D6:AA:38:E0:39:E9:57:B1:C1
Fingerprint (SHA1): 58:E8:AB:B0:36:15:33:FB:80:F7:9B:1B:6D:29:D3:FF:8D:5F:00:F0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA 2 2009"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003\014
\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071
END
CKA_ID UTF8 "0"

CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003\014
\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\011\203\363
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\063\060\202\003\033\240\003\002\001\002\002\003\011
\203\363\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165
\163\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003
\014\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103
\154\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071
\060\036\027\015\060\071\061\061\060\065\060\070\063\065\065\070
\132\027\015\062\071\061\061\060\065\060\070\063\065\065\070\132
\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003\014
\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071\060
\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000
\323\262\112\317\172\107\357\165\233\043\372\072\057\326\120\105
\211\065\072\306\153\333\376\333\000\150\250\340\003\021\035\067
\120\010\237\115\112\150\224\065\263\123\321\224\143\247\040\126
\257\336\121\170\354\052\075\363\110\110\120\076\012\337\106\125
\213\047\155\303\020\115\015\221\122\103\330\207\340\135\116\066
\265\041\312\137\071\100\004\137\133\176\314\243\306\053\251\100
\036\331\066\204\326\110\363\222\036\064\106\040\044\301\244\121
\216\112\032\357\120\077\151\135\031\177\105\303\307\001\217\121
\311\043\350\162\256\264\274\126\011\177\022\313\034\261\257\051
\220\012\311\125\314\017\323\264\032\355\107\065\132\112\355\234
\163\004\041\320\252\275\014\023\265\000\312\046\154\304\153\014
\224\132\225\224\332\120\232\361\377\245\053\146\061\244\311\070
\240\337\035\037\270\011\056\363\247\350\147\122\253\225\037\340
\106\076\330\244\303\312\132\305\061\200\350\110\232\237\224\151
\376\031\335\330\163\174\201\312\226\336\216\355\263\062\005\145
\204\064\346\346\375\127\020\265\137\166\277\057\260\020\015\305
\002\003\001\000\001\243\202\001\032\060\202\001\026\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035
\006\003\125\035\016\004\026\004\024\375\332\024\304\237\060\336
\041\275\036\102\071\374\253\143\043\111\340\361\204\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\201\323

\006\003\125\035\037\004\201\313\060\201\310\060\201\200\240\176
\240\174\206\172\154\144\141\160\072\057\057\144\151\162\145\143
\164\157\162\171\056\144\055\164\162\165\163\164\056\156\145\164
\057\103\116\075\104\055\124\122\125\123\124\045\062\060\122\157
\157\164\045\062\060\103\154\141\163\163\045\062\060\063\045\062
\060\103\101\045\062\060\062\045\062\060\062\060\060\071\054\117
\075\104\055\124\162\165\163\164\045\062\060\107\155\142\110\054
\103\075\104\105\077\143\145\162\164\151\146\151\143\141\164\145
\162\145\166\157\143\141\164\151\157\156\154\151\163\164\060\103
\240\101\240\077\206\075\150\164\164\160\072\057\057\167\167\167
\056\144\055\164\162\165\163\164\056\156\145\164\057\143\162\154
\057\144\055\164\162\165\163\164\137\162\157\157\164\137\143\154
\141\163\163\137\063\137\143\141\137\062\137\062\060\060\071\056
\143\162\154\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\177\227\333\060\310\337\244\234\175
\041\172\200\160\316\024\022\151\210\024\225\140\104\001\254\262
\351\060\117\233\120\302\146\330\176\215\060\265\160\061\351\342
\151\307\363\160\333\040\025\206\320\015\360\276\254\001\165\204
\316\176\237\115\277\267\140\073\234\363\312\035\342\136\150\330
\243\235\227\345\100\140\322\066\041\376\320\264\270\027\332\164
\243\177\324\337\260\230\002\254\157\153\153\054\045\044\162\241
\145\356\045\132\345\346\062\347\362\337\253\111\372\363\220\151
\043\333\004\331\347\134\130\374\145\324\227\276\314\374\056\012
\314\045\052\065\004\370\140\221\025\165\075\101\377\043\037\031
\310\154\353\202\123\004\246\344\114\042\115\215\214\272\316\133
\163\354\144\124\120\155\321\234\125\373\151\303\066\303\214\274
\074\205\246\153\012\046\015\340\223\230\140\256\176\306\044\227
\212\141\137\221\216\146\222\011\207\066\315\213\233\055\076\366
\121\324\120\324\131\050\275\203\362\314\050\173\123\206\155\330
\046\210\160\327\352\221\315\076\271\312\300\220\156\132\306\136
\164\145\327\134\376\243\342
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST Root Class 3 CA 2 2009"
Issuer: CN=D-TRUST Root Class 3 CA 2 2009,O=D-Trust GmbH,C=DE
Serial Number: 623603 (0x983f3)
Subject: CN=D-TRUST Root Class 3 CA 2 2009,O=D-Trust GmbH,C=DE
Not Valid Before: Thu Nov 05 08:35:58 2009
Not Valid After : Mon Nov 05 08:35:58 2029
Fingerprint (SHA-256):
49:E7:A4:42:AC:F0:EA:62:87:05:00:54:B5:25:64:B6:50:E4:F4:9E:42:E3:48:D6:AA:38:E0:39:E9:57:B1:C1
Fingerprint (SHA1): 58:E8:AB:B0:36:15:33:FB:80:F7:9B:1B:6D:29:D3:FF:8D:5F:00:F0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA 2 2009"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\130\350\253\260\066\025\063\373\200\367\233\033\155\051\323\377
\215\137\000\360
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\315\340\045\151\215\107\254\234\211\065\220\367\375\121\075\057
END
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003\014
\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\011\203\363
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST Root Class 3 CA 2 EV 2009"
#
Issuer: CN=D-TRUST Root Class 3 CA 2 EV 2009,O=D-Trust GmbH,C=DE
Serial Number: 623604 (0x983f4)
Subject: CN=D-TRUST Root Class 3 CA 2 EV 2009,O=D-Trust GmbH,C=DE
Not Valid Before: Thu Nov 05 08:50:46 2009
Not Valid After : Mon Nov 05 08:50:46 2029
Fingerprint (SHA-256):
EE:C5:49:6B:98:8C:E9:86:25:B9:34:09:2E:EC:29:08:BE:D0:B0:F3:16:C2:D4:73:0C:84:EA:F1:F3:D3:48:81
Fingerprint (SHA1): 96:C9:1B:0B:95:B4:10:98:42:FA:D0:D8:22:79:FE:60:FA:B9:16:83
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA 2 EV 2009"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\052\060\050\006\003\125\004\003\014
\041\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\105\126\040\062\060
\060\071

END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\052\060\050\006\003\125\004\003\014
\041\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\105\126\040\062\060
\060\071
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\011\203\364
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\103\060\202\003\053\240\003\002\001\002\002\003\011
\203\364\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\120\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165
\163\164\040\107\155\142\110\061\052\060\050\006\003\125\004\003
\014\041\104\055\124\122\125\123\124\040\122\157\157\164\040\103
\154\141\163\163\040\063\040\103\101\040\062\040\105\126\040\062
\060\060\071\060\036\027\015\060\071\061\061\060\065\060\070\065
\060\064\066\132\027\015\062\071\061\061\060\065\060\070\065\060
\064\066\132\060\120\061\013\060\011\006\003\125\004\006\023\002
\104\105\061\025\060\023\006\003\125\004\012\014\014\104\055\124
\162\165\163\164\040\107\155\142\110\061\052\060\050\006\003\125
\004\003\014\041\104\055\124\122\125\123\124\040\122\157\157\164
\040\103\154\141\163\163\040\063\040\103\101\040\062\040\105\126
\040\062\060\060\071\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\231\361\204\064\160\272\057\267\060\240
\216\275\174\004\317\276\142\274\231\375\202\227\322\172\012\147
\226\070\011\366\020\116\225\042\163\231\215\332\025\055\347\005
\374\031\163\042\267\216\230\000\274\074\075\254\241\154\373\326
\171\045\113\255\360\314\144\332\210\076\051\270\017\011\323\064
\335\063\365\142\321\341\315\031\351\356\030\117\114\130\256\342
\036\326\014\133\025\132\330\072\270\304\030\144\036\343\063\262
\265\211\167\116\014\277\331\224\153\023\227\157\022\243\376\231
\251\004\314\025\354\140\150\066\355\010\173\267\365\277\223\355
\146\061\203\214\306\161\064\207\116\027\352\257\213\221\215\034
\126\101\256\042\067\136\067\362\035\331\321\055\015\057\151\121
\247\276\146\246\212\072\052\275\307\032\261\341\024\360\276\072
\035\271\317\133\261\152\376\264\261\106\040\242\373\036\073\160
\357\223\230\175\214\163\226\362\305\357\205\160\255\051\046\374
\036\004\076\034\240\330\017\313\122\203\142\174\356\213\123\225
\220\251\127\242\352\141\005\330\371\115\304\047\372\156\255\355
\371\327\121\367\153\245\002\003\001\000\001\243\202\001\044\060
\202\001\040\060\017\006\003\125\035\023\001\001\377\004\005\060

\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\323
\224\212\114\142\023\052\031\056\314\257\162\212\175\066\327\232
\034\334\147\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\201\335\006\003\125\035\037\004\201\325\060\201
\322\060\201\207\240\201\204\240\201\201\206\177\154\144\141\160
\072\057\057\144\151\162\145\143\164\157\162\171\056\144\055\164
\162\165\163\164\056\156\145\164\057\103\116\075\104\055\124\122
\125\123\124\045\062\060\122\157\157\164\045\062\060\103\154\141
\163\163\045\062\060\063\045\062\060\103\101\045\062\060\062\045
\062\060\105\126\045\062\060\062\060\060\071\054\117\075\104\055
\124\162\165\163\164\045\062\060\107\155\142\110\054\103\075\104
\105\077\143\145\162\164\151\146\151\143\141\164\145\162\145\166
\157\143\141\164\151\157\156\154\151\163\164\060\106\240\104\240
\102\206\100\150\164\164\160\072\057\057\167\167\167\056\144\055
\164\162\165\163\164\056\156\145\164\057\143\162\154\057\144\055
\164\162\165\163\164\137\162\157\157\164\137\143\154\141\163\163
\137\063\137\143\141\137\062\137\145\166\137\062\060\060\071\056
\143\162\154\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\064\355\173\132\074\244\224\210\357
\032\021\165\007\057\263\376\074\372\036\121\046\353\207\366\051
\336\340\361\324\306\044\011\351\301\317\125\033\264\060\331\316
\032\376\006\121\246\025\244\055\357\262\113\277\040\050\045\111
\321\246\066\167\064\350\144\337\122\261\021\307\163\172\315\071
\236\302\255\214\161\041\362\132\153\257\337\074\116\125\257\262
\204\145\024\211\271\167\313\052\061\276\317\243\155\317\157\110
\224\062\106\157\347\161\214\240\246\204\031\067\007\362\003\105
\011\053\206\165\174\337\137\151\127\000\333\156\330\246\162\042
\113\120\324\165\230\126\337\267\030\377\103\103\120\256\172\104
\173\360\171\121\327\103\075\247\323\201\323\360\311\117\271\332
\306\227\206\320\202\303\344\102\155\376\260\342\144\116\016\046
\347\100\064\046\265\010\211\327\010\143\143\070\047\165\036\063
\352\156\250\335\237\231\117\164\115\201\211\200\113\335\232\227
\051\134\057\276\201\101\271\214\377\352\175\140\006\236\315\327
\075\323\056\243\025\274\250\346\046\345\157\303\334\270\003\041
\352\237\026\361\054\124\265
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST Root Class 3 CA 2 EV 2009"
Issuer: CN=D-TRUST Root Class 3 CA 2 EV 2009,O=D-Trust GmbH,C=DE
Serial Number: 623604 (0x983f4)
Subject: CN=D-TRUST Root Class 3 CA 2 EV 2009,O=D-Trust GmbH,C=DE
Not Valid Before: Thu Nov 05 08:50:46 2009
Not Valid After : Mon Nov 05 08:50:46 2029
Fingerprint (SHA-256):
EE:C5:49:6B:98:8C:E9:86:25:B9:34:09:2E:EC:29:08:BE:D0:B0:F3:16:C2:D4:73:0C:84:EA:F1:F3:D3:48:81

Fingerprint (SHA1): 96:C9:1B:0B:95:B4:10:98:42:FA:D0:D8:22:79:FE:60:FA:B9:16:83
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA 2 EV 2009"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\226\311\033\013\225\264\020\230\102\372\320\330\042\171\376\140
\372\271\026\203
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\252\306\103\054\136\055\315\304\064\300\120\117\021\002\117\266
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\052\060\050\006\003\125\004\003\014
\041\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\105\126\040\062\060
\060\071
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\011\203\364
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "CA Disig Root R2"
#
Issuer: CN=CA Disig Root R2,O=Disig a.s.,L=Bratislava,C=SK
Serial Number:00:92:b8:88:db:b0:8a:c1:63
Subject: CN=CA Disig Root R2,O=Disig a.s.,L=Bratislava,C=SK
Not Valid Before: Thu Jul 19 09:15:30 2012
Not Valid After : Sat Jul 19 09:15:30 2042
Fingerprint (SHA-256):
E2:3D:4A:03:6D:7B:70:E9:F5:95:B1:42:20:79:D2:B9:1E:DF:BB:1F:B6:51:A0:63:3E:AA:8A:9D:C5:F8:07:03
Fingerprint (SHA1): B5:61:EB:EA:A4:DE:E4:25:4B:69:1A:98:A5:57:47:C2:34:C7:D9:71
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CA Disig Root R2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\123\113\061

\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\031\060\027\006\003\125
\004\003\023\020\103\101\040\104\151\163\151\147\040\122\157\157
\164\040\122\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\031\060\027\006\003\125
\004\003\023\020\103\101\040\104\151\163\151\147\040\122\157\157
\164\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\222\270\210\333\260\212\301\143
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\151\060\202\003\121\240\003\002\001\002\002\011\000
\222\270\210\333\260\212\301\143\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\122\061\013\060\011\006\003\125
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CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "CA Disig Root R2"
Issuer: CN=CA Disig Root R2,O=Disig a.s.,L=Bratislava,C=SK
Serial Number:00:92:b8:88:db:b0:8a:c1:63
Subject: CN=CA Disig Root R2,O=Disig a.s.,L=Bratislava,C=SK
Not Valid Before: Thu Jul 19 09:15:30 2012
Not Valid After : Sat Jul 19 09:15:30 2042
Fingerprint (SHA-256):
E2:3D:4A:03:6D:7B:70:E9:F5:95:B1:42:20:79:D2:B9:1E:DF:BB:1F:B6:51:A0:63:3E:AA:8A:9D:C5:F8:07:03
Fingerprint (SHA1): B5:61:EB:EA:A4:DE:E4:25:4B:69:1A:98:A5:57:47:C2:34:C7:D9:71
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CA Disig Root R2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\265\141\353\352\244\336\344\045\113\151\032\230\245\127\107\302
\064\307\331\161
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\046\001\373\330\047\247\027\232\105\124\070\032\103\001\073\003
END
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\031\060\027\006\003\125
\004\003\023\020\103\101\040\104\151\163\151\147\040\122\157\157
\164\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\222\270\210\333\260\212\301\143
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ACCVRAIZ1"
#
Issuer: C=ES,O=ACCV,OU=PKIACCV,CN=ACCVRAIZ1
Serial Number:5e:c3:b7:a6:43:7f:a4:e0
Subject: C=ES,O=ACCV,OU=PKIACCV,CN=ACCVRAIZ1
Not Valid Before: Thu May 05 09:37:37 2011
Not Valid After : Tue Dec 31 09:37:37 2030
Fingerprint (SHA-256):
9A:6E:C0:12:E1:A7:DA:9D:BE:34:19:4D:47:8A:D7:C0:DB:18:22:FB:07:1D:F1:29:81:49:6E:D1:04:38:41:13
Fingerprint (SHA1): 93:05:7A:88:15:C6:4F:CE:88:2F:FA:91:16:52:28:78:BC:53:64:17
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ACCVRAIZ1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\102\061\022\060\020\006\003\125\004\003\014\011\101\103\103
\126\122\101\111\132\061\061\020\060\016\006\003\125\004\013\014
\007\120\113\111\101\103\103\126\061\015\060\013\006\003\125\004
\012\014\004\101\103\103\126\061\013\060\011\006\003\125\004\006
\023\002\105\123
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
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\126\122\101\111\132\061\061\020\060\016\006\003\125\004\013\014
\007\120\113\111\101\103\103\126\061\015\060\013\006\003\125\004
\012\014\004\101\103\103\126\061\013\060\011\006\003\125\004\006
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END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
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END
CKA_VALUE MULTILINE_OCTAL
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\060\065\060\065\060\071\063\067\063\067\132\027\015\063\060\061

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\325\260\355\216\075\234\052\300\015\330\075\146\343\074\015\275

\325\224\134\342\342\247\065\033\004\000\366\077\132\215\352\103
\275\137\211\035\251\301\260\314\231\342\115\000\012\332\311\047
\133\347\023\220\134\344\365\063\242\125\155\334\340\011\115\057
\261\046\133\047\165\000\011\304\142\167\051\010\137\236\131\254
\266\176\255\237\124\060\042\003\301\036\161\144\376\371\070\012
\226\030\335\002\024\254\043\313\006\034\036\244\175\215\015\336
\047\101\350\255\332\025\267\260\043\335\053\250\323\332\045\207
\355\350\125\104\115\210\364\066\176\204\232\170\254\367\016\126
\111\016\326\063\045\326\204\120\102\154\040\022\035\052\325\276
\274\362\160\201\244\160\140\276\005\265\233\236\004\104\276\141
\043\254\351\245\044\214\021\200\224\132\242\242\271\111\322\301
\334\321\247\355\061\021\054\236\031\246\356\341\125\341\300\352
\317\015\204\344\027\267\242\174\245\336\125\045\006\356\314\300
\207\134\100\332\314\225\077\125\340\065\307\270\204\276\264\135
\315\172\203\001\162\356\207\346\137\035\256\265\205\306\046\337
\346\301\232\351\036\002\107\237\052\250\155\251\133\317\354\105
\167\177\230\047\232\062\135\052\343\204\356\305\230\146\057\226
\040\035\335\330\303\047\327\260\371\376\331\175\315\320\237\217
\013\024\130\121\237\057\213\303\070\055\336\350\217\326\215\207
\244\365\126\103\026\231\054\364\244\126\264\064\270\141\067\311
\302\130\200\033\240\227\241\374\131\215\351\021\366\321\017\113
\125\064\106\052\213\206\073
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ACCVRAIZ1"
Issuer: C=ES,O=ACCV,OU=PKIACCV,CN=ACCVRAIZ1
Serial Number:5e:c3:b7:a6:43:7f:a4:e0
Subject: C=ES,O=ACCV,OU=PKIACCV,CN=ACCVRAIZ1
Not Valid Before: Thu May 05 09:37:37 2011
Not Valid After : Tue Dec 31 09:37:37 2030
Fingerprint (SHA-256):
9A:6E:C0:12:E1:A7:DA:9D:BE:34:19:4D:47:8A:D7:C0:DB:18:22:FB:07:1D:F1:29:81:49:6E:D1:04:38:41:13
Fingerprint (SHA1): 93:05:7A:88:15:C6:4F:CE:88:2F:FA:91:16:52:28:78:BC:53:64:17
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ACCVRAIZ1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\223\005\172\210\025\306\117\316\210\057\372\221\026\122\050\170
\274\123\144\027
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\320\240\132\356\005\266\011\224\041\241\175\361\262\051\202\002
END

CKA_ISSUER MULTILINE_OCTAL
\060\102\061\022\060\020\006\003\125\004\003\014\011\101\103\103
\126\122\101\111\132\061\061\020\060\016\006\003\125\004\013\014
\007\120\113\111\101\103\103\126\061\015\060\013\006\003\125\004
\012\014\004\101\103\103\126\061\013\060\011\006\003\125\004\006
\023\002\105\123
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\136\303\267\246\103\177\244\340
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TWCA Global Root CA"
#
Issuer: CN=TWCA Global Root CA,OU=Root CA,O=TAIWAN-CA,C=TW
Serial Number: 3262 (0xcbe)
Subject: CN=TWCA Global Root CA,OU=Root CA,O=TAIWAN-CA,C=TW
Not Valid Before: Wed Jun 27 06:28:33 2012
Not Valid After : Tue Dec 31 15:59:59 2030
Fingerprint (SHA-256):
59:76:90:07:F7:68:5D:0F:CD:50:87:2F:9F:95:D5:75:5A:5B:2B:45:7D:81:F3:69:2B:61:0A:98:67:2F:0E:1B
Fingerprint (SHA1): 9C:BB:48:53:F6:A4:F6:D3:52:A4:E8:32:52:55:60:13:F5:AD:AF:65
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TWCA Global Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\023\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\034\060\032\006\003\125\004\003\023\023
\124\127\103\101\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\023\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\034\060\032\006\003\125\004\003\023\023
\124\127\103\101\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\014\276
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\101\060\202\003\051\240\003\002\001\002\002\002\014
\276\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\060\121\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\023\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\034\060\032\006\003\125\004\003\023\023
\124\127\103\101\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101\060\036\027\015\061\062\060\066\062\067\060\066\062
\070\063\063\132\027\015\063\060\061\062\063\061\061\065\065\071
\065\071\132\060\121\061\013\060\011\006\003\125\004\006\023\002
\124\127\061\022\060\020\006\003\125\004\012\023\011\124\101\111
\127\101\116\055\103\101\061\020\060\016\006\003\125\004\013\023
\007\122\157\157\164\040\103\101\061\034\060\032\006\003\125\004
\003\023\023\124\127\103\101\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\101\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\260\005\333\310\353\214\304\156\212
\041\357\216\115\234\161\012\037\122\160\355\155\202\234\227\305
\327\114\116\105\111\313\100\102\265\022\064\154\031\302\164\244
\061\137\205\002\227\354\103\063\012\123\322\234\214\216\267\270
\171\333\053\325\152\362\216\146\304\356\053\001\007\222\324\263
\320\002\337\120\366\125\257\146\016\313\340\107\140\057\053\062
\071\065\122\072\050\203\370\173\026\306\030\270\142\326\107\045
\221\316\360\031\022\115\255\143\365\323\077\165\137\051\360\241
\060\034\052\240\230\246\025\275\356\375\031\066\360\342\221\103
\217\372\312\326\020\047\111\114\357\335\301\361\205\160\233\312
\352\250\132\103\374\155\206\157\163\351\067\105\251\360\066\307
\314\210\165\036\273\154\006\377\233\153\076\027\354\141\252\161
\174\306\035\242\367\111\351\025\265\074\326\241\141\365\021\367
\005\157\035\375\021\276\320\060\007\302\051\260\011\116\046\334
\343\242\250\221\152\037\302\221\105\210\134\345\230\270\161\245
\025\031\311\174\165\021\314\160\164\117\055\233\035\221\104\375
\126\050\240\376\273\206\152\310\372\134\013\130\334\306\113\166
\310\253\042\331\163\017\245\364\132\002\211\077\117\236\042\202
\356\242\164\123\052\075\123\047\151\035\154\216\062\054\144\000
\046\143\141\066\116\243\106\267\077\175\263\055\254\155\220\242
\225\242\316\317\332\202\347\007\064\031\226\351\270\041\252\051
\176\246\070\276\216\051\112\041\146\171\037\263\303\265\011\147
\336\326\324\007\106\363\052\332\346\042\067\140\313\201\266\017
\240\017\351\310\225\177\277\125\221\005\172\317\075\025\300\157
\336\011\224\001\203\327\064\033\314\100\245\360\270\233\147\325
\230\221\073\247\204\170\225\046\244\132\010\370\053\164\264\000
\004\074\337\270\024\216\350\337\251\215\154\147\222\063\035\300

\267\322\354\222\310\276\011\277\054\051\005\157\002\153\236\357
\274\277\052\274\133\300\120\217\101\160\161\207\262\115\267\004
\251\204\243\062\257\256\356\153\027\213\262\261\376\154\341\220
\214\210\250\227\110\316\310\115\313\363\006\317\137\152\012\102
\261\036\036\167\057\216\240\346\222\016\006\374\005\042\322\046
\341\061\121\175\062\334\017\002\003\001\000\001\243\043\060\041
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\003\202\002\001\000\137\064\201\166\357\226\035\325\345\265\331
\002\143\204\026\301\256\240\160\121\247\367\114\107\065\310\013
\327\050\075\211\161\331\252\063\101\352\024\033\154\041\000\300
\154\102\031\176\237\151\133\040\102\337\242\322\332\304\174\227
\113\215\260\350\254\310\356\245\151\004\231\012\222\246\253\047
\056\032\115\201\277\204\324\160\036\255\107\376\375\112\235\063
\340\362\271\304\105\010\041\012\332\151\151\163\162\015\276\064
\376\224\213\255\303\036\065\327\242\203\357\345\070\307\245\205
\037\253\317\064\354\077\050\376\014\361\127\206\116\311\125\367
\034\324\330\245\175\006\172\157\325\337\020\337\201\116\041\145
\261\266\341\027\171\225\105\006\316\137\314\334\106\211\143\150
\104\215\223\364\144\160\240\075\235\050\005\303\071\160\270\142
\173\040\375\344\333\351\010\241\270\236\075\011\307\117\373\054
\370\223\166\101\336\122\340\341\127\322\235\003\274\167\236\376
\236\051\136\367\301\121\140\037\336\332\013\262\055\165\267\103
\110\223\347\366\171\306\204\135\200\131\140\224\374\170\230\217
\074\223\121\355\100\220\007\337\144\143\044\313\116\161\005\241
\327\224\032\210\062\361\042\164\042\256\245\246\330\022\151\114
\140\243\002\356\053\354\324\143\222\013\136\276\057\166\153\243
\266\046\274\217\003\330\012\362\114\144\106\275\071\142\345\226
\353\064\143\021\050\314\225\361\255\357\357\334\200\130\110\351
\113\270\352\145\254\351\374\200\265\265\310\105\371\254\301\237
\331\271\352\142\210\216\304\361\113\203\022\255\346\213\204\326
\236\302\353\203\030\237\152\273\033\044\140\063\160\314\354\367
\062\363\134\331\171\175\357\236\244\376\311\043\303\044\356\025
\222\261\075\221\117\046\206\275\146\163\044\023\352\244\256\143
\301\255\175\204\003\074\020\170\206\033\171\343\304\363\362\004
\225\040\256\043\202\304\263\072\000\142\277\346\066\044\341\127
\272\307\036\220\165\325\137\077\225\141\053\301\073\315\345\263
\150\141\320\106\046\251\041\122\151\055\353\056\307\353\167\316
\246\072\265\003\063\117\166\321\347\134\124\001\135\313\170\364
\311\014\277\317\022\216\027\055\043\150\224\347\253\376\251\262
\053\006\320\004\315
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TWCA Global Root CA"

Issuer: CN=TWCA Global Root CA,OU=Root CA,O=TAIWAN-CA,C=TW
Serial Number: 3262 (0xcbe)
Subject: CN=TWCA Global Root CA,OU=Root CA,O=TAIWAN-CA,C=TW
Not Valid Before: Wed Jun 27 06:28:33 2012
Not Valid After : Tue Dec 31 15:59:59 2030
Fingerprint (SHA-256):
59:76:90:07:F7:68:5D:0F:CD:50:87:2F:9F:95:D5:75:5A:5B:2B:45:7D:81:F3:69:2B:61:0A:98:67:2F:0E:1B
Fingerprint (SHA1): 9C:BB:48:53:F6:A4:F6:D3:52:A4:E8:32:52:55:60:13:F5:AD:AF:65
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TWCA Global Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\234\273\110\123\366\244\366\323\122\244\350\062\122\125\140\023
\365\255\257\145
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\371\003\176\317\346\236\074\163\172\052\220\007\151\377\053\226
END
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\023\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\034\060\032\006\003\125\004\003\023\023
\124\127\103\101\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\014\276
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TeliaSonera Root CA v1"
#
Issuer: CN=TeliaSonera Root CA v1,O=TeliaSonera
Serial Number:00:95:be:16:a0:f7:2e:46:f1:7b:39:82:72:fa:8b:cd:96
Subject: CN=TeliaSonera Root CA v1,O=TeliaSonera
Not Valid Before: Thu Oct 18 12:00:50 2007
Not Valid After : Mon Oct 18 12:00:50 2032
Fingerprint (SHA-256):
DD:69:36:FE:21:F8:F0:77:C1:23:A1:A5:21:C1:22:24:F7:22:55:B7:3E:03:A7:26:06:93:E8:A2:4B:0F:A3:89
Fingerprint (SHA1): 43:13:BB:96:F1:D5:86:9B:C1:4E:6A:92:F6:CF:F6:34:69:87:82:37
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TeliaSonera Root CA v1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\067\061\024\060\022\006\003\125\004\012\014\013\124\145\154
\151\141\123\157\156\145\162\141\061\037\060\035\006\003\125\004
\003\014\026\124\145\154\151\141\123\157\156\145\162\141\040\122
\157\157\164\040\103\101\040\166\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\067\061\024\060\022\006\003\125\004\012\014\013\124\145\154
\151\141\123\157\156\145\162\141\061\037\060\035\006\003\125\004
\003\014\026\124\145\154\151\141\123\157\156\145\162\141\040\122
\157\157\164\040\103\101\040\166\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\225\276\026\240\367\056\106\361\173\071\202\162\372
\213\315\226
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\070\060\202\003\040\240\003\002\001\002\002\021\000
\225\276\026\240\367\056\106\361\173\071\202\162\372\213\315\226
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\067\061\024\060\022\006\003\125\004\012\014\013\124\145\154\151
\141\123\157\156\145\162\141\061\037\060\035\006\003\125\004\003
\014\026\124\145\154\151\141\123\157\156\145\162\141\040\122\157
\157\164\040\103\101\040\166\061\060\036\027\015\060\067\061\060
\061\070\061\062\060\060\065\060\132\027\015\063\062\061\060\061
\070\061\062\060\060\065\060\132\060\067\061\024\060\022\006\003
\125\004\012\014\013\124\145\154\151\141\123\157\156\145\162\141
\061\037\060\035\006\003\125\004\003\014\026\124\145\154\151\141
\123\157\156\145\162\141\040\122\157\157\164\040\103\101\040\166
\061\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\302\276\353\047\360\041\243\363\151\046\125\176\235\305
\125\026\221\134\375\357\041\277\123\200\172\055\322\221\214\143
\061\360\354\044\360\303\245\322\162\174\020\155\364\067\267\345
\346\174\171\352\214\265\202\213\256\110\266\254\000\334\145\165
\354\052\115\137\301\207\365\040\145\053\201\250\107\076\211\043
\225\060\026\220\177\350\127\007\110\347\031\256\277\105\147\261
\067\033\006\052\376\336\371\254\175\203\373\136\272\344\217\227
\147\276\113\216\215\144\007\127\070\125\151\064\066\075\023\110
\357\117\342\323\146\036\244\317\032\267\136\066\063\324\264\006
\275\030\001\375\167\204\120\000\105\365\214\135\350\043\274\176
\376\065\341\355\120\173\251\060\215\031\323\011\216\150\147\135

\277\074\227\030\123\273\051\142\305\312\136\162\301\307\226\324
\333\055\240\264\037\151\003\354\352\342\120\361\014\074\360\254
\363\123\055\360\034\365\355\154\071\071\163\200\026\310\122\260
\043\315\340\076\334\335\074\107\240\273\065\212\342\230\150\213
\276\345\277\162\356\322\372\245\355\022\355\374\230\030\251\046
\166\334\050\113\020\040\034\323\177\026\167\055\355\157\200\367
\111\273\123\005\273\135\150\307\324\310\165\026\077\211\132\213
\367\027\107\324\114\361\322\211\171\076\115\075\230\250\141\336
\072\036\322\370\136\003\340\301\311\034\214\323\215\115\323\225
\066\263\067\137\143\143\233\063\024\360\055\046\153\123\174\211
\214\062\302\156\354\075\041\000\071\311\241\150\342\120\203\056
\260\072\053\363\066\240\254\057\344\157\141\302\121\011\071\076
\213\123\271\273\147\332\334\123\271\166\131\066\235\103\345\040
\340\075\062\140\205\042\121\267\307\063\273\335\025\057\244\170
\246\007\173\201\106\066\004\206\335\171\065\307\225\054\073\260
\243\027\065\345\163\037\264\134\131\357\332\352\020\145\173\172
\320\177\237\263\264\052\067\073\160\213\233\133\271\053\267\354
\262\121\022\227\123\051\132\324\360\022\020\334\117\002\273\022
\222\057\142\324\077\151\103\174\015\326\374\130\165\001\210\235
\130\026\113\336\272\220\377\107\001\211\006\152\366\137\262\220
\152\263\002\246\002\210\277\263\107\176\052\331\325\372\150\170
\065\115\002\003\001\000\001\243\077\060\075\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\013\006\003
\125\035\017\004\004\003\002\001\006\060\035\006\003\125\035\016
\004\026\004\024\360\217\131\070\000\263\365\217\232\226\014\325
\353\372\173\252\027\350\023\022\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\002\001\000\276\344\134\142
\116\044\364\014\010\377\360\323\014\150\344\223\111\042\077\104
\047\157\273\155\336\203\146\316\250\314\015\374\365\232\006\345
\167\024\221\353\235\101\173\231\052\204\345\377\374\041\301\135
\360\344\037\127\267\165\251\241\137\002\046\377\327\307\367\116
\336\117\370\367\034\106\300\172\117\100\054\042\065\360\031\261
\320\153\147\054\260\250\340\300\100\067\065\366\204\134\134\343
\257\102\170\376\247\311\015\120\352\015\204\166\366\121\357\203
\123\306\172\377\016\126\111\056\217\172\326\014\346\047\124\343
\115\012\140\162\142\315\221\007\326\245\277\310\231\153\355\304
\031\346\253\114\021\070\305\157\061\342\156\111\310\077\166\200
\046\003\046\051\340\066\366\366\040\123\343\027\160\064\027\235
\143\150\036\153\354\303\115\206\270\023\060\057\135\106\015\107
\103\325\033\252\131\016\271\134\215\006\110\255\164\207\137\307
\374\061\124\101\023\342\307\041\016\236\340\036\015\341\300\173
\103\205\220\305\212\130\306\145\012\170\127\362\306\043\017\001
\331\040\113\336\017\373\222\205\165\052\134\163\215\155\173\045
\221\312\356\105\256\006\113\000\314\323\261\131\120\332\072\210
\073\051\103\106\136\227\053\124\316\123\157\215\112\347\226\372
\277\161\016\102\213\174\375\050\240\320\110\312\332\304\201\114
\273\242\163\223\046\310\353\014\326\046\210\266\300\044\317\273
\275\133\353\165\175\351\010\216\206\063\054\171\167\011\151\245

\211\374\263\160\220\207\166\217\323\042\273\102\316\275\163\013
\040\046\052\320\233\075\160\036\044\154\315\207\166\251\027\226
\267\317\015\222\373\216\030\251\230\111\321\236\376\140\104\162
\041\271\031\355\302\365\061\361\071\110\210\220\044\165\124\026
\255\316\364\370\151\024\144\071\373\243\270\272\160\100\307\047
\034\277\304\126\123\372\143\145\320\363\034\016\026\365\153\206
\130\115\030\324\344\015\216\245\235\133\221\334\166\044\120\077
\306\052\373\331\267\234\265\326\346\320\331\350\031\213\025\161
\110\255\267\352\330\131\210\324\220\277\026\263\331\351\254\131
\141\124\310\034\272\312\301\312\341\271\040\114\217\072\223\211
\245\240\314\277\323\366\165\244\165\226\155\126
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TeliaSonera Root CA v1"
Issuer: CN=TeliaSonera Root CA v1,O=TeliaSonera
Serial Number:00:95:be:16:a0:f7:2e:46:f1:7b:39:82:72:fa:8b:cd:96
Subject: CN=TeliaSonera Root CA v1,O=TeliaSonera
Not Valid Before: Thu Oct 18 12:00:50 2007
Not Valid After : Mon Oct 18 12:00:50 2032
Fingerprint (SHA-256):
DD:69:36:FE:21:F8:F0:77:C1:23:A1:A5:21:C1:22:24:F7:22:55:B7:3E:03:A7:26:06:93:E8:A2:4B:0F:A3:89
Fingerprint (SHA1): 43:13:BB:96:F1:D5:86:9B:C1:4E:6A:92:F6:CF:F6:34:69:87:82:37
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TeliaSonera Root CA v1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\103\023\273\226\361\325\206\233\301\116\152\222\366\317\366\064
\151\207\202\067
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\067\101\111\033\030\126\232\046\365\255\302\146\373\100\245\114
END
CKA_ISSUER MULTILINE_OCTAL
\060\067\061\024\060\022\006\003\125\004\012\014\013\124\145\154
\151\141\123\157\156\145\162\141\061\037\060\035\006\003\125\004
\003\014\026\124\145\154\151\141\123\157\156\145\162\141\040\122
\157\157\164\040\103\101\040\166\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\225\276\026\240\367\056\106\361\173\071\202\162\372
\213\315\226
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "E-Tugra Certification Authority"
#
Issuer: CN=E-Tugra Certification Authority,OU=E-Tugra Sertifikasyon Merkezi,O=E-Tu..ra EBG Bili..im Teknolojileri ve Hizmetleri A....,L=Ankara,C=TR
Serial Number:6a:68:3e:9c:51:9b:cb:53
Subject: CN=E-Tugra Certification Authority,OU=E-Tugra Sertifikasyon Merkezi,O=E-Tu..ra EBG Bili..im Teknolojileri ve Hizmetleri A....,L=Ankara,C=TR
Not Valid Before: Tue Mar 05 12:09:48 2013
Not Valid After : Fri Mar 03 12:09:48 2023
Fingerprint (SHA-256):
B0:BF:D5:2B:B0:D7:D9:BD:92:BF:5D:4D:C1:3D:A2:55:C0:2C:54:2F:37:83:65:EA:89:39:11:F5:5E:55:F2:3C
Fingerprint (SHA1): 51:C6:E7:08:49:06:6E:F3:92:D4:5C:A0:0D:6D:A3:62:8F:C3:52:39
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\262\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\014\006\101\156\153\141\162
\141\061\100\060\076\006\003\125\004\012\014\067\105\055\124\165
\304\237\162\141\040\105\102\107\040\102\151\154\151\305\237\151
\155\040\124\145\153\156\157\154\157\152\151\154\145\162\151\040
\166\145\040\110\151\172\155\145\164\154\145\162\151\040\101\056
\305\236\056\061\046\060\044\006\003\125\004\013\014\035\105\055
\124\165\147\162\141\040\123\145\162\164\151\146\151\153\141\163
\171\157\156\040\115\145\162\153\145\172\151\061\050\060\046\006
\003\125\004\003\014\037\105\055\124\165\147\162\141\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\262\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\014\006\101\156\153\141\162
\141\061\100\060\076\006\003\125\004\012\014\067\105\055\124\165
\304\237\162\141\040\105\102\107\040\102\151\154\151\305\237\151
\155\040\124\145\153\156\157\154\157\152\151\154\145\162\151\040
\166\145\040\110\151\172\155\145\164\154\145\162\151\040\101\056
\305\236\056\061\046\060\044\006\003\125\004\013\014\035\105\055
\124\165\147\162\141\040\123\145\162\164\151\146\151\153\141\163
\171\157\156\040\115\145\162\153\145\172\151\061\050\060\046\006

\003\125\004\003\014\037\105\055\124\165\147\162\141\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\152\150\076\234\121\233\313\123
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\113\060\202\004\063\240\003\002\001\002\002\010\152
\150\076\234\121\233\313\123\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\201\262\061\013\060\011\006\003\125
\004\006\023\002\124\122\061\017\060\015\006\003\125\004\007\014
\006\101\156\153\141\162\141\061\100\060\076\006\003\125\004\012
\014\067\105\055\124\165\304\237\162\141\040\105\102\107\040\102
\151\154\151\305\237\151\155\040\124\145\153\156\157\154\157\152
\151\154\145\162\151\040\166\145\040\110\151\172\155\145\164\154
\145\162\151\040\101\056\305\236\056\061\046\060\044\006\003\125
\004\013\014\035\105\055\124\165\147\162\141\040\123\145\162\164
\151\146\151\153\141\163\171\157\156\040\115\145\162\153\145\172
\151\061\050\060\046\006\003\125\004\003\014\037\105\055\124\165
\147\162\141\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\060\036\027\015\061
\063\060\063\060\065\061\062\060\071\064\070\132\027\015\062\063
\060\063\060\063\061\062\060\071\064\070\132\060\201\262\061\013
\060\011\006\003\125\004\006\023\002\124\122\061\017\060\015\006
\003\125\004\007\014\006\101\156\153\141\162\141\061\100\060\076
\006\003\125\004\012\014\067\105\055\124\165\304\237\162\141\040
\105\102\107\040\102\151\154\151\305\237\151\155\040\124\145\153
\156\157\154\157\152\151\154\145\162\151\040\166\145\040\110\151
\172\155\145\164\154\145\162\151\040\101\056\305\236\056\061\046
\060\044\006\003\125\004\013\014\035\105\055\124\165\147\162\141
\040\123\145\162\164\151\146\151\153\141\163\171\157\156\040\115
\145\162\153\145\172\151\061\050\060\046\006\003\125\004\003\014
\037\105\055\124\165\147\162\141\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\342\365\077\223\005\121\036\205\142\124\136\172\013\365\030
\007\203\256\176\257\174\367\324\212\153\245\143\103\071\271\113
\367\303\306\144\211\075\224\056\124\200\122\071\071\007\113\113
\335\205\007\166\207\314\277\057\225\114\314\175\247\075\274\107
\017\230\160\370\214\205\036\164\216\222\155\033\100\321\231\015
\273\165\156\310\251\153\232\300\204\061\257\312\103\313\353\053
\064\350\217\227\153\001\233\325\016\112\010\252\133\222\164\205
\103\323\200\256\241\210\133\256\263\352\136\313\026\232\167\104
\310\241\366\124\150\316\336\217\227\053\272\133\100\002\014\144
\027\300\265\223\315\341\361\023\146\316\014\171\357\321\221\050
\253\137\240\022\122\060\163\031\216\217\341\214\007\242\303\273

\112\360\352\037\025\250\356\045\314\244\106\370\033\042\357\263
\016\103\272\054\044\270\305\054\134\324\034\370\135\144\275\303
\223\136\050\247\077\047\361\216\036\323\052\120\005\243\125\331
\313\347\071\123\300\230\236\214\124\142\213\046\260\367\175\215
\174\344\306\236\146\102\125\202\107\347\262\130\215\146\367\007
\174\056\066\346\120\034\077\333\103\044\305\277\206\107\171\263
\171\034\367\132\364\023\354\154\370\077\342\131\037\225\356\102
\076\271\255\250\062\205\111\227\106\376\113\061\217\132\313\255
\164\107\037\351\221\267\337\050\004\042\240\324\017\135\342\171
\117\352\154\205\206\275\250\246\316\344\372\303\341\263\256\336
\074\121\356\313\023\174\001\177\204\016\135\121\224\236\023\014
\266\056\245\114\371\071\160\066\157\226\312\056\014\104\125\305
\312\372\135\002\243\337\326\144\214\132\263\001\012\251\265\012
\107\027\377\357\221\100\052\216\241\106\072\061\230\345\021\374
\314\273\111\126\212\374\271\320\141\232\157\145\154\346\303\313
\076\165\111\376\217\247\342\211\305\147\327\235\106\023\116\061
\166\073\044\263\236\021\145\206\253\177\357\035\324\370\274\347
\254\132\134\267\132\107\134\125\316\125\264\042\161\133\133\013
\360\317\334\240\141\144\352\251\327\150\012\143\247\340\015\077
\240\257\323\252\322\176\357\121\240\346\121\053\125\222\025\027
\123\313\267\146\016\146\114\370\371\165\114\220\347\022\160\307
\105\002\003\001\000\001\243\143\060\141\060\035\006\003\125\035
\016\004\026\004\024\056\343\333\262\111\320\234\124\171\134\372
\047\052\376\314\116\322\350\116\124\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125\035
\043\004\030\060\026\200\024\056\343\333\262\111\320\234\124\171
\134\372\047\052\376\314\116\322\350\116\124\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\005
\067\072\364\115\267\105\342\105\165\044\217\266\167\122\350\034
\330\020\223\145\363\362\131\006\244\076\036\051\354\135\321\320
\253\174\340\012\220\110\170\355\116\230\003\231\376\050\140\221
\035\060\035\270\143\174\250\346\065\265\372\323\141\166\346\326
\007\113\312\151\232\262\204\172\167\223\105\027\025\237\044\320
\230\023\022\377\273\240\056\375\116\114\207\370\316\134\252\230
\033\005\340\000\106\112\202\200\245\063\213\050\334\355\070\323
\337\345\076\351\376\373\131\335\141\204\117\322\124\226\023\141
\023\076\217\200\151\276\223\107\265\065\103\322\132\273\075\134
\357\263\102\107\315\073\125\023\006\260\011\333\375\143\366\072
\210\012\231\157\176\341\316\033\123\152\104\146\043\121\010\173
\274\133\122\242\375\006\067\070\100\141\217\112\226\270\220\067
\370\146\307\170\220\000\025\056\213\255\121\065\123\007\250\153
\150\256\371\116\074\007\046\315\010\005\160\314\071\077\166\275
\245\323\147\046\001\206\246\123\322\140\073\174\103\177\125\212
\274\225\032\301\050\071\114\037\103\322\221\364\162\131\212\271
\126\374\077\264\235\332\160\234\166\132\214\103\120\356\216\060
\162\115\337\377\111\367\306\251\147\331\155\254\002\021\342\072
\026\045\247\130\010\313\157\123\101\234\110\070\107\150\063\321

\327\307\217\324\164\041\324\303\005\220\172\377\316\226\210\261
\025\051\135\043\253\320\140\241\022\117\336\364\027\315\062\345
\311\277\310\103\255\375\056\216\361\257\342\364\230\372\022\037
\040\330\300\247\014\205\305\220\364\073\055\226\046\261\054\276
\114\253\353\261\322\212\311\333\170\023\017\036\011\235\155\217
\000\237\002\332\301\372\037\172\172\011\304\112\346\210\052\227
\237\211\213\375\067\137\137\072\316\070\131\206\113\257\161\013
\264\330\362\160\117\237\062\023\343\260\247\127\345\332\332\103
\313\204\064\362\050\304\352\155\364\052\357\301\153\166\332\373
\176\273\205\074\322\123\302\115\276\161\341\105\321\375\043\147
\015\023\165\373\317\145\147\042\235\256\260\011\321\011\377\035
\064\277\376\043\227\067\322\071\372\075\015\006\013\264\333\073
\243\253\157\134\035\266\176\350\263\202\064\355\006\134\044
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "E-Tugra Certification Authority"
Issuer: CN=E-Tugra Certification Authority,OU=E-Tugra Sertifikasyon Merkezi,O=E-Tu..ra EBG Bili..im Teknolojileri ve Hizmetleri A....,L=Ankara,C=TR
Serial Number:6a:68:3e:9c:51:9b:cb:53
Subject: CN=E-Tugra Certification Authority,OU=E-Tugra Sertifikasyon Merkezi,O=E-Tu..ra EBG Bili..im Teknolojileri ve Hizmetleri A....,L=Ankara,C=TR
Not Valid Before: Tue Mar 05 12:09:48 2013
Not Valid After : Fri Mar 03 12:09:48 2023
Fingerprint (SHA-256):
B0:BF:D5:2B:B0:D7:D9:BD:92:BF:5D:4D:C1:3D:A2:55:C0:2C:54:2F:37:83:65:EA:89:39:11:F5:5E:55:F2:3C
Fingerprint (SHA1): 51:C6:E7:08:49:06:6E:F3:92:D4:5C:A0:0D:6D:A3:62:8F:C3:52:39
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\121\306\347\010\111\006\156\363\222\324\134\240\015\155\243\142
\217\303\122\071
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\270\241\003\143\260\275\041\161\160\212\157\023\072\273\171\111
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\262\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\014\006\101\156\153\141\162
\141\061\100\060\076\006\003\125\004\012\014\067\105\055\124\165
\304\237\162\141\040\105\102\107\040\102\151\154\151\305\237\151
\155\040\124\145\153\156\157\154\157\152\151\154\145\162\151\040
\166\145\040\110\151\172\155\145\164\154\145\162\151\040\101\056

\305\236\056\061\046\060\044\006\003\125\004\013\014\035\105\055
\124\165\147\162\141\040\123\145\162\164\151\146\151\153\141\163
\171\157\156\040\115\145\162\153\145\172\151\061\050\060\046\006
\003\125\004\003\014\037\105\055\124\165\147\162\141\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\152\150\076\234\121\233\313\123
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "T-TeleSec GlobalRoot Class 2"
#
Issuer: CN=T-TeleSec GlobalRoot Class 2,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Serial Number: 1 (0x1)
Subject: CN=T-TeleSec GlobalRoot Class 2,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Not Valid Before: Wed Oct 01 10:40:14 2008
Not Valid After : Sat Oct 01 23:59:59 2033
Fingerprint (SHA-256):
91:E2:F5:78:8D:58:10:EB:A7:BA:58:73:7D:E1:54:8A:8E:CA:CD:01:45:98:BC:0B:14:3E:04:1B:17:05:25:52
Fingerprint (SHA1): 59:0D:2D:7D:88:4F:40:2E:61:7E:A5:62:32:17:65:CF:17:D8:94:E9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "T-TeleSec GlobalRoot Class 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105

\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\303\060\202\002\253\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163\164
\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040\123
\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060\035
\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155\163
\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045\060
\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123\145
\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154\141
\163\163\040\062\060\036\027\015\060\070\061\060\060\061\061\060
\064\060\061\064\132\027\015\063\063\061\060\060\061\062\063\065
\071\065\071\132\060\201\202\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\053\060\051\006\003\125\004\012\014\042\124
\055\123\171\163\164\145\155\163\040\105\156\164\145\162\160\162
\151\163\145\040\123\145\162\166\151\143\145\163\040\107\155\142
\110\061\037\060\035\006\003\125\004\013\014\026\124\055\123\171
\163\164\145\155\163\040\124\162\165\163\164\040\103\145\156\164
\145\162\061\045\060\043\006\003\125\004\003\014\034\124\055\124
\145\154\145\123\145\143\040\107\154\157\142\141\154\122\157\157
\164\040\103\154\141\163\163\040\062\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\252\137\332\033\137\350
\163\221\345\332\134\364\242\346\107\345\363\150\125\140\005\035
\002\244\263\233\131\363\036\212\257\064\255\374\015\302\331\110
\031\356\151\217\311\040\374\041\252\007\031\355\260\134\254\145
\307\137\355\002\174\173\174\055\033\326\272\271\200\302\030\202
\026\204\372\146\260\010\306\124\043\201\344\315\271\111\077\366
\117\156\067\110\050\070\017\305\276\347\150\160\375\071\227\115
\322\307\230\221\120\252\304\104\263\043\175\071\107\351\122\142
\326\022\223\136\267\061\226\102\005\373\166\247\036\243\365\302
\374\351\172\305\154\251\161\117\352\313\170\274\140\257\307\336
\364\331\313\276\176\063\245\156\224\203\360\064\372\041\253\352
\216\162\240\077\244\336\060\133\357\206\115\152\225\133\103\104
\250\020\025\034\345\001\127\305\230\361\346\006\050\221\252\040

\305\267\123\046\121\103\262\013\021\225\130\341\300\017\166\331
\300\215\174\201\363\162\160\236\157\376\032\216\331\137\065\306
\262\157\064\174\276\110\117\342\132\071\327\330\235\170\236\237
\206\076\003\136\031\213\104\242\325\307\002\003\001\000\001\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\277
\131\040\066\000\171\240\240\042\153\214\325\362\141\322\270\054
\313\202\112\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\061\003\242\141\013\037\164\350\162
\066\306\155\371\115\236\372\042\250\341\201\126\317\315\273\237
\352\253\221\031\070\257\252\174\025\115\363\266\243\215\245\364
\216\366\104\251\247\350\041\225\255\076\000\142\026\210\360\002
\272\374\141\043\346\063\233\060\172\153\066\142\173\255\004\043
\204\130\145\342\333\053\212\347\045\123\067\142\123\137\274\332
\001\142\051\242\246\047\161\346\072\042\176\301\157\035\225\160
\040\112\007\064\337\352\377\025\200\345\272\327\172\330\133\165
\174\005\172\051\107\176\100\250\061\023\167\315\100\073\264\121
\107\172\056\021\343\107\021\336\235\146\320\213\325\124\146\372
\203\125\352\174\302\051\211\033\351\157\263\316\342\005\204\311
\057\076\170\205\142\156\311\137\301\170\143\164\130\300\110\030
\014\231\071\353\244\314\032\265\171\132\215\025\234\330\024\015
\366\172\007\127\307\042\203\005\055\074\233\045\046\075\030\263
\251\103\174\310\310\253\144\217\016\243\277\234\033\235\060\333
\332\320\031\056\252\074\361\373\063\200\166\344\315\255\031\117
\005\047\216\023\241\156\302
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "T-TeleSec GlobalRoot Class 2"
Issuer: CN=T-TeleSec GlobalRoot Class 2,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Serial Number: 1 (0x1)
Subject: CN=T-TeleSec GlobalRoot Class 2,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Not Valid Before: Wed Oct 01 10:40:14 2008
Not Valid After : Sat Oct 01 23:59:59 2033
Fingerprint (SHA-256):
91:E2:F5:78:8D:58:10:EB:A7:BA:58:73:7D:E1:54:8A:8E:CA:CD:01:45:98:BC:0B:14:3E:04:1B:17:05:25:52
Fingerprint (SHA1): 59:0D:2D:7D:88:4F:40:2E:61:7E:A5:62:32:17:65:CF:17:D8:94:E9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "T-TeleSec GlobalRoot Class 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\131\015\055\175\210\117\100\056\141\176\245\142\062\027\145\317
\027\330\224\351
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\053\233\236\344\173\154\037\000\162\032\314\301\167\171\337\152
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Atos TrustedRoot 2011"
#
Issuer: C=DE,O=Atos,CN=Atos TrustedRoot 2011
Serial Number:5c:33:cb:62:2c:5f:b3:32
Subject: C=DE,O=Atos,CN=Atos TrustedRoot 2011
Not Valid Before: Thu Jul 07 14:58:30 2011
Not Valid After : Tue Dec 31 23:59:59 2030
Fingerprint (SHA-256):
F3:56:BE:A2:44:B7:A9:1E:B3:5D:53:CA:9A:D7:86:4A:CE:01:8E:2D:35:D5:F8:F9:6D:DF:68:A6:F4:1A:A4:74
Fingerprint (SHA1): 2B:B1:F5:3E:55:0C:1D:C5:F1:D4:E6:B7:6A:46:4B:55:06:02:AC:21
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Atos TrustedRoot 2011"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\074\061\036\060\034\006\003\125\004\003\014\025\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\062\060
\061\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\074\061\036\060\034\006\003\125\004\003\014\025\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\062\060
\061\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\134\063\313\142\054\137\263\062
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\167\060\202\002\137\240\003\002\001\002\002\010\134
\063\313\142\054\137\263\062\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\074\061\036\060\034\006\003\125\004
\003\014\025\101\164\157\163\040\124\162\165\163\164\145\144\122
\157\157\164\040\062\060\061\061\061\015\060\013\006\003\125\004
\012\014\004\101\164\157\163\061\013\060\011\006\003\125\004\006
\023\002\104\105\060\036\027\015\061\061\060\067\060\067\061\064
\065\070\063\060\132\027\015\063\060\061\062\063\061\062\063\065
\071\065\071\132\060\074\061\036\060\034\006\003\125\004\003\014
\025\101\164\157\163\040\124\162\165\163\164\145\144\122\157\157
\164\040\062\060\061\061\061\015\060\013\006\003\125\004\012\014
\004\101\164\157\163\061\013\060\011\006\003\125\004\006\023\002
\104\105\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\225\205\073\227\157\052\073\056\073\317\246\363\051
\065\276\317\030\254\076\252\331\370\115\240\076\032\107\271\274
\232\337\362\376\314\076\107\350\172\226\302\044\216\065\364\251
\014\374\202\375\155\301\162\142\047\275\352\153\353\347\212\314
\124\076\220\120\317\200\324\225\373\350\265\202\324\024\305\266
\251\125\045\127\333\261\120\366\260\140\144\131\172\151\317\003
\267\157\015\276\312\076\157\164\162\352\252\060\052\163\142\276
\111\221\141\310\021\376\016\003\052\367\152\040\334\002\025\015
\136\025\152\374\343\202\301\265\305\235\144\011\154\243\131\230
\007\047\307\033\226\053\141\164\161\154\103\361\367\065\211\020
\340\236\354\125\241\067\042\242\207\004\005\054\107\175\264\034
\271\142\051\146\050\312\267\341\223\365\244\224\003\231\271\160
\205\265\346\110\352\215\120\374\331\336\314\157\007\016\335\013
\162\235\200\060\026\007\225\077\050\016\375\305\165\117\123\326
\164\232\264\044\056\216\002\221\317\166\305\233\036\125\164\234
\170\041\261\360\055\361\013\237\302\325\226\030\037\360\124\042
\172\214\007\002\003\001\000\001\243\175\060\173\060\035\006\003
\125\035\016\004\026\004\024\247\245\006\261\054\246\011\140\356
\321\227\351\160\256\274\073\031\154\333\041\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003
\125\035\043\004\030\060\026\200\024\247\245\006\261\054\246\011
\140\356\321\227\351\160\256\274\073\031\154\333\041\060\030\006
\003\125\035\040\004\021\060\017\060\015\006\013\053\006\001\004

\001\260\055\003\004\001\001\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\206\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\001\001\000\046\167\064\333\224
\110\206\052\101\235\054\076\006\220\140\304\214\254\013\124\270
\037\271\173\323\007\071\344\372\076\173\262\075\116\355\237\043
\275\227\363\153\134\357\356\375\100\246\337\241\223\241\012\206
\254\357\040\320\171\001\275\170\367\031\330\044\061\064\004\001
\246\272\025\232\303\047\334\330\117\017\314\030\143\377\231\017
\016\221\153\165\026\341\041\374\330\046\307\107\267\246\317\130
\162\161\176\272\341\115\225\107\073\311\257\155\241\264\301\354
\211\366\264\017\070\265\342\144\334\045\317\246\333\353\232\134
\231\241\305\010\336\375\346\332\325\326\132\105\014\304\267\302
\265\024\357\264\021\377\016\025\265\365\365\333\306\275\353\132
\247\360\126\042\251\074\145\124\306\025\250\275\206\236\315\203
\226\150\172\161\201\211\341\013\341\352\021\033\150\010\314\151
\236\354\236\101\236\104\062\046\172\342\207\012\161\075\353\344
\132\244\322\333\305\315\306\336\140\177\271\363\117\104\222\357
\052\267\030\076\247\031\331\013\175\261\067\101\102\260\272\140
\035\362\376\011\021\260\360\207\173\247\235
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Atos TrustedRoot 2011"
Issuer: C=DE,O=Atos,CN=Atos TrustedRoot 2011
Serial Number:5c:33:cb:62:2c:5f:b3:32
Subject: C=DE,O=Atos,CN=Atos TrustedRoot 2011
Not Valid Before: Thu Jul 07 14:58:30 2011
Not Valid After : Tue Dec 31 23:59:59 2030
Fingerprint (SHA-256):
F3:56:BE:A2:44:B7:A9:1E:B3:5D:53:CA:9A:D7:86:4A:CE:01:8E:2D:35:D5:F8:F9:6D:DF:68:A6:F4:1A:A4:74
Fingerprint (SHA1): 2B:B1:F5:3E:55:0C:1D:C5:F1:D4:E6:B7:6A:46:4B:55:06:02:AC:21
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Atos TrustedRoot 2011"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\053\261\365\076\125\014\035\305\361\324\346\267\152\106\113\125
\006\002\254\041
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\256\271\304\062\113\254\177\135\146\314\167\224\273\052\167\126
END
CKA_ISSUER MULTILINE_OCTAL
\060\074\061\036\060\034\006\003\125\004\003\014\025\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\062\060

\061\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\134\063\313\142\054\137\263\062
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "QuoVadis Root CA 1 G3"
#
Issuer: CN=QuoVadis Root CA 1 G3,O=QuoVadis Limited,C=BM
Serial Number:78:58:5f:2e:ad:2c:19:4b:e3:37:07:35:34:13:28:b5:96:d4:65:93
Subject: CN=QuoVadis Root CA 1 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 17:27:44 2012
Not Valid After : Sun Jan 12 17:27:44 2042
Fingerprint (SHA-256):
8A:86:6F:D1:B2:76:B5:7E:57:8E:92:1C:65:82:8A:2B:ED:58:E9:F2:F2:88:05:41:34:B7:F1:F4:BF:C9:CC:74
Fingerprint (SHA1): 1B:8E:EA:57:96:29:1A:C9:39:EA:B8:0A:81:1A:73:73:C0:93:79:67
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 1 G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\061\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\061\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\170\130\137\056\255\054\031\113\343\067\007\065\064\023
\050\265\226\324\145\223
END
CKA_VALUE MULTILINE_OCTAL

\060\202\005\140\060\202\003\110\240\003\002\001\002\002\024\170
\130\137\056\255\054\031\113\343\067\007\065\064\023\050\265\226
\324\145\223\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\110\061\013\060\011\006\003\125\004\006\023\002\102
\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\036\060\034
\006\003\125\004\003\023\025\121\165\157\126\141\144\151\163\040
\122\157\157\164\040\103\101\040\061\040\107\063\060\036\027\015
\061\062\060\061\061\062\061\067\062\067\064\064\132\027\015\064
\062\060\061\061\062\061\067\062\067\064\064\132\060\110\061\013
\060\011\006\003\125\004\006\023\002\102\115\061\031\060\027\006
\003\125\004\012\023\020\121\165\157\126\141\144\151\163\040\114
\151\155\151\164\145\144\061\036\060\034\006\003\125\004\003\023
\025\121\165\157\126\141\144\151\163\040\122\157\157\164\040\103
\101\040\061\040\107\063\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\240\276\120\020\216\351\362\154\100
\264\004\234\205\271\061\312\334\055\344\021\251\004\074\033\125
\301\347\130\060\035\044\264\303\357\205\336\214\054\341\301\075
\337\202\346\117\255\107\207\154\354\133\111\301\112\325\273\217
\354\207\254\177\202\232\206\354\075\003\231\122\001\322\065\236
\254\332\360\123\311\146\074\324\254\002\001\332\044\323\073\250
\002\106\257\244\034\343\370\163\130\166\267\366\016\220\015\265
\360\317\314\372\371\306\114\345\303\206\060\012\215\027\176\065
\353\305\337\273\016\234\300\215\207\343\210\070\205\147\372\076
\307\253\340\023\234\005\030\230\317\223\365\261\222\264\374\043
\323\317\325\304\047\111\340\236\074\233\010\243\213\135\052\041
\340\374\071\252\123\332\175\176\317\032\011\123\274\135\005\004
\317\241\112\217\213\166\202\015\241\370\322\307\024\167\133\220
\066\007\201\233\076\006\372\122\136\143\305\246\000\376\245\351
\122\033\122\265\222\071\162\003\011\142\275\260\140\026\156\246
\335\045\302\003\146\335\363\004\321\100\342\116\213\206\364\157
\345\203\240\047\204\136\004\301\365\220\275\060\075\304\357\250
\151\274\070\233\244\244\226\321\142\332\151\300\001\226\256\313
\304\121\064\352\014\252\377\041\216\131\217\112\134\344\141\232
\247\322\351\052\170\215\121\075\072\025\356\242\131\216\251\134
\336\305\371\220\042\345\210\105\161\335\221\231\154\172\237\075
\075\230\174\136\366\276\026\150\240\136\256\013\043\374\132\017
\252\042\166\055\311\241\020\035\344\323\104\043\220\210\237\306
\052\346\327\365\232\263\130\036\057\060\211\010\033\124\242\265
\230\043\354\010\167\034\225\135\141\321\313\211\234\137\242\112
\221\232\357\041\252\111\026\010\250\275\141\050\061\311\164\255
\205\366\331\305\261\213\321\345\020\062\115\137\213\040\072\074
\111\037\063\205\131\015\333\313\011\165\103\151\163\373\153\161
\175\360\337\304\114\175\306\243\056\310\225\171\313\163\242\216
\116\115\044\373\136\344\004\276\162\033\246\047\055\111\132\231
\172\327\134\011\040\267\177\224\271\117\361\015\034\136\210\102
\033\021\267\347\221\333\236\154\364\152\337\214\006\230\003\255

\314\050\357\245\107\363\123\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\035\006\003\125\035\016\004\026\004\024\243\227\326\363
\136\242\020\341\253\105\237\074\027\144\074\356\001\160\234\314
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\030\372\133\165\374\076\172\307\137\167\307\312
\337\317\137\303\022\304\100\135\324\062\252\270\152\327\325\025
\025\106\230\043\245\346\220\133\030\231\114\343\255\102\243\202
\061\066\210\315\351\373\304\004\226\110\213\001\307\215\001\317
\133\063\006\226\106\146\164\035\117\355\301\266\271\264\015\141
\314\143\176\327\056\167\214\226\034\052\043\150\153\205\127\166
\160\063\023\376\341\117\246\043\167\030\372\032\214\350\275\145
\311\317\077\364\311\027\334\353\307\274\300\004\056\055\106\057
\151\146\303\033\217\376\354\076\323\312\224\277\166\012\045\015
\251\173\002\034\251\320\073\137\013\300\201\072\075\144\341\277
\247\055\116\275\115\304\330\051\306\042\030\320\305\254\162\002
\202\077\252\072\242\072\042\227\061\335\010\143\303\165\024\271
\140\050\055\133\150\340\026\251\146\202\043\121\365\353\123\330
\061\233\173\351\267\235\113\353\210\026\317\371\135\070\212\111
\060\217\355\361\353\031\364\167\032\061\030\115\147\124\154\057
\157\145\371\333\075\354\041\354\136\364\364\213\312\140\145\124
\321\161\144\364\371\246\243\201\063\066\063\161\360\244\170\137
\116\255\203\041\336\064\111\215\350\131\254\235\362\166\132\066
\362\023\364\257\340\011\307\141\052\154\367\340\235\256\273\206
\112\050\157\056\356\264\171\315\220\063\303\263\166\372\365\360
\154\235\001\220\372\236\220\366\234\162\317\107\332\303\037\344
\065\040\123\362\124\321\337\141\203\246\002\342\045\070\336\205
\062\055\136\163\220\122\135\102\304\316\075\113\341\371\031\204
\035\325\242\120\314\101\373\101\024\303\275\326\311\132\243\143
\146\002\200\275\005\072\073\107\234\354\000\046\114\365\210\121
\277\250\043\177\030\007\260\013\355\213\046\241\144\323\141\112
\353\134\237\336\263\257\147\003\263\037\335\155\135\151\150\151
\253\136\072\354\174\151\274\307\073\205\116\236\025\271\264\025
\117\303\225\172\130\327\311\154\351\154\271\363\051\143\136\264
\054\360\055\075\355\132\145\340\251\133\100\302\110\231\201\155
\236\037\006\052\074\022\264\213\017\233\242\044\360\246\215\326
\172\340\113\266\144\226\143\225\204\302\112\315\034\056\044\207
\063\140\345\303
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 1 G3"
Issuer: CN=QuoVadis Root CA 1 G3,O=QuoVadis Limited,C=BM
Serial Number:78:58:5f:2e:ad:2c:19:4b:e3:37:07:35:34:13:28:b5:96:d4:65:93
Subject: CN=QuoVadis Root CA 1 G3,O=QuoVadis Limited,C=BM

Not Valid Before: Thu Jan 12 17:27:44 2012
Not Valid After : Sun Jan 12 17:27:44 2042
Fingerprint (SHA-256):
8A:86:6F:D1:B2:76:B5:7E:57:8E:92:1C:65:82:8A:2B:ED:58:E9:F2:F2:88:05:41:34:B7:F1:F4:BF:C9:CC:74
Fingerprint (SHA1): 1B:8E:EA:57:96:29:1A:C9:39:EA:B8:0A:81:1A:73:73:C0:93:79:67
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 1 G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\033\216\352\127\226\051\032\311\071\352\270\012\201\032\163\163
\300\223\171\147
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\244\274\133\077\376\067\232\372\144\360\342\372\005\075\013\253
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\061\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\170\130\137\056\255\054\031\113\343\067\007\065\064\023
\050\265\226\324\145\223
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "QuoVadis Root CA 2 G3"
#
Issuer: CN=QuoVadis Root CA 2 G3,O=QuoVadis Limited,C=BM
Serial Number:44:57:34:24:5b:81:89:9b:35:f2:ce:b8:2b:3b:5b:a7:26:f0:75:28
Subject: CN=QuoVadis Root CA 2 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 18:59:32 2012
Not Valid After : Sun Jan 12 18:59:32 2042
Fingerprint (SHA-256):
8F:E4:FB:0A:F9:3A:4D:0D:67:DB:0B:EB:B2:3E:37:C7:1B:F3:25:DC:BC:DD:24:0E:A0:4D:AF:58:B4:7E:18:40
Fingerprint (SHA1): 09:3C:61:F3:8B:8B:DC:7D:55:DF:75:38:02:05:00:E1:25:F5:C8:36
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "QuoVadis Root CA 2 G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\104\127\064\044\133\201\211\233\065\362\316\270\053\073
\133\247\046\360\165\050
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\140\060\202\003\110\240\003\002\001\002\002\024\104
\127\064\044\133\201\211\233\065\362\316\270\053\073\133\247\046
\360\165\050\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\110\061\013\060\011\006\003\125\004\006\023\002\102
\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\036\060\034
\006\003\125\004\003\023\025\121\165\157\126\141\144\151\163\040
\122\157\157\164\040\103\101\040\062\040\107\063\060\036\027\015
\061\062\060\061\061\062\061\070\065\071\063\062\132\027\015\064
\062\060\061\061\062\061\070\065\071\063\062\132\060\110\061\013
\060\011\006\003\125\004\006\023\002\102\115\061\031\060\027\006
\003\125\004\012\023\020\121\165\157\126\141\144\151\163\040\114
\151\155\151\164\145\144\061\036\060\034\006\003\125\004\003\023
\025\121\165\157\126\141\144\151\163\040\122\157\157\164\040\103
\101\040\062\040\107\063\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\241\256\045\262\001\030\334\127\210
\077\106\353\371\257\342\353\043\161\342\232\321\141\146\041\137
\252\257\047\121\345\156\033\026\324\055\175\120\260\123\167\275
\170\072\140\342\144\002\233\174\206\233\326\032\216\255\377\037
\025\177\325\225\036\022\313\346\024\204\004\301\337\066\263\026
\237\212\343\311\333\230\064\316\330\063\027\050\106\374\247\311
\360\322\264\325\115\011\162\111\371\362\207\343\251\332\175\241
\175\153\262\072\045\251\155\122\104\254\370\276\156\373\334\246
\163\221\220\141\246\003\024\040\362\347\207\243\210\255\255\240
\214\377\246\013\045\122\045\347\026\001\325\313\270\065\201\014

\243\073\360\341\341\374\132\135\316\200\161\155\370\111\253\076
\073\272\270\327\200\001\373\245\353\133\263\305\136\140\052\061
\240\257\067\350\040\072\237\250\062\054\014\314\011\035\323\236
\216\135\274\114\230\356\305\032\150\173\354\123\246\351\024\065
\243\337\315\200\237\014\110\373\034\364\361\277\112\270\372\325
\214\161\112\307\037\255\376\101\232\263\203\135\362\204\126\357
\245\127\103\316\051\255\214\253\125\277\304\373\133\001\335\043
\041\241\130\000\216\303\320\152\023\355\023\343\022\053\200\334
\147\346\225\262\315\036\042\156\052\370\101\324\362\312\024\007
\215\212\125\022\306\151\365\270\206\150\057\123\136\260\322\252
\041\301\230\346\060\343\147\125\307\233\156\254\031\250\125\246
\105\006\320\043\072\333\353\145\135\052\021\021\360\073\117\312
\155\364\064\304\161\344\377\000\132\366\134\256\043\140\205\163
\361\344\020\261\045\256\325\222\273\023\301\014\340\071\332\264
\071\127\265\253\065\252\162\041\073\203\065\347\061\337\172\041
\156\270\062\010\175\035\062\221\025\112\142\162\317\343\167\241
\274\325\021\033\166\001\147\010\340\101\013\303\353\025\156\370
\244\031\331\242\253\257\342\047\122\126\053\002\212\054\024\044
\371\277\102\002\277\046\310\306\217\340\156\070\175\123\055\345
\355\230\263\225\143\150\177\371\065\364\337\210\305\140\065\222
\300\174\151\034\141\225\026\320\353\336\013\257\076\004\020\105
\145\130\120\070\257\110\362\131\266\026\362\074\015\220\002\306
\160\056\001\255\074\025\327\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\035\006\003\125\035\016\004\026\004\024\355\347\157\166
\132\277\140\354\111\133\306\245\167\273\162\026\161\233\304\075
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\221\337\200\077\103\011\176\161\302\367\353\263
\210\217\341\121\262\274\075\165\371\050\135\310\274\231\233\173
\135\252\345\312\341\012\367\350\262\323\237\335\147\061\176\272
\001\252\307\152\101\073\220\324\010\134\262\140\152\220\360\310
\316\003\142\371\213\355\373\156\052\334\006\115\074\051\017\211
\026\212\130\114\110\017\350\204\141\352\074\162\246\167\344\102
\256\210\243\103\130\171\176\256\312\245\123\015\251\075\160\275
\040\031\141\244\154\070\374\103\062\341\301\107\377\370\354\361
\021\042\062\226\234\302\366\133\151\226\173\040\014\103\101\232
\133\366\131\031\210\336\125\210\067\121\013\170\134\012\036\243
\102\375\307\235\210\017\300\362\170\002\044\124\223\257\211\207
\210\311\112\200\035\352\320\156\076\141\056\066\273\065\016\047
\226\375\146\064\073\141\162\163\361\026\134\107\006\124\111\000
\172\130\022\260\012\357\205\375\261\270\063\165\152\223\034\022
\346\140\136\157\035\177\311\037\043\313\204\141\237\036\202\104
\371\137\255\142\125\044\232\122\230\355\121\347\241\176\227\072
\346\057\037\021\332\123\200\054\205\236\253\065\020\333\042\137
\152\305\136\227\123\362\062\002\011\060\243\130\360\015\001\325
\162\306\261\174\151\173\303\365\066\105\314\141\156\136\114\224
\305\136\256\350\016\136\213\277\367\315\340\355\241\016\033\063

\356\124\030\376\017\276\357\176\204\153\103\343\160\230\333\135
\165\262\015\131\007\205\025\043\071\326\361\337\251\046\017\326
\110\307\263\246\042\365\063\067\132\225\107\237\173\272\030\025
\157\377\326\024\144\203\111\322\012\147\041\333\017\065\143\140
\050\042\343\261\225\203\315\205\246\335\057\017\347\147\122\156
\273\057\205\174\365\112\163\347\305\076\300\275\041\022\005\077
\374\267\003\111\002\133\310\045\346\342\124\070\365\171\207\214
\035\123\262\116\205\173\006\070\307\054\370\370\260\162\215\045
\345\167\122\364\003\034\110\246\120\137\210\040\060\156\362\202
\103\253\075\227\204\347\123\373\041\301\117\017\042\232\206\270
\131\052\366\107\075\031\210\055\350\205\341\236\354\205\010\152
\261\154\064\311\035\354\110\053\073\170\355\146\304\216\171\151
\203\336\177\214
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 2 G3"
Issuer: CN=QuoVadis Root CA 2 G3,O=QuoVadis Limited,C=BM
Serial Number:44:57:34:24:5b:81:89:9b:35:f2:ce:b8:2b:3b:5b:a7:26:f0:75:28
Subject: CN=QuoVadis Root CA 2 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 18:59:32 2012
Not Valid After : Sun Jan 12 18:59:32 2042
Fingerprint (SHA-256):
8F:E4:FB:0A:F9:3A:4D:0D:67:DB:0B:EB:B2:3E:37:C7:1B:F3:25:DC:BC:DD:24:0E:A0:4D:AF:58:B4:7E:18:40
Fingerprint (SHA1): 09:3C:61:F3:8B:8B:DC:7D:55:DF:75:38:02:05:00:E1:25:F5:C8:36
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 2 G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\011\074\141\363\213\213\334\175\125\337\165\070\002\005\000\341
\045\365\310\066
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\257\014\206\156\277\100\055\177\013\076\022\120\272\022\075\006
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\104\127\064\044\133\201\211\233\065\362\316\270\053\073

\133\247\046\360\165\050
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "QuoVadis Root CA 3 G3"
#
Issuer: CN=QuoVadis Root CA 3 G3,O=QuoVadis Limited,C=BM
Serial Number:2e:f5:9b:02:28:a7:db:7a:ff:d5:a3:a9:ee:bd:03:a0:cf:12:6a:1d
Subject: CN=QuoVadis Root CA 3 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 20:26:32 2012
Not Valid After : Sun Jan 12 20:26:32 2042
Fingerprint (SHA-256):
88:EF:81:DE:20:2E:B0:18:45:2E:43:F8:64:72:5C:EA:5F:BD:1F:C2:D9:D2:05:73:07:09:C5:D8:B8:69:0F:46
Fingerprint (SHA1): 48:12:BD:92:3C:A8:C4:39:06:E7:30:6D:27:96:E6:A4:CF:22:2E:7D
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 3 G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\056\365\233\002\050\247\333\172\377\325\243\251\356\275
\003\240\317\022\152\035
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\140\060\202\003\110\240\003\002\001\002\002\024\056
\365\233\002\050\247\333\172\377\325\243\251\356\275\003\240\317
\022\152\035\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\110\061\013\060\011\006\003\125\004\006\023\002\102

\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\036\060\034
\006\003\125\004\003\023\025\121\165\157\126\141\144\151\163\040
\122\157\157\164\040\103\101\040\063\040\107\063\060\036\027\015
\061\062\060\061\061\062\062\060\062\066\063\062\132\027\015\064
\062\060\061\061\062\062\060\062\066\063\062\132\060\110\061\013
\060\011\006\003\125\004\006\023\002\102\115\061\031\060\027\006
\003\125\004\012\023\020\121\165\157\126\141\144\151\163\040\114
\151\155\151\164\145\144\061\036\060\034\006\003\125\004\003\023
\025\121\165\157\126\141\144\151\163\040\122\157\157\164\040\103
\101\040\063\040\107\063\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\263\313\016\020\147\216\352\024\227
\247\062\052\012\126\066\177\150\114\307\263\157\072\043\024\221
\377\031\177\245\312\254\356\263\166\235\172\351\213\033\253\153
\061\333\372\013\123\114\257\305\245\032\171\074\212\114\377\254
\337\045\336\116\331\202\062\013\104\336\312\333\214\254\243\156
\026\203\073\246\144\113\062\211\373\026\026\070\176\353\103\342
\323\164\112\302\142\012\163\012\335\111\263\127\322\260\012\205
\235\161\074\336\243\313\300\062\363\001\071\040\103\033\065\321
\123\263\261\356\305\223\151\202\076\026\265\050\106\241\336\352
\211\011\355\103\270\005\106\212\206\365\131\107\276\033\157\001
\041\020\271\375\251\322\050\312\020\071\011\312\023\066\317\234
\255\255\100\164\171\053\002\077\064\377\372\040\151\175\323\356
\141\365\272\263\347\060\320\067\043\206\162\141\105\051\110\131
\150\157\167\246\056\201\276\007\115\157\257\316\304\105\023\221
\024\160\006\217\037\237\370\207\151\261\016\357\303\211\031\353
\352\034\141\374\172\154\212\334\326\003\013\236\046\272\022\335
\324\124\071\253\046\243\063\352\165\201\332\055\315\017\117\344
\003\321\357\025\227\033\153\220\305\002\220\223\146\002\041\261
\107\336\213\232\112\200\271\125\217\265\242\057\300\326\063\147
\332\176\304\247\264\004\104\353\107\373\346\130\271\367\014\360
\173\053\261\300\160\051\303\100\142\055\073\110\151\334\043\074
\110\353\173\011\171\251\155\332\250\060\230\317\200\162\003\210
\246\133\106\256\162\171\174\010\003\041\145\256\267\341\034\245
\261\052\242\061\336\146\004\367\300\164\350\161\336\377\075\131
\314\226\046\022\213\205\225\127\032\253\153\165\013\104\075\021
\050\074\173\141\267\342\217\147\117\345\354\074\114\140\200\151
\127\070\036\001\133\215\125\350\307\337\300\314\167\043\064\111
\165\174\366\230\021\353\055\336\355\101\056\024\005\002\177\340
\376\040\353\065\347\021\254\042\316\127\075\336\311\060\155\020
\003\205\315\361\377\214\026\265\301\262\076\210\154\140\177\220
\117\225\367\366\055\255\001\071\007\004\372\165\200\175\277\111
\120\355\357\311\304\174\034\353\200\176\333\266\320\335\023\376
\311\323\234\327\262\227\251\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\035\006\003\125\035\016\004\026\004\024\306\027\320\274

\250\352\002\103\362\033\006\231\135\053\220\040\271\327\234\344
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\064\141\331\126\265\022\207\125\115\335\243\065
\061\106\273\244\007\162\274\137\141\142\350\245\373\013\067\261
\074\266\263\372\051\235\177\002\365\244\311\250\223\267\172\161
\050\151\217\163\341\122\220\332\325\276\072\345\267\166\152\126
\200\041\337\135\346\351\072\236\345\076\366\242\151\307\052\012
\260\030\107\334\040\160\175\122\243\076\131\174\301\272\311\310
\025\100\141\312\162\326\160\254\322\267\360\034\344\206\051\360
\316\357\150\143\320\265\040\212\025\141\232\176\206\230\264\311
\302\166\373\314\272\060\026\314\243\141\306\164\023\345\153\357
\243\025\352\003\376\023\213\144\344\323\301\322\350\204\373\111
\321\020\115\171\146\353\252\375\364\215\061\036\160\024\255\334
\336\147\023\114\201\025\141\274\267\331\221\167\161\031\201\140
\273\360\130\245\265\234\013\367\217\042\125\047\300\113\001\155
\073\231\015\324\035\233\143\147\057\320\356\015\312\146\274\224
\117\246\255\355\374\356\143\254\127\077\145\045\317\262\206\217
\320\010\377\270\166\024\156\336\345\047\354\253\170\265\123\271
\266\077\350\040\371\322\250\276\141\106\312\207\214\204\363\371
\361\240\150\233\042\036\201\046\233\020\004\221\161\300\006\037
\334\240\323\271\126\247\343\230\055\177\203\235\337\214\053\234
\062\216\062\224\360\001\074\042\052\237\103\302\056\303\230\071
\007\070\173\374\136\000\102\037\363\062\046\171\203\204\366\345
\360\301\121\022\300\013\036\004\043\014\124\245\114\057\111\305
\112\321\266\156\140\015\153\374\153\213\205\044\144\267\211\016
\253\045\107\133\074\317\176\111\275\307\351\012\306\332\367\176
\016\027\010\323\110\227\320\161\222\360\017\071\076\064\152\034
\175\330\362\042\256\273\151\364\063\264\246\110\125\321\017\016
\046\350\354\266\013\055\247\205\065\315\375\131\310\237\321\315
\076\132\051\064\271\075\204\316\261\145\324\131\221\221\126\165
\041\301\167\236\371\172\341\140\235\323\255\004\030\364\174\353
\136\223\217\123\112\042\051\370\110\053\076\115\206\254\133\177
\313\006\231\131\140\330\130\145\225\215\104\321\367\177\176\047
\177\175\256\200\365\007\114\266\076\234\161\124\231\004\113\375
\130\371\230\364
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 3 G3"
Issuer: CN=QuoVadis Root CA 3 G3,O=QuoVadis Limited,C=BM
Serial Number:2e:f5:9b:02:28:a7:db:7a:ff:d5:a3:a9:ee:bd:03:a0:cf:12:6a:1d
Subject: CN=QuoVadis Root CA 3 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 20:26:32 2012
Not Valid After : Sun Jan 12 20:26:32 2042
Fingerprint (SHA-256):
88:EF:81:DE:20:2E:B0:18:45:2E:43:F8:64:72:5C:EA:5F:BD:1F:C2:D9:D2:05:73:07:09:C5:D8:B8:69:0F:46

Fingerprint (SHA1): 48:12:BD:92:3C:A8:C4:39:06:E7:30:6D:27:96:E6:A4:CF:22:2E:7D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 3 G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\110\022\275\222\074\250\304\071\006\347\060\155\047\226\346\244
\317\042\056\175
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\337\175\271\255\124\157\150\241\337\211\127\003\227\103\260\327
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\056\365\233\002\050\247\333\172\377\325\243\251\356\275
\003\240\317\022\152\035
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Assured ID Root G2"
#
Issuer: CN=DigiCert Assured ID Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0b:93:1c:3a:d6:39:67:ea:67:23:bf:c3:af:9a:f4:4b
Subject: CN=DigiCert Assured ID Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
7D:05:EB:B6:82:33:9F:8C:94:51:EE:09:4E:EB:FE:FA:79:53:A1:14:ED:B2:F4:49:49:45:2F:AB:7D:2F:C1:85
Fingerprint (SHA1): A1:4B:48:D9:43:EE:0A:0E:40:90:4F:3C:E0:A4:C0:91:93:51:5D:3F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061

\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\013\223\034\072\326\071\147\352\147\043\277\303\257\232
\364\113
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\226\060\202\002\176\240\003\002\001\002\002\020\013
\223\034\072\326\071\147\352\147\043\277\303\257\232\364\113\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\145
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\044\060\042\006\003\125\004\003\023\033\104\151\147\151\103\145
\162\164\040\101\163\163\165\162\145\144\040\111\104\040\122\157
\157\164\040\107\062\060\036\027\015\061\063\060\070\060\061\061
\062\060\060\060\060\132\027\015\063\070\060\061\061\065\061\062
\060\060\060\060\132\060\145\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\025\060\023\006\003\125\004\012\023\014\104
\151\147\151\103\145\162\164\040\111\156\143\061\031\060\027\006
\003\125\004\013\023\020\167\167\167\056\144\151\147\151\143\145
\162\164\056\143\157\155\061\044\060\042\006\003\125\004\003\023
\033\104\151\147\151\103\145\162\164\040\101\163\163\165\162\145
\144\040\111\104\040\122\157\157\164\040\107\062\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\331\347\050
\057\122\077\066\162\111\210\223\064\363\370\152\036\061\124\200
\237\255\124\101\265\107\337\226\250\324\257\200\055\271\012\317
\165\375\211\245\175\044\372\343\042\014\053\274\225\027\013\063
\277\031\115\101\006\220\000\275\014\115\020\376\007\265\347\034
\156\042\125\061\145\227\275\323\027\322\036\142\363\333\352\154
\120\214\077\204\014\226\317\267\313\003\340\312\155\241\024\114

\033\211\335\355\000\260\122\174\257\221\154\261\070\023\321\351
\022\010\300\000\260\034\053\021\332\167\160\066\233\256\316\171
\207\334\202\160\346\011\164\160\125\151\257\243\150\237\277\335
\266\171\263\362\235\160\051\125\364\253\377\225\141\363\311\100
\157\035\321\276\223\273\323\210\052\273\235\277\162\132\126\161
\073\077\324\363\321\012\376\050\357\243\356\331\231\257\003\323
\217\140\267\362\222\241\261\275\211\211\037\060\315\303\246\056
\142\063\256\026\002\167\104\132\347\201\012\074\247\104\056\171
\270\077\004\274\134\240\207\341\033\257\121\216\315\354\054\372
\370\376\155\360\072\174\252\213\344\147\225\061\215\002\003\001
\000\001\243\102\060\100\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\206\060\035\006\003\125\035\016\004\026
\004\024\316\303\112\271\231\125\362\270\333\140\277\251\176\275
\126\265\227\066\247\326\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\001\001\000\312\245\125\214\343\310
\101\156\151\047\247\165\021\357\074\206\066\157\322\235\306\170
\070\035\151\226\242\222\151\056\070\154\233\175\004\324\211\245
\261\061\067\212\311\041\314\253\154\315\213\034\232\326\277\110
\322\062\146\301\212\300\363\057\072\357\300\343\324\221\206\321
\120\343\003\333\163\167\157\112\071\123\355\336\046\307\265\175
\257\053\102\321\165\142\343\112\053\002\307\120\113\340\151\342
\226\154\016\104\146\020\104\217\255\005\353\370\171\254\246\033
\350\067\064\235\123\311\141\252\242\122\257\112\160\026\206\302
\072\310\261\023\160\066\330\317\356\364\012\064\325\133\114\375
\007\234\242\272\331\001\162\134\363\115\301\335\016\261\034\015
\304\143\276\255\364\024\373\211\354\242\101\016\114\314\310\127
\100\320\156\003\252\315\014\216\211\231\231\154\360\074\060\257
\070\337\157\274\243\276\051\040\047\253\164\377\023\042\170\336
\227\122\125\036\203\265\124\040\003\356\256\300\117\126\336\067
\314\303\177\252\004\047\273\323\167\270\142\333\027\174\234\050
\042\023\163\154\317\046\365\212\051\347
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Assured ID Root G2"
Issuer: CN=DigiCert Assured ID Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0b:93:1c:3a:d6:39:67:ea:67:23:bf:c3:af:9a:f4:4b
Subject: CN=DigiCert Assured ID Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
7D:05:EB:B6:82:33:9F:8C:94:51:EE:09:4E:EB:FE:FA:79:53:A1:14:ED:B2:F4:49:49:45:2F:AB:7D:2F:C1:85
Fingerprint (SHA1): A1:4B:48:D9:43:EE:0A:0E:40:90:4F:3C:E0:A4:C0:91:93:51:5D:3F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\241\113\110\331\103\356\012\016\100\220\117\074\340\244\300\221
\223\121\135\077
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\222\070\271\370\143\044\202\145\054\127\063\346\376\201\217\235
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\013\223\034\072\326\071\147\352\147\043\277\303\257\232
\364\113
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Assured ID Root G3"
#
Issuer: CN=DigiCert Assured ID Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0b:a1:5a:fa:1d:df:a0:b5:49:44:af:cd:24:a0:6c:ec
Subject: CN=DigiCert Assured ID Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
7E:37:CB:8B:4C:47:09:0C:AB:36:55:1B:A6:F4:5D:B8:40:68:0F:BA:16:6A:95:2D:B1:00:71:7F:43:05:3F:C2
Fingerprint (SHA1): F5:17:A2:4F:9A:48:C6:C9:F8:A2:00:26:9F:DC:0F:48:2C:AB:30:89
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145

\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\013\241\132\372\035\337\240\265\111\104\257\315\044\240
\154\354
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\106\060\202\001\315\240\003\002\001\002\002\020\013
\241\132\372\035\337\240\265\111\104\257\315\044\240\154\354\060
\012\006\010\052\206\110\316\075\004\003\003\060\145\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\025\060\023\006\003
\125\004\012\023\014\104\151\147\151\103\145\162\164\040\111\156
\143\061\031\060\027\006\003\125\004\013\023\020\167\167\167\056
\144\151\147\151\143\145\162\164\056\143\157\155\061\044\060\042
\006\003\125\004\003\023\033\104\151\147\151\103\145\162\164\040
\101\163\163\165\162\145\144\040\111\104\040\122\157\157\164\040
\107\063\060\036\027\015\061\063\060\070\060\061\061\062\060\060
\060\060\132\027\015\063\070\060\061\061\065\061\062\060\060\060
\060\132\060\145\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\025\060\023\006\003\125\004\012\023\014\104\151\147\151
\103\145\162\164\040\111\156\143\061\031\060\027\006\003\125\004
\013\023\020\167\167\167\056\144\151\147\151\143\145\162\164\056
\143\157\155\061\044\060\042\006\003\125\004\003\023\033\104\151
\147\151\103\145\162\164\040\101\163\163\165\162\145\144\040\111
\104\040\122\157\157\164\040\107\063\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\031\347\274\254\104\145\355\315\270\077\130\373\215\261\127
\251\104\055\005\025\362\357\013\377\020\164\237\265\142\122\137
\146\176\037\345\334\033\105\171\013\314\306\123\012\235\215\135
\002\331\251\131\336\002\132\366\225\052\016\215\070\112\212\111
\306\274\306\003\070\007\137\125\332\176\011\156\342\177\136\320
\105\040\017\131\166\020\326\240\044\360\055\336\066\362\154\051
\071\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377

\004\004\003\002\001\206\060\035\006\003\125\035\016\004\026\004
\024\313\320\275\251\341\230\005\121\241\115\067\242\203\171\316
\215\035\052\344\204\060\012\006\010\052\206\110\316\075\004\003
\003\003\147\000\060\144\002\060\045\244\201\105\002\153\022\113
\165\164\117\310\043\343\160\362\165\162\336\174\211\360\317\221
\162\141\236\136\020\222\131\126\271\203\307\020\347\070\351\130
\046\066\175\325\344\064\206\071\002\060\174\066\123\360\060\345
\142\143\072\231\342\266\243\073\233\064\372\036\332\020\222\161
\136\221\023\247\335\244\156\222\314\062\326\365\041\146\307\057
\352\226\143\152\145\105\222\225\001\264
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Assured ID Root G3"
Issuer: CN=DigiCert Assured ID Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0b:a1:5a:fa:1d:df:a0:b5:49:44:af:cd:24:a0:6c:ec
Subject: CN=DigiCert Assured ID Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
7E:37:CB:8B:4C:47:09:0C:AB:36:55:1B:A6:F4:5D:B8:40:68:0F:BA:16:6A:95:2D:B1:00:71:7F:43:05:3F:C2
Fingerprint (SHA1): F5:17:A2:4F:9A:48:C6:C9:F8:A2:00:26:9F:DC:0F:48:2C:AB:30:89
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\365\027\242\117\232\110\306\311\370\242\000\046\237\334\017\110
\054\253\060\211
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\174\177\145\061\014\201\337\215\272\076\231\342\134\255\156\373
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\013\241\132\372\035\337\240\265\111\104\257\315\044\240
\154\354

END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Global Root G2"
#
Issuer: CN=DigiCert Global Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:03:3a:f1:e6:a7:11:a9:a0:bb:28:64:b1:1d:09:fa:e5
Subject: CN=DigiCert Global Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
CB:3C:CB:B7:60:31:E5:E0:13:8F:8D:D3:9A:23:F9:DE:47:FF:C3:5E:43:C1:14:4C:EA:27:D4:6A:5A:B1:CB:5F
Fingerprint (SHA1): DF:3C:24:F9:BF:D6:66:76:1B:26:80:73:FE:06:D1:CC:8D:4F:82:A4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\003\072\361\346\247\021\251\240\273\050\144\261\035\011
\372\345
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\216\060\202\002\166\240\003\002\001\002\002\020\003

\072\361\346\247\021\251\240\273\050\144\261\035\011\372\345\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\141
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\040\060\036\006\003\125\004\003\023\027\104\151\147\151\103\145
\162\164\040\107\154\157\142\141\154\040\122\157\157\164\040\107
\062\060\036\027\015\061\063\060\070\060\061\061\062\060\060\060
\060\132\027\015\063\070\060\061\061\065\061\062\060\060\060\060
\132\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103
\145\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013
\023\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143
\157\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147
\151\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157
\164\040\107\062\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\273\067\315\064\334\173\153\311\262\150\220
\255\112\165\377\106\272\041\012\010\215\365\031\124\311\373\210
\333\363\256\362\072\211\221\074\172\346\253\006\032\153\317\254
\055\350\136\011\044\104\272\142\232\176\326\243\250\176\340\124
\165\040\005\254\120\267\234\143\032\154\060\334\332\037\031\261
\327\036\336\375\327\340\313\224\203\067\256\354\037\103\116\335
\173\054\322\275\056\245\057\344\251\270\255\072\324\231\244\266
\045\351\233\153\000\140\222\140\377\117\041\111\030\367\147\220
\253\141\006\234\217\362\272\351\264\351\222\062\153\265\363\127
\350\135\033\315\214\035\253\225\004\225\111\363\065\055\226\343
\111\155\335\167\343\373\111\113\264\254\125\007\251\217\225\263
\264\043\273\114\155\105\360\366\251\262\225\060\264\375\114\125
\214\047\112\127\024\174\202\235\315\163\222\323\026\112\006\014
\214\120\321\217\036\011\276\027\241\346\041\312\375\203\345\020
\274\203\245\012\304\147\050\366\163\024\024\075\106\166\303\207
\024\211\041\064\115\257\017\105\014\246\111\241\272\273\234\305
\261\063\203\051\205\002\003\001\000\001\243\102\060\100\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060
\035\006\003\125\035\016\004\026\004\024\116\042\124\040\030\225
\346\343\156\346\017\372\372\271\022\355\006\027\217\071\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001
\001\000\140\147\050\224\157\016\110\143\353\061\335\352\147\030
\325\211\175\074\305\213\112\177\351\276\333\053\027\337\260\137
\163\167\052\062\023\071\201\147\102\204\043\362\105\147\065\354
\210\277\370\217\260\141\014\064\244\256\040\114\204\306\333\370
\065\341\166\331\337\246\102\273\307\104\010\206\177\066\164\044
\132\332\154\015\024\131\065\275\362\111\335\266\037\311\263\015
\107\052\075\231\057\273\134\273\265\324\040\341\231\137\123\106
\025\333\150\233\360\363\060\325\076\061\342\215\204\236\343\212

\332\332\226\076\065\023\245\137\360\371\160\120\160\107\101\021
\127\031\116\300\217\256\006\304\225\023\027\057\033\045\237\165
\362\261\216\231\241\157\023\261\101\161\376\210\052\310\117\020
\040\125\327\363\024\105\345\340\104\364\352\207\225\062\223\016
\376\123\106\372\054\235\377\213\042\271\113\331\011\105\244\336
\244\270\232\130\335\033\175\122\237\216\131\103\210\201\244\236
\046\325\157\255\335\015\306\067\175\355\003\222\033\345\167\137
\166\356\074\215\304\135\126\133\242\331\146\156\263\065\067\345
\062\266
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Global Root G2"
Issuer: CN=DigiCert Global Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:03:3a:f1:e6:a7:11:a9:a0:bb:28:64:b1:1d:09:fa:e5
Subject: CN=DigiCert Global Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
CB:3C:CB:B7:60:31:E5:E0:13:8F:8D:D3:9A:23:F9:DE:47:FF:C3:5E:43:C1:14:4C:EA:27:D4:6A:5A:B1:CB:5F
Fingerprint (SHA1): DF:3C:24:F9:BF:D6:66:76:1B:26:80:73:FE:06:D1:CC:8D:4F:82:A4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\337\074\044\371\277\326\146\166\033\046\200\163\376\006\321\314
\215\117\202\244
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\344\246\212\310\124\254\122\102\106\012\375\162\110\033\052\104
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\003\072\361\346\247\021\251\240\273\050\144\261\035\011
\372\345
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Global Root G3"
#
Issuer: CN=DigiCert Global Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:05:55:56:bc:f2:5e:a4:35:35:c3:a4:0f:d5:ab:45:72
Subject: CN=DigiCert Global Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
31:AD:66:48:F8:10:41:38:C7:38:F3:9E:A4:32:01:33:39:3E:3A:18:CC:02:29:6E:F9:7C:2A:C9:EF:67:31:D0
Fingerprint (SHA1): 7E:04:DE:89:6A:3E:66:6D:00:E6:87:D3:3F:FA:D9:3B:E8:3D:34:9E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\125\126\274\362\136\244\065\065\303\244\017\325\253
\105\162
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\077\060\202\001\305\240\003\002\001\002\002\020\005
\125\126\274\362\136\244\065\065\303\244\017\325\253\105\162\060

\012\006\010\052\206\110\316\075\004\003\003\060\141\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\025\060\023\006\003
\125\004\012\023\014\104\151\147\151\103\145\162\164\040\111\156
\143\061\031\060\027\006\003\125\004\013\023\020\167\167\167\056
\144\151\147\151\143\145\162\164\056\143\157\155\061\040\060\036
\006\003\125\004\003\023\027\104\151\147\151\103\145\162\164\040
\107\154\157\142\141\154\040\122\157\157\164\040\107\063\060\036
\027\015\061\063\060\070\060\061\061\062\060\060\060\060\132\027
\015\063\070\060\061\061\065\061\062\060\060\060\060\132\060\141
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\040\060\036\006\003\125\004\003\023\027\104\151\147\151\103\145
\162\164\040\107\154\157\142\141\154\040\122\157\157\164\040\107
\063\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\335\247\331\273\212\270\013
\373\013\177\041\322\360\276\276\163\363\063\135\032\274\064\352
\336\306\233\274\320\225\366\360\314\320\013\272\141\133\121\106
\176\236\055\237\356\216\143\014\027\354\007\160\365\317\204\056
\100\203\234\350\077\101\155\073\255\323\244\024\131\066\170\235
\003\103\356\020\023\154\162\336\256\210\247\241\153\265\103\316
\147\334\043\377\003\034\243\342\076\243\102\060\100\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\035
\006\003\125\035\016\004\026\004\024\263\333\110\244\371\241\305
\330\256\066\101\314\021\143\151\142\051\274\113\306\060\012\006
\010\052\206\110\316\075\004\003\003\003\150\000\060\145\002\061
\000\255\274\362\154\077\022\112\321\055\071\303\012\011\227\163
\364\210\066\214\210\047\273\346\210\215\120\205\247\143\371\236
\062\336\146\223\017\361\314\261\011\217\335\154\253\372\153\177
\240\002\060\071\146\133\302\144\215\270\236\120\334\250\325\111
\242\355\307\334\321\111\177\027\001\270\310\206\217\116\214\210
\053\250\232\251\212\305\321\000\275\370\124\342\232\345\133\174
\263\047\027
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Global Root G3"
Issuer: CN=DigiCert Global Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:05:55:56:bc:f2:5e:a4:35:35:c3:a4:0f:d5:ab:45:72
Subject: CN=DigiCert Global Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
31:AD:66:48:F8:10:41:38:C7:38:F3:9E:A4:32:01:33:39:3E:3A:18:CC:02:29:6E:F9:7C:2A:C9:EF:67:31:D0

Fingerprint (SHA1): 7E:04:DE:89:6A:3E:66:6D:00:E6:87:D3:3F:FA:D9:3B:E8:3D:34:9E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\176\004\336\211\152\076\146\155\000\346\207\323\077\372\331\073
\350\075\064\236
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\365\135\244\120\245\373\050\176\036\017\015\314\226\127\126\312
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\125\126\274\362\136\244\065\065\303\244\017\325\253
\105\162
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Trusted Root G4"
#
Issuer: CN=DigiCert Trusted Root G4,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:05:9b:1b:57:9e:8e:21:32:e2:39:07:bd:a7:77:75:5c
Subject: CN=DigiCert Trusted Root G4,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
55:2F:7B:DC:F1:A7:AF:9E:6C:E6:72:01:7F:4F:12:AB:F7:72:40:C7:8E:76:1A:C2:03:D1:D9:D2:0A:C8:99:88
Fingerprint (SHA1): DD:FB:16:CD:49:31:C9:73:A2:03:7D:3F:C8:3A:4D:7D:77:5D:05:E4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Trusted Root G4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509

CKA_SUBJECT MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\041\060\037\006\003\125\004\003\023\030\104\151\147\151
\103\145\162\164\040\124\162\165\163\164\145\144\040\122\157\157
\164\040\107\064
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\041\060\037\006\003\125\004\003\023\030\104\151\147\151
\103\145\162\164\040\124\162\165\163\164\145\144\040\122\157\157
\164\040\107\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\233\033\127\236\216\041\062\342\071\007\275\247\167
\165\134
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\220\060\202\003\170\240\003\002\001\002\002\020\005
\233\033\127\236\216\041\062\342\071\007\275\247\167\165\134\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\142
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\041\060\037\006\003\125\004\003\023\030\104\151\147\151\103\145
\162\164\040\124\162\165\163\164\145\144\040\122\157\157\164\040
\107\064\060\036\027\015\061\063\060\070\060\061\061\062\060\060
\060\060\132\027\015\063\070\060\061\061\065\061\062\060\060\060
\060\132\060\142\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\025\060\023\006\003\125\004\012\023\014\104\151\147\151
\103\145\162\164\040\111\156\143\061\031\060\027\006\003\125\004
\013\023\020\167\167\167\056\144\151\147\151\143\145\162\164\056
\143\157\155\061\041\060\037\006\003\125\004\003\023\030\104\151
\147\151\103\145\162\164\040\124\162\165\163\164\145\144\040\122
\157\157\164\040\107\064\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\277\346\220\163\150\336\273\344\135
\112\074\060\042\060\151\063\354\302\247\045\056\311\041\075\362
\212\330\131\302\341\051\247\075\130\253\166\232\315\256\173\033
\204\015\304\060\037\363\033\244\070\026\353\126\306\227\155\035
\253\262\171\362\312\021\322\344\137\326\005\074\122\017\122\037

\306\236\025\245\176\276\237\251\127\026\131\125\162\257\150\223
\160\302\262\272\165\231\152\163\062\224\321\020\104\020\056\337
\202\363\007\204\346\164\073\155\161\342\055\014\033\356\040\325
\311\040\035\143\051\055\316\354\136\116\310\223\370\041\141\233
\064\353\005\306\136\354\133\032\274\353\311\317\315\254\064\100
\137\261\172\146\356\167\310\110\250\146\127\127\237\124\130\216
\014\053\267\117\247\060\331\126\356\312\173\135\343\255\311\117
\136\345\065\347\061\313\332\223\136\334\216\217\200\332\266\221
\230\100\220\171\303\170\307\266\261\304\265\152\030\070\003\020
\215\330\324\067\244\056\005\175\210\365\202\076\020\221\160\253
\125\202\101\062\327\333\004\163\052\156\221\001\174\041\114\324
\274\256\033\003\165\135\170\146\331\072\061\104\232\063\100\277
\010\327\132\111\244\302\346\251\240\147\335\244\047\274\241\117
\071\265\021\130\027\367\044\134\106\217\144\367\301\151\210\166
\230\166\075\131\135\102\166\207\211\227\151\172\110\360\340\242
\022\033\146\232\164\312\336\113\036\347\016\143\256\346\324\357
\222\222\072\236\075\334\000\344\105\045\211\266\232\104\031\053
\176\300\224\264\322\141\155\353\063\331\305\337\113\004\000\314
\175\034\225\303\217\367\041\262\262\021\267\273\177\362\325\214
\160\054\101\140\252\261\143\030\104\225\032\166\142\176\366\200
\260\373\350\144\246\063\321\211\007\341\275\267\346\103\244\030
\270\246\167\001\341\017\224\014\041\035\262\124\051\045\211\154
\345\016\122\121\107\164\276\046\254\266\101\165\336\172\254\137
\215\077\311\274\323\101\021\022\133\345\020\120\353\061\305\312
\162\026\042\011\337\174\114\165\077\143\354\041\137\304\040\121
\153\157\261\253\206\213\117\302\326\105\137\235\040\374\241\036
\305\300\217\242\261\176\012\046\231\365\344\151\057\230\035\055
\365\331\251\262\035\345\033\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\206\060\035\006\003\125\035\016\004\026\004\024\354\327\343\202
\322\161\135\144\114\337\056\147\077\347\272\230\256\034\017\117
\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000\003
\202\002\001\000\273\141\331\175\251\154\276\027\304\221\033\303
\241\242\000\215\343\144\150\017\126\317\167\256\160\371\375\232
\112\231\271\311\170\134\014\014\137\344\346\024\051\126\013\066
\111\135\104\143\340\255\234\226\030\146\033\043\015\075\171\351
\155\153\326\124\370\322\074\301\103\100\256\035\120\365\122\374
\220\073\273\230\231\151\153\307\301\247\250\150\244\047\334\235
\371\047\256\060\205\271\366\147\115\072\076\217\131\071\042\123
\104\353\310\135\003\312\355\120\172\175\142\041\012\200\310\163
\146\321\240\005\140\137\350\245\264\247\257\250\367\155\065\234
\174\132\212\326\242\070\231\363\170\213\364\115\322\040\013\336
\004\356\214\233\107\201\162\015\300\024\062\357\060\131\056\256
\340\161\362\126\344\152\227\157\222\120\155\226\215\150\172\232
\262\066\024\172\006\362\044\271\011\021\120\327\010\261\270\211
\172\204\043\141\102\051\345\243\315\242\040\101\327\321\234\144
\331\352\046\241\213\024\327\114\031\262\120\101\161\075\077\115

\160\043\206\014\112\334\201\322\314\062\224\204\015\010\011\227
\034\117\300\356\153\040\164\060\322\340\071\064\020\205\041\025
\001\010\350\125\062\336\161\111\331\050\027\120\115\346\276\115
\321\165\254\320\312\373\101\270\103\245\252\323\303\005\104\117
\054\066\233\342\372\342\105\270\043\123\154\006\157\147\125\177
\106\265\114\077\156\050\132\171\046\322\244\250\142\227\322\036
\342\355\112\213\274\033\375\107\112\015\337\147\146\176\262\133
\101\320\073\344\364\073\364\004\143\351\357\302\124\000\121\240
\212\052\311\316\170\314\325\352\207\004\030\263\316\257\111\210
\257\363\222\231\266\263\346\141\017\322\205\000\347\120\032\344
\033\225\235\031\241\271\234\261\233\261\000\036\357\320\017\117
\102\154\311\012\274\356\103\372\072\161\245\310\115\046\245\065
\375\211\135\274\205\142\035\062\322\240\053\124\355\232\127\301
\333\372\020\317\031\267\213\112\033\217\001\266\047\225\123\350
\266\211\155\133\274\150\324\043\350\213\121\242\126\371\360\246
\200\240\326\036\263\274\017\017\123\165\051\252\352\023\167\344
\336\214\201\041\255\007\020\107\021\255\207\075\007\321\165\274
\317\363\146\176
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Trusted Root G4"
Issuer: CN=DigiCert Trusted Root G4,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:05:9b:1b:57:9e:8e:21:32:e2:39:07:bd:a7:77:75:5c
Subject: CN=DigiCert Trusted Root G4,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
55:2F:7B:DC:F1:A7:AF:9E:6C:E6:72:01:7F:4F:12:AB:F7:72:40:C7:8E:76:1A:C2:03:D1:D9:D2:0A:C8:99:88
Fingerprint (SHA1): DD:FB:16:CD:49:31:C9:73:A2:03:7D:3F:C8:3A:4D:7D:77:5D:05:E4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Trusted Root G4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\335\373\026\315\111\061\311\163\242\003\175\077\310\072\115\175
\167\135\005\344
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\170\362\374\252\140\037\057\264\353\311\067\272\123\056\165\111
END
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023

\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\041\060\037\006\003\125\004\003\023\030\104\151\147\151
\103\145\162\164\040\124\162\165\163\164\145\144\040\122\157\157
\164\040\107\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\233\033\127\236\216\041\062\342\071\007\275\247\167
\165\134
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "COMODO RSA Certification Authority"
#
Issuer: CN=COMODO RSA Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:4c:aa:f9:ca:db:63:6f:e0:1f:f7:4e:d8:5b:03:86:9d
Subject: CN=COMODO RSA Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Tue Jan 19 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
52:F0:E1:C4:E5:8E:C6:29:29:1B:60:31:7F:07:46:71:B8:5D:7E:A8:0D:5B:07:27:34:63:53:4B:32:B4:02:34
Fingerprint (SHA1): AF:E5:D2:44:A8:D1:19:42:30:FF:47:9F:E2:F8:97:BB:CD:7A:8C:B4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO RSA Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\122\123\101
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164

\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\122\123\101
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\114\252\371\312\333\143\157\340\037\367\116\330\133\003
\206\235
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\330\060\202\003\300\240\003\002\001\002\002\020\114
\252\371\312\333\143\157\340\037\367\116\330\133\003\206\235\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\201
\205\061\013\060\011\006\003\125\004\006\023\002\107\102\061\033
\060\031\006\003\125\004\010\023\022\107\162\145\141\164\145\162
\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016\006
\003\125\004\007\023\007\123\141\154\146\157\162\144\061\032\060
\030\006\003\125\004\012\023\021\103\117\115\117\104\117\040\103
\101\040\114\151\155\151\164\145\144\061\053\060\051\006\003\125
\004\003\023\042\103\117\115\117\104\117\040\122\123\101\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\060\036\027\015\061\060\060\061\061\071
\060\060\060\060\060\060\132\027\015\063\070\060\061\061\070\062
\063\065\071\065\071\132\060\201\205\061\013\060\011\006\003\125
\004\006\023\002\107\102\061\033\060\031\006\003\125\004\010\023
\022\107\162\145\141\164\145\162\040\115\141\156\143\150\145\163
\164\145\162\061\020\060\016\006\003\125\004\007\023\007\123\141
\154\146\157\162\144\061\032\060\030\006\003\125\004\012\023\021
\103\117\115\117\104\117\040\103\101\040\114\151\155\151\164\145
\144\061\053\060\051\006\003\125\004\003\023\042\103\117\115\117
\104\117\040\122\123\101\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\221
\350\124\222\322\012\126\261\254\015\044\335\305\317\104\147\164
\231\053\067\243\175\043\160\000\161\274\123\337\304\372\052\022
\217\113\177\020\126\275\237\160\162\267\141\177\311\113\017\027
\247\075\343\260\004\141\356\377\021\227\307\364\206\076\012\372
\076\134\371\223\346\064\172\331\024\153\347\234\263\205\240\202
\172\166\257\161\220\327\354\375\015\372\234\154\372\337\260\202
\364\024\176\371\276\304\246\057\117\177\231\177\265\374\147\103
\162\275\014\000\326\211\353\153\054\323\355\217\230\034\024\253
\176\345\343\156\374\330\250\344\222\044\332\103\153\142\270\125
\375\352\301\274\154\266\213\363\016\215\232\344\233\154\151\231
\370\170\110\060\105\325\255\341\015\074\105\140\374\062\226\121

\047\274\147\303\312\056\266\153\352\106\307\307\040\240\261\037
\145\336\110\010\272\244\116\251\362\203\106\067\204\353\350\314
\201\110\103\147\116\162\052\233\134\275\114\033\050\212\134\042
\173\264\253\230\331\356\340\121\203\303\011\106\116\155\076\231
\372\225\027\332\174\063\127\101\074\215\121\355\013\266\134\257
\054\143\032\337\127\310\077\274\351\135\304\233\257\105\231\342
\243\132\044\264\272\251\126\075\317\157\252\377\111\130\276\360
\250\377\364\270\255\351\067\373\272\270\364\013\072\371\350\103
\102\036\211\330\204\313\023\361\331\273\341\211\140\270\214\050
\126\254\024\035\234\012\347\161\353\317\016\335\075\251\226\241
\110\275\074\367\257\265\015\042\114\300\021\201\354\126\073\366
\323\242\342\133\267\262\004\042\122\225\200\223\151\350\216\114
\145\361\221\003\055\160\164\002\352\213\147\025\051\151\122\002
\273\327\337\120\152\125\106\277\240\243\050\141\177\160\320\303
\242\252\054\041\252\107\316\050\234\006\105\166\277\202\030\047
\264\325\256\264\313\120\346\153\364\114\206\161\060\351\246\337
\026\206\340\330\377\100\335\373\320\102\210\177\243\063\072\056
\134\036\101\021\201\143\316\030\161\153\053\354\246\212\267\061
\134\072\152\107\340\303\171\131\326\040\032\257\362\152\230\252
\162\274\127\112\322\113\235\273\020\374\260\114\101\345\355\035
\075\136\050\235\234\314\277\263\121\332\247\107\345\204\123\002
\003\001\000\001\243\102\060\100\060\035\006\003\125\035\016\004
\026\004\024\273\257\176\002\075\372\246\361\074\204\216\255\356
\070\230\354\331\062\062\324\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\015\006\011\052\206\110\206
\367\015\001\001\014\005\000\003\202\002\001\000\012\361\325\106
\204\267\256\121\273\154\262\115\101\024\000\223\114\234\313\345
\300\124\317\240\045\216\002\371\375\260\242\015\365\040\230\074
\023\055\254\126\242\260\326\176\021\222\351\056\272\236\056\232
\162\261\275\031\104\154\141\065\242\232\264\026\022\151\132\214
\341\327\076\244\032\350\057\003\364\256\141\035\020\033\052\244
\213\172\305\376\005\246\341\300\326\310\376\236\256\217\053\272
\075\231\370\330\163\011\130\106\156\246\234\364\327\047\323\225
\332\067\203\162\034\323\163\340\242\107\231\003\070\135\325\111
\171\000\051\034\307\354\233\040\034\007\044\151\127\170\262\071
\374\072\204\240\265\234\174\215\277\056\223\142\047\267\071\332
\027\030\256\275\074\011\150\377\204\233\074\325\326\013\003\343
\127\236\024\367\321\353\117\310\275\207\043\267\266\111\103\171
\205\134\272\353\222\013\241\306\350\150\250\114\026\261\032\231
\012\350\123\054\222\273\241\011\030\165\014\145\250\173\313\043
\267\032\302\050\205\303\033\377\320\053\142\357\244\173\011\221
\230\147\214\024\001\315\150\006\152\143\041\165\003\200\210\212
\156\201\306\205\362\251\244\055\347\364\245\044\020\107\203\312
\315\364\215\171\130\261\006\233\347\032\052\331\235\001\327\224
\175\355\003\112\312\360\333\350\251\001\076\365\126\231\311\036
\216\111\075\273\345\011\271\340\117\111\222\075\026\202\100\314
\314\131\306\346\072\355\022\056\151\074\154\225\261\375\252\035

\173\177\206\276\036\016\062\106\373\373\023\217\165\177\114\213
\113\106\143\376\000\064\100\160\301\303\271\241\335\246\160\342
\004\263\101\274\351\200\221\352\144\234\172\341\042\003\251\234
\156\157\016\145\117\154\207\207\136\363\156\240\371\165\245\233
\100\350\123\262\047\235\112\271\300\167\041\215\377\207\362\336
\274\214\357\027\337\267\111\013\321\362\156\060\013\032\016\116
\166\355\021\374\365\351\126\262\175\277\307\155\012\223\214\245
\320\300\266\035\276\072\116\224\242\327\156\154\013\302\212\174
\372\040\363\304\344\345\315\015\250\313\221\222\261\174\205\354
\265\024\151\146\016\202\347\315\316\310\055\246\121\177\041\301
\065\123\205\006\112\135\237\255\273\033\137\164
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "COMODO RSA Certification Authority"
Issuer: CN=COMODO RSA Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:4c:aa:f9:ca:db:63:6f:e0:1f:f7:4e:d8:5b:03:86:9d
Subject: CN=COMODO RSA Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Tue Jan 19 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
52:F0:E1:C4:E5:8E:C6:29:29:1B:60:31:7F:07:46:71:B8:5D:7E:A8:0D:5B:07:27:34:63:53:4B:32:B4:02:34
Fingerprint (SHA1): AF:E5:D2:44:A8:D1:19:42:30:FF:47:9F:E2:F8:97:BB:CD:7A:8C:B4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO RSA Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\257\345\322\104\250\321\031\102\060\377\107\237\342\370\227\273
\315\172\214\264
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\033\061\260\161\100\066\314\024\066\221\255\304\076\375\354\030
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\122\123\101
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101

\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\114\252\371\312\333\143\157\340\037\367\116\330\133\003
\206\235
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "USERTrust RSA Certification Authority"
#
Issuer: CN=USERTrust RSA Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Serial Number:01:fd:6d:30:fc:a3:ca:51:a8:1b:bc:64:0e:35:03:2d
Subject: CN=USERTrust RSA Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Not Valid Before: Mon Feb 01 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
E7:93:C9:B0:2F:D8:AA:13:E2:1C:31:22:8A:CC:B0:81:19:64:3B:74:9C:89:89:64:B1:74:6D:46:C3:D4:CB:D2
Fingerprint (SHA1): 2B:8F:1B:57:33:0D:BB:A2:D0:7A:6C:51:F7:0E:E9:0D:DA:B9:AD:8E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "USERTrust RSA Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\122\123\101\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122

\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\122\123\101\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\001\375\155\060\374\243\312\121\250\033\274\144\016\065
\003\055
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\336\060\202\003\306\240\003\002\001\002\002\020\001
\375\155\060\374\243\312\121\250\033\274\144\016\065\003\055\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\201
\210\061\013\060\011\006\003\125\004\006\023\002\125\123\061\023
\060\021\006\003\125\004\010\023\012\116\145\167\040\112\145\162
\163\145\171\061\024\060\022\006\003\125\004\007\023\013\112\145
\162\163\145\171\040\103\151\164\171\061\036\060\034\006\003\125
\004\012\023\025\124\150\145\040\125\123\105\122\124\122\125\123
\124\040\116\145\164\167\157\162\153\061\056\060\054\006\003\125
\004\003\023\045\125\123\105\122\124\162\165\163\164\040\122\123
\101\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\060\036\027\015\061\060\060
\062\060\061\060\060\060\060\060\060\132\027\015\063\070\060\061
\061\070\062\063\065\071\065\071\132\060\201\210\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\023\060\021\006\003\125
\004\010\023\012\116\145\167\040\112\145\162\163\145\171\061\024
\060\022\006\003\125\004\007\023\013\112\145\162\163\145\171\040
\103\151\164\171\061\036\060\034\006\003\125\004\012\023\025\124
\150\145\040\125\123\105\122\124\122\125\123\124\040\116\145\164
\167\157\162\153\061\056\060\054\006\003\125\004\003\023\045\125
\123\105\122\124\162\165\163\164\040\122\123\101\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\200\022\145\027\066\016\303\333\010\263\320
\254\127\015\166\355\315\047\323\114\255\120\203\141\342\252\040
\115\011\055\144\011\334\316\211\237\314\075\251\354\366\317\301
\334\361\323\261\326\173\067\050\021\053\107\332\071\306\274\072
\031\264\137\246\275\175\235\243\143\102\266\166\362\251\073\053
\221\370\342\157\320\354\026\040\220\011\076\342\350\164\311\030
\264\221\324\142\144\333\177\243\006\361\210\030\152\220\042\074
\274\376\023\360\207\024\173\366\344\037\216\324\344\121\306\021
\147\106\010\121\313\206\024\124\077\274\063\376\176\154\234\377
\026\235\030\275\121\216\065\246\247\146\310\162\147\333\041\146
\261\324\233\170\003\300\120\072\350\314\360\334\274\236\114\376
\257\005\226\065\037\127\132\267\377\316\371\075\267\054\266\366
\124\335\310\347\022\072\115\256\114\212\267\134\232\264\267\040
\075\312\177\042\064\256\176\073\150\146\001\104\347\001\116\106

\123\233\063\140\367\224\276\123\067\220\163\103\363\062\303\123
\357\333\252\376\164\116\151\307\153\214\140\223\336\304\307\014
\337\341\062\256\314\223\073\121\170\225\147\213\356\075\126\376
\014\320\151\017\033\017\363\045\046\153\063\155\367\156\107\372
\163\103\345\176\016\245\146\261\051\174\062\204\143\125\211\304
\015\301\223\124\060\031\023\254\323\175\067\247\353\135\072\154
\065\134\333\101\327\022\332\251\111\013\337\330\200\212\011\223
\142\216\265\146\317\045\210\315\204\270\261\077\244\071\017\331
\002\236\353\022\114\225\174\363\153\005\251\136\026\203\314\270
\147\342\350\023\235\314\133\202\323\114\263\355\133\377\336\345
\163\254\043\073\055\000\277\065\125\164\011\111\330\111\130\032
\177\222\066\346\121\222\016\363\046\175\034\115\027\274\311\354
\103\046\320\277\101\137\100\251\104\104\364\231\347\127\207\236
\120\037\127\124\250\076\375\164\143\057\261\120\145\011\346\130
\102\056\103\032\114\264\360\045\107\131\372\004\036\223\324\046
\106\112\120\201\262\336\276\170\267\374\147\025\341\311\127\204
\036\017\143\326\351\142\272\326\137\125\056\352\134\306\050\010
\004\045\071\270\016\053\251\362\114\227\034\007\077\015\122\365
\355\357\057\202\017\002\003\001\000\001\243\102\060\100\060\035
\006\003\125\035\016\004\026\004\024\123\171\277\132\252\053\112
\317\124\200\341\330\233\300\235\362\262\003\146\313\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\015
\006\011\052\206\110\206\367\015\001\001\014\005\000\003\202\002
\001\000\134\324\174\015\317\367\001\175\101\231\145\014\163\305
\122\237\313\370\317\231\006\177\033\332\103\025\237\236\002\125
\127\226\024\361\122\074\047\207\224\050\355\037\072\001\067\242
\166\374\123\120\300\204\233\306\153\116\272\214\041\117\242\216
\125\142\221\363\151\025\330\274\210\343\304\252\013\375\357\250
\351\113\125\052\006\040\155\125\170\051\031\356\137\060\134\113
\044\021\125\377\044\232\156\136\052\053\356\013\115\237\177\367
\001\070\224\024\225\103\007\011\373\140\251\356\034\253\022\214
\240\232\136\247\230\152\131\155\213\077\010\373\310\321\105\257
\030\025\144\220\022\017\163\050\056\305\342\044\116\374\130\354
\360\364\105\376\042\263\353\057\216\322\331\105\141\005\301\227
\157\250\166\162\217\213\214\066\257\277\015\005\316\161\215\346
\246\157\037\154\246\161\142\305\330\320\203\162\014\361\147\021
\211\014\234\023\114\162\064\337\274\325\161\337\252\161\335\341
\271\154\214\074\022\135\145\332\275\127\022\266\103\153\377\345
\336\115\146\021\121\317\231\256\354\027\266\350\161\221\214\336
\111\376\335\065\161\242\025\047\224\034\317\141\343\046\273\157
\243\147\045\041\135\346\335\035\013\056\150\033\073\202\257\354
\203\147\205\324\230\121\164\261\271\231\200\211\377\177\170\031
\134\171\112\140\056\222\100\256\114\067\052\054\311\307\142\310
\016\135\367\066\133\312\340\045\045\001\264\335\032\007\234\167
\000\077\320\334\325\354\075\324\372\273\077\314\205\326\157\177
\251\055\337\271\002\367\365\227\232\265\065\332\303\147\260\207
\112\251\050\236\043\216\377\134\047\153\341\260\117\363\007\356

\000\056\324\131\207\313\122\101\225\352\364\107\327\356\144\101
\125\174\215\131\002\225\335\142\235\302\271\356\132\050\164\204
\245\233\267\220\307\014\007\337\365\211\066\164\062\326\050\301
\260\260\013\340\234\114\303\034\326\374\343\151\265\107\106\201
\057\242\202\253\323\143\104\160\304\215\377\055\063\272\255\217
\173\265\160\210\256\076\031\317\100\050\330\374\310\220\273\135
\231\042\365\122\346\130\305\037\210\061\103\356\210\035\327\306
\216\074\103\152\035\247\030\336\175\075\026\361\142\371\312\220
\250\375
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "USERTrust RSA Certification Authority"
Issuer: CN=USERTrust RSA Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Serial Number:01:fd:6d:30:fc:a3:ca:51:a8:1b:bc:64:0e:35:03:2d
Subject: CN=USERTrust RSA Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Not Valid Before: Mon Feb 01 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
E7:93:C9:B0:2F:D8:AA:13:E2:1C:31:22:8A:CC:B0:81:19:64:3B:74:9C:89:89:64:B1:74:6D:46:C3:D4:CB:D2
Fingerprint (SHA1): 2B:8F:1B:57:33:0D:BB:A2:D0:7A:6C:51:F7:0E:E9:0D:DA:B9:AD:8E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "USERTrust RSA Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\053\217\033\127\063\015\273\242\320\172\154\121\367\016\351\015
\332\271\255\216
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\033\376\151\321\221\267\031\063\243\162\250\017\341\125\345\265
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\122\123\101\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\001\375\155\060\374\243\312\121\250\033\274\144\016\065
\003\055
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "USERTrust ECC Certification Authority"
#
Issuer: CN=USERTrust ECC Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Serial Number:5c:8b:99:c5:5a:94:c5:d2:71:56:de:cd:89:80:cc:26
Subject: CN=USERTrust ECC Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Not Valid Before: Mon Feb 01 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
4F:F4:60:D5:4B:9C:86:DA:BF:BC:FC:57:12:E0:40:0D:2B:ED:3F:BC:4D:4F:BD:AA:86:E0:6A:DC:D2:A9:AD:7A
Fingerprint (SHA1): D1:CB:CA:5D:B2:D5:2A:7F:69:3B:67:4D:E5:F0:5A:1D:0C:95:7D:F0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "USERTrust ECC Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\105\103\103\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040

\105\103\103\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\134\213\231\305\132\224\305\322\161\126\336\315\211\200
\314\046
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\217\060\202\002\025\240\003\002\001\002\002\020\134
\213\231\305\132\224\305\322\161\126\336\315\211\200\314\046\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\210\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\023\060\021\006
\003\125\004\010\023\012\116\145\167\040\112\145\162\163\145\171
\061\024\060\022\006\003\125\004\007\023\013\112\145\162\163\145
\171\040\103\151\164\171\061\036\060\034\006\003\125\004\012\023
\025\124\150\145\040\125\123\105\122\124\122\125\123\124\040\116
\145\164\167\157\162\153\061\056\060\054\006\003\125\004\003\023
\045\125\123\105\122\124\162\165\163\164\040\105\103\103\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\060\036\027\015\061\060\060\062\060\061
\060\060\060\060\060\060\132\027\015\063\070\060\061\061\070\062
\063\065\071\065\071\132\060\201\210\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\023\060\021\006\003\125\004\010\023
\012\116\145\167\040\112\145\162\163\145\171\061\024\060\022\006
\003\125\004\007\023\013\112\145\162\163\145\171\040\103\151\164
\171\061\036\060\034\006\003\125\004\012\023\025\124\150\145\040
\125\123\105\122\124\122\125\123\124\040\116\145\164\167\157\162
\153\061\056\060\054\006\003\125\004\003\023\045\125\123\105\122
\124\162\165\163\164\040\105\103\103\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\032\254\124\132\251\371\150
\043\347\172\325\044\157\123\306\132\330\113\253\306\325\266\321
\346\163\161\256\335\234\326\014\141\375\333\240\211\003\270\005
\024\354\127\316\356\135\077\342\041\263\316\367\324\212\171\340
\243\203\176\055\227\320\141\304\361\231\334\045\221\143\253\177
\060\243\264\160\342\307\241\063\234\363\277\056\134\123\261\137
\263\175\062\177\212\064\343\171\171\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\072\341\011\206\324\317\031\302
\226\166\164\111\166\334\340\065\306\143\143\232\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\012\006
\010\052\206\110\316\075\004\003\003\003\150\000\060\145\002\060
\066\147\241\026\010\334\344\227\000\101\035\116\276\341\143\001
\317\073\252\102\021\144\240\235\224\071\002\021\171\134\173\035
\372\144\271\356\026\102\263\277\212\302\011\304\354\344\261\115
\002\061\000\351\052\141\107\214\122\112\113\116\030\160\366\326
\104\326\156\365\203\272\155\130\275\044\331\126\110\352\357\304

\242\106\201\210\152\072\106\321\251\233\115\311\141\332\321\135
\127\152\030
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "USERTrust ECC Certification Authority"
Issuer: CN=USERTrust ECC Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Serial Number:5c:8b:99:c5:5a:94:c5:d2:71:56:de:cd:89:80:cc:26
Subject: CN=USERTrust ECC Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Not Valid Before: Mon Feb 01 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
4F:F4:60:D5:4B:9C:86:DA:BF:BC:FC:57:12:E0:40:0D:2B:ED:3F:BC:4D:4F:BD:AA:86:E0:6A:DC:D2:A9:AD:7A
Fingerprint (SHA1): D1:CB:CA:5D:B2:D5:2A:7F:69:3B:67:4D:E5:F0:5A:1D:0C:95:7D:F0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "USERTrust ECC Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\321\313\312\135\262\325\052\177\151\073\147\115\345\360\132\035
\014\225\175\360
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\372\150\274\331\265\177\255\375\311\035\006\203\050\314\044\301
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\105\103\103\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\134\213\231\305\132\224\305\322\161\126\336\315\211\200
\314\046
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign ECC Root CA - R5"
#
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R5
Serial Number:60:59:49:e0:26:2e:bb:55:f9:0a:77:8a:71:f9:4a:d8:6c
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R5
Not Valid Before: Tue Nov 13 00:00:00 2012
Not Valid After : Tue Jan 19 03:14:07 2038
Fingerprint (SHA-256):
17:9F:BC:14:8A:3D:D0:0F:D2:4E:A1:34:58:CC:43:BF:A7:F5:9C:81:82:D7:83:A5:13:F6:EB:EC:10:0C:89:24
Fingerprint (SHA1): 1F:24:C6:30:CD:A4:18:EF:20:69:FF:AD:4F:DD:5F:46:3A:1B:69:AA
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign ECC Root CA - R5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\065\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\065\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\140\131\111\340\046\056\273\125\371\012\167\212\161\371
\112\330\154
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\036\060\202\001\244\240\003\002\001\002\002\021\140
\131\111\340\046\056\273\125\371\012\167\212\161\371\112\330\154
\060\012\006\010\052\206\110\316\075\004\003\003\060\120\061\044
\060\042\006\003\125\004\013\023\033\107\154\157\142\141\154\123
\151\147\156\040\105\103\103\040\122\157\157\164\040\103\101\040
\055\040\122\065\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125

\004\003\023\012\107\154\157\142\141\154\123\151\147\156\060\036
\027\015\061\062\061\061\061\063\060\060\060\060\060\060\132\027
\015\063\070\060\061\061\071\060\063\061\064\060\067\132\060\120
\061\044\060\042\006\003\125\004\013\023\033\107\154\157\142\141
\154\123\151\147\156\040\105\103\103\040\122\157\157\164\040\103
\101\040\055\040\122\065\061\023\060\021\006\003\125\004\012\023
\012\107\154\157\142\141\154\123\151\147\156\061\023\060\021\006
\003\125\004\003\023\012\107\154\157\142\141\154\123\151\147\156
\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053
\201\004\000\042\003\142\000\004\107\105\016\226\373\175\135\277
\351\071\321\041\370\237\013\266\325\173\036\222\072\110\131\034
\360\142\061\055\300\172\050\376\032\247\134\263\266\314\227\347
\105\324\130\372\321\167\155\103\242\300\207\145\064\012\037\172
\335\353\074\063\241\305\235\115\244\157\101\225\070\177\311\036
\204\353\321\236\111\222\207\224\207\014\072\205\112\146\237\235
\131\223\115\227\141\006\206\112\243\102\060\100\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006
\003\125\035\016\004\026\004\024\075\346\051\110\233\352\007\312
\041\104\112\046\336\156\336\322\203\320\237\131\060\012\006\010
\052\206\110\316\075\004\003\003\003\150\000\060\145\002\061\000
\345\151\022\311\156\333\306\061\272\011\101\341\227\370\373\375
\232\342\175\022\311\355\174\144\323\313\005\045\213\126\331\240
\347\136\135\116\013\203\234\133\166\051\240\011\046\041\152\142
\002\060\161\322\265\217\134\352\073\341\170\011\205\250\165\222
\073\310\134\375\110\357\015\164\042\250\010\342\156\305\111\316
\307\014\274\247\141\151\361\367\073\341\052\313\371\053\363\146
\220\067
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign ECC Root CA - R5"
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R5
Serial Number:60:59:49:e0:26:2e:bb:55:f9:0a:77:8a:71:f9:4a:d8:6c
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R5
Not Valid Before: Tue Nov 13 00:00:00 2012
Not Valid After : Tue Jan 19 03:14:07 2038
Fingerprint (SHA-256):
17:9F:BC:14:8A:3D:D0:0F:D2:4E:A1:34:58:CC:43:BF:A7:F5:9C:81:82:D7:83:A5:13:F6:EB:EC:10:0C:89:24
Fingerprint (SHA1): 1F:24:C6:30:CD:A4:18:EF:20:69:FF:AD:4F:DD:5F:46:3A:1B:69:AA
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign ECC Root CA - R5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\037\044\306\060\315\244\030\357\040\151\377\255\117\335\137\106
\072\033\151\252
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\237\255\073\034\002\036\212\272\027\164\070\201\014\242\274\010
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\065\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\140\131\111\340\046\056\273\125\371\012\167\212\161\371
\112\330\154
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Staat der Nederlanden Root CA - G3"
#
Issuer: CN=Staat der Nederlanden Root CA - G3,O=Staat der Nederlanden,C=NL
Serial Number: 10003001 (0x98a239)
Subject: CN=Staat der Nederlanden Root CA - G3,O=Staat der Nederlanden,C=NL
Not Valid Before: Thu Nov 14 11:28:42 2013
Not Valid After : Mon Nov 13 23:00:00 2028
Fingerprint (SHA-256):
3C:4F:B0:B9:5A:B8:B3:00:32:F4:32:B8:6F:53:5F:E1:72:C1:85:D0:FD:39:86:58:37:CF:36:18:7F:A6:F4:28
Fingerprint (SHA1): D8:EB:6B:41:51:92:59:E0:F3:E7:85:00:C0:3D:B6:88:97:C9:EE:FC
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden Root CA - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\053\060\051\006\003\125\004\003\014\042\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101\040\055\040\107\063
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\053\060\051\006\003\125\004\003\014\042\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\230\242\071
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\164\060\202\003\134\240\003\002\001\002\002\004\000
\230\242\071\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\132\061\013\060\011\006\003\125\004\006\023\002\116
\114\061\036\060\034\006\003\125\004\012\014\025\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\061\053\060\051\006\003\125\004\003\014\042\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\040\122\157\157\164\040\103\101\040\055\040\107\063\060\036
\027\015\061\063\061\061\061\064\061\061\062\070\064\062\132\027
\015\062\070\061\061\061\063\062\063\060\060\060\060\132\060\132
\061\013\060\011\006\003\125\004\006\023\002\116\114\061\036\060
\034\006\003\125\004\012\014\025\123\164\141\141\164\040\144\145
\162\040\116\145\144\145\162\154\141\156\144\145\156\061\053\060
\051\006\003\125\004\003\014\042\123\164\141\141\164\040\144\145
\162\040\116\145\144\145\162\154\141\156\144\145\156\040\122\157
\157\164\040\103\101\040\055\040\107\063\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\276\062\242\124\017
\160\373\054\134\131\353\154\304\244\121\350\205\052\263\314\112
\064\362\260\137\363\016\307\034\075\123\036\210\010\150\330\157
\075\255\302\236\314\202\147\007\047\207\150\161\072\237\165\226
\042\106\005\260\355\255\307\133\236\052\336\234\374\072\306\225
\247\365\027\147\030\347\057\111\010\014\134\317\346\314\064\355
\170\373\120\261\334\153\062\360\242\376\266\074\344\354\132\227
\307\077\036\160\010\060\240\334\305\263\155\157\320\202\162\021
\253\322\201\150\131\202\027\267\170\222\140\372\314\336\077\204
\353\215\070\063\220\012\162\043\372\065\314\046\161\061\321\162
\050\222\331\133\043\155\146\265\155\007\102\353\246\063\316\222
\333\300\366\154\143\170\315\312\116\075\265\345\122\233\361\276
\073\346\124\140\260\146\036\011\253\007\376\124\211\021\102\321
\367\044\272\140\170\032\230\367\311\021\375\026\301\065\032\124
\165\357\103\323\345\256\116\316\347\173\303\306\116\141\121\113
\253\232\105\113\241\037\101\275\110\123\025\161\144\013\206\263
\345\056\276\316\244\033\301\051\204\242\265\313\010\043\166\103
\042\044\037\027\004\324\156\234\306\374\177\053\146\032\354\212

\345\326\317\115\365\143\011\267\025\071\326\173\254\353\343\174
\351\116\374\165\102\310\355\130\225\014\006\102\242\234\367\344
\160\263\337\162\157\132\067\100\211\330\205\244\327\361\013\336
\103\031\324\112\130\054\214\212\071\236\277\204\207\361\026\073
\066\014\351\323\264\312\154\031\101\122\011\241\035\260\152\277
\202\357\160\121\041\062\334\005\166\214\313\367\144\344\003\120
\257\214\221\147\253\305\362\356\130\330\336\276\367\347\061\317
\154\311\073\161\301\325\210\265\145\274\300\350\027\027\007\022
\265\134\322\253\040\223\264\346\202\203\160\066\305\315\243\215
\255\213\354\243\301\103\207\346\103\342\064\276\225\213\065\355
\007\071\332\250\035\172\237\066\236\022\260\014\145\022\220\025
\140\331\046\100\104\343\126\140\245\020\324\152\074\375\101\334
\016\132\107\266\357\227\141\165\117\331\376\307\262\035\324\355
\135\111\263\251\152\313\146\204\023\325\134\240\334\337\156\167
\006\321\161\165\310\127\157\257\017\167\133\002\003\001\000\001
\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024
\124\255\372\307\222\127\256\312\065\234\056\022\373\344\272\135
\040\334\224\127\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\002\001\000\060\231\235\005\062\310\136\016
\073\230\001\072\212\244\347\007\367\172\370\347\232\337\120\103
\123\227\052\075\312\074\107\230\056\341\025\173\361\222\363\141
\332\220\045\026\145\300\237\124\135\016\003\073\133\167\002\234
\204\266\015\230\137\064\335\073\143\302\303\050\201\302\234\051
\056\051\342\310\303\001\362\063\352\052\252\314\011\010\367\145
\147\306\315\337\323\266\053\247\275\314\321\016\160\137\270\043
\321\313\221\116\012\364\310\172\345\331\143\066\301\324\337\374
\042\227\367\140\135\352\051\057\130\262\275\130\275\215\226\117
\020\165\277\110\173\075\121\207\241\074\164\042\302\374\007\177
\200\334\304\254\376\152\301\160\060\260\351\216\151\342\054\151
\201\224\011\272\335\376\115\300\203\214\224\130\300\106\040\257
\234\037\002\370\065\125\111\057\106\324\300\360\240\226\002\017
\063\305\161\363\236\043\175\224\267\375\072\323\011\203\006\041
\375\140\075\256\062\300\322\356\215\246\360\347\264\202\174\012
\314\160\311\171\200\370\376\114\367\065\204\031\212\061\373\012
\331\327\177\233\360\242\232\153\303\005\112\355\101\140\024\060
\321\252\021\102\156\323\043\002\004\013\306\145\335\335\122\167
\332\201\153\262\250\372\001\070\271\226\352\052\154\147\227\211
\224\236\274\341\124\325\344\152\170\357\112\275\053\232\075\100
\176\306\300\165\322\156\373\150\060\354\354\213\235\371\111\065
\232\032\054\331\263\225\071\325\036\222\367\246\271\145\057\345
\075\155\072\110\114\010\334\344\050\022\050\276\175\065\134\352
\340\026\176\023\033\152\327\076\327\236\374\055\165\262\301\024
\325\043\003\333\133\157\013\076\170\057\015\336\063\215\026\267
\110\347\203\232\201\017\173\301\103\115\125\004\027\070\112\121
\325\131\242\211\164\323\237\276\036\113\327\306\155\267\210\044
\157\140\221\244\202\205\133\126\101\274\320\104\253\152\023\276

\321\054\130\267\022\063\130\262\067\143\334\023\365\224\035\077
\100\121\365\117\365\072\355\310\305\353\302\036\035\026\225\172
\307\176\102\161\223\156\113\025\267\060\337\252\355\127\205\110
\254\035\152\335\071\151\344\341\171\170\276\316\005\277\241\014
\367\200\173\041\147\047\060\131
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Staat der Nederlanden Root CA - G3"
Issuer: CN=Staat der Nederlanden Root CA - G3,O=Staat der Nederlanden,C=NL
Serial Number: 10003001 (0x98a239)
Subject: CN=Staat der Nederlanden Root CA - G3,O=Staat der Nederlanden,C=NL
Not Valid Before: Thu Nov 14 11:28:42 2013
Not Valid After : Mon Nov 13 23:00:00 2028
Fingerprint (SHA-256):
3C:4F:B0:B9:5A:B8:B3:00:32:F4:32:B8:6F:53:5F:E1:72:C1:85:D0:FD:39:86:58:37:CF:36:18:7F:A6:F4:28
Fingerprint (SHA1): D8:EB:6B:41:51:92:59:E0:F3:E7:85:00:C0:3D:B6:88:97:C9:EE:FC
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden Root CA - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\330\353\153\101\121\222\131\340\363\347\205\000\300\075\266\210
\227\311\356\374
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\013\106\147\007\333\020\057\031\214\065\120\140\321\013\364\067
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\053\060\051\006\003\125\004\003\014\042\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\230\242\071
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#

Certificate "Staat der Nederlanden EV Root CA"
#
Issuer: CN=Staat der Nederlanden EV Root CA,O=Staat der Nederlanden,C=NL
Serial Number: 10000013 (0x98968d)
Subject: CN=Staat der Nederlanden EV Root CA,O=Staat der Nederlanden,C=NL
Not Valid Before: Wed Dec 08 11:19:29 2010
Not Valid After : Thu Dec 08 11:10:28 2022
Fingerprint (SHA-256):
4D:24:91:41:4C:FE:95:67:46:EC:4C:EF:A6:CF:6F:72:E2:8A:13:29:43:2F:9D:8A:90:7A:C4:CB:5D:AD:C1:5A
Fingerprint (SHA1): 76:E2:7E:C1:4F:DB:82:C1:C0:A6:75:B5:05:BE:3D:29:B4:ED:DB:BB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden EV Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\051\060\047\006\003\125\004\003\014\040\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\105\126\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\051\060\047\006\003\125\004\003\014\040\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\105\126\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\230\226\215
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\160\060\202\003\130\240\003\002\001\002\002\004\000
\230\226\215\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\130\061\013\060\011\006\003\125\004\006\023\002\116
\114\061\036\060\034\006\003\125\004\012\014\025\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\061\051\060\047\006\003\125\004\003\014\040\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\040\105\126\040\122\157\157\164\040\103\101\060\036\027\015
\061\060\061\062\060\070\061\061\061\071\062\071\132\027\015\062
\062\061\062\060\070\061\061\061\060\062\070\132\060\130\061\013
\060\011\006\003\125\004\006\023\002\116\114\061\036\060\034\006

\003\125\004\012\014\025\123\164\141\141\164\040\144\145\162\040
\116\145\144\145\162\154\141\156\144\145\156\061\051\060\047\006
\003\125\004\003\014\040\123\164\141\141\164\040\144\145\162\040
\116\145\144\145\162\154\141\156\144\145\156\040\105\126\040\122
\157\157\164\040\103\101\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\343\307\176\211\371\044\113\072\322
\063\203\065\054\151\354\334\011\244\343\121\250\045\053\171\270
\010\075\340\221\272\204\205\306\205\244\312\346\311\056\123\244
\311\044\036\375\125\146\161\135\054\305\140\150\004\267\331\302
\122\046\070\210\244\326\073\100\246\302\315\077\315\230\223\263
\124\024\130\226\125\325\120\376\206\255\244\143\177\134\207\366
\216\346\047\222\147\027\222\002\003\054\334\326\146\164\355\335
\147\377\301\141\215\143\117\017\233\155\027\060\046\357\253\322
\037\020\240\371\305\177\026\151\201\003\107\355\036\150\215\162
\241\115\262\046\306\272\154\137\155\326\257\321\261\023\216\251
\255\363\136\151\165\046\030\076\101\053\041\177\356\213\135\007
\006\235\103\304\051\012\053\374\052\076\206\313\074\203\072\371
\311\015\332\305\231\342\274\170\101\063\166\341\277\057\135\345
\244\230\120\014\025\335\340\372\234\177\070\150\320\262\246\172
\247\321\061\275\176\212\130\047\103\263\272\063\221\323\247\230
\025\134\232\346\323\017\165\331\374\101\230\227\076\252\045\333
\217\222\056\260\173\014\137\361\143\251\067\371\233\165\151\114
\050\046\045\332\325\362\022\160\105\125\343\337\163\136\067\365
\041\154\220\216\065\132\311\323\043\353\323\300\276\170\254\102
\050\130\146\245\106\155\160\002\327\020\371\113\124\374\135\206
\112\207\317\177\312\105\254\021\132\265\040\121\215\057\210\107
\227\071\300\317\272\300\102\001\100\231\110\041\013\153\247\322
\375\226\325\321\276\106\235\111\340\013\246\240\042\116\070\320
\301\074\060\274\160\217\054\165\314\320\305\214\121\073\075\224
\010\144\046\141\175\271\303\145\217\024\234\041\320\252\375\027
\162\003\217\275\233\214\346\136\123\236\271\235\357\202\273\341
\274\342\162\101\133\041\224\323\105\067\224\321\337\011\071\135
\347\043\252\232\035\312\155\250\012\206\205\212\202\276\102\007
\326\362\070\202\163\332\207\133\345\074\323\236\076\247\073\236
\364\003\263\371\361\175\023\164\002\377\273\241\345\372\000\171
\034\246\146\101\210\134\140\127\246\056\011\304\272\375\232\317
\247\037\100\303\273\314\132\012\125\113\073\070\166\121\270\143
\213\204\224\026\346\126\363\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\035\006\003\125\035\016\004\026\004\024\376\253\000\220
\230\236\044\374\251\314\032\212\373\047\270\277\060\156\250\073
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\317\167\054\156\126\276\116\263\266\204\000\224
\253\107\311\015\322\166\307\206\237\035\007\323\266\264\273\010
\170\257\151\322\013\111\336\063\305\254\255\302\210\002\175\006
\267\065\002\301\140\311\277\304\350\224\336\324\323\251\023\045

\132\376\156\242\256\175\005\334\175\363\154\360\176\246\215\356
\331\327\316\130\027\350\251\051\256\163\110\207\347\233\312\156
\051\241\144\137\031\023\367\256\006\020\377\121\306\233\115\125
\045\117\223\231\020\001\123\165\361\023\316\307\246\101\101\322
\277\210\245\177\105\374\254\270\245\265\063\014\202\304\373\007
\366\152\345\045\204\137\006\312\301\206\071\021\333\130\315\167
\073\054\302\114\017\136\232\343\360\253\076\141\033\120\044\302
\300\364\361\031\360\021\051\266\245\030\002\233\327\143\114\160
\214\107\243\003\103\134\271\135\106\240\015\157\377\131\216\276
\335\237\162\303\133\053\337\214\133\316\345\014\106\154\222\262
\012\243\114\124\102\030\025\022\030\275\332\374\272\164\156\377
\301\266\240\144\330\251\137\125\256\237\134\152\166\226\330\163
\147\207\373\115\177\134\356\151\312\163\020\373\212\251\375\236
\275\066\070\111\111\207\364\016\024\360\351\207\270\077\247\117
\172\132\216\171\324\223\344\273\150\122\204\254\154\351\363\230
\160\125\162\062\371\064\253\053\111\265\315\040\142\344\072\172
\147\143\253\226\334\155\256\227\354\374\237\166\126\210\056\146
\317\133\266\311\244\260\327\005\272\341\047\057\223\273\046\052
\242\223\260\033\363\216\276\035\100\243\271\066\217\076\202\032
\032\136\210\352\120\370\131\342\203\106\051\013\343\104\134\341
\225\266\151\220\232\024\157\227\256\201\317\150\357\231\232\276
\265\347\341\177\370\372\023\107\026\114\314\155\010\100\347\213
\170\157\120\202\104\120\077\146\006\212\253\103\204\126\112\017
\040\055\206\016\365\322\333\322\172\212\113\315\245\350\116\361
\136\046\045\001\131\043\240\176\322\366\176\041\127\327\047\274
\025\127\114\244\106\301\340\203\036\014\114\115\037\117\006\031
\342\371\250\364\072\202\241\262\171\103\171\326\255\157\172\047
\220\003\244\352\044\207\077\331\275\331\351\362\137\120\111\034
\356\354\327\056
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Staat der Nederlanden EV Root CA"
Issuer: CN=Staat der Nederlanden EV Root CA,O=Staat der Nederlanden,C=NL
Serial Number: 10000013 (0x98968d)
Subject: CN=Staat der Nederlanden EV Root CA,O=Staat der Nederlanden,C=NL
Not Valid Before: Wed Dec 08 11:19:29 2010
Not Valid After : Thu Dec 08 11:10:28 2022
Fingerprint (SHA-256):
4D:24:91:41:4C:FE:95:67:46:EC:4C:EF:A6:CF:6F:72:E2:8A:13:29:43:2F:9D:8A:90:7A:C4:CB:5D:AD:C1:5A
Fingerprint (SHA1): 76:E2:7E:C1:4F:DB:82:C1:C0:A6:75:B5:05:BE:3D:29:B4:ED:DB:BB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden EV Root CA"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\166\342\176\301\117\333\202\301\300\246\165\265\005\276\075\051
\264\355\333\273
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\374\006\257\173\350\032\361\232\264\350\322\160\037\300\365\272
END
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\051\060\047\006\003\125\004\003\014\040\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\105\126\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\230\226\215
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "IdenTrust Commercial Root CA 1"
#
Issuer: CN=IdenTrust Commercial Root CA 1,O=IdenTrust,C=US
Serial Number:0a:01:42:80:00:00:01:45:23:c8:44:b5:00:00:00:02
Subject: CN=IdenTrust Commercial Root CA 1,O=IdenTrust,C=US
Not Valid Before: Thu Jan 16 18:12:23 2014
Not Valid After : Mon Jan 16 18:12:23 2034
Fingerprint (SHA-256):
5D:56:49:9B:E4:D2:E0:8B:CF:CA:D0:8A:3E:38:72:3D:50:50:3B:DE:70:69:48:E4:2F:55:60:30:19:E5:28:AE
Fingerprint (SHA1): DF:71:7E:AA:4A:D9:4E:C9:55:84:99:60:2D:48:DE:5F:BC:F0:3A:25
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IdenTrust Commercial Root CA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\047\060\045\006\003\125\004\003\023\036\111\144
\145\156\124\162\165\163\164\040\103\157\155\155\145\162\143\151
\141\154\040\122\157\157\164\040\103\101\040\061
END
CKA_ID UTF8 "0"

CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\047\060\045\006\003\125\004\003\023\036\111\144
\145\156\124\162\165\163\164\040\103\157\155\155\145\162\143\151
\141\154\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\012\001\102\200\000\000\001\105\043\310\104\265\000\000
\000\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\140\060\202\003\110\240\003\002\001\002\002\020\012
\001\102\200\000\000\001\105\043\310\104\265\000\000\000\002\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\112
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022\060
\020\006\003\125\004\012\023\011\111\144\145\156\124\162\165\163
\164\061\047\060\045\006\003\125\004\003\023\036\111\144\145\156
\124\162\165\163\164\040\103\157\155\155\145\162\143\151\141\154
\040\122\157\157\164\040\103\101\040\061\060\036\027\015\061\064
\060\061\061\066\061\070\061\062\062\063\132\027\015\063\064\060
\061\061\066\061\070\061\062\062\063\132\060\112\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\022\060\020\006\003\125
\004\012\023\011\111\144\145\156\124\162\165\163\164\061\047\060
\045\006\003\125\004\003\023\036\111\144\145\156\124\162\165\163
\164\040\103\157\155\155\145\162\143\151\141\154\040\122\157\157
\164\040\103\101\040\061\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\247\120\031\336\077\231\075\324\063
\106\361\157\121\141\202\262\251\117\217\147\211\135\204\331\123
\335\014\050\331\327\360\377\256\225\103\162\231\371\265\135\174
\212\301\102\341\061\120\164\321\201\015\174\315\233\041\253\103
\342\254\255\136\206\156\363\011\212\037\132\062\275\242\353\224
\371\350\134\012\354\377\230\322\257\161\263\264\123\237\116\207
\357\222\274\275\354\117\062\060\210\113\027\136\127\304\123\302
\366\002\227\215\331\142\053\277\044\037\142\215\337\303\270\051
\113\111\170\074\223\140\210\042\374\231\332\066\310\302\242\324
\054\124\000\147\065\156\163\277\002\130\360\244\335\345\260\242
\046\172\312\340\066\245\031\026\365\375\267\357\256\077\100\365
\155\132\004\375\316\064\312\044\334\164\043\033\135\063\023\022
\135\304\001\045\366\060\335\002\135\237\340\325\107\275\264\353
\033\241\273\111\111\330\237\133\002\363\212\344\044\220\344\142
\117\117\301\257\213\016\164\027\250\321\162\210\152\172\001\111
\314\264\106\171\306\027\261\332\230\036\007\131\372\165\041\205
\145\335\220\126\316\373\253\245\140\235\304\235\371\122\260\213
\275\207\371\217\053\043\012\043\166\073\367\063\341\311\000\363
\151\371\113\242\340\116\274\176\223\071\204\007\367\104\160\176
\376\007\132\345\261\254\321\030\314\362\065\345\111\111\010\312

\126\311\075\373\017\030\175\213\073\301\023\302\115\217\311\117
\016\067\351\037\241\016\152\337\142\056\313\065\006\121\171\054
\310\045\070\364\372\113\247\211\134\234\322\343\015\071\206\112
\164\174\325\131\207\302\077\116\014\134\122\364\075\367\122\202
\361\352\243\254\375\111\064\032\050\363\101\210\072\023\356\350
\336\377\231\035\137\272\313\350\036\362\271\120\140\300\061\323
\163\345\357\276\240\355\063\013\164\276\040\040\304\147\154\360
\010\003\172\125\200\177\106\116\226\247\364\036\076\341\366\330
\011\341\063\144\053\143\327\062\136\237\371\300\173\017\170\157
\227\274\223\232\371\234\022\220\170\172\200\207\025\327\162\164
\234\125\164\170\261\272\341\156\160\004\272\117\240\272\150\303
\173\377\061\360\163\075\075\224\052\261\013\101\016\240\376\115
\210\145\153\171\063\264\327\002\003\001\000\001\243\102\060\100
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\355\104\031\300
\323\360\006\213\356\244\173\276\102\347\046\124\310\216\066\166
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\015\256\220\062\366\246\113\174\104\166\031\141
\036\047\050\315\136\124\357\045\274\343\010\220\371\051\327\256
\150\010\341\224\000\130\357\056\056\176\123\122\214\266\134\007
\352\210\272\231\213\120\224\327\202\200\337\141\011\000\223\255
\015\024\346\316\301\362\067\224\170\260\137\234\263\242\163\270
\217\005\223\070\315\215\076\260\270\373\300\317\261\362\354\055
\055\033\314\354\252\232\263\252\140\202\033\055\073\303\204\075
\127\212\226\036\234\165\270\323\060\315\140\010\203\220\323\216
\124\361\115\146\300\135\164\003\100\243\356\205\176\302\037\167
\234\006\350\301\247\030\135\122\225\355\311\335\045\236\155\372
\251\355\243\072\064\320\131\173\332\355\120\363\065\277\355\353
\024\115\061\307\140\364\332\361\207\234\342\110\342\306\305\067
\373\006\020\372\165\131\146\061\107\051\332\166\232\034\351\202
\256\357\232\271\121\367\210\043\232\151\225\142\074\345\125\200
\066\327\124\002\377\361\271\135\316\324\043\157\330\105\204\112
\133\145\357\211\014\335\024\247\040\313\030\245\045\264\015\371
\001\360\242\322\364\000\310\164\216\241\052\110\216\145\333\023
\304\342\045\027\175\353\276\207\133\027\040\124\121\223\112\123
\003\013\354\135\312\063\355\142\375\105\307\057\133\334\130\240
\200\071\346\372\327\376\023\024\246\355\075\224\112\102\164\324
\303\167\131\163\315\217\106\276\125\070\357\372\350\221\062\352
\227\130\004\042\336\070\303\314\274\155\311\063\072\152\012\151
\077\240\310\352\162\217\214\143\206\043\275\155\074\226\236\225
\340\111\114\252\242\271\052\033\234\066\201\170\355\303\350\106
\342\046\131\104\165\036\331\165\211\121\315\020\204\235\141\140
\313\135\371\227\042\115\216\230\346\343\177\366\133\273\256\315
\312\112\201\153\136\013\363\121\341\164\053\351\176\047\247\331
\231\111\116\370\245\200\333\045\017\034\143\142\212\311\063\147
\153\074\020\203\306\255\336\250\315\026\216\215\360\007\067\161
\237\362\253\374\101\365\301\213\354\000\067\135\011\345\116\200

\357\372\261\134\070\006\245\033\112\341\334\070\055\074\334\253
\037\220\032\325\112\234\356\321\160\154\314\356\364\127\370\030
\272\204\156\207
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "IdenTrust Commercial Root CA 1"
Issuer: CN=IdenTrust Commercial Root CA 1,O=IdenTrust,C=US
Serial Number:0a:01:42:80:00:00:01:45:23:c8:44:b5:00:00:00:02
Subject: CN=IdenTrust Commercial Root CA 1,O=IdenTrust,C=US
Not Valid Before: Thu Jan 16 18:12:23 2014
Not Valid After : Mon Jan 16 18:12:23 2034
Fingerprint (SHA-256):
5D:56:49:9B:E4:D2:E0:8B:CF:CA:D0:8A:3E:38:72:3D:50:50:3B:DE:70:69:48:E4:2F:55:60:30:19:E5:28:AE
Fingerprint (SHA1): DF:71:7E:AA:4A:D9:4E:C9:55:84:99:60:2D:48:DE:5F:BC:F0:3A:25
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IdenTrust Commercial Root CA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\337\161\176\252\112\331\116\311\125\204\231\140\055\110\336\137
\274\360\072\045
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\263\076\167\163\165\356\240\323\343\176\111\143\111\131\273\307
END
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\047\060\045\006\003\125\004\003\023\036\111\144
\145\156\124\162\165\163\164\040\103\157\155\155\145\162\143\151
\141\154\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\012\001\102\200\000\000\001\105\043\310\104\265\000\000
\000\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "IdenTrust Public Sector Root CA 1"
#

Issuer: CN=IdenTrust Public Sector Root CA 1,O=IdenTrust,C=US
Serial Number:0a:01:42:80:00:00:01:45:23:cf:46:7c:00:00:00:02
Subject: CN=IdenTrust Public Sector Root CA 1,O=IdenTrust,C=US
Not Valid Before: Thu Jan 16 17:53:32 2014
Not Valid After : Mon Jan 16 17:53:32 2034
Fingerprint (SHA-256):
30:D0:89:5A:9A:44:8A:26:20:91:63:55:22:D1:F5:20:10:B5:86:7A:CA:E1:2C:78:EF:95:8F:D4:F4:38:9F:2F
Fingerprint (SHA1): BA:29:41:60:77:98:3F:F4:F3:EF:F2:31:05:3B:2E:EA:6D:4D:45:FD
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IdenTrust Public Sector Root CA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\052\060\050\006\003\125\004\003\023\041\111\144
\145\156\124\162\165\163\164\040\120\165\142\154\151\143\040\123
\145\143\164\157\162\040\122\157\157\164\040\103\101\040\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\052\060\050\006\003\125\004\003\023\041\111\144
\145\156\124\162\165\163\164\040\120\165\142\154\151\143\040\123
\145\143\164\157\162\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\012\001\102\200\000\000\001\105\043\317\106\174\000\000
\000\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\146\060\202\003\116\240\003\002\001\002\002\020\012
\001\102\200\000\000\001\105\043\317\106\174\000\000\000\002\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\115
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022\060
\020\006\003\125\004\012\023\011\111\144\145\156\124\162\165\163
\164\061\052\060\050\006\003\125\004\003\023\041\111\144\145\156
\124\162\165\163\164\040\120\165\142\154\151\143\040\123\145\143
\164\157\162\040\122\157\157\164\040\103\101\040\061\060\036\027
\015\061\064\060\061\061\066\061\067\065\063\063\062\132\027\015
\063\064\060\061\061\066\061\067\065\063\063\062\132\060\115\061
\013\060\011\006\003\125\004\006\023\002\125\123\061\022\060\020
\006\003\125\004\012\023\011\111\144\145\156\124\162\165\163\164
\061\052\060\050\006\003\125\004\003\023\041\111\144\145\156\124
\162\165\163\164\040\120\165\142\154\151\143\040\123\145\143\164

\157\162\040\122\157\157\164\040\103\101\040\061\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\266\042\224
\374\244\110\257\350\107\153\012\373\047\166\344\362\077\212\073
\172\112\054\061\052\214\215\260\251\303\061\153\250\167\166\204
\046\266\254\201\102\015\010\353\125\130\273\172\370\274\145\175
\362\240\155\213\250\107\351\142\166\036\021\356\010\024\321\262
\104\026\364\352\320\372\036\057\136\333\313\163\101\256\274\000
\260\112\053\100\262\254\341\073\113\302\055\235\344\241\233\354
\032\072\036\360\010\263\320\344\044\065\007\237\234\264\311\122
\155\333\007\312\217\265\133\360\203\363\117\307\055\245\310\255
\313\225\040\244\061\050\127\130\132\344\215\033\232\253\236\015
\014\362\012\063\071\042\071\012\227\056\363\123\167\271\104\105
\375\204\313\066\040\201\131\055\232\157\155\110\110\141\312\114
\337\123\321\257\122\274\104\237\253\057\153\203\162\357\165\200
\332\006\063\033\135\310\332\143\306\115\315\254\146\061\315\321
\336\076\207\020\066\341\271\244\172\357\140\120\262\313\312\246
\126\340\067\257\253\064\023\071\045\350\071\146\344\230\172\252
\022\230\234\131\146\206\076\255\361\260\312\076\006\017\173\360
\021\113\067\240\104\155\173\313\250\214\161\364\325\265\221\066
\314\360\025\306\053\336\121\027\261\227\114\120\075\261\225\131
\174\005\175\055\041\325\000\277\001\147\242\136\173\246\134\362
\367\042\361\220\015\223\333\252\104\121\146\314\175\166\003\353
\152\250\052\070\031\227\166\015\153\212\141\371\274\366\356\166
\375\160\053\335\051\074\370\012\036\133\102\034\213\126\057\125
\033\034\241\056\265\307\026\346\370\252\074\222\216\151\266\001
\301\265\206\235\211\017\013\070\224\124\350\352\334\236\075\045
\274\123\046\355\325\253\071\252\305\100\114\124\253\262\264\331
\331\370\327\162\333\034\274\155\275\145\137\357\210\065\052\146
\057\356\366\263\145\360\063\215\174\230\101\151\106\017\103\034
\151\372\233\265\320\141\152\315\312\113\331\114\220\106\253\025
\131\241\107\124\051\056\203\050\137\034\302\242\253\162\027\000
\006\216\105\354\213\342\063\075\177\332\031\104\344\142\162\303
\337\042\306\362\126\324\335\137\225\162\355\155\137\367\110\003
\133\375\305\052\240\366\163\043\204\020\033\001\347\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\343\161\340\236\330\247\102\331\333\161\221\153\224\223
\353\303\243\321\024\243\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\002\001\000\107\372\335\012\260\021
\221\070\255\115\135\367\345\016\227\124\031\202\110\207\124\214
\252\144\231\330\132\376\210\001\305\130\245\231\261\043\124\043
\267\152\035\040\127\345\001\142\101\027\323\011\333\165\313\156
\124\220\165\376\032\237\201\012\302\335\327\367\011\320\133\162
\025\344\036\011\152\075\063\363\041\232\346\025\176\255\121\325
\015\020\355\175\102\300\217\356\300\232\010\325\101\326\134\016
\041\151\156\200\141\016\025\300\270\317\305\111\022\122\314\276

\072\314\324\056\070\005\336\065\375\037\157\270\200\150\230\075
\115\240\312\100\145\322\163\174\365\213\331\012\225\077\330\077
\043\155\032\321\052\044\031\331\205\263\027\357\170\156\251\130
\321\043\323\307\023\355\162\045\177\135\261\163\160\320\177\006
\227\011\204\051\200\141\035\372\136\377\163\254\240\343\211\270
\034\161\025\306\336\061\177\022\334\341\155\233\257\347\350\237
\165\170\114\253\106\073\232\316\277\005\030\135\115\025\074\026
\232\031\120\004\232\262\232\157\145\213\122\137\074\130\004\050
\045\300\146\141\061\176\271\340\165\271\032\250\201\326\162\027
\263\305\003\061\065\021\170\170\242\340\351\060\214\177\200\337
\130\337\074\272\047\226\342\200\064\155\343\230\323\144\047\254
\110\176\050\167\134\306\045\141\045\370\205\014\145\372\304\062
\057\245\230\005\344\370\013\147\026\026\306\202\270\062\031\371
\371\271\171\334\037\315\353\257\253\016\335\033\333\105\344\172
\347\002\342\225\135\374\151\360\123\151\141\225\165\171\013\136
\125\346\070\034\224\251\131\063\236\310\161\164\171\177\121\211
\266\310\152\270\060\310\152\070\303\156\236\341\067\026\352\005
\142\114\133\022\107\355\247\264\263\130\126\307\111\363\177\022
\150\011\061\161\360\155\370\116\107\373\326\205\356\305\130\100
\031\244\035\247\371\113\103\067\334\150\132\117\317\353\302\144
\164\336\264\025\331\364\124\124\032\057\034\327\227\161\124\220
\216\331\040\235\123\053\177\253\217\342\352\060\274\120\067\357
\361\107\265\175\174\054\004\354\150\235\264\111\104\020\364\162
\113\034\144\347\374\346\153\220\335\151\175\151\375\000\126\245
\267\254\266\255\267\312\076\001\357\234
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "IdenTrust Public Sector Root CA 1"
Issuer: CN=IdenTrust Public Sector Root CA 1,O=IdenTrust,C=US
Serial Number:0a:01:42:80:00:00:01:45:23:cf:46:7c:00:00:00:02
Subject: CN=IdenTrust Public Sector Root CA 1,O=IdenTrust,C=US
Not Valid Before: Thu Jan 16 17:53:32 2014
Not Valid After : Mon Jan 16 17:53:32 2034
Fingerprint (SHA-256):
30:D0:89:5A:9A:44:8A:26:20:91:63:55:22:D1:F5:20:10:B5:86:7A:CA:E1:2C:78:EF:95:8F:D4:F4:38:9F:2F
Fingerprint (SHA1): BA:29:41:60:77:98:3F:F4:F3:EF:F2:31:05:3B:2E:EA:6D:4D:45:FD
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IdenTrust Public Sector Root CA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\272\051\101\140\167\230\077\364\363\357\362\061\005\073\056\352
\155\115\105\375
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\067\006\245\260\374\211\235\272\364\153\214\032\144\315\325\272
END
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\052\060\050\006\003\125\004\003\023\041\111\144
\145\156\124\162\165\163\164\040\120\165\142\154\151\143\040\123
\145\143\164\157\162\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\012\001\102\200\000\000\001\105\043\317\106\174\000\000
\000\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust Root Certification Authority - G2"
#
Issuer: CN=Entrust Root Certification Authority - G2,OU="(c) 2009 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number: 1246989352 (0x4a538c28)
Subject: CN=Entrust Root Certification Authority - G2,OU="(c) 2009 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Tue Jul 07 17:25:54 2009
Not Valid After : Sat Dec 07 17:55:54 2030
Fingerprint (SHA-256):
43:DF:57:74:B0:3E:7F:EF:5F:E4:0D:93:1A:7B:ED:F1:BB:2E:6B:42:73:8C:4E:6D:38:41:10:3D:3A:A7:F3:39
Fingerprint (SHA1): 8C:F4:27:FD:79:0C:3A:D1:66:06:8D:E8:1E:57:EF:BB:93:22:72:D4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\060\071\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060

\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\060\071\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\112\123\214\050
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\076\060\202\003\046\240\003\002\001\002\002\004\112
\123\214\050\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\201\276\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\026\060\024\006\003\125\004\012\023\015\105\156\164
\162\165\163\164\054\040\111\156\143\056\061\050\060\046\006\003
\125\004\013\023\037\123\145\145\040\167\167\167\056\145\156\164
\162\165\163\164\056\156\145\164\057\154\145\147\141\154\055\164
\145\162\155\163\061\071\060\067\006\003\125\004\013\023\060\050
\143\051\040\062\060\060\071\040\105\156\164\162\165\163\164\054
\040\111\156\143\056\040\055\040\146\157\162\040\141\165\164\150
\157\162\151\172\145\144\040\165\163\145\040\157\156\154\171\061
\062\060\060\006\003\125\004\003\023\051\105\156\164\162\165\163
\164\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\055
\040\107\062\060\036\027\015\060\071\060\067\060\067\061\067\062
\065\065\064\132\027\015\063\060\061\062\060\067\061\067\065\065
\065\064\132\060\201\276\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\026\060\024\006\003\125\004\012\023\015\105\156
\164\162\165\163\164\054\040\111\156\143\056\061\050\060\046\006
\003\125\004\013\023\037\123\145\145\040\167\167\167\056\145\156
\164\162\165\163\164\056\156\145\164\057\154\145\147\141\154\055
\164\145\162\155\163\061\071\060\067\006\003\125\004\013\023\060
\050\143\051\040\062\060\060\071\040\105\156\164\162\165\163\164

\054\040\111\156\143\056\040\055\040\146\157\162\040\141\165\164
\150\157\162\151\172\145\144\040\165\163\145\040\157\156\154\171
\061\062\060\060\006\003\125\004\003\023\051\105\156\164\162\165
\163\164\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040
\055\040\107\062\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\272\204\266\162\333\236\014\153\342\231\351
\060\001\247\166\352\062\270\225\101\032\311\332\141\116\130\162
\317\376\366\202\171\277\163\141\006\012\245\047\330\263\137\323
\105\116\034\162\326\116\062\362\162\212\017\367\203\031\320\152
\200\200\000\105\036\260\307\347\232\277\022\127\047\034\243\150
\057\012\207\275\152\153\016\136\145\363\034\167\325\324\205\215
\160\041\264\263\062\347\213\242\325\206\071\002\261\270\322\107
\316\344\311\111\304\073\247\336\373\124\175\127\276\360\350\156
\302\171\262\072\013\125\342\120\230\026\062\023\134\057\170\126
\301\302\224\263\362\132\344\047\232\237\044\327\306\354\320\233
\045\202\343\314\302\304\105\305\214\227\172\006\153\052\021\237
\251\012\156\110\073\157\333\324\021\031\102\367\217\007\277\365
\123\137\234\076\364\027\054\346\151\254\116\062\114\142\167\352
\267\350\345\273\064\274\031\213\256\234\121\347\267\176\265\123
\261\063\042\345\155\317\160\074\032\372\342\233\147\266\203\364
\215\245\257\142\114\115\340\130\254\144\064\022\003\370\266\215
\224\143\044\244\161\002\003\001\000\001\243\102\060\100\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\035\006\003\125\035\016\004\026\004\024\152\162\046\172\320\036
\357\175\347\073\151\121\324\154\215\237\220\022\146\253\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001
\001\000\171\237\035\226\306\266\171\077\042\215\207\323\207\003
\004\140\152\153\232\056\131\211\163\021\254\103\321\365\023\377
\215\071\053\300\362\275\117\160\214\251\057\352\027\304\013\124
\236\324\033\226\230\063\074\250\255\142\242\000\166\253\131\151
\156\006\035\176\304\271\104\215\230\257\022\324\141\333\012\031
\106\107\363\353\367\143\301\100\005\100\245\322\267\364\265\232
\066\277\251\210\166\210\004\125\004\053\234\207\177\032\067\074
\176\055\245\032\330\324\211\136\312\275\254\075\154\330\155\257
\325\363\166\017\315\073\210\070\042\235\154\223\232\304\075\277
\202\033\145\077\246\017\135\252\374\345\262\025\312\265\255\306
\274\075\320\204\350\352\006\162\260\115\071\062\170\277\076\021
\234\013\244\235\232\041\363\360\233\013\060\170\333\301\334\207
\103\376\274\143\232\312\305\302\034\311\307\215\377\073\022\130
\010\346\266\075\354\172\054\116\373\203\226\316\014\074\151\207
\124\163\244\163\302\223\377\121\020\254\025\124\001\330\374\005
\261\211\241\177\164\203\232\111\327\334\116\173\212\110\157\213
\105\366
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE

CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Entrust Root Certification Authority - G2"
Issuer: CN=Entrust Root Certification Authority - G2,OU="(c) 2009 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number: 1246989352 (0x4a538c28)
Subject: CN=Entrust Root Certification Authority - G2,OU="(c) 2009 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Tue Jul 07 17:25:54 2009
Not Valid After : Sat Dec 07 17:55:54 2030
Fingerprint (SHA-256):
43:DF:57:74:B0:3E:7F:EF:5F:E4:0D:93:1A:7B:ED:F1:BB:2E:6B:42:73:8C:4E:6D:38:41:10:3D:3A:A7:F3:39
Fingerprint (SHA1): 8C:F4:27:FD:79:0C:3A:D1:66:06:8D:E8:1E:57:EF:BB:93:22:72:D4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\214\364\047\375\171\014\072\321\146\006\215\350\036\127\357\273
\223\042\162\324
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\113\342\311\221\226\145\014\364\016\132\223\222\240\012\376\262
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\060\071\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\112\123\214\050
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust Root Certification Authority - EC1"
#
Issuer: CN=Entrust Root Certification Authority - EC1,OU="(c) 2012 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number:00:a6:8b:79:29:00:00:00:00:50:d0:91:f9
Subject: CN=Entrust Root Certification Authority - EC1,OU="(c) 2012 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Tue Dec 18 15:25:36 2012
Not Valid After : Fri Dec 18 15:55:36 2037
Fingerprint (SHA-256):
02:ED:0E:B2:8C:14:DA:45:16:5C:56:67:91:70:0D:64:51:D7:FB:56:F0:B2:AB:1D:3B:8E:B0:70:E5:6E:DF:F5
Fingerprint (SHA1): 20:D8:06:40:DF:9B:25:F5:12:25:3A:11:EA:F7:59:8A:EB:14:B5:47
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - EC1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\277\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\062\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\063\060
\061\006\003\125\004\003\023\052\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\105
\103\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\277\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\062\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\063\060
\061\006\003\125\004\003\023\052\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151

\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\105
\103\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\000\246\213\171\051\000\000\000\000\120\320\221\371
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\371\060\202\002\200\240\003\002\001\002\002\015\000
\246\213\171\051\000\000\000\000\120\320\221\371\060\012\006\010
\052\206\110\316\075\004\003\003\060\201\277\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\026\060\024\006\003\125\004
\012\023\015\105\156\164\162\165\163\164\054\040\111\156\143\056
\061\050\060\046\006\003\125\004\013\023\037\123\145\145\040\167
\167\167\056\145\156\164\162\165\163\164\056\156\145\164\057\154
\145\147\141\154\055\164\145\162\155\163\061\071\060\067\006\003
\125\004\013\023\060\050\143\051\040\062\060\061\062\040\105\156
\164\162\165\163\164\054\040\111\156\143\056\040\055\040\146\157
\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163\145
\040\157\156\154\171\061\063\060\061\006\003\125\004\003\023\052
\105\156\164\162\165\163\164\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\040\055\040\105\103\061\060\036\027\015\061\062
\061\062\061\070\061\065\062\065\063\066\132\027\015\063\067\061
\062\061\070\061\065\065\065\063\066\132\060\201\277\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\026\060\024\006\003
\125\004\012\023\015\105\156\164\162\165\163\164\054\040\111\156
\143\056\061\050\060\046\006\003\125\004\013\023\037\123\145\145
\040\167\167\167\056\145\156\164\162\165\163\164\056\156\145\164
\057\154\145\147\141\154\055\164\145\162\155\163\061\071\060\067
\006\003\125\004\013\023\060\050\143\051\040\062\060\061\062\040
\105\156\164\162\165\163\164\054\040\111\156\143\056\040\055\040
\146\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165
\163\145\040\157\156\154\171\061\063\060\061\006\003\125\004\003
\023\052\105\156\164\162\165\163\164\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\055\040\105\103\061\060\166\060\020
\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042
\003\142\000\004\204\023\311\320\272\155\101\173\342\154\320\353
\125\137\146\002\032\044\364\133\211\151\107\343\270\302\175\361
\362\002\305\237\240\366\133\325\213\006\031\206\117\123\020\155
\007\044\047\241\240\370\325\107\031\141\114\175\312\223\047\352
\164\014\357\157\226\011\376\143\354\160\135\066\255\147\167\256
\311\235\174\125\104\072\242\143\121\037\365\343\142\324\251\107
\007\076\314\040\243\102\060\100\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\267\143\347\032\335\215\351\010\246\125\203\244
\340\152\120\101\145\021\102\111\060\012\006\010\052\206\110\316

\075\004\003\003\003\147\000\060\144\002\060\141\171\330\345\102
\107\337\034\256\123\231\027\266\157\034\175\341\277\021\224\321
\003\210\165\344\215\211\244\212\167\106\336\155\141\357\002\365
\373\265\337\314\376\116\377\376\251\346\247\002\060\133\231\327
\205\067\006\265\173\010\375\353\047\213\112\224\371\341\372\247
\216\046\010\350\174\222\150\155\163\330\157\046\254\041\002\270
\231\267\046\101\133\045\140\256\320\110\032\356\006
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Entrust Root Certification Authority - EC1"
Issuer: CN=Entrust Root Certification Authority - EC1,OU="(c) 2012 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number:00:a6:8b:79:29:00:00:00:00:50:d0:91:f9
Subject: CN=Entrust Root Certification Authority - EC1,OU="(c) 2012 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Tue Dec 18 15:25:36 2012
Not Valid After : Fri Dec 18 15:55:36 2037
Fingerprint (SHA-256):
02:ED:0E:B2:8C:14:DA:45:16:5C:56:67:91:70:0D:64:51:D7:FB:56:F0:B2:AB:1D:3B:8E:B0:70:E5:6E:DF:F5
Fingerprint (SHA1): 20:D8:06:40:DF:9B:25:F5:12:25:3A:11:EA:F7:59:8A:EB:14:B5:47
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - EC1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\040\330\006\100\337\233\045\365\022\045\072\021\352\367\131\212
\353\024\265\107
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\266\176\035\360\130\305\111\154\044\073\075\355\230\030\355\274
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\277\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\062\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\063\060
\061\006\003\125\004\003\023\052\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\105

\103\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\000\246\213\171\051\000\000\000\000\120\320\221\371
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "CFCA EV ROOT"
#
Issuer: CN=CFCA EV ROOT,O=China Financial Certification Authority,C=CN
Serial Number: 407555286 (0x184accd6)
Subject: CN=CFCA EV ROOT,O=China Financial Certification Authority,C=CN
Not Valid Before: Wed Aug 08 03:07:01 2012
Not Valid After : Mon Dec 31 03:07:01 2029
Fingerprint (SHA-256):
5C:C3:D7:8E:4E:1D:5E:45:54:7A:04:E6:87:3E:64:F9:0C:F9:53:6D:1C:CC:2E:F8:00:F3:55:C4:C5:FD:70:FD
Fingerprint (SHA1): E2:B8:29:4B:55:84:AB:6B:58:C2:90:46:6C:AC:3F:B8:39:8F:84:83
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CFCA EV ROOT"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\060\060\056\006\003\125\004\012\014\047\103\150\151\156\141\040
\106\151\156\141\156\143\151\141\154\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\061\025\060\023\006\003\125\004\003\014\014\103\106\103\101
\040\105\126\040\122\117\117\124
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\060\060\056\006\003\125\004\012\014\047\103\150\151\156\141\040
\106\151\156\141\156\143\151\141\154\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\061\025\060\023\006\003\125\004\003\014\014\103\106\103\101
\040\105\126\040\122\117\117\124
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\030\112\314\326
END
CKA_VALUE MULTILINE_OCTAL

\060\202\005\215\060\202\003\165\240\003\002\001\002\002\004\030
\112\314\326\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\126\061\013\060\011\006\003\125\004\006\023\002\103
\116\061\060\060\056\006\003\125\004\012\014\047\103\150\151\156
\141\040\106\151\156\141\156\143\151\141\154\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\061\025\060\023\006\003\125\004\003\014\014\103\106
\103\101\040\105\126\040\122\117\117\124\060\036\027\015\061\062
\060\070\060\070\060\063\060\067\060\061\132\027\015\062\071\061
\062\063\061\060\063\060\067\060\061\132\060\126\061\013\060\011
\006\003\125\004\006\023\002\103\116\061\060\060\056\006\003\125
\004\012\014\047\103\150\151\156\141\040\106\151\156\141\156\143
\151\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\025\060\023\006
\003\125\004\003\014\014\103\106\103\101\040\105\126\040\122\117
\117\124\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\327\135\153\315\020\077\037\005\131\325\005\115\067
\261\016\354\230\053\216\025\035\372\223\113\027\202\041\161\020
\122\327\121\144\160\026\302\125\151\115\216\025\155\237\277\014
\033\302\340\243\147\326\014\254\317\042\256\257\167\124\052\113
\114\212\123\122\172\303\356\056\336\263\161\045\301\351\135\075
\356\241\057\243\367\052\074\311\043\035\152\253\035\241\247\361
\363\354\240\325\104\317\025\317\162\057\035\143\227\350\231\371
\375\223\244\124\200\114\122\324\122\253\056\111\337\220\315\270
\137\276\077\336\241\312\115\040\324\045\350\204\051\123\267\261
\210\037\377\372\332\220\237\012\251\055\101\077\261\361\030\051
\356\026\131\054\064\111\032\250\006\327\250\210\322\003\162\172
\062\342\352\150\115\156\054\226\145\173\312\131\372\362\342\335
\356\060\054\373\314\106\254\304\143\353\157\177\066\053\064\163
\022\224\177\337\314\046\236\361\162\135\120\145\131\217\151\263
\207\136\062\157\303\030\212\265\225\217\260\172\067\336\132\105
\073\307\066\341\357\147\321\071\323\227\133\163\142\031\110\055
\207\034\006\373\164\230\040\111\163\360\005\322\033\261\240\243
\267\033\160\323\210\151\271\132\326\070\364\142\334\045\213\170
\277\370\350\176\270\134\311\225\117\137\247\055\271\040\153\317
\153\335\365\015\364\202\267\364\262\146\056\020\050\366\227\132
\173\226\026\217\001\031\055\154\156\177\071\130\006\144\203\001
\203\203\303\115\222\335\062\306\207\244\067\351\026\316\252\055
\150\257\012\201\145\072\160\301\233\255\115\155\124\312\052\055
\113\205\033\263\200\346\160\105\015\153\136\065\360\177\073\270
\234\344\004\160\211\022\045\223\332\012\231\042\140\152\143\140
\116\166\006\230\116\275\203\255\035\130\212\045\205\322\307\145
\036\055\216\306\337\266\306\341\177\212\004\041\025\051\164\360
\076\234\220\235\014\056\361\212\076\132\252\014\011\036\307\325
\074\243\355\227\303\036\064\372\070\371\010\016\343\300\135\053
\203\321\126\152\311\266\250\124\123\056\170\062\147\075\202\177
\164\320\373\341\266\005\140\271\160\333\216\013\371\023\130\157

\161\140\020\122\020\271\301\101\011\357\162\037\147\061\170\377
\226\005\215\002\003\001\000\001\243\143\060\141\060\037\006\003
\125\035\043\004\030\060\026\200\024\343\376\055\375\050\320\013
\265\272\266\242\304\277\006\252\005\214\223\373\057\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035
\006\003\125\035\016\004\026\004\024\343\376\055\375\050\320\013
\265\272\266\242\304\277\006\252\005\214\223\373\057\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001
\000\045\306\272\153\353\207\313\336\202\071\226\075\360\104\247
\153\204\163\003\336\235\053\117\272\040\177\274\170\262\317\227
\260\033\234\363\327\171\056\365\110\266\322\373\027\210\346\323
\172\077\355\123\023\320\342\057\152\171\313\000\043\050\346\036
\067\127\065\211\204\302\166\117\064\066\255\147\303\316\101\006
\210\305\367\356\330\032\270\326\013\177\120\377\223\252\027\113
\214\354\355\122\140\262\244\006\352\116\353\364\153\031\375\353
\365\032\340\045\052\232\334\307\101\066\367\310\164\005\204\071
\225\071\326\013\073\244\047\372\010\330\134\036\370\004\140\122
\021\050\050\003\377\357\123\146\000\245\112\064\026\146\174\375
\011\244\256\236\147\032\157\101\013\153\006\023\233\217\206\161
\005\264\057\215\211\146\063\051\166\124\232\021\370\047\372\262
\077\221\340\316\015\033\363\060\032\255\277\042\135\033\323\277
\045\005\115\341\222\032\177\231\237\074\104\223\312\324\100\111
\154\200\207\327\004\072\303\062\122\065\016\126\370\245\335\175
\304\213\015\021\037\123\313\036\262\027\266\150\167\132\340\324
\313\310\007\256\365\072\056\216\067\267\320\001\113\103\051\167
\214\071\227\217\202\132\370\121\345\211\240\030\347\150\177\135
\012\056\373\243\107\016\075\246\043\172\306\001\307\217\310\136
\277\155\200\126\276\212\044\272\063\352\237\341\062\021\236\361
\322\117\200\366\033\100\257\070\236\021\120\171\163\022\022\315
\346\154\235\054\210\162\074\060\201\006\221\042\352\131\255\332
\031\056\042\302\215\271\214\207\340\146\274\163\043\137\041\144
\143\200\110\365\240\074\030\075\224\310\110\101\035\100\272\136
\376\376\126\071\241\310\317\136\236\031\144\106\020\332\027\221
\267\005\200\254\213\231\222\175\347\242\330\007\013\066\047\347
\110\171\140\212\303\327\023\134\370\162\100\337\112\313\317\231
\000\012\000\013\021\225\332\126\105\003\210\012\237\147\320\325
\171\261\250\215\100\155\015\302\172\100\372\363\137\144\107\222
\313\123\271\273\131\316\117\375\320\025\123\001\330\337\353\331
\346\166\357\320\043\273\073\251\171\263\325\002\051\315\211\243
\226\017\112\065\347\116\102\300\165\315\007\317\346\054\353\173
\056
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "CFCA EV ROOT"

Issuer: CN=CFCA EV ROOT,O=China Financial Certification Authority,C=CN
Serial Number: 407555286 (0x184accd6)
Subject: CN=CFCA EV ROOT,O=China Financial Certification Authority,C=CN
Not Valid Before: Wed Aug 08 03:07:01 2012
Not Valid After : Mon Dec 31 03:07:01 2029
Fingerprint (SHA-256):
5C:C3:D7:8E:4E:1D:5E:45:54:7A:04:E6:87:3E:64:F9:0C:F9:53:6D:1C:CC:2E:F8:00:F3:55:C4:C5:FD:70:FD
Fingerprint (SHA1): E2:B8:29:4B:55:84:AB:6B:58:C2:90:46:6C:AC:3F:B8:39:8F:84:83
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CFCA EV ROOT"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\342\270\051\113\125\204\253\153\130\302\220\106\154\254\077\270
\071\217\204\203
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\164\341\266\355\046\172\172\104\060\063\224\253\173\047\201\060
END
CKA_ISSUER MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\060\060\056\006\003\125\004\012\014\047\103\150\151\156\141\040
\106\151\156\141\156\143\151\141\154\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\061\025\060\023\006\003\125\004\003\014\014\103\106\103\101
\040\105\126\040\122\117\117\124
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\030\112\314\326
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "OISTE WISeKey Global Root GB CA"
#
Issuer: CN=OISTE WISeKey Global Root GB CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Serial Number:76:b1:20:52:74:f0:85:87:46:b3:f8:23:1a:f6:c2:c0
Subject: CN=OISTE WISeKey Global Root GB CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Not Valid Before: Mon Dec 01 15:00:32 2014
Not Valid After : Thu Dec 01 15:10:31 2039
Fingerprint (SHA-256):
6B:9C:08:E8:6E:B0:F7:67:CF:AD:65:CD:98:B6:21:49:E5:49:4A:67:F5:84:5E:7B:D1:ED:01:9F:27:B8:6B:D6
Fingerprint (SHA1): 0F:F9:40:76:18:D3:D7:6A:4B:98:F0:A8:35:9E:0C:FD:27:AC:CC:ED
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GB CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\102\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\102\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\261\040\122\164\360\205\207\106\263\370\043\032\366
\302\300
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\265\060\202\002\235\240\003\002\001\002\002\020\166
\261\040\122\164\360\205\207\106\263\370\043\032\366\302\300\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\155
\061\013\060\011\006\003\125\004\006\023\002\103\110\061\020\060
\016\006\003\125\004\012\023\007\127\111\123\145\113\145\171\061
\042\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040
\106\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162
\163\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111
\123\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142
\141\154\040\122\157\157\164\040\107\102\040\103\101\060\036\027
\015\061\064\061\062\060\061\061\065\060\060\063\062\132\027\015
\063\071\061\062\060\061\061\065\061\060\063\061\132\060\155\061
\013\060\011\006\003\125\004\006\023\002\103\110\061\020\060\016
\006\003\125\004\012\023\007\127\111\123\145\113\145\171\061\042
\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040\106
\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162\163
\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111\123
\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142\141
\154\040\122\157\157\164\040\107\102\040\103\101\060\202\001\042

\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\330\027\267
\034\112\044\052\326\227\261\312\342\036\373\175\070\357\230\365
\262\071\230\116\047\270\021\135\173\322\045\224\210\202\025\046
\152\033\061\273\250\133\041\041\053\330\017\116\237\132\361\261
\132\344\171\326\062\043\053\341\123\314\231\105\134\173\117\255
\274\277\207\112\013\113\227\132\250\366\110\354\175\173\015\315
\041\006\337\236\025\375\101\212\110\267\040\364\241\172\033\127
\324\135\120\377\272\147\330\043\231\037\310\077\343\336\377\157
\133\167\261\153\156\270\311\144\367\341\312\101\106\016\051\161
\320\271\043\374\311\201\137\116\367\157\337\277\204\255\163\144
\273\267\102\216\151\366\324\166\035\176\235\247\270\127\212\121
\147\162\327\324\250\270\225\124\100\163\003\366\352\364\353\376
\050\102\167\077\235\043\033\262\266\075\200\024\007\114\056\117
\367\325\012\026\015\275\146\103\067\176\043\103\171\303\100\206
\365\114\051\332\216\232\255\015\245\004\207\210\036\205\343\351
\123\325\233\310\213\003\143\170\353\340\031\112\156\273\057\153
\063\144\130\223\255\151\277\217\033\357\202\110\307\002\003\001
\000\001\243\121\060\117\060\013\006\003\125\035\017\004\004\003
\002\001\206\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\065
\017\310\066\143\136\342\243\354\371\073\146\025\316\121\122\343
\221\232\075\060\020\006\011\053\006\001\004\001\202\067\025\001
\004\003\002\001\000\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\003\202\001\001\000\100\114\373\207\262\231\201
\220\176\235\305\260\260\046\315\210\173\053\062\215\156\270\041
\161\130\227\175\256\067\024\257\076\347\367\232\342\175\366\161
\230\231\004\252\103\164\170\243\343\111\141\076\163\214\115\224
\340\371\161\304\266\026\016\123\170\037\326\242\207\057\002\071
\201\051\074\257\025\230\041\060\376\050\220\000\214\321\341\313
\372\136\310\375\370\020\106\073\242\170\102\221\027\164\125\012
\336\120\147\115\146\321\247\377\375\331\300\265\250\243\212\316
\146\365\017\103\315\247\053\127\173\143\106\152\252\056\122\330
\364\355\341\155\255\051\220\170\110\272\341\043\252\243\211\354
\265\253\226\300\264\113\242\035\227\236\172\362\156\100\161\337
\150\361\145\115\316\174\005\337\123\145\251\245\360\261\227\004
\160\025\106\003\230\324\322\277\124\264\240\130\175\122\157\332
\126\046\142\324\330\333\211\061\157\034\360\042\302\323\142\034
\065\315\114\151\025\124\032\220\230\336\353\036\137\312\167\307
\313\216\075\103\151\234\232\130\320\044\073\337\033\100\226\176
\065\255\201\307\116\161\272\210\023
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "OISTE WISeKey Global Root GB CA"
Issuer: CN=OISTE WISeKey Global Root GB CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH

Serial Number:76:b1:20:52:74:f0:85:87:46:b3:f8:23:1a:f6:c2:c0
Subject: CN=OISTE WISeKey Global Root GB CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Not Valid Before: Mon Dec 01 15:00:32 2014
Not Valid After : Thu Dec 01 15:10:31 2039
Fingerprint (SHA-256):
6B:9C:08:E8:6E:B0:F7:67:CF:AD:65:CD:98:B6:21:49:E5:49:4A:67:F5:84:5E:7B:D1:ED:01:9F:27:B8:6B:D6
Fingerprint (SHA1): 0F:F9:40:76:18:D3:D7:6A:4B:98:F0:A8:35:9E:0C:FD:27:AC:CC:ED
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GB CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\017\371\100\166\030\323\327\152\113\230\360\250\065\236\014\375
\047\254\314\355
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\244\353\271\141\050\056\267\057\230\260\065\046\220\231\121\035
END
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\102\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\261\040\122\164\360\205\207\106\263\370\043\032\366
\302\300
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SZAFIR ROOT CA2"
#
Issuer: CN=SZAFIR ROOT CA2,O=Krajowa Izba Rozliczeniowa S.A.,C=PL
Serial Number:3e:8a:5d:07:ec:55:d2:32:d5:b7:e3:b6:5f:01:eb:2d:dc:e4:d6:e4
Subject: CN=SZAFIR ROOT CA2,O=Krajowa Izba Rozliczeniowa S.A.,C=PL
Not Valid Before: Mon Oct 19 07:43:30 2015
Not Valid After : Fri Oct 19 07:43:30 2035
Fingerprint (SHA-256):
A1:33:9D:33:28:1A:0B:56:E5:57:D3:D3:2B:1C:E7:F9:36:7E:B0:94:BD:5F:A7:2A:7E:50:04:C8:DE:D7:CA:FE
Fingerprint (SHA1): E2:52:FA:95:3F:ED:DB:24:60:BD:6E:28:F3:9C:CC:CF:5E:B3:3F:DE

CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SZAFIR ROOT CA2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\050\060\046\006\003\125\004\012\014\037\113\162\141\152\157\167
\141\040\111\172\142\141\040\122\157\172\154\151\143\172\145\156
\151\157\167\141\040\123\056\101\056\061\030\060\026\006\003\125
\004\003\014\017\123\132\101\106\111\122\040\122\117\117\124\040
\103\101\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\050\060\046\006\003\125\004\012\014\037\113\162\141\152\157\167
\141\040\111\172\142\141\040\122\157\172\154\151\143\172\145\156
\151\157\167\141\040\123\056\101\056\061\030\060\026\006\003\125
\004\003\014\017\123\132\101\106\111\122\040\122\117\117\124\040
\103\101\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\076\212\135\007\354\125\322\062\325\267\343\266\137\001
\353\055\334\344\326\344
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\162\060\202\002\132\240\003\002\001\002\002\024\076
\212\135\007\354\125\322\062\325\267\343\266\137\001\353\055\334
\344\326\344\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\121\061\013\060\011\006\003\125\004\006\023\002\120
\114\061\050\060\046\006\003\125\004\012\014\037\113\162\141\152
\157\167\141\040\111\172\142\141\040\122\157\172\154\151\143\172
\145\156\151\157\167\141\040\123\056\101\056\061\030\060\026\006
\003\125\004\003\014\017\123\132\101\106\111\122\040\122\117\117
\124\040\103\101\062\060\036\027\015\061\065\061\060\061\071\060
\067\064\063\063\060\132\027\015\063\065\061\060\061\071\060\067
\064\063\063\060\132\060\121\061\013\060\011\006\003\125\004\006
\023\002\120\114\061\050\060\046\006\003\125\004\012\014\037\113
\162\141\152\157\167\141\040\111\172\142\141\040\122\157\172\154
\151\143\172\145\156\151\157\167\141\040\123\056\101\056\061\030
\060\026\006\003\125\004\003\014\017\123\132\101\106\111\122\040
\122\117\117\124\040\103\101\062\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\267\274\076\120\250\113\315
\100\265\316\141\347\226\312\264\241\332\014\042\260\372\265\173
\166\000\167\214\013\317\175\250\206\314\046\121\344\040\075\205

\014\326\130\343\347\364\052\030\235\332\321\256\046\356\353\123
\334\364\220\326\023\112\014\220\074\303\364\332\322\216\015\222
\072\334\261\261\377\070\336\303\272\055\137\200\271\002\275\112
\235\033\017\264\303\302\301\147\003\335\334\033\234\075\263\260
\336\000\036\250\064\107\273\232\353\376\013\024\275\066\204\332
\015\040\277\372\133\313\251\026\040\255\071\140\356\057\165\266
\347\227\234\371\076\375\176\115\157\115\057\357\210\015\152\372
\335\361\075\156\040\245\240\022\264\115\160\271\316\327\162\073
\211\223\247\200\204\034\047\111\162\111\265\377\073\225\236\301
\314\310\001\354\350\016\212\012\226\347\263\246\207\345\326\371
\005\053\015\227\100\160\074\272\254\165\132\234\325\115\235\002
\012\322\113\233\146\113\106\007\027\145\255\237\154\210\000\334
\042\211\340\341\144\324\147\274\061\171\141\074\273\312\101\315
\134\152\000\310\074\070\216\130\257\002\003\001\000\001\243\102
\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\035\006\003\125\035\016\004\026\004\024\056\026
\251\112\030\265\313\314\365\157\120\363\043\137\370\135\347\254
\360\310\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\003\202\001\001\000\265\163\370\003\334\131\133\035\166\351
\243\052\173\220\050\262\115\300\063\117\252\232\261\324\270\344
\047\377\251\226\231\316\106\340\155\174\114\242\070\244\006\160
\360\364\101\021\354\077\107\215\077\162\207\371\073\375\244\157
\053\123\000\340\377\071\271\152\007\016\353\035\034\366\242\162
\220\313\202\075\021\202\213\322\273\237\052\257\041\346\143\206
\235\171\031\357\367\273\014\065\220\303\212\355\117\017\365\314
\022\331\244\076\273\240\374\040\225\137\117\046\057\021\043\203
\116\165\007\017\277\233\321\264\035\351\020\004\376\312\140\217
\242\114\270\255\317\341\220\017\315\256\012\307\135\173\267\120
\322\324\141\372\325\025\333\327\237\207\121\124\353\245\343\353
\311\205\240\045\040\067\373\216\316\014\064\204\341\074\201\262
\167\116\103\245\210\137\206\147\241\075\346\264\134\141\266\076
\333\376\267\050\305\242\007\256\265\312\312\215\052\022\357\227
\355\302\060\244\311\052\172\373\363\115\043\033\231\063\064\240
\056\365\251\013\077\324\135\341\317\204\237\342\031\302\137\212
\326\040\036\343\163\267
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SZAFIR ROOT CA2"
Issuer: CN=SZAFIR ROOT CA2,O=Krajowa Izba Rozliczeniowa S.A.,C=PL
Serial Number:3e:8a:5d:07:ec:55:d2:32:d5:b7:e3:b6:5f:01:eb:2d:dc:e4:d6:e4
Subject: CN=SZAFIR ROOT CA2,O=Krajowa Izba Rozliczeniowa S.A.,C=PL
Not Valid Before: Mon Oct 19 07:43:30 2015
Not Valid After : Fri Oct 19 07:43:30 2035
Fingerprint (SHA-256):

A1:33:9D:33:28:1A:0B:56:E5:57:D3:D3:2B:1C:E7:F9:36:7E:B0:94:BD:5F:A7:2A:7E:50:04:C8:DE:D7:CA:FE
Fingerprint (SHA1): E2:52:FA:95:3F:ED:DB:24:60:BD:6E:28:F3:9C:CC:CF:5E:B3:3F:DE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SZAFIR ROOT CA2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\342\122\372\225\077\355\333\044\140\275\156\050\363\234\314\317
\136\263\077\336
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\021\144\301\211\260\044\261\214\261\007\176\211\236\121\236\231
END
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\050\060\046\006\003\125\004\012\014\037\113\162\141\152\157\167
\141\040\111\172\142\141\040\122\157\172\154\151\143\172\145\156
\151\157\167\141\040\123\056\101\056\061\030\060\026\006\003\125
\004\003\014\017\123\132\101\106\111\122\040\122\117\117\124\040
\103\101\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\076\212\135\007\354\125\322\062\325\267\343\266\137\001
\353\055\334\344\326\344
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum Trusted Network CA 2"
#
Issuer: CN=Certum Trusted Network CA 2,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Serial Number:21:d6:d0:4a:4f:25:0f:c9:32:37:fc:aa:5e:12:8d:e9
Subject: CN=Certum Trusted Network CA 2,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Not Valid Before: Thu Oct 06 08:39:56 2011
Not Valid After : Sat Oct 06 08:39:56 2046
Fingerprint (SHA-256):
B6:76:F2:ED:DA:E8:77:5C:D3:6C:B0:F6:3C:D1:D4:60:39:61:F4:9E:62:65:BA:01:3A:2F:03:07:B6:D0:B8:04
Fingerprint (SHA1): D3:DD:48:3E:2B:BF:4C:05:E8:AF:10:F5:FA:76:26:CF:D3:DC:30:92
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "Certum Trusted Network CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\044\060
\042\006\003\125\004\003\023\033\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\044\060
\042\006\003\125\004\003\023\033\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\041\326\320\112\117\045\017\311\062\067\374\252\136\022
\215\351
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\322\060\202\003\272\240\003\002\001\002\002\020\041
\326\320\112\117\045\017\311\062\067\374\252\136\022\215\351\060
\015\006\011\052\206\110\206\367\015\001\001\015\005\000\060\201
\200\061\013\060\011\006\003\125\004\006\023\002\120\114\061\042
\060\040\006\003\125\004\012\023\031\125\156\151\172\145\164\157
\040\124\145\143\150\156\157\154\157\147\151\145\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\044\060\042\006
\003\125\004\003\023\033\103\145\162\164\165\155\040\124\162\165
\163\164\145\144\040\116\145\164\167\157\162\153\040\103\101\040
\062\060\042\030\017\062\060\061\061\061\060\060\066\060\070\063
\071\065\066\132\030\017\062\060\064\066\061\060\060\066\060\070
\063\071\065\066\132\060\201\200\061\013\060\011\006\003\125\004
\006\023\002\120\114\061\042\060\040\006\003\125\004\012\023\031
\125\156\151\172\145\164\157\040\124\145\143\150\156\157\154\157
\147\151\145\163\040\123\056\101\056\061\047\060\045\006\003\125
\004\013\023\036\103\145\162\164\165\155\040\103\145\162\164\151

\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\061\044\060\042\006\003\125\004\003\023\033\103\145\162
\164\165\155\040\124\162\165\163\164\145\144\040\116\145\164\167
\157\162\153\040\103\101\040\062\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\275\371\170\370\346\325\200
\014\144\235\206\033\226\144\147\077\042\072\036\165\001\175\357
\373\134\147\214\311\314\134\153\251\221\346\271\102\345\040\113
\233\332\233\173\271\231\135\331\233\200\113\327\204\100\053\047
\323\350\272\060\273\076\011\032\247\111\225\357\053\100\044\302
\227\307\247\356\233\045\357\250\012\000\227\205\132\252\235\334
\051\311\342\065\007\353\160\115\112\326\301\263\126\270\241\101
\070\233\321\373\061\177\217\340\137\341\261\077\017\216\026\111
\140\327\006\215\030\371\252\046\020\253\052\323\320\321\147\215
\033\106\276\107\060\325\056\162\321\305\143\332\347\143\171\104
\176\113\143\044\211\206\056\064\077\051\114\122\213\052\247\300
\342\221\050\211\271\300\133\371\035\331\347\047\255\377\232\002
\227\301\306\120\222\233\002\054\275\251\271\064\131\012\277\204
\112\377\337\376\263\237\353\331\236\340\230\043\354\246\153\167
\026\052\333\314\255\073\034\244\207\334\106\163\136\031\142\150
\105\127\344\220\202\102\273\102\326\360\141\340\301\243\075\146
\243\135\364\030\356\210\311\215\027\105\051\231\062\165\002\061
\356\051\046\310\153\002\346\265\142\105\177\067\025\132\043\150
\211\324\076\336\116\047\260\360\100\014\274\115\027\313\115\242
\263\036\320\006\132\335\366\223\317\127\165\231\365\372\206\032
\147\170\263\277\226\376\064\334\275\347\122\126\345\263\345\165
\173\327\101\221\005\334\135\151\343\225\015\103\271\374\203\226
\071\225\173\154\200\132\117\023\162\306\327\175\051\172\104\272
\122\244\052\325\101\106\011\040\376\042\240\266\133\060\215\274
\211\014\325\327\160\370\207\122\375\332\357\254\121\056\007\263
\116\376\320\011\332\160\357\230\372\126\346\155\333\265\127\113
\334\345\054\045\025\310\236\056\170\116\370\332\234\236\206\054
\312\127\363\032\345\310\222\213\032\202\226\172\303\274\120\022
\151\330\016\132\106\213\072\353\046\372\043\311\266\260\201\276
\102\000\244\370\326\376\060\056\307\322\106\366\345\216\165\375
\362\314\271\320\207\133\314\006\020\140\273\203\065\267\136\147
\336\107\354\231\110\361\244\241\025\376\255\214\142\216\071\125
\117\071\026\271\261\143\235\377\267\002\003\001\000\001\243\102
\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\035\006\003\125\035\016\004\026\004\024\266\241
\124\071\002\303\240\077\216\212\274\372\324\370\034\246\321\072
\016\375\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\015\006\011\052\206\110\206\367\015\001\001\015\005
\000\003\202\002\001\000\161\245\016\316\344\351\277\077\070\325
\211\132\304\002\141\373\114\305\024\027\055\213\117\123\153\020
\027\374\145\204\307\020\111\220\336\333\307\046\223\210\046\157
\160\326\002\136\071\240\367\217\253\226\265\245\023\134\201\024
\155\016\201\202\021\033\212\116\306\117\245\335\142\036\104\337

\011\131\364\133\167\013\067\351\213\040\306\370\012\116\056\130
\034\353\063\320\317\206\140\311\332\373\200\057\236\114\140\204
\170\075\041\144\326\373\101\037\030\017\347\311\165\161\275\275
\134\336\064\207\076\101\260\016\366\271\326\077\011\023\226\024
\057\336\232\035\132\271\126\316\065\072\260\137\160\115\136\343
\051\361\043\050\162\131\266\253\302\214\146\046\034\167\054\046
\166\065\213\050\247\151\240\371\073\365\043\335\205\020\164\311
\220\003\126\221\347\257\272\107\324\022\227\021\042\343\242\111
\224\154\347\267\224\113\272\055\244\332\063\213\114\246\104\377
\132\074\306\035\144\330\265\061\344\246\074\172\250\127\013\333
\355\141\032\313\361\316\163\167\143\244\207\157\114\121\070\326
\344\137\307\237\266\201\052\344\205\110\171\130\136\073\370\333
\002\202\147\301\071\333\303\164\113\075\066\036\371\051\223\210
\150\133\250\104\031\041\360\247\350\201\015\054\350\223\066\264
\067\262\312\260\033\046\172\232\045\037\232\232\200\236\113\052
\077\373\243\232\376\163\062\161\302\236\306\162\341\212\150\047
\361\344\017\264\304\114\245\141\223\370\227\020\007\052\060\045
\251\271\310\161\270\357\150\314\055\176\365\340\176\017\202\250
\157\266\272\154\203\103\167\315\212\222\027\241\236\133\170\026
\075\105\342\063\162\335\341\146\312\231\323\311\305\046\375\015
\150\004\106\256\266\331\233\214\276\031\276\261\306\362\031\343
\134\002\312\054\330\157\112\007\331\311\065\332\100\165\362\304
\247\031\157\236\102\020\230\165\346\225\213\140\274\355\305\022
\327\212\316\325\230\134\126\226\003\305\356\167\006\065\377\317
\344\356\077\023\141\356\333\332\055\205\360\315\256\235\262\030
\011\105\303\222\241\162\027\374\107\266\240\013\054\361\304\336
\103\150\010\152\137\073\360\166\143\373\314\006\054\246\306\342
\016\265\271\276\044\217
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum Trusted Network CA 2"
Issuer: CN=Certum Trusted Network CA 2,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Serial Number:21:d6:d0:4a:4f:25:0f:c9:32:37:fc:aa:5e:12:8d:e9
Subject: CN=Certum Trusted Network CA 2,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Not Valid Before: Thu Oct 06 08:39:56 2011
Not Valid After : Sat Oct 06 08:39:56 2046
Fingerprint (SHA-256): B6:76:F2:ED:DA:E8:77:5C:D3:6C:B0:F6:3C:D1:D4:60:39:61:F4:9E:62:65:BA:01:3A:2F:03:07:B6:D0:B8:04
Fingerprint (SHA1): D3:DD:48:3E:2B:BF:4C:05:E8:AF:10:F5:FA:76:26:CF:D3:DC:30:92
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "Certum Trusted Network CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\323\335\110\076\053\277\114\005\350\257\020\365\372\166\046\317
\323\334\060\222
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\155\106\236\331\045\155\010\043\133\136\164\175\036\047\333\362
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\044\060
\042\006\003\125\004\003\023\033\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\041\326\320\112\117\045\017\311\062\067\374\252\136\022
\215\351
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Hellenic Academic and Research Institutions RootCA 2015"
#
Issuer: CN=Hellenic Academic and Research Institutions RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Not Valid Before: Tue Jul 07 10:11:21 2015
Not Valid After : Sat Jun 30 10:11:21 2040
Fingerprint (SHA-256):
A0:40:92:9A:02:CE:53:B4:AC:F4:F2:FF:C6:98:1C:E4:49:6F:75:5E:6D:45:FE:0B:2A:69:2B:CD:52:52:3F:36
Fingerprint (SHA1): 01:0C:06:95:A6:98:19:14:FF:BF:5F:C6:B0:B6:95:EA:29:E9:12:A6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions RootCA 2015"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\201\246\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003
\023\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157
\157\164\103\101\040\062\060\061\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\246\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003
\023\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157
\157\164\103\101\040\062\060\061\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\013\060\202\003\363\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\246\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156\163
\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154\145
\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144
\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164
\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165\164
\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003\023
\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145\155
\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150\040
\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157\157
\164\103\101\040\062\060\061\065\060\036\027\015\061\065\060\067
\060\067\061\060\061\061\062\061\132\027\015\064\060\060\066\063
\060\061\060\061\061\062\061\132\060\201\246\061\013\060\011\006
\003\125\004\006\023\002\107\122\061\017\060\015\006\003\125\004
\007\023\006\101\164\150\145\156\163\061\104\060\102\006\003\125
\004\012\023\073\110\145\154\154\145\156\151\143\040\101\143\141

\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141\162
\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163\040
\103\145\162\164\056\040\101\165\164\150\157\162\151\164\171\061
\100\060\076\006\003\125\004\003\023\067\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\122\157\157\164\103\101\040\062\060\061
\065\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\302\370\251\077\033\211\374\074\074\004\135\075\220\066
\260\221\072\171\074\146\132\357\155\071\001\111\032\264\267\317
\177\115\043\123\267\220\000\343\023\052\050\246\061\361\221\000
\343\050\354\256\041\101\316\037\332\375\175\022\133\001\203\017
\271\260\137\231\341\362\022\203\200\115\006\076\337\254\257\347
\241\210\153\061\257\360\213\320\030\063\270\333\105\152\064\364
\002\200\044\050\012\002\025\225\136\166\052\015\231\072\024\133
\366\313\313\123\274\023\115\001\210\067\224\045\033\102\274\042
\330\216\243\226\136\072\331\062\333\076\350\360\020\145\355\164
\341\057\247\174\257\047\064\273\051\175\233\266\317\011\310\345
\323\012\374\210\145\145\164\012\334\163\034\134\315\100\261\034
\324\266\204\214\114\120\317\150\216\250\131\256\302\047\116\202
\242\065\335\024\364\037\377\262\167\325\207\057\252\156\175\044
\047\347\306\313\046\346\345\376\147\007\143\330\105\015\335\072
\131\145\071\130\172\222\231\162\075\234\204\136\210\041\270\325
\364\054\374\331\160\122\117\170\270\275\074\053\213\225\230\365
\263\321\150\317\040\024\176\114\134\137\347\213\345\365\065\201
\031\067\327\021\010\267\146\276\323\112\316\203\127\000\072\303
\201\370\027\313\222\066\135\321\243\330\165\033\341\213\047\352
\172\110\101\375\105\031\006\255\047\231\116\301\160\107\335\265
\237\201\123\022\345\261\214\110\135\061\103\027\343\214\306\172
\143\226\113\051\060\116\204\116\142\031\136\074\316\227\220\245
\177\001\353\235\340\370\213\211\335\045\230\075\222\266\176\357
\331\361\121\121\175\055\046\310\151\131\141\340\254\152\270\052
\066\021\004\172\120\275\062\204\276\057\334\162\325\327\035\026
\107\344\107\146\040\077\364\226\305\257\216\001\172\245\017\172
\144\365\015\030\207\331\256\210\325\372\204\301\072\300\151\050
\055\362\015\150\121\252\343\245\167\306\244\220\016\241\067\213
\061\043\107\301\011\010\353\156\367\170\233\327\202\374\204\040
\231\111\031\266\022\106\261\373\105\125\026\251\243\145\254\234
\007\017\352\153\334\037\056\006\162\354\206\210\022\344\055\333
\137\005\057\344\360\003\323\046\063\347\200\302\315\102\241\027
\064\013\002\003\001\000\001\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\161\025\147\310\310\311\275\165\135
\162\320\070\030\152\235\363\161\044\124\013\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\165
\273\155\124\113\252\020\130\106\064\362\142\327\026\066\135\010

\136\325\154\310\207\275\264\056\106\362\061\370\174\352\102\265
\223\026\125\334\241\014\022\240\332\141\176\017\130\130\163\144
\162\307\350\105\216\334\251\362\046\077\306\171\214\261\123\010
\063\201\260\126\023\276\346\121\134\330\233\012\117\113\234\126
\123\002\351\117\366\015\140\352\115\102\125\350\174\033\041\041
\323\033\072\314\167\362\270\220\361\150\307\371\132\376\372\055
\364\277\311\365\105\033\316\070\020\052\067\212\171\243\264\343
\011\154\205\206\223\377\211\226\047\170\201\217\147\343\106\164
\124\216\331\015\151\342\112\364\115\164\003\377\262\167\355\225
\147\227\344\261\305\253\277\152\043\350\324\224\342\104\050\142
\304\113\342\360\330\342\051\153\032\160\176\044\141\223\173\117
\003\062\045\015\105\044\053\226\264\106\152\277\112\013\367\232
\217\301\254\032\305\147\363\157\064\322\372\163\143\214\357\026
\260\250\244\106\052\370\353\022\354\162\264\357\370\053\176\214
\122\300\213\204\124\371\057\076\343\125\250\334\146\261\331\341
\137\330\263\214\131\064\131\244\253\117\154\273\037\030\333\165
\253\330\313\222\315\224\070\141\016\007\006\037\113\106\020\361
\025\276\215\205\134\073\112\053\201\171\017\264\151\237\111\120
\227\115\367\016\126\135\300\225\152\302\066\303\033\150\311\365
\052\334\107\232\276\262\316\305\045\350\372\003\271\332\371\026
\156\221\204\365\034\050\310\374\046\314\327\034\220\126\247\137
\157\072\004\274\315\170\211\013\216\017\057\243\252\117\242\033
\022\075\026\010\100\017\361\106\114\327\252\173\010\301\012\365
\155\047\336\002\217\312\303\265\053\312\351\353\310\041\123\070
\245\314\073\330\167\067\060\242\117\331\157\321\362\100\255\101
\172\027\305\326\112\065\211\267\101\325\174\206\177\125\115\203
\112\245\163\040\300\072\257\220\361\232\044\216\331\216\161\312
\173\270\206\332\262\217\231\076\035\023\015\022\021\356\324\253
\360\351\025\166\002\344\340\337\252\040\036\133\141\205\144\100
\251\220\227\015\255\123\322\132\035\207\152\000\227\145\142\264
\276\157\152\247\365\054\102\355\062\255\266\041\236\276\274
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Hellenic Academic and Research Institutions RootCA 2015"
Issuer: CN=Hellenic Academic and Research Institutions RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Not Valid Before: Tue Jul 07 10:11:21 2015
Not Valid After : Sat Jun 30 10:11:21 2040
Fingerprint (SHA-256):
A0:40:92:9A:02:CE:53:B4:AC:F4:F2:FF:C6:98:1C:E4:49:6F:75:5E:6D:45:FE:0B:2A:69:2B:CD:52:52:3F:36
Fingerprint (SHA1): 01:0C:06:95:A6:98:19:14:FF:BF:5F:C6:B0:B6:95:EA:29:E9:12:A6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions RootCA 2015"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\001\014\006\225\246\230\031\024\377\277\137\306\260\266\225\352
\051\351\022\246
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\312\377\342\333\003\331\313\113\351\017\255\204\375\173\030\316
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\246\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003
\023\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157
\157\164\103\101\040\062\060\061\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Hellenic Academic and Research Institutions ECC RootCA 2015"
#
Issuer: CN=Hellenic Academic and Research Institutions ECC RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions ECC RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Not Valid Before: Tue Jul 07 10:37:12 2015
Not Valid After : Sat Jun 30 10:37:12 2040
Fingerprint (SHA-256):
44:B5:45:AA:8A:25:E6:5A:73:CA:15:DC:27:FC:36:D2:4C:1C:B9:95:3A:06:65:39:B1:15:82:DC:48:7B:48:33
Fingerprint (SHA1): 9F:F1:71:8D:92:D5:9A:F3:7D:74:97:B4:BC:6F:84:68:0B:BA:B6:66
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions ECC RootCA 2015"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\252\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\104\060\102\006\003\125\004\003
\023\073\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\105\103
\103\040\122\157\157\164\103\101\040\062\060\061\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\252\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\104\060\102\006\003\125\004\003
\023\073\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\105\103
\103\040\122\157\157\164\103\101\040\062\060\061\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\303\060\202\002\112\240\003\002\001\002\002\001\000
\060\012\006\010\052\206\110\316\075\004\003\002\060\201\252\061
\013\060\011\006\003\125\004\006\023\002\107\122\061\017\060\015
\006\003\125\004\007\023\006\101\164\150\145\156\163\061\104\060
\102\006\003\125\004\012\023\073\110\145\154\154\145\156\151\143
\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122\145
\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164\151
\157\156\163\040\103\145\162\164\056\040\101\165\164\150\157\162
\151\164\171\061\104\060\102\006\003\125\004\003\023\073\110\145
\154\154\145\156\151\143\040\101\143\141\144\145\155\151\143\040
\141\156\144\040\122\145\163\145\141\162\143\150\040\111\156\163
\164\151\164\165\164\151\157\156\163\040\105\103\103\040\122\157
\157\164\103\101\040\062\060\061\065\060\036\027\015\061\065\060
\067\060\067\061\060\063\067\061\062\132\027\015\064\060\060\066

\063\060\061\060\063\067\061\062\132\060\201\252\061\013\060\011
\006\003\125\004\006\023\002\107\122\061\017\060\015\006\003\125
\004\007\023\006\101\164\150\145\156\163\061\104\060\102\006\003
\125\004\012\023\073\110\145\154\154\145\156\151\143\040\101\143
\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141
\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163
\040\103\145\162\164\056\040\101\165\164\150\157\162\151\164\171
\061\104\060\102\006\003\125\004\003\023\073\110\145\154\154\145
\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144
\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164
\165\164\151\157\156\163\040\105\103\103\040\122\157\157\164\103
\101\040\062\060\061\065\060\166\060\020\006\007\052\206\110\316
\075\002\001\006\005\053\201\004\000\042\003\142\000\004\222\240
\101\350\113\202\204\134\342\370\061\021\231\206\144\116\011\045
\057\235\101\057\012\256\065\117\164\225\262\121\144\153\215\153
\346\077\160\225\360\005\104\107\246\162\070\120\166\225\002\132
\216\256\050\236\371\055\116\231\357\054\110\157\114\045\051\350
\321\161\133\337\035\301\165\067\264\327\372\173\172\102\234\152
\012\126\132\174\151\013\252\200\011\044\154\176\301\106\243\102
\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\035\006\003\125\035\016\004\026\004\024\264\042
\013\202\231\044\001\016\234\273\344\016\375\277\373\227\040\223
\231\052\060\012\006\010\052\206\110\316\075\004\003\002\003\147
\000\060\144\002\060\147\316\026\142\070\242\254\142\105\247\251
\225\044\300\032\047\234\062\073\300\300\325\272\251\347\370\004
\103\123\205\356\122\041\336\235\365\045\203\076\236\130\113\057
\327\147\023\016\041\002\060\005\341\165\001\336\150\355\052\037
\115\114\011\010\015\354\113\255\144\027\050\347\165\316\105\145
\162\041\027\313\042\101\016\214\023\230\070\232\124\155\233\312
\342\174\352\002\130\042\221
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Hellenic Academic and Research Institutions ECC RootCA 2015"
Issuer: CN=Hellenic Academic and Research Institutions ECC RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions ECC RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Not Valid Before: Tue Jul 07 10:37:12 2015
Not Valid After : Sat Jun 30 10:37:12 2040
Fingerprint (SHA-256):
44:B5:45:AA:8A:25:E6:5A:73:CA:15:DC:27:FC:36:D2:4C:1C:B9:95:3A:06:65:39:B1:15:82:DC:48:7B:48:33
Fingerprint (SHA1): 9F:F1:71:8D:92:D5:9A:F3:7D:74:97:B4:BC:6F:84:68:0B:BA:B6:66
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions ECC RootCA 2015"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\237\361\161\215\222\325\232\363\175\164\227\264\274\157\204\150
\013\272\266\146
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\201\345\264\027\353\302\365\341\113\015\101\173\111\222\376\357
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\252\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\104\060\102\006\003\125\004\003
\023\073\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\105\103
\103\040\122\157\157\164\103\101\040\062\060\061\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ISRG Root X1"
#
Issuer: CN=ISRG Root X1,O=Internet Security Research Group,C=US
Serial Number:00:82:10:cf:b0:d2:40:e3:59:44:63:e0:bb:63:82:8b:00
Subject: CN=ISRG Root X1,O=Internet Security Research Group,C=US
Not Valid Before: Thu Jun 04 11:04:38 2015
Not Valid After : Mon Jun 04 11:04:38 2035
Fingerprint (SHA-256):
96:BC:EC:06:26:49:76:F3:74:60:77:9A:CF:28:C5:A7:CF:E8:A3:C0:AA:E1:1A:8F:FC:EE:05:C0:BD:DF:08:C6
Fingerprint (SHA1): CA:BD:2A:79:A1:07:6A:31:F2:1D:25:36:35:CB:03:9D:43:29:A5:E8
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ISRG Root X1"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\202\020\317\260\322\100\343\131\104\143\340\273\143
\202\213\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\153\060\202\003\123\240\003\002\001\002\002\021\000
\202\020\317\260\322\100\343\131\104\143\340\273\143\202\213\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061\051
\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156\145
\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145\141
\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003\125
\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130\061
\060\036\027\015\061\065\060\066\060\064\061\061\060\064\063\070
\132\027\015\063\065\060\066\060\064\061\061\060\064\063\070\132
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\061\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\255\350\044\163\364\024\067\363\233\236\053\127\050\034
\207\276\334\267\337\070\220\214\156\074\346\127\240\170\367\165
\302\242\376\365\152\156\366\000\117\050\333\336\150\206\154\104
\223\266\261\143\375\024\022\153\277\037\322\352\061\233\041\176
\321\063\074\272\110\365\335\171\337\263\270\377\022\361\041\232
\113\301\212\206\161\151\112\146\146\154\217\176\074\160\277\255
\051\042\006\363\344\300\346\200\256\342\113\217\267\231\176\224
\003\237\323\107\227\174\231\110\043\123\350\070\256\117\012\157

\203\056\321\111\127\214\200\164\266\332\057\320\070\215\173\003
\160\041\033\165\362\060\074\372\217\256\335\332\143\253\353\026
\117\302\216\021\113\176\317\013\350\377\265\167\056\364\262\173
\112\340\114\022\045\014\160\215\003\051\240\341\123\044\354\023
\331\356\031\277\020\263\112\214\077\211\243\141\121\336\254\207
\007\224\364\143\161\354\056\342\157\133\230\201\341\211\134\064
\171\154\166\357\073\220\142\171\346\333\244\232\057\046\305\320
\020\341\016\336\331\020\216\026\373\267\367\250\367\307\345\002
\007\230\217\066\010\225\347\342\067\226\015\066\165\236\373\016
\162\261\035\233\274\003\371\111\005\330\201\335\005\264\052\326
\101\351\254\001\166\225\012\017\330\337\325\275\022\037\065\057
\050\027\154\322\230\301\250\011\144\167\156\107\067\272\316\254
\131\136\150\235\177\162\326\211\305\006\101\051\076\131\076\335
\046\365\044\311\021\247\132\243\114\100\037\106\241\231\265\247
\072\121\156\206\073\236\175\162\247\022\005\170\131\355\076\121
\170\025\013\003\217\215\320\057\005\262\076\173\112\034\113\163
\005\022\374\306\352\340\120\023\174\103\223\164\263\312\164\347
\216\037\001\010\320\060\324\133\161\066\264\007\272\301\060\060
\134\110\267\202\073\230\246\175\140\212\242\243\051\202\314\272
\275\203\004\033\242\203\003\101\241\326\005\361\033\302\266\360
\250\174\206\073\106\250\110\052\210\334\166\232\166\277\037\152
\245\075\031\217\353\070\363\144\336\310\053\015\012\050\377\367
\333\342\025\102\324\042\320\047\135\341\171\376\030\347\160\210
\255\116\346\331\213\072\306\335\047\121\156\377\274\144\365\063
\103\117\002\003\001\000\001\243\102\060\100\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\171\264\131\346\173\266\345\344\001
\163\200\010\210\310\032\130\366\351\233\156\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\125
\037\130\251\274\262\250\120\320\014\261\330\032\151\040\047\051
\010\254\141\165\134\212\156\370\202\345\151\057\325\366\126\113
\271\270\163\020\131\323\041\227\176\347\114\161\373\262\322\140
\255\071\250\013\352\027\041\126\205\361\120\016\131\353\316\340
\131\351\272\311\025\357\206\235\217\204\200\366\344\351\221\220
\334\027\233\142\033\105\360\146\225\322\174\157\302\352\073\357
\037\317\313\326\256\047\361\251\260\310\256\375\175\176\232\372
\042\004\353\377\331\177\352\221\053\042\261\027\016\217\362\212
\064\133\130\330\374\001\311\124\271\270\046\314\212\210\063\211
\114\055\204\074\202\337\356\226\127\005\272\054\273\367\304\267
\307\116\073\202\276\061\310\042\163\163\222\321\302\200\244\071
\071\020\063\043\202\114\074\237\206\262\125\230\035\276\051\206
\214\042\233\236\342\153\073\127\072\202\160\115\334\011\307\211
\313\012\007\115\154\350\135\216\311\357\316\253\307\273\265\053
\116\105\326\112\320\046\314\345\162\312\010\152\245\225\343\025
\241\367\244\355\311\054\137\245\373\377\254\050\002\056\276\327
\173\273\343\161\173\220\026\323\007\136\106\123\174\067\007\102
\214\323\304\226\234\325\231\265\052\340\225\032\200\110\256\114

\071\007\316\314\107\244\122\225\053\272\270\373\255\322\063\123
\175\345\035\115\155\325\241\261\307\102\157\346\100\047\065\134
\243\050\267\007\215\347\215\063\220\347\043\237\373\120\234\171
\154\106\325\264\025\263\226\156\176\233\014\226\072\270\122\055
\077\326\133\341\373\010\302\204\376\044\250\243\211\332\254\152
\341\030\052\261\250\103\141\133\323\037\334\073\215\166\362\055
\350\215\165\337\027\063\154\075\123\373\173\313\101\137\377\334
\242\320\141\070\341\226\270\254\135\213\067\327\165\325\063\300
\231\021\256\235\101\301\162\165\204\276\002\101\102\137\147\044
\110\224\321\233\047\276\007\077\271\270\117\201\164\121\341\172
\267\355\235\043\342\276\340\325\050\004\023\074\061\003\236\335
\172\154\217\306\007\030\306\177\336\107\216\077\050\236\004\006
\317\245\124\064\167\275\354\211\233\351\027\103\337\133\333\137
\376\216\036\127\242\315\100\235\176\142\042\332\336\030\047
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ISRG Root X1"
Issuer: CN=ISRG Root X1,O=Internet Security Research Group,C=US
Serial Number:00:82:10:cf:b0:d2:40:e3:59:44:63:e0:bb:63:82:8b:00
Subject: CN=ISRG Root X1,O=Internet Security Research Group,C=US
Not Valid Before: Thu Jun 04 11:04:38 2015
Not Valid After : Mon Jun 04 11:04:38 2035
Fingerprint (SHA-256):
96:BC:EC:06:26:49:76:F3:74:60:77:9A:CF:28:C5:A7:CF:E8:A3:C0:AA:E1:1A:8F:FC:EE:05:C0:BD:DF:08:C6
Fingerprint (SHA1): CA:BD:2A:79:A1:07:6A:31:F2:1D:25:36:35:CB:03:9D:43:29:A5:E8
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ISRG Root X1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\312\275\052\171\241\007\152\061\362\035\045\066\065\313\003\235
\103\051\245\350
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\014\322\371\340\332\027\163\351\355\206\115\245\343\160\347\116
END
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\061
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\202\020\317\260\322\100\343\131\104\143\340\273\143
\202\213\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AC RAIZ FNMT-RCM"
#
Issuer: OU=AC RAIZ FNMT-RCM,O=FNMT-RCM,C=ES
Serial Number:5d:93:8d:30:67:36:c8:06:1d:1a:c7:54:84:69:07
Subject: OU=AC RAIZ FNMT-RCM,O=FNMT-RCM,C=ES
Not Valid Before: Wed Oct 29 15:59:56 2008
Not Valid After : Tue Jan 01 00:00:00 2030
Fingerprint (SHA-256):
EB:C5:57:0C:29:01:8C:4D:67:B1:AA:12:7B:AF:12:F7:03:B4:61:1E:BC:17:B7:DA:B5:57:38:94:17:9B:93:FA
Fingerprint (SHA1): EC:50:35:07:B2:15:C4:95:62:19:E2:A8:9A:5B:42:99:2C:4C:2C:20
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ FNMT-RCM"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\031\060\027\006\003\125\004\013\014\020\101\103\040
\122\101\111\132\040\106\116\115\124\055\122\103\115
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\031\060\027\006\003\125\004\013\014\020\101\103\040
\122\101\111\132\040\106\116\115\124\055\122\103\115
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\135\223\215\060\147\066\310\006\035\032\307\124\204\151
\007
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\203\060\202\003\153\240\003\002\001\002\002\017\135
\223\215\060\147\066\310\006\035\032\307\124\204\151\007\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\060\073\061
\013\060\011\006\003\125\004\006\023\002\105\123\061\021\060\017

\006\003\125\004\012\014\010\106\116\115\124\055\122\103\115\061
\031\060\027\006\003\125\004\013\014\020\101\103\040\122\101\111
\132\040\106\116\115\124\055\122\103\115\060\036\027\015\060\070
\061\060\062\071\061\065\065\071\065\066\132\027\015\063\060\060
\061\060\061\060\060\060\060\060\060\132\060\073\061\013\060\011
\006\003\125\004\006\023\002\105\123\061\021\060\017\006\003\125
\004\012\014\010\106\116\115\124\055\122\103\115\061\031\060\027
\006\003\125\004\013\014\020\101\103\040\122\101\111\132\040\106
\116\115\124\055\122\103\115\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\272\161\200\172\114\206\156\177
\310\023\155\300\306\175\034\000\227\217\054\014\043\273\020\232
\100\251\032\267\207\210\370\233\126\152\373\346\173\216\213\222
\216\247\045\135\131\021\333\066\056\267\121\027\037\251\010\037
\004\027\044\130\252\067\112\030\337\345\071\324\127\375\327\301
\054\221\001\221\342\042\324\003\300\130\374\167\107\354\217\076
\164\103\272\254\064\215\115\070\166\147\216\260\310\157\060\063
\130\161\134\264\365\153\156\324\001\120\270\023\176\154\112\243
\111\321\040\031\356\274\300\051\030\145\247\336\376\357\335\012
\220\041\347\032\147\222\102\020\230\137\117\060\274\076\034\105
\264\020\327\150\100\024\300\100\372\347\167\027\172\346\013\217
\145\133\074\331\232\122\333\265\275\236\106\317\075\353\221\005
\002\300\226\262\166\114\115\020\226\073\222\372\234\177\017\231
\337\276\043\065\105\036\002\134\376\265\250\233\231\045\332\136
\363\042\303\071\365\344\052\056\323\306\037\304\154\252\305\034
\152\001\005\112\057\322\305\301\250\064\046\135\146\245\322\002
\041\371\030\267\006\365\116\231\157\250\253\114\121\350\317\120
\030\305\167\310\071\011\054\111\222\062\231\250\273\027\027\171
\260\132\305\346\243\304\131\145\107\065\203\136\251\350\065\013
\231\273\344\315\040\306\233\112\006\071\265\150\374\042\272\356
\125\214\053\116\352\363\261\343\374\266\231\232\325\102\372\161
\115\010\317\207\036\152\161\175\371\323\264\351\245\161\201\173
\302\116\107\226\245\366\166\205\243\050\217\351\200\156\201\123
\245\155\137\270\110\371\302\371\066\246\056\111\377\270\226\302
\214\007\263\233\210\130\374\353\033\034\336\055\160\342\227\222
\060\241\211\343\274\125\250\047\326\113\355\220\255\213\372\143
\045\131\055\250\065\335\312\227\063\274\345\315\307\235\321\354
\357\136\016\112\220\006\046\143\255\271\331\065\055\007\272\166
\145\054\254\127\217\175\364\007\224\327\201\002\226\135\243\007
\111\325\172\320\127\371\033\347\123\106\165\252\260\171\102\313
\150\161\010\351\140\275\071\151\316\364\257\303\126\100\307\255
\122\242\011\344\157\206\107\212\037\353\050\047\135\203\040\257
\004\311\154\126\232\213\106\365\002\003\001\000\001\243\201\203
\060\201\200\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\367
\175\305\375\304\350\232\033\167\144\247\365\035\240\314\277\207
\140\232\155\060\076\006\003\125\035\040\004\067\060\065\060\063

\006\004\125\035\040\000\060\053\060\051\006\010\053\006\001\005
\005\007\002\001\026\035\150\164\164\160\072\057\057\167\167\167
\056\143\145\162\164\056\146\156\155\164\056\145\163\057\144\160
\143\163\057\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\007\220\112\337\363\043\116\360\303
\234\121\145\233\234\042\242\212\014\205\363\163\051\153\115\376
\001\342\251\014\143\001\277\004\147\245\235\230\137\375\001\023
\372\354\232\142\351\206\376\266\142\322\156\114\224\373\300\165
\105\174\145\014\370\262\067\317\254\017\317\215\157\371\031\367
\217\354\036\362\160\236\360\312\270\357\267\377\166\067\166\133
\366\156\210\363\257\142\062\042\223\015\072\152\216\024\146\014
\055\123\164\127\145\036\325\262\335\043\201\073\245\146\043\047
\147\011\217\341\167\252\103\315\145\121\010\355\121\130\376\346
\071\371\313\107\204\244\025\361\166\273\244\356\244\073\304\137
\357\262\063\226\021\030\267\311\145\276\030\341\243\244\334\372
\030\371\323\274\023\233\071\172\064\272\323\101\373\372\062\212
\052\267\053\206\013\151\203\070\276\315\212\056\013\160\255\215
\046\222\356\036\365\001\053\012\331\326\227\233\156\340\250\031
\034\072\041\213\014\036\100\255\003\347\335\146\176\365\271\040
\015\003\350\226\371\202\105\324\071\340\240\000\135\327\230\346
\175\236\147\163\303\232\052\367\253\213\241\072\024\357\064\274
\122\016\211\230\232\004\100\204\035\176\105\151\223\127\316\353
\316\370\120\174\117\034\156\004\103\233\371\326\073\043\030\351
\352\216\321\115\106\215\361\073\344\152\312\272\373\043\267\233
\372\231\001\051\132\130\132\055\343\371\324\155\016\046\255\301
\156\064\274\062\370\014\005\372\145\243\333\073\067\203\042\351
\326\334\162\063\375\135\362\040\275\166\074\043\332\050\367\371
\033\353\131\144\325\334\137\162\176\040\374\315\211\265\220\147
\115\142\172\077\116\255\035\303\071\376\172\364\050\026\337\101
\366\110\200\005\327\017\121\171\254\020\253\324\354\003\146\346
\152\260\272\061\222\102\100\152\276\072\323\162\341\152\067\125
\274\254\035\225\267\151\141\362\103\221\164\346\240\323\012\044
\106\241\010\257\326\332\105\031\226\324\123\035\133\204\171\360
\300\367\107\357\213\217\305\006\256\235\114\142\235\377\106\004
\370\323\311\266\020\045\100\165\376\026\252\311\112\140\206\057
\272\357\060\167\344\124\342\270\204\231\130\200\252\023\213\121
\072\117\110\366\213\266\263
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AC RAIZ FNMT-RCM"
Issuer: OU=AC RAIZ FNMT-RCM,O=FNMT-RCM,C=ES
Serial Number:5d:93:8d:30:67:36:c8:06:1d:1a:c7:54:84:69:07
Subject: OU=AC RAIZ FNMT-RCM,O=FNMT-RCM,C=ES
Not Valid Before: Wed Oct 29 15:59:56 2008
Not Valid After : Tue Jan 01 00:00:00 2030

Fingerprint (SHA-256):
EB:C5:57:0C:29:01:8C:4D:67:B1:AA:12:7B:AF:12:F7:03:B4:61:1E:BC:17:B7:DA:B5:57:38:94:17:9B:93:FA
Fingerprint (SHA1): EC:50:35:07:B2:15:C4:95:62:19:E2:A8:9A:5B:42:99:2C:4C:2C:20
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ FNMT-RCM"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\354\120\065\007\262\025\304\225\142\031\342\250\232\133\102\231
\054\114\054\040
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\342\011\004\264\323\275\321\240\024\375\032\322\107\304\127\035
END
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\031\060\027\006\003\125\004\013\014\020\101\103\040
\122\101\111\132\040\106\116\115\124\055\122\103\115
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\135\223\215\060\147\066\310\006\035\032\307\124\204\151
\007
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Amazon Root CA 1"
#
Issuer: CN=Amazon Root CA 1,O=Amazon,C=US
Serial Number:06:6c:9f:cf:99:bf:8c:0a:39:e2:f0:78:8a:43:e6:96:36:5b:ca
Subject: CN=Amazon Root CA 1,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sun Jan 17 00:00:00 2038
Fingerprint (SHA-256):
8E:CD:E6:88:4F:3D:87:B1:12:5B:A3:1A:C3:FC:B1:3D:70:16:DE:7F:57:CC:90:4F:E1:CB:97:C6:AE:98:19:6E
Fingerprint (SHA1): 8D:A7:F9:65:EC:5E:FC:37:91:0F:1C:6E:59:FD:C1:CC:6A:6E:DE:16
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\317\231\277\214\012\071\342\360\170\212\103
\346\226\066\133\312
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\101\060\202\002\051\240\003\002\001\002\002\023\006
\154\237\317\231\277\214\012\071\342\360\170\212\103\346\226\066
\133\312\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157
\156\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172
\157\156\040\122\157\157\164\040\103\101\040\061\060\036\027\015
\061\065\060\065\062\066\060\060\060\060\060\060\132\027\015\063
\070\060\061\061\067\060\060\060\060\060\060\132\060\071\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\017\060\015\006
\003\125\004\012\023\006\101\155\141\172\157\156\061\031\060\027
\006\003\125\004\003\023\020\101\155\141\172\157\156\040\122\157
\157\164\040\103\101\040\061\060\202\001\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060
\202\001\012\002\202\001\001\000\262\170\200\161\312\170\325\343
\161\257\107\200\120\164\175\156\330\327\210\166\364\231\150\367
\130\041\140\371\164\204\001\057\254\002\055\206\323\240\103\172
\116\262\244\320\066\272\001\276\215\333\110\310\007\027\066\114
\364\356\210\043\307\076\353\067\365\265\031\370\111\150\260\336
\327\271\166\070\035\141\236\244\376\202\066\245\345\112\126\344
\105\341\371\375\264\026\372\164\332\234\233\065\071\057\372\260
\040\120\006\154\172\320\200\262\246\371\257\354\107\031\217\120
\070\007\334\242\207\071\130\370\272\325\251\371\110\147\060\226
\356\224\170\136\157\211\243\121\300\060\206\146\241\105\146\272
\124\353\243\303\221\371\110\334\377\321\350\060\055\175\055\164
\160\065\327\210\044\367\236\304\131\156\273\163\207\027\362\062
\106\050\270\103\372\267\035\252\312\264\362\237\044\016\055\113
\367\161\134\136\151\377\352\225\002\313\070\212\256\120\070\157
\333\373\055\142\033\305\307\036\124\341\167\340\147\310\017\234
\207\043\326\077\100\040\177\040\200\304\200\114\076\073\044\046
\216\004\256\154\232\310\252\015\002\003\001\000\001\243\102\060

\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\206\060\035\006\003\125\035\016\004\026\004\024\204\030\314
\205\064\354\274\014\224\224\056\010\131\234\307\262\020\116\012
\010\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\003\202\001\001\000\230\362\067\132\101\220\241\032\305\166\121
\050\040\066\043\016\256\346\050\273\252\370\224\256\110\244\060
\177\033\374\044\215\113\264\310\241\227\366\266\361\172\160\310
\123\223\314\010\050\343\230\045\317\043\244\371\336\041\323\174
\205\011\255\116\232\165\072\302\013\152\211\170\166\104\107\030
\145\154\215\101\216\073\177\232\313\364\265\247\120\327\005\054
\067\350\003\113\255\351\141\240\002\156\365\362\360\305\262\355
\133\267\334\372\224\134\167\236\023\245\177\122\255\225\362\370
\223\073\336\213\134\133\312\132\122\133\140\257\024\367\113\357
\243\373\237\100\225\155\061\124\374\102\323\307\106\037\043\255
\331\017\110\160\232\331\165\170\161\321\162\103\064\165\156\127
\131\302\002\134\046\140\051\317\043\031\026\216\210\103\245\324
\344\313\010\373\043\021\103\350\103\051\162\142\241\251\135\136
\010\324\220\256\270\330\316\024\302\320\125\362\206\366\304\223
\103\167\146\141\300\271\350\101\327\227\170\140\003\156\112\162
\256\245\321\175\272\020\236\206\154\033\212\271\131\063\370\353
\304\220\276\361\271
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Amazon Root CA 1"
Issuer: CN=Amazon Root CA 1,O=Amazon,C=US
Serial Number:06:6c:9f:cf:99:bf:8c:0a:39:e2:f0:78:8a:43:e6:96:36:5b:ca
Subject: CN=Amazon Root CA 1,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sun Jan 17 00:00:00 2038
Fingerprint (SHA-256):
8E:CD:E6:88:4F:3D:87:B1:12:5B:A3:1A:C3:FC:B1:3D:70:16:DE:7F:57:CC:90:4F:E1:CB:97:C6:AE:98:19:6E
Fingerprint (SHA1): 8D:A7:F9:65:EC:5E:FC:37:91:0F:1C:6E:59:FD:C1:CC:6A:6E:DE:16
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\215\247\371\145\354\136\374\067\221\017\034\156\131\375\301\314
\152\156\336\026
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\103\306\277\256\354\376\255\057\030\306\210\150\060\374\310\346
END

CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\317\231\277\214\012\071\342\360\170\212\103
\346\226\066\133\312
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Amazon Root CA 2"
#
Issuer: CN=Amazon Root CA 2,O=Amazon,C=US
Serial Number:06:6c:9f:d2:96:35:86:9f:0a:0f:e5:86:78:f8:5b:26:bb:8a:37
Subject: CN=Amazon Root CA 2,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
1B:A5:B2:AA:8C:65:40:1A:82:96:01:18:F8:0B:EC:4F:62:30:4D:83:CE:C4:71:3A:19:C3:9C:01:1E:A4:6D:B4
Fingerprint (SHA1): 5A:8C:EF:45:D7:A6:98:59:76:7A:8C:8B:44:96:B5:78:CF:47:4B:1A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\322\226\065\206\237\012\017\345\206\170\370
\133\046\273\212\067

END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\101\060\202\003\051\240\003\002\001\002\002\023\006
\154\237\322\226\065\206\237\012\017\345\206\170\370\133\046\273
\212\067\060\015\006\011\052\206\110\206\367\015\001\001\014\005
\000\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157
\156\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172
\157\156\040\122\157\157\164\040\103\101\040\062\060\036\027\015
\061\065\060\065\062\066\060\060\060\060\060\060\132\027\015\064
\060\060\065\062\066\060\060\060\060\060\060\132\060\071\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\017\060\015\006
\003\125\004\012\023\006\101\155\141\172\157\156\061\031\060\027
\006\003\125\004\003\023\020\101\155\141\172\157\156\040\122\157
\157\164\040\103\101\040\062\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\255\226\237\055\234\112\114\112
\201\171\121\231\354\212\313\153\140\121\023\274\115\155\006\374
\260\010\215\335\031\020\152\307\046\014\065\330\300\157\040\204
\351\224\261\233\205\003\303\133\333\112\350\310\370\220\166\331
\133\117\343\114\350\006\066\115\314\232\254\075\014\220\053\222
\324\006\031\140\254\067\104\171\205\201\202\255\132\067\340\015
\314\235\246\114\122\166\352\103\235\267\004\321\120\366\125\340
\325\322\246\111\205\351\067\351\312\176\256\134\225\115\110\232
\077\256\040\132\155\210\225\331\064\270\122\032\103\220\260\277
\154\005\271\266\170\267\352\320\344\072\074\022\123\142\377\112
\362\173\276\065\005\251\022\064\343\363\144\164\142\054\075\000
\111\132\050\376\062\104\273\207\335\145\047\002\161\073\332\112
\367\037\332\315\367\041\125\220\117\017\354\256\202\341\237\153
\331\105\323\273\360\137\207\355\074\054\071\206\332\077\336\354
\162\125\353\171\243\255\333\335\174\260\272\034\316\374\336\117
\065\166\317\017\370\170\037\152\066\121\106\047\141\133\351\236
\317\360\242\125\175\174\045\212\157\057\264\305\317\204\056\053
\375\015\121\020\154\373\137\033\274\033\176\305\256\073\230\001
\061\222\377\013\127\364\232\262\271\127\351\253\357\015\166\321
\360\356\364\316\206\247\340\156\351\264\151\241\337\151\366\063
\306\151\056\227\023\236\245\207\260\127\020\201\067\311\123\263
\273\177\366\222\321\234\320\030\364\222\156\332\203\117\246\143
\231\114\245\373\136\357\041\144\172\040\137\154\144\205\025\313
\067\351\142\014\013\052\026\334\001\056\062\332\076\113\365\236
\072\366\027\100\224\357\236\221\010\206\372\276\143\250\132\063
\354\313\164\103\225\371\154\151\122\066\307\051\157\374\125\003
\134\037\373\237\275\107\353\347\111\107\225\013\116\211\042\011
\111\340\365\141\036\361\277\056\212\162\156\200\131\377\127\072
\371\165\062\243\116\137\354\355\050\142\331\115\163\362\314\201
\027\140\355\315\353\334\333\247\312\305\176\002\275\362\124\010
\124\375\264\055\011\054\027\124\112\230\321\124\341\121\147\010
\322\355\156\176\157\077\322\055\201\131\051\146\313\220\071\225

\021\036\164\047\376\335\353\257\002\003\001\000\001\243\102\060
\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\206\060\035\006\003\125\035\016\004\026\004\024\260\014\360
\114\060\364\005\130\002\110\375\063\345\122\257\113\204\343\146
\122\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000
\003\202\002\001\000\252\250\200\217\016\170\243\340\242\324\315
\346\365\230\172\073\352\000\003\260\227\016\223\274\132\250\366
\054\214\162\207\251\261\374\177\163\375\143\161\170\245\207\131
\317\060\341\015\020\262\023\132\155\202\365\152\346\200\237\240
\005\013\150\344\107\153\307\152\337\266\375\167\062\162\345\030
\372\011\364\240\223\054\135\322\214\165\205\166\145\220\014\003
\171\267\061\043\143\255\170\203\011\206\150\204\312\377\371\317
\046\232\222\171\347\315\113\305\347\141\247\027\313\363\251\022
\223\223\153\247\350\057\123\222\304\140\130\260\314\002\121\030
\133\205\215\142\131\143\266\255\264\336\232\373\046\367\000\047
\300\135\125\067\164\231\311\120\177\343\131\056\104\343\054\045
\356\354\114\062\167\264\237\032\351\113\135\040\305\332\375\034
\207\026\306\103\350\324\273\046\232\105\160\136\251\013\067\123
\342\106\173\047\375\340\106\362\211\267\314\102\266\313\050\046
\156\331\245\311\072\310\101\023\140\367\120\214\025\256\262\155
\032\025\032\127\170\346\222\052\331\145\220\202\077\154\002\257
\256\022\072\047\226\066\004\327\035\242\200\143\251\233\361\345
\272\264\174\024\260\116\311\261\037\164\137\070\366\121\352\233
\372\054\242\021\324\251\055\047\032\105\261\257\262\116\161\015
\300\130\106\326\151\006\313\123\313\263\376\153\101\315\101\176
\175\114\017\174\162\171\172\131\315\136\112\016\254\233\251\230
\163\171\174\264\364\314\271\270\007\014\262\164\134\270\307\157
\210\241\220\247\364\252\371\277\147\072\364\032\025\142\036\267
\237\276\075\261\051\257\147\241\022\362\130\020\031\123\003\060
\033\270\032\211\366\234\275\227\003\216\243\011\363\035\213\041
\361\264\337\344\034\321\237\145\002\006\352\134\326\023\263\204
\357\242\245\134\214\167\051\247\150\300\153\256\100\322\250\264
\352\315\360\215\113\070\234\031\232\033\050\124\270\211\220\357
\312\165\201\076\036\362\144\044\307\030\257\116\377\107\236\007
\366\065\145\244\323\012\126\377\365\027\144\154\357\250\042\045
\111\223\266\337\000\027\332\130\176\135\356\305\033\260\321\321
\137\041\020\307\371\363\272\002\012\047\007\305\361\326\307\323
\340\373\011\140\154
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Amazon Root CA 2"
Issuer: CN=Amazon Root CA 2,O=Amazon,C=US
Serial Number:06:6c:9f:d2:96:35:86:9f:0a:0f:e5:86:78:f8:5b:26:bb:8a:37
Subject: CN=Amazon Root CA 2,O=Amazon,C=US

Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
1B:A5:B2:AA:8C:65:40:1A:82:96:01:18:F8:0B:EC:4F:62:30:4D:83:CE:C4:71:3A:19:C3:9C:01:1E:A4:6D:B4
Fingerprint (SHA1): 5A:8C:EF:45:D7:A6:98:59:76:7A:8C:8B:44:96:B5:78:CF:47:4B:1A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\132\214\357\105\327\246\230\131\166\172\214\213\104\226\265\170
\317\107\113\032
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\310\345\215\316\250\102\342\172\300\052\134\174\236\046\277\146
END
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\322\226\065\206\237\012\017\345\206\170\370
\133\046\273\212\067
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Amazon Root CA 3"
#
Issuer: CN=Amazon Root CA 3,O=Amazon,C=US
Serial Number:06:6c:9f:d5:74:97:36:66:3f:3b:0b:9a:d9:e8:9e:76:03:f2:4a
Subject: CN=Amazon Root CA 3,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
18:CE:6C:FE:7B:F1:4E:60:B2:E3:47:B8:DF:E8:68:CB:31:D0:2E:BB:3A:DA:27:15:69:F5:03:43:B4:6D:B3:A4
Fingerprint (SHA1): 0D:44:DD:8C:3C:8C:1A:1A:58:75:64:81:E9:0F:2E:2A:FF:B3:D2:6E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 3"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\325\164\227\066\146\077\073\013\232\331\350
\236\166\003\362\112
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\266\060\202\001\133\240\003\002\001\002\002\023\006
\154\237\325\164\227\066\146\077\073\013\232\331\350\236\166\003
\362\112\060\012\006\010\052\206\110\316\075\004\003\002\060\071
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\017\060
\015\006\003\125\004\012\023\006\101\155\141\172\157\156\061\031
\060\027\006\003\125\004\003\023\020\101\155\141\172\157\156\040
\122\157\157\164\040\103\101\040\063\060\036\027\015\061\065\060
\065\062\066\060\060\060\060\060\060\132\027\015\064\060\060\065
\062\066\060\060\060\060\060\060\132\060\071\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\017\060\015\006\003\125\004
\012\023\006\101\155\141\172\157\156\061\031\060\027\006\003\125
\004\003\023\020\101\155\141\172\157\156\040\122\157\157\164\040
\103\101\040\063\060\131\060\023\006\007\052\206\110\316\075\002
\001\006\010\052\206\110\316\075\003\001\007\003\102\000\004\051
\227\247\306\101\177\300\015\233\350\001\033\126\306\362\122\245
\272\055\262\022\350\322\056\327\372\311\305\330\252\155\037\163
\201\073\073\230\153\071\174\063\245\305\116\206\216\200\027\150
\142\105\127\175\104\130\035\263\067\345\147\010\353\146\336\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\035\006\003\125\035\016\004\026\004\024\253
\266\333\327\006\236\067\254\060\206\007\221\160\307\234\304\031
\261\170\300\060\012\006\010\052\206\110\316\075\004\003\002\003
\111\000\060\106\002\041\000\340\205\222\243\027\267\215\371\053
\006\245\223\254\032\230\150\141\162\372\341\241\320\373\034\170
\140\246\103\231\305\270\304\002\041\000\234\002\357\361\224\234
\263\226\371\353\306\052\370\266\054\376\072\220\024\026\327\214
\143\044\110\034\337\060\175\325\150\073
END

CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Amazon Root CA 3"
Issuer: CN=Amazon Root CA 3,O=Amazon,C=US
Serial Number:06:6c:9f:d5:74:97:36:66:3f:3b:0b:9a:d9:e8:9e:76:03:f2:4a
Subject: CN=Amazon Root CA 3,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
18:CE:6C:FE:7B:F1:4E:60:B2:E3:47:B8:DF:E8:68:CB:31:D0:2E:BB:3A:DA:27:15:69:F5:03:43:B4:6D:B3:A4
Fingerprint (SHA1): 0D:44:DD:8C:3C:8C:1A:1A:58:75:64:81:E9:0F:2E:2A:FF:B3:D2:6E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\015\104\335\214\074\214\032\032\130\165\144\201\351\017\056\052
\377\263\322\156
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\240\324\357\013\367\265\330\111\225\052\354\365\304\374\201\207
END
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\325\164\227\066\146\077\073\013\232\331\350
\236\166\003\362\112
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Amazon Root CA 4"
#
Issuer: CN=Amazon Root CA 4,O=Amazon,C=US
Serial Number:06:6c:9f:d7:c1:bb:10:4c:29:43:e5:71:7b:7b:2c:c8:1a:c1:0e
Subject: CN=Amazon Root CA 4,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040

Fingerprint (SHA-256):
E3:5D:28:41:9E:D0:20:25:CF:A6:90:38:CD:62:39:62:45:8D:A5:C6:95:FB:DE:A3:C2:2B:0B:FB:25:89:70:92
Fingerprint (SHA1): F6:10:84:07:D6:F8:BB:67:98:0C:C2:E2:44:C2:EB:AE:1C:EF:63:BE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\064
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\327\301\273\020\114\051\103\345\161\173\173
\054\310\032\301\016
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\362\060\202\001\170\240\003\002\001\002\002\023\006
\154\237\327\301\273\020\114\051\103\345\161\173\173\054\310\032
\301\016\060\012\006\010\052\206\110\316\075\004\003\003\060\071
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\017\060
\015\006\003\125\004\012\023\006\101\155\141\172\157\156\061\031
\060\027\006\003\125\004\003\023\020\101\155\141\172\157\156\040
\122\157\157\164\040\103\101\040\064\060\036\027\015\061\065\060
\065\062\066\060\060\060\060\060\060\132\027\015\064\060\060\065
\062\066\060\060\060\060\060\060\132\060\071\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\017\060\015\006\003\125\004
\012\023\006\101\155\141\172\157\156\061\031\060\027\006\003\125
\004\003\023\020\101\155\141\172\157\156\040\122\157\157\164\040
\103\101\040\064\060\166\060\020\006\007\052\206\110\316\075\002
\001\006\005\053\201\004\000\042\003\142\000\004\322\253\212\067
\117\243\123\015\376\301\212\173\113\250\173\106\113\143\260\142
\366\055\033\333\010\161\041\322\000\350\143\275\232\047\373\360
\071\156\135\352\075\245\311\201\252\243\133\040\230\105\135\026
\333\375\350\020\155\343\234\340\343\275\137\204\142\363\160\144
\063\240\313\044\057\160\272\210\241\052\240\165\370\201\256\142
\006\304\201\333\071\156\051\260\036\372\056\134\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001

\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\206\060\035\006\003\125\035\016\004\026\004\024\323\354\307\072
\145\156\314\341\332\166\232\126\373\234\363\206\155\127\345\201
\060\012\006\010\052\206\110\316\075\004\003\003\003\150\000\060
\145\002\060\072\213\041\361\275\176\021\255\320\357\130\226\057
\326\353\235\176\220\215\053\317\146\125\303\054\343\050\251\160
\012\107\016\360\067\131\022\377\055\231\224\050\116\052\117\065
\115\063\132\002\061\000\352\165\000\116\073\304\072\224\022\221
\311\130\106\235\041\023\162\247\210\234\212\344\114\112\333\226
\324\254\213\153\153\111\022\123\063\255\327\344\276\044\374\265
\012\166\324\245\274\020
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Amazon Root CA 4"
Issuer: CN=Amazon Root CA 4,O=Amazon,C=US
Serial Number:06:6c:9f:d7:c1:bb:10:4c:29:43:e5:71:7b:7b:2c:c8:1a:c1:0e
Subject: CN=Amazon Root CA 4,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
E3:5D:28:41:9E:D0:20:25:CF:A6:90:38:CD:62:39:62:45:8D:A5:C6:95:FB:DE:A3:C2:2B:0B:FB:25:89:70:92
Fingerprint (SHA1): F6:10:84:07:D6:F8:BB:67:98:0C:C2:E2:44:C2:EB:AE:1C:EF:63:BE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\366\020\204\007\326\370\273\147\230\014\302\342\104\302\353\256
\034\357\143\276
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\211\274\047\325\353\027\215\006\152\151\325\375\211\107\264\315
END
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\327\301\273\020\114\051\103\345\161\173\173
\054\310\032\301\016
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Symantec Class 1 Public Primary Certification Authority - G6"
#
Issuer: CN=Symantec Class 1 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Serial Number:24:32:75:f2:1d:2f:d2:09:33:f7:b4:6a:ca:d0:f3:98
Subject: CN=Symantec Class 1 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Not Valid Before: Tue Oct 18 00:00:00 2011
Not Valid After : Tue Dec 01 23:59:59 2037
Fingerprint (SHA-256):
9D:19:0B:2E:31:45:66:68:5B:E8:A8:89:E2:7A:A8:C7:D7:AE:1D:8A:AD:DB:A3:C1:EC:F9:D2:48:63:CD:34:B9
Fingerprint (SHA1): 51:7F:61:1E:29:91:6B:53:82:FB:72:E7:44:D9:8D:C3:CC:53:6D:64
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Class 1 Public Primary Certification Authority - G6"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\061\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\061\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\044\062\165\362\035\057\322\011\063\367\264\152\312\320
\363\230
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\366\060\202\002\336\240\003\002\001\002\002\020\044
\062\165\362\035\057\322\011\063\367\264\152\312\320\363\230\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\201
\224\061\013\060\011\006\003\125\004\006\023\002\125\123\061\035
\060\033\006\003\125\004\012\023\024\123\171\155\141\156\164\145
\143\040\103\157\162\160\157\162\141\164\151\157\156\061\037\060
\035\006\003\125\004\013\023\026\123\171\155\141\156\164\145\143
\040\124\162\165\163\164\040\116\145\164\167\157\162\153\061\105
\060\103\006\003\125\004\003\023\074\123\171\155\141\156\164\145
\143\040\103\154\141\163\163\040\061\040\120\165\142\154\151\143
\040\120\162\151\155\141\162\171\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\066\060\036\027\015\061\061\061\060\061\070\060
\060\060\060\060\060\132\027\015\063\067\061\062\060\061\062\063
\065\071\065\071\132\060\201\224\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\035\060\033\006\003\125\004\012\023\024
\123\171\155\141\156\164\145\143\040\103\157\162\160\157\162\141
\164\151\157\156\061\037\060\035\006\003\125\004\013\023\026\123
\171\155\141\156\164\145\143\040\124\162\165\163\164\040\116\145
\164\167\157\162\153\061\105\060\103\006\003\125\004\003\023\074
\123\171\155\141\156\164\145\143\040\103\154\141\163\163\040\061
\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165
\164\150\157\162\151\164\171\040\055\040\107\066\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\307\071\327
\111\144\251\231\202\042\114\352\105\331\007\026\343\173\364\203
\350\231\163\372\153\261\066\340\232\167\240\100\302\201\215\001
\307\314\214\275\217\175\367\171\343\172\114\003\115\331\373\375
\207\070\050\054\335\232\213\124\010\333\147\373\033\214\376\050
\222\057\276\267\262\110\247\201\241\330\136\210\303\314\071\100
\101\132\321\334\345\332\020\237\057\332\001\115\375\056\106\174
\371\056\047\012\151\067\356\221\243\033\152\314\104\277\033\307
\303\324\021\262\120\140\227\011\275\056\042\365\101\204\146\237
\315\100\246\251\000\200\301\037\225\222\237\336\363\110\357\333
\035\167\141\374\177\337\356\226\244\162\320\266\076\377\170\047
\257\313\222\025\151\010\333\143\020\342\346\227\254\156\334\254
\366\242\316\036\107\231\271\211\267\022\346\241\324\315\131\021
\147\303\157\205\330\102\116\050\276\131\125\131\004\225\253\217
\067\200\277\015\360\374\037\072\144\061\130\201\170\327\342\065
\366\040\077\051\270\217\026\156\076\110\334\265\114\007\341\362
\032\352\176\012\171\326\250\275\353\135\206\053\115\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377

\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\063\101\350\310\071\022\025\223\110\362\226\062\056\132
\365\332\224\137\123\140\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\001\001\000\025\343\163\127\261\027
\266\137\111\151\104\246\366\136\172\147\254\322\336\165\111\253
\376\045\125\307\072\311\104\025\020\156\277\061\153\313\331\007
\223\177\034\205\143\000\343\062\022\340\314\313\373\071\154\217
\342\123\342\074\100\063\331\244\214\107\346\255\130\373\211\257
\343\336\206\051\126\064\054\105\270\022\372\104\211\156\055\024
\045\050\044\001\145\326\352\122\254\005\156\126\022\011\075\320
\164\364\327\275\006\312\250\072\215\126\102\372\215\162\076\164
\361\003\162\337\207\033\136\016\172\125\226\054\070\267\230\205
\315\115\063\104\311\224\217\132\061\060\067\113\243\072\022\263
\347\066\321\041\150\113\055\070\346\123\256\034\045\126\010\126
\003\147\204\235\306\303\316\044\142\307\114\066\317\260\006\104
\267\365\137\002\335\331\124\351\057\220\116\172\310\116\203\100
\014\232\227\074\067\277\277\354\366\360\264\205\167\050\301\013
\310\147\202\020\027\070\242\267\006\352\233\277\072\370\351\043
\007\277\164\340\230\070\025\125\170\356\162\000\134\031\243\364
\322\063\340\377\275\321\124\071\051\017
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
For Email Distrust After: Wed Aug 31 00:00:00 2022
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\062\060\070\063\061\060\060\060\060\060\060\132
END

Trust for "Symantec Class 1 Public Primary Certification Authority - G6"
Issuer: CN=Symantec Class 1 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Serial Number:24:32:75:f2:1d:2f:d2:09:33:f7:b4:6a:ca:d0:f3:98
Subject: CN=Symantec Class 1 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Not Valid Before: Tue Oct 18 00:00:00 2011
Not Valid After : Tue Dec 01 23:59:59 2037
Fingerprint (SHA-256):
9D:19:0B:2E:31:45:66:68:5B:E8:A8:89:E2:7A:A8:C7:D7:AE:1D:8A:AD:DB:A3:C1:EC:F9:D2:48:63:CD:34:B9
Fingerprint (SHA1): 51:7F:61:1E:29:91:6B:53:82:FB:72:E7:44:D9:8D:C3:CC:53:6D:64
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Class 1 Public Primary Certification Authority - G6"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\121\177\141\036\051\221\153\123\202\373\162\347\104\331\215\303
\314\123\155\144

END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\057\250\264\332\366\144\113\036\202\371\106\075\124\032\174\260
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\061\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\044\062\165\362\035\057\322\011\063\367\264\152\312\320
\363\230
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Symantec Class 2 Public Primary Certification Authority - G6"
#
Issuer: CN=Symantec Class 2 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Serial Number:64:82:9e:fc:37:1e:74:5d:fc:97:ff:97:c8:b1:ff:41
Subject: CN=Symantec Class 2 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Not Valid Before: Tue Oct 18 00:00:00 2011
Not Valid After : Tue Dec 01 23:59:59 2037
Fingerprint (SHA-256):
CB:62:7D:18:B5:8A:D5:6D:DE:33:1A:30:45:6B:C6:5C:60:1A:4E:9B:18:DE:DC:EA:08:E7:DA:AA:07:81:5F:F0
Fingerprint (SHA1): 40:B3:31:A0:E9:BF:E8:55:BC:39:93:CA:70:4F:4E:C2:51:D4:1D:8F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Class 2 Public Primary Certification Authority - G6"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061

\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\062\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\062\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\144\202\236\374\067\036\164\135\374\227\377\227\310\261
\377\101
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\366\060\202\002\336\240\003\002\001\002\002\020\144
\202\236\374\067\036\164\135\374\227\377\227\310\261\377\101\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\201
\224\061\013\060\011\006\003\125\004\006\023\002\125\123\061\035
\060\033\006\003\125\004\012\023\024\123\171\155\141\156\164\145
\143\040\103\157\162\160\157\162\141\164\151\157\156\061\037\060
\035\006\003\125\004\013\023\026\123\171\155\141\156\164\145\143
\040\124\162\165\163\164\040\116\145\164\167\157\162\153\061\105
\060\103\006\003\125\004\003\023\074\123\171\155\141\156\164\145
\143\040\103\154\141\163\163\040\062\040\120\165\142\154\151\143
\040\120\162\151\155\141\162\171\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\066\060\036\027\015\061\061\061\060\061\070\060
\060\060\060\060\060\132\027\015\063\067\061\062\060\061\062\063
\065\071\065\071\132\060\201\224\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\035\060\033\006\003\125\004\012\023\024
\123\171\155\141\156\164\145\143\040\103\157\162\160\157\162\141
\164\151\157\156\061\037\060\035\006\003\125\004\013\023\026\123
\171\155\141\156\164\145\143\040\124\162\165\163\164\040\116\145
\164\167\157\162\153\061\105\060\103\006\003\125\004\003\023\074
\123\171\155\141\156\164\145\143\040\103\154\141\163\163\040\062
\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171\040

\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165
\164\150\157\162\151\164\171\040\055\040\107\066\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\315\314\351
\005\310\143\205\313\077\100\143\027\275\030\372\065\346\004\147
\127\145\230\051\244\117\311\134\217\017\064\322\370\332\250\023
\142\252\270\036\120\147\170\260\026\114\240\071\251\025\172\256
\355\322\242\300\360\220\067\051\030\046\134\350\015\074\266\154
\111\077\301\340\334\331\113\266\024\031\013\246\323\226\341\326
\011\343\031\046\034\371\037\145\113\371\032\103\034\000\203\326
\320\252\111\242\324\333\346\142\070\272\120\024\103\155\371\061
\370\126\026\331\070\002\221\317\353\154\335\273\071\116\231\341
\060\147\105\361\324\360\215\303\337\376\362\070\007\041\175\000
\136\126\104\263\344\140\275\221\053\234\253\133\004\162\017\262
\050\331\162\253\005\040\102\045\251\133\003\152\040\020\314\061
\360\053\332\065\054\320\373\232\227\116\360\202\113\053\330\137
\066\243\013\055\257\143\015\035\045\177\241\156\134\142\241\215
\050\076\241\374\034\040\370\001\057\272\125\232\021\260\031\322
\310\120\171\153\016\152\005\327\252\004\066\262\243\362\341\137
\167\247\167\234\345\036\334\351\337\152\301\145\135\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\207\214\040\225\310\230\112\321\326\200\006\112\220\064
\104\337\034\115\277\260\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\001\001\000\201\216\262\245\146\226
\267\041\245\266\357\157\043\132\137\333\201\305\102\245\170\301
\151\375\364\074\327\371\134\153\160\162\032\374\132\227\115\000
\200\210\210\202\212\303\161\015\216\305\211\233\054\355\215\013
\322\162\124\365\175\324\134\103\127\351\363\256\245\002\021\366
\166\053\201\127\335\175\332\164\060\375\124\107\366\340\026\156
\246\264\012\110\346\347\165\007\017\051\031\071\316\171\364\266
\154\305\137\231\325\037\113\372\337\155\054\074\015\124\200\160
\360\210\013\200\317\306\150\242\270\035\160\331\166\214\374\356
\245\311\317\255\035\317\231\045\127\132\142\105\313\026\153\275
\111\315\245\243\214\151\171\045\256\270\114\154\213\100\146\113
\026\077\317\002\032\335\341\154\153\007\141\152\166\025\051\231
\177\033\335\210\200\301\277\265\217\163\305\246\226\043\204\246
\050\206\044\063\152\001\056\127\163\045\266\136\277\217\346\035
\141\250\100\051\147\035\207\233\035\177\233\237\231\315\061\326
\124\276\142\273\071\254\150\022\110\221\040\245\313\261\335\376
\157\374\132\344\202\125\131\257\061\251
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
For Email Distrust After: Wed Aug 31 00:00:00 2022
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\062\060\070\063\061\060\060\060\060\060\060\132

END

Trust for "Symantec Class 2 Public Primary Certification Authority - G6"
Issuer: CN=Symantec Class 2 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Serial Number:64:82:9e:fc:37:1e:74:5d:fc:97:ff:97:c8:b1:ff:41
Subject: CN=Symantec Class 2 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Not Valid Before: Tue Oct 18 00:00:00 2011
Not Valid After : Tue Dec 01 23:59:59 2037
Fingerprint (SHA-256):
CB:62:7D:18:B5:8A:D5:6D:DE:33:1A:30:45:6B:C6:5C:60:1A:4E:9B:18:DE:DC:EA:08:E7:DA:AA:07:81:5F:F0
Fingerprint (SHA1): 40:B3:31:A0:E9:BF:E8:55:BC:39:93:CA:70:4F:4E:C2:51:D4:1D:8F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Class 2 Public Primary Certification Authority - G6"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\100\263\061\240\351\277\350\125\274\071\223\312\160\117\116\302
\121\324\035\217
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\175\013\203\345\373\174\255\007\117\040\251\265\337\143\355\171
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\062\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\144\202\236\374\067\036\164\135\374\227\377\227\310\261
\377\101
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST Root CA 3 2013"

#
Issuer: CN=D-TRUST Root CA 3 2013,O=D-Trust GmbH,C=DE
Serial Number: 1039788 (0xfddac)
Subject: CN=D-TRUST Root CA 3 2013,O=D-Trust GmbH,C=DE
Not Valid Before: Fri Sep 20 08:25:51 2013
Not Valid After : Wed Sep 20 08:25:51 2028
Fingerprint (SHA-256):
A1:A8:6D:04:12:1E:B8:7F:02:7C:66:F5:33:03:C2:8E:57:39:F9:43:FC:84:B3:8A:D6:AF:00:90:35:DD:94:57
Fingerprint (SHA1): 6C:7C:CC:E7:D4:AE:51:5F:99:08:CD:3F:F6:E8:C3:78:DF:6F:EF:97
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root CA 3 2013"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\037\060\035\006\003\125\004\003\014
\026\104\055\124\122\125\123\124\040\122\157\157\164\040\103\101
\040\063\040\062\060\061\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\037\060\035\006\003\125\004\003\014
\026\104\055\124\122\125\123\124\040\122\157\157\164\040\103\101
\040\063\040\062\060\061\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\017\335\254
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\016\060\202\002\366\240\003\002\001\002\002\003\017
\335\254\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\105\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165
\163\164\040\107\155\142\110\061\037\060\035\006\003\125\004\003
\014\026\104\055\124\122\125\123\124\040\122\157\157\164\040\103
\101\040\063\040\062\060\061\063\060\036\027\015\061\063\060\071
\062\060\060\070\062\065\065\061\132\027\015\062\070\060\071\062
\060\060\070\062\065\065\061\132\060\105\061\013\060\011\006\003
\125\004\006\023\002\104\105\061\025\060\023\006\003\125\004\012
\014\014\104\055\124\162\165\163\164\040\107\155\142\110\061\037
\060\035\006\003\125\004\003\014\026\104\055\124\122\125\123\124
\040\122\157\157\164\040\103\101\040\063\040\062\060\061\063\060
\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001

\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000
\304\173\102\222\202\037\354\355\124\230\216\022\300\312\011\337
\223\156\072\223\134\033\344\020\167\236\116\151\210\154\366\341
\151\362\366\233\242\141\261\275\007\040\164\230\145\361\214\046
\010\315\250\065\312\200\066\321\143\155\350\104\172\202\303\154
\136\336\273\350\066\322\304\150\066\214\237\062\275\204\042\340
\334\302\356\020\106\071\155\257\223\071\256\207\346\303\274\011
\311\054\153\147\133\331\233\166\165\114\013\340\273\305\327\274
\076\171\362\137\276\321\220\127\371\256\366\146\137\061\277\323
\155\217\247\272\112\363\043\145\273\267\357\243\045\327\012\352
\130\266\357\210\372\372\171\262\122\130\325\360\254\214\241\121
\164\051\225\252\121\073\220\062\003\237\034\162\164\220\336\075
\355\141\322\345\343\375\144\107\345\271\267\112\251\367\037\256
\226\206\004\254\057\343\244\201\167\267\132\026\377\330\017\077
\366\267\170\314\244\257\372\133\074\022\133\250\122\211\162\357
\210\363\325\104\201\206\225\043\237\173\335\274\331\064\357\174
\224\074\252\300\101\302\343\235\120\032\300\344\031\042\374\263
\002\003\001\000\001\243\202\001\005\060\202\001\001\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035
\006\003\125\035\016\004\026\004\024\077\220\310\175\307\025\157
\363\044\217\251\303\057\113\242\017\041\262\057\347\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\201\276
\006\003\125\035\037\004\201\266\060\201\263\060\164\240\162\240
\160\206\156\154\144\141\160\072\057\057\144\151\162\145\143\164
\157\162\171\056\144\055\164\162\165\163\164\056\156\145\164\057
\103\116\075\104\055\124\122\125\123\124\045\062\060\122\157\157
\164\045\062\060\103\101\045\062\060\063\045\062\060\062\060\061
\063\054\117\075\104\055\124\162\165\163\164\045\062\060\107\155
\142\110\054\103\075\104\105\077\143\145\162\164\151\146\151\143
\141\164\145\162\145\166\157\143\141\164\151\157\156\154\151\163
\164\060\073\240\071\240\067\206\065\150\164\164\160\072\057\057
\143\162\154\056\144\055\164\162\165\163\164\056\156\145\164\057
\143\162\154\057\144\055\164\162\165\163\164\137\162\157\157\164
\137\143\141\137\063\137\062\060\061\063\056\143\162\154\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001
\001\000\016\131\016\130\344\164\110\043\104\317\064\041\265\234
\024\032\255\232\113\267\263\210\155\134\251\027\160\360\052\237
\215\173\371\173\205\372\307\071\350\020\010\260\065\053\137\317
\002\322\323\234\310\013\036\356\005\124\256\067\223\004\011\175
\154\217\302\164\274\370\034\224\276\061\001\100\055\363\044\040
\267\204\125\054\134\310\365\164\112\020\031\213\243\307\355\065
\326\011\110\323\016\300\272\071\250\260\106\002\260\333\306\210
\131\302\276\374\173\261\053\317\176\142\207\125\226\314\001\157
\233\147\041\225\065\213\370\020\374\161\033\267\113\067\151\246
\073\326\354\213\356\301\260\363\045\311\217\222\175\241\352\303
\312\104\277\046\245\164\222\234\343\164\353\235\164\331\313\115
\207\330\374\264\151\154\213\240\103\007\140\170\227\351\331\223
\174\302\106\274\233\067\122\243\355\212\074\023\251\173\123\113

\111\232\021\005\054\013\156\126\254\037\056\202\154\340\151\147
\265\016\155\055\331\344\300\025\361\077\372\030\162\341\025\155
\047\133\055\060\050\053\237\110\232\144\053\231\357\362\165\111
\137\134
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST Root CA 3 2013"
Issuer: CN=D-TRUST Root CA 3 2013,O=D-Trust GmbH,C=DE
Serial Number: 1039788 (0xfddac)
Subject: CN=D-TRUST Root CA 3 2013,O=D-Trust GmbH,C=DE
Not Valid Before: Fri Sep 20 08:25:51 2013
Not Valid After : Wed Sep 20 08:25:51 2028
Fingerprint (SHA-256):
A1:A8:6D:04:12:1E:B8:7F:02:7C:66:F5:33:03:C2:8E:57:39:F9:43:FC:84:B3:8A:D6:AF:00:90:35:DD:94:57
Fingerprint (SHA1): 6C:7C:CC:E7:D4:AE:51:5F:99:08:CD:3F:F6:E8:C3:78:DF:6F:EF:97
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root CA 3 2013"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\154\174\314\347\324\256\121\137\231\010\315\077\366\350\303\170
\337\157\357\227
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\267\042\146\230\176\326\003\340\301\161\346\165\315\126\105\277
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\037\060\035\006\003\125\004\003\014
\026\104\055\124\122\125\123\124\040\122\157\157\164\040\103\101
\040\063\040\062\060\061\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\017\335\254
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1"
#

Issuer: CN=TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1,OU=Kamu Sertifikasyon Merkezi - Kamu SM,O=Turkiye Bilimsel ve Teknolojik Arastirma Kurumu - TUBITAK,L=Gebze - Kocaeli,C=TR
Serial Number: 1 (0x1)
Subject: CN=TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1,OU=Kamu Sertifikasyon Merkezi - Kamu SM,O=Turkiye Bilimsel ve Teknolojik Arastirma Kurumu - TUBITAK,L=Gebze - Kocaeli,C=TR
Not Valid Before: Mon Nov 25 08:25:55 2013
Not Valid After : Sun Oct 25 08:25:55 2043
Fingerprint (SHA-256):
46:ED:C3:68:90:46:D5:3A:45:3F:B3:10:4A:B8:0D:CA:EC:65:8B:26:60:EA:16:29:DD:7E:86:79:90:64:87:16
Fingerprint (SHA1): 31:43:64:9B:EC:CE:27:EC:ED:3A:3F:0B:8F:0D:E4:E8:91:DD:EE:CA
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\322\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\030\060\026\006\003\125\004\007\023\017\107\145\142\172\145
\040\055\040\113\157\143\141\145\154\151\061\102\060\100\006\003
\125\004\012\023\071\124\165\162\153\151\171\145\040\102\151\154
\151\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157
\152\151\153\040\101\162\141\163\164\151\162\155\141\040\113\165
\162\165\155\165\040\055\040\124\125\102\111\124\101\113\061\055
\060\053\006\003\125\004\013\023\044\113\141\155\165\040\123\145
\162\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153
\145\172\151\040\055\040\113\141\155\165\040\123\115\061\066\060
\064\006\003\125\004\003\023\055\124\125\102\111\124\101\113\040
\113\141\155\165\040\123\115\040\123\123\114\040\113\157\153\040
\123\145\162\164\151\146\151\153\141\163\151\040\055\040\123\165
\162\165\155\040\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\322\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\030\060\026\006\003\125\004\007\023\017\107\145\142\172\145
\040\055\040\113\157\143\141\145\154\151\061\102\060\100\006\003
\125\004\012\023\071\124\165\162\153\151\171\145\040\102\151\154
\151\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157
\152\151\153\040\101\162\141\163\164\151\162\155\141\040\113\165
\162\165\155\165\040\055\040\124\125\102\111\124\101\113\061\055
\060\053\006\003\125\004\013\023\044\113\141\155\165\040\123\145
\162\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153
\145\172\151\040\055\040\113\141\155\165\040\123\115\061\066\060
\064\006\003\125\004\003\023\055\124\125\102\111\124\101\113\040
\113\141\155\165\040\123\115\040\123\123\114\040\113\157\153\040
\123\145\162\164\151\146\151\153\141\163\151\040\055\040\123\165
\162\165\155\040\061

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\143\060\202\003\113\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\322\061\013\060\011\006\003\125\004\006\023\002\124\122\061
\030\060\026\006\003\125\004\007\023\017\107\145\142\172\145\040
\055\040\113\157\143\141\145\154\151\061\102\060\100\006\003\125
\004\012\023\071\124\165\162\153\151\171\145\040\102\151\154\151
\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157\152
\151\153\040\101\162\141\163\164\151\162\155\141\040\113\165\162
\165\155\165\040\055\040\124\125\102\111\124\101\113\061\055\060
\053\006\003\125\004\013\023\044\113\141\155\165\040\123\145\162
\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153\145
\172\151\040\055\040\113\141\155\165\040\123\115\061\066\060\064
\006\003\125\004\003\023\055\124\125\102\111\124\101\113\040\113
\141\155\165\040\123\115\040\123\123\114\040\113\157\153\040\123
\145\162\164\151\146\151\153\141\163\151\040\055\040\123\165\162
\165\155\040\061\060\036\027\015\061\063\061\061\062\065\060\070
\062\065\065\065\132\027\015\064\063\061\060\062\065\060\070\062
\065\065\065\132\060\201\322\061\013\060\011\006\003\125\004\006
\023\002\124\122\061\030\060\026\006\003\125\004\007\023\017\107
\145\142\172\145\040\055\040\113\157\143\141\145\154\151\061\102
\060\100\006\003\125\004\012\023\071\124\165\162\153\151\171\145
\040\102\151\154\151\155\163\145\154\040\166\145\040\124\145\153
\156\157\154\157\152\151\153\040\101\162\141\163\164\151\162\155
\141\040\113\165\162\165\155\165\040\055\040\124\125\102\111\124
\101\113\061\055\060\053\006\003\125\004\013\023\044\113\141\155
\165\040\123\145\162\164\151\146\151\153\141\163\171\157\156\040
\115\145\162\153\145\172\151\040\055\040\113\141\155\165\040\123
\115\061\066\060\064\006\003\125\004\003\023\055\124\125\102\111
\124\101\113\040\113\141\155\165\040\123\115\040\123\123\114\040
\113\157\153\040\123\145\162\164\151\146\151\153\141\163\151\040
\055\040\123\165\162\165\155\040\061\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\257\165\060\063\252\273
\153\323\231\054\022\067\204\331\215\173\227\200\323\156\347\377
\233\120\225\076\220\225\126\102\327\031\174\046\204\215\222\372
\001\035\072\017\342\144\070\267\214\274\350\210\371\213\044\253
\056\243\365\067\344\100\216\030\045\171\203\165\037\073\377\154
\250\305\306\126\370\264\355\212\104\243\253\154\114\374\035\320
\334\357\150\275\317\344\252\316\360\125\367\242\064\324\203\153
\067\174\034\302\376\265\003\354\127\316\274\264\265\305\355\000
\017\123\067\052\115\364\117\014\203\373\206\317\313\376\214\116
\275\207\371\247\213\041\127\234\172\337\003\147\211\054\235\227
\141\247\020\270\125\220\177\016\055\047\070\164\337\347\375\332

\116\022\343\115\025\042\002\310\340\340\374\017\255\212\327\311
\124\120\314\073\017\312\026\200\204\320\121\126\303\216\126\177
\211\042\063\057\346\205\012\275\245\250\033\066\336\323\334\054
\155\073\307\023\275\131\043\054\346\345\244\367\330\013\355\352
\220\100\104\250\225\273\223\325\320\200\064\266\106\170\016\037
\000\223\106\341\356\351\371\354\117\027\002\003\001\000\001\243
\102\060\100\060\035\006\003\125\035\016\004\026\004\024\145\077
\307\212\206\306\074\335\074\124\134\065\370\072\355\122\014\107
\127\310\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\052\077\341\361\062\216\256\341\230
\134\113\136\317\153\036\152\011\322\042\251\022\307\136\127\175
\163\126\144\200\204\172\223\344\011\271\020\315\237\052\047\341
\000\167\276\110\310\065\250\201\237\344\270\054\311\177\016\260
\322\113\067\135\352\271\325\013\136\064\275\364\163\051\303\355
\046\025\234\176\010\123\212\130\215\320\113\050\337\301\263\337
\040\363\371\343\343\072\337\314\234\224\330\116\117\303\153\027
\267\367\162\350\255\146\063\265\045\123\253\340\370\114\251\235
\375\362\015\272\256\271\331\252\306\153\371\223\273\256\253\270
\227\074\003\032\272\103\306\226\271\105\162\070\263\247\241\226
\075\221\173\176\300\041\123\114\207\355\362\013\124\225\121\223
\325\042\245\015\212\361\223\016\076\124\016\260\330\311\116\334
\362\061\062\126\352\144\371\352\265\235\026\146\102\162\363\177
\323\261\061\103\374\244\216\027\361\155\043\253\224\146\370\255
\373\017\010\156\046\055\177\027\007\011\262\214\373\120\300\237
\226\215\317\266\375\000\235\132\024\232\277\002\104\365\301\302
\237\042\136\242\017\241\343
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1"
Issuer: CN=TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1,OU=Kamu Sertifikasyon Merkezi - Kamu SM,O=Turkiye Bilimsel ve Teknolojik Arastirma Kurumu - TUBITAK,L=Gebze - Kocaeli,C=TR
Serial Number: 1 (0x1)
Subject: CN=TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1,OU=Kamu Sertifikasyon Merkezi - Kamu SM,O=Turkiye Bilimsel ve Teknolojik Arastirma Kurumu - TUBITAK,L=Gebze - Kocaeli,C=TR
Not Valid Before: Mon Nov 25 08:25:55 2013
Not Valid After : Sun Oct 25 08:25:55 2043
Fingerprint (SHA-256):
46:ED:C3:68:90:46:D5:3A:45:3F:B3:10:4A:B8:0D:CA:EC:65:8B:26:60:EA:16:29:DD:7E:86:79:90:64:87:16
Fingerprint (SHA1): 31:43:64:9B:EC:CE:27:EC:ED:3A:3F:0B:8F:0D:E4:E8:91:DD:EE:CA
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\061\103\144\233\354\316\047\354\355\072\077\013\217\015\344\350
\221\335\356\312
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\334\000\201\334\151\057\076\057\260\073\366\075\132\221\216\111
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\322\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\030\060\026\006\003\125\004\007\023\017\107\145\142\172\145
\040\055\040\113\157\143\141\145\154\151\061\102\060\100\006\003
\125\004\012\023\071\124\165\162\153\151\171\145\040\102\151\154
\151\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157
\152\151\153\040\101\162\141\163\164\151\162\155\141\040\113\165
\162\165\155\165\040\055\040\124\125\102\111\124\101\113\061\055
\060\053\006\003\125\004\013\023\044\113\141\155\165\040\123\145
\162\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153
\145\172\151\040\055\040\113\141\155\165\040\123\115\061\066\060
\064\006\003\125\004\003\023\055\124\125\102\111\124\101\113\040
\113\141\155\165\040\123\115\040\123\123\114\040\113\157\153\040
\123\145\162\164\151\146\151\153\141\163\151\040\055\040\123\165
\162\165\155\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GDCA TrustAUTH R5 ROOT"
#
Issuer: CN=GDCA TrustAUTH R5 ROOT,O="GUANG DONG CERTIFICATE AUTHORITY CO.,LTD.",C=CN
Serial Number:7d:09:97:fe:f0:47:ea:7a
Subject: CN=GDCA TrustAUTH R5 ROOT,O="GUANG DONG CERTIFICATE AUTHORITY CO.,LTD.",C=CN
Not Valid Before: Wed Nov 26 05:13:15 2014
Not Valid After : Mon Dec 31 15:59:59 2040
Fingerprint (SHA-256):
BF:FF:8F:D0:44:33:48:7D:6A:8A:A6:0C:1A:29:76:7A:9F:C2:BB:B0:5E:42:0F:71:3A:13:B9:92:89:1D:38:93
Fingerprint (SHA1): 0F:36:38:5B:81:1A:25:C3:9B:31:4E:83:CA:E9:34:66:70:CC:74:B4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GDCA TrustAUTH R5 ROOT"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\062\060\060\006\003\125\004\012\014\051\107\125\101\116\107\040
\104\117\116\107\040\103\105\122\124\111\106\111\103\101\124\105
\040\101\125\124\110\117\122\111\124\131\040\103\117\056\054\114
\124\104\056\061\037\060\035\006\003\125\004\003\014\026\107\104
\103\101\040\124\162\165\163\164\101\125\124\110\040\122\065\040
\122\117\117\124
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\062\060\060\006\003\125\004\012\014\051\107\125\101\116\107\040
\104\117\116\107\040\103\105\122\124\111\106\111\103\101\124\105
\040\101\125\124\110\117\122\111\124\131\040\103\117\056\054\114
\124\104\056\061\037\060\035\006\003\125\004\003\014\026\107\104
\103\101\040\124\162\165\163\164\101\125\124\110\040\122\065\040
\122\117\117\124
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\175\011\227\376\360\107\352\172
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\210\060\202\003\160\240\003\002\001\002\002\010\175
\011\227\376\360\107\352\172\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\142\061\013\060\011\006\003\125\004
\006\023\002\103\116\061\062\060\060\006\003\125\004\012\014\051
\107\125\101\116\107\040\104\117\116\107\040\103\105\122\124\111
\106\111\103\101\124\105\040\101\125\124\110\117\122\111\124\131
\040\103\117\056\054\114\124\104\056\061\037\060\035\006\003\125
\004\003\014\026\107\104\103\101\040\124\162\165\163\164\101\125
\124\110\040\122\065\040\122\117\117\124\060\036\027\015\061\064
\061\061\062\066\060\065\061\063\061\065\132\027\015\064\060\061
\062\063\061\061\065\065\071\065\071\132\060\142\061\013\060\011
\006\003\125\004\006\023\002\103\116\061\062\060\060\006\003\125
\004\012\014\051\107\125\101\116\107\040\104\117\116\107\040\103
\105\122\124\111\106\111\103\101\124\105\040\101\125\124\110\117
\122\111\124\131\040\103\117\056\054\114\124\104\056\061\037\060
\035\006\003\125\004\003\014\026\107\104\103\101\040\124\162\165
\163\164\101\125\124\110\040\122\065\040\122\117\117\124\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\331
\243\026\360\310\164\164\167\233\357\063\015\073\006\176\125\374
\265\140\217\166\206\022\102\175\126\146\076\210\202\355\162\143
\016\236\213\335\064\054\002\121\121\303\031\375\131\124\204\311

\361\153\263\114\260\351\350\106\135\070\306\242\247\056\021\127
\272\202\025\242\234\217\155\260\231\112\012\362\353\211\160\143
\116\171\304\267\133\275\242\135\261\362\101\002\053\255\251\072
\243\354\171\012\354\137\072\343\375\357\200\074\255\064\233\032
\253\210\046\173\126\242\202\206\037\353\065\211\203\177\137\256
\051\116\075\266\156\354\256\301\360\047\233\256\343\364\354\357
\256\177\367\206\075\162\172\353\245\373\131\116\247\353\225\214
\042\071\171\341\055\010\217\314\274\221\270\101\367\024\301\043
\251\303\255\232\105\104\263\262\327\054\315\306\051\342\120\020
\256\134\313\202\216\027\030\066\175\227\346\210\232\260\115\064
\011\364\054\271\132\146\052\260\027\233\236\036\166\235\112\146
\061\101\337\077\373\305\006\357\033\266\176\032\106\066\367\144
\143\073\343\071\030\043\347\147\165\024\325\165\127\222\067\275
\276\152\033\046\120\362\066\046\006\220\305\160\001\144\155\166
\146\341\221\333\156\007\300\141\200\056\262\056\057\214\160\247
\321\073\074\263\221\344\156\266\304\073\160\362\154\222\227\011
\315\107\175\030\300\363\273\236\017\326\213\256\007\266\132\017
\316\013\014\107\247\345\076\270\275\175\307\233\065\240\141\227
\072\101\165\027\314\053\226\167\052\222\041\036\331\225\166\040
\147\150\317\015\275\337\326\037\011\152\232\342\314\163\161\244
\057\175\022\200\267\123\060\106\136\113\124\231\017\147\311\245
\310\362\040\301\202\354\235\021\337\302\002\373\032\073\321\355
\040\232\357\145\144\222\020\015\052\342\336\160\361\030\147\202
\214\141\336\270\274\321\057\234\373\017\320\053\355\033\166\271
\344\071\125\370\370\241\035\270\252\200\000\114\202\347\262\177
\011\270\274\060\240\057\015\365\122\236\216\367\222\263\012\000
\035\000\124\227\006\340\261\007\331\307\017\134\145\175\074\155
\131\127\344\355\245\215\351\100\123\237\025\113\240\161\366\032
\041\343\332\160\006\041\130\024\207\205\167\171\252\202\171\002
\003\001\000\001\243\102\060\100\060\035\006\003\125\035\016\004
\026\004\024\342\311\100\237\115\316\350\232\241\174\317\016\077
\145\305\051\210\152\031\121\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\206\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\003\202\002\001\000\321\111\127\340
\247\314\150\130\272\001\017\053\031\315\215\260\141\105\254\021
\355\143\120\151\370\037\177\276\026\217\375\235\353\013\252\062
\107\166\322\147\044\355\275\174\063\062\227\052\307\005\206\146
\015\027\175\024\025\033\324\353\375\037\232\366\136\227\151\267
\032\045\244\012\263\221\077\137\066\254\213\354\127\250\076\347
\201\212\030\127\071\205\164\032\102\307\351\133\023\137\217\371
\010\351\222\164\215\365\107\322\253\073\326\373\170\146\116\066
\175\371\351\222\351\004\336\375\111\143\374\155\373\024\161\223
\147\057\107\112\267\271\377\036\052\163\160\106\060\277\132\362
\057\171\245\341\215\014\331\371\262\143\067\214\067\145\205\160
\152\134\133\011\162\271\255\143\074\261\335\370\374\062\277\067
\206\344\273\216\230\047\176\272\037\026\341\160\021\362\003\337
\045\142\062\047\046\030\062\204\237\377\000\072\023\272\232\115

\364\117\270\024\160\042\261\312\053\220\316\051\301\160\364\057
\235\177\362\220\036\326\132\337\267\106\374\346\206\372\313\340
\040\166\172\272\246\313\365\174\336\142\245\261\213\356\336\202
\146\212\116\072\060\037\077\200\313\255\047\272\014\136\327\320
\261\126\312\167\161\262\265\165\241\120\251\100\103\027\302\050
\331\317\122\213\133\310\143\324\102\076\240\063\172\106\056\367
\012\040\106\124\176\152\117\061\361\201\176\102\164\070\145\163
\047\356\306\174\270\216\327\245\072\327\230\241\234\214\020\125
\323\333\113\354\100\220\362\315\156\127\322\142\016\174\127\223
\261\247\155\315\235\203\273\052\347\345\266\073\161\130\255\375
\321\105\274\132\221\356\123\025\157\323\105\011\165\156\272\220
\135\036\004\317\067\337\036\250\146\261\214\346\040\152\357\374
\110\116\164\230\102\257\051\157\056\152\307\373\175\321\146\061
\042\314\206\000\176\146\203\014\102\364\275\064\222\303\032\352
\117\312\176\162\115\013\160\214\246\110\273\246\241\024\366\373
\130\104\231\024\256\252\013\223\151\240\051\045\112\245\313\053
\335\212\146\007\026\170\025\127\161\033\354\365\107\204\363\236
\061\067\172\325\177\044\255\344\274\375\375\314\156\203\350\014
\250\267\101\154\007\335\275\074\206\227\057\322
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GDCA TrustAUTH R5 ROOT"
Issuer: CN=GDCA TrustAUTH R5 ROOT,O="GUANG DONG CERTIFICATE AUTHORITY CO.,LTD.",C=CN
Serial Number:7d:09:97:fe:f0:47:ea:7a
Subject: CN=GDCA TrustAUTH R5 ROOT,O="GUANG DONG CERTIFICATE AUTHORITY CO.,LTD.",C=CN
Not Valid Before: Wed Nov 26 05:13:15 2014
Not Valid After : Mon Dec 31 15:59:59 2040
Fingerprint (SHA-256):
BF:FF:8F:D0:44:33:48:7D:6A:8A:A6:0C:1A:29:76:7A:9F:C2:BB:B0:5E:42:0F:71:3A:13:B9:92:89:1D:38:93
Fingerprint (SHA1): 0F:36:38:5B:81:1A:25:C3:9B:31:4E:83:CA:E9:34:66:70:CC:74:B4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GDCA TrustAUTH R5 ROOT"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\017\066\070\133\201\032\045\303\233\061\116\203\312\351\064\146
\160\314\164\264
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\143\314\331\075\064\065\134\157\123\243\342\010\160\110\037\264
END
CKA_ISSUER MULTILINE_OCTAL

\060\142\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\062\060\060\006\003\125\004\012\014\051\107\125\101\116\107\040
\104\117\116\107\040\103\105\122\124\111\106\111\103\101\124\105
\040\101\125\124\110\117\122\111\124\131\040\103\117\056\054\114
\124\104\056\061\037\060\035\006\003\125\004\003\014\026\107\104
\103\101\040\124\162\165\163\164\101\125\124\110\040\122\065\040
\122\117\117\124
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\175\011\227\376\360\107\352\172
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TrustCor RootCert CA-1"
#
Issuer: CN=TrustCor RootCert CA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Serial Number:00:da:9b:ec:71:f3:03:b0:19
Subject: CN=TrustCor RootCert CA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Not Valid Before: Thu Feb 04 12:32:16 2016
Not Valid After : Mon Dec 31 17:23:16 2029
Fingerprint (SHA-256):
D4:0E:9C:86:CD:8F:E4:68:C1:77:69:59:F4:9E:A7:74:FA:54:86:84:B6:C4:06:F3:90:92:61:F4:DC:E2:57:5C
Fingerprint (SHA1): FF:BD:CD:E7:82:C8:43:5E:3C:6F:26:86:5C:CA:A8:3A:45:5B:C3:0A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustCor RootCert CA-1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\244\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\037\060\035\006\003\125\004\003\014
\026\124\162\165\163\164\103\157\162\040\122\157\157\164\103\145
\162\164\040\103\101\055\061
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\244\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\037\060\035\006\003\125\004\003\014
\026\124\162\165\163\164\103\157\162\040\122\157\157\164\103\145
\162\164\040\103\101\055\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\332\233\354\161\363\003\260\031
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\060\060\202\003\030\240\003\002\001\002\002\011\000
\332\233\354\161\363\003\260\031\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\201\244\061\013\060\011\006\003
\125\004\006\023\002\120\101\061\017\060\015\006\003\125\004\010
\014\006\120\141\156\141\155\141\061\024\060\022\006\003\125\004
\007\014\013\120\141\156\141\155\141\040\103\151\164\171\061\044
\060\042\006\003\125\004\012\014\033\124\162\165\163\164\103\157
\162\040\123\171\163\164\145\155\163\040\123\056\040\144\145\040
\122\056\114\056\061\047\060\045\006\003\125\004\013\014\036\124
\162\165\163\164\103\157\162\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\061\037\060
\035\006\003\125\004\003\014\026\124\162\165\163\164\103\157\162
\040\122\157\157\164\103\145\162\164\040\103\101\055\061\060\036
\027\015\061\066\060\062\060\064\061\062\063\062\061\066\132\027
\015\062\071\061\062\063\061\061\067\062\063\061\066\132\060\201
\244\061\013\060\011\006\003\125\004\006\023\002\120\101\061\017
\060\015\006\003\125\004\010\014\006\120\141\156\141\155\141\061
\024\060\022\006\003\125\004\007\014\013\120\141\156\141\155\141
\040\103\151\164\171\061\044\060\042\006\003\125\004\012\014\033
\124\162\165\163\164\103\157\162\040\123\171\163\164\145\155\163
\040\123\056\040\144\145\040\122\056\114\056\061\047\060\045\006
\003\125\004\013\014\036\124\162\165\163\164\103\157\162\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171\061\037\060\035\006\003\125\004\003\014\026\124
\162\165\163\164\103\157\162\040\122\157\157\164\103\145\162\164
\040\103\101\055\061\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\277\216\267\225\342\302\046\022\153\063
\031\307\100\130\012\253\131\252\215\000\243\374\200\307\120\173
\216\324\040\046\272\062\022\330\043\124\111\045\020\042\230\235

\106\322\301\311\236\116\033\056\054\016\070\363\032\045\150\034
\246\132\005\346\036\213\110\277\230\226\164\076\151\312\351\265
\170\245\006\274\325\000\136\011\012\362\047\172\122\374\055\325
\261\352\264\211\141\044\363\032\023\333\251\317\122\355\014\044
\272\271\236\354\176\000\164\372\223\255\154\051\222\256\121\264
\273\323\127\277\263\363\250\215\234\364\044\113\052\326\231\236
\364\236\376\300\176\102\072\347\013\225\123\332\267\150\016\220
\114\373\160\077\217\112\054\224\363\046\335\143\151\251\224\330
\020\116\305\107\010\220\231\033\027\115\271\154\156\357\140\225
\021\216\041\200\265\275\240\163\330\320\262\167\304\105\352\132
\046\373\146\166\166\370\006\037\141\155\017\125\305\203\267\020
\126\162\006\007\245\363\261\032\003\005\144\016\235\132\212\326
\206\160\033\044\336\376\050\212\053\320\152\260\374\172\242\334
\262\171\016\213\145\017\002\003\001\000\001\243\143\060\141\060
\035\006\003\125\035\016\004\026\004\024\356\153\111\074\172\077
\015\343\261\011\267\212\310\253\031\237\163\063\120\347\060\037
\006\003\125\035\043\004\030\060\026\200\024\356\153\111\074\172
\077\015\343\261\011\267\212\310\253\031\237\163\063\120\347\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\001\001\000\045\030\324\221\217\023\356\217\036\035\021\123
\332\055\104\051\031\240\036\153\061\236\115\016\236\255\075\134
\101\157\225\053\044\241\171\230\072\070\066\373\273\146\236\110
\377\220\220\357\075\324\270\233\264\207\165\077\040\233\316\162
\317\241\125\301\115\144\242\031\006\241\007\063\014\013\051\345
\361\352\253\243\354\265\012\164\220\307\175\162\362\327\134\237
\221\357\221\213\267\334\355\146\242\317\216\146\073\274\237\072
\002\340\047\335\026\230\300\225\324\012\244\344\201\232\165\224
\065\234\220\137\210\067\006\255\131\225\012\260\321\147\323\031
\312\211\347\062\132\066\034\076\202\250\132\223\276\306\320\144
\221\266\317\331\266\030\317\333\176\322\145\243\246\304\216\027
\061\301\373\176\166\333\323\205\343\130\262\167\172\166\073\154
\057\120\034\347\333\366\147\171\037\365\202\225\232\007\247\024
\257\217\334\050\041\147\011\322\326\115\132\034\031\034\216\167
\134\303\224\044\075\062\153\113\176\324\170\224\203\276\067\115
\316\137\307\036\116\074\340\211\063\225\013\017\245\062\326\074
\132\171\054\031
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TrustCor RootCert CA-1"
Issuer: CN=TrustCor RootCert CA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Serial Number:00:da:9b:ec:71:f3:03:b0:19
Subject: CN=TrustCor RootCert CA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de

R.L.,L=Panama City,ST=Panama,C=PA
Not Valid Before: Thu Feb 04 12:32:16 2016
Not Valid After : Mon Dec 31 17:23:16 2029
Fingerprint (SHA-256):
D4:0E:9C:86:CD:8F:E4:68:C1:77:69:59:F4:9E:A7:74:FA:54:86:84:B6:C4:06:F3:90:92:61:F4:DC:E2:57:5C
Fingerprint (SHA1): FF:BD:CD:E7:82:C8:43:5E:3C:6F:26:86:5C:CA:A8:3A:45:5B:C3:0A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustCor RootCert CA-1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\377\275\315\347\202\310\103\136\074\157\046\206\134\312\250\072
\105\133\303\012
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\156\205\361\334\032\000\323\042\325\262\262\254\153\067\005\105
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\244\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\037\060\035\006\003\125\004\003\014
\026\124\162\165\163\164\103\157\162\040\122\157\157\164\103\145
\162\164\040\103\101\055\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\332\233\354\161\363\003\260\031
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TrustCor RootCert CA-2"
#
Issuer: CN=TrustCor RootCert CA-2,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Serial Number:25:a1:df:ca:33:cb:59:02
Subject: CN=TrustCor RootCert CA-2,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Not Valid Before: Thu Feb 04 12:32:23 2016

Not Valid After : Sun Dec 31 17:26:39 2034
Fingerprint (SHA-256):
07:53:E9:40:37:8C:1B:D5:E3:83:6E:39:5D:AE:A5:CB:83:9E:50:46:F1:BD:0E:AE:19:51:CF:10:FE:C7:C9:65
Fingerprint (SHA1): B8:BE:6D:CB:56:F1:55:B9:63:D4:12:CA:4E:06:34:C7:94:B2:1C:C0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustCor RootCert CA-2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\244\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\037\060\035\006\003\125\004\003\014
\026\124\162\165\163\164\103\157\162\040\122\157\157\164\103\145
\162\164\040\103\101\055\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\244\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\037\060\035\006\003\125\004\003\014
\026\124\162\165\163\164\103\157\162\040\122\157\157\164\103\145
\162\164\040\103\101\055\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\045\241\337\312\063\313\131\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\057\060\202\004\027\240\003\002\001\002\002\010\045
\241\337\312\063\313\131\002\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\201\244\061\013\060\011\006\003\125
\004\006\023\002\120\101\061\017\060\015\006\003\125\004\010\014
\006\120\141\156\141\155\141\061\024\060\022\006\003\125\004\007
\014\013\120\141\156\141\155\141\040\103\151\164\171\061\044\060
\042\006\003\125\004\012\014\033\124\162\165\163\164\103\157\162

\040\123\171\163\164\145\155\163\040\123\056\040\144\145\040\122
\056\114\056\061\047\060\045\006\003\125\004\013\014\036\124\162
\165\163\164\103\157\162\040\103\145\162\164\151\146\151\143\141
\164\145\040\101\165\164\150\157\162\151\164\171\061\037\060\035
\006\003\125\004\003\014\026\124\162\165\163\164\103\157\162\040
\122\157\157\164\103\145\162\164\040\103\101\055\062\060\036\027
\015\061\066\060\062\060\064\061\062\063\062\062\063\132\027\015
\063\064\061\062\063\061\061\067\062\066\063\071\132\060\201\244
\061\013\060\011\006\003\125\004\006\023\002\120\101\061\017\060
\015\006\003\125\004\010\014\006\120\141\156\141\155\141\061\024
\060\022\006\003\125\004\007\014\013\120\141\156\141\155\141\040
\103\151\164\171\061\044\060\042\006\003\125\004\012\014\033\124
\162\165\163\164\103\157\162\040\123\171\163\164\145\155\163\040
\123\056\040\144\145\040\122\056\114\056\061\047\060\045\006\003
\125\004\013\014\036\124\162\165\163\164\103\157\162\040\103\145
\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162
\151\164\171\061\037\060\035\006\003\125\004\003\014\026\124\162
\165\163\164\103\157\162\040\122\157\157\164\103\145\162\164\040
\103\101\055\062\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\247\040\156\302\052\242\142\044\225\220\166
\310\070\176\200\322\253\301\233\145\005\224\364\301\012\020\325
\002\254\355\237\223\307\207\310\260\047\053\102\014\075\012\076
\101\132\236\165\335\215\312\340\233\354\150\062\244\151\222\150
\214\013\201\016\126\240\076\032\335\054\045\024\202\057\227\323
\144\106\364\124\251\334\072\124\055\061\053\231\202\362\331\052
\327\357\161\000\270\061\244\276\172\044\007\303\102\040\362\212
\324\222\004\033\145\126\114\154\324\373\266\141\132\107\043\264
\330\151\264\267\072\320\164\074\014\165\241\214\116\166\241\351
\333\052\245\073\372\316\260\377\176\152\050\375\047\034\310\261
\351\051\361\127\156\144\264\320\301\025\155\016\276\056\016\106
\310\136\364\121\376\357\016\143\072\073\161\272\317\157\131\312
\014\343\233\135\111\270\114\342\127\261\230\212\102\127\234\166
\357\357\275\321\150\250\322\364\011\273\167\065\276\045\202\010
\304\026\054\104\040\126\251\104\021\167\357\135\264\035\252\136
\153\076\213\062\366\007\057\127\004\222\312\365\376\235\302\351
\350\263\216\114\113\002\061\331\344\074\110\202\047\367\030\202
\166\110\072\161\261\023\241\071\325\056\305\064\302\035\142\205
\337\003\376\115\364\257\075\337\134\133\215\372\160\341\245\176
\047\307\206\056\152\217\022\306\204\136\103\121\120\234\031\233
\170\346\374\366\355\107\176\173\075\146\357\023\023\210\137\074
\241\143\373\371\254\207\065\237\363\202\236\244\077\012\234\061
\151\213\231\244\210\112\216\156\146\115\357\026\304\017\171\050
\041\140\015\205\026\175\327\124\070\361\222\126\375\265\063\114
\203\334\327\020\237\113\375\306\370\102\275\272\174\163\002\340
\377\175\315\133\341\324\254\141\173\127\325\112\173\133\324\205
\130\047\135\277\370\053\140\254\240\046\256\024\041\047\306\167
\232\063\200\074\136\106\077\367\303\261\243\206\063\306\350\136

\015\271\065\054\252\106\301\205\002\165\200\240\353\044\373\025
\252\344\147\177\156\167\077\364\004\212\057\174\173\343\027\141
\360\335\011\251\040\310\276\011\244\320\176\104\303\262\060\112
\070\252\251\354\030\232\007\202\053\333\270\234\030\255\332\340
\106\027\254\317\135\002\003\001\000\001\243\143\060\141\060\035
\006\003\125\035\016\004\026\004\024\331\376\041\100\156\224\236
\274\233\075\234\175\230\040\031\345\214\060\142\262\060\037\006
\003\125\035\043\004\030\060\026\200\024\331\376\041\100\156\224
\236\274\233\075\234\175\230\040\031\345\214\060\142\262\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\002\001\000\236\105\236\014\073\266\357\341\072\310\174\321\000
\075\317\342\352\006\265\262\072\273\006\113\150\172\320\043\227
\164\247\054\360\010\330\171\132\327\132\204\212\330\022\232\033
\331\175\134\115\160\305\245\371\253\345\243\211\211\335\001\372
\354\335\371\351\222\227\333\260\106\102\363\323\142\252\225\376
\061\147\024\151\130\220\012\252\013\356\067\043\307\120\121\264
\365\176\236\343\173\367\344\314\102\062\055\111\014\313\377\111
\014\233\036\064\375\156\156\226\212\171\003\266\157\333\011\313
\375\137\145\024\067\341\070\365\363\141\026\130\344\265\155\015
\013\004\033\077\120\055\177\263\307\172\032\026\200\140\370\212
\037\351\033\052\306\371\272\001\032\151\277\322\130\307\124\127
\010\217\341\071\140\167\113\254\131\204\032\210\361\335\313\117
\170\327\347\341\063\055\374\356\101\372\040\260\276\313\367\070
\224\300\341\320\205\017\273\355\054\163\253\355\376\222\166\032
\144\177\133\015\063\011\007\063\173\006\077\021\244\134\160\074
\205\300\317\343\220\250\203\167\372\333\346\305\214\150\147\020
\147\245\122\055\360\304\231\217\177\277\321\153\342\265\107\326
\331\320\205\231\115\224\233\017\113\215\356\000\132\107\035\021
\003\254\101\030\257\207\267\157\014\072\217\312\317\334\003\301
\242\011\310\345\375\200\136\310\140\102\001\033\032\123\132\273
\067\246\267\274\272\204\351\036\154\032\324\144\332\324\103\376
\223\213\113\362\054\171\026\020\324\223\013\210\217\241\330\206
\024\106\221\107\233\050\044\357\127\122\116\134\102\234\252\367
\111\354\047\350\100\036\263\246\211\042\162\234\365\015\063\264
\130\243\060\073\335\324\152\124\223\276\032\115\363\223\224\367
\374\204\013\077\204\040\134\064\003\104\305\332\255\274\012\301
\002\317\036\345\224\331\363\216\133\330\114\360\235\354\141\027
\273\024\062\124\014\002\051\223\036\222\206\366\177\357\347\222
\005\016\131\335\231\010\056\056\372\234\000\122\323\305\146\051
\344\247\227\104\244\016\050\201\023\065\305\366\157\144\346\101
\304\325\057\314\064\105\045\317\101\000\226\075\112\056\302\226
\230\117\116\112\234\227\267\333\037\222\062\310\377\017\121\156
\326\354\011
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE

CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TrustCor RootCert CA-2"
Issuer: CN=TrustCor RootCert CA-2,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Serial Number:25:a1:df:ca:33:cb:59:02
Subject: CN=TrustCor RootCert CA-2,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Not Valid Before: Thu Feb 04 12:32:23 2016
Not Valid After : Sun Dec 31 17:26:39 2034
Fingerprint (SHA-256):
07:53:E9:40:37:8C:1B:D5:E3:83:6E:39:5D:AE:A5:CB:83:9E:50:46:F1:BD:0E:AE:19:51:CF:10:FE:C7:C9:65
Fingerprint (SHA1): B8:BE:6D:CB:56:F1:55:B9:63:D4:12:CA:4E:06:34:C7:94:B2:1C:C0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustCor RootCert CA-2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\270\276\155\313\126\361\125\271\143\324\022\312\116\006\064\307
\224\262\034\300
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\242\341\370\030\013\272\105\325\307\101\052\273\067\122\105\144
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\244\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\037\060\035\006\003\125\004\003\014
\026\124\162\165\163\164\103\157\162\040\122\157\157\164\103\145
\162\164\040\103\101\055\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\045\241\337\312\063\313\131\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TrustCor ECA-1"

#
Issuer: CN=TrustCor ECA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Serial Number:00:84:82:2c:5f:1c:62:d0:40
Subject: CN=TrustCor ECA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Not Valid Before: Thu Feb 04 12:32:33 2016
Not Valid After : Mon Dec 31 17:28:07 2029
Fingerprint (SHA-256):
5A:88:5D:B1:9C:01:D9:12:C5:75:93:88:93:8C:AF:BB:DF:03:1A:B2:D4:8E:91:EE:15:58:9B:42:97:1D:03:9C
Fingerprint (SHA1): 58:D1:DF:95:95:67:6B:63:C0:F0:5B:1C:17:4D:8B:84:0B:C8:78:BD
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustCor ECA-1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\234\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\027\060\025\006\003\125\004\003\014
\016\124\162\165\163\164\103\157\162\040\105\103\101\055\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\234\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\027\060\025\006\003\125\004\003\014
\016\124\162\165\163\164\103\157\162\040\105\103\101\055\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\204\202\054\137\034\142\320\100
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\040\060\202\003\010\240\003\002\001\002\002\011\000
\204\202\054\137\034\142\320\100\060\015\006\011\052\206\110\206

\367\015\001\001\013\005\000\060\201\234\061\013\060\011\006\003
\125\004\006\023\002\120\101\061\017\060\015\006\003\125\004\010
\014\006\120\141\156\141\155\141\061\024\060\022\006\003\125\004
\007\014\013\120\141\156\141\155\141\040\103\151\164\171\061\044
\060\042\006\003\125\004\012\014\033\124\162\165\163\164\103\157
\162\040\123\171\163\164\145\155\163\040\123\056\040\144\145\040
\122\056\114\056\061\047\060\045\006\003\125\004\013\014\036\124
\162\165\163\164\103\157\162\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\061\027\060
\025\006\003\125\004\003\014\016\124\162\165\163\164\103\157\162
\040\105\103\101\055\061\060\036\027\015\061\066\060\062\060\064
\061\062\063\062\063\063\132\027\015\062\071\061\062\063\061\061
\067\062\070\060\067\132\060\201\234\061\013\060\011\006\003\125
\004\006\023\002\120\101\061\017\060\015\006\003\125\004\010\014
\006\120\141\156\141\155\141\061\024\060\022\006\003\125\004\007
\014\013\120\141\156\141\155\141\040\103\151\164\171\061\044\060
\042\006\003\125\004\012\014\033\124\162\165\163\164\103\157\162
\040\123\171\163\164\145\155\163\040\123\056\040\144\145\040\122
\056\114\056\061\047\060\045\006\003\125\004\013\014\036\124\162
\165\163\164\103\157\162\040\103\145\162\164\151\146\151\143\141
\164\145\040\101\165\164\150\157\162\151\164\171\061\027\060\025
\006\003\125\004\003\014\016\124\162\165\163\164\103\157\162\040
\105\103\101\055\061\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\317\217\340\021\265\237\250\166\166\333
\337\017\124\357\163\143\051\202\255\107\306\243\153\355\376\137
\063\370\103\121\351\032\063\221\061\027\240\164\304\324\247\001
\346\262\222\076\152\235\355\016\371\164\230\100\323\077\003\200
\006\202\100\350\261\342\247\121\247\035\203\046\153\253\336\372
\027\221\053\330\306\254\036\261\236\031\001\325\227\246\352\015
\267\304\125\037\047\174\322\010\325\166\037\051\025\207\100\071
\335\070\105\021\165\320\232\247\064\340\277\315\310\122\035\271
\107\176\015\270\273\306\014\366\163\127\026\132\176\103\221\037
\125\072\306\155\104\004\252\234\251\234\247\114\211\027\203\256
\243\004\136\122\200\213\036\022\045\021\031\327\014\175\175\061
\104\101\352\333\257\260\034\357\201\320\054\305\232\041\233\075
\355\102\073\120\046\362\354\316\161\141\006\142\041\124\116\177
\301\235\076\177\040\214\200\313\052\330\227\142\310\203\063\221
\175\260\242\132\017\127\350\073\314\362\045\262\324\174\057\354
\115\306\241\072\025\172\347\266\135\065\365\366\110\112\066\105
\146\324\272\230\130\301\002\003\001\000\001\243\143\060\141\060
\035\006\003\125\035\016\004\026\004\024\104\236\110\365\314\155
\110\324\240\113\177\376\131\044\057\203\227\231\232\206\060\037
\006\003\125\035\043\004\030\060\026\200\024\104\236\110\365\314
\155\110\324\240\113\177\376\131\044\057\203\227\231\232\206\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003

\202\001\001\000\005\076\065\134\025\160\233\311\307\163\141\157
\162\053\324\302\217\362\103\135\002\316\304\224\271\224\021\203
\147\135\342\147\154\165\166\277\273\014\252\066\306\255\107\223
\143\334\036\176\326\336\056\376\351\031\062\070\003\177\024\366
\000\163\054\131\261\041\006\341\373\254\030\225\014\243\377\231
\226\367\053\047\233\325\044\314\035\335\301\072\340\230\104\260
\304\344\076\167\261\163\251\144\054\366\034\001\174\077\135\105
\205\300\205\347\045\217\225\334\027\363\074\237\032\156\260\312
\343\035\052\351\114\143\372\044\141\142\326\332\176\266\034\154
\365\002\035\324\052\335\125\220\353\052\021\107\074\056\136\164
\262\202\042\245\175\123\037\105\354\047\221\175\347\042\026\350
\300\150\066\330\306\361\117\200\104\062\371\341\321\321\035\252
\336\250\253\234\004\257\255\040\016\144\230\115\245\153\300\110
\130\226\151\115\334\007\214\121\223\242\337\237\017\075\213\140
\264\202\215\252\010\116\142\105\340\371\013\322\340\340\074\133
\336\134\161\047\045\302\346\003\201\213\020\123\343\307\125\242
\264\237\327\346
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TrustCor ECA-1"
Issuer: CN=TrustCor ECA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Serial Number:00:84:82:2c:5f:1c:62:d0:40
Subject: CN=TrustCor ECA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Not Valid Before: Thu Feb 04 12:32:33 2016
Not Valid After : Mon Dec 31 17:28:07 2029
Fingerprint (SHA-256):
5A:88:5D:B1:9C:01:D9:12:C5:75:93:88:93:8C:AF:BB:DF:03:1A:B2:D4:8E:91:EE:15:58:9B:42:97:1D:03:9C
Fingerprint (SHA1): 58:D1:DF:95:95:67:6B:63:C0:F0:5B:1C:17:4D:8B:84:0B:C8:78:BD
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustCor ECA-1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\130\321\337\225\225\147\153\143\300\360\133\034\027\115\213\204
\013\310\170\275
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\047\222\043\035\012\365\100\174\351\346\153\235\330\365\347\154
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\234\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155

\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\027\060\025\006\003\125\004\003\014
\016\124\162\165\163\164\103\157\162\040\105\103\101\055\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\204\202\054\137\034\142\320\100
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com Root Certification Authority RSA"
#
Issuer: CN=SSL.com Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:7b:2c:9b:d3:16:80:32:99
Subject: CN=SSL.com Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 17:39:39 2016
Not Valid After : Tue Feb 12 17:39:39 2041
Fingerprint (SHA-256):
85:66:6A:56:2E:E0:BE:5C:E9:25:C1:D8:89:0A:6F:76:A8:7E:C1:6D:4D:7D:5F:29:EA:74:19:CF:20:12:3B:69
Fingerprint (SHA1): B7:AB:33:08:D1:EA:44:77:BA:14:80:12:5A:6F:BD:A9:36:49:0C:BB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Root Certification Authority RSA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\122\123\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061

\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\122\123\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\173\054\233\323\026\200\062\231
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\335\060\202\003\305\240\003\002\001\002\002\010\173
\054\233\323\026\200\062\231\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\174\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\016\060\014\006\003\125\004\010\014\005
\124\145\170\141\163\061\020\060\016\006\003\125\004\007\014\007
\110\157\165\163\164\157\156\061\030\060\026\006\003\125\004\012
\014\017\123\123\114\040\103\157\162\160\157\162\141\164\151\157
\156\061\061\060\057\006\003\125\004\003\014\050\123\123\114\056
\143\157\155\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\122\123\101\060\036\027\015\061\066\060\062\061\062\061\067
\063\071\063\071\132\027\015\064\061\060\062\061\062\061\067\063
\071\063\071\132\060\174\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\016\060\014\006\003\125\004\010\014\005\124\145
\170\141\163\061\020\060\016\006\003\125\004\007\014\007\110\157
\165\163\164\157\156\061\030\060\026\006\003\125\004\012\014\017
\123\123\114\040\103\157\162\160\157\162\141\164\151\157\156\061
\061\060\057\006\003\125\004\003\014\050\123\123\114\056\143\157
\155\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122
\123\101\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\371\017\335\243\053\175\313\320\052\376\354\147\205
\246\347\056\033\272\167\341\343\365\257\244\354\372\112\135\221
\304\127\107\153\030\167\153\166\362\375\223\344\075\017\302\026
\236\013\146\303\126\224\236\027\203\205\316\126\357\362\026\375
\000\142\365\042\011\124\350\145\027\116\101\271\340\117\106\227
\252\033\310\270\156\142\136\151\261\137\333\052\002\176\374\154
\312\363\101\330\355\320\350\374\077\141\110\355\260\003\024\035
\020\016\113\031\340\273\116\354\206\145\377\066\363\136\147\002
\013\235\206\125\141\375\172\070\355\376\342\031\000\267\157\241
\120\142\165\164\074\240\372\310\045\222\264\156\172\042\307\370
\036\241\343\262\335\221\061\253\053\035\004\377\245\112\004\067
\351\205\244\063\053\375\342\326\125\064\174\031\244\112\150\307
\262\250\323\267\312\241\223\210\353\301\227\274\214\371\035\331
\042\204\044\164\307\004\075\152\251\051\223\314\353\270\133\341
\376\137\045\252\064\130\310\301\043\124\235\033\230\021\303\070

\234\176\075\206\154\245\017\100\206\174\002\364\134\002\117\050
\313\256\161\237\017\072\310\063\376\021\045\065\352\374\272\305
\140\075\331\174\030\325\262\251\323\165\170\003\162\042\312\072
\303\037\357\054\345\056\251\372\236\054\266\121\106\375\257\003
\326\352\140\150\352\205\026\066\153\205\351\036\300\263\335\304
\044\334\200\052\201\101\155\224\076\310\340\311\201\101\000\236
\136\277\177\305\010\230\242\030\054\102\100\263\371\157\070\047
\113\116\200\364\075\201\107\340\210\174\352\034\316\265\165\134
\121\056\034\053\177\032\162\050\347\000\265\321\164\306\327\344
\237\255\007\223\266\123\065\065\374\067\344\303\366\135\026\276
\041\163\336\222\012\370\240\143\152\274\226\222\152\076\370\274
\145\125\233\336\365\015\211\046\004\374\045\032\246\045\151\313
\302\155\312\174\342\131\137\227\254\353\357\056\310\274\327\033
\131\074\053\314\362\031\310\223\153\047\143\031\317\374\351\046
\370\312\161\233\177\223\376\064\147\204\116\231\353\374\263\170
\011\063\160\272\146\246\166\355\033\163\353\032\245\015\304\042
\023\040\224\126\012\116\054\154\116\261\375\317\234\011\272\242
\063\355\207\002\003\001\000\001\243\143\060\141\060\035\006\003
\125\035\016\004\026\004\024\335\004\011\007\242\365\172\175\122
\123\022\222\225\356\070\200\045\015\246\131\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003
\125\035\043\004\030\060\026\200\024\335\004\011\007\242\365\172
\175\122\123\022\222\225\356\070\200\045\015\246\131\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\206\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001
\000\040\030\021\224\051\373\046\235\034\036\036\160\141\361\225
\162\223\161\044\255\150\223\130\216\062\257\033\263\160\003\374
\045\053\164\205\220\075\170\152\364\271\213\245\227\073\265\030
\221\273\036\247\371\100\133\221\371\125\231\257\036\021\320\134
\035\247\146\343\261\224\007\014\062\071\246\352\033\260\171\330
\035\234\160\104\343\212\335\304\371\225\037\212\070\103\077\001
\205\245\107\247\075\106\262\274\345\042\150\367\173\234\330\054
\076\012\041\310\055\063\254\277\305\201\231\061\164\301\165\161
\305\276\261\360\043\105\364\235\153\374\031\143\235\243\274\004
\306\030\013\045\273\123\211\017\263\200\120\336\105\356\104\177
\253\224\170\144\230\323\366\050\335\207\330\160\145\164\373\016
\271\023\353\247\017\141\251\062\226\314\336\273\355\143\114\030
\273\251\100\367\240\124\156\040\210\161\165\030\352\172\264\064
\162\340\043\047\167\134\266\220\352\206\045\100\253\357\063\017
\313\237\202\276\242\040\373\366\265\055\032\346\302\205\261\164
\017\373\310\145\002\244\122\001\107\335\111\042\301\277\330\353
\153\254\176\336\354\143\063\025\267\043\010\217\306\017\215\101
\132\335\216\305\271\217\345\105\077\170\333\272\322\033\100\261
\376\161\115\077\340\201\242\272\136\264\354\025\340\223\335\010
\037\176\341\125\231\013\041\336\223\236\012\373\346\243\111\275
\066\060\376\347\167\262\240\165\227\265\055\201\210\027\145\040
\367\332\220\000\237\311\122\314\062\312\065\174\365\075\017\330
\053\327\365\046\154\311\006\064\226\026\352\160\131\032\062\171

\171\013\266\210\177\017\122\110\075\277\154\330\242\104\056\321
\116\267\162\130\323\211\023\225\376\104\253\370\327\213\033\156
\234\274\054\240\133\325\152\000\257\137\067\341\325\372\020\013
\230\234\206\347\046\217\316\360\354\156\212\127\013\200\343\116
\262\300\240\143\141\220\272\125\150\067\164\152\266\222\333\237
\241\206\042\266\145\047\016\354\266\237\102\140\344\147\302\265
\332\101\013\304\323\213\141\033\274\372\037\221\053\327\104\007
\136\272\051\254\331\305\351\357\123\110\132\353\200\361\050\130
\041\315\260\006\125\373\047\077\123\220\160\251\004\036\127\047
\271
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com Root Certification Authority RSA"
Issuer: CN=SSL.com Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:7b:2c:9b:d3:16:80:32:99
Subject: CN=SSL.com Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 17:39:39 2016
Not Valid After : Tue Feb 12 17:39:39 2041
Fingerprint (SHA-256):
85:66:6A:56:2E:E0:BE:5C:E9:25:C1:D8:89:0A:6F:76:A8:7E:C1:6D:4D:7D:5F:29:EA:74:19:CF:20:12:3B:69
Fingerprint (SHA1): B7:AB:33:08:D1:EA:44:77:BA:14:80:12:5A:6F:BD:A9:36:49:0C:BB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Root Certification Authority RSA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\267\253\063\010\321\352\104\167\272\024\200\022\132\157\275\251
\066\111\014\273
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\206\151\022\300\160\361\354\254\254\302\325\274\245\133\241\051
END
CKA_ISSUER MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\122\123\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\173\054\233\323\026\200\062\231

END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com Root Certification Authority ECC"
#
Issuer: CN=SSL.com Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:75:e6:df:cb:c1:68:5b:a8
Subject: CN=SSL.com Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 18:14:03 2016
Not Valid After : Tue Feb 12 18:14:03 2041
Fingerprint (SHA-256):
34:17:BB:06:CC:60:07:DA:1B:96:1C:92:0B:8A:B4:CE:3F:AD:82:0E:4A:A3:0B:9A:CB:C4:A7:4E:BD:CE:BC:65
Fingerprint (SHA1): C3:19:7C:39:24:E6:54:AF:1B:C4:AB:20:95:7A:E2:C3:0E:13:02:6A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Root Certification Authority ECC"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\105\103\103
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\105\103\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\165\346\337\313\301\150\133\250
END
CKA_VALUE MULTILINE_OCTAL

\060\202\002\215\060\202\002\024\240\003\002\001\002\002\010\165
\346\337\313\301\150\133\250\060\012\006\010\052\206\110\316\075
\004\003\002\060\174\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\016\060\014\006\003\125\004\010\014\005\124\145\170
\141\163\061\020\060\016\006\003\125\004\007\014\007\110\157\165
\163\164\157\156\061\030\060\026\006\003\125\004\012\014\017\123
\123\114\040\103\157\162\160\157\162\141\164\151\157\156\061\061
\060\057\006\003\125\004\003\014\050\123\123\114\056\143\157\155
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\105\103
\103\060\036\027\015\061\066\060\062\061\062\061\070\061\064\060
\063\132\027\015\064\061\060\062\061\062\061\070\061\064\060\063
\132\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163
\061\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164
\157\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114
\040\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057
\006\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\040\105\103\103\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\105\156\251\120\304\246\043\066\236
\137\050\215\027\313\226\042\144\077\334\172\216\035\314\010\263
\242\161\044\272\216\111\271\004\033\107\226\130\253\055\225\310
\355\236\010\065\310\047\353\211\214\123\130\353\142\212\376\360
\133\017\153\061\122\143\101\073\211\315\354\354\266\215\031\323
\064\007\334\273\306\006\177\302\105\225\354\313\177\250\043\340
\011\351\201\372\363\107\323\243\143\060\141\060\035\006\003\125
\035\016\004\026\004\024\202\321\205\163\060\347\065\004\323\216
\002\222\373\345\244\321\304\041\350\315\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125
\035\043\004\030\060\026\200\024\202\321\205\163\060\347\065\004
\323\216\002\222\373\345\244\321\304\041\350\315\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\206\060\012\006\010
\052\206\110\316\075\004\003\002\003\147\000\060\144\002\060\157
\347\353\131\021\244\140\317\141\260\226\173\355\005\371\057\023
\221\334\355\345\374\120\153\021\106\106\263\034\041\000\142\273
\276\303\347\350\315\007\231\371\015\013\135\162\076\304\252\002
\060\037\274\272\013\342\060\044\373\174\155\200\125\012\231\076
\200\015\063\345\146\243\263\243\273\245\325\213\217\011\054\246
\135\176\342\360\007\010\150\155\322\174\151\156\137\337\345\152
\145
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com Root Certification Authority ECC"

Issuer: CN=SSL.com Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:75:e6:df:cb:c1:68:5b:a8
Subject: CN=SSL.com Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 18:14:03 2016
Not Valid After : Tue Feb 12 18:14:03 2041
Fingerprint (SHA-256):
34:17:BB:06:CC:60:07:DA:1B:96:1C:92:0B:8A:B4:CE:3F:AD:82:0E:4A:A3:0B:9A:CB:C4:A7:4E:BD:CE:BC:65
Fingerprint (SHA1): C3:19:7C:39:24:E6:54:AF:1B:C4:AB:20:95:7A:E2:C3:0E:13:02:6A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Root Certification Authority ECC"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\303\031\174\071\044\346\124\257\033\304\253\040\225\172\342\303
\016\023\002\152
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\056\332\344\071\177\234\217\067\321\160\237\046\027\121\072\216
END
CKA_ISSUER MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\105\103\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\165\346\337\313\301\150\133\250
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com EV Root Certification Authority RSA R2"
#
Issuer: CN=SSL.com EV Root Certification Authority RSA R2,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:56:b6:29:cd:34:bc:78:f6
Subject: CN=SSL.com EV Root Certification Authority RSA R2,O=SSL
Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Wed May 31 18:14:37 2017
Not Valid After : Fri May 30 18:14:37 2042
Fingerprint (SHA-256):

2E:7B:F1:6C:C2:24:85:A7:BB:E2:AA:86:96:75:07:61:B0:AE:39:BE:3B:2F:E9:D0:CC:6D:4E:F7:34:91:42:5C
Fingerprint (SHA1): 74:3A:F0:52:9B:D0:32:A0:F4:4A:83:CD:D4:BA:A9:7B:7C:2E:C4:9A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority RSA R2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163
\061\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164
\157\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114
\040\103\157\162\160\157\162\141\164\151\157\156\061\067\060\065
\006\003\125\004\003\014\056\123\123\114\056\143\157\155\040\105
\126\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122
\123\101\040\122\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163
\061\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164
\157\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114
\040\103\157\162\160\157\162\141\164\151\157\156\061\067\060\065
\006\003\125\004\003\014\056\123\123\114\056\143\157\155\040\105
\126\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122
\123\101\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\126\266\051\315\064\274\170\366
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\353\060\202\003\323\240\003\002\001\002\002\010\126
\266\051\315\064\274\170\366\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\201\202\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\016\060\014\006\003\125\004\010\014
\005\124\145\170\141\163\061\020\060\016\006\003\125\004\007\014
\007\110\157\165\163\164\157\156\061\030\060\026\006\003\125\004
\012\014\017\123\123\114\040\103\157\162\160\157\162\141\164\151
\157\156\061\067\060\065\006\003\125\004\003\014\056\123\123\114
\056\143\157\155\040\105\126\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\040\122\123\101\040\122\062\060\036\027\015\061
\067\060\065\063\061\061\070\061\064\063\067\132\027\015\064\062
\060\065\063\060\061\070\061\064\063\067\132\060\201\202\061\013

\060\011\006\003\125\004\006\023\002\125\123\061\016\060\014\006
\003\125\004\010\014\005\124\145\170\141\163\061\020\060\016\006
\003\125\004\007\014\007\110\157\165\163\164\157\156\061\030\060
\026\006\003\125\004\012\014\017\123\123\114\040\103\157\162\160
\157\162\141\164\151\157\156\061\067\060\065\006\003\125\004\003
\014\056\123\123\114\056\143\157\155\040\105\126\040\122\157\157
\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\040\122\123\101\040\122\062
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\217\066\145\100\341\326\115\300\327\264\351\106\332\153\352
\063\107\315\114\371\175\175\276\275\055\075\360\333\170\341\206
\245\331\272\011\127\150\355\127\076\240\320\010\101\203\347\050
\101\044\037\343\162\025\320\001\032\373\136\160\043\262\313\237
\071\343\317\305\116\306\222\155\046\306\173\273\263\332\047\235
\012\206\351\201\067\005\376\360\161\161\354\303\034\351\143\242
\027\024\235\357\033\147\323\205\125\002\002\326\111\311\314\132
\341\261\367\157\062\237\311\324\073\210\101\250\234\275\313\253
\333\155\173\011\037\242\114\162\220\332\053\010\374\317\074\124
\316\147\017\250\317\135\226\031\013\304\343\162\353\255\321\175
\035\047\357\222\353\020\277\133\353\073\257\317\200\335\301\322
\226\004\133\172\176\244\251\074\070\166\244\142\216\240\071\136
\352\167\317\135\000\131\217\146\054\076\007\242\243\005\046\021
\151\227\352\205\267\017\226\013\113\310\100\341\120\272\056\212
\313\367\017\232\042\347\177\232\067\023\315\362\115\023\153\041
\321\300\314\042\362\241\106\366\104\151\234\312\141\065\007\000
\157\326\141\010\021\352\272\270\366\351\263\140\345\115\271\354
\237\024\146\311\127\130\333\315\207\151\370\212\206\022\003\107
\277\146\023\166\254\167\175\064\044\205\203\315\327\252\234\220
\032\237\041\054\177\170\267\144\270\330\350\246\364\170\263\125
\313\204\322\062\304\170\256\243\217\141\335\316\010\123\255\354
\210\374\025\344\232\015\346\237\032\167\316\114\217\270\024\025
\075\142\234\206\070\006\000\146\022\344\131\166\132\123\300\002
\230\242\020\053\150\104\173\216\171\316\063\112\166\252\133\201
\026\033\265\212\330\320\000\173\136\142\264\011\326\206\143\016
\246\005\225\111\272\050\213\210\223\262\064\034\330\244\125\156
\267\034\320\336\231\125\073\043\364\042\340\371\051\146\046\354
\040\120\167\333\112\013\217\276\345\002\140\160\101\136\324\256
\120\071\042\024\046\313\262\073\163\164\125\107\007\171\201\071
\250\060\023\104\345\004\212\256\226\023\045\102\017\271\123\304
\233\374\315\344\034\336\074\372\253\326\006\112\037\147\246\230
\060\034\335\054\333\334\030\225\127\146\306\377\134\213\126\365
\167\002\003\001\000\001\243\143\060\141\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125
\035\043\004\030\060\026\200\024\371\140\273\324\343\325\064\366
\270\365\006\200\045\247\163\333\106\151\250\236\060\035\006\003
\125\035\016\004\026\004\024\371\140\273\324\343\325\064\366\270
\365\006\200\045\247\163\333\106\151\250\236\060\016\006\003\125

\035\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\126
\263\216\313\012\235\111\216\277\244\304\221\273\146\027\005\121
\230\165\373\345\120\054\172\236\361\024\372\253\323\212\076\377
\221\051\217\143\213\330\264\251\124\001\015\276\223\206\057\371
\112\155\307\136\365\127\371\312\125\034\022\276\107\017\066\305
\337\152\267\333\165\302\107\045\177\271\361\143\370\150\055\125
\004\321\362\215\260\244\317\274\074\136\037\170\347\245\240\040
\160\260\004\305\267\367\162\247\336\042\015\275\063\045\106\214
\144\222\046\343\076\056\143\226\332\233\214\075\370\030\011\327
\003\314\175\206\202\340\312\004\007\121\120\327\377\222\325\014
\357\332\206\237\231\327\353\267\257\150\342\071\046\224\272\150
\267\277\203\323\352\172\147\075\142\147\256\045\345\162\350\342
\344\354\256\022\366\113\053\074\237\351\260\100\363\070\124\263
\375\267\150\310\332\306\217\121\074\262\373\221\334\034\347\233
\235\341\267\015\162\217\342\244\304\251\170\371\353\024\254\306
\103\005\302\145\071\050\030\002\303\202\262\235\005\276\145\355
\226\137\145\164\074\373\011\065\056\173\234\023\375\033\017\135
\307\155\201\072\126\017\314\073\341\257\002\057\042\254\106\312
\106\074\240\034\114\326\104\264\136\056\134\025\146\011\341\046
\051\376\306\122\141\272\261\163\377\303\014\234\345\154\152\224
\077\024\312\100\026\225\204\363\131\251\254\137\114\141\223\155
\321\073\314\242\225\014\042\246\147\147\104\056\271\331\322\212
\101\263\146\013\132\373\175\043\245\362\032\260\377\336\233\203
\224\056\321\077\337\222\267\221\257\005\073\145\307\240\154\261
\315\142\022\303\220\033\343\045\316\064\274\157\167\166\261\020
\303\367\005\032\300\326\257\164\142\110\027\167\222\151\220\141
\034\336\225\200\164\124\217\030\034\303\363\003\320\277\244\103
\165\206\123\030\172\012\056\011\034\066\237\221\375\202\212\042
\113\321\016\120\045\335\313\003\014\027\311\203\000\010\116\065
\115\212\213\355\360\002\224\146\054\104\177\313\225\047\226\027
\255\011\060\254\266\161\027\156\213\027\366\034\011\324\055\073
\230\245\161\323\124\023\331\140\363\365\113\146\117\372\361\356
\040\022\215\264\254\127\261\105\143\241\254\166\251\302\373
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com EV Root Certification Authority RSA R2"
Issuer: CN=SSL.com EV Root Certification Authority RSA R2,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:56:b6:29:cd:34:bc:78:f6
Subject: CN=SSL.com EV Root Certification Authority RSA R2,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Wed May 31 18:14:37 2017
Not Valid After : Fri May 30 18:14:37 2042
Fingerprint (SHA-256):
2E:7B:F1:6C:C2:24:85:A7:BB:E2:AA:86:96:75:07:61:B0:AE:39:BE:3B:2F:E9:D0:CC:6D:4E:F7:34:91:42:5C

Fingerprint (SHA1): 74:3A:F0:52:9B:D0:32:A0:F4:4A:83:CD:D4:BA:A9:7B:7C:2E:C4:9A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority RSA R2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\164\072\360\122\233\320\062\240\364\112\203\315\324\272\251\173
\174\056\304\232
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\341\036\061\130\032\256\124\123\002\366\027\152\021\173\115\225
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163
\061\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164
\157\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114
\040\103\157\162\160\157\162\141\164\151\157\156\061\067\060\065
\006\003\125\004\003\014\056\123\123\114\056\143\157\155\040\105
\126\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122
\123\101\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\126\266\051\315\064\274\170\366
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com EV Root Certification Authority ECC"
#
Issuer: CN=SSL.com EV Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:2c:29:9c:5b:16:ed:05:95
Subject: CN=SSL.com EV Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 18:15:23 2016
Not Valid After : Tue Feb 12 18:15:23 2041
Fingerprint (SHA-256):
22:A2:C1:F7:BD:ED:70:4C:C1:E7:01:B5:F4:08:C3:10:88:0F:E9:56:B5:DE:2A:4A:44:F9:9C:87:3A:25:A7:C8
Fingerprint (SHA1): 4C:DD:51:A3:D1:F5:20:32:14:B0:C6:C5:32:23:03:91:C7:46:42:6D
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority ECC"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\064\060\062\006
\003\125\004\003\014\053\123\123\114\056\143\157\155\040\105\126
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\105\103
\103
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\064\060\062\006
\003\125\004\003\014\053\123\123\114\056\143\157\155\040\105\126
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\105\103
\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\054\051\234\133\026\355\005\225
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\224\060\202\002\032\240\003\002\001\002\002\010\054
\051\234\133\026\355\005\225\060\012\006\010\052\206\110\316\075
\004\003\002\060\177\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\016\060\014\006\003\125\004\010\014\005\124\145\170
\141\163\061\020\060\016\006\003\125\004\007\014\007\110\157\165
\163\164\157\156\061\030\060\026\006\003\125\004\012\014\017\123
\123\114\040\103\157\162\160\157\162\141\164\151\157\156\061\064
\060\062\006\003\125\004\003\014\053\123\123\114\056\143\157\155
\040\105\126\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\105\103\103\060\036\027\015\061\066\060\062\061\062\061\070
\061\065\062\063\132\027\015\064\061\060\062\061\062\061\070\061
\065\062\063\132\060\177\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\016\060\014\006\003\125\004\010\014\005\124\145
\170\141\163\061\020\060\016\006\003\125\004\007\014\007\110\157
\165\163\164\157\156\061\030\060\026\006\003\125\004\012\014\017
\123\123\114\040\103\157\162\160\157\162\141\164\151\157\156\061
\064\060\062\006\003\125\004\003\014\053\123\123\114\056\143\157
\155\040\105\126\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164

\171\040\105\103\103\060\166\060\020\006\007\052\206\110\316\075
\002\001\006\005\053\201\004\000\042\003\142\000\004\252\022\107
\220\230\033\373\357\303\100\007\203\040\116\361\060\202\242\006
\321\362\222\206\141\362\366\041\150\312\000\304\307\352\103\000
\124\206\334\375\037\337\000\270\101\142\134\334\160\026\062\336
\037\231\324\314\305\007\310\010\037\141\026\007\121\075\175\134
\007\123\343\065\070\214\337\315\237\331\056\015\112\266\031\056
\132\160\132\006\355\276\360\241\260\312\320\011\051\243\143\060
\141\060\035\006\003\125\035\016\004\026\004\024\133\312\136\345
\336\322\201\252\315\250\055\144\121\266\331\162\233\227\346\117
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\037\006\003\125\035\043\004\030\060\026\200\024\133\312
\136\345\336\322\201\252\315\250\055\144\121\266\331\162\233\227
\346\117\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\206\060\012\006\010\052\206\110\316\075\004\003\002\003\150
\000\060\145\002\061\000\212\346\100\211\067\353\351\325\023\331
\312\324\153\044\363\260\075\207\106\130\032\354\261\337\157\373
\126\272\160\153\307\070\314\350\261\214\117\017\367\361\147\166
\016\203\320\036\121\217\002\060\075\366\043\050\046\114\306\140
\207\223\046\233\262\065\036\272\326\367\074\321\034\316\372\045
\074\246\032\201\025\133\363\022\017\154\356\145\212\311\207\250
\371\007\340\142\232\214\134\112
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com EV Root Certification Authority ECC"
Issuer: CN=SSL.com EV Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:2c:29:9c:5b:16:ed:05:95
Subject: CN=SSL.com EV Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 18:15:23 2016
Not Valid After : Tue Feb 12 18:15:23 2041
Fingerprint (SHA-256):
22:A2:C1:F7:BD:ED:70:4C:C1:E7:01:B5:F4:08:C3:10:88:0F:E9:56:B5:DE:2A:4A:44:F9:9C:87:3A:25:A7:C8
Fingerprint (SHA1): 4C:DD:51:A3:D1:F5:20:32:14:B0:C6:C5:32:23:03:91:C7:46:42:6D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority ECC"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\114\335\121\243\321\365\040\062\024\260\306\305\062\043\003\221
\307\106\102\155
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\131\123\042\145\203\102\001\124\300\316\102\271\132\174\362\220
END

CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\064\060\062\006
\003\125\004\003\014\053\123\123\114\056\143\157\155\040\105\126
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\105\103
\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\054\051\234\133\026\355\005\225
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Root CA - R6"
#
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R6
Serial Number:45:e6:bb:03:83:33:c3:85:65:48:e6:ff:45:51
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R6
Not Valid Before: Wed Dec 10 00:00:00 2014
Not Valid After : Sun Dec 10 00:00:00 2034
Fingerprint (SHA-256):
2C:AB:EA:FE:37:D0:6C:A2:2A:BA:73:91:C0:03:3D:25:98:29:52:C4:53:64:73:49:76:3A:3A:B5:AD:6C:CF:69
Fingerprint (SHA1): 80:94:64:0E:B5:A7:A1:CA:11:9C:1F:DD:D5:9F:81:02:63:A7:FB:D1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA - R6"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\066\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\066\061\023\060\021\006\003\125\004\012\023\012\107

\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\016\105\346\273\003\203\063\303\205\145\110\346\377\105\121
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\203\060\202\003\153\240\003\002\001\002\002\016\105
\346\273\003\203\063\303\205\145\110\346\377\105\121\060\015\006
\011\052\206\110\206\367\015\001\001\014\005\000\060\114\061\040
\060\036\006\003\125\004\013\023\027\107\154\157\142\141\154\123
\151\147\156\040\122\157\157\164\040\103\101\040\055\040\122\066
\061\023\060\021\006\003\125\004\012\023\012\107\154\157\142\141
\154\123\151\147\156\061\023\060\021\006\003\125\004\003\023\012
\107\154\157\142\141\154\123\151\147\156\060\036\027\015\061\064
\061\062\061\060\060\060\060\060\060\060\132\027\015\063\064\061
\062\061\060\060\060\060\060\060\060\132\060\114\061\040\060\036
\006\003\125\004\013\023\027\107\154\157\142\141\154\123\151\147
\156\040\122\157\157\164\040\103\101\040\055\040\122\066\061\023
\060\021\006\003\125\004\012\023\012\107\154\157\142\141\154\123
\151\147\156\061\023\060\021\006\003\125\004\003\023\012\107\154
\157\142\141\154\123\151\147\156\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\225\007\350\163\312\146\371
\354\024\312\173\074\367\015\010\361\264\105\013\054\202\264\110
\306\353\133\074\256\203\270\101\222\063\024\244\157\177\351\052
\314\306\260\210\153\305\266\211\321\306\262\377\024\316\121\024
\041\354\112\335\033\132\306\326\207\356\115\072\025\006\355\144
\146\013\222\200\312\104\336\163\224\116\363\247\211\177\117\170
\143\010\310\022\120\155\102\146\057\115\271\171\050\115\122\032
\212\032\200\267\031\201\016\176\304\212\274\144\114\041\034\103
\150\327\075\074\212\305\262\146\325\220\232\267\061\006\305\276
\342\155\062\006\246\036\371\271\353\252\243\270\277\276\202\143
\120\320\360\030\211\337\344\017\171\365\352\242\037\052\322\160
\056\173\347\274\223\273\155\123\342\110\174\214\020\007\070\377
\146\262\167\141\176\340\352\214\074\252\264\244\366\363\225\112
\022\007\155\375\214\262\211\317\320\240\141\167\310\130\164\260
\324\043\072\367\135\072\312\242\333\235\011\336\135\104\055\220
\361\201\315\127\222\372\176\274\120\004\143\064\337\153\223\030
\276\153\066\262\071\344\254\044\066\267\360\357\266\034\023\127
\223\266\336\262\370\342\205\267\163\242\270\065\252\105\362\340
\235\066\241\157\124\212\361\162\126\156\056\210\305\121\102\104
\025\224\356\243\305\070\226\233\116\116\132\013\107\363\006\066
\111\167\060\274\161\067\345\246\354\041\010\165\374\346\141\026
\077\167\325\331\221\227\204\012\154\324\002\115\164\300\024\355
\375\071\373\203\362\136\024\241\004\260\013\351\376\356\217\341
\156\013\262\010\263\141\146\011\152\261\006\072\145\226\131\300
\360\065\375\311\332\050\215\032\021\207\160\201\012\250\232\165

\035\236\072\206\005\000\236\333\200\326\045\371\334\005\236\047
\131\114\166\071\133\352\371\245\241\330\203\017\321\377\337\060
\021\371\205\317\063\110\365\312\155\144\024\054\172\130\117\323
\113\010\111\305\225\144\032\143\016\171\075\365\263\214\312\130
\255\234\102\105\171\156\016\207\031\134\124\261\145\266\277\214
\233\334\023\351\015\157\270\056\334\147\156\311\213\021\265\204
\024\212\000\031\160\203\171\221\227\221\324\032\047\277\067\036
\062\007\330\024\143\074\050\114\257\002\003\001\000\001\243\143
\060\141\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\035\006\003\125\035\016\004\026\004\024\256\154
\005\243\223\023\342\242\347\342\327\034\326\307\360\177\310\147
\123\240\060\037\006\003\125\035\043\004\030\060\026\200\024\256
\154\005\243\223\023\342\242\347\342\327\034\326\307\360\177\310
\147\123\240\060\015\006\011\052\206\110\206\367\015\001\001\014
\005\000\003\202\002\001\000\203\045\355\350\321\375\225\122\315
\236\300\004\240\221\151\346\134\320\204\336\334\255\242\117\350
\107\170\326\145\230\251\133\250\074\207\174\002\212\321\156\267
\026\163\346\137\300\124\230\325\164\276\301\315\342\021\221\255
\043\030\075\335\341\162\104\226\264\225\136\300\173\216\231\170
\026\103\023\126\127\263\242\263\073\265\167\334\100\162\254\243
\353\233\065\076\261\010\041\241\347\304\103\067\171\062\276\265
\347\234\054\114\274\103\051\231\216\060\323\254\041\340\343\035
\372\330\007\063\166\124\000\042\052\271\115\040\056\160\150\332
\345\123\374\203\134\323\235\362\377\104\014\104\146\362\322\343
\275\106\000\032\155\002\272\045\135\215\241\061\121\335\124\106
\034\115\333\231\226\357\032\034\004\134\246\025\357\170\340\171
\376\135\333\076\252\114\125\375\232\025\251\157\341\246\373\337
\160\060\351\303\356\102\106\355\302\223\005\211\372\175\143\173
\077\320\161\201\174\000\350\230\256\016\170\064\303\045\373\257
\012\237\040\153\335\073\023\217\022\214\342\101\032\110\172\163
\240\167\151\307\266\134\177\202\310\036\376\130\033\050\053\250
\154\255\136\155\300\005\322\173\267\353\200\376\045\067\376\002
\233\150\254\102\135\303\356\365\314\334\360\120\165\322\066\151
\234\346\173\004\337\156\006\151\266\336\012\011\110\131\207\353
\173\024\140\172\144\252\151\103\357\221\307\114\354\030\335\154
\357\123\055\214\231\341\136\362\162\076\317\124\310\275\147\354
\244\017\114\105\377\323\271\060\043\007\114\217\020\277\206\226
\331\231\132\264\231\127\034\244\314\273\025\211\123\272\054\005
\017\344\304\236\031\261\030\064\325\114\235\272\355\367\037\257
\044\225\004\170\250\003\273\356\201\345\332\137\174\213\112\241
\220\164\045\247\263\076\113\310\054\126\275\307\310\357\070\342
\134\222\360\171\367\234\204\272\164\055\141\001\040\176\176\321
\362\117\007\131\137\213\055\103\122\353\106\014\224\341\365\146
\107\171\167\325\124\133\037\255\044\067\313\105\132\116\240\104
\110\310\330\260\231\305\025\204\011\366\326\111\111\300\145\270
\346\032\161\156\240\250\361\202\350\105\076\154\326\002\327\012
\147\203\005\132\311\244\020

END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root CA - R6"
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R6
Serial Number:45:e6:bb:03:83:33:c3:85:65:48:e6:ff:45:51
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R6
Not Valid Before: Wed Dec 10 00:00:00 2014
Not Valid After : Sun Dec 10 00:00:00 2034
Fingerprint (SHA-256):
2C:AB:EA:FE:37:D0:6C:A2:2A:BA:73:91:C0:03:3D:25:98:29:52:C4:53:64:73:49:76:3A:3A:B5:AD:6C:CF:69
Fingerprint (SHA1): 80:94:64:0E:B5:A7:A1:CA:11:9C:1F:DD:D5:9F:81:02:63:A7:FB:D1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA - R6"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\200\224\144\016\265\247\241\312\021\234\037\335\325\237\201\002
\143\247\373\321
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\117\335\007\344\324\042\144\071\036\014\067\102\352\321\306\256
END
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\066\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\016\105\346\273\003\203\063\303\205\145\110\346\377\105\121
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "OISTE WISeKey Global Root GC CA"
#
Issuer: CN=OISTE WISeKey Global Root GC CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Serial Number:21:2a:56:0c:ae:da:0c:ab:40:45:bf:2b:a2:2d:3a:ea
Subject: CN=OISTE WISeKey Global Root GC CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Not Valid Before: Tue May 09 09:48:34 2017

Not Valid After : Fri May 09 09:58:33 2042
Fingerprint (SHA-256):
85:60:F9:1C:36:24:DA:BA:95:70:B5:FE:A0:DB:E3:6F:F1:1A:83:23:BE:94:86:85:4F:B3:F3:4A:55:71:19:8D
Fingerprint (SHA1): E0:11:84:5E:34:DE:BE:88:81:B9:9C:F6:16:26:D1:96:1F:C3:B9:31
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GC CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\103\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\103\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\041\052\126\014\256\332\014\253\100\105\277\053\242\055
\072\352
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\151\060\202\001\357\240\003\002\001\002\002\020\041
\052\126\014\256\332\014\253\100\105\277\053\242\055\072\352\060
\012\006\010\052\206\110\316\075\004\003\003\060\155\061\013\060
\011\006\003\125\004\006\023\002\103\110\061\020\060\016\006\003
\125\004\012\023\007\127\111\123\145\113\145\171\061\042\060\040
\006\003\125\004\013\023\031\117\111\123\124\105\040\106\157\165
\156\144\141\164\151\157\156\040\105\156\144\157\162\163\145\144
\061\050\060\046\006\003\125\004\003\023\037\117\111\123\124\105
\040\127\111\123\145\113\145\171\040\107\154\157\142\141\154\040
\122\157\157\164\040\107\103\040\103\101\060\036\027\015\061\067
\060\065\060\071\060\071\064\070\063\064\132\027\015\064\062\060
\065\060\071\060\071\065\070\063\063\132\060\155\061\013\060\011
\006\003\125\004\006\023\002\103\110\061\020\060\016\006\003\125
\004\012\023\007\127\111\123\145\113\145\171\061\042\060\040\006

\003\125\004\013\023\031\117\111\123\124\105\040\106\157\165\156
\144\141\164\151\157\156\040\105\156\144\157\162\163\145\144\061
\050\060\046\006\003\125\004\003\023\037\117\111\123\124\105\040
\127\111\123\145\113\145\171\040\107\154\157\142\141\154\040\122
\157\157\164\040\107\103\040\103\101\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\114\351\120\300\306\017\162\030\274\330\361\272\263\211\342
\171\112\243\026\247\153\124\044\333\121\377\352\364\011\044\303
\013\042\237\313\152\047\202\201\015\322\300\257\061\344\164\202
\156\312\045\331\214\165\235\361\333\320\232\242\113\041\176\026
\247\143\220\322\071\324\261\207\170\137\030\226\017\120\033\065
\067\017\152\306\334\331\023\115\244\216\220\067\346\275\133\061
\221\243\124\060\122\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\110\207\024\254\343\303\236\220\140\072\327\312\211\356\323
\255\214\264\120\146\060\020\006\011\053\006\001\004\001\202\067
\025\001\004\003\002\001\000\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\060\046\307\151\133\334\325
\347\262\347\310\014\214\214\303\335\171\214\033\143\325\311\122
\224\116\115\202\112\163\036\262\200\204\251\045\300\114\132\155
\111\051\140\170\023\342\176\110\353\144\002\061\000\333\064\040
\062\010\377\232\111\002\266\210\336\024\257\135\154\231\161\215
\032\077\213\327\340\242\066\206\034\007\202\072\166\123\375\302
\242\355\357\173\260\200\117\130\017\113\123\071\275
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "OISTE WISeKey Global Root GC CA"
Issuer: CN=OISTE WISeKey Global Root GC CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Serial Number:21:2a:56:0c:ae:da:0c:ab:40:45:bf:2b:a2:2d:3a:ea
Subject: CN=OISTE WISeKey Global Root GC CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Not Valid Before: Tue May 09 09:48:34 2017
Not Valid After : Fri May 09 09:58:33 2042
Fingerprint (SHA-256):
85:60:F9:1C:36:24:DA:BA:95:70:B5:FE:A0:DB:E3:6F:F1:1A:83:23:BE:94:86:85:4F:B3:F3:4A:55:71:19:8D
Fingerprint (SHA1): E0:11:84:5E:34:DE:BE:88:81:B9:9C:F6:16:26:D1:96:1F:C3:B9:31
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GC CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\340\021\204\136\064\336\276\210\201\271\234\366\026\046\321\226
\037\303\271\061
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\251\326\271\055\057\223\144\370\245\151\312\221\351\150\007\043
END
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\103\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\041\052\126\014\256\332\014\253\100\105\277\053\242\055
\072\352
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "UCA Global G2 Root"
#
Issuer: CN=UCA Global G2 Root,O=UniTrust,C=CN
Serial Number:5d:df:b1:da:5a:a3:ed:5d:be:5a:65:20:65:03:90:ef
Subject: CN=UCA Global G2 Root,O=UniTrust,C=CN
Not Valid Before: Fri Mar 11 00:00:00 2016
Not Valid After : Mon Dec 31 00:00:00 2040
Fingerprint (SHA-256):
9B:EA:11:C9:76:FE:01:47:64:C1:BE:56:A6:F9:14:B5:A5:60:31:7A:BD:99:88:39:33:82:E5:16:1A:A0:49:3C
Fingerprint (SHA1): 28:F9:78:16:19:7A:FF:18:25:18:AA:44:FE:C1:A0:CE:5C:B6:4C:8A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Global G2 Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\033\060\031\006\003\125\004\003\014\022\125\103\101
\040\107\154\157\142\141\154\040\107\062\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165

\163\164\061\033\060\031\006\003\125\004\003\014\022\125\103\101
\040\107\154\157\142\141\154\040\107\062\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\135\337\261\332\132\243\355\135\276\132\145\040\145\003
\220\357
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\106\060\202\003\056\240\003\002\001\002\002\020\135
\337\261\332\132\243\355\135\276\132\145\040\145\003\220\357\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\075
\061\013\060\011\006\003\125\004\006\023\002\103\116\061\021\060
\017\006\003\125\004\012\014\010\125\156\151\124\162\165\163\164
\061\033\060\031\006\003\125\004\003\014\022\125\103\101\040\107
\154\157\142\141\154\040\107\062\040\122\157\157\164\060\036\027
\015\061\066\060\063\061\061\060\060\060\060\060\060\132\027\015
\064\060\061\062\063\061\060\060\060\060\060\060\132\060\075\061
\013\060\011\006\003\125\004\006\023\002\103\116\061\021\060\017
\006\003\125\004\012\014\010\125\156\151\124\162\165\163\164\061
\033\060\031\006\003\125\004\003\014\022\125\103\101\040\107\154
\157\142\141\154\040\107\062\040\122\157\157\164\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\305\346\053
\157\174\357\046\005\047\243\201\044\332\157\313\001\371\231\232
\251\062\302\042\207\141\101\221\073\313\303\150\033\006\305\114
\251\053\301\147\027\042\035\053\355\371\051\211\223\242\170\275
\222\153\240\243\015\242\176\312\223\263\246\321\214\065\325\165
\371\027\366\317\105\305\345\172\354\167\223\240\217\043\256\016
\032\003\177\276\324\320\355\056\173\253\106\043\133\377\054\346
\124\172\224\300\052\025\360\311\215\260\172\073\044\341\327\150
\342\061\074\006\063\106\266\124\021\246\245\057\042\124\052\130
\015\001\002\361\372\025\121\147\154\300\372\327\266\033\177\321
\126\210\057\032\072\215\073\273\202\021\340\107\000\320\122\207
\253\373\206\176\017\044\153\100\235\064\147\274\215\307\055\206
\157\171\076\216\251\074\027\113\177\260\231\343\260\161\140\334
\013\365\144\303\316\103\274\155\161\271\322\336\047\133\212\350
\330\306\256\341\131\175\317\050\055\065\270\225\126\032\361\262
\130\113\267\022\067\310\174\263\355\113\200\341\215\372\062\043
\266\157\267\110\225\010\261\104\116\205\214\072\002\124\040\057
\337\277\127\117\073\072\220\041\327\301\046\065\124\040\354\307
\077\107\354\357\132\277\113\172\301\255\073\027\120\134\142\330
\017\113\112\334\053\372\156\274\163\222\315\354\307\120\350\101
\226\327\251\176\155\330\351\035\217\212\265\271\130\222\272\112
\222\053\014\126\375\200\353\010\360\136\051\156\033\034\014\257
\217\223\211\255\333\275\243\236\041\312\211\031\354\337\265\303
\032\353\026\376\170\066\114\326\156\320\076\027\034\220\027\153
\046\272\373\172\057\277\021\034\030\016\055\163\003\217\240\345
\065\240\132\342\114\165\035\161\341\071\070\123\170\100\314\203

\223\327\012\236\235\133\217\212\344\345\340\110\344\110\262\107
\315\116\052\165\052\173\362\042\366\311\276\011\221\226\127\172
\210\210\254\356\160\254\371\334\051\343\014\034\073\022\116\104
\326\247\116\260\046\310\363\331\032\227\221\150\352\357\215\106
\006\322\126\105\130\232\074\014\017\203\270\005\045\303\071\317
\073\244\064\211\267\171\022\057\107\305\347\251\227\151\374\246
\167\147\265\337\173\361\172\145\025\344\141\126\145\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\201\304\214\314\365\344\060\377\245\014\010\137\214\025
\147\041\164\001\337\337\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\002\001\000\023\145\042\365\216\053
\255\104\344\313\377\271\150\346\303\200\110\075\004\173\372\043
\057\172\355\066\332\262\316\155\366\346\236\345\137\130\217\313
\067\062\241\310\145\266\256\070\075\065\033\076\274\073\266\004
\320\274\371\111\365\233\367\205\305\066\266\313\274\370\310\071
\325\344\137\007\275\025\124\227\164\312\312\355\117\272\272\144
\166\237\201\270\204\105\111\114\215\157\242\353\261\314\321\303
\224\332\104\302\346\342\352\030\350\242\037\047\005\272\327\345
\326\251\315\335\357\166\230\215\000\016\315\033\372\003\267\216
\200\130\016\047\077\122\373\224\242\312\136\145\311\326\204\332
\271\065\161\363\046\300\117\167\346\201\047\322\167\073\232\024
\157\171\364\366\320\341\323\224\272\320\127\121\275\047\005\015
\301\375\310\022\060\356\157\215\021\053\010\235\324\324\277\200
\105\024\232\210\104\332\060\352\264\247\343\356\357\133\202\325
\076\326\255\170\222\333\134\074\363\330\255\372\270\153\177\304
\066\050\266\002\025\212\124\054\234\260\027\163\216\320\067\243
\024\074\230\225\000\014\051\005\133\236\111\111\261\137\307\343
\313\317\047\145\216\065\027\267\127\310\060\331\101\133\271\024
\266\350\302\017\224\061\247\224\230\314\152\353\265\341\047\365
\020\250\001\350\216\022\142\350\210\314\265\177\106\227\300\233
\020\146\070\032\066\106\137\042\150\075\337\311\306\023\047\253
\123\006\254\242\074\206\006\145\157\261\176\261\051\104\232\243
\272\111\151\050\151\217\327\345\137\255\004\206\144\157\032\240
\014\305\010\142\316\200\243\320\363\354\150\336\276\063\307\027
\133\177\200\304\114\114\261\246\204\212\303\073\270\011\315\024
\201\272\030\343\124\127\066\376\333\057\174\107\241\072\063\310
\371\130\073\104\117\261\312\002\211\004\226\050\150\305\113\270
\046\211\273\326\063\057\120\325\376\232\211\272\030\062\222\124
\306\133\340\235\371\136\345\015\042\233\366\332\342\310\041\262
\142\041\252\206\100\262\056\144\323\137\310\343\176\021\147\105
\037\005\376\343\242\357\263\250\263\363\175\217\370\014\037\042
\037\055\160\264\270\001\064\166\060\000\345\043\170\247\126\327
\120\037\212\373\006\365\302\031\360\320
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE

CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "UCA Global G2 Root"
Issuer: CN=UCA Global G2 Root,O=UniTrust,C=CN
Serial Number:5d:df:b1:da:5a:a3:ed:5d:be:5a:65:20:65:03:90:ef
Subject: CN=UCA Global G2 Root,O=UniTrust,C=CN
Not Valid Before: Fri Mar 11 00:00:00 2016
Not Valid After : Mon Dec 31 00:00:00 2040
Fingerprint (SHA-256):
9B:EA:11:C9:76:FE:01:47:64:C1:BE:56:A6:F9:14:B5:A5:60:31:7A:BD:99:88:39:33:82:E5:16:1A:A0:49:3C
Fingerprint (SHA1): 28:F9:78:16:19:7A:FF:18:25:18:AA:44:FE:C1:A0:CE:5C:B6:4C:8A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Global G2 Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\050\371\170\026\031\172\377\030\045\030\252\104\376\301\240\316
\134\266\114\212
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\200\376\360\304\112\360\134\142\062\237\034\272\170\251\120\370
END
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\033\060\031\006\003\125\004\003\014\022\125\103\101
\040\107\154\157\142\141\154\040\107\062\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\135\337\261\332\132\243\355\135\276\132\145\040\145\003
\220\357
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "UCA Extended Validation Root"
#
Issuer: CN=UCA Extended Validation Root,O=UniTrust,C=CN
Serial Number:4f:d2:2b:8f:f5:64:c8:33:9e:4f:34:58:66:23:70:60
Subject: CN=UCA Extended Validation Root,O=UniTrust,C=CN
Not Valid Before: Fri Mar 13 00:00:00 2015
Not Valid After : Fri Dec 31 00:00:00 2038
Fingerprint (SHA-256):
D4:3A:F9:B3:54:73:75:5C:96:84:FC:06:D7:D8:CB:70:EE:5C:28:E7:73:FB:29:4E:B4:1E:E7:17:22:92:4D:24

Fingerprint (SHA1): A3:A1:B0:6F:24:61:23:4A:E3:36:A5:C2:37:FC:A6:FF:DD:F0:D7:3A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Extended Validation Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\045\060\043\006\003\125\004\003\014\034\125\103\101
\040\105\170\164\145\156\144\145\144\040\126\141\154\151\144\141
\164\151\157\156\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\045\060\043\006\003\125\004\003\014\034\125\103\101
\040\105\170\164\145\156\144\145\144\040\126\141\154\151\144\141
\164\151\157\156\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\117\322\053\217\365\144\310\063\236\117\064\130\146\043
\160\140
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\132\060\202\003\102\240\003\002\001\002\002\020\117
\322\053\217\365\144\310\063\236\117\064\130\146\043\160\140\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\107
\061\013\060\011\006\003\125\004\006\023\002\103\116\061\021\060
\017\006\003\125\004\012\014\010\125\156\151\124\162\165\163\164
\061\045\060\043\006\003\125\004\003\014\034\125\103\101\040\105
\170\164\145\156\144\145\144\040\126\141\154\151\144\141\164\151
\157\156\040\122\157\157\164\060\036\027\015\061\065\060\063\061
\063\060\060\060\060\060\060\132\027\015\063\070\061\062\063\061
\060\060\060\060\060\060\132\060\107\061\013\060\011\006\003\125
\004\006\023\002\103\116\061\021\060\017\006\003\125\004\012\014
\010\125\156\151\124\162\165\163\164\061\045\060\043\006\003\125
\004\003\014\034\125\103\101\040\105\170\164\145\156\144\145\144
\040\126\141\154\151\144\141\164\151\157\156\040\122\157\157\164
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\251\011\007\050\023\002\260\231\340\144\252\036\103\026\172
\163\261\221\240\165\076\250\372\343\070\000\172\354\211\152\040
\017\213\305\260\233\063\003\132\206\306\130\206\325\301\205\273
\117\306\234\100\115\312\276\356\151\226\270\255\201\060\232\174
\222\005\353\005\053\232\110\320\270\166\076\226\310\040\273\322

\260\361\217\330\254\105\106\377\252\147\140\264\167\176\152\037
\074\032\122\172\004\075\007\074\205\015\204\320\037\166\012\367
\152\024\337\162\343\064\174\127\116\126\001\076\171\361\252\051
\073\154\372\370\217\155\115\310\065\337\256\353\334\044\356\171
\105\247\205\266\005\210\336\210\135\045\174\227\144\147\011\331
\277\132\025\005\206\363\011\036\354\130\062\063\021\363\167\144
\260\166\037\344\020\065\027\033\362\016\261\154\244\052\243\163
\374\011\037\036\062\031\123\021\347\331\263\054\056\166\056\241
\243\336\176\152\210\011\350\362\007\212\370\262\315\020\347\342
\163\100\223\273\010\321\077\341\374\013\224\263\045\357\174\246
\327\321\257\237\377\226\232\365\221\173\230\013\167\324\176\350
\007\322\142\265\225\071\343\363\361\155\017\016\145\204\212\143
\124\305\200\266\340\236\113\175\107\046\247\001\010\135\321\210
\236\327\303\062\104\372\202\112\012\150\124\177\070\123\003\314
\244\000\063\144\121\131\013\243\202\221\172\136\354\026\302\363
\052\346\142\332\052\333\131\142\020\045\112\052\201\013\107\007
\103\006\160\207\322\372\223\021\051\172\110\115\353\224\307\160
\115\257\147\325\121\261\200\040\001\001\264\172\010\246\220\177
\116\340\357\007\101\207\257\152\245\136\213\373\317\120\262\232
\124\257\303\211\272\130\055\365\060\230\261\066\162\071\176\111
\004\375\051\247\114\171\344\005\127\333\224\271\026\123\215\106
\263\035\225\141\127\126\177\257\360\026\133\141\130\157\066\120
\021\013\330\254\053\225\026\032\016\037\010\315\066\064\145\020
\142\146\325\200\137\024\040\137\055\014\240\170\012\150\326\054
\327\351\157\053\322\112\005\223\374\236\157\153\147\377\210\361
\116\245\151\112\122\067\005\352\306\026\215\322\304\231\321\202
\053\073\272\065\165\367\121\121\130\363\310\007\335\344\264\003
\177\002\003\001\000\001\243\102\060\100\060\035\006\003\125\035
\016\004\026\004\024\331\164\072\344\060\075\015\367\022\334\176
\132\005\237\036\064\232\367\341\024\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\066\215
\227\314\102\025\144\051\067\233\046\054\326\373\256\025\151\054
\153\032\032\367\137\266\371\007\114\131\352\363\311\310\271\256
\314\272\056\172\334\300\365\260\055\300\073\257\237\160\005\021
\152\237\045\117\001\051\160\343\345\014\341\352\132\174\334\111
\273\301\036\052\201\365\026\113\162\221\310\242\061\271\252\332
\374\235\037\363\135\100\002\023\374\116\034\006\312\263\024\220
\124\027\031\022\032\361\037\327\014\151\132\366\161\170\364\224
\175\221\013\216\354\220\124\216\274\157\241\114\253\374\164\144
\375\161\232\370\101\007\241\315\221\344\074\232\340\233\062\071
\163\253\052\325\151\310\170\221\046\061\175\342\307\060\361\374
\024\170\167\022\016\023\364\335\026\224\277\113\147\173\160\123
\205\312\260\273\363\070\115\054\220\071\300\015\302\135\153\351
\342\345\325\210\215\326\054\277\253\033\276\265\050\207\022\027
\164\156\374\175\374\217\320\207\046\260\033\373\271\154\253\342
\236\075\025\301\073\056\147\002\130\221\237\357\370\102\037\054

\267\150\365\165\255\317\265\366\377\021\175\302\360\044\245\255
\323\372\240\074\251\372\135\334\245\240\357\104\244\276\326\350
\345\344\023\226\027\173\006\076\062\355\307\267\102\274\166\243
\330\145\070\053\070\065\121\041\016\016\157\056\064\023\100\341
\053\147\014\155\112\101\060\030\043\132\062\125\231\311\027\340
\074\336\366\354\171\255\053\130\031\242\255\054\042\032\225\216
\276\226\220\135\102\127\304\371\024\003\065\053\034\055\121\127
\010\247\072\336\077\344\310\264\003\163\302\301\046\200\273\013
\102\037\255\015\257\046\162\332\314\276\263\243\203\130\015\202
\305\037\106\121\343\234\030\314\215\233\215\354\111\353\165\120
\325\214\050\131\312\164\064\332\214\013\041\253\036\352\033\345
\307\375\025\076\300\027\252\373\043\156\046\106\313\372\371\261
\162\153\151\317\042\204\013\142\017\254\331\031\000\224\242\166
\074\324\055\232\355\004\236\055\006\142\020\067\122\034\205\162
\033\047\345\314\306\061\354\067\354\143\131\233\013\035\166\314
\176\062\232\210\225\010\066\122\273\336\166\137\166\111\111\255
\177\275\145\040\262\311\301\053\166\030\166\237\126\261
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "UCA Extended Validation Root"
Issuer: CN=UCA Extended Validation Root,O=UniTrust,C=CN
Serial Number:4f:d2:2b:8f:f5:64:c8:33:9e:4f:34:58:66:23:70:60
Subject: CN=UCA Extended Validation Root,O=UniTrust,C=CN
Not Valid Before: Fri Mar 13 00:00:00 2015
Not Valid After : Fri Dec 31 00:00:00 2038
Fingerprint (SHA-256):
D4:3A:F9:B3:54:73:75:5C:96:84:FC:06:D7:D8:CB:70:EE:5C:28:E7:73:FB:29:4E:B4:1E:E7:17:22:92:4D:24
Fingerprint (SHA1): A3:A1:B0:6F:24:61:23:4A:E3:36:A5:C2:37:FC:A6:FF:DD:F0:D7:3A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Extended Validation Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\243\241\260\157\044\141\043\112\343\066\245\302\067\374\246\377
\335\360\327\072
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\241\363\137\103\306\064\233\332\277\214\176\005\123\255\226\342
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\045\060\043\006\003\125\004\003\014\034\125\103\101
\040\105\170\164\145\156\144\145\144\040\126\141\154\151\144\141

\164\151\157\156\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\117\322\053\217\365\144\310\063\236\117\064\130\146\043
\160\140
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certigna Root CA"
#
Issuer: CN=Certigna Root CA,OU=0002 48146308100036,O=Dhimyotis,C=FR
Serial Number:00:ca:e9:1b:89:f1:55:03:0d:a3:e6:41:6d:c4:e3:a6:e1
Subject: CN=Certigna Root CA,OU=0002 48146308100036,O=Dhimyotis,C=FR
Not Valid Before: Tue Oct 01 08:32:27 2013
Not Valid After : Sat Oct 01 08:32:27 2033
Fingerprint (SHA-256):
D4:8D:3D:23:EE:DB:50:A4:59:E5:51:97:60:1C:27:77:4B:9D:7B:18:C9:4D:5A:05:95:11:A1:02:50:B9:31:68
Fingerprint (SHA1): 2D:0D:52:14:FF:9E:AD:99:24:01:74:20:47:6E:6C:85:27:27:F5:43
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certigna Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\034\060\032\006\003\125\004\013\014\023\060\060
\060\062\040\064\070\061\064\066\063\060\070\061\060\060\060\063
\066\061\031\060\027\006\003\125\004\003\014\020\103\145\162\164
\151\147\156\141\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\034\060\032\006\003\125\004\013\014\023\060\060
\060\062\040\064\070\061\064\066\063\060\070\061\060\060\060\063
\066\061\031\060\027\006\003\125\004\003\014\020\103\145\162\164
\151\147\156\141\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\312\351\033\211\361\125\003\015\243\346\101\155\304
\343\246\341

END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\133\060\202\004\103\240\003\002\001\002\002\021\000
\312\351\033\211\361\125\003\015\243\346\101\155\304\343\246\341
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\132\061\013\060\011\006\003\125\004\006\023\002\106\122\061\022
\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157\164
\151\163\061\034\060\032\006\003\125\004\013\014\023\060\060\060
\062\040\064\070\061\064\066\063\060\070\061\060\060\060\063\066
\061\031\060\027\006\003\125\004\003\014\020\103\145\162\164\151
\147\156\141\040\122\157\157\164\040\103\101\060\036\027\015\061
\063\061\060\060\061\060\070\063\062\062\067\132\027\015\063\063
\061\060\060\061\060\070\063\062\062\067\132\060\132\061\013\060
\011\006\003\125\004\006\023\002\106\122\061\022\060\020\006\003
\125\004\012\014\011\104\150\151\155\171\157\164\151\163\061\034
\060\032\006\003\125\004\013\014\023\060\060\060\062\040\064\070
\061\064\066\063\060\070\061\060\060\060\063\066\061\031\060\027
\006\003\125\004\003\014\020\103\145\162\164\151\147\156\141\040
\122\157\157\164\040\103\101\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\315\030\071\145\032\131\261\352
\144\026\016\214\224\044\225\174\203\323\305\071\046\334\014\357
\026\127\215\327\330\254\243\102\177\202\312\355\315\133\333\016
\267\055\355\105\010\027\262\331\263\313\326\027\122\162\050\333
\216\116\236\212\266\013\371\236\204\232\115\166\336\042\051\134
\322\263\322\006\076\060\071\251\164\243\222\126\034\241\157\114
\012\040\155\237\043\172\264\306\332\054\344\035\054\334\263\050
\320\023\362\114\116\002\111\241\124\100\236\346\345\005\240\055
\204\310\377\230\154\320\353\212\032\204\010\036\267\150\043\356
\043\325\160\316\155\121\151\020\356\241\172\302\321\042\061\302
\202\205\322\362\125\166\120\174\045\172\311\204\134\013\254\335
\102\116\053\347\202\242\044\211\313\220\262\320\356\043\272\146
\114\273\142\244\371\123\132\144\173\174\230\372\243\110\236\017
\225\256\247\030\364\152\354\056\003\105\257\360\164\370\052\315
\172\135\321\276\104\046\062\051\361\361\365\154\314\176\002\041
\013\237\157\244\077\276\235\123\342\317\175\251\054\174\130\032
\227\341\075\067\067\030\146\050\322\100\305\121\212\214\303\055
\316\123\210\044\130\144\060\026\305\252\340\326\012\246\100\337
\170\366\365\004\174\151\023\204\274\321\321\247\006\317\001\367
\150\300\250\127\273\072\141\255\004\214\223\343\255\374\360\333
\104\155\131\334\111\131\256\254\232\231\066\060\101\173\166\063
\042\207\243\302\222\206\156\371\160\356\256\207\207\225\033\304
\172\275\061\363\324\322\345\231\377\276\110\354\165\365\170\026
\035\246\160\301\177\074\033\241\222\373\317\310\074\326\305\223
\012\217\365\125\072\166\225\316\131\230\212\011\225\167\062\232
\203\272\054\004\072\227\275\324\057\276\327\154\233\242\312\175
\155\046\311\125\325\317\303\171\122\010\011\231\007\044\055\144
\045\153\246\041\151\233\152\335\164\115\153\227\172\101\275\253

\027\371\220\027\110\217\066\371\055\325\305\333\356\252\205\105
\101\372\315\072\105\261\150\346\066\114\233\220\127\354\043\271
\207\010\302\304\011\361\227\206\052\050\115\342\164\300\332\304
\214\333\337\342\241\027\131\316\044\131\164\061\332\177\375\060
\155\331\334\341\152\341\374\137\002\003\001\000\001\243\202\001
\032\060\202\001\026\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004
\024\030\207\126\340\156\167\356\044\065\074\116\163\232\037\326
\341\342\171\176\053\060\037\006\003\125\035\043\004\030\060\026
\200\024\030\207\126\340\156\167\356\044\065\074\116\163\232\037
\326\341\342\171\176\053\060\104\006\003\125\035\040\004\075\060
\073\060\071\006\004\125\035\040\000\060\061\060\057\006\010\053
\006\001\005\005\007\002\001\026\043\150\164\164\160\163\072\057
\057\167\167\167\056\143\145\162\164\151\147\156\141\056\146
\162\057\141\165\164\157\162\151\164\145\163\057\060\155\006\003
\125\035\037\004\146\060\144\060\057\240\055\240\053\206\051\150
\164\164\160\072\057\057\143\162\154\056\143\145\162\164\151\147
\156\141\056\146\162\057\143\145\162\164\151\147\156\141\162\157
\157\164\143\141\056\143\162\154\060\061\240\057\240\055\206\053
\150\164\164\160\072\057\057\143\162\154\056\144\150\151\155\171
\157\164\151\163\056\143\157\155\057\143\145\162\164\151\147\156
\141\162\157\157\164\143\141\056\143\162\154\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\224
\270\236\117\360\343\225\010\042\347\315\150\101\367\034\125\325
\174\000\342\055\072\211\135\150\070\057\121\042\013\112\215\313
\351\273\135\076\273\134\075\261\050\376\344\123\125\023\317\241
\220\033\002\035\137\146\106\011\063\050\341\015\044\227\160\323
\020\037\352\144\127\226\273\135\332\347\304\214\117\114\144\106
\035\134\207\343\131\336\102\321\233\250\176\246\211\335\217\034
\311\060\202\355\073\234\315\300\351\031\340\152\330\002\165\067
\253\367\064\050\050\221\362\004\012\117\065\343\140\046\001\372
\320\021\214\371\021\152\356\257\075\303\120\323\217\137\063\171
\074\206\250\163\105\220\214\040\266\162\163\027\043\276\007\145
\345\170\222\015\272\001\300\353\214\034\146\277\254\206\167\001
\224\015\234\346\351\071\215\037\246\121\214\231\014\071\167\341
\264\233\372\034\147\127\157\152\152\216\251\053\114\127\171\172
\127\042\317\315\137\143\106\215\134\131\072\206\370\062\107\142
\243\147\015\030\221\334\373\246\153\365\110\141\163\043\131\216
\002\247\274\104\352\364\111\235\361\124\130\371\140\257\332\030
\244\057\050\105\334\172\240\210\206\135\363\073\347\377\051\065
\200\374\144\103\224\346\343\034\157\276\255\016\052\143\231\053
\311\176\205\366\161\350\006\003\225\376\336\217\110\034\132\324
\222\350\053\356\347\061\333\272\004\152\207\230\347\305\137\357
\175\247\042\367\001\330\115\371\211\320\016\232\005\131\244\236
\230\331\157\053\312\160\276\144\302\125\243\364\351\257\303\222
\051\334\210\026\044\231\074\215\046\230\266\133\267\314\316\267
\067\007\375\046\331\230\205\044\377\131\043\003\232\355\235\235

\250\344\136\070\316\327\122\015\157\322\077\155\261\005\153\111
\316\212\221\106\163\364\366\057\360\250\163\167\016\145\254\241
\215\146\122\151\176\113\150\014\307\036\067\047\203\245\214\307
\002\344\024\315\111\001\260\163\263\375\306\220\072\157\322\154
\355\073\356\354\221\276\242\103\135\213\000\112\146\045\104\160
\336\100\017\370\174\025\367\242\316\074\327\136\023\214\201\027
\030\027\321\275\361\167\020\072\324\145\071\301\047\254\127\054
\045\124\377\242\332\117\212\141\071\136\256\075\112\214\275
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certigna Root CA"
Issuer: CN=Certigna Root CA,OU=0002 48146308100036,O=Dhimyotis,C=FR
Serial Number:00:ca:e9:1b:89:f1:55:03:0d:a3:e6:41:6d:c4:e3:a6:e1
Subject: CN=Certigna Root CA,OU=0002 48146308100036,O=Dhimyotis,C=FR
Not Valid Before: Tue Oct 01 08:32:27 2013
Not Valid After : Sat Oct 01 08:32:27 2033
Fingerprint (SHA-256):
D4:8D:3D:23:EE:DB:50:A4:59:E5:51:97:60:1C:27:77:4B:9D:7B:18:C9:4D:5A:05:95:11:A1:02:50:B9:31:68
Fingerprint (SHA1): 2D:0D:52:14:FF:9E:AD:99:24:01:74:20:47:6E:6C:85:27:27:F5:43
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certigna Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\055\015\122\024\377\236\255\231\044\001\164\040\107\156\154\205
\047\047\365\103
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\016\134\060\142\047\353\133\274\327\256\142\272\351\325\337\167
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\034\060\032\006\003\125\004\013\014\023\060\060
\060\062\040\064\070\061\064\066\063\060\070\061\060\060\060\063
\066\061\031\060\027\006\003\125\004\003\014\020\103\145\162\164
\151\147\156\141\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\312\351\033\211\361\125\003\015\243\346\101\155\304
\343\246\341
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "emSign Root CA - G1"
#
Issuer: CN=emSign Root CA - G1,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:31:f5:e4:62:0c:6c:58:ed:d6:d8
Subject: CN=emSign Root CA - G1,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
40:F6:AF:03:46:A9:9A:A1:CD:1D:55:5A:4E:9C:CE:62:C7:F9:63:46:03:EE:40:66:15:83:3D:C8:C8:D0:03:67
Fingerprint (SHA1): 8A:C7:AD:8F:73:AC:4E:C1:B5:75:4D:A5:40:F4:FC:CF:7C:B5:8E:8C
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - G1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\107\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\107\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\061\365\344\142\014\154\130\355\326\330
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\224\060\202\002\174\240\003\002\001\002\002\012\061
\365\344\142\014\154\130\355\326\330\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\060\147\061\013\060\011\006\003
\125\004\006\023\002\111\116\061\023\060\021\006\003\125\004\013
\023\012\145\155\123\151\147\156\040\120\113\111\061\045\060\043

\006\003\125\004\012\023\034\145\115\165\144\150\162\141\040\124
\145\143\150\156\157\154\157\147\151\145\163\040\114\151\155\151
\164\145\144\061\034\060\032\006\003\125\004\003\023\023\145\155
\123\151\147\156\040\122\157\157\164\040\103\101\040\055\040\107
\061\060\036\027\015\061\070\060\062\061\070\061\070\063\060\060
\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060\060
\132\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116
\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147
\156\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034
\145\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157
\147\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032
\006\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157
\157\164\040\103\101\040\055\040\107\061\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\223\113\273\351\146
\212\356\235\133\325\064\223\320\033\036\303\347\236\270\144\063
\177\143\170\150\264\315\056\161\165\327\233\040\306\115\051\274
\266\150\140\212\367\041\232\126\065\132\363\166\275\330\315\232
\377\223\126\113\245\131\006\241\223\064\051\335\026\064\165\116
\362\201\264\307\226\116\255\031\025\122\112\376\074\160\165\160
\315\257\053\253\025\232\063\074\252\263\213\252\315\103\375\365
\352\160\377\355\317\021\073\224\316\116\062\026\323\043\100\052
\167\263\257\074\001\054\154\355\231\054\213\331\116\151\230\262
\367\217\101\260\062\170\141\326\015\137\303\372\242\100\222\035
\134\027\346\160\076\065\347\242\267\302\142\342\253\244\070\114
\265\071\065\157\352\003\151\372\072\124\150\205\155\326\362\057
\103\125\036\221\015\016\330\325\152\244\226\321\023\074\054\170
\120\350\072\222\322\027\126\345\065\032\100\034\076\215\054\355
\071\337\102\340\203\101\164\337\243\315\302\206\140\110\150\343
\151\013\124\000\213\344\166\151\041\015\171\116\064\010\136\024
\302\314\261\267\255\327\174\160\212\307\205\002\003\001\000\001
\243\102\060\100\060\035\006\003\125\035\016\004\026\004\024\373
\357\015\206\236\260\343\335\251\271\361\041\027\177\076\374\360
\167\053\032\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\001\001\000\131\377\362\214\365\207\175\161
\075\243\237\033\133\321\332\370\323\234\153\066\275\233\251\141
\353\336\026\054\164\075\236\346\165\332\327\272\247\274\102\027
\347\075\221\353\345\175\335\076\234\361\317\222\254\154\110\314
\302\042\077\151\073\305\266\025\057\243\065\306\150\052\034\127
\257\071\357\215\320\065\303\030\014\173\000\126\034\315\213\031
\164\336\276\017\022\340\320\252\241\077\002\064\261\160\316\235
\030\326\010\003\011\106\356\140\340\176\266\304\111\004\121\175
\160\140\274\252\262\377\171\162\172\246\035\075\137\052\370\312
\342\375\071\267\107\271\353\176\337\004\043\257\372\234\006\007
\351\373\143\223\200\100\265\306\154\012\061\050\316\014\237\317
\263\043\065\200\101\215\154\304\067\173\201\057\200\241\100\102

\205\351\331\070\215\350\241\123\315\001\277\151\350\132\006\362
\105\013\220\372\256\341\277\235\362\256\127\074\245\256\262\126
\364\213\145\100\351\375\061\201\054\364\071\011\330\356\153\247
\264\246\035\025\245\230\367\001\201\330\205\175\363\121\134\161
\210\336\272\314\037\200\176\112
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "emSign Root CA - G1"
Issuer: CN=emSign Root CA - G1,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:31:f5:e4:62:0c:6c:58:ed:d6:d8
Subject: CN=emSign Root CA - G1,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
40:F6:AF:03:46:A9:9A:A1:CD:1D:55:5A:4E:9C:CE:62:C7:F9:63:46:03:EE:40:66:15:83:3D:C8:C8:D0:03:67
Fingerprint (SHA1): 8A:C7:AD:8F:73:AC:4E:C1:B5:75:4D:A5:40:F4:FC:CF:7C:B5:8E:8C
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - G1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\212\307\255\217\163\254\116\301\265\165\115\245\100\364\374\317
\174\265\216\214
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\234\102\204\127\335\313\013\247\056\225\255\266\363\332\274\254
END
CKA_ISSUER MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\107\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\061\365\344\142\014\154\130\355\326\330
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "emSign ECC Root CA - G3"
#
Issuer: CN=emSign ECC Root CA - G3,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:3c:f6:07:a9:68:70:0e:da:8b:84
Subject: CN=emSign ECC Root CA - G3,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
86:A1:EC:BA:08:9C:4A:8D:3B:BE:27:34:C6:12:BA:34:1D:81:3E:04:3C:F9:E8:A8:62:CD:5C:57:A3:6B:BE:6B
Fingerprint (SHA1): 30:43:FA:4F:F2:57:DC:A0:C3:80:EE:2E:58:EA:78:B2:3F:E6:BB:C1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign ECC Root CA - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\040\060\036\006
\003\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103
\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\040\060\036\006
\003\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103
\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\074\366\007\251\150\160\016\332\213\204
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\116\060\202\001\323\240\003\002\001\002\002\012\074
\366\007\251\150\160\016\332\213\204\060\012\006\010\052\206\110
\316\075\004\003\003\060\153\061\013\060\011\006\003\125\004\006
\023\002\111\116\061\023\060\021\006\003\125\004\013\023\012\145
\155\123\151\147\156\040\120\113\111\061\045\060\043\006\003\125
\004\012\023\034\145\115\165\144\150\162\141\040\124\145\143\150
\156\157\154\157\147\151\145\163\040\114\151\155\151\164\145\144
\061\040\060\036\006\003\125\004\003\023\027\145\155\123\151\147

\156\040\105\103\103\040\122\157\157\164\040\103\101\040\055\040
\107\063\060\036\027\015\061\070\060\062\061\070\061\070\063\060
\060\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060
\060\132\060\153\061\013\060\011\006\003\125\004\006\023\002\111
\116\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151
\147\156\040\120\113\111\061\045\060\043\006\003\125\004\012\023
\034\145\115\165\144\150\162\141\040\124\145\143\150\156\157\154
\157\147\151\145\163\040\114\151\155\151\164\145\144\061\040\060
\036\006\003\125\004\003\023\027\145\155\123\151\147\156\040\105
\103\103\040\122\157\157\164\040\103\101\040\055\040\107\063\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\043\245\014\270\055\022\365\050\363
\261\262\335\342\002\022\200\236\071\137\111\115\237\311\045\064
\131\164\354\273\006\034\347\300\162\257\350\256\057\341\101\124
\207\024\250\112\262\350\174\202\346\133\152\265\334\263\165\316
\213\006\320\206\043\277\106\325\216\017\077\004\364\327\034\222
\176\366\245\143\302\365\137\216\056\117\241\030\031\002\053\062
\012\202\144\175\026\223\321\243\102\060\100\060\035\006\003\125
\035\016\004\026\004\024\174\135\002\204\023\324\314\212\233\201
\316\027\034\056\051\036\234\110\143\102\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\012\006\010\052
\206\110\316\075\004\003\003\003\151\000\060\146\002\061\000\276
\363\141\317\002\020\035\144\225\007\270\030\156\210\205\005\057
\203\010\027\220\312\037\212\114\350\015\033\172\261\255\325\201
\011\107\357\073\254\010\004\174\134\231\261\355\107\007\322\002
\061\000\235\272\125\374\251\112\350\355\355\346\166\001\102\173
\310\370\140\331\215\121\213\125\073\373\214\173\353\145\011\303
\370\226\315\107\250\202\362\026\125\167\044\176\022\020\225\004
\054\243
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "emSign ECC Root CA - G3"
Issuer: CN=emSign ECC Root CA - G3,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:3c:f6:07:a9:68:70:0e:da:8b:84
Subject: CN=emSign ECC Root CA - G3,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
86:A1:EC:BA:08:9C:4A:8D:3B:BE:27:34:C6:12:BA:34:1D:81:3E:04:3C:F9:E8:A8:62:CD:5C:57:A3:6B:BE:6B
Fingerprint (SHA1): 30:43:FA:4F:F2:57:DC:A0:C3:80:EE:2E:58:EA:78:B2:3F:E6:BB:C1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "emSign ECC Root CA - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\060\103\372\117\362\127\334\240\303\200\356\056\130\352\170\262
\077\346\273\301
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\316\013\162\321\237\210\216\320\120\003\350\343\270\213\147\100
END
CKA_ISSUER MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\040\060\036\006
\003\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103
\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\074\366\007\251\150\160\016\332\213\204
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "emSign Root CA - C1"
#
Issuer: CN=emSign Root CA - C1,O=eMudhra Inc,OU=emSign PKI,C=US
Serial Number:00:ae:cf:00:ba:c4:cf:32:f8:43:b2
Subject: CN=emSign Root CA - C1,O=eMudhra Inc,OU=emSign PKI,C=US
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
12:56:09:AA:30:1D:A0:A2:49:B9:7A:82:39:CB:6A:34:21:6F:44:DC:AC:9F:39:54:B1:42:92:F2:E8:C8:60:8F
Fingerprint (SHA1): E7:2E:F1:DF:FC:B2:09:28:CF:5D:D4:D5:67:37:B1:51:CB:86:4F:01
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - C1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164

\040\103\101\040\055\040\103\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164
\040\103\101\040\055\040\103\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\000\256\317\000\272\304\317\062\370\103\262
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\163\060\202\002\133\240\003\002\001\002\002\013\000
\256\317\000\272\304\317\062\370\103\262\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\060\126\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\023\060\021\006\003\125\004
\013\023\012\145\155\123\151\147\156\040\120\113\111\061\024\060
\022\006\003\125\004\012\023\013\145\115\165\144\150\162\141\040
\111\156\143\061\034\060\032\006\003\125\004\003\023\023\145\155
\123\151\147\156\040\122\157\157\164\040\103\101\040\055\040\103
\061\060\036\027\015\061\070\060\062\061\070\061\070\063\060\060
\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060\060
\132\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147
\156\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013
\145\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\103\061\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\317\353\251\271\361\231
\005\314\330\050\041\112\363\163\064\121\204\126\020\365\240\117
\054\022\343\372\023\232\047\320\317\371\171\032\164\137\035\171
\071\374\133\370\160\216\340\222\122\367\344\045\371\124\203\331
\035\323\310\132\205\077\136\307\266\007\356\076\300\316\232\257
\254\126\102\052\071\045\160\326\277\265\173\066\255\254\366\163
\334\315\327\035\212\203\245\373\053\220\025\067\153\034\046\107
\334\073\051\126\223\152\263\301\152\072\235\075\365\301\227\070
\130\005\213\034\021\343\344\264\270\135\205\035\203\376\170\137
\013\105\150\030\110\245\106\163\064\073\376\017\310\166\273\307
\030\363\005\321\206\363\205\355\347\271\331\062\255\125\210\316
\246\266\221\260\117\254\176\025\043\226\366\077\360\040\064\026
\336\012\306\304\004\105\171\177\247\375\276\322\251\245\257\234
\305\043\052\367\074\041\154\275\257\217\116\305\072\262\363\064
\022\374\337\200\032\111\244\324\251\225\367\236\211\136\242\211
\254\224\313\250\150\233\257\212\145\047\315\211\356\335\214\265

\153\051\160\103\240\151\013\344\271\017\002\003\001\000\001\243
\102\060\100\060\035\006\003\125\035\016\004\026\004\024\376\241
\340\160\036\052\003\071\122\132\102\276\134\221\205\172\030\252
\115\265\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\302\112\126\372\025\041\173\050\242
\351\345\035\373\370\055\304\071\226\101\114\073\047\054\304\154
\030\025\200\306\254\257\107\131\057\046\013\343\066\260\357\073
\376\103\227\111\062\231\022\025\133\337\021\051\377\253\123\370
\273\301\170\017\254\234\123\257\127\275\150\214\075\151\063\360
\243\240\043\143\073\144\147\042\104\255\325\161\313\126\052\170
\222\243\117\022\061\066\066\342\336\376\000\304\243\140\017\047
\255\240\260\212\265\066\172\122\241\275\047\364\040\047\142\350
\115\224\044\023\344\012\004\351\074\253\056\310\103\011\112\306
\141\004\345\111\064\176\323\304\310\365\017\300\252\351\272\124
\136\363\143\053\117\117\120\324\376\271\173\231\214\075\300\056
\274\002\053\323\304\100\344\212\007\061\036\233\316\046\231\023
\373\021\352\232\042\014\021\031\307\136\033\201\120\060\310\226
\022\156\347\313\101\177\221\073\242\107\267\124\200\033\334\000
\314\232\220\352\303\303\120\006\142\014\060\300\025\110\247\250
\131\174\341\256\042\242\342\012\172\017\372\142\253\122\114\341
\361\337\312\276\203\015\102
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "emSign Root CA - C1"
Issuer: CN=emSign Root CA - C1,O=eMudhra Inc,OU=emSign PKI,C=US
Serial Number:00:ae:cf:00:ba:c4:cf:32:f8:43:b2
Subject: CN=emSign Root CA - C1,O=eMudhra Inc,OU=emSign PKI,C=US
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
12:56:09:AA:30:1D:A0:A2:49:B9:7A:82:39:CB:6A:34:21:6F:44:DC:AC:9F:39:54:B1:42:92:F2:E8:C8:60:8F
Fingerprint (SHA1): E7:2E:F1:DF:FC:B2:09:28:CF:5D:D4:D5:67:37:B1:51:CB:86:4F:01
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - C1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\347\056\361\337\374\262\011\050\317\135\324\325\147\067\261\121
\313\206\117\001
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\330\343\135\001\041\372\170\132\260\337\272\322\356\052\137\150

END
CKA_ISSUER MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164
\040\103\101\040\055\040\103\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\000\256\317\000\272\304\317\062\370\103\262
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "emSign ECC Root CA - C3"
#
Issuer: CN=emSign ECC Root CA - C3,O=eMudhra Inc,OU=emSign PKI,C=US
Serial Number:7b:71:b6:82:56:b8:12:7c:9c:a8
Subject: CN=emSign ECC Root CA - C3,O=eMudhra Inc,OU=emSign PKI,C=US
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
BC:4D:80:9B:15:18:9D:78:DB:3E:1D:8C:F4:F9:72:6A:79:5D:A1:64:3C:A5:F1:35:8E:1D:DB:0E:DC:0D:7E:B3
Fingerprint (SHA1): B6:AF:43:C2:9B:81:53:7D:F6:EF:6B:C3:1F:1F:60:15:0C:EE:48:66
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign ECC Root CA - C3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\040\060\036\006\003
\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103\040
\122\157\157\164\040\103\101\040\055\040\103\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\040\060\036\006\003

\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103\040
\122\157\157\164\040\103\101\040\055\040\103\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\173\161\266\202\126\270\022\174\234\250
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\053\060\202\001\261\240\003\002\001\002\002\012\173
\161\266\202\126\270\022\174\234\250\060\012\006\010\052\206\110
\316\075\004\003\003\060\132\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\023\060\021\006\003\125\004\013\023\012\145
\155\123\151\147\156\040\120\113\111\061\024\060\022\006\003\125
\004\012\023\013\145\115\165\144\150\162\141\040\111\156\143\061
\040\060\036\006\003\125\004\003\023\027\145\155\123\151\147\156
\040\105\103\103\040\122\157\157\164\040\103\101\040\055\040\103
\063\060\036\027\015\061\070\060\062\061\070\061\070\063\060\060
\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060\060
\132\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147
\156\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013
\145\115\165\144\150\162\141\040\111\156\143\061\040\060\036\006
\003\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103
\040\122\157\157\164\040\103\101\040\055\040\103\063\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\375\245\141\256\173\046\020\035\351\267\042
\060\256\006\364\201\263\261\102\161\225\071\274\323\122\343\257
\257\371\362\227\065\222\066\106\016\207\225\215\271\071\132\351
\273\337\320\376\310\007\101\074\273\125\157\203\243\152\373\142
\260\201\211\002\160\175\110\305\112\343\351\042\124\042\115\223
\273\102\014\257\167\234\043\246\175\327\141\021\316\145\307\370
\177\376\365\362\251\243\102\060\100\060\035\006\003\125\035\016
\004\026\004\024\373\132\110\320\200\040\100\362\250\351\000\007
\151\031\167\247\346\303\364\317\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\012\006\010\052\206\110
\316\075\004\003\003\003\150\000\060\145\002\061\000\264\330\057
\002\211\375\266\114\142\272\103\116\023\204\162\265\256\335\034
\336\326\265\334\126\217\130\100\132\055\336\040\114\042\203\312
\223\250\176\356\022\100\307\326\207\117\370\337\205\002\060\034
\024\144\344\174\226\203\021\234\260\321\132\141\113\246\017\111
\323\000\374\241\374\344\245\377\177\255\327\060\320\307\167\177
\276\201\007\125\060\120\040\024\365\127\070\012\250\061\121
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "emSign ECC Root CA - C3"

Issuer: CN=emSign ECC Root CA - C3,O=eMudhra Inc,OU=emSign PKI,C=US
Serial Number:7b:71:b6:82:56:b8:12:7c:9c:a8
Subject: CN=emSign ECC Root CA - C3,O=eMudhra Inc,OU=emSign PKI,C=US
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
BC:4D:80:9B:15:18:9D:78:DB:3E:1D:8C:F4:F9:72:6A:79:5D:A1:64:3C:A5:F1:35:8E:1D:DB:0E:DC:0D:7E:B3
Fingerprint (SHA1): B6:AF:43:C2:9B:81:53:7D:F6:EF:6B:C3:1F:1F:60:15:0C:EE:48:66
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign ECC Root CA - C3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\266\257\103\302\233\201\123\175\366\357\153\303\037\037\140\025
\014\356\110\146
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\076\123\263\243\201\356\327\020\370\323\260\035\027\222\365\325
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\040\060\036\006\003
\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103\040
\122\157\157\164\040\103\101\040\055\040\103\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\173\161\266\202\126\270\022\174\234\250
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Hongkong Post Root CA 3"
#
Issuer: CN=Hongkong Post Root CA 3,O=Hongkong Post,L=Hong Kong,ST=Hong Kong,C=HK
Serial Number:08:16:5f:8a:4c:a5:ec:00:c9:93:40:df:c4:c6:ae:23:b8:1c:5a:a4
Subject: CN=Hongkong Post Root CA 3,O=Hongkong Post,L=Hong Kong,ST=Hong Kong,C=HK
Not Valid Before: Sat Jun 03 02:29:46 2017
Not Valid After : Tue Jun 03 02:29:46 2042
Fingerprint (SHA-256):
5A:2F:C0:3F:0C:83:B0:90:BB:FA:40:60:4B:09:88:44:6C:76:36:18:3D:F9:84:6E:17:10:1A:44:7F:B8:EF:D6
Fingerprint (SHA1): 58:A2:D0:EC:20:52:81:5B:C1:F3:F8:64:02:24:4E:C2:8E:02:4B:02
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hongkong Post Root CA 3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\022\060\020\006\003\125\004\010\023\011\110\157\156\147\040\113
\157\156\147\061\022\060\020\006\003\125\004\007\023\011\110\157
\156\147\040\113\157\156\147\061\026\060\024\006\003\125\004\012
\023\015\110\157\156\147\153\157\156\147\040\120\157\163\164\061
\040\060\036\006\003\125\004\003\023\027\110\157\156\147\153\157
\156\147\040\120\157\163\164\040\122\157\157\164\040\103\101\040
\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\022\060\020\006\003\125\004\010\023\011\110\157\156\147\040\113
\157\156\147\061\022\060\020\006\003\125\004\007\023\011\110\157
\156\147\040\113\157\156\147\061\026\060\024\006\003\125\004\012
\023\015\110\157\156\147\153\157\156\147\040\120\157\163\164\061
\040\060\036\006\003\125\004\003\023\027\110\157\156\147\153\157
\156\147\040\120\157\163\164\040\122\157\157\164\040\103\101\040
\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\010\026\137\212\114\245\354\000\311\223\100\337\304\306
\256\043\270\034\132\244
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\317\060\202\003\267\240\003\002\001\002\002\024\010
\026\137\212\114\245\354\000\311\223\100\337\304\306\256\043\270
\034\132\244\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\157\061\013\060\011\006\003\125\004\006\023\002\110
\113\061\022\060\020\006\003\125\004\010\023\011\110\157\156\147
\040\113\157\156\147\061\022\060\020\006\003\125\004\007\023\011
\110\157\156\147\040\113\157\156\147\061\026\060\024\006\003\125
\004\012\023\015\110\157\156\147\153\157\156\147\040\120\157\163
\164\061\040\060\036\006\003\125\004\003\023\027\110\157\156\147
\153\157\156\147\040\120\157\163\164\040\122\157\157\164\040\103
\101\040\063\060\036\027\015\061\067\060\066\060\063\060\062\062
\071\064\066\132\027\015\064\062\060\066\060\063\060\062\062\071
\064\066\132\060\157\061\013\060\011\006\003\125\004\006\023\002
\110\113\061\022\060\020\006\003\125\004\010\023\011\110\157\156
\147\040\113\157\156\147\061\022\060\020\006\003\125\004\007\023
\011\110\157\156\147\040\113\157\156\147\061\026\060\024\006\003
\125\004\012\023\015\110\157\156\147\153\157\156\147\040\120\157

\163\164\061\040\060\036\006\003\125\004\003\023\027\110\157\156
\147\153\157\156\147\040\120\157\163\164\040\122\157\157\164\040
\103\101\040\063\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\263\210\327\352\316\017\040\116\276\346\326
\003\155\356\131\374\302\127\337\051\150\241\203\016\076\150\307
\150\130\234\034\140\113\211\103\014\271\324\025\262\356\301\116
\165\351\265\247\357\345\351\065\231\344\314\034\347\113\137\215
\063\060\040\063\123\331\246\273\325\076\023\216\351\037\207\111
\255\120\055\120\312\030\276\001\130\242\023\160\226\273\211\210
\126\200\134\370\275\054\074\341\114\127\210\273\323\271\225\357
\313\307\366\332\061\164\050\246\346\124\211\365\101\061\312\345
\046\032\315\202\340\160\332\073\051\273\325\003\365\231\272\125
\365\144\321\140\016\263\211\111\270\212\057\005\322\204\105\050
\174\217\150\120\022\170\374\013\265\123\313\302\230\034\204\243
\236\260\276\043\244\332\334\310\053\036\332\156\105\036\211\230
\332\371\000\056\006\351\014\073\160\325\120\045\210\231\313\315
\163\140\367\325\377\065\147\305\241\274\136\253\315\112\270\105
\353\310\150\036\015\015\024\106\022\343\322\144\142\212\102\230
\274\264\306\010\010\370\375\250\114\144\234\166\001\275\057\251
\154\063\017\330\077\050\270\074\151\001\102\206\176\151\301\311
\006\312\345\172\106\145\351\302\326\120\101\056\077\267\344\355
\154\327\277\046\001\021\242\026\051\112\153\064\006\220\354\023
\322\266\373\152\166\322\074\355\360\326\055\335\341\025\354\243
\233\057\054\311\076\053\344\151\073\377\162\045\261\066\206\133
\307\177\153\213\125\033\112\305\040\141\075\256\313\120\341\010
\072\276\260\217\143\101\123\060\010\131\074\230\035\167\272\143
\221\172\312\020\120\140\277\360\327\274\225\207\217\227\305\376
\227\152\001\224\243\174\133\205\035\052\071\072\320\124\241\321
\071\161\235\375\041\371\265\173\360\342\340\002\217\156\226\044
\045\054\240\036\054\250\304\211\247\357\355\231\006\057\266\012
\114\117\333\242\314\067\032\257\107\205\055\212\137\304\064\064
\114\000\375\030\223\147\023\321\067\346\110\264\213\006\305\127
\173\031\206\012\171\313\000\311\122\257\102\377\067\217\341\243
\036\172\075\120\253\143\006\347\025\265\077\266\105\067\224\067
\261\176\362\110\303\177\305\165\376\227\215\105\217\032\247\032
\162\050\032\100\017\002\003\001\000\001\243\143\060\141\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\037\006\003\125\035\043\004\030\060\026\200\024\027\235\315\036
\213\326\071\053\160\323\134\324\240\270\037\260\000\374\305\141
\060\035\006\003\125\035\016\004\026\004\024\027\235\315\036\213
\326\071\053\160\323\134\324\240\270\037\260\000\374\305\141\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\002\001\000\126\325\173\156\346\042\001\322\102\233\030\325\016
\327\146\043\134\343\376\240\307\222\322\351\224\255\113\242\306
\354\022\174\164\325\110\322\131\024\231\300\353\271\321\353\364
\110\060\133\255\247\127\163\231\251\323\345\267\321\056\131\044

\130\334\150\056\056\142\330\152\344\160\013\055\040\120\040\244
\062\225\321\000\230\273\323\375\367\062\362\111\256\306\172\340
\107\276\156\316\313\243\162\072\055\151\135\313\310\350\105\071
\324\372\102\301\021\114\167\135\222\373\152\377\130\104\345\353
\201\236\257\240\231\255\276\251\001\146\313\070\035\074\337\103
\037\364\115\156\264\272\027\106\374\175\375\207\201\171\152\015
\063\017\372\057\370\024\271\200\263\135\115\252\227\341\371\344
\030\305\370\325\070\214\046\074\375\362\050\342\356\132\111\210
\054\337\171\075\216\236\220\074\275\101\112\072\335\133\366\232
\264\316\077\045\060\177\062\175\242\003\224\320\334\172\241\122
\336\156\223\215\030\046\375\125\254\275\217\233\322\317\257\347
\206\054\313\037\011\157\243\157\251\204\324\163\277\115\241\164
\033\116\043\140\362\314\016\252\177\244\234\114\045\250\262\146
\073\070\377\331\224\060\366\162\204\276\150\125\020\017\306\163
\054\026\151\223\007\376\261\105\355\273\242\125\152\260\332\265
\112\002\045\047\205\327\267\267\206\104\026\211\154\200\053\076
\227\251\234\325\176\125\114\306\336\105\020\034\352\351\073\237
\003\123\356\356\172\001\002\026\170\324\350\302\276\106\166\210
\023\077\042\273\110\022\035\122\000\264\002\176\041\032\036\234
\045\364\363\075\136\036\322\034\371\263\055\266\367\067\134\306
\313\041\116\260\367\231\107\030\205\301\053\272\125\256\006\352
\320\007\262\334\253\320\202\226\165\316\322\120\376\231\347\317
\057\237\347\166\321\141\052\373\041\273\061\320\252\237\107\244
\262\042\312\026\072\120\127\304\133\103\147\305\145\142\003\111
\001\353\103\331\330\370\236\255\317\261\143\016\105\364\240\132
\054\233\055\305\246\300\255\250\107\364\047\114\070\015\056\033
\111\073\122\364\350\210\203\053\124\050\324\362\065\122\264\062
\203\142\151\144\014\221\234\237\227\352\164\026\375\037\021\006
\232\233\364
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Hongkong Post Root CA 3"
Issuer: CN=Hongkong Post Root CA 3,O=Hongkong Post,L=Hong Kong,ST=Hong Kong,C=HK
Serial Number:08:16:5f:8a:4c:a5:ec:00:c9:93:40:df:c4:c6:ae:23:b8:1c:5a:a4
Subject: CN=Hongkong Post Root CA 3,O=Hongkong Post,L=Hong Kong,ST=Hong Kong,C=HK
Not Valid Before: Sat Jun 03 02:29:46 2017
Not Valid After : Tue Jun 03 02:29:46 2042
Fingerprint (SHA-256):
5A:2F:C0:3F:0C:83:B0:90:BB:FA:40:60:4B:09:88:44:6C:76:36:18:3D:F9:84:6E:17:10:1A:44:7F:B8:EF:D6
Fingerprint (SHA1): 58:A2:D0:EC:20:52:81:5B:C1:F3:F8:64:02:24:4E:C2:8E:02:4B:02
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hongkong Post Root CA 3"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\130\242\320\354\040\122\201\133\301\363\370\144\002\044\116\302
\216\002\113\002
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\021\374\237\275\163\060\002\212\375\077\363\130\271\313\040\360
END
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\022\060\020\006\003\125\004\010\023\011\110\157\156\147\040\113
\157\156\147\061\022\060\020\006\003\125\004\007\023\011\110\157
\156\147\040\113\157\156\147\061\026\060\024\006\003\125\004\012
\023\015\110\157\156\147\153\157\156\147\040\120\157\163\164\061
\040\060\036\006\003\125\004\003\023\027\110\157\156\147\153\157
\156\147\040\120\157\163\164\040\122\157\157\164\040\103\101\040
\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\010\026\137\212\114\245\354\000\311\223\100\337\304\306
\256\043\270\034\132\244
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust Root Certification Authority - G4"
#
Issuer: CN=Entrust Root Certification Authority - G4,OU="(c) 2015 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number:00:d9:b5:43:7f:af:a9:39:0f:00:00:00:00:55:65:ad:58
Subject: CN=Entrust Root Certification Authority - G4,OU="(c) 2015 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Wed May 27 11:11:16 2015
Not Valid After : Sun Dec 27 11:41:16 2037
Fingerprint (SHA-256):
DB:35:17:D1:F6:73:2A:2D:5A:B9:7C:53:3E:C7:07:79:EE:32:70:A6:2F:B4:AC:42:38:37:24:60:E6:F0:1E:88
Fingerprint (SHA1): 14:88:4E:86:26:37:B0:26:AF:59:62:5C:40:77:EC:35:29:BA:96:01
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - G4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165

\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\064
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\331\265\103\177\257\251\071\017\000\000\000\000\125
\145\255\130
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\113\060\202\004\063\240\003\002\001\002\002\021\000
\331\265\103\177\257\251\071\017\000\000\000\000\125\145\255\130
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165\163
\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004\013
\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165\163
\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162\155
\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051\040
\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111\156
\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162\151
\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060\060
\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107\064

\060\036\027\015\061\065\060\065\062\067\061\061\061\061\061\066
\132\027\015\063\067\061\062\062\067\061\061\064\061\061\066\132
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\064\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\261\354\054\102\356\342\321\060\377\245\222\107\342\055
\303\272\144\227\155\312\367\015\265\131\301\263\313\250\150\031
\330\257\204\155\060\160\135\176\363\056\322\123\231\341\376\037
\136\331\110\257\135\023\215\333\377\143\063\115\323\000\002\274
\304\370\321\006\010\224\171\130\212\025\336\051\263\375\375\304
\117\350\252\342\240\073\171\315\277\153\103\062\335\331\164\020
\271\367\364\150\324\273\320\207\325\252\113\212\052\157\052\004
\265\262\246\307\240\172\346\110\253\322\321\131\314\326\176\043
\346\227\154\360\102\345\334\121\113\025\101\355\111\112\311\336
\020\227\326\166\301\357\245\265\066\024\227\065\330\170\042\065
\122\357\103\275\333\047\333\141\126\202\064\334\313\210\140\014
\013\132\345\054\001\306\124\257\327\252\301\020\173\322\005\132
\270\100\236\206\247\303\220\206\002\126\122\011\172\234\322\047
\202\123\112\145\122\152\365\074\347\250\362\234\257\213\275\323
\016\324\324\136\156\207\236\152\075\105\035\321\135\033\364\351
\012\254\140\231\373\211\264\377\230\054\317\174\035\351\002\252
\004\232\036\270\334\210\156\045\263\154\146\367\074\220\363\127
\301\263\057\365\155\362\373\312\241\370\051\235\106\213\263\152
\366\346\147\007\276\054\147\012\052\037\132\262\076\127\304\323
\041\041\143\145\122\221\033\261\231\216\171\176\346\353\215\000
\331\132\252\352\163\350\244\202\002\107\226\376\133\216\124\141
\243\353\057\113\060\260\213\043\165\162\174\041\074\310\366\361
\164\324\034\173\243\005\125\356\273\115\073\062\276\232\167\146
\236\254\151\220\042\007\037\141\072\226\276\345\232\117\314\005
\074\050\131\323\301\014\124\250\131\141\275\310\162\114\350\334
\237\207\177\275\234\110\066\136\225\243\016\271\070\044\125\374
\165\146\353\002\343\010\064\051\112\306\343\053\057\063\240\332
\243\206\245\022\227\375\200\053\332\024\102\343\222\275\076\362
\135\136\147\164\056\034\210\107\051\064\137\342\062\250\234\045
\067\214\272\230\000\227\213\111\226\036\375\045\212\254\334\332
\330\135\164\156\146\260\377\104\337\241\030\306\276\110\057\067
\224\170\370\225\112\077\177\023\136\135\131\375\164\206\103\143

\163\111\002\003\001\000\001\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\237\070\304\126\043\303\071\350\240
\161\154\350\124\114\344\350\072\261\277\147\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\022
\345\102\246\173\213\017\014\344\106\245\266\140\100\207\214\045
\176\255\270\150\056\133\306\100\166\074\003\370\311\131\364\363
\253\142\316\020\215\264\132\144\214\150\300\260\162\103\064\322
\033\013\366\054\123\322\312\220\113\206\146\374\252\203\042\364
\213\032\157\046\110\254\166\167\010\277\305\230\134\364\046\211
\236\173\303\271\144\062\001\177\323\303\335\130\155\354\261\253
\204\125\164\167\204\004\047\122\153\206\114\316\335\271\145\377
\326\306\136\237\232\020\231\113\165\152\376\152\351\227\040\344
\344\166\172\306\320\044\252\220\315\040\220\272\107\144\373\177
\007\263\123\170\265\012\142\362\163\103\316\101\053\201\152\056
\205\026\224\123\324\153\137\162\042\253\121\055\102\325\000\234
\231\277\336\273\224\073\127\375\232\365\206\313\126\073\133\210
\001\345\174\050\113\003\371\111\203\174\262\177\174\343\355\216
\241\177\140\123\216\125\235\120\064\022\017\267\227\173\154\207
\112\104\347\365\155\354\200\067\360\130\031\156\112\150\166\360
\037\222\344\352\265\222\323\141\121\020\013\255\247\331\137\307
\137\334\037\243\134\214\241\176\233\267\236\323\126\157\146\136
\007\226\040\355\013\164\373\146\116\213\021\025\351\201\111\176
\157\260\324\120\177\042\327\137\145\002\015\246\364\205\036\330
\256\006\113\112\247\322\061\146\302\370\316\345\010\246\244\002
\226\104\150\127\304\325\063\317\031\057\024\304\224\034\173\244
\331\360\237\016\261\200\342\321\236\021\144\251\210\021\072\166
\202\345\142\302\200\330\244\203\355\223\357\174\057\220\260\062
\114\226\025\150\110\122\324\231\010\300\044\350\034\343\263\245
\041\016\222\300\220\037\317\040\137\312\073\070\307\267\155\072
\363\346\104\270\016\061\153\210\216\160\353\234\027\122\250\101
\224\056\207\266\347\246\022\305\165\337\133\300\012\156\173\244
\344\136\206\371\066\224\337\167\303\351\015\300\071\361\171\273
\106\216\253\103\131\047\267\040\273\043\351\126\100\041\354\061
\075\145\252\103\362\075\337\160\104\341\272\115\046\020\073\230
\237\363\310\216\033\070\126\041\152\121\223\323\221\312\106\332
\211\267\075\123\203\054\010\037\213\217\123\335\377\254\037
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE

Trust for "Entrust Root Certification Authority - G4"
Issuer: CN=Entrust Root Certification Authority - G4,OU="(c) 2015 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number:00:d9:b5:43:7f:af:a9:39:0f:00:00:00:00:55:65:ad:58
Subject: CN=Entrust Root Certification Authority - G4,OU="(c) 2015 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Wed May 27 11:11:16 2015

Not Valid After : Sun Dec 27 11:41:16 2037
Fingerprint (SHA-256):
DB:35:17:D1:F6:73:2A:2D:5A:B9:7C:53:3E:C7:07:79:EE:32:70:A6:2F:B4:AC:42:38:37:24:60:E6:F0:1E:88
Fingerprint (SHA1): 14:88:4E:86:26:37:B0:26:AF:59:62:5C:40:77:EC:35:29:BA:96:01
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - G4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\024\210\116\206\046\067\260\046\257\131\142\134\100\167\354\065
\051\272\226\001
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\211\123\361\203\043\267\174\216\005\361\214\161\070\116\037\210
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\331\265\103\177\257\251\071\017\000\000\000\000\125
\145\255\130
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Microsoft ECC Root Certificate Authority 2017"
#
Issuer: CN=Microsoft ECC Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Serial Number:66:f2:3d:af:87:de:8b:b1:4a:ea:0c:57:31:01:c2:ec
Subject: CN=Microsoft ECC Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Not Valid Before: Wed Dec 18 23:06:45 2019
Not Valid After : Fri Jul 18 23:16:04 2042

Fingerprint (SHA-256):
35:8D:F3:9D:76:4A:F9:E1:B7:66:E9:C9:72:DF:35:2E:E1:5C:FA:C2:27:AF:6A:D1:D7:0E:8E:4A:6E:DC:BA:02
Fingerprint (SHA1): 99:9A:64:C3:7F:F4:7D:9F:AB:95:F1:47:69:89:14:60:EE:C4:C3:C5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft ECC Root Certificate Authority 2017"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\105\103\103\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\105\103\103\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\146\362\075\257\207\336\213\261\112\352\014\127\061\001
\302\354
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\131\060\202\001\337\240\003\002\001\002\002\020\146
\362\075\257\207\336\213\261\112\352\014\127\061\001\302\354\060
\012\006\010\052\206\110\316\075\004\003\003\060\145\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\036\060\034\006\003
\125\004\012\023\025\115\151\143\162\157\163\157\146\164\040\103
\157\162\160\157\162\141\164\151\157\156\061\066\060\064\006\003
\125\004\003\023\055\115\151\143\162\157\163\157\146\164\040\105
\103\103\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\062\060
\061\067\060\036\027\015\061\071\061\062\061\070\062\063\060\066
\064\065\132\027\015\064\062\060\067\061\070\062\063\061\066\060
\064\132\060\145\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\036\060\034\006\003\125\004\012\023\025\115\151\143\162
\157\163\157\146\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\066\060\064\006\003\125\004\003\023\055\115\151\143\162

\157\163\157\146\164\040\105\103\103\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171\040\062\060\061\067\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\324\274\075\002\102\165\101\023\043\315\200\004\206\002\121
\057\152\250\201\142\013\145\314\366\312\235\036\157\112\146\121
\242\003\331\235\221\372\266\026\261\214\156\336\174\315\333\171
\246\057\316\273\316\161\057\345\245\253\050\354\143\004\146\231
\370\372\362\223\020\005\341\201\050\102\343\306\150\364\346\033
\204\140\112\211\257\355\171\017\073\316\361\366\104\365\001\170
\300\243\124\060\122\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\310\313\231\162\160\122\014\370\346\276\262\004\127\051\052
\317\102\020\355\065\060\020\006\011\053\006\001\004\001\202\067
\025\001\004\003\002\001\000\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\060\130\362\115\352\014\371
\137\136\356\140\051\313\072\362\333\326\062\204\031\077\174\325
\057\302\261\314\223\256\120\273\011\062\306\306\355\176\311\066
\224\022\344\150\205\006\242\033\320\057\002\061\000\231\351\026
\264\016\372\126\110\324\244\060\026\221\170\333\124\214\145\001
\212\347\120\146\302\061\267\071\272\270\032\042\007\116\374\153
\124\026\040\377\053\265\347\114\014\115\246\117\163
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Microsoft ECC Root Certificate Authority 2017"
Issuer: CN=Microsoft ECC Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Serial Number:66:f2:3d:af:87:de:8b:b1:4a:ea:0c:57:31:01:c2:ec
Subject: CN=Microsoft ECC Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Not Valid Before: Wed Dec 18 23:06:45 2019
Not Valid After : Fri Jul 18 23:16:04 2042
Fingerprint (SHA-256):
35:8D:F3:9D:76:4A:F9:E1:B7:66:E9:C9:72:DF:35:2E:E1:5C:FA:C2:27:AF:6A:D1:D7:0E:8E:4A:6E:DC:BA:02
Fingerprint (SHA1): 99:9A:64:C3:7F:F4:7D:9F:AB:95:F1:47:69:89:14:60:EE:C4:C3:C5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft ECC Root Certificate Authority 2017"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\231\232\144\303\177\364\175\237\253\225\361\107\151\211\024\140
\356\304\303\305
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\335\241\003\346\112\223\020\321\277\360\031\102\313\376\355\147

END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\105\103\103\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\146\362\075\257\207\336\213\261\112\352\014\127\061\001
\302\354
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Microsoft RSA Root Certificate Authority 2017"
#
Issuer: CN=Microsoft RSA Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Serial Number:1e:d3:97:09:5f:d8:b4:b3:47:70:1e:aa:be:7f:45:b3
Subject: CN=Microsoft RSA Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Not Valid Before: Wed Dec 18 22:51:22 2019
Not Valid After : Fri Jul 18 23:00:23 2042
Fingerprint (SHA-256):
C7:41:F7:0F:4B:2A:8D:88:BF:2E:71:C1:41:22:EF:53:EF:10:EB:A0:CF:A5:E6:4C:FA:20:F4:18:85:30:73:E0
Fingerprint (SHA1): 73:A5:E6:4A:3B:FF:83:16:FF:0E:DC:CC:61:8A:90:6E:4E:AE:4D:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft RSA Root Certificate Authority 2017"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\122\123\101\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061

\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\122\123\101\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\036\323\227\011\137\330\264\263\107\160\036\252\276\177
\105\263
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\250\060\202\003\220\240\003\002\001\002\002\020\036
\323\227\011\137\330\264\263\107\160\036\252\276\177\105\263\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\145
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\036\060
\034\006\003\125\004\012\023\025\115\151\143\162\157\163\157\146
\164\040\103\157\162\160\157\162\141\164\151\157\156\061\066\060
\064\006\003\125\004\003\023\055\115\151\143\162\157\163\157\146
\164\040\122\123\101\040\122\157\157\164\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
\040\062\060\061\067\060\036\027\015\061\071\061\062\061\070\062
\062\065\061\062\062\132\027\015\064\062\060\067\061\070\062\063
\060\060\062\063\132\060\145\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\036\060\034\006\003\125\004\012\023\025\115
\151\143\162\157\163\157\146\164\040\103\157\162\160\157\162\141
\164\151\157\156\061\066\060\064\006\003\125\004\003\023\055\115
\151\143\162\157\163\157\146\164\040\122\123\101\040\122\157\157
\164\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165
\164\150\157\162\151\164\171\040\062\060\061\067\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\312\133\276
\224\063\214\051\225\221\026\012\225\275\107\142\301\211\363\231
\066\337\106\220\311\245\355\170\152\157\107\221\150\370\047\147
\120\063\035\241\246\373\340\345\103\243\204\002\127\001\135\234
\110\100\202\123\020\274\277\307\073\150\220\266\202\055\345\364
\145\320\314\155\031\314\225\371\173\254\112\224\255\016\336\113
\103\035\207\007\222\023\220\200\203\144\065\071\004\374\345\351
\154\263\266\037\120\224\070\145\120\134\027\106\271\266\205\265
\034\265\027\350\326\105\235\330\262\046\260\312\304\160\112\256
\140\244\335\263\331\354\374\073\325\127\162\274\077\310\311\262
\336\113\153\370\043\154\003\300\005\275\225\307\315\163\073\146
\200\144\343\032\254\056\371\107\005\362\006\266\233\163\365\170
\063\133\307\241\373\047\052\241\264\232\221\214\221\323\072\202
\076\166\100\264\315\122\141\121\160\050\077\305\305\132\362\311
\214\111\273\024\133\115\310\377\147\115\114\022\226\255\365\376
\170\250\227\207\327\375\136\040\200\334\241\113\042\373\324\211
\255\272\316\107\227\107\125\173\217\105\310\147\050\204\225\034

\150\060\357\357\111\340\065\173\144\347\230\260\224\332\115\205
\073\076\125\304\050\257\127\363\236\023\333\106\047\237\036\242
\136\104\203\244\245\312\325\023\263\113\077\304\343\302\346\206
\141\244\122\060\271\172\040\117\157\017\070\123\313\063\014\023
\053\217\326\232\275\052\310\055\261\034\175\113\121\312\107\321
\110\047\162\135\207\353\325\105\346\110\145\235\257\122\220\272
\133\242\030\145\127\022\237\150\271\324\025\153\224\304\151\042
\230\364\063\340\355\371\121\216\101\120\311\064\117\166\220\254
\374\070\301\330\341\173\271\343\343\224\341\106\151\313\016\012
\120\153\023\272\254\017\067\132\267\022\265\220\201\036\126\256
\127\042\206\331\311\322\321\327\121\343\253\073\306\125\375\036
\016\323\164\012\321\332\252\352\151\270\227\050\217\110\304\007
\370\122\103\072\364\312\125\065\054\260\246\152\300\234\371\362
\201\341\022\152\300\105\331\147\263\316\377\043\242\211\012\124
\324\024\271\052\250\327\354\371\253\315\045\130\062\171\217\220
\133\230\071\304\010\006\301\254\177\016\075\000\245\002\003\001
\000\001\243\124\060\122\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\011\313\131\177\206\262\160\217\032\303\071\343\300\331
\351\277\273\115\262\043\060\020\006\011\053\006\001\004\001\202
\067\025\001\004\003\002\001\000\060\015\006\011\052\206\110\206
\367\015\001\001\014\005\000\003\202\002\001\000\254\257\076\135
\302\021\226\211\216\243\347\222\326\227\025\270\023\242\246\102
\056\002\315\026\005\131\047\312\040\350\272\270\350\032\354\115
\250\227\126\256\145\103\261\217\000\233\122\315\125\315\123\071
\155\142\114\213\015\133\174\056\104\277\203\020\217\363\123\202
\200\303\117\072\307\156\021\077\346\343\026\221\204\373\155\204
\177\064\164\255\211\247\316\271\327\327\237\204\144\222\276\225
\241\255\011\123\063\335\356\012\352\112\121\216\157\125\253\272
\265\224\106\256\214\177\330\242\120\045\145\140\200\106\333\063
\004\256\154\265\230\164\124\045\334\223\344\370\343\125\025\075
\270\155\303\012\244\022\301\151\205\156\337\144\361\123\231\341
\112\165\040\235\225\017\344\326\334\003\361\131\030\350\107\211
\262\127\132\224\266\251\330\027\053\027\111\345\166\313\301\126
\231\072\067\261\377\151\054\221\221\223\341\337\114\243\067\166
\115\241\237\370\155\036\035\323\372\354\373\364\105\035\023\155
\317\367\131\345\042\047\162\053\206\363\127\273\060\355\044\115
\334\175\126\273\243\263\370\064\171\211\301\340\362\002\141\367
\246\374\017\273\034\027\013\256\101\331\174\275\047\243\375\056
\072\321\223\224\261\163\035\044\213\257\133\040\211\255\267\147
\146\171\365\072\306\246\226\063\376\123\222\310\106\261\021\221
\306\231\177\217\311\326\146\061\040\101\020\207\055\014\326\301
\257\064\230\312\144\203\373\023\127\321\301\360\074\172\214\245
\301\375\225\041\240\161\301\223\147\161\022\352\217\210\012\151
\031\144\231\043\126\373\254\052\056\160\276\146\304\014\204\357
\345\213\363\223\001\370\152\220\223\147\113\262\150\243\265\142
\217\351\077\214\172\073\136\017\347\214\270\306\174\357\067\375

\164\342\310\117\063\162\341\224\071\155\275\022\257\276\014\116
\160\174\033\157\215\263\062\223\163\104\026\155\350\364\367\340
\225\200\217\226\135\070\244\364\253\336\012\060\207\223\330\115
\000\161\142\105\047\113\072\102\204\133\177\145\267\147\064\122
\055\234\026\153\252\250\330\173\243\102\114\161\307\014\312\076
\203\344\246\357\267\001\060\136\121\243\171\365\160\151\246\101
\104\017\206\260\054\221\306\075\352\256\017\204
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Microsoft RSA Root Certificate Authority 2017"
Issuer: CN=Microsoft RSA Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Serial Number:1e:d3:97:09:5f:d8:b4:b3:47:70:1e:aa:be:7f:45:b3
Subject: CN=Microsoft RSA Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Not Valid Before: Wed Dec 18 22:51:22 2019
Not Valid After : Fri Jul 18 23:00:23 2042
Fingerprint (SHA-256):
C7:41:F7:0F:4B:2A:8D:88:BF:2E:71:C1:41:22:EF:53:EF:10:EB:A0:CF:A5:E6:4C:FA:20:F4:18:85:30:73:E0
Fingerprint (SHA1): 73:A5:E6:4A:3B:FF:83:16:FF:0E:DC:CC:61:8A:90:6E:4E:AE:4D:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft RSA Root Certificate Authority 2017"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\163\245\346\112\073\377\203\026\377\016\334\314\141\212\220\156
\116\256\115\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\020\377\000\377\317\311\370\307\172\300\356\065\216\311\017\107
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\122\123\101\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\036\323\227\011\137\330\264\263\107\160\036\252\276\177
\105\263
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "e-Szigno Root CA 2017"
#
Issuer: CN=e-Szigno Root CA 2017,OID.2.5.4.97=VATHU-23584497,O=Microsec Ltd.,L=Budapest,C=HU
Serial Number:01:54:48:ef:21:fd:97:59:0d:f5:04:0a
Subject: CN=e-Szigno Root CA 2017,OID.2.5.4.97=VATHU-23584497,O=Microsec Ltd.,L=Budapest,C=HU
Not Valid Before: Tue Aug 22 12:07:06 2017
Not Valid After : Fri Aug 22 12:07:06 2042
Fingerprint (SHA-256):
BE:B0:0B:30:83:9B:9B:C3:2C:32:E4:44:79:05:95:06:41:F2:64:21:B1:5E:D0:89:19:8B:51:8A:E2:EA:1B:99
Fingerprint (SHA1): 89:D4:83:03:4F:9E:9A:48:80:5F:72:37:D4:A9:A6:EF:CB:7C:1F:D1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "e-Szigno Root CA 2017"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160\145
\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151\143
\162\157\163\145\143\040\114\164\144\056\061\027\060\025\006\003
\125\004\141\014\016\126\101\124\110\125\055\062\063\065\070\064
\064\071\067\061\036\060\034\006\003\125\004\003\014\025\145\055
\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040\062
\060\061\067
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160\145
\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151\143
\162\157\163\145\143\040\114\164\144\056\061\027\060\025\006\003
\125\004\141\014\016\126\101\124\110\125\055\062\063\065\070\064
\064\071\067\061\036\060\034\006\003\125\004\003\014\025\145\055
\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040\062
\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\001\124\110\357\041\375\227\131\015\365\004\012
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\100\060\202\001\345\240\003\002\001\002\002\014\001
\124\110\357\041\375\227\131\015\365\004\012\060\012\006\010\052
\206\110\316\075\004\003\002\060\161\061\013\060\011\006\003\125

\004\006\023\002\110\125\061\021\060\017\006\003\125\004\007\014
\010\102\165\144\141\160\145\163\164\061\026\060\024\006\003\125
\004\012\014\015\115\151\143\162\157\163\145\143\040\114\164\144
\056\061\027\060\025\006\003\125\004\141\014\016\126\101\124\110
\125\055\062\063\065\070\064\064\071\067\061\036\060\034\006\003
\125\004\003\014\025\145\055\123\172\151\147\156\157\040\122\157
\157\164\040\103\101\040\062\060\061\067\060\036\027\015\061\067
\060\070\062\062\061\062\060\067\060\066\132\027\015\064\062\060
\070\062\062\061\062\060\067\060\066\132\060\161\061\013\060\011
\006\003\125\004\006\023\002\110\125\061\021\060\017\006\003\125
\004\007\014\010\102\165\144\141\160\145\163\164\061\026\060\024
\006\003\125\004\012\014\015\115\151\143\162\157\163\145\143\040
\114\164\144\056\061\027\060\025\006\003\125\004\141\014\016\126
\101\124\110\125\055\062\063\065\070\064\064\071\067\061\036\060
\034\006\003\125\004\003\014\025\145\055\123\172\151\147\156\157
\040\122\157\157\164\040\103\101\040\062\060\061\067\060\131\060
\023\006\007\052\206\110\316\075\002\001\006\010\052\206\110\316
\075\003\001\007\003\102\000\004\226\334\075\212\330\260\173\157
\306\047\276\104\220\261\263\126\025\173\216\103\044\175\032\204
\131\356\143\150\262\306\136\207\320\025\110\036\250\220\255\275
\123\242\332\336\072\220\246\140\137\150\062\265\206\101\337\207
\133\054\173\305\376\174\172\332\243\143\060\141\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006
\003\125\035\016\004\026\004\024\207\021\025\010\321\252\301\170
\014\261\257\316\306\311\220\357\277\060\004\300\060\037\006\003
\125\035\043\004\030\060\026\200\024\207\021\025\010\321\252\301
\170\014\261\257\316\306\311\220\357\277\060\004\300\060\012\006
\010\052\206\110\316\075\004\003\002\003\111\000\060\106\002\041
\000\265\127\335\327\212\125\013\066\341\206\104\372\324\331\150
\215\270\334\043\212\212\015\324\057\175\352\163\354\277\115\154
\250\002\041\000\313\245\264\022\372\347\265\350\317\176\223\374
\363\065\217\157\116\132\174\264\274\116\262\374\162\252\133\131
\371\347\334\061
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "e-Szigno Root CA 2017"
Issuer: CN=e-Szigno Root CA 2017,OID.2.5.4.97=VATHU-23584497,O=Microsec Ltd.,L=Budapest,C=HU
Serial Number:01:54:48:ef:21:fd:97:59:0d:f5:04:0a
Subject: CN=e-Szigno Root CA 2017,OID.2.5.4.97=VATHU-23584497,O=Microsec Ltd.,L=Budapest,C=HU
Not Valid Before: Tue Aug 22 12:07:06 2017
Not Valid After : Fri Aug 22 12:07:06 2042
Fingerprint (SHA-256):
BE:B0:0B:30:83:9B:9B:C3:2C:32:E4:44:79:05:95:06:41:F2:64:21:B1:5E:D0:89:19:8B:51:8A:E2:EA:1B:99
Fingerprint (SHA1): 89:D4:83:03:4F:9E:9A:48:80:5F:72:37:D4:A9:A6:EF:CB:7C:1F:D1

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "e-Szigno Root CA 2017"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\211\324\203\003\117\236\232\110\200\137\162\067\324\251\246\357
\313\174\037\321
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\336\037\366\236\204\256\247\264\041\316\036\130\175\321\204\230
END
CKA_ISSUER MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160\145
\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151\143
\162\157\163\145\143\040\114\164\144\056\061\027\060\025\006\003
\125\004\141\014\016\126\101\124\110\125\055\062\063\065\070\064
\064\071\067\061\036\060\034\006\003\125\004\003\014\025\145\055
\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040\062
\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\001\124\110\357\041\375\227\131\015\365\004\012
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "certSIGN Root CA G2"
#
Issuer: OU=certSIGN ROOT CA G2,O=CERTSIGN SA,C=RO
Serial Number:11:00:34:b6:4e:c6:36:2d:36
Subject: OU=certSIGN ROOT CA G2,O=CERTSIGN SA,C=RO
Not Valid Before: Mon Feb 06 09:27:35 2017
Not Valid After : Thu Feb 06 09:27:35 2042
Fingerprint (SHA-256):
65:7C:FE:2F:A7:3F:AA:38:46:25:71:F3:32:A2:36:3A:46:FC:E7:02:09:51:71:07:02:CD:FB:B6:EE:DA:33:05
Fingerprint (SHA1): 26:F9:93:B4:ED:3D:28:27:B0:B9:4B:A7:E9:15:1D:A3:8D:92:E5:32
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "certSIGN Root CA G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\101\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\024\060\022\006\003\125\004\012\023\013\103\105\122\124\123\111
\107\116\040\123\101\061\034\060\032\006\003\125\004\013\023\023
\143\145\162\164\123\111\107\116\040\122\117\117\124\040\103\101
\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\024\060\022\006\003\125\004\012\023\013\103\105\122\124\123\111
\107\116\040\123\101\061\034\060\032\006\003\125\004\013\023\023
\143\145\162\164\123\111\107\116\040\122\117\117\124\040\103\101
\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\021\000\064\266\116\306\066\055\066
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\107\060\202\003\057\240\003\002\001\002\002\011\021
\000\064\266\116\306\066\055\066\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\101\061\013\060\011\006\003\125
\004\006\023\002\122\117\061\024\060\022\006\003\125\004\012\023
\013\103\105\122\124\123\111\107\116\040\123\101\061\034\060\032
\006\003\125\004\013\023\023\143\145\162\164\123\111\107\116\040
\122\117\117\124\040\103\101\040\107\062\060\036\027\015\061\067
\060\062\060\066\060\071\062\067\063\065\132\027\015\064\062\060
\062\060\066\060\071\062\067\063\065\132\060\101\061\013\060\011
\006\003\125\004\006\023\002\122\117\061\024\060\022\006\003\125
\004\012\023\013\103\105\122\124\123\111\107\116\040\123\101\061
\034\060\032\006\003\125\004\013\023\023\143\145\162\164\123\111
\107\116\040\122\117\117\124\040\103\101\040\107\062\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\300\305
\165\031\221\175\104\164\164\207\376\016\073\226\334\330\001\026
\314\356\143\221\347\013\157\316\073\012\151\032\174\302\343\257
\202\216\206\327\136\217\127\353\323\041\131\375\071\067\102\060
\276\120\352\266\017\251\210\330\056\055\151\041\347\321\067\030
\116\175\221\325\026\137\153\133\000\302\071\103\015\066\205\122
\271\123\145\017\035\102\345\217\317\005\323\356\334\014\032\331
\270\213\170\042\147\344\151\260\150\305\074\344\154\132\106\347
\315\307\372\357\304\354\113\275\152\244\254\375\314\050\121\357
\222\264\051\253\253\065\232\114\344\304\010\306\046\314\370\151
\237\344\234\360\051\323\134\371\306\026\045\236\043\303\040\301
\075\017\077\070\100\260\376\202\104\070\252\132\032\212\153\143
\130\070\264\025\323\266\021\151\173\036\124\356\214\032\042\254
\162\227\077\043\131\233\311\042\204\301\007\117\314\177\342\127
\312\022\160\273\246\145\363\151\165\143\275\225\373\033\227\315
\344\250\257\366\321\116\250\331\212\161\044\315\066\075\274\226

\304\361\154\251\256\345\317\015\156\050\015\260\016\265\312\121
\173\170\024\303\040\057\177\373\024\125\341\021\231\375\325\012
\241\236\002\343\142\137\353\065\113\054\270\162\350\076\075\117
\254\054\273\056\206\342\243\166\217\345\223\052\317\245\253\310
\134\215\113\006\377\022\106\254\170\313\024\007\065\340\251\337
\213\351\257\025\117\026\211\133\275\366\215\306\131\256\210\205
\016\301\211\353\037\147\305\105\216\377\155\067\066\053\170\146
\203\221\121\053\075\377\121\167\166\142\241\354\147\076\076\201
\203\340\126\251\120\037\037\172\231\253\143\277\204\027\167\361
\015\073\337\367\234\141\263\065\230\212\072\262\354\074\032\067
\077\176\217\222\317\331\022\024\144\332\020\002\025\101\377\117
\304\353\034\243\311\372\231\367\106\351\341\030\331\261\270\062
\055\313\024\014\120\330\203\145\203\356\271\134\317\313\005\132
\114\372\031\227\153\326\135\023\323\302\134\124\274\062\163\240
\170\365\361\155\036\313\237\245\246\237\042\334\321\121\236\202
\171\144\140\051\023\076\243\375\117\162\152\253\342\324\345\270
\044\125\054\104\113\212\210\104\234\312\204\323\052\073\002\003
\001\000\001\243\102\060\100\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\035\006\003\125\035\016\004
\026\004\024\202\041\055\146\306\327\240\340\025\353\316\114\011
\167\304\140\236\124\156\003\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\002\001\000\140\336\032\270\347
\362\140\202\325\003\063\201\313\006\212\361\042\111\351\350\352
\221\177\306\063\136\150\031\003\206\073\103\001\317\007\160\344
\010\036\145\205\221\346\021\042\267\365\002\043\216\256\271\036
\175\037\176\154\346\275\045\325\225\032\362\005\246\257\205\002
\157\256\370\326\061\377\045\311\112\310\307\212\251\331\237\113
\111\233\021\127\231\222\103\021\336\266\063\244\314\327\215\144
\175\324\315\074\050\054\264\232\226\352\115\365\304\104\304\045
\252\040\200\330\051\125\367\340\101\374\006\046\377\271\066\365
\103\024\003\146\170\341\021\261\332\040\137\106\000\170\000\041
\245\036\000\050\141\170\157\250\001\001\217\235\064\232\377\364
\070\220\373\270\321\263\162\006\311\161\346\201\305\171\355\013
\246\171\362\023\013\234\367\135\016\173\044\223\264\110\333\206
\137\336\120\206\170\347\100\346\061\250\220\166\160\141\257\234
\067\054\021\265\202\267\252\256\044\064\133\162\014\151\015\315
\131\237\366\161\257\234\013\321\012\070\371\006\042\203\123\045
\014\374\121\304\346\276\342\071\225\013\044\255\257\321\225\344
\226\327\164\144\153\161\116\002\074\252\205\363\040\243\103\071
\166\133\154\120\376\232\234\024\036\145\024\212\025\275\243\202
\105\132\111\126\152\322\234\261\143\062\345\141\340\123\042\016
\247\012\111\352\313\176\037\250\342\142\200\366\020\105\122\230
\006\030\336\245\315\057\177\252\324\351\076\010\162\354\043\003
\002\074\246\252\330\274\147\164\075\024\027\373\124\113\027\343
\323\171\075\155\153\111\311\050\016\056\164\120\277\014\331\106
\072\020\206\311\247\077\351\240\354\177\353\245\167\130\151\161
\346\203\012\067\362\206\111\152\276\171\010\220\366\002\026\144

\076\345\332\114\176\014\064\311\371\137\266\263\050\121\247\247
\053\252\111\372\215\145\051\116\343\153\023\247\224\243\055\121
\155\170\014\104\313\337\336\010\157\316\243\144\253\323\225\204
\324\271\122\124\162\173\226\045\314\274\151\343\110\156\015\320
\307\235\047\232\252\370\023\222\335\036\337\143\237\065\251\026
\066\354\214\270\203\364\075\211\217\315\264\027\136\327\263\027
\101\020\135\047\163\140\205\127\111\042\007
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "certSIGN Root CA G2"
Issuer: OU=certSIGN ROOT CA G2,O=CERTSIGN SA,C=RO
Serial Number:11:00:34:b6:4e:c6:36:2d:36
Subject: OU=certSIGN ROOT CA G2,O=CERTSIGN SA,C=RO
Not Valid Before: Mon Feb 06 09:27:35 2017
Not Valid After : Thu Feb 06 09:27:35 2042
Fingerprint (SHA-256):
65:7C:FE:2F:A7:3F:AA:38:46:25:71:F3:32:A2:36:3A:46:FC:E7:02:09:51:71:07:02:CD:FB:B6:EE:DA:33:05
Fingerprint (SHA1): 26:F9:93:B4:ED:3D:28:27:B0:B9:4B:A7:E9:15:1D:A3:8D:92:E5:32
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "certSIGN Root CA G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\046\371\223\264\355\075\050\047\260\271\113\247\351\025\035\243
\215\222\345\062
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\214\361\165\212\306\031\317\224\267\367\145\040\207\303\227\307
END
CKA_ISSUER MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\024\060\022\006\003\125\004\012\023\013\103\105\122\124\123\111
\107\116\040\123\101\061\034\060\032\006\003\125\004\013\023\023
\143\145\162\164\123\111\107\116\040\122\117\117\124\040\103\101
\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\021\000\064\266\116\306\066\055\066
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Trustwave Global Certification Authority"
#
Issuer: CN=Trustwave Global Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:05:f7:0e:86:da:49:f3:46:35:2e:ba:b2
Subject: CN=Trustwave Global Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:34:12 2017
Not Valid After : Sat Aug 23 19:34:12 2042
Fingerprint (SHA-256): 97:55:20:15:F5:DD:FC:3C:87:88:C0:06:94:45:55:40:88:94:45:00:84:F1:00:86:70:86:BC:1A:2B:B5:8D:C8
Fingerprint (SHA1): 2F:8F:36:4F:E1:58:97:44:21:59:87:A5:2A:9A:D0:69:95:26:7F:B5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\014\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\014\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\014\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\061\060\057\006\003\125\004
\003\014\050\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\014\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\014\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\014\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\061\060\057\006\003\125\004
\003\014\050\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\005\367\016\206\332\111\363\106\065\056\272\262
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\332\060\202\003\302\240\003\002\001\002\002\014\005
\367\016\206\332\111\363\106\065\056\272\262\060\015\006\011\052

\206\110\206\367\015\001\001\013\005\000\060\201\210\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\021\060\017\006\003
\125\004\010\014\010\111\154\154\151\156\157\151\163\061\020\060
\016\006\003\125\004\007\014\007\103\150\151\143\141\147\157\061
\041\060\037\006\003\125\004\012\014\030\124\162\165\163\164\167
\141\166\145\040\110\157\154\144\151\156\147\163\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\003\014\050\124\162\165
\163\164\167\141\166\145\040\107\154\157\142\141\154\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\060\036\027\015\061\067\060\070\062\063\061
\071\063\064\061\062\132\027\015\064\062\060\070\062\063\061\071
\063\064\061\062\132\060\201\210\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\021\060\017\006\003\125\004\010\014\010
\111\154\154\151\156\157\151\163\061\020\060\016\006\003\125\004
\007\014\007\103\150\151\143\141\147\157\061\041\060\037\006\003
\125\004\012\014\030\124\162\165\163\164\167\141\166\145\040\110
\157\154\144\151\156\147\163\054\040\111\156\143\056\061\061\060
\057\006\003\125\004\003\014\050\124\162\165\163\164\167\141\166
\145\040\107\154\157\142\141\154\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\271\135\121\050\113\074\067\222\321\202\316\275\035\275\315
\335\270\253\317\012\076\341\135\345\334\252\011\271\127\002\076
\346\143\141\337\362\017\202\143\256\243\367\254\163\321\174\347
\263\013\257\010\000\011\131\177\315\051\052\210\223\207\027\030
\200\355\210\262\264\266\020\037\055\326\137\125\242\023\135\321
\306\353\006\126\211\210\376\254\062\235\375\134\303\005\307\156
\356\206\211\272\210\003\235\162\041\206\220\256\217\003\245\334
\237\210\050\313\243\222\111\017\354\320\017\342\155\104\117\200
\152\262\324\347\240\012\123\001\272\216\227\221\166\156\274\374
\325\153\066\346\100\210\326\173\057\137\005\350\054\155\021\363
\347\262\276\222\104\114\322\227\244\376\322\162\201\103\007\234
\351\021\076\365\213\032\131\175\037\150\130\335\004\000\054\226
\363\103\263\176\230\031\164\331\234\163\331\030\276\101\307\064
\171\331\364\142\302\103\271\263\047\260\042\313\371\075\122\307
\060\107\263\311\076\270\152\342\347\350\201\160\136\102\213\117
\046\245\376\072\302\040\156\273\370\026\216\315\014\251\264\033
\154\166\020\341\130\171\106\076\124\316\200\250\127\011\067\051
\033\231\023\217\014\310\326\054\034\373\005\350\010\225\075\145
\106\334\356\315\151\342\115\217\207\050\116\064\013\076\317\024
\331\273\335\266\120\232\255\167\324\031\326\332\032\210\310\116
\033\047\165\330\262\010\361\256\203\060\271\021\016\315\207\360
\204\215\025\162\174\241\357\314\362\210\141\272\364\151\273\014
\214\013\165\127\004\270\116\052\024\056\075\017\034\036\062\246
\142\066\356\146\342\042\270\005\100\143\020\042\363\063\035\164
\162\212\054\365\071\051\240\323\347\033\200\204\055\305\075\343
\115\261\375\032\157\272\145\007\073\130\354\102\105\046\373\330

\332\045\162\304\366\000\261\042\171\275\343\174\131\142\112\234
\005\157\075\316\346\326\107\143\231\306\044\157\162\022\310\254
\177\220\264\013\221\160\350\267\346\026\020\161\027\316\336\006
\117\110\101\175\065\112\243\211\362\311\113\173\101\021\155\147
\267\010\230\114\345\021\031\256\102\200\334\373\220\005\324\370
\120\312\276\344\255\307\302\224\327\026\235\346\027\217\257\066
\373\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\231\340\031\147\015\142\333\166\263\332
\075\270\133\350\375\102\322\061\016\207\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\230\163
\160\342\260\323\355\071\354\114\140\331\251\022\206\027\036\226
\320\350\124\050\073\144\055\041\246\370\235\126\023\152\110\075
\117\307\076\051\333\155\130\203\124\075\207\175\043\005\324\344
\034\334\350\070\145\206\305\165\247\132\333\065\005\275\167\336
\273\051\067\100\005\007\303\224\122\237\312\144\335\361\033\053
\334\106\012\020\002\061\375\112\150\015\007\144\220\346\036\365
\052\241\250\273\074\135\371\243\010\013\021\014\361\077\055\020
\224\157\376\342\064\207\203\326\317\345\033\065\155\322\003\341
\260\015\250\240\252\106\047\202\066\247\025\266\010\246\102\124
\127\266\231\132\342\013\171\220\327\127\022\121\065\031\210\101
\150\045\324\067\027\204\025\373\001\162\334\225\336\122\046\040
\230\046\342\166\365\047\157\372\000\073\112\141\331\015\313\121
\223\052\375\026\006\226\247\043\232\043\110\376\121\275\266\304
\260\261\124\316\336\154\101\255\026\147\176\333\375\070\315\271
\070\116\262\301\140\313\235\027\337\130\236\172\142\262\046\217
\164\225\233\344\133\035\322\017\335\230\034\233\131\271\043\323
\061\240\246\377\070\335\317\040\117\351\130\126\072\147\303\321
\366\231\231\235\272\066\266\200\057\210\107\117\206\277\104\072
\200\344\067\034\246\272\352\227\230\021\320\204\142\107\144\036
\252\356\100\277\064\261\234\217\116\341\362\222\117\037\216\363
\236\227\336\363\246\171\152\211\161\117\113\047\027\110\376\354
\364\120\017\117\111\175\314\105\343\275\172\100\305\101\334\141
\126\047\006\151\345\162\101\201\323\266\001\211\240\057\072\162
\171\376\072\060\277\101\354\307\142\076\221\113\307\331\061\166
\102\371\367\074\143\354\046\214\163\014\175\032\035\352\250\174
\207\250\302\047\174\341\063\101\017\317\317\374\000\240\042\200
\236\112\247\157\000\260\101\105\267\042\312\150\110\305\102\242
\256\335\035\362\340\156\116\005\130\261\300\220\026\052\244\075
\020\100\276\217\142\143\203\251\234\202\175\055\002\351\203\060
\174\313\047\311\375\036\146\000\260\056\323\041\057\216\063\026
\154\230\355\020\250\007\326\314\223\317\333\321\151\034\344\312
\311\340\266\234\351\316\161\161\336\154\077\026\244\171
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Trustwave Global Certification Authority"
Issuer: CN=Trustwave Global Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:05:f7:0e:86:da:49:f3:46:35:2e:ba:b2
Subject: CN=Trustwave Global Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:34:12 2017
Not Valid After : Sat Aug 23 19:34:12 2042
Fingerprint (SHA-256):
97:55:20:15:F5:DD:FC:3C:87:88:C0:06:94:45:55:40:88:94:45:00:84:F1:00:86:70:86:BC:1A:2B:B5:8D:C8
Fingerprint (SHA1): 2F:8F:36:4F:E1:58:97:44:21:59:87:A5:2A:9A:D0:69:95:26:7F:B5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\057\217\066\117\341\130\227\104\041\131\207\245\052\232\320\151
\225\046\177\265
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\370\034\030\055\057\272\137\155\241\154\274\307\253\221\307\016
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\014\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\014\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\014\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\061\060\057\006\003\125\004
\003\014\050\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\005\367\016\206\332\111\363\106\065\056\272\262
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Trustwave Global ECC P256 Certification Authority"
#
Issuer: CN=Trustwave Global ECC P256 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US

Serial Number:0d:6a:5f:08:3f:28:5c:3e:51:95:df:5d
Subject: CN=Trustwave Global ECC P256 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:35:10 2017
Not Valid After : Sat Aug 23 19:35:10 2042
Fingerprint (SHA-256): 94:5B:BC:82:5E:A5:54:F4:89:D1:FD:51:A7:3D:DF:2E:A6:24:AC:70:19:A0:52:05:22:5C:22:A7:8C:CF:A8:B4
Fingerprint (SHA1): B4:90:82:DD:45:0C:BE:8B:5B:B1:66:D3:E2:A4:08:26:CD:ED:42:CF

CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global ECC P256 Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\062\065\066\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\062\065\066\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\015\152\137\010\077\050\134\076\121\225\337\135
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\140\060\202\002\007\240\003\002\001\002\002\014\015
\152\137\010\077\050\134\076\121\225\337\135\060\012\006\010\052
\206\110\316\075\004\003\002\060\201\221\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\021\060\017\006\003\125\004\010
\023\010\111\154\154\151\156\157\151\163\061\020\060\016\006\003

\125\004\007\023\007\103\150\151\143\141\147\157\061\041\060\037
\006\003\125\004\012\023\030\124\162\165\163\164\167\141\166\145
\040\110\157\154\144\151\156\147\163\054\040\111\156\143\056\061
\072\060\070\006\003\125\004\003\023\061\124\162\165\163\164\167
\141\166\145\040\107\154\157\142\141\154\040\105\103\103\040\120
\062\065\066\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\060\036\027\015\061
\067\060\070\062\063\061\071\063\065\061\060\132\027\015\064\062
\060\070\062\063\061\071\063\065\061\060\132\060\201\221\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\021\060\017\006
\003\125\004\010\023\010\111\154\154\151\156\157\151\163\061\020
\060\016\006\003\125\004\007\023\007\103\150\151\143\141\147\157
\061\041\060\037\006\003\125\004\012\023\030\124\162\165\163\164
\167\141\166\145\040\110\157\154\144\151\156\147\163\054\040\111
\156\143\056\061\072\060\070\006\003\125\004\003\023\061\124\162
\165\163\164\167\141\166\145\040\107\154\157\142\141\154\040\105
\103\103\040\120\062\065\066\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060
\131\060\023\006\007\052\206\110\316\075\002\001\006\010\052\206
\110\316\075\003\001\007\003\102\000\004\176\373\154\346\043\343
\163\062\010\312\140\346\123\234\272\164\215\030\260\170\220\122
\200\335\070\300\112\035\321\250\314\223\244\227\006\070\312\015
\025\142\306\216\001\052\145\235\252\337\064\221\056\201\301\344
\063\222\061\304\375\011\072\246\077\255\243\103\060\101\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\017\006\003\125\035\017\001\001\377\004\005\003\003\007\006\000
\060\035\006\003\125\035\016\004\026\004\024\243\101\006\254\220
\155\321\112\353\165\245\112\020\231\263\261\241\213\112\367\060
\012\006\010\052\206\110\316\075\004\003\002\003\107\000\060\104
\002\040\007\346\124\332\016\240\132\262\256\021\237\207\305\266
\377\151\336\045\276\370\240\267\010\363\104\316\052\337\010\041
\014\067\002\040\055\046\003\240\005\275\153\321\366\134\370\145
\314\206\155\263\234\064\110\143\204\011\305\215\167\032\342\314
\234\341\164\173
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Trustwave Global ECC P256 Certification Authority"
Issuer: CN=Trustwave Global ECC P256 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:0d:6a:5f:08:3f:28:5c:3e:51:95:df:5d
Subject: CN=Trustwave Global ECC P256 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:35:10 2017
Not Valid After : Sat Aug 23 19:35:10 2042
Fingerprint (SHA-256):

94:5B:BC:82:5E:A5:54:F4:89:D1:FD:51:A7:3D:DF:2E:A6:24:AC:70:19:A0:52:05:22:5C:22:A7:8C:CF:A8:B4
Fingerprint (SHA1): B4:90:82:DD:45:0C:BE:8B:5B:B1:66:D3:E2:A4:08:26:CD:ED:42:CF
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global ECC P256 Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\264\220\202\335\105\014\276\213\133\261\146\323\342\244\010\046
\315\355\102\317
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\133\104\343\215\135\066\206\046\350\015\005\322\131\247\203\124
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\062\065\066\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\015\152\137\010\077\050\134\076\121\225\337\135
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Trustwave Global ECC P384 Certification Authority"
#
Issuer: CN=Trustwave Global ECC P384 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:08:bd:85:97:6c:99:27:a4:80:68:47:3b
Subject: CN=Trustwave Global ECC P384 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:36:43 2017
Not Valid After : Sat Aug 23 19:36:43 2042
Fingerprint (SHA-256):
55:90:38:59:C8:C0:C3:EB:B8:75:9E:CE:4E:25:57:22:5F:F5:75:8B:BD:38:EB:D4:82:76:60:1E:1B:D5:80:97
Fingerprint (SHA1): E7:F3:A3:C8:CF:6F:C3:04:2E:6D:0E:67:32:C5:9E:68:95:0D:5E:D2
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global ECC P384 Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\063\070\064\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\063\070\064\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\010\275\205\227\154\231\047\244\200\150\107\073
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\235\060\202\002\044\240\003\002\001\002\002\014\010
\275\205\227\154\231\047\244\200\150\107\073\060\012\006\010\052
\206\110\316\075\004\003\003\060\201\221\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\021\060\017\006\003\125\004\010
\023\010\111\154\154\151\156\157\151\163\061\020\060\016\006\003
\125\004\007\023\007\103\150\151\143\141\147\157\061\041\060\037
\006\003\125\004\012\023\030\124\162\165\163\164\167\141\166\145
\040\110\157\154\144\151\156\147\163\054\040\111\156\143\056\061
\072\060\070\006\003\125\004\003\023\061\124\162\165\163\164\167
\141\166\145\040\107\154\157\142\141\154\040\105\103\103\040\120
\063\070\064\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\060\036\027\015\061
\067\060\070\062\063\061\071\063\066\064\063\132\027\015\064\062
\060\070\062\063\061\071\063\066\064\063\132\060\201\221\061\013

\060\011\006\003\125\004\006\023\002\125\123\061\021\060\017\006
\003\125\004\010\023\010\111\154\154\151\156\157\151\163\061\020
\060\016\006\003\125\004\007\023\007\103\150\151\143\141\147\157
\061\041\060\037\006\003\125\004\012\023\030\124\162\165\163\164
\167\141\166\145\040\110\157\154\144\151\156\147\163\054\040\111
\156\143\056\061\072\060\070\006\003\125\004\003\023\061\124\162
\165\163\164\167\141\166\145\040\107\154\157\142\141\154\040\105
\103\103\040\120\063\070\064\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\153\332\015\165\065\010\061\107\005
\256\105\231\125\361\021\023\056\112\370\020\061\043\243\176\203
\323\177\050\010\072\046\032\072\317\227\202\037\200\267\047\011
\217\321\216\060\304\012\233\016\254\130\004\253\367\066\175\224
\043\244\233\012\212\213\253\353\375\071\045\146\361\136\376\214
\256\215\101\171\235\011\140\316\050\251\323\212\155\363\326\105
\324\362\230\204\070\145\240\243\103\060\101\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\017\006\003
\125\035\017\001\001\377\004\005\003\003\007\006\000\060\035\006
\003\125\035\016\004\026\004\024\125\251\204\211\322\301\062\275
\030\313\154\246\007\116\310\347\235\276\202\220\060\012\006\010
\052\206\110\316\075\004\003\003\003\147\000\060\144\002\060\067
\001\222\227\105\022\176\240\363\076\255\031\072\162\335\364\120
\223\003\022\276\104\322\117\101\244\214\234\235\037\243\366\302
\222\347\110\024\376\116\233\245\221\127\256\306\067\162\273\002
\060\147\045\012\261\014\136\356\251\143\222\157\345\220\013\376
\146\042\312\107\375\212\061\367\203\376\172\277\020\276\030\053
\036\217\366\051\036\224\131\357\216\041\067\313\121\230\245\156
\113
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Trustwave Global ECC P384 Certification Authority"
Issuer: CN=Trustwave Global ECC P384 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:08:bd:85:97:6c:99:27:a4:80:68:47:3b
Subject: CN=Trustwave Global ECC P384 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:36:43 2017
Not Valid After : Sat Aug 23 19:36:43 2042
Fingerprint (SHA-256):
55:90:38:59:C8:C0:C3:EB:B8:75:9E:CE:4E:25:57:22:5F:F5:75:8B:BD:38:EB:D4:82:76:60:1E:1B:D5:80:97
Fingerprint (SHA1): E7:F3:A3:C8:CF:6F:C3:04:2E:6D:0E:67:32:C5:9E:68:95:0D:5E:D2
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global ECC P384 Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\347\363\243\310\317\157\303\004\056\155\016\147\062\305\236\150
\225\015\136\322
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\352\317\140\304\073\271\025\051\100\241\227\355\170\047\223\326
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\063\070\064\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\010\275\205\227\154\231\047\244\200\150\107\073
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "NAVER Global Root Certification Authority"
#
Issuer: CN=NAVER Global Root Certification Authority,O=NAVER BUSINESS PLATFORM Corp.,C=KR
Serial Number:01:94:30:1e:a2:0b:dd:f5:c5:33:2a:b1:43:44:71:f8:d6:50:4d:0d
Subject: CN=NAVER Global Root Certification Authority,O=NAVER BUSINESS PLATFORM Corp.,C=KR
Not Valid Before: Fri Aug 18 08:58:42 2017
Not Valid After : Tue Aug 18 23:59:59 2037
Fingerprint (SHA-256):
88:F4:38:DC:F8:FF:D1:FA:8F:42:91:15:FF:E5:F8:2A:E1:E0:6E:0C:70:C3:75:FA:AD:71:7B:34:A4:9E:72:65
Fingerprint (SHA1): 8F:6B:F2:A9:27:4A:DA:14:A0:C4:F4:8E:61:27:F9:C0:1E:78:5D:D1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NAVER Global Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\151\061\013\060\011\006\003\125\004\006\023\002\113\122\061

\046\060\044\006\003\125\004\012\014\035\116\101\126\105\122\040
\102\125\123\111\116\105\123\123\040\120\114\101\124\106\117\122
\115\040\103\157\162\160\056\061\062\060\060\006\003\125\004\003
\014\051\116\101\126\105\122\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\151\061\013\060\011\006\003\125\004\006\023\002\113\122\061
\046\060\044\006\003\125\004\012\014\035\116\101\126\105\122\040
\102\125\123\111\116\105\123\123\040\120\114\101\124\106\117\122
\115\040\103\157\162\160\056\061\062\060\060\006\003\125\004\003
\014\051\116\101\126\105\122\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\001\224\060\036\242\013\335\365\305\063\052\261\103\104
\161\370\326\120\115\015
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\242\060\202\003\212\240\003\002\001\002\002\024\001
\224\060\036\242\013\335\365\305\063\052\261\103\104\161\370\326
\120\115\015\060\015\006\011\052\206\110\206\367\015\001\001\014
\005\000\060\151\061\013\060\011\006\003\125\004\006\023\002\113
\122\061\046\060\044\006\003\125\004\012\014\035\116\101\126\105
\122\040\102\125\123\111\116\105\123\123\040\120\114\101\124\106
\117\122\115\040\103\157\162\160\056\061\062\060\060\006\003\125
\004\003\014\051\116\101\126\105\122\040\107\154\157\142\141\154
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\060\036\027
\015\061\067\060\070\061\070\060\070\065\070\064\062\132\027\015
\063\067\060\070\061\070\062\063\065\071\065\071\132\060\151\061
\013\060\011\006\003\125\004\006\023\002\113\122\061\046\060\044
\006\003\125\004\012\014\035\116\101\126\105\122\040\102\125\123
\111\116\105\123\123\040\120\114\101\124\106\117\122\115\040\103
\157\162\160\056\061\062\060\060\006\003\125\004\003\014\051\116
\101\126\105\122\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\266\324\361\223\134\265\100
\211\012\253\015\220\133\120\143\256\220\224\164\027\105\162\326
\173\145\132\051\113\247\126\240\113\270\057\102\165\351\331\173
\044\132\061\145\253\027\027\321\063\072\331\021\334\100\066\207
\337\307\152\351\046\136\131\212\167\343\350\110\234\061\026\372
\076\221\261\312\311\243\342\237\316\041\123\243\002\066\060\313

\122\002\345\332\062\135\303\305\346\371\356\021\307\213\311\104
\036\204\223\030\112\264\237\345\022\144\151\320\046\205\142\001
\266\311\002\035\276\203\121\273\134\332\370\255\025\152\231\367
\222\124\367\064\133\351\277\352\051\201\022\324\123\221\226\263
\221\132\335\376\220\163\050\373\060\106\265\312\010\007\307\161
\162\311\146\323\064\227\366\214\364\030\112\341\320\075\132\105
\266\151\247\051\373\043\316\210\330\022\234\000\110\250\246\017
\263\073\222\215\161\016\164\305\213\310\114\371\364\233\216\270
\074\151\355\157\073\120\057\130\355\304\260\320\034\033\152\014
\342\274\104\252\330\315\024\135\224\170\141\277\016\156\332\052
\274\057\014\013\161\246\263\026\077\234\346\371\314\237\123\065
\342\003\240\240\030\277\273\361\276\364\326\214\207\015\102\367
\006\271\361\155\355\004\224\250\376\266\323\006\306\100\141\337
\235\235\363\124\166\316\123\072\001\246\222\101\354\004\243\217
\015\242\325\011\312\326\313\232\361\357\103\135\300\253\245\101
\317\134\123\160\160\311\210\246\055\324\153\141\163\120\046\206
\141\016\137\033\302\053\342\214\325\273\235\301\003\102\272\224
\332\137\251\260\312\314\115\012\357\107\151\003\057\042\373\361
\050\316\277\135\120\145\250\220\155\263\164\260\010\307\254\250
\321\353\076\234\374\135\032\203\056\053\313\265\363\104\235\072
\247\027\141\226\242\161\323\160\226\025\115\267\114\163\356\031
\134\305\133\076\101\376\254\165\140\073\033\143\316\000\335\332
\010\220\142\264\345\055\356\110\247\153\027\231\124\276\207\112
\343\251\136\004\114\353\020\155\124\326\357\361\350\362\142\026
\313\200\153\355\075\355\365\037\060\245\256\113\311\023\355\212
\001\001\311\270\121\130\300\146\072\261\146\113\304\325\061\002
\142\351\164\204\014\333\115\106\055\002\003\001\000\001\243\102
\060\100\060\035\006\003\125\035\016\004\026\004\024\322\237\210
\337\241\315\054\275\354\365\073\001\001\223\063\047\262\353\140
\113\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\015\006\011\052\206\110\206\367\015\001\001\014\005
\000\003\202\002\001\000\062\312\200\263\235\075\124\006\335\322
\322\056\360\244\001\041\013\147\110\312\155\216\340\310\252\015
\252\215\041\127\217\306\076\172\312\333\121\324\122\263\324\226
\204\245\130\140\177\345\013\216\037\365\334\012\025\201\345\073
\266\267\042\057\011\234\023\026\261\154\014\065\010\155\253\143
\162\355\334\276\354\307\127\346\060\040\161\326\327\020\301\023
\125\001\214\052\103\344\101\361\317\072\172\123\222\316\242\003
\005\015\070\337\002\273\020\056\331\073\322\233\172\300\241\246
\370\265\061\346\364\165\311\271\123\231\165\107\042\132\024\025
\307\170\033\266\235\351\014\370\033\166\361\205\204\336\241\332
\022\357\244\342\020\227\172\170\336\014\121\227\250\041\100\213
\206\275\015\360\136\116\113\066\273\073\040\037\212\102\126\341
\013\032\277\173\320\042\103\054\104\214\373\345\052\264\154\034
\034\272\224\340\023\176\041\346\232\302\313\305\102\144\264\036
\224\173\010\045\310\161\314\207\105\127\205\323\237\051\142\042
\203\121\227\000\030\227\167\152\230\222\311\174\140\154\337\154

\175\112\344\160\114\302\236\270\035\367\320\064\307\017\314\373
\247\377\003\276\255\160\220\332\013\335\310\155\227\137\232\177
\011\062\101\375\315\242\314\132\155\114\362\252\111\376\146\370
\351\330\065\353\016\050\036\356\110\057\072\320\171\011\070\174
\246\042\202\223\225\320\003\276\276\002\240\005\335\040\042\343
\157\035\210\064\140\306\346\012\271\011\165\013\360\007\350\151
\226\065\307\373\043\201\216\070\071\270\105\053\103\170\242\321
\054\024\377\015\050\162\162\225\233\136\011\333\211\104\230\252
\241\111\273\161\122\362\277\366\377\047\241\066\257\270\266\167
\210\335\072\244\155\233\064\220\334\024\135\060\277\267\353\027
\344\207\267\161\320\241\327\167\025\324\102\327\362\363\061\231
\135\233\335\026\155\077\352\006\043\370\106\242\042\355\223\366
\335\232\346\052\207\261\230\124\361\042\367\153\105\343\342\216
\166\035\232\215\304\006\215\066\267\024\363\235\124\151\267\216
\074\325\244\155\223\201\267\255\366\275\144\173\302\311\150\071
\240\222\234\315\064\206\221\220\372\144\121\235\376\376\353\245
\365\165\336\211\367\162
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "NAVER Global Root Certification Authority"
Issuer: CN=NAVER Global Root Certification Authority,O=NAVER BUSINESS PLATFORM Corp.,C=KR
Serial Number:01:94:30:1e:a2:0b:dd:f5:c5:33:2a:b1:43:44:71:f8:d6:50:4d:0d
Subject: CN=NAVER Global Root Certification Authority,O=NAVER BUSINESS PLATFORM Corp.,C=KR
Not Valid Before: Fri Aug 18 08:58:42 2017
Not Valid After : Tue Aug 18 23:59:59 2037
Fingerprint (SHA-256):
88:F4:38:DC:F8:FF:D1:FA:8F:42:91:15:FF:E5:F8:2A:E1:E0:6E:0C:70:C3:75:FA:AD:71:7B:34:A4:9E:72:65
Fingerprint (SHA1): 8F:6B:F2:A9:27:4A:DA:14:A0:C4:F4:8E:61:27:F9:C0:1E:78:5D:D1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NAVER Global Root Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\217\153\362\251\047\112\332\024\240\304\364\216\141\047\371\300
\036\170\135\321
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\310\176\101\366\045\073\365\011\263\027\350\106\075\277\320\233
END
CKA_ISSUER MULTILINE_OCTAL
\060\151\061\013\060\011\006\003\125\004\006\023\002\113\122\061
\046\060\044\006\003\125\004\012\014\035\116\101\126\105\122\040
\102\125\123\111\116\105\123\123\040\120\114\101\124\106\117\122
\115\040\103\157\162\160\056\061\062\060\060\006\003\125\004\003

\014\051\116\101\126\105\122\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\001\224\060\036\242\013\335\365\305\063\052\261\103\104
\161\370\326\120\115\015
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AC RAIZ FNMT-RCM SERVIDORES SEGUROS"
#
Issuer: CN=AC RAIZ FNMT-RCM SERVIDORES SEGUROS,OID.2.5.4.97=VATES-Q2826004J,OU=Ceres,O=FNMT-RCM,C=ES
Serial Number:62:f6:32:6c:e5:c4:e3:68:5c:1b:62:dd:9c:2e:9d:95
Subject: CN=AC RAIZ FNMT-RCM SERVIDORES SEGUROS,OID.2.5.4.97=VATES-Q2826004J,OU=Ceres,O=FNMT-RCM,C=ES
Not Valid Before: Thu Dec 20 09:37:33 2018
Not Valid After : Sun Dec 20 09:37:33 2043
Fingerprint (SHA-256):
55:41:53:B1:3D:2C:F9:DD:B7:53:BF:BE:1A:4E:0A:E0:8D:0A:A4:18:70:58:FE:60:A2:B8:62:B2:E4:B8:7B:CB
Fingerprint (SHA1): 62:FF:D9:9E:C0:65:0D:03:CE:75:93:D2:ED:3F:2D:32:C9:E3:E5:4A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ FNMT-RCM SERVIDORES SEGUROS"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\170\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\016\060\014\006\003\125\004\013\014\005\103\145\162
\145\163\061\030\060\026\006\003\125\004\141\014\017\126\101\124
\105\123\055\121\062\070\062\066\060\060\064\112\061\054\060\052
\006\003\125\004\003\014\043\101\103\040\122\101\111\132\040\106
\116\115\124\055\122\103\115\040\123\105\122\126\111\104\117\122
\105\123\040\123\105\107\125\122\117\123
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\170\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\016\060\014\006\003\125\004\013\014\005\103\145\162
\145\163\061\030\060\026\006\003\125\004\141\014\017\126\101\124

\105\123\055\121\062\070\062\066\060\060\064\112\061\054\060\052
\006\003\125\004\003\014\043\101\103\040\122\101\111\132\040\106
\116\115\124\055\122\103\115\040\123\105\122\126\111\104\117\122
\105\123\040\123\105\107\125\122\117\123
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\142\366\062\154\345\304\343\150\134\033\142\335\234\056
\235\225
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\156\060\202\001\363\240\003\002\001\002\002\020\142
\366\062\154\345\304\343\150\134\033\142\335\234\056\235\225\060
\012\006\010\052\206\110\316\075\004\003\003\060\170\061\013\060
\011\006\003\125\004\006\023\002\105\123\061\021\060\017\006\003
\125\004\012\014\010\106\116\115\124\055\122\103\115\061\016\060
\014\006\003\125\004\013\014\005\103\145\162\145\163\061\030\060
\026\006\003\125\004\141\014\017\126\101\124\105\123\055\121\062
\070\062\066\060\060\064\112\061\054\060\052\006\003\125\004\003
\014\043\101\103\040\122\101\111\132\040\106\116\115\124\055\122
\103\115\040\123\105\122\126\111\104\117\122\105\123\040\123\105
\107\125\122\117\123\060\036\027\015\061\070\061\062\062\060\060
\071\063\067\063\063\132\027\015\064\063\061\062\062\060\060\071
\063\067\063\063\132\060\170\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\021\060\017\006\003\125\004\012\014\010\106
\116\115\124\055\122\103\115\061\016\060\014\006\003\125\004\013
\014\005\103\145\162\145\163\061\030\060\026\006\003\125\004\141
\014\017\126\101\124\105\123\055\121\062\070\062\066\060\060\064
\112\061\054\060\052\006\003\125\004\003\014\043\101\103\040\122
\101\111\132\040\106\116\115\124\055\122\103\115\040\123\105\122
\126\111\104\117\122\105\123\040\123\105\107\125\122\117\123\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\366\272\127\123\310\312\253\337\066
\112\122\041\344\227\322\203\147\236\360\145\121\320\136\207\307
\107\261\131\362\127\107\233\000\002\223\104\027\151\333\102\307
\261\262\072\030\016\264\135\214\263\146\135\241\064\371\066\054
\111\333\363\106\374\263\104\151\104\023\146\375\327\305\375\257
\066\115\316\003\115\007\161\317\257\152\005\322\242\103\132\012
\122\157\001\003\116\216\213\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\001\271\057\357\277\021\206\140\362
\117\320\101\156\253\163\037\347\322\156\111\060\012\006\010\052
\206\110\316\075\004\003\003\003\151\000\060\146\002\061\000\256
\112\343\053\100\303\164\021\362\225\255\026\043\336\116\014\032
\346\135\245\044\136\153\104\173\374\070\342\117\313\234\105\027
\021\114\024\047\046\125\071\165\112\003\314\023\220\237\222\002
\061\000\372\112\154\140\210\163\363\356\270\230\142\251\316\053
\302\331\212\246\160\061\035\257\260\224\114\353\117\306\343\321

\363\142\247\074\377\223\056\007\134\111\001\147\151\022\002\162
\277\347
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AC RAIZ FNMT-RCM SERVIDORES SEGUROS"
Issuer: CN=AC RAIZ FNMT-RCM SERVIDORES SEGUROS,OID.2.5.4.97=VATES-Q2826004J,OU=Ceres,O=FNMT-RCM,C=ES
Serial Number:62:f6:32:6c:e5:c4:e3:68:5c:1b:62:dd:9c:2e:9d:95
Subject: CN=AC RAIZ FNMT-RCM SERVIDORES SEGUROS,OID.2.5.4.97=VATES-Q2826004J,OU=Ceres,O=FNMT-RCM,C=ES
Not Valid Before: Thu Dec 20 09:37:33 2018
Not Valid After : Sun Dec 20 09:37:33 2043
Fingerprint (SHA-256):
55:41:53:B1:3D:2C:F9:DD:B7:53:BF:BE:1A:4E:0A:E0:8D:0A:A4:18:70:58:FE:60:A2:B8:62:B2:E4:B8:7B:CB
Fingerprint (SHA1): 62:FF:D9:9E:C0:65:0D:03:CE:75:93:D2:ED:3F:2D:32:C9:E3:E5:4A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ FNMT-RCM SERVIDORES SEGUROS"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\142\377\331\236\300\145\015\003\316\165\223\322\355\077\055\062
\311\343\345\112
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\031\066\234\122\003\057\322\321\273\043\314\335\036\022\125\273
END
CKA_ISSUER MULTILINE_OCTAL
\060\170\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\016\060\014\006\003\125\004\013\014\005\103\145\162
\145\163\061\030\060\026\006\003\125\004\141\014\017\126\101\124
\105\123\055\121\062\070\062\066\060\060\064\112\061\054\060\052
\006\003\125\004\003\014\043\101\103\040\122\101\111\132\040\106
\116\115\124\055\122\103\115\040\123\105\122\126\111\104\117\122
\105\123\040\123\105\107\125\122\117\123
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\142\366\062\154\345\304\343\150\134\033\142\335\234\056
\235\225
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Secure Mail Root R45"
#
Issuer: CN=GlobalSign Secure Mail Root R45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:a8:4c:50:ab:9f:8d:32:b5:1d:03:8f:57:dc
Subject: CN=GlobalSign Secure Mail Root R45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After : Sat Mar 18 00:00:00 2045
Fingerprint (SHA-256):
31:9A:F0:A7:72:9E:6F:89:26:9C:13:1E:A6:A3:A1:6F:CD:86:38:9F:DC:AB:3C:47:A4:A6:75:C1:61:A3:F9:74
Fingerprint (SHA1): 76:18:D1:F3:80:24:3D:52:40:C6:11:6A:AD:57:77:09:7D:81:30:A0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Secure Mail Root R45"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\122\064\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\122\064\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\123\376\250\114\120\253\237\215\062\265\035\003\217
\127\334
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\160\060\202\003\130\240\003\002\001\002\002\020\166
\123\376\250\114\120\253\237\215\062\265\035\003\217\127\334\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\122
\061\013\060\011\006\003\125\004\006\023\002\102\105\061\031\060
\027\006\003\125\004\012\023\020\107\154\157\142\141\154\123\151
\147\156\040\156\166\055\163\141\061\050\060\046\006\003\125\004
\003\023\037\107\154\157\142\141\154\123\151\147\156\040\123\145
\143\165\162\145\040\115\141\151\154\040\122\157\157\164\040\122

\064\065\060\036\027\015\062\060\060\063\061\070\060\060\060\060
\060\060\132\027\015\064\065\060\063\061\070\060\060\060\060\060
\060\132\060\122\061\013\060\011\006\003\125\004\006\023\002\102
\105\061\031\060\027\006\003\125\004\012\023\020\107\154\157\142
\141\154\123\151\147\156\040\156\166\055\163\141\061\050\060\046
\006\003\125\004\003\023\037\107\154\157\142\141\154\123\151\147
\156\040\123\145\143\165\162\145\040\115\141\151\154\040\122\157
\157\164\040\122\064\065\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\334\171\314\155\006\371\155\273\340
\126\004\154\177\340\165\314\055\005\111\350\113\334\124\354\133
\167\225\162\277\177\142\235\205\251\212\044\120\137\123\345\333
\164\157\244\051\133\023\052\011\255\232\305\057\302\367\166\073
\241\105\106\252\103\346\044\376\053\260\157\062\160\031\106\132
\171\046\057\374\075\175\137\144\313\127\314\141\141\250\331\225
\156\343\225\240\156\177\107\022\030\326\357\003\311\373\212\372
\232\275\202\025\251\125\167\113\021\117\131\340\153\303\161\363
\014\330\124\325\201\150\076\023\271\025\056\207\212\074\104\047
\066\142\044\156\370\054\005\162\060\141\275\102\221\043\304\235
\045\247\331\124\232\024\243\061\255\200\171\014\247\143\154\230
\243\254\127\107\063\037\145\226\341\320\322\065\332\371\161\367
\241\246\045\265\101\135\337\076\140\330\321\366\237\245\362\270
\314\023\252\217\371\262\156\341\203\055\223\335\076\205\032\335
\350\261\134\046\001\313\111\205\374\374\322\324\177\205\142\206
\164\371\313\354\065\042\242\014\060\217\073\253\171\353\126\362
\372\102\363\355\371\037\105\211\100\051\255\352\222\164\352\122
\375\126\264\053\332\242\355\165\302\156\253\316\122\220\113\366
\336\360\111\217\232\110\324\210\031\155\105\346\314\214\271\335
\144\140\140\002\100\370\271\317\274\130\353\075\205\271\306\012
\323\234\007\146\217\307\030\071\043\106\341\074\036\243\057\120
\141\222\013\075\053\154\361\243\107\070\127\221\253\015\217\306
\235\115\004\322\046\122\134\345\245\375\052\055\026\052\001\151
\347\251\175\341\066\267\261\052\305\331\261\215\275\271\213\316
\314\213\241\076\013\110\315\120\225\064\304\330\010\131\330\153
\046\364\276\365\324\042\027\000\127\311\256\233\004\060\063\237
\013\373\337\126\242\311\156\124\166\332\261\227\142\047\131\017
\021\212\042\033\144\226\077\250\361\267\044\112\215\074\123\174
\155\203\166\075\262\046\110\163\365\104\026\001\055\011\052\216
\026\226\120\320\163\006\135\273\042\110\202\114\012\106\132\077
\200\377\134\362\362\232\254\054\010\340\326\352\360\022\070\201
\117\246\020\355\106\253\314\026\234\013\317\144\246\231\002\205
\104\147\106\255\375\115\347\002\003\001\000\001\243\102\060\100
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\240\223\025\050
\156\356\217\010\262\065\306\236\142\171\164\247\261\016\053\173
\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000\003
\202\002\001\000\105\012\370\321\134\254\142\201\320\004\327\266

\377\127\121\211\013\014\313\336\044\145\067\373\253\236\355\146
\364\352\014\031\151\211\270\031\261\060\126\264\331\366\367\276
\306\256\227\313\105\366\021\214\072\060\144\114\301\237\131\300
\106\102\010\006\107\144\027\170\340\225\007\006\326\214\242\254
\251\331\077\323\173\126\117\374\304\207\050\337\266\053\026\043
\300\237\037\133\343\326\104\136\042\117\043\004\214\065\026\265
\171\007\206\134\057\227\342\366\010\144\246\334\333\250\212\343
\244\173\167\015\321\051\223\050\040\264\123\243\113\116\137\336
\301\366\165\043\374\037\074\170\117\160\061\170\057\242\065\124
\161\004\254\310\304\155\303\366\221\261\376\315\356\104\156\201
\366\100\305\076\052\001\277\253\114\261\003\077\015\021\344\017
\322\044\343\042\210\233\237\137\107\075\121\111\340\011\067\176
\027\041\061\166\267\147\161\110\050\113\045\327\020\350\237\141
\131\026\305\076\062\116\037\014\316\243\314\017\344\307\021\007
\042\057\070\010\335\133\227\353\102\154\131\232\232\356\172\320
\235\337\305\333\011\103\056\012\252\031\075\153\350\152\060\172
\127\346\277\263\152\071\251\217\343\361\117\145\150\266\275\237
\050\217\241\026\132\011\120\072\062\056\035\057\104\021\102\246
\000\346\061\230\377\055\241\017\346\244\140\126\317\171\327\262
\116\327\260\372\156\014\127\043\307\316\037\245\261\114\155\031
\111\236\016\177\160\217\161\077\130\050\237\165\335\141\340\072
\267\071\266\356\227\324\065\121\373\213\111\140\310\074\146\256
\227\356\215\046\131\127\273\170\360\172\120\060\011\260\140\252
\237\116\334\311\076\036\072\334\142\223\063\260\072\124\164\157
\054\061\105\321\153\021\062\152\150\166\366\075\366\152\023\136
\044\230\347\352\035\232\317\170\202\007\140\367\115\020\323\201
\232\105\215\236\257\233\334\200\307\103\262\225\150\244\303\016
\350\012\107\025\277\124\063\334\001\347\325\246\036\163\330\172
\262\277\057\255\343\125\060\236\337\016\101\274\340\021\365\241
\014\250\042\341\343\000\243\116\160\174\222\343\004\321\172\102
\212\165\220\131\343\233\321\114\242\144\275\163\171\233\157\362
\263\301\366\074
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Secure Mail Root R45"
Issuer: CN=GlobalSign Secure Mail Root R45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:a8:4c:50:ab:9f:8d:32:b5:1d:03:8f:57:dc
Subject: CN=GlobalSign Secure Mail Root R45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After : Sat Mar 18 00:00:00 2045
Fingerprint (SHA-256):
31:9A:F0:A7:72:9E:6F:89:26:9C:13:1E:A6:A3:A1:6F:CD:86:38:9F:DC:AB:3C:47:A4:A6:75:C1:61:A3:F9:74
Fingerprint (SHA1): 76:18:D1:F3:80:24:3D:52:40:C6:11:6A:AD:57:77:09:7D:81:30:A0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Secure Mail Root R45"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\166\030\321\363\200\044\075\122\100\306\021\152\255\127\167\011
\175\201\060\240
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\223\304\173\263\016\124\107\034\103\054\213\276\160\205\142\051
END
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\122\064\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\123\376\250\114\120\253\237\215\062\265\035\003\217
\127\334
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Secure Mail Root E45"
#
Issuer: CN=GlobalSign Secure Mail Root E45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:aa:27:1d:95:46:5d:d6:f1:9e:e5:b8:90:0a
Subject: CN=GlobalSign Secure Mail Root E45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After : Sat Mar 18 00:00:00 2045
Fingerprint (SHA-256):
5C:BF:6F:B8:1F:D4:17:EA:41:28:CD:6F:81:72:A3:C9:40:20:94:F7:4A:B2:ED:3A:06:B4:40:5D:04:F3:0B:19
Fingerprint (SHA1): 18:2E:1F:32:4F:89:DF:BE:FE:88:89:F0:93:C2:C4:A0:2B:67:75:21
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Secure Mail Root E45"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003

\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\105\064\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\105\064\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\123\376\252\047\035\225\106\135\326\361\236\345\270
\220\012
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\041\060\202\001\247\240\003\002\001\002\002\020\166
\123\376\252\047\035\225\106\135\326\361\236\345\270\220\012\060
\012\006\010\052\206\110\316\075\004\003\003\060\122\061\013\060
\011\006\003\125\004\006\023\002\102\105\061\031\060\027\006\003
\125\004\012\023\020\107\154\157\142\141\154\123\151\147\156\040
\156\166\055\163\141\061\050\060\046\006\003\125\004\003\023\037
\107\154\157\142\141\154\123\151\147\156\040\123\145\143\165\162
\145\040\115\141\151\154\040\122\157\157\164\040\105\064\065\060
\036\027\015\062\060\060\063\061\070\060\060\060\060\060\060\132
\027\015\064\065\060\063\061\070\060\060\060\060\060\060\132\060
\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061\031
\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154\123
\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003\125
\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040\123
\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164\040
\105\064\065\060\166\060\020\006\007\052\206\110\316\075\002\001
\006\005\053\201\004\000\042\003\142\000\004\371\171\213\201\107
\067\211\226\077\105\111\120\177\032\046\013\223\062\176\056\300
\300\247\010\232\303\156\217\233\076\013\042\354\067\123\267\157
\212\260\274\047\067\113\155\251\106\073\331\037\377\245\241\104
\273\055\163\277\236\101\007\134\123\233\121\010\072\132\273\157
\070\307\026\221\170\302\112\023\151\035\202\337\132\057\000\210
\226\242\056\034\164\371\235\176\146\067\212\243\102\060\100\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\337\023\136\213\137
\302\100\002\375\126\267\224\114\266\036\325\246\261\024\226\060
\012\006\010\052\206\110\316\075\004\003\003\003\150\000\060\145
\002\060\023\260\276\327\161\040\076\344\253\234\316\066\022\175
\137\114\037\052\265\151\105\063\137\323\055\132\262\344\210\307

\336\012\066\102\062\171\235\246\153\272\341\371\104\052\173\212
\303\022\002\061\000\240\146\034\116\207\235\207\311\355\231\114
\033\012\356\055\140\303\067\307\035\315\265\162\260\331\306\357
\274\362\377\077\360\122\335\010\347\252\144\171\303\344\151\127
\221\057\244\313\174
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Secure Mail Root E45"
Issuer: CN=GlobalSign Secure Mail Root E45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:aa:27:1d:95:46:5d:d6:f1:9e:e5:b8:90:0a
Subject: CN=GlobalSign Secure Mail Root E45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After : Sat Mar 18 00:00:00 2045
Fingerprint (SHA-256):
5C:BF:6F:B8:1F:D4:17:EA:41:28:CD:6F:81:72:A3:C9:40:20:94:F7:4A:B2:ED:3A:06:B4:40:5D:04:F3:0B:19
Fingerprint (SHA1): 18:2E:1F:32:4F:89:DF:BE:FE:88:89:F0:93:C2:C4:A0:2B:67:75:21
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Secure Mail Root E45"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\030\056\037\062\117\211\337\276\376\210\211\360\223\302\304\240
\053\147\165\041
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\374\306\056\237\364\122\055\052\250\244\272\373\147\062\377
END
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\105\064\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\123\376\252\047\035\225\106\135\326\361\236\345\270
\220\012
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Root R46"
#
Issuer: CN=GlobalSign Root R46,O=GlobalSign nv-sa,C=BE
Serial Number:11:d2:bb:b9:d7:23:18:9e:40:5f:0a:9d:2d:d0:df:25:67:d1
Subject: CN=GlobalSign Root R46,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 20 00:00:00 2019
Not Valid After : Tue Mar 20 00:00:00 2046
Fingerprint (SHA-256):
4F:A3:12:6D:8D:3A:11:D1:C4:85:5A:4F:80:7C:BA:D6:CF:91:9D:3A:5A:88:B0:3B:EA:2C:63:72:D9:3C:40:C9
Fingerprint (SHA1): 53:A2:B0:4B:CA:6B:D6:45:E6:39:8A:8E:C4:0D:D2:BF:77:C3:A2:90
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root R46"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\122\064\066
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\122\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\322\273\271\327\043\030\236\100\137\012\235\055\320
\337\045\147\321
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\132\060\202\003\102\240\003\002\001\002\002\022\021
\322\273\271\327\043\030\236\100\137\012\235\055\320\337\045\147
\321\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\122\064\066\060\036\027\015\061\071\060\063
\062\060\060\060\060\060\060\060\132\027\015\064\066\060\063\062
\060\060\060\060\060\060\060\132\060\106\061\013\060\011\006\003
\125\004\006\023\002\102\105\061\031\060\027\006\003\125\004\012

\023\020\107\154\157\142\141\154\123\151\147\156\040\156\166\055
\163\141\061\034\060\032\006\003\125\004\003\023\023\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\122\064\066
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\254\254\164\062\350\263\145\345\272\355\103\046\035\246\211
\015\105\272\051\210\262\244\035\143\335\323\301\054\011\127\211
\071\241\125\351\147\064\167\014\156\344\125\035\122\045\322\023
\153\136\341\035\251\267\175\211\062\137\015\236\237\054\172\143
\140\100\037\246\260\266\170\217\231\124\226\010\130\256\344\006
\274\142\005\002\026\277\257\250\043\003\266\224\017\274\156\154
\302\313\325\246\273\014\351\366\301\002\373\041\336\146\335\027
\253\164\102\357\360\164\057\045\364\352\153\125\133\220\333\235
\337\136\207\012\100\373\255\031\153\373\367\312\140\210\336\332
\301\217\326\256\325\177\324\074\203\356\327\026\114\203\105\063
\153\047\320\206\320\034\055\153\363\253\175\361\205\251\365\050
\322\255\357\363\204\113\034\207\374\023\243\072\162\242\132\021
\053\326\047\161\047\355\201\055\155\146\201\222\207\264\033\130
\172\314\077\012\372\106\117\115\170\134\370\053\110\343\004\204
\313\135\366\264\152\263\145\374\102\236\121\046\043\040\313\075
\024\371\201\355\145\026\000\117\032\144\227\146\010\317\214\173
\343\053\300\235\371\024\362\033\361\126\152\026\277\054\205\205
\315\170\070\232\353\102\152\002\064\030\203\027\116\224\126\370
\266\202\265\363\226\335\075\363\276\177\040\167\076\173\031\043
\153\054\324\162\163\103\127\175\340\370\327\151\117\027\066\004
\371\300\220\140\067\105\336\346\014\330\164\215\256\234\242\155
\164\135\102\276\006\365\331\144\156\002\020\254\211\260\114\073
\007\115\100\176\044\305\212\230\202\171\216\244\247\202\040\215
\043\372\047\161\311\337\306\101\164\240\115\366\221\026\334\106
\214\137\051\143\061\131\161\014\330\157\302\266\062\175\373\346
\135\123\246\176\025\374\273\165\174\135\354\370\366\027\034\354
\307\153\031\313\363\173\360\053\007\245\331\154\171\124\166\154
\235\034\246\156\016\351\171\014\250\043\152\243\337\033\060\061
\237\261\124\173\376\152\313\146\252\334\145\320\242\236\112\232
\007\041\153\201\217\333\304\131\372\336\042\300\004\234\343\252
\133\066\223\350\075\275\172\241\235\013\166\261\013\307\235\375
\317\230\250\006\302\370\052\243\241\203\240\267\045\162\245\002
\343\002\003\001\000\001\243\102\060\100\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\003\134\253\163\201\207\250\314\260\246
\325\224\342\066\226\111\377\005\231\054\060\015\006\011\052\206
\110\206\367\015\001\001\014\005\000\003\202\002\001\000\174\170
\354\366\002\054\273\133\176\222\053\135\071\334\276\330\035\242
\102\063\115\371\357\244\052\073\104\151\036\254\331\105\243\116
\074\247\330\044\121\262\124\034\223\116\304\357\173\223\205\140
\046\352\011\110\340\365\273\307\351\150\322\273\152\061\161\314
\171\256\021\250\360\231\375\345\037\274\057\250\314\127\353\166

\304\041\246\107\123\125\115\150\277\005\244\356\327\046\253\142
\332\103\067\113\342\306\265\345\262\203\031\072\307\323\333\115
\236\010\172\363\356\317\076\142\373\254\350\140\314\321\307\241
\134\203\105\304\105\314\363\027\153\024\311\004\002\076\322\044
\246\171\351\036\316\242\347\301\131\025\237\035\342\113\232\076
\237\166\010\055\153\330\272\127\024\332\203\352\376\214\125\351
\320\116\251\314\167\061\261\104\021\172\134\261\076\323\024\105
\025\030\142\044\023\322\313\115\316\134\203\301\066\362\020\265
\016\210\155\270\341\126\237\211\336\226\146\071\107\144\054\156
\115\256\142\173\277\140\164\031\270\126\254\222\254\026\062\355
\255\150\125\376\230\272\323\064\336\364\311\141\303\016\206\366
\113\204\140\356\015\173\265\062\130\171\221\125\054\201\103\263
\164\037\172\252\045\236\035\327\241\213\271\315\102\056\004\244
\146\203\115\211\065\266\154\250\066\112\171\041\170\042\320\102
\274\321\100\061\220\241\276\004\317\312\147\355\365\360\200\323
\140\311\203\052\042\005\320\007\073\122\277\014\236\252\053\371
\273\346\037\217\045\272\205\215\027\036\002\376\135\120\004\127
\317\376\055\274\357\134\300\032\253\266\237\044\306\337\163\150
\110\220\054\024\364\077\122\032\344\322\313\024\303\141\151\317
\342\371\030\305\272\063\237\024\243\004\135\271\161\367\265\224
\330\366\063\301\132\301\064\213\174\233\335\223\072\347\023\242
\160\141\237\257\217\353\330\305\165\370\063\146\324\164\147\072
\067\167\234\347\335\244\017\166\103\146\212\103\362\237\373\014
\102\170\143\321\342\017\157\173\324\241\075\164\227\205\267\110
\071\101\326\040\374\320\072\263\372\350\157\304\212\272\161\067
\276\213\227\261\170\061\117\263\347\266\003\023\316\124\235\256
\045\131\314\177\065\137\010\367\100\105\061\170\052\172
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root R46"
Issuer: CN=GlobalSign Root R46,O=GlobalSign nv-sa,C=BE
Serial Number:11:d2:bb:b9:d7:23:18:9e:40:5f:0a:9d:2d:d0:df:25:67:d1
Subject: CN=GlobalSign Root R46,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 20 00:00:00 2019
Not Valid After : Tue Mar 20 00:00:00 2046
Fingerprint (SHA-256):
4F:A3:12:6D:8D:3A:11:D1:C4:85:5A:4F:80:7C:BA:D6:CF:91:9D:3A:5A:88:B0:3B:EA:2C:63:72:D9:3C:40:C9
Fingerprint (SHA1): 53:A2:B0:4B:CA:6B:D6:45:E6:39:8A:8E:C4:0D:D2:BF:77:C3:A2:90
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root R46"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\123\242\260\113\312\153\326\105\346\071\212\216\304\015\322\277

\167\303\242\220
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\304\024\060\344\372\146\103\224\052\152\033\044\137\031\320\357
END
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\122\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\322\273\271\327\043\030\236\100\137\012\235\055\320
\337\045\147\321
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Root E46"
#
Issuer: CN=GlobalSign Root E46,O=GlobalSign nv-sa,C=BE
Serial Number:11:d2:bb:ba:33:6e:d4:bc:e6:24:68:c5:0d:84:1d:98:e8:43
Subject: CN=GlobalSign Root E46,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 20 00:00:00 2019
Not Valid After : Tue Mar 20 00:00:00 2046
Fingerprint (SHA-256):
CB:B9:C4:4D:84:B8:04:3E:10:50:EA:31:A6:9F:51:49:55:D7:BF:D2:E2:C6:B4:93:01:01:9A:D6:1D:9F:50:58
Fingerprint (SHA1): 39:B4:6C:D5:FE:80:06:EB:E2:2F:4A:BB:08:33:A0:AF:DB:B9:DD:84
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root E46"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\105\064\066
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061

\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\105\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\322\273\272\063\156\324\274\346\044\150\305\015\204
\035\230\350\103
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\013\060\202\001\221\240\003\002\001\002\002\022\021
\322\273\272\063\156\324\274\346\044\150\305\015\204\035\230\350
\103\060\012\006\010\052\206\110\316\075\004\003\003\060\106\061
\013\060\011\006\003\125\004\006\023\002\102\105\061\031\060\027
\006\003\125\004\012\023\020\107\154\157\142\141\154\123\151\147
\156\040\156\166\055\163\141\061\034\060\032\006\003\125\004\003
\023\023\107\154\157\142\141\154\123\151\147\156\040\122\157\157
\164\040\105\064\066\060\036\027\015\061\071\060\063\062\060\060
\060\060\060\060\060\132\027\015\064\066\060\063\062\060\060\060
\060\060\060\060\132\060\106\061\013\060\011\006\003\125\004\006
\023\002\102\105\061\031\060\027\006\003\125\004\012\023\020\107
\154\157\142\141\154\123\151\147\156\040\156\166\055\163\141\061
\034\060\032\006\003\125\004\003\023\023\107\154\157\142\141\154
\123\151\147\156\040\122\157\157\164\040\105\064\066\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\234\016\261\317\267\350\236\122\167\165\064
\372\245\106\247\255\062\031\062\264\007\251\047\312\224\273\014
\322\012\020\307\332\211\260\227\014\160\023\011\001\216\330\352
\107\352\276\262\200\053\315\374\050\015\333\254\274\244\206\067
\355\160\010\000\165\352\223\013\173\056\122\234\043\150\043\006
\103\354\222\057\123\204\333\373\107\024\007\350\137\224\147\135
\311\172\201\074\040\243\102\060\100\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\061\012\220\217\266\306\235\322\104\113\200
\265\242\346\037\261\022\117\033\225\060\012\006\010\052\206\110
\316\075\004\003\003\003\150\000\060\145\002\061\000\337\124\220
\355\233\357\213\224\002\223\027\202\231\276\263\236\054\366\013
\221\214\237\112\024\261\366\144\274\273\150\121\023\014\003\367
\025\213\204\140\271\213\377\122\216\347\214\274\034\002\060\074
\371\021\324\214\116\300\301\141\302\025\114\252\253\035\013\061
\137\073\034\342\000\227\104\061\346\376\163\226\057\332\226\323
\376\010\007\263\064\211\274\005\237\367\036\206\356\213\160
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root E46"
Issuer: CN=GlobalSign Root E46,O=GlobalSign nv-sa,C=BE
Serial Number:11:d2:bb:ba:33:6e:d4:bc:e6:24:68:c5:0d:84:1d:98:e8:43
Subject: CN=GlobalSign Root E46,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 20 00:00:00 2019
Not Valid After : Tue Mar 20 00:00:00 2046
Fingerprint (SHA-256):
CB:B9:C4:4D:84:B8:04:3E:10:50:EA:31:A6:9F:51:49:55:D7:BF:D2:E2:C6:B4:93:01:01:9A:D6:1D:9F:50:58
Fingerprint (SHA1): 39:B4:6C:D5:FE:80:06:EB:E2:2F:4A:BB:08:33:A0:AF:DB:B9:DD:84
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root E46"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\071\264\154\325\376\200\006\353\342\057\112\273\010\063\240\257
\333\271\335\204
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\265\270\146\355\336\010\203\343\311\342\001\064\006\254\121\157
END
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\105\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\322\273\272\063\156\324\274\346\044\150\305\015\204
\035\230\350\103
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GLOBALTRUST 2020"
#
Issuer: CN=GLOBALTRUST 2020,O=e-commerce monitoring GmbH,C=AT
Serial Number:5a:4b:bd:5a:fb:4f:8a:5b:fa:65:e5
Subject: CN=GLOBALTRUST 2020,O=e-commerce monitoring GmbH,C=AT
Not Valid Before: Mon Feb 10 00:00:00 2020
Not Valid After : Sun Jun 10 00:00:00 2040
Fingerprint (SHA-256):
9A:29:6A:51:82:D1:D4:51:A2:E3:7F:43:9B:74:DA:AF:A2:67:52:33:29:F9:0F:9A:0D:20:07:C3:34:E2:3C:9A
Fingerprint (SHA1): D0:67:C1:13:51:01:0C:AA:D0:C7:6A:65:37:31:16:26:4F:53:71:A2

CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GLOBALTRUST 2020"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\043\060\041\006\003\125\004\012\023\032\145\055\143\157\155\155
\145\162\143\145\040\155\157\156\151\164\157\162\151\156\147\040
\107\155\142\110\061\031\060\027\006\003\125\004\003\023\020\107
\114\117\102\101\114\124\122\125\123\124\040\062\060\062\060
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\043\060\041\006\003\125\004\012\023\032\145\055\143\157\155\155
\145\162\143\145\040\155\157\156\151\164\157\162\151\156\147\040
\107\155\142\110\061\031\060\027\006\003\125\004\003\023\020\107
\114\117\102\101\114\124\122\125\123\124\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\132\113\275\132\373\117\212\133\372\145\345
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\202\060\202\003\152\240\003\002\001\002\002\013\132
\113\275\132\373\117\212\133\372\145\345\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\060\115\061\013\060\011\006
\003\125\004\006\023\002\101\124\061\043\060\041\006\003\125\004
\012\023\032\145\055\143\157\155\155\145\162\143\145\040\155\157
\156\151\164\157\162\151\156\147\040\107\155\142\110\061\031\060
\027\006\003\125\004\003\023\020\107\114\117\102\101\114\124\122
\125\123\124\040\062\060\062\060\060\036\027\015\062\060\060\062
\061\060\060\060\060\060\060\060\132\027\015\064\060\060\066\061
\060\060\060\060\060\060\060\132\060\115\061\013\060\011\006\003
\125\004\006\023\002\101\124\061\043\060\041\006\003\125\004\012
\023\032\145\055\143\157\155\155\145\162\143\145\040\155\157\156
\151\164\157\162\151\156\147\040\107\155\142\110\061\031\060\027
\006\003\125\004\003\023\020\107\114\117\102\101\114\124\122\125
\123\124\040\062\060\062\060\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\256\056\126\255\033\034\357\366
\225\217\240\167\033\053\323\143\217\204\115\105\242\017\237\133
\105\253\131\173\121\064\371\354\213\212\170\305\335\153\257\275
\304\337\223\105\036\277\221\070\013\256\016\026\347\101\163\370
\333\273\321\270\121\340\313\203\073\163\070\156\167\212\017\131
\143\046\315\247\052\316\124\373\270\342\300\174\107\316\140\174
\077\262\163\362\300\031\266\212\222\207\065\015\220\050\242\344

\025\004\143\076\272\257\356\174\136\314\246\213\120\262\070\367
\101\143\312\316\377\151\217\150\016\225\066\345\314\271\214\011
\312\113\335\061\220\226\310\314\037\375\126\226\064\333\216\034
\352\054\276\205\056\143\335\252\251\225\323\375\051\225\023\360
\310\230\223\331\055\026\107\220\021\203\242\072\042\242\050\127
\242\353\376\300\214\050\240\246\175\347\052\102\073\202\200\143
\245\143\037\031\314\174\262\146\250\302\323\155\067\157\342\176
\006\121\331\105\204\037\022\316\044\122\144\205\013\110\200\116
\207\261\042\042\060\252\353\256\276\340\002\340\100\350\260\102
\200\003\121\252\264\176\252\104\327\103\141\363\242\153\026\211
\111\244\243\244\053\212\002\304\170\364\150\212\301\344\172\066
\261\157\033\226\033\167\111\215\324\311\006\162\217\317\123\343
\334\027\205\040\112\334\230\047\323\221\046\053\107\036\151\007
\257\336\242\344\344\324\153\013\263\136\174\324\044\200\107\051
\151\073\156\350\254\375\100\353\330\355\161\161\053\362\350\130
\035\353\101\227\042\305\037\324\071\320\047\217\207\343\030\364
\340\251\106\015\365\164\072\202\056\320\156\054\221\243\061\134
\073\106\352\173\004\020\126\136\200\035\365\245\145\350\202\374
\342\007\214\142\105\365\040\336\106\160\206\241\274\223\323\036
\164\246\154\260\054\367\003\014\210\014\313\324\162\123\206\274
\140\106\363\230\152\302\361\277\103\371\160\040\167\312\067\101
\171\125\122\143\215\133\022\237\305\150\304\210\235\254\362\060
\253\267\243\061\227\147\255\217\027\017\154\307\163\355\044\224
\153\310\203\232\320\232\067\111\004\253\261\026\310\154\111\111
\055\253\241\320\214\222\362\101\112\171\041\045\333\143\327\266
\234\247\176\102\151\373\072\143\002\003\001\000\001\243\143\060
\141\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\035\006\003\125\035\016\004\026\004\024\334\056\037
\321\141\067\171\344\253\325\325\263\022\161\150\075\152\150\234
\042\060\037\006\003\125\035\043\004\030\060\026\200\024\334\056
\037\321\141\067\171\344\253\325\325\263\022\161\150\075\152\150
\234\042\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\003\202\002\001\000\221\360\102\002\150\100\356\303\150\300
\124\057\337\354\142\303\303\236\212\240\061\050\252\203\216\244
\126\226\022\020\206\126\272\227\162\322\124\060\174\255\031\325
\035\150\157\373\024\102\330\215\016\363\265\321\245\343\002\102
\136\334\350\106\130\007\065\002\060\340\274\164\112\301\103\052
\377\333\032\320\260\257\154\303\375\313\263\365\177\155\003\056
\131\126\235\055\055\065\214\262\326\103\027\054\222\012\313\135
\350\214\017\113\160\103\320\202\377\250\314\277\244\224\300\276
\207\275\212\343\223\173\306\217\233\026\235\047\145\274\172\305
\102\202\154\134\007\320\251\301\210\140\104\351\230\205\026\137
\370\217\312\001\020\316\045\303\371\140\033\240\305\227\303\323
\054\210\061\242\275\060\354\320\320\300\022\361\301\071\343\345
\365\370\326\112\335\064\315\373\157\301\117\343\000\213\126\342
\222\367\050\262\102\167\162\043\147\307\077\021\025\262\304\003
\005\276\273\021\173\012\277\250\156\347\377\130\103\317\233\147

\240\200\007\266\035\312\255\155\352\101\021\176\055\164\223\373
\302\274\276\121\104\305\357\150\045\047\200\343\310\240\324\022
\354\331\245\067\035\067\174\264\221\312\332\324\261\226\201\357
\150\134\166\020\111\257\176\245\067\200\261\034\122\275\063\201
\114\217\371\335\145\331\024\315\212\045\130\364\342\305\203\245
\011\220\324\154\024\143\265\100\337\353\300\374\304\130\176\015
\024\026\207\124\047\156\126\344\160\204\270\154\062\022\176\202
\061\103\276\327\335\174\241\255\256\326\253\040\022\357\012\303
\020\214\111\226\065\334\013\165\136\261\117\325\117\064\016\021
\040\007\165\103\105\351\243\021\332\254\243\231\302\266\171\047
\342\271\357\310\342\366\065\051\172\164\372\305\177\202\005\142
\246\012\352\150\262\171\107\006\156\362\127\250\025\063\306\367
\170\112\075\102\173\153\176\376\367\106\352\321\353\216\357\210
\150\133\350\301\331\161\176\375\144\357\377\147\107\210\130\045
\057\076\206\007\275\373\250\345\202\250\254\245\323\151\103\315
\061\210\111\204\123\222\300\261\071\033\071\203\001\060\304\362
\251\372\320\003\275\162\067\140\126\037\066\174\275\071\221\365
\155\015\277\173\327\222
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GLOBALTRUST 2020"
Issuer: CN=GLOBALTRUST 2020,O=e-commerce monitoring GmbH,C=AT
Serial Number:5a:4b:bd:5a:fb:4f:8a:5b:fa:65:e5
Subject: CN=GLOBALTRUST 2020,O=e-commerce monitoring GmbH,C=AT
Not Valid Before: Mon Feb 10 00:00:00 2020
Not Valid After : Sun Jun 10 00:00:00 2040
Fingerprint (SHA-256):
9A:29:6A:51:82:D1:D4:51:A2:E3:7F:43:9B:74:DA:AF:A2:67:52:33:29:F9:0F:9A:0D:20:07:C3:34:E2:3C:9A
Fingerprint (SHA1): D0:67:C1:13:51:01:0C:AA:D0:C7:6A:65:37:31:16:26:4F:53:71:A2
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GLOBALTRUST 2020"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\320\147\301\023\121\001\014\252\320\307\152\145\067\061\026\046
\117\123\161\242
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\212\307\157\313\155\343\314\242\361\174\203\372\016\170\327\350
END
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\043\060\041\006\003\125\004\012\023\032\145\055\143\157\155\155
\145\162\143\145\040\155\157\156\151\164\157\162\151\156\147\040

\107\155\142\110\061\031\060\027\006\003\125\004\003\023\020\107
\114\117\102\101\114\124\122\125\123\124\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\132\113\275\132\373\117\212\133\372\145\345
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ANF Secure Server Root CA"
#
Issuer: CN=ANF Secure Server Root CA,OU=ANF CA Raiz,O=ANF Autoridad de Certificacion,C=ES,serialNumber=G63287510
Serial Number:0d:d3:e3:bc:6c:f9:6b:b1
Subject: CN=ANF Secure Server Root CA,OU=ANF CA Raiz,O=ANF Autoridad de Certificacion,C=ES,serialNumber=G63287510
Not Valid Before: Wed Sep 04 10:00:38 2019
Not Valid After : Tue Aug 30 10:00:38 2039
Fingerprint (SHA-256):
FB:8F:EC:75:91:69:B9:10:6B:1E:51:16:44:C6:18:C5:13:04:37:3F:6C:06:43:08:8D:8B:EF:FD:1B:99:75:99
Fingerprint (SHA1): 5B:6E:68:D0:CC:15:B6:A0:5F:1E:C1:5F:AE:02:FC:6B:2F:5D:6F:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANF Secure Server Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\204\061\022\060\020\006\003\125\004\005\023\011\107\066
\063\062\070\067\065\061\060\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\047\060\045\006\003\125\004\012\023\036\101
\116\106\040\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\061\024\060
\022\006\003\125\004\013\023\013\101\116\106\040\103\101\040\122
\141\151\172\061\042\060\040\006\003\125\004\003\023\031\101\116
\106\040\123\145\143\165\162\145\040\123\145\162\166\145\162\040
\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\204\061\022\060\020\006\003\125\004\005\023\011\107\066
\063\062\070\067\065\061\060\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\047\060\045\006\003\125\004\012\023\036\101
\116\106\040\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\061\024\060

\022\006\003\125\004\013\023\013\101\116\106\040\103\101\040\122
\141\151\172\061\042\060\040\006\003\125\004\003\023\031\101\116
\106\040\123\145\143\165\162\145\040\123\145\162\166\145\162\040
\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\015\323\343\274\154\371\153\261
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\357\060\202\003\327\240\003\002\001\002\002\010\015
\323\343\274\154\371\153\261\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\201\204\061\022\060\020\006\003\125
\004\005\023\011\107\066\063\062\070\067\065\061\060\061\013\060
\011\006\003\125\004\006\023\002\105\123\061\047\060\045\006\003
\125\004\012\023\036\101\116\106\040\101\165\164\157\162\151\144
\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141\143
\151\157\156\061\024\060\022\006\003\125\004\013\023\013\101\116
\106\040\103\101\040\122\141\151\172\061\042\060\040\006\003\125
\004\003\023\031\101\116\106\040\123\145\143\165\162\145\040\123
\145\162\166\145\162\040\122\157\157\164\040\103\101\060\036\027
\015\061\071\060\071\060\064\061\060\060\060\063\070\132\027\015
\063\071\060\070\063\060\061\060\060\060\063\070\132\060\201\204
\061\022\060\020\006\003\125\004\005\023\011\107\066\063\062\070
\067\065\061\060\061\013\060\011\006\003\125\004\006\023\002\105
\123\061\047\060\045\006\003\125\004\012\023\036\101\116\106\040
\101\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\061\024\060\022\006\003
\125\004\013\023\013\101\116\106\040\103\101\040\122\141\151\172
\061\042\060\040\006\003\125\004\003\023\031\101\116\106\040\123
\145\143\165\162\145\040\123\145\162\166\145\162\040\122\157\157
\164\040\103\101\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\333\353\153\053\346\144\124\225\202\220\243
\162\244\031\001\235\234\013\201\137\163\111\272\247\254\363\004
\116\173\226\013\354\021\340\133\246\034\316\033\322\015\203\034
\053\270\236\035\176\105\062\140\017\007\351\167\130\176\237\152
\310\141\116\266\046\301\114\215\377\114\357\064\262\037\145\330
\271\170\365\255\251\161\271\357\117\130\035\245\336\164\040\227
\241\355\150\114\336\222\027\113\274\253\377\145\232\236\373\107
\331\127\162\363\011\241\256\166\104\023\156\234\055\104\071\274
\371\307\073\244\130\075\101\275\264\302\111\243\310\015\322\227
\057\007\145\122\000\247\156\310\257\150\354\364\024\226\266\127
\037\126\303\071\237\053\155\344\363\076\366\065\144\332\014\034
\241\204\113\057\113\113\342\054\044\235\155\223\100\353\265\043
\216\062\312\157\105\323\250\211\173\036\317\036\372\133\103\213
\315\315\250\017\152\312\014\136\271\236\107\217\360\331\266\012
\013\130\145\027\063\271\043\344\167\031\175\313\112\056\222\173
\117\057\020\167\261\215\057\150\234\142\314\340\120\370\354\221

\247\124\114\127\011\325\166\143\305\350\145\036\356\155\152\317
\011\235\372\174\117\255\140\010\375\126\231\017\025\054\173\251
\200\253\214\141\217\112\007\166\102\336\075\364\335\262\044\063
\133\270\265\243\104\311\254\177\167\074\035\043\354\202\251\246
\342\310\006\114\002\376\254\134\231\231\013\057\020\212\246\364
\177\325\207\164\015\131\111\105\366\360\161\134\071\051\326\277
\112\043\213\365\137\001\143\322\207\163\050\265\113\012\365\370
\253\202\054\176\163\045\062\035\013\143\012\027\201\000\377\266
\166\136\347\264\261\100\312\041\273\325\200\121\345\110\122\147
\054\322\141\211\007\015\017\316\102\167\300\104\163\234\104\120
\240\333\020\012\055\225\034\201\257\344\034\345\024\036\361\066
\101\001\002\057\175\163\247\336\102\314\114\351\211\015\126\367
\237\221\324\003\306\154\311\217\333\330\034\340\100\230\135\146
\231\230\200\156\055\377\001\305\316\313\106\037\254\002\306\103
\346\256\242\204\074\305\116\036\075\155\311\024\114\343\056\101
\273\312\071\277\066\074\052\031\252\101\207\116\245\316\113\062
\171\335\220\111\177\002\003\001\000\001\243\143\060\141\060\037
\006\003\125\035\043\004\030\060\026\200\024\234\137\320\154\143
\243\137\223\312\223\230\010\255\214\207\245\054\134\301\067\060
\035\006\003\125\035\016\004\026\004\024\234\137\320\154\143\243
\137\223\312\223\230\010\255\214\207\245\054\134\301\067\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\002\001\000\116\036\271\212\306\240\230\077\156\303\151\300\152
\134\111\122\254\313\053\135\170\070\301\325\124\204\237\223\360
\207\031\075\054\146\211\353\015\102\374\314\360\165\205\077\213
\364\200\135\171\345\027\147\275\065\202\342\362\074\216\175\133
\066\313\132\200\000\051\362\316\053\054\361\217\252\155\005\223
\154\162\307\126\353\337\120\043\050\345\105\020\075\350\147\243
\257\016\125\017\220\011\142\357\113\131\242\366\123\361\300\065
\344\057\301\044\275\171\057\116\040\042\073\375\032\040\260\244
\016\054\160\355\164\077\270\023\225\006\121\310\350\207\046\312
\244\133\152\026\041\222\335\163\140\236\020\030\336\074\201\352
\350\030\303\174\211\362\213\120\076\275\021\342\025\003\250\066
\175\063\001\154\110\025\327\210\220\231\004\305\314\346\007\364
\274\364\220\355\023\342\352\213\303\217\243\063\017\301\051\114
\023\116\332\025\126\161\163\162\202\120\366\232\063\174\242\261
\250\032\064\164\145\134\316\321\353\253\123\340\032\200\330\352
\072\111\344\046\060\233\345\034\212\250\251\025\062\206\231\222
\012\020\043\126\022\340\366\316\114\342\273\276\333\215\222\163
\001\146\057\142\076\262\162\047\105\066\355\115\126\343\227\231
\377\072\065\076\245\124\112\122\131\113\140\333\356\376\170\021
\177\112\334\024\171\140\266\153\144\003\333\025\203\341\242\276
\366\043\227\120\360\011\063\066\247\161\226\045\363\271\102\175
\333\070\077\054\130\254\350\102\341\016\330\323\073\114\056\202
\351\203\056\153\061\331\335\107\206\117\155\227\221\056\117\342
\050\161\065\026\321\362\163\376\045\053\007\107\044\143\047\310

\370\366\331\153\374\022\061\126\010\300\123\102\257\234\320\063
\176\374\006\360\061\104\003\024\361\130\352\362\152\015\251\021
\262\203\276\305\032\277\007\352\131\334\243\210\065\357\234\166
\062\074\115\006\042\316\025\345\335\236\330\217\332\336\322\304
\071\345\027\201\317\070\107\353\177\210\155\131\033\337\237\102
\024\256\176\317\250\260\146\145\332\067\257\237\252\075\352\050
\266\336\325\061\130\026\202\133\352\273\031\165\002\163\032\312
\110\032\041\223\220\012\216\223\204\247\175\073\043\030\222\211
\240\215\254
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ANF Secure Server Root CA"
Issuer: CN=ANF Secure Server Root CA,OU=ANF CA Raiz,O=ANF Autoridad de Certificacion,C=ES,serialNumber=G63287510
Serial Number:0d:d3:e3:bc:6c:f9:6b:b1
Subject: CN=ANF Secure Server Root CA,OU=ANF CA Raiz,O=ANF Autoridad de Certificacion,C=ES,serialNumber=G63287510
Not Valid Before: Wed Sep 04 10:00:38 2019
Not Valid After : Tue Aug 30 10:00:38 2039
Fingerprint (SHA-256):
FB:8F:EC:75:91:69:B9:10:6B:1E:51:16:44:C6:18:C5:13:04:37:3F:6C:06:43:08:8D:8B:EF:FD:1B:99:75:99
Fingerprint (SHA1): 5B:6E:68:D0:CC:15:B6:A0:5F:1E:C1:5F:AE:02:FC:6B:2F:5D:6F:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANF Secure Server Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\133\156\150\320\314\025\266\240\137\036\301\137\256\002\374\153
\057\135\157\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\046\246\104\132\331\257\116\057\262\035\266\145\260\116\350\226
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\204\061\022\060\020\006\003\125\004\005\023\011\107\066
\063\062\070\067\065\061\060\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\047\060\045\006\003\125\004\012\023\036\101
\116\106\040\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\061\024\060
\022\006\003\125\004\013\023\013\101\116\106\040\103\101\040\122
\141\151\172\061\042\060\040\006\003\125\004\003\023\031\101\116
\106\040\123\145\143\165\162\145\040\123\145\162\166\145\162\040
\122\157\157\164\040\103\101
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\015\323\343\274\154\371\153\261
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum EC-384 CA"
#
Issuer: CN=Certum EC-384 CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Serial Number:78:8f:27:5c:81:12:52:20:a5:04:d0:2d:dd:ba:73:f4
Subject: CN=Certum EC-384 CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Not Valid Before: Mon Mar 26 07:24:54 2018
Not Valid After : Thu Mar 26 07:24:54 2043
Fingerprint (SHA-256):
6B:32:80:85:62:53:18:AA:50:D1:73:C9:8D:8B:DA:09:D5:7E:27:41:3D:11:4C:F7:87:A0:F5:D0:6C:03:0C:F6
Fingerprint (SHA1): F3:3E:78:3C:AC:DF:F4:A2:CC:AC:67:55:69:56:D7:E5:16:3C:E1:ED
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum EC-384 CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\031\060\027\006
\003\125\004\003\023\020\103\145\162\164\165\155\040\105\103\055
\063\070\064\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\031\060\027\006
\003\125\004\003\023\020\103\145\162\164\165\155\040\105\103\055
\063\070\064\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\170\217\047\134\201\022\122\040\245\004\320\055\335\272

\163\364
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\145\060\202\001\353\240\003\002\001\002\002\020\170
\217\047\134\201\022\122\040\245\004\320\055\335\272\163\364\060
\012\006\010\052\206\110\316\075\004\003\003\060\164\061\013\060
\011\006\003\125\004\006\023\002\120\114\061\041\060\037\006\003
\125\004\012\023\030\101\163\163\145\143\157\040\104\141\164\141
\040\123\171\163\164\145\155\163\040\123\056\101\056\061\047\060
\045\006\003\125\004\013\023\036\103\145\162\164\165\155\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\061\031\060\027\006\003\125\004\003\023
\020\103\145\162\164\165\155\040\105\103\055\063\070\064\040\103
\101\060\036\027\015\061\070\060\063\062\066\060\067\062\064\065
\064\132\027\015\064\063\060\063\062\066\060\067\062\064\065\064
\132\060\164\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143
\157\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123
\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145
\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\031\060\027
\006\003\125\004\003\023\020\103\145\162\164\165\155\040\105\103
\055\063\070\064\040\103\101\060\166\060\020\006\007\052\206\110
\316\075\002\001\006\005\053\201\004\000\042\003\142\000\004\304
\050\216\253\030\133\152\276\156\144\067\143\344\315\354\253\072
\367\314\241\270\016\202\111\327\206\051\237\241\224\362\343\140
\170\230\201\170\006\115\362\354\232\016\127\140\203\237\264\346
\027\057\032\263\135\002\133\211\043\074\302\021\005\052\247\210
\023\030\363\120\204\327\275\064\054\047\211\125\377\316\114\347
\337\246\037\050\304\360\124\303\271\174\267\123\255\353\302\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\215
\006\146\164\044\166\072\363\211\367\274\326\275\107\175\057\274
\020\137\113\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\012\006\010\052\206\110\316\075\004\003\003\003
\150\000\060\145\002\060\003\125\055\246\346\030\304\174\357\311
\120\156\301\047\017\234\207\257\156\325\033\010\030\275\222\051
\301\357\224\221\170\322\072\034\125\211\142\345\033\011\036\272
\144\153\361\166\264\324\002\061\000\264\102\204\231\377\253\347
\236\373\221\227\047\135\334\260\133\060\161\316\136\070\032\152
\331\045\347\352\367\141\222\126\370\352\332\066\302\207\145\226
\056\162\045\057\177\337\303\023\311
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum EC-384 CA"

Issuer: CN=Certum EC-384 CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Serial Number:78:8f:27:5c:81:12:52:20:a5:04:d0:2d:dd:ba:73:f4
Subject: CN=Certum EC-384 CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Not Valid Before: Mon Mar 26 07:24:54 2018
Not Valid After : Thu Mar 26 07:24:54 2043
Fingerprint (SHA-256):
6B:32:80:85:62:53:18:AA:50:D1:73:C9:8D:8B:DA:09:D5:7E:27:41:3D:11:4C:F7:87:A0:F5:D0:6C:03:0C:F6
Fingerprint (SHA1): F3:3E:78:3C:AC:DF:F4:A2:CC:AC:67:55:69:56:D7:E5:16:3C:E1:ED
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum EC-384 CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\363\076\170\074\254\337\364\242\314\254\147\125\151\126\327\345
\026\074\341\355
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\266\145\263\226\140\227\022\241\354\116\341\075\243\306\311\361
END
CKA_ISSUER MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\031\060\027\006
\003\125\004\003\023\020\103\145\162\164\165\155\040\105\103\055
\063\070\064\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\170\217\047\134\201\022\122\040\245\004\320\055\335\272
\163\364
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum Trusted Root CA"
#
Issuer: CN=Certum Trusted Root CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Serial Number:1e:bf:59:50:b8:c9:80:37:4c:06:f7:eb:55:4f:b5:ed
Subject: CN=Certum Trusted Root CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Not Valid Before: Fri Mar 16 12:10:13 2018
Not Valid After : Mon Mar 16 12:10:13 2043
Fingerprint (SHA-256):

FE:76:96:57:38:55:77:3E:37:A9:5E:7A:D4:D9:CC:96:C3:01:57:C1:5D:31:76:5B:A9:B1:57:04:E1:AE:78:FD
Fingerprint (SHA1): C8:83:44:C0:18:AE:9F:CC:F1:87:B7:8F:22:D1:C5:D7:45:84:BA:E5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\172\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\037\060\035\006
\003\125\004\003\023\026\103\145\162\164\165\155\040\124\162\165
\163\164\145\144\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\172\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\037\060\035\006
\003\125\004\003\023\026\103\145\162\164\165\155\040\124\162\165
\163\164\145\144\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\036\277\131\120\270\311\200\067\114\006\367\353\125\117
\265\355
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\300\060\202\003\250\240\003\002\001\002\002\020\036
\277\131\120\270\311\200\067\114\006\367\353\125\117\265\355\060
\015\006\011\052\206\110\206\367\015\001\001\015\005\000\060\172
\061\013\060\011\006\003\125\004\006\023\002\120\114\061\041\060
\037\006\003\125\004\012\023\030\101\163\163\145\143\157\040\104
\141\164\141\040\123\171\163\164\145\155\163\040\123\056\101\056
\061\047\060\045\006\003\125\004\013\023\036\103\145\162\164\165
\155\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\061\037\060\035\006\003\125
\004\003\023\026\103\145\162\164\165\155\040\124\162\165\163\164
\145\144\040\122\157\157\164\040\103\101\060\036\027\015\061\070
\060\063\061\066\061\062\061\060\061\063\132\027\015\064\063\060
\063\061\066\061\062\061\060\061\063\132\060\172\061\013\060\011
\006\003\125\004\006\023\002\120\114\061\041\060\037\006\003\125

\004\012\023\030\101\163\163\145\143\157\040\104\141\164\141\040
\123\171\163\164\145\155\163\040\123\056\101\056\061\047\060\045
\006\003\125\004\013\023\036\103\145\162\164\165\155\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\061\037\060\035\006\003\125\004\003\023\026
\103\145\162\164\165\155\040\124\162\165\163\164\145\144\040\122
\157\157\164\040\103\101\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\321\055\216\273\267\066\352\155\067
\221\237\116\223\247\005\344\051\003\045\316\034\202\367\174\231
\237\101\006\315\355\243\272\300\333\011\054\301\174\337\051\176
\113\145\057\223\247\324\001\153\003\050\030\243\330\235\005\301
\052\330\105\361\221\336\337\073\320\200\002\214\317\070\017\352
\247\134\170\021\244\301\310\205\134\045\323\323\262\347\045\317
\021\124\227\253\065\300\036\166\034\357\000\123\237\071\334\024
\245\054\042\045\263\162\162\374\215\263\345\076\010\036\024\052
\067\013\210\074\312\260\364\310\302\241\256\274\301\276\051\147
\125\342\374\255\131\134\376\275\127\054\260\220\215\302\355\067
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\360\225\116\045\131\035\315\230\151\273\323\314\062\311\215\357
\201\376\255\175\211\273\272\140\023\312\145\225\147\240\363\031
\366\003\126\324\152\323\047\342\241\255\203\360\112\022\042\167
\034\005\163\342\031\161\102\300\354\165\106\232\220\130\340\152
\216\053\245\106\060\004\216\031\262\027\343\276\251\272\177\126
\361\044\003\327\262\041\050\166\016\066\060\114\171\325\101\232
\232\250\270\065\272\014\072\362\104\033\040\210\367\305\045\327
\075\306\343\076\103\335\207\376\304\352\365\123\076\114\145\377
\073\112\313\170\132\153\027\137\015\307\303\117\116\232\052\242
\355\127\115\042\342\106\232\077\017\221\064\044\175\125\343\214
\225\067\323\032\360\011\053\054\322\311\215\264\015\000\253\147
\051\050\330\001\365\031\004\266\035\276\166\376\162\134\304\205
\312\322\200\101\337\005\250\243\325\204\220\117\013\363\340\077
\233\031\322\067\211\077\362\173\122\034\214\366\341\367\074\007
\227\214\016\242\131\201\014\262\220\075\323\343\131\106\355\017
\251\247\336\200\153\132\252\007\266\031\313\274\127\363\227\041
\172\014\261\053\164\076\353\332\247\147\055\114\304\230\236\066
\011\166\146\146\374\032\077\352\110\124\034\276\060\275\200\120
\277\174\265\316\000\366\014\141\331\347\044\003\340\343\001\201
\016\275\330\205\064\210\275\262\066\250\173\134\010\345\104\200
\214\157\370\057\325\041\312\035\034\320\373\304\265\207\321\072
\116\307\166\265\065\110\265\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\214\373\034\165
\274\002\323\237\116\056\110\331\371\140\124\252\304\263\117\372
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\015\006\011\052\206\110\206\367\015\001\001\015\005\000\003
\202\002\001\000\110\242\325\000\013\056\320\077\274\034\325\265
\124\111\036\132\153\364\344\362\340\100\067\340\314\024\173\271

\311\372\065\265\165\027\223\152\005\151\205\234\315\117\031\170
\133\031\201\363\143\076\303\316\133\217\365\057\136\001\166\023
\077\054\000\271\315\226\122\071\111\155\004\116\305\351\017\206
\015\341\372\263\137\202\022\361\072\316\146\006\044\064\053\350
\314\312\347\151\334\207\235\302\064\327\171\321\323\167\270\252
\131\130\376\235\046\372\070\206\076\235\212\207\144\127\345\027
\072\342\371\215\271\343\063\170\301\220\330\270\335\267\203\121
\344\304\314\043\325\006\174\346\121\323\315\064\061\300\366\106
\273\013\255\374\075\020\005\052\073\112\221\045\356\214\324\204
\207\200\052\274\011\214\252\072\023\137\350\064\171\120\301\020
\031\371\323\050\036\324\321\121\060\051\263\256\220\147\326\037
\012\143\261\305\251\306\102\061\143\027\224\357\151\313\057\372
\214\024\175\304\103\030\211\331\360\062\100\346\200\342\106\137
\345\343\301\000\131\250\371\350\040\274\211\054\016\107\064\013
\352\127\302\123\066\374\247\324\257\061\315\376\002\345\165\372
\271\047\011\371\363\365\073\312\175\237\251\042\313\210\311\252
\321\107\075\066\167\250\131\144\153\047\317\357\047\301\343\044
\265\206\367\256\176\062\115\260\171\150\321\071\350\220\130\303
\203\274\017\054\326\227\353\316\014\341\040\307\332\267\076\303
\077\277\057\334\064\244\373\053\041\315\147\217\113\364\343\352
\324\077\347\117\272\271\245\223\105\034\146\037\041\372\144\136
\157\340\166\224\062\313\165\365\156\345\366\217\307\270\244\314
\250\226\175\144\373\044\132\112\003\154\153\070\306\350\003\103
\232\367\127\271\263\051\151\223\070\364\003\362\273\373\202\153
\007\040\321\122\037\232\144\002\173\230\146\333\134\115\132\017
\320\204\225\240\074\024\103\006\312\312\333\270\101\066\332\152
\104\147\207\257\257\343\105\021\025\151\010\262\276\026\071\227
\044\157\022\105\321\147\135\011\250\311\025\332\372\322\246\137
\023\141\037\277\205\254\264\255\255\005\224\010\203\036\165\027
\323\161\073\223\120\043\131\240\355\074\221\124\235\166\000\305
\303\270\070\333
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum Trusted Root CA"
Issuer: CN=Certum Trusted Root CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Serial Number:1e:bf:59:50:b8:c9:80:37:4c:06:f7:eb:55:4f:b5:ed
Subject: CN=Certum Trusted Root CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Not Valid Before: Fri Mar 16 12:10:13 2018
Not Valid After : Mon Mar 16 12:10:13 2043
Fingerprint (SHA-256):
FE:76:96:57:38:55:77:3E:37:A9:5E:7A:D4:D9:CC:96:C3:01:57:C1:5D:31:76:5B:A9:B1:57:04:E1:AE:78:FD
Fingerprint (SHA1): C8:83:44:C0:18:AE:9F:CC:F1:87:B7:8F:22:D1:C5:D7:45:84:BA:E5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\310\203\104\300\030\256\237\314\361\207\267\217\042\321\305\327
\105\204\272\345
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\121\341\302\347\376\114\204\257\131\016\057\364\124\157\352\051
END
CKA_ISSUER MULTILINE_OCTAL
\060\172\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\037\060\035\006
\003\125\004\003\023\026\103\145\162\164\165\155\040\124\162\165
\163\164\145\144\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\036\277\131\120\270\311\200\067\114\006\367\353\125\117
\265\355
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TunTrust Root CA"
#
Issuer: CN=TunTrust Root CA,O=Agence Nationale de Certification Electronique,C=TN
Serial Number:13:02:d5:e2:40:4c:92:46:86:16:67:5d:b4:bb:bb:b2:6b:3e:fc:13
Subject: CN=TunTrust Root CA,O=Agence Nationale de Certification Electronique,C=TN
Not Valid Before: Fri Apr 26 08:57:56 2019
Not Valid After : Tue Apr 26 08:57:56 2044
Fingerprint (SHA-256):
2E:44:10:2A:B5:8C:B8:54:19:45:1C:8E:19:D9:AC:F3:66:2C:AF:BC:61:4B:6A:53:96:0A:30:F7:D0:E2:EB:41
Fingerprint (SHA1): CF:E9:70:84:0F:E0:73:0F:9D:F6:0C:7F:2C:4B:EE:20:46:34:9C:BB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TunTrust Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\124\116\061
\067\060\065\006\003\125\004\012\014\056\101\147\145\156\143\145

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\040\116\141\164\151\157\156\141\154\145\040\144\145\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\105\154\145\143
\164\162\157\156\151\161\165\145\061\031\060\027\006\003\125\004
\003\014\020\124\165\156\124\162\165\163\164\040\122\157\157\164
\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\124\116\061
\067\060\065\006\003\125\004\012\014\056\101\147\145\156\143\145
\040\116\141\164\151\157\156\141\154\145\040\144\145\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\105\154\145\143
\164\162\157\156\151\161\165\145\061\031\060\027\006\003\125\004
\003\014\020\124\165\156\124\162\165\163\164\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\023\002\325\342\100\114\222\106\206\026\147\135\264\273
\273\262\153\076\374\023
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\263\060\202\003\233\240\003\002\001\002\002\024\023
\002\325\342\100\114\222\106\206\026\147\135\264\273\273\262\153
\076\374\023\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\141\061\013\060\011\006\003\125\004\006\023\002\124
\116\061\067\060\065\006\003\125\004\012\014\056\101\147\145\156
\143\145\040\116\141\164\151\157\156\141\154\145\040\144\145\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\105\154
\145\143\164\162\157\156\151\161\165\145\061\031\060\027\006\003
\125\004\003\014\020\124\165\156\124\162\165\163\164\040\122\157
\157\164\040\103\101\060\036\027\015\061\071\060\064\062\066\060
\070\065\067\065\066\132\027\015\064\064\060\064\062\066\060\070
\065\067\065\066\132\060\141\061\013\060\011\006\003\125\004\006
\023\002\124\116\061\067\060\065\006\003\125\004\012\014\056\101
\147\145\156\143\145\040\116\141\164\151\157\156\141\154\145\040
\144\145\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\105\154\145\143\164\162\157\156\151\161\165\145\061\031\060
\027\006\003\125\004\003\014\020\124\165\156\124\162\165\163\164
\040\122\157\157\164\040\103\101\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\303\315\323\374\275\004\123
\335\014\040\072\325\210\056\005\113\101\365\203\202\176\367\131
\237\236\236\143\350\163\332\366\006\251\117\037\264\371\013\037
\071\214\232\040\320\176\006\324\354\064\331\206\274\165\133\207
\210\360\322\331\324\243\012\262\154\033\353\111\054\076\254\135
\330\224\003\240\354\064\345\060\304\065\175\373\046\115\033\156
\060\124\330\365\200\105\234\071\255\234\311\045\004\115\232\220
\076\116\100\156\212\153\315\051\147\306\314\055\340\164\350\005
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\127\012\110\120\372\172\103\332\176\354\133\232\016\142\166\376
\352\235\035\205\162\354\021\273\065\350\037\047\277\301\241\307
\273\110\026\335\126\327\314\116\240\341\271\254\333\325\203\031
\032\205\321\224\227\327\312\243\145\013\363\070\371\002\256\335
\366\147\317\311\077\365\212\054\107\032\231\157\005\015\375\320
\035\202\061\374\051\314\000\130\227\221\114\200\000\034\063\205
\226\057\313\101\302\213\020\204\303\011\044\211\037\265\017\331
\331\167\107\030\222\224\140\134\307\231\003\074\376\367\225\247
\175\120\241\200\302\251\203\255\130\226\125\041\333\206\131\324
\257\306\274\335\201\156\007\333\140\142\376\354\020\156\332\150
\001\364\203\033\251\076\242\133\043\327\144\306\337\334\242\175
\330\113\272\202\322\121\370\146\277\006\106\344\171\052\046\066
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\220\020\246\261\067\363\315\072\044\156\264\205\220\277\200\271
\014\214\325\233\326\310\361\126\077\032\200\211\172\251\342\033
\062\121\054\076\362\337\173\366\135\172\051\031\216\345\310\275
\066\161\213\135\114\302\035\077\255\130\242\317\075\160\115\246
\120\230\045\334\043\371\270\130\101\010\161\277\117\270\204\240
\217\000\124\025\374\221\155\130\247\226\073\353\113\226\047\315
\153\242\241\206\254\015\174\124\346\146\114\146\137\220\276\041
\232\002\106\055\344\203\302\200\271\317\113\076\350\177\074\001
\354\217\136\315\177\322\050\102\001\225\212\342\227\075\020\041
\175\366\235\034\305\064\241\354\054\016\012\122\054\022\125\160
\044\075\313\302\024\065\103\135\047\116\276\300\275\252\174\226
\347\374\236\141\255\104\323\000\227\002\003\001\000\001\243\143
\060\141\060\035\006\003\125\035\016\004\026\004\024\006\232\233
\037\123\175\361\365\244\310\323\206\076\241\163\131\264\367\104
\041\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\037\006\003\125\035\043\004\030\060\026\200\024\006
\232\233\037\123\175\361\365\244\310\323\206\076\241\163\131\264
\367\104\041\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\252\005\156\266\335\025\311\277\263
\306\040\366\006\107\260\206\223\045\323\215\271\310\000\077\227
\365\122\047\210\161\311\164\375\353\312\144\333\133\357\036\135
\272\277\321\353\356\134\151\272\026\310\363\271\217\323\066\056
\100\111\007\015\131\336\213\020\260\111\005\342\377\221\077\113
\267\335\002\216\370\201\050\134\314\334\155\257\137\024\234\175
\130\170\015\366\200\011\271\351\016\227\051\031\270\267\353\370
\026\313\125\022\344\306\175\273\304\354\370\265\034\116\076\147
\277\305\137\033\155\155\107\050\252\004\130\141\326\166\277\042
\177\320\007\152\247\144\123\360\227\215\235\200\077\273\301\007
\333\145\257\346\233\062\232\303\124\223\304\034\010\303\104\373
\173\143\021\103\321\152\032\141\152\171\155\220\117\051\216\107
\005\301\022\151\151\326\306\066\061\341\374\372\200\272\134\117
\304\353\267\062\254\370\165\141\027\327\020\031\271\361\322\011
\357\172\102\235\133\132\013\324\306\225\116\052\316\377\007\327
\117\176\030\006\210\361\031\265\331\230\273\256\161\304\034\347

\164\131\130\357\014\211\317\213\037\165\223\032\004\024\222\110
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\101\017\304\314\074\335\351\063\103\001\221\020\053\036\321\271
\135\315\062\031\213\217\214\040\167\327\042\304\102\334\204\026
\233\045\155\350\264\125\161\177\260\174\263\323\161\111\271\317
\122\244\004\077\334\075\240\273\257\063\236\012\060\140\216\333
\235\135\224\250\275\140\347\142\200\166\201\203\014\214\314\060
\106\111\342\014\322\250\257\353\141\161\357\347\042\142\251\367
\134\144\154\237\026\214\147\066\047\105\365\011\173\277\366\020
\012\361\260\215\124\103\214\004\272\243\077\357\342\065\307\371
\164\340\157\064\101\320\277\163\145\127\040\371\233\147\172\146
\150\044\116\200\145\275\020\231\006\131\362\145\257\270\306\107
\273\375\220\170\213\101\163\056\257\125\037\334\073\222\162\156
\204\323\320\141\114\015\314\166\127\342\055\205\042\025\066\015
\353\001\235\353\330\353\304\204\231\373\300\014\314\062\350\343
\167\332\203\104\213\236\125\050\300\213\130\323\220\076\116\033
\000\361\025\255\203\053\232
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TunTrust Root CA"
Issuer: CN=TunTrust Root CA,O=Agence Nationale de Certification Electronique,C=TN
Serial Number:13:02:d5:e2:40:4c:92:46:86:16:67:5d:b4:bb:bb:b2:6b:3e:fc:13
Subject: CN=TunTrust Root CA,O=Agence Nationale de Certification Electronique,C=TN
Not Valid Before: Fri Apr 26 08:57:56 2019
Not Valid After : Tue Apr 26 08:57:56 2044
Fingerprint (SHA-256):
2E:44:10:2A:B5:8C:B8:54:19:45:1C:8E:19:D9:AC:F3:66:2C:AF:BC:61:4B:6A:53:96:0A:30:F7:D0:E2:EB:41
Fingerprint (SHA1): CF:E9:70:84:0F:E0:73:0F:9D:F6:0C:7F:2C:4B:EE:20:46:34:9C:BB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TunTrust Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\317\351\160\204\017\340\163\017\235\366\014\177\054\113\356\040
\106\064\234\273
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\205\023\271\220\133\066\134\266\136\270\132\370\340\061\127\264
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\124\116\061
\067\060\065\006\003\125\004\012\014\056\101\147\145\156\143\145
\040\116\141\164\151\157\156\141\154\145\040\144\145\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\105\154\145\143

\164\162\157\156\151\161\165\145\061\031\060\027\006\003\125\004
\003\014\020\124\165\156\124\162\165\163\164\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\023\002\325\342\100\114\222\106\206\026\147\135\264\273
\273\262\153\076\374\023
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HARICA TLS RSA Root CA 2021"
#
Issuer: CN=HARICA TLS RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:39:ca:93:1c:ef:43:f3:c6:8e:93:c7:f4:64:89:38:7e
Subject: CN=HARICA TLS RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:55:38 2021
Not Valid After : Mon Feb 13 10:55:37 2045
Fingerprint (SHA-256):
D9:5D:0E:8E:DA:79:52:5B:F9:BE:B1:1B:14:D2:10:0D:32:94:98:5F:0C:62:D9:FA:BD:9C:D9:99:EC:CB:7B:1D
Fingerprint (SHA1): 02:2D:05:82:FA:88:CE:14:0C:06:79:DE:7F:14:10:E9:45:D7:A5:6D
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA TLS RSA Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\122\123
\101\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\122\123
\101\040\122\157\157\164\040\103\101\040\062\060\062\061

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\071\312\223\034\357\103\363\306\216\223\307\364\144\211
\070\176
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\244\060\202\003\214\240\003\002\001\002\002\020\071
\312\223\034\357\103\363\306\216\223\307\364\144\211\070\176\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\154
\061\013\060\011\006\003\125\004\006\023\002\107\122\061\067\060
\065\006\003\125\004\012\014\056\110\145\154\154\145\156\151\143
\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122\145
\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164\151
\157\156\163\040\103\101\061\044\060\042\006\003\125\004\003\014
\033\110\101\122\111\103\101\040\124\114\123\040\122\123\101\040
\122\157\157\164\040\103\101\040\062\060\062\061\060\036\027\015
\062\061\060\062\061\071\061\060\065\065\063\070\132\027\015\064
\065\060\062\061\063\061\060\065\065\063\067\132\060\154\061\013
\060\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006
\003\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101
\143\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145
\141\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156
\163\040\103\101\061\044\060\042\006\003\125\004\003\014\033\110
\101\122\111\103\101\040\124\114\123\040\122\123\101\040\122\157
\157\164\040\103\101\040\062\060\062\061\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\213\302\347\257\145
\233\005\147\226\311\015\044\271\320\016\144\374\316\342\044\030
\054\204\177\167\121\313\004\021\066\270\136\355\151\161\247\236
\344\045\011\227\147\301\107\302\317\221\026\066\142\075\070\004
\341\121\202\377\254\322\264\151\335\056\354\021\243\105\356\153
\153\073\114\277\214\215\244\036\235\021\271\351\070\371\172\016
\014\230\342\043\035\321\116\143\324\347\270\101\104\373\153\257
\153\332\037\323\305\221\210\133\244\211\222\321\201\346\214\071
\130\240\326\151\103\251\255\230\122\130\156\333\012\373\153\317
\150\372\343\244\136\072\105\163\230\007\352\137\002\162\336\014
\245\263\237\256\251\035\267\035\263\374\212\131\347\156\162\145
\255\365\060\224\043\007\363\202\026\113\065\230\234\123\273\057
\312\344\132\331\307\215\035\374\230\231\373\054\244\202\153\360
\052\037\216\013\137\161\134\134\256\102\173\051\211\201\313\003
\243\231\312\210\236\013\100\011\101\063\333\346\130\172\375\256
\231\160\300\132\017\326\023\206\161\057\166\151\374\220\335\333
\055\156\321\362\233\365\032\153\236\157\025\214\172\360\113\050
\240\042\070\200\044\154\066\244\073\362\060\221\363\170\023\317
\301\077\065\253\361\035\021\043\265\103\042\236\001\222\267\030
\002\345\021\321\202\333\025\000\314\141\067\301\052\174\232\341
\320\272\263\120\106\356\202\254\235\061\370\373\043\342\003\000
\110\160\243\011\046\171\025\123\140\363\070\134\255\070\352\201

\000\143\024\271\063\136\335\013\333\240\105\007\032\063\011\370
\115\264\247\002\246\151\364\302\131\005\210\145\205\126\256\113
\313\340\336\074\175\055\032\310\351\373\037\243\141\112\326\052
\023\255\167\114\032\030\233\221\017\130\330\006\124\305\227\370
\252\077\040\212\246\205\246\167\366\246\374\034\342\356\156\224
\063\052\203\120\204\012\345\117\206\370\120\105\170\000\201\353
\133\150\343\046\215\314\173\134\121\364\024\054\100\276\032\140
\035\172\162\141\035\037\143\055\210\252\316\242\105\220\010\374
\153\276\263\120\052\132\375\250\110\030\106\326\220\100\222\220
\012\204\136\150\061\370\353\355\015\323\035\306\175\231\030\125
\126\047\145\056\215\105\305\044\354\316\343\002\003\001\000\001
\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\012\110\043\246\140\244\222\012\063\352\223\133\305\127\352\045
\115\275\022\356\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\002\001\000\076\220\110\252\156\142\025\045
\146\173\014\325\214\213\211\235\327\355\116\007\357\234\320\024
\137\136\120\275\150\226\220\244\024\021\252\150\155\011\065\071
\100\011\332\364\011\054\064\245\173\131\204\111\051\227\164\310
\007\036\107\155\362\316\034\120\046\343\236\075\100\123\077\367
\177\226\166\020\305\106\245\320\040\113\120\364\065\073\030\364
\125\152\101\033\107\006\150\074\273\011\010\142\331\137\125\102
\252\254\123\205\254\225\126\066\126\253\344\005\214\305\250\332
\037\243\151\275\123\017\304\377\334\312\343\176\362\114\210\206
\107\106\032\363\000\365\200\221\242\334\103\102\224\233\040\360
\321\315\262\353\054\123\302\123\170\112\117\004\224\101\232\217
\047\062\301\345\111\031\277\361\362\302\213\250\012\071\061\050
\264\175\142\066\054\115\354\037\063\266\176\167\155\176\120\360
\237\016\327\021\217\317\030\305\343\047\376\046\357\005\235\317
\317\067\305\320\173\332\073\260\026\204\014\072\223\326\276\027
\333\017\076\016\031\170\011\307\251\002\162\042\113\367\067\166
\272\165\304\205\003\132\143\325\261\165\005\302\271\275\224\255
\214\025\231\247\223\175\366\305\363\252\164\317\004\205\224\230
\000\364\342\371\312\044\145\277\340\142\257\310\305\372\262\311
\236\126\110\332\171\375\226\166\025\276\243\216\126\304\263\064
\374\276\107\364\301\264\250\374\325\060\210\150\356\313\256\311
\143\304\166\276\254\070\030\341\136\134\317\256\072\042\121\353
\321\213\263\363\053\063\007\124\207\372\264\262\023\173\272\123
\004\142\001\235\361\300\117\356\341\072\324\213\040\020\372\002
\127\346\357\301\013\267\220\106\234\031\051\214\334\157\240\112
\151\151\224\267\044\145\240\377\254\077\316\001\373\041\056\375
\150\370\233\362\245\317\061\070\134\025\252\346\227\000\301\337
\132\245\247\071\252\351\204\177\074\121\250\072\331\224\133\214
\277\117\010\161\345\333\250\134\324\322\246\376\000\243\306\026
\307\017\350\200\316\034\050\144\164\031\010\323\102\343\316\000
\135\177\261\334\023\260\341\005\313\321\040\252\206\164\236\071
\347\221\375\377\133\326\367\255\246\057\003\013\155\343\127\124

\353\166\123\030\215\021\230\272
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HARICA TLS RSA Root CA 2021"
Issuer: CN=HARICA TLS RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:39:ca:93:1c:ef:43:f3:c6:8e:93:c7:f4:64:89:38:7e
Subject: CN=HARICA TLS RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:55:38 2021
Not Valid After : Mon Feb 13 10:55:37 2045
Fingerprint (SHA-256):
D9:5D:0E:8E:DA:79:52:5B:F9:BE:B1:1B:14:D2:10:0D:32:94:98:5F:0C:62:D9:FA:BD:9C:D9:99:EC:CB:7B:1D
Fingerprint (SHA1): 02:2D:05:82:FA:88:CE:14:0C:06:79:DE:7F:14:10:E9:45:D7:A5:6D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA TLS RSA Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\002\055\005\202\372\210\316\024\014\006\171\336\177\024\020\351
\105\327\245\155
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\145\107\233\130\206\335\054\360\374\242\204\037\036\226\304\221
END
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\122\123
\101\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\071\312\223\034\357\103\363\306\216\223\307\364\144\211
\070\176
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HARICA TLS ECC Root CA 2021"
#

Issuer: CN=HARICA TLS ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:67:74:9d:8d:77:d8:3b:6a:db:22:f4:ff:59:e2:bf:ce
Subject: CN=HARICA TLS ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 11:01:10 2021
Not Valid After : Mon Feb 13 11:01:09 2045
Fingerprint (SHA-256):
3F:99:CC:47:4A:CF:CE:4D:FE:D5:87:94:66:5E:47:8D:15:47:73:9F:2E:78:0F:1B:B4:CA:9B:13:30:97:D4:01
Fingerprint (SHA1): BC:B0:C1:9D:E9:98:92:70:19:38:57:E9:8D:A7:B4:5D:6E:EE:01:48
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA TLS ECC Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\105\103
\103\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\105\103
\103\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\147\164\235\215\167\330\073\152\333\042\364\377\131\342
\277\316
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\124\060\202\001\333\240\003\002\001\002\002\020\147
\164\235\215\167\330\073\152\333\042\364\377\131\342\277\316\060
\012\006\010\052\206\110\316\075\004\003\003\060\154\061\013\060
\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006\003
\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101\143
\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141
\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163
\040\103\101\061\044\060\042\006\003\125\004\003\014\033\110\101
\122\111\103\101\040\124\114\123\040\105\103\103\040\122\157\157
\164\040\103\101\040\062\060\062\061\060\036\027\015\062\061\060

\062\061\071\061\061\060\061\061\060\132\027\015\064\065\060\062
\061\063\061\061\060\061\060\071\132\060\154\061\013\060\011\006
\003\125\004\006\023\002\107\122\061\067\060\065\006\003\125\004
\012\014\056\110\145\154\154\145\156\151\143\040\101\143\141\144
\145\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143
\150\040\111\156\163\164\151\164\165\164\151\157\156\163\040\103
\101\061\044\060\042\006\003\125\004\003\014\033\110\101\122\111
\103\101\040\124\114\123\040\105\103\103\040\122\157\157\164\040
\103\101\040\062\060\062\061\060\166\060\020\006\007\052\206\110
\316\075\002\001\006\005\053\201\004\000\042\003\142\000\004\070
\010\376\261\240\226\322\172\254\257\111\072\320\300\340\303\073
\050\252\361\162\155\145\000\107\210\204\374\232\046\153\252\113
\272\154\004\012\210\136\027\362\125\207\374\060\260\064\342\064
\130\127\032\204\123\351\060\331\251\362\226\164\303\121\037\130
\111\061\314\230\116\140\021\207\165\323\162\224\220\117\233\020
\045\052\250\170\055\276\220\101\130\220\025\162\247\241\267\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\311
\033\123\201\022\376\004\325\026\321\252\274\232\157\267\240\225
\031\156\312\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\206\060\012\006\010\052\206\110\316\075\004\003\003\003
\147\000\060\144\002\060\021\336\256\370\334\116\210\260\251\360
\042\255\302\121\100\357\140\161\055\356\217\002\304\135\003\160
\111\244\222\352\305\024\210\160\246\323\015\260\252\312\054\100
\234\373\351\202\156\232\002\060\053\107\232\007\306\321\302\201
\174\312\013\226\030\101\033\243\364\060\011\236\265\043\050\015
\237\024\266\074\123\242\114\006\151\175\372\154\221\306\052\111
\105\346\354\267\023\341\072\154
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HARICA TLS ECC Root CA 2021"
Issuer: CN=HARICA TLS ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:67:74:9d:8d:77:d8:3b:6a:db:22:f4:ff:59:e2:bf:ce
Subject: CN=HARICA TLS ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 11:01:10 2021
Not Valid After : Mon Feb 13 11:01:09 2045
Fingerprint (SHA-256):
3F:99:CC:47:4A:CF:CE:4D:FE:D5:87:94:66:5E:47:8D:15:47:73:9F:2E:78:0F:1B:B4:CA:9B:13:30:97:D4:01
Fingerprint (SHA1): BC:B0:C1:9D:E9:98:92:70:19:38:57:E9:8D:A7:B4:5D:6E:EE:01:48
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA TLS ECC Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\274\260\301\235\351\230\222\160\031\070\127\351\215\247\264\135
\156\356\001\110
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\256\367\114\345\146\065\321\267\233\214\042\223\164\323\113\260
END
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\105\103
\103\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\147\164\235\215\167\330\073\152\333\042\364\377\131\342
\277\316
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HARICA Client RSA Root CA 2021"
#
Issuer: CN=HARICA Client RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:55:52:f8:1e:db:1b:24:2c:9e:bb:96:18:cd:02:28:3e
Subject: CN=HARICA Client RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:58:46 2021
Not Valid After : Mon Feb 13 10:58:45 2045
Fingerprint (SHA-256):
1B:E7:AB:E3:06:86:B1:63:48:AF:D1:C6:1B:68:66:A0:EA:7F:48:21:E6:7D:5E:8A:F9:37:CF:80:11:BC:75:0D
Fingerprint (SHA1): 46:C6:90:0A:77:3A:B6:BC:F4:65:AD:AC:FC:E3:F7:07:00:6E:DE:6E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Client RSA Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164

\040\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\125\122\370\036\333\033\044\054\236\273\226\030\315\002
\050\076
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\252\060\202\003\222\240\003\002\001\002\002\020\125
\122\370\036\333\033\044\054\236\273\226\030\315\002\050\076\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\157
\061\013\060\011\006\003\125\004\006\023\002\107\122\061\067\060
\065\006\003\125\004\012\014\056\110\145\154\154\145\156\151\143
\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122\145
\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164\151
\157\156\163\040\103\101\061\047\060\045\006\003\125\004\003\014
\036\110\101\122\111\103\101\040\103\154\151\145\156\164\040\122
\123\101\040\122\157\157\164\040\103\101\040\062\060\062\061\060
\036\027\015\062\061\060\062\061\071\061\060\065\070\064\066\132
\027\015\064\065\060\062\061\063\061\060\065\070\064\065\132\060
\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061\067
\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156\151
\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122
\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164
\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004\003
\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164\040
\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062\061
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\201\333\127\102\220\054\164\065\364\370\270\164\031\115\253
\011\132\167\105\201\163\142\260\065\237\370\320\267\063\000\207
\023\266\226\253\016\124\022\060\007\274\233\267\110\327\321\031
\203\256\216\330\251\361\251\000\204\260\214\136\236\350\014\217
\124\151\277\366\324\010\117\046\160\376\030\101\143\032\263\062
\213\100\370\007\253\127\061\360\306\026\166\147\232\264\335\057
\362\321\153\305\320\222\204\221\161\156\017\056\143\351\037\123
\244\335\122\023\314\011\203\051\201\014\305\123\165\104\261\016

\147\123\030\320\303\037\210\113\237\224\044\264\051\274\273\350
\116\375\157\322\025\035\111\334\215\160\362\021\032\040\121\125
\021\272\210\157\304\367\120\171\326\252\061\342\204\075\136\062
\310\167\052\120\161\345\013\057\351\266\352\357\253\012\063\071
\016\375\217\245\147\103\202\216\230\151\011\011\033\100\315\070
\147\107\352\311\354\227\161\022\336\044\365\162\074\321\367\103
\114\046\367\220\262\211\351\105\113\125\075\061\005\172\101\342
\225\272\103\300\027\305\266\205\075\031\215\144\160\363\133\254
\315\237\323\051\165\207\113\225\147\152\246\370\321\335\274\220
\206\211\103\051\251\067\133\365\135\260\046\132\123\102\166\220
\053\317\236\126\154\053\124\317\134\232\145\337\133\213\110\140
\070\174\373\305\013\317\166\004\143\002\063\052\175\365\203\147
\347\372\306\103\375\053\017\324\046\057\167\244\062\301\044\352
\144\235\277\263\070\161\061\104\362\107\270\242\146\101\241\373
\233\173\274\307\106\152\165\277\132\242\214\350\152\104\301\270
\226\265\300\062\010\055\173\164\065\163\262\312\306\376\257\021
\162\030\366\347\310\302\317\245\052\352\173\326\131\350\174\240
\262\152\100\011\151\016\245\226\333\321\000\271\361\210\156\066
\360\210\262\235\361\122\362\303\174\277\060\211\074\012\151\371
\042\244\145\341\233\340\164\306\261\205\227\226\054\256\224\217
\120\246\071\022\037\276\107\362\201\170\323\165\066\236\175\132
\040\227\342\122\256\231\237\306\174\233\146\363\376\330\317\356
\275\227\006\035\055\205\334\076\066\123\226\173\040\272\350\310
\341\255\226\142\076\021\174\263\000\204\236\247\114\161\253\112
\067\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\240\326\007\075\136\044\367\173\240\104
\056\044\122\015\031\252\053\004\221\247\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\015\107
\371\011\146\061\122\354\171\356\302\250\362\150\076\355\226\105
\313\072\246\230\143\077\352\053\115\116\003\320\034\202\341\313
\323\345\326\253\133\147\050\274\235\376\014\231\012\200\125\247
\316\033\043\141\015\260\127\360\376\340\312\276\346\220\333\203
\054\276\203\216\364\171\266\376\320\015\102\247\130\037\151\352
\201\365\005\245\376\106\150\353\154\170\311\340\352\347\346\336
\061\305\322\325\054\202\143\050\235\135\250\032\176\210\346\347
\053\361\054\325\320\005\236\334\055\275\067\146\324\004\242\247
\255\277\072\302\250\073\255\377\215\235\063\340\271\232\204\241
\207\037\166\364\202\164\327\016\371\060\110\076\133\210\076\252
\134\153\326\057\014\350\216\163\302\030\221\203\071\266\146\132
\320\037\140\047\135\115\343\366\072\015\146\120\234\170\173\253
\363\023\020\256\017\057\253\350\144\263\030\040\235\106\065\144
\045\163\352\233\020\134\130\065\211\261\106\110\247\364\254\324
\035\236\133\314\251\245\032\023\117\044\120\252\331\033\155\261
\100\373\235\335\130\164\304\302\157\024\162\354\333\065\237\270
\124\165\105\303\246\310\032\050\065\072\256\145\362\251\230\316
\257\133\311\070\214\061\073\177\314\334\226\375\342\133\326\320

\131\364\166\272\013\313\117\203\020\307\100\320\035\140\351\052
\345\110\130\167\014\105\151\276\031\161\004\044\342\343\044\037
\112\310\301\076\231\365\226\230\070\110\045\241\025\260\033\327
\342\204\030\133\366\161\065\232\150\173\100\314\030\134\014\044
\235\324\225\365\231\252\106\352\256\254\277\364\024\031\044\350
\214\354\343\365\274\006\150\212\052\014\005\137\012\227\165\247
\334\176\300\375\327\172\030\337\060\321\070\113\037\260\230\160
\277\314\174\163\360\156\304\061\245\244\227\035\254\277\316\154
\041\112\276\047\043\147\363\006\126\201\012\221\216\266\341\003
\005\063\054\332\064\010\115\116\120\043\255\037\245\305\324\172
\376\352\011\354\247\050\140\213\106\174\265\352\233\335\117\371
\347\153\025\306\210\317\103\333\345\047\334\004\126\156\157\106
\025\361\126\055\350\134\014\163\303\043\201\070\040\313\311\014
\151\317\054\253\073\204\140\063\031\122\375\151\024\063
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HARICA Client RSA Root CA 2021"
Issuer: CN=HARICA Client RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:55:52:f8:1e:db:1b:24:2c:9e:bb:96:18:cd:02:28:3e
Subject: CN=HARICA Client RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:58:46 2021
Not Valid After : Mon Feb 13 10:58:45 2045
Fingerprint (SHA-256):
1B:E7:AB:E3:06:86:B1:63:48:AF:D1:C6:1B:68:66:A0:EA:7F:48:21:E6:7D:5E:8A:F9:37:CF:80:11:BC:75:0D
Fingerprint (SHA1): 46:C6:90:0A:77:3A:B6:BC:F4:65:AD:AC:FC:E3:F7:07:00:6E:DE:6E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Client RSA Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\106\306\220\012\167\072\266\274\364\145\255\254\374\343\367\007
\000\156\336\156
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\157\355\134\327\210\314\070\251\334\351\335\331\135\333\330\355
END
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062

\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\125\122\370\036\333\033\044\054\236\273\226\030\315\002
\050\076
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HARICA Client ECC Root CA 2021"
#
Issuer: CN=HARICA Client ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:31:68:d9:d8:e1:62:57:1e:d2:19:44:88:e6:10:7d:f0
Subject: CN=HARICA Client ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 11:03:34 2021
Not Valid After : Mon Feb 13 11:03:33 2045
Fingerprint (SHA-256):
8D:D4:B5:37:3C:B0:DE:36:76:9C:12:33:92:80:D8:27:46:B3:AA:6C:D4:26:E7:97:A3:1B:AB:E4:27:9C:F0:0B
Fingerprint (SHA1): BE:64:D3:DA:14:4B:D2:6B:CD:AF:8F:DB:A6:A6:72:F8:DE:26:F9:00
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Client ECC Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062
\061

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\061\150\331\330\341\142\127\036\322\031\104\210\346\020
\175\360
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\132\060\202\001\341\240\003\002\001\002\002\020\061
\150\331\330\341\142\127\036\322\031\104\210\346\020\175\360\060
\012\006\010\052\206\110\316\075\004\003\003\060\157\061\013\060
\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006\003
\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101\143
\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141
\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163
\040\103\101\061\047\060\045\006\003\125\004\003\014\036\110\101
\122\111\103\101\040\103\154\151\145\156\164\040\105\103\103\040
\122\157\157\164\040\103\101\040\062\060\062\061\060\036\027\015
\062\061\060\062\061\071\061\061\060\063\063\064\132\027\015\064
\065\060\062\061\063\061\061\060\063\063\063\132\060\157\061\013
\060\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006
\003\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101
\143\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145
\141\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156
\163\040\103\101\061\047\060\045\006\003\125\004\003\014\036\110
\101\122\111\103\101\040\103\154\151\145\156\164\040\105\103\103
\040\122\157\157\164\040\103\101\040\062\060\062\061\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\007\030\255\225\226\224\320\134\017\202\367
\052\100\372\002\311\311\075\066\246\243\004\152\301\155\225\001
\210\140\022\124\154\134\242\053\156\023\072\210\225\014\034\046
\206\066\112\211\031\267\030\336\073\350\250\120\037\312\337\133
\277\111\200\025\333\343\060\341\035\132\307\052\212\001\007\376
\155\054\064\357\050\050\227\274\301\371\127\206\225\213\065\317
\236\132\321\150\225\243\102\060\100\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\122\010\322\276\062\201\045\375\365\032\227
\354\116\137\032\273\123\315\220\255\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\206\060\012\006\010\052\206\110
\316\075\004\003\003\003\147\000\060\144\002\060\114\061\105\106
\117\250\346\276\303\167\262\032\030\113\055\210\173\130\346\253
\224\153\104\003\260\027\377\337\202\163\104\121\054\375\223\035
\006\173\024\322\211\354\100\014\357\041\001\056\002\060\057\311
\056\132\154\054\035\331\225\340\236\260\271\134\122\174\366\370
\070\312\056\361\324\035\362\242\111\242\225\370\301\130\136\117
\376\163\012\357\061\260\253\043\130\023\214\213\336\073
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HARICA Client ECC Root CA 2021"
Issuer: CN=HARICA Client ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:31:68:d9:d8:e1:62:57:1e:d2:19:44:88:e6:10:7d:f0
Subject: CN=HARICA Client ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 11:03:34 2021
Not Valid After : Mon Feb 13 11:03:33 2045
Fingerprint (SHA-256):
8D:D4:B5:37:3C:B0:DE:36:76:9C:12:33:92:80:D8:27:46:B3:AA:6C:D4:26:E7:97:A3:1B:AB:E4:27:9C:F0:0B
Fingerprint (SHA1): BE:64:D3:DA:14:4B:D2:6B:CD:AF:8F:DB:A6:A6:72:F8:DE:26:F9:00
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Client ECC Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\276\144\323\332\024\113\322\153\315\257\217\333\246\246\162\370
\336\046\371\000
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\255\270\120\246\251\202\172\154\075\032\252\244\322\143\244\104
END
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\061\150\331\330\341\142\127\036\322\031\104\210\346\020
\175\360
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Autoridad de Certificacion Firmaprofesional CIF A62634068"
#
Issuer: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Serial Number:1b:70:e9:d2:ff:ae:6c:71
Subject: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Not Valid Before: Tue Sep 23 15:22:07 2014

Not Valid After : Mon May 05 15:22:07 2036
Fingerprint (SHA-256):
57:DE:05:83:EF:D2:B2:6E:03:61:DA:99:DA:9D:F4:64:8D:EF:7E:E8:44:1C:3B:72:8A:FA:9B:CD:E0:F9:B2:6A
Fingerprint (SHA1): 0B:BE:C2:27:22:49:CB:39:AA:DB:35:5C:53:E3:8C:AE:78:FF:B6:FE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion Firmaprofesional CIF A62634068"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\033\160\351\322\377\256\154\161
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\024\060\202\003\374\240\003\002\001\002\002\010\033
\160\351\322\377\256\154\161\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\121\061\013\060\011\006\003\125\004
\006\023\002\105\123\061\102\060\100\006\003\125\004\003\014\071
\101\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\040\106\151\162\155\141
\160\162\157\146\145\163\151\157\156\141\154\040\103\111\106\040
\101\066\062\066\063\064\060\066\070\060\036\027\015\061\064\060
\071\062\063\061\065\062\062\060\067\132\027\015\063\066\060\065
\060\065\061\065\062\062\060\067\132\060\121\061\013\060\011\006
\003\125\004\006\023\002\105\123\061\102\060\100\006\003\125\004
\003\014\071\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\040\106\151
\162\155\141\160\162\157\146\145\163\151\157\156\141\154\040\103
\111\106\040\101\066\062\066\063\064\060\066\070\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\312\226\153

\216\352\370\373\361\242\065\340\177\114\332\340\303\122\327\175
\266\020\310\002\136\263\103\052\304\117\152\262\312\034\135\050
\232\170\021\032\151\131\127\257\265\040\102\344\213\017\346\337
\133\246\003\222\057\365\021\344\142\327\062\161\070\331\004\014
\161\253\075\121\176\017\007\337\143\005\134\351\277\224\157\301
\051\202\300\264\332\121\260\301\074\273\255\067\112\134\312\361
\113\066\016\044\253\277\303\204\167\375\250\120\364\261\347\306
\057\322\055\131\215\172\012\116\226\151\122\002\252\066\230\354
\374\372\024\203\014\067\037\311\222\067\177\327\201\055\345\304
\271\340\076\064\376\147\364\076\146\321\323\364\100\317\136\142
\064\017\160\006\076\040\030\132\316\367\162\033\045\154\223\164
\024\223\243\163\261\016\252\207\020\043\131\137\040\005\031\107
\355\150\216\222\022\312\135\374\326\053\262\222\074\040\317\341
\137\257\040\276\240\166\177\166\345\354\032\206\141\063\076\347
\173\264\077\240\017\216\242\271\152\157\271\207\046\157\101\154
\210\246\120\375\152\143\013\365\223\026\033\031\217\262\355\233
\233\311\220\365\001\014\337\031\075\017\076\070\043\311\057\217
\014\321\002\376\033\125\326\116\320\215\074\257\117\244\363\376
\257\052\323\005\235\171\010\241\313\127\061\264\234\310\220\262
\147\364\030\026\223\072\374\107\330\321\170\226\061\037\272\053
\014\137\135\231\255\143\211\132\044\040\166\330\337\375\253\116
\246\042\252\235\136\346\047\212\175\150\051\243\347\212\270\332
\021\273\027\055\231\235\023\044\106\367\305\342\330\237\216\177
\307\217\164\155\132\262\350\162\365\254\356\044\020\255\057\024
\332\377\055\232\106\161\107\276\102\337\273\001\333\364\177\323
\050\217\061\131\133\323\311\002\246\264\122\312\156\227\373\103
\305\010\046\157\212\364\273\375\237\050\252\015\325\105\363\023
\072\035\330\300\170\217\101\147\074\036\224\144\256\173\013\305
\350\331\001\210\071\032\227\206\144\101\325\073\207\014\156\372
\017\306\275\110\024\277\071\115\324\236\101\266\217\226\035\143
\226\223\331\225\006\170\061\150\236\067\006\073\200\211\105\141
\071\043\307\033\104\243\025\345\034\370\222\060\273\002\003\001
\000\001\243\201\357\060\201\354\060\035\006\003\125\035\016\004
\026\004\024\145\315\353\253\065\036\000\076\176\325\164\300\034
\264\163\107\016\032\144\057\060\022\006\003\125\035\023\001\001
\377\004\010\060\006\001\001\377\002\001\001\060\201\246\006\003
\125\035\040\004\201\236\060\201\233\060\201\230\006\004\125\035
\040\000\060\201\217\060\057\006\010\053\006\001\005\005\007\002
\001\026\043\150\164\164\160\072\057\057\167\167\167\056\146\151
\162\155\141\160\162\157\146\145\163\151\157\156\141\154\056\143
\157\155\057\143\160\163\060\134\006\010\053\006\001\005\005\007
\002\002\060\120\036\116\000\120\000\141\000\163\000\145\000\157
\000\040\000\144\000\145\000\040\000\154\000\141\000\040\000\102
\000\157\000\156\000\141\000\156\000\157\000\166\000\141\000\040
\000\064\000\067\000\040\000\102\000\141\000\162\000\143\000\145
\000\154\000\157\000\156\000\141\000\040\000\060\000\070\000\060
\000\061\000\067\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\015\006\011\052\206\110\206\367\015\001\001

\013\005\000\003\202\002\001\000\164\207\050\002\053\167\037\146
\211\144\355\217\164\056\106\034\273\250\370\370\013\035\203\266
\072\247\350\105\212\007\267\340\076\040\313\341\010\333\023\010
\370\050\241\065\262\200\263\013\121\300\323\126\232\215\063\105
\111\257\111\360\340\075\007\172\105\023\132\377\310\227\330\323
\030\054\175\226\370\335\242\145\103\160\223\220\025\272\220\337
\350\031\260\333\054\212\140\017\267\157\224\007\036\035\246\311
\205\366\275\064\370\100\170\142\020\160\072\276\175\113\071\201
\251\020\324\226\101\273\370\137\034\013\035\010\362\261\260\211
\172\362\367\240\340\304\217\213\170\265\073\130\245\043\216\117
\125\376\066\073\340\014\267\312\052\060\101\040\264\200\315\256
\374\166\146\163\250\256\156\341\174\332\003\350\224\040\346\042
\243\320\037\220\135\040\123\024\046\127\332\124\227\337\026\104
\020\001\036\210\146\217\162\070\223\335\040\267\064\276\327\361
\356\143\216\107\171\050\006\374\363\131\105\045\140\042\063\033
\243\137\250\272\052\332\032\075\315\100\352\214\356\005\025\225
\325\245\054\040\057\247\230\050\356\105\374\361\270\210\000\054
\217\102\332\121\325\234\345\023\150\161\105\103\213\236\013\041
\074\113\134\005\334\032\237\230\216\332\275\042\236\162\315\255
\012\313\314\243\147\233\050\164\304\233\327\032\074\004\130\246
\202\235\255\307\173\157\377\200\226\351\370\215\152\275\030\220
\035\377\111\032\220\122\067\223\057\074\002\135\202\166\013\121
\347\026\307\127\370\070\371\247\315\233\042\124\357\143\260\025
\155\123\145\003\112\136\112\240\262\247\216\111\000\131\070\325
\307\364\200\144\365\156\225\120\270\021\176\025\160\070\112\260
\177\320\304\062\160\300\031\377\311\070\055\024\054\146\364\102
\104\346\125\166\033\200\025\127\377\300\247\247\252\071\252\330
\323\160\320\056\272\353\224\152\372\137\064\206\347\142\265\375
\212\360\060\205\224\311\257\044\002\057\157\326\335\147\376\343
\260\125\117\004\230\117\244\101\126\342\223\320\152\350\326\363
\373\145\340\316\165\304\061\131\014\356\202\310\014\140\063\112
\031\272\204\147\047\017\274\102\135\275\044\124\015\354\035\160
\006\137\244\274\372\040\174\125
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Autoridad de Certificacion Firmaprofesional CIF A62634068"
Issuer: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Serial Number:1b:70:e9:d2:ff:ae:6c:71
Subject: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Not Valid Before: Tue Sep 23 15:22:07 2014
Not Valid After : Mon May 05 15:22:07 2036
Fingerprint (SHA-256):
57:DE:05:83:EF:D2:B2:6E:03:61:DA:99:DA:9D:F4:64:8D:EF:7E:E8:44:1C:3B:72:8A:FA:9B:CD:E0:F9:B2:6A
Fingerprint (SHA1): 0B:BE:C2:27:22:49:CB:39:AA:DB:35:5C:53:E3:8C:AE:78:FF:B6:FE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion Firmaprofesional CIF A62634068"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\013\276\302\047\042\111\313\071\252\333\065\134\123\343\214\256
\170\377\266\376
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\116\156\233\124\114\312\267\372\110\344\220\261\025\113\034\243
END
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\033\160\351\322\377\256\154\161
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "vTrus ECC Root CA"
#
Issuer: CN=vTrus ECC Root CA,O="iTrusChina Co.,Ltd.",C=CN
Serial Number:6e:6a:bc:59:aa:53:be:98:39:67:a2:d2:6b:a4:3b:e6:6d:1c:d6:da
Subject: CN=vTrus ECC Root CA,O="iTrusChina Co.,Ltd.",C=CN
Not Valid Before: Tue Jul 31 07:26:44 2018
Not Valid After : Fri Jul 31 07:26:44 2043
Fingerprint (SHA-256):
30:FB:BA:2C:32:23:8E:2A:98:54:7A:F9:79:31:E5:50:42:8B:9B:3F:1C:8E:EB:66:33:DC:FA:86:C5:B2:7D:D3
Fingerprint (SHA1): F6:9C:DB:B0:FC:F6:02:13:B6:52:32:A6:A3:91:3F:16:70:DA:C3:E1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "vTrus ECC Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\032\060

\030\006\003\125\004\003\023\021\166\124\162\165\163\040\105\103
\103\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\032\060
\030\006\003\125\004\003\023\021\166\124\162\165\163\040\105\103
\103\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\156\152\274\131\252\123\276\230\071\147\242\322\153\244
\073\346\155\034\326\332
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\017\060\202\001\225\240\003\002\001\002\002\024\156
\152\274\131\252\123\276\230\071\147\242\322\153\244\073\346\155
\034\326\332\060\012\006\010\052\206\110\316\075\004\003\003\060
\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061\034
\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103\150
\151\156\141\040\103\157\056\054\114\164\144\056\061\032\060\030
\006\003\125\004\003\023\021\166\124\162\165\163\040\105\103\103
\040\122\157\157\164\040\103\101\060\036\027\015\061\070\060\067
\063\061\060\067\062\066\064\064\132\027\015\064\063\060\067\063
\061\060\067\062\066\064\064\132\060\107\061\013\060\011\006\003
\125\004\006\023\002\103\116\061\034\060\032\006\003\125\004\012
\023\023\151\124\162\165\163\103\150\151\156\141\040\103\157\056
\054\114\164\144\056\061\032\060\030\006\003\125\004\003\023\021
\166\124\162\165\163\040\105\103\103\040\122\157\157\164\040\103
\101\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\145\120\112\256\214\171\226
\112\252\034\010\303\243\242\315\376\131\126\101\167\375\046\224
\102\273\035\315\010\333\163\262\133\165\363\317\234\116\202\364
\277\370\141\046\205\154\326\205\133\162\160\322\375\333\142\264
\337\123\213\275\261\104\130\142\102\011\307\372\177\133\020\347
\376\100\375\300\330\303\053\062\347\160\246\267\246\040\125\035
\173\200\135\113\217\147\114\361\020\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\230\071\315\276\330\262\214\367
\262\253\341\255\044\257\173\174\241\333\037\317\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\012\006
\010\052\206\110\316\075\004\003\003\003\150\000\060\145\002\060
\127\235\335\126\361\307\343\351\270\111\120\153\233\151\303\157
\354\303\175\045\344\127\225\023\100\233\122\323\073\363\100\031
\274\046\307\055\006\236\265\173\066\237\365\045\324\143\153\000
\002\061\000\351\323\306\236\126\232\052\314\241\332\077\310\146
\053\323\130\234\040\205\372\253\221\212\160\160\021\070\140\144

\013\142\011\221\130\000\371\115\373\064\150\332\011\255\041\006
\030\224\316
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "vTrus ECC Root CA"
Issuer: CN=vTrus ECC Root CA,O="iTrusChina Co.,Ltd.",C=CN
Serial Number:6e:6a:bc:59:aa:53:be:98:39:67:a2:d2:6b:a4:3b:e6:6d:1c:d6:da
Subject: CN=vTrus ECC Root CA,O="iTrusChina Co.,Ltd.",C=CN
Not Valid Before: Tue Jul 31 07:26:44 2018
Not Valid After : Fri Jul 31 07:26:44 2043
Fingerprint (SHA-256):
30:FB:BA:2C:32:23:8E:2A:98:54:7A:F9:79:31:E5:50:42:8B:9B:3F:1C:8E:EB:66:33:DC:FA:86:C5:B2:7D:D3
Fingerprint (SHA1): F6:9C:DB:B0:FC:F6:02:13:B6:52:32:A6:A3:91:3F:16:70:DA:C3:E1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "vTrus ECC Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\366\234\333\260\374\366\002\023\266\122\062\246\243\221\077\026
\160\332\303\341
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\336\113\301\365\122\214\233\103\341\076\217\125\124\027\215\205
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\032\060
\030\006\003\125\004\003\023\021\166\124\162\165\163\040\105\103
\103\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\156\152\274\131\252\123\276\230\071\147\242\322\153\244
\073\346\155\034\326\332
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "vTrus Root CA"
#
Issuer: CN=vTrus Root CA,O="iTrusChina Co.,Ltd.",C=CN

Serial Number:43:e3:71:13:d8:b3:59:14:5d:b7:ce:8c:fd:35:fd:6f:bc:05:8d:45
Subject: CN=vTrus Root CA,O="iTrusChina Co.,Ltd.",C=CN
Not Valid Before: Tue Jul 31 07:24:05 2018
Not Valid After : Fri Jul 31 07:24:05 2043
Fingerprint (SHA-256):
8A:71:DE:65:59:33:6F:42:6C:26:E5:38:80:D0:0D:88:A1:8D:A4:C6:A9:1F:0D:CB:61:94:E2:06:C5:C9:63:87
Fingerprint (SHA1): 84:1A:69:FB:F5:CD:1A:25:34:13:3D:E3:F8:FC:B8:99:D0:C9:14:B7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "vTrus Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\026\060
\024\006\003\125\004\003\023\015\166\124\162\165\163\040\122\157
\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\026\060
\024\006\003\125\004\003\023\015\166\124\162\165\163\040\122\157
\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\103\343\161\023\330\263\131\024\135\267\316\214\375\065
\375\157\274\005\215\105
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\126\060\202\003\076\240\003\002\001\002\002\024\103
\343\161\023\330\263\131\024\135\267\316\214\375\065\375\157\274
\005\215\105\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\103\061\013\060\011\006\003\125\004\006\023\002\103
\116\061\034\060\032\006\003\125\004\012\023\023\151\124\162\165
\163\103\150\151\156\141\040\103\157\056\054\114\164\144\056\061
\026\060\024\006\003\125\004\003\023\015\166\124\162\165\163\040
\122\157\157\164\040\103\101\060\036\027\015\061\070\060\067\063
\061\060\067\062\064\060\065\132\027\015\064\063\060\067\063\061
\060\067\062\064\060\065\132\060\103\061\013\060\011\006\003\125
\004\006\023\002\103\116\061\034\060\032\006\003\125\004\012\023
\023\151\124\162\165\163\103\150\151\156\141\040\103\157\056\054
\114\164\144\056\061\026\060\024\006\003\125\004\003\023\015\166
\124\162\165\163\040\122\157\157\164\040\103\101\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003

\202\002\017\000\060\202\002\012\002\202\002\001\000\275\125\174
\141\323\270\035\004\142\005\240\256\154\267\160\264\101\352\113
\003\136\020\077\220\132\034\213\073\260\146\213\154\110\246\034
\042\272\325\100\222\356\063\262\043\131\311\216\274\130\332\213
\236\320\031\362\057\131\306\214\143\132\272\237\243\013\260\263
\232\134\272\021\270\022\351\014\273\317\156\154\200\207\051\024
\003\054\215\044\232\310\144\203\265\152\254\023\054\063\361\237
\334\054\141\074\032\077\160\125\233\255\000\122\177\317\004\271
\376\066\372\234\300\026\256\142\376\226\114\103\176\125\024\276
\032\263\322\155\302\257\166\146\225\153\052\260\224\167\205\136
\004\017\142\035\143\165\367\153\347\313\133\232\160\354\076\147
\005\360\376\007\010\200\317\050\333\005\306\024\047\057\206\175
\360\047\336\377\346\176\063\110\347\013\036\130\321\047\053\123
\016\127\112\145\327\373\242\200\140\374\114\274\065\123\001\152
\227\162\202\257\361\035\160\350\234\365\357\136\302\154\307\107
\176\132\224\205\046\115\073\272\353\114\350\260\011\302\145\302
\235\235\011\233\116\265\227\005\254\365\006\240\367\066\005\176
\364\220\262\153\304\264\371\144\352\351\032\012\310\015\250\355
\047\311\324\347\263\271\253\202\042\220\047\075\052\350\174\220
\357\274\117\375\342\012\044\247\336\145\044\244\135\352\300\166
\060\323\167\120\370\015\004\233\224\066\001\163\312\006\130\246
\323\073\334\372\004\106\023\125\212\311\104\107\270\121\071\032
\056\350\064\342\171\313\131\112\012\177\274\246\357\037\003\147
\152\131\053\045\142\223\331\123\031\146\074\047\142\051\206\115
\244\153\356\377\324\116\272\325\264\342\216\110\132\000\031\011
\361\005\331\316\221\261\367\353\351\071\117\366\157\004\103\232
\125\365\076\005\024\275\277\263\131\264\330\216\063\204\243\220
\122\252\263\002\225\140\371\014\114\150\371\356\325\027\015\370
\161\127\265\045\344\051\356\145\135\257\321\356\074\027\013\132
\103\305\245\206\352\044\236\342\005\007\334\064\102\022\221\326
\071\164\256\114\101\202\333\362\246\110\321\263\233\363\063\252
\363\246\300\305\116\365\364\235\166\143\346\002\306\042\113\301
\225\077\120\144\054\124\345\266\360\074\051\317\127\002\003\001
\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026\004
\024\124\142\160\143\361\165\204\103\130\216\321\026\040\261\306
\254\032\274\366\211\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\002\001\000\051\272\222\111\247\255
\360\361\160\303\344\227\360\237\251\045\325\153\236\064\376\346
\032\144\366\072\153\122\262\020\170\032\237\114\332\212\332\354
\034\067\122\340\102\113\373\154\166\312\044\013\071\022\025\235
\237\021\055\374\171\144\334\340\340\365\335\340\127\311\245\262
\166\160\120\244\376\267\012\160\325\240\064\361\165\327\115\111
\272\021\321\263\330\354\202\377\353\016\304\277\144\055\175\143
\156\027\170\354\135\174\210\310\353\216\127\166\331\131\004\372
\274\122\037\105\254\360\172\200\354\354\157\166\256\221\333\020
\216\004\334\222\337\240\366\346\256\111\323\301\154\022\033\314

\051\252\371\010\245\342\067\024\312\261\270\146\357\032\202\344
\360\370\361\247\026\151\267\333\251\141\074\237\365\061\313\344
\000\106\302\057\164\261\261\327\201\356\250\046\225\274\210\257
\114\065\007\052\002\312\170\024\155\107\053\100\126\351\313\052
\140\241\147\003\240\316\214\274\260\162\147\304\061\316\333\064
\345\045\003\140\045\173\161\230\344\300\033\053\137\164\102\322
\113\305\131\010\007\207\276\305\303\177\347\226\331\341\334\050
\227\326\217\005\343\365\233\116\312\035\120\107\005\123\260\312
\071\347\205\240\211\301\005\073\001\067\323\077\111\342\167\353
\043\310\210\146\073\075\071\166\041\106\361\354\137\043\270\353
\242\146\165\164\301\100\367\330\150\232\223\342\055\251\056\275
\034\243\036\310\164\306\244\055\172\040\253\073\270\260\106\375
\157\335\137\122\125\165\142\360\227\240\174\327\070\375\045\337
\315\240\233\020\317\213\270\070\136\136\305\264\246\002\066\241
\036\137\034\317\342\226\235\051\252\375\230\256\122\341\363\101
\122\373\251\056\162\226\237\047\343\252\163\175\370\032\043\146
\173\073\253\145\260\062\001\113\025\076\075\242\117\014\053\065
\242\306\331\147\022\065\060\315\166\056\026\263\231\236\115\117
\116\055\073\064\103\341\232\016\015\244\146\227\272\322\034\112
\114\054\052\213\213\201\117\161\032\251\335\134\173\173\010\305
\000\015\067\100\343\174\173\124\137\057\205\137\166\366\367\247
\260\034\127\126\301\162\350\255\242\257\215\063\111\272\037\212
\334\346\164\174\140\206\157\207\227\173
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "vTrus Root CA"
Issuer: CN=vTrus Root CA,O="iTrusChina Co.,Ltd.",C=CN
Serial Number:43:e3:71:13:d8:b3:59:14:5d:b7:ce:8c:fd:35:fd:6f:bc:05:8d:45
Subject: CN=vTrus Root CA,O="iTrusChina Co.,Ltd.",C=CN
Not Valid Before: Tue Jul 31 07:24:05 2018
Not Valid After : Fri Jul 31 07:24:05 2043
Fingerprint (SHA-256):
8A:71:DE:65:59:33:6F:42:6C:26:E5:38:80:D0:0D:88:A1:8D:A4:C6:A9:1F:0D:CB:61:94:E2:06:C5:C9:63:87
Fingerprint (SHA1): 84:1A:69:FB:F5:CD:1A:25:34:13:3D:E3:F8:FC:B8:99:D0:C9:14:B7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "vTrus Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\204\032\151\373\365\315\032\045\064\023\075\343\370\374\270\231
\320\311\024\267
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\270\311\067\337\372\153\061\204\144\305\352\021\152\033\165\374

END
CKA_ISSUER MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\026\060
\024\006\003\125\004\003\023\015\166\124\162\165\163\040\122\157
\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\103\343\161\023\330\263\131\024\135\267\316\214\375\065
\375\157\274\005\215\105
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ISRG Root X2"
#
Issuer: CN=ISRG Root X2,O=Internet Security Research Group,C=US
Serial Number:41:d2:9d:d1:72:ea:ee:a7:80:c1:2c:6c:e9:2f:87:52
Subject: CN=ISRG Root X2,O=Internet Security Research Group,C=US
Not Valid Before: Fri Sep 04 00:00:00 2020
Not Valid After : Mon Sep 17 16:00:00 2040
Fingerprint (SHA-256):
69:72:9B:8E:15:A8:6E:FC:17:7A:57:AF:B7:17:1D:FC:64:AD:D2:8C:2F:CA:8C:F1:50:7E:34:45:3C:CB:14:70
Fingerprint (SHA1): BD:B1:B9:3C:D5:97:8D:45:C6:26:14:55:F8:DB:95:C7:5A:D1:53:AF
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ISRG Root X2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003

\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\101\322\235\321\162\352\356\247\200\301\054\154\351\057
\207\122
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\033\060\202\001\241\240\003\002\001\002\002\020\101
\322\235\321\162\352\356\247\200\301\054\154\351\057\207\122\060
\012\006\010\052\206\110\316\075\004\003\003\060\117\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\051\060\047\006\003
\125\004\012\023\040\111\156\164\145\162\156\145\164\040\123\145
\143\165\162\151\164\171\040\122\145\163\145\141\162\143\150\040
\107\162\157\165\160\061\025\060\023\006\003\125\004\003\023\014
\111\123\122\107\040\122\157\157\164\040\130\062\060\036\027\015
\062\060\060\071\060\064\060\060\060\060\060\060\132\027\015\064
\060\060\071\061\067\061\066\060\060\060\060\132\060\117\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\051\060\047\006
\003\125\004\012\023\040\111\156\164\145\162\156\145\164\040\123
\145\143\165\162\151\164\171\040\122\145\163\145\141\162\143\150
\040\107\162\157\165\160\061\025\060\023\006\003\125\004\003\023
\014\111\123\122\107\040\122\157\157\164\040\130\062\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\315\233\325\237\200\203\012\354\011\112\363
\026\112\076\134\317\167\254\336\147\005\015\035\007\266\334\026
\373\132\213\024\333\342\161\140\304\272\105\225\021\211\216\352
\006\337\367\052\026\034\244\271\305\305\062\340\003\340\036\202
\030\070\213\327\105\330\012\152\156\346\000\167\373\002\121\175
\042\330\012\156\232\133\167\337\360\372\101\354\071\334\165\312
\150\007\014\037\352\243\102\060\100\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\174\102\226\256\336\113\110\073\372\222\370
\236\214\317\155\213\251\162\067\225\060\012\006\010\052\206\110
\316\075\004\003\003\003\150\000\060\145\002\060\173\171\116\106
\120\204\302\104\207\106\033\105\160\377\130\231\336\364\375\244
\322\125\246\040\055\164\326\064\274\101\243\120\137\001\047\126
\264\276\047\165\006\257\022\056\165\230\215\374\002\061\000\213
\365\167\154\324\310\145\252\340\013\054\356\024\235\047\067\244
\371\123\245\121\344\051\203\327\370\220\061\133\102\237\012\365
\376\256\000\150\347\214\111\017\266\157\133\133\025\362\347
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ISRG Root X2"

Issuer: CN=ISRG Root X2,O=Internet Security Research Group,C=US
Serial Number:41:d2:9d:d1:72:ea:ee:a7:80:c1:2c:6c:e9:2f:87:52
Subject: CN=ISRG Root X2,O=Internet Security Research Group,C=US
Not Valid Before: Fri Sep 04 00:00:00 2020
Not Valid After : Mon Sep 17 16:00:00 2040
Fingerprint (SHA-256):
69:72:9B:8E:15:A8:6E:FC:17:7A:57:AF:B7:17:1D:FC:64:AD:D2:8C:2F:CA:8C:F1:50:7E:34:45:3C:CB:14:70
Fingerprint (SHA1): BD:B1:B9:3C:D5:97:8D:45:C6:26:14:55:F8:DB:95:C7:5A:D1:53:AF
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ISRG Root X2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\275\261\271\074\325\227\215\105\306\046\024\125\370\333\225\307
\132\321\123\257
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\323\236\304\036\043\074\246\337\317\243\176\155\340\024\346\345
END
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\101\322\235\321\162\352\356\247\200\301\054\154\351\057
\207\122
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HiPKI Root CA - G1"
#
Issuer: CN=HiPKI Root CA - G1,O="Chunghwa Telecom Co., Ltd.",C=TW
Serial Number:2d:dd:ac:ce:62:97:94:a1:43:e8:b0:cd:76:6a:5e:60
Subject: CN=HiPKI Root CA - G1,O="Chunghwa Telecom Co., Ltd.",C=TW
Not Valid Before: Fri Feb 22 09:46:04 2019
Not Valid After : Thu Dec 31 15:59:59 2037
Fingerprint (SHA-256):
F0:15:CE:3C:C2:39:BF:EF:06:4B:E9:F1:D2:C4:17:E1:A0:26:4A:0A:94:BE:1F:0C:8D:12:18:64:EB:69:49:CC
Fingerprint (SHA1): 6A:92:E4:A8:EE:1B:EC:96:45:37:E3:29:57:49:CD:96:E3:E5:D2:60

CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HiPKI Root CA - G1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\033\060\031\006\003\125\004\003\014\022\110
\151\120\113\111\040\122\157\157\164\040\103\101\040\055\040\107
\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\033\060\031\006\003\125\004\003\014\022\110
\151\120\113\111\040\122\157\157\164\040\103\101\040\055\040\107
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\055\335\254\316\142\227\224\241\103\350\260\315\166\152
\136\140
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\152\060\202\003\122\240\003\002\001\002\002\020\055
\335\254\316\142\227\224\241\103\350\260\315\166\152\136\140\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\117
\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043\060
\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167\141
\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114\164
\144\056\061\033\060\031\006\003\125\004\003\014\022\110\151\120
\113\111\040\122\157\157\164\040\103\101\040\055\040\107\061\060
\036\027\015\061\071\060\062\062\062\060\071\064\066\060\064\132
\027\015\063\067\061\062\063\061\061\065\065\071\065\071\132\060
\117\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043
\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167
\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114
\164\144\056\061\033\060\031\006\003\125\004\003\014\022\110\151
\120\113\111\040\122\157\157\164\040\103\101\040\055\040\107\061
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\364\036\177\122\163\062\014\163\344\275\023\164\243\324\060
\250\320\256\113\330\266\337\165\107\146\364\174\347\071\004\036
\152\160\040\322\132\107\162\147\125\364\245\350\235\325\036\041

\241\360\147\272\314\041\150\276\104\123\277\215\371\342\334\057
\125\310\067\077\037\244\300\234\263\344\167\134\240\106\376\167
\372\032\240\070\352\355\232\162\336\053\275\224\127\072\272\354
\171\347\137\175\102\144\071\172\046\066\367\044\360\325\057\272
\225\230\021\146\255\227\065\326\165\001\200\340\257\364\204\141
\214\015\036\137\174\207\226\136\101\257\353\207\352\370\135\361
\056\210\005\076\114\042\273\332\037\052\335\122\106\144\071\363
\102\316\331\236\014\263\260\167\227\144\234\300\364\243\056\037
\225\007\260\027\337\060\333\000\030\226\114\241\201\113\335\004
\155\123\243\075\374\007\254\324\305\067\202\353\344\225\010\031
\050\202\322\102\072\243\330\123\354\171\211\140\110\140\310\162
\222\120\334\003\217\203\077\262\102\127\132\333\152\351\021\227
\335\205\050\274\060\114\253\343\302\261\105\104\107\037\340\212
\026\007\226\322\041\017\123\300\355\251\176\324\116\354\233\011
\354\257\102\254\060\326\277\321\020\105\340\246\026\262\245\305
\323\117\163\224\063\161\002\241\152\243\326\063\227\117\041\143
\036\133\217\331\301\136\105\161\167\017\201\135\137\041\232\255
\203\314\372\136\326\215\043\137\033\075\101\257\040\165\146\132
\112\366\237\373\253\030\367\161\300\266\035\061\354\073\040\353
\313\342\270\365\256\222\262\367\341\204\113\362\242\362\223\232
\042\236\323\024\157\066\124\275\037\136\131\025\271\163\250\301
\174\157\173\142\351\026\154\107\132\145\363\016\021\233\106\331
\375\155\334\326\234\300\264\175\245\260\335\077\126\157\241\371
\366\344\022\110\375\006\177\022\127\266\251\043\117\133\003\303
\340\161\052\043\267\367\260\261\073\274\230\275\326\230\250\014
\153\366\216\022\147\246\362\262\130\344\002\011\023\074\251\273
\020\264\322\060\105\361\354\367\000\021\337\145\370\334\053\103
\125\277\026\227\304\017\325\054\141\204\252\162\206\376\346\072
\176\302\077\175\356\374\057\024\076\346\205\335\120\157\267\111
\355\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\362\167\027\372\136\250\376\366\075\161
\325\150\272\311\106\014\070\330\257\260\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\120\121
\360\165\334\160\004\343\377\252\165\324\161\242\313\236\217\250
\251\323\257\165\307\124\317\072\034\004\231\042\254\304\021\342
\357\063\112\246\043\035\016\015\107\330\067\307\157\257\064\177
\117\201\153\065\117\351\162\245\061\342\170\347\367\116\224\030
\133\100\175\317\153\041\124\206\346\225\172\373\306\312\352\234
\110\116\127\011\135\057\254\364\245\264\227\063\130\325\254\171
\251\314\137\371\205\372\122\305\215\370\221\024\353\072\015\027
\320\122\302\173\343\302\163\216\106\170\006\070\054\350\134\332
\146\304\364\244\360\126\031\063\051\132\145\222\005\107\106\112
\253\204\303\036\047\241\037\021\222\231\047\165\223\017\274\066
\073\227\127\217\046\133\014\273\234\017\324\156\060\007\324\334
\137\066\150\146\071\203\226\047\046\212\310\304\071\376\232\041
\157\325\162\206\351\177\142\345\227\116\320\044\320\100\260\320

\165\010\216\275\150\356\010\327\156\174\020\160\106\033\174\340
\210\262\236\162\206\231\001\343\277\237\111\031\264\045\276\126
\145\256\027\143\345\036\337\350\377\107\245\277\341\046\005\204
\344\260\300\257\347\010\231\250\014\136\046\200\105\324\370\150
\057\226\217\256\342\112\034\234\026\014\023\157\070\207\366\273
\310\064\137\222\003\121\171\160\246\337\313\365\231\115\171\315
\116\274\127\237\103\116\153\056\053\030\370\152\163\214\272\305
\065\357\071\152\101\036\317\161\250\242\262\206\007\133\072\311
\341\357\077\145\004\200\107\062\104\160\225\116\061\147\152\164
\133\020\105\165\352\260\237\320\346\065\376\116\237\213\314\053
\222\105\133\156\045\140\205\106\315\321\252\260\166\146\223\167
\226\276\203\276\070\266\044\116\046\013\314\355\172\126\032\340
\351\132\306\144\255\114\172\000\110\104\057\271\100\273\023\076
\276\025\170\235\205\201\112\052\127\336\325\031\103\332\333\312
\133\107\206\203\013\077\266\015\166\170\163\171\042\136\261\200
\037\317\276\321\077\126\020\230\053\225\207\241\037\235\144\024
\140\071\054\263\000\125\056\344\365\263\016\127\304\221\101\000
\234\077\350\245\337\352\366\377\310\360\255\155\122\250\027\253
\233\141\374\022\121\065\344\045\375\257\252\152\206\071
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HiPKI Root CA - G1"
Issuer: CN=HiPKI Root CA - G1,O="Chunghwa Telecom Co., Ltd.",C=TW
Serial Number:2d:dd:ac:ce:62:97:94:a1:43:e8:b0:cd:76:6a:5e:60
Subject: CN=HiPKI Root CA - G1,O="Chunghwa Telecom Co., Ltd.",C=TW
Not Valid Before: Fri Feb 22 09:46:04 2019
Not Valid After : Thu Dec 31 15:59:59 2037
Fingerprint (SHA-256):
F0:15:CE:3C:C2:39:BF:EF:06:4B:E9:F1:D2:C4:17:E1:A0:26:4A:0A:94:BE:1F:0C:8D:12:18:64:EB:69:49:CC
Fingerprint (SHA1): 6A:92:E4:A8:EE:1B:EC:96:45:37:E3:29:57:49:CD:96:E3:E5:D2:60
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HiPKI Root CA - G1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\152\222\344\250\356\033\354\226\105\067\343\051\127\111\315\226
\343\345\322\140
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\151\105\337\026\145\113\350\150\232\217\166\137\377\200\236\323
END
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150

\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\033\060\031\006\003\125\004\003\014\022\110
\151\120\113\111\040\122\157\157\164\040\103\101\040\055\040\107
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\055\335\254\316\142\227\224\241\103\350\260\315\166\152
\136\140
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign ECC Root CA - R4"
#
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R4
Serial Number:02:03:e5:7e:f5:3f:93:fd:a5:09:21:b2:a6
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R4
Not Valid Before: Tue Nov 13 00:00:00 2012
Not Valid After : Tue Jan 19 03:14:07 2038
Fingerprint (SHA-256):
B0:85:D7:0B:96:4F:19:1A:73:E4:AF:0D:54:AE:7A:0E:07:AA:FD:AF:9B:71:DD:08:62:13:8A:B7:32:5A:24:A2
Fingerprint (SHA1): 6B:A0:B0:98:E1:71:EF:5A:AD:FE:48:15:80:77:10:F4:BD:6F:0B:28
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign ECC Root CA - R4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\064\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\064\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\176\365\077\223\375\245\011\041\262\246
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\334\060\202\001\203\240\003\002\001\002\002\015\002
\003\345\176\365\077\223\375\245\011\041\262\246\060\012\006\010
\052\206\110\316\075\004\003\002\060\120\061\044\060\042\006\003
\125\004\013\023\033\107\154\157\142\141\154\123\151\147\156\040
\105\103\103\040\122\157\157\164\040\103\101\040\055\040\122\064
\061\023\060\021\006\003\125\004\012\023\012\107\154\157\142\141
\154\123\151\147\156\061\023\060\021\006\003\125\004\003\023\012
\107\154\157\142\141\154\123\151\147\156\060\036\027\015\061\062
\061\061\061\063\060\060\060\060\060\060\132\027\015\063\070\060
\061\061\071\060\063\061\064\060\067\132\060\120\061\044\060\042
\006\003\125\004\013\023\033\107\154\157\142\141\154\123\151\147
\156\040\105\103\103\040\122\157\157\164\040\103\101\040\055\040
\122\064\061\023\060\021\006\003\125\004\012\023\012\107\154\157
\142\141\154\123\151\147\156\061\023\060\021\006\003\125\004\003
\023\012\107\154\157\142\141\154\123\151\147\156\060\131\060\023
\006\007\052\206\110\316\075\002\001\006\010\052\206\110\316\075
\003\001\007\003\102\000\004\270\306\171\323\217\154\045\016\237
\056\071\031\034\003\244\256\232\345\071\007\011\026\312\143\261
\271\206\370\212\127\301\127\316\102\372\163\241\367\145\102\377
\036\301\000\262\156\163\016\377\307\041\345\030\244\252\331\161
\077\250\324\271\316\214\035\243\102\060\100\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\206\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\124\260\173\255\105\270\342\100\177
\373\012\156\373\276\063\311\074\243\204\325\060\012\006\010\052
\206\110\316\075\004\003\002\003\107\000\060\104\002\040\042\117
\164\162\271\140\257\361\346\234\240\026\005\120\137\303\136\073
\156\141\164\357\276\001\304\276\030\110\131\141\202\062\002\040
\046\235\124\143\100\336\067\140\120\317\310\330\355\235\202\256
\067\230\274\243\217\114\114\251\064\053\154\357\373\225\233\046
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign ECC Root CA - R4"
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R4
Serial Number:02:03:e5:7e:f5:3f:93:fd:a5:09:21:b2:a6
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R4
Not Valid Before: Tue Nov 13 00:00:00 2012
Not Valid After : Tue Jan 19 03:14:07 2038
Fingerprint (SHA-256):
B0:85:D7:0B:96:4F:19:1A:73:E4:AF:0D:54:AE:7A:0E:07:AA:FD:AF:9B:71:DD:08:62:13:8A:B7:32:5A:24:A2
Fingerprint (SHA1): 6B:A0:B0:98:E1:71:EF:5A:AD:FE:48:15:80:77:10:F4:BD:6F:0B:28

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign ECC Root CA - R4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\153\240\260\230\341\161\357\132\255\376\110\025\200\167\020\364
\275\157\013\050
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\046\051\370\155\341\210\277\242\145\177\252\304\315\017\177\374
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\064\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\176\365\077\223\375\245\011\041\262\246
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GTS Root R1"
#
Issuer: CN=GTS Root R1,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:93:6f:31:b0:13:49:88:6b:a2:17
Subject: CN=GTS Root R1,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
D9:47:43:2A:BD:E7:B7:FA:90:FC:2E:6B:59:10:1B:12:80:E0:E1:C7:E4:E4:0F:A3:C6:88:7F:FF:57:A7:F4:CF
Fingerprint (SHA1): E5:8C:1C:C4:91:3B:38:63:4B:E9:10:6E:E3:AD:8E:6B:9D:D9:81:4A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145

\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\061
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CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\223\157\061\260\023\111\210\153\242\027
END
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\003\345\223\157\061\260\023\111\210\153\242\027\060\015\006\011
\052\206\110\206\367\015\001\001\014\005\000\060\107\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\042\060\040\006\003
\125\004\012\023\031\107\157\157\147\154\145\040\124\162\165\163
\164\040\123\145\162\166\151\143\145\163\040\114\114\103\061\024
\060\022\006\003\125\004\003\023\013\107\124\123\040\122\157\157
\164\040\122\061\060\036\027\015\061\066\060\066\062\062\060\060
\060\060\060\060\132\027\015\063\066\060\066\062\062\060\060\060
\060\060\060\132\060\107\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\042\060\040\006\003\125\004\012\023\031\107\157
\157\147\154\145\040\124\162\165\163\164\040\123\145\162\166\151
\143\145\163\040\114\114\103\061\024\060\022\006\003\125\004\003
\023\013\107\124\123\040\122\157\157\164\040\122\061\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
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\333\274\152\056\227\227\243\214\113\371\053\366\261\371\316\204
\035\261\371\305\227\336\357\271\362\243\351\274\022\211\136\247
\252\122\253\370\043\047\313\244\261\234\143\333\327\231\176\360
\012\136\353\150\246\364\306\132\107\015\115\020\063\343\116\261
\023\243\310\030\154\113\354\374\011\220\337\235\144\051\045\043
\007\241\264\322\075\056\140\340\317\322\011\207\273\315\110\360
\115\302\302\172\210\212\273\272\317\131\031\326\257\217\260\007
\260\236\061\361\202\301\300\337\056\246\155\154\031\016\265\330
\176\046\032\105\003\075\260\171\244\224\050\255\017\177\046\345
\250\010\376\226\350\074\150\224\123\356\203\072\210\053\025\226
\011\262\340\172\214\056\165\326\234\353\247\126\144\217\226\117
\150\256\075\227\302\204\217\300\274\100\300\013\134\275\366\207
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\013\265\305\305\212\125\253\323\254\352\221\113\051\314\031\244
\062\045\116\052\361\145\104\320\002\316\252\316\111\264\352\237
\174\203\260\100\173\347\103\253\247\154\243\217\175\211\201\372
\114\245\377\325\216\303\316\113\340\265\330\263\216\105\317\166
\300\355\100\053\375\123\017\260\247\325\073\015\261\212\242\003
\336\061\255\314\167\352\157\173\076\326\337\221\042\022\346\276
\372\330\062\374\020\143\024\121\162\336\135\326\026\223\275\051
\150\063\357\072\146\354\007\212\046\337\023\327\127\145\170\047
\336\136\111\024\000\242\000\177\232\250\041\266\251\261\225\260
\245\271\015\026\021\332\307\154\110\074\100\340\176\015\132\315
\126\074\321\227\005\271\313\113\355\071\113\234\304\077\322\125
\023\156\044\260\326\161\372\364\301\272\314\355\033\365\376\201
\101\330\000\230\075\072\310\256\172\230\067\030\005\225\002\003
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\377\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
\026\004\024\344\257\053\046\161\032\053\110\047\205\057\122\146
\054\357\360\211\023\161\076\060\015\006\011\052\206\110\206\367
\015\001\001\014\005\000\003\202\002\001\000\237\252\102\046\333
\013\233\276\377\036\226\222\056\076\242\145\112\152\230\272\042
\313\175\301\072\330\202\012\006\306\366\245\336\300\116\207\146
\171\241\371\246\130\234\252\371\265\346\140\347\340\350\261\036
\102\101\063\013\067\075\316\211\160\025\312\265\044\250\317\153
\265\322\100\041\230\317\042\064\317\073\305\042\204\340\305\016
\212\174\135\210\344\065\044\316\233\076\032\124\036\156\333\262
\207\247\374\363\372\201\125\024\142\012\131\251\042\005\061\076
\202\326\356\333\127\064\274\063\225\323\027\033\350\047\242\213
\173\116\046\032\172\132\144\266\321\254\067\361\375\240\363\070
\354\162\360\021\165\235\313\064\122\215\346\166\153\027\306\337
\206\253\047\216\111\053\165\146\201\020\041\246\352\076\364\256
\045\377\174\025\336\316\214\045\077\312\142\160\012\367\057\011
\146\007\310\077\034\374\360\333\105\060\337\142\210\301\265\017
\235\303\237\112\336\131\131\107\305\207\042\066\346\202\247\355
\012\271\342\007\240\215\173\172\112\074\161\322\342\003\241\037
\062\007\335\033\344\102\316\014\000\105\141\200\265\013\040\131
\051\170\275\371\125\313\143\305\074\114\364\266\377\333\152\137
\061\153\231\236\054\301\153\120\244\327\346\030\024\275\205\077
\147\253\106\237\240\377\102\247\072\177\134\313\135\260\160\035
\053\064\365\324\166\011\014\353\170\114\131\005\363\063\102\303
\141\025\020\033\167\115\316\042\214\324\205\362\105\175\267\123
\352\357\100\132\224\012\134\040\137\116\100\135\142\042\166\337
\377\316\141\275\214\043\170\322\067\002\340\216\336\321\021\067
\211\366\277\355\111\007\142\256\222\354\100\032\257\024\011\331
\320\116\262\242\367\276\356\356\330\377\334\032\055\336\270\066
\161\342\374\171\267\224\045\321\110\163\133\241\065\347\263\231

\147\165\301\031\072\053\107\116\323\102\216\375\061\310\026\146
\332\322\014\074\333\263\216\311\241\015\200\017\173\026\167\024
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\336\020\303\000\334\250\052\225\266\302\326\077\220\153\166\333
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END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GTS Root R1"
Issuer: CN=GTS Root R1,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:93:6f:31:b0:13:49:88:6b:a2:17
Subject: CN=GTS Root R1,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
D9:47:43:2A:BD:E7:B7:FA:90:FC:2E:6B:59:10:1B:12:80:E0:E1:C7:E4:E4:0F:A3:C6:88:7F:FF:57:A7:F4:CF
Fingerprint (SHA1): E5:8C:1C:C4:91:3B:38:63:4B:E9:10:6E:E3:AD:8E:6B:9D:D9:81:4A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\345\214\034\304\221\073\070\143\113\351\020\156\343\255\216\153
\235\331\201\112
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\005\376\320\277\161\250\243\166\143\332\001\340\330\122\334\100
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\223\157\061\260\023\111\210\153\242\027
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#

Certificate "GTS Root R2"
#
Issuer: CN=GTS Root R2,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:ae:c5:8d:04:25:1a:ab:11:25:aa
Subject: CN=GTS Root R2,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
8D:25:CD:97:22:9D:BF:70:35:6B:DA:4E:B3:CC:73:40:31:E2:4C:F0:0F:AF:CF:D3:2D:C7:6E:B5:84:1C:7E:A8
Fingerprint (SHA1): 9A:44:49:76:32:DB:DE:FA:D0:BC:FB:5A:7B:17:BD:9E:56:09:24:94
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
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END
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\052\206\110\206\367\015\001\001\014\005\000\060\107\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\042\060\040\006\003
\125\004\012\023\031\107\157\157\147\154\145\040\124\162\165\163
\164\040\123\145\162\166\151\143\145\163\040\114\114\103\061\024
\060\022\006\003\125\004\003\023\013\107\124\123\040\122\157\157
\164\040\122\062\060\036\027\015\061\066\060\066\062\062\060\060
\060\060\060\060\132\027\015\063\066\060\066\062\062\060\060\060
\060\060\060\132\060\107\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\042\060\040\006\003\125\004\012\023\031\107\157
\157\147\154\145\040\124\162\165\163\164\040\123\145\162\166\151
\143\145\163\040\114\114\103\061\024\060\022\006\003\125\004\003

\023\013\107\124\123\040\122\157\157\164\040\122\062\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
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\335\367\301\235\125\252\323\315\073\244\223\162\357\012\372\155
\235\366\360\205\200\133\241\110\122\237\071\305\267\356\050\254
\357\313\166\150\024\271\337\255\001\154\231\037\304\042\035\237
\376\162\167\340\054\133\257\344\004\277\117\162\240\032\064\230
\350\071\150\354\225\045\173\166\241\346\151\271\205\031\275\211
\214\376\255\355\066\352\163\274\377\203\342\313\175\301\322\316
\112\263\215\005\236\213\111\223\337\301\133\320\156\136\360\056
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\350\176\146\136\231\327\270\302\076\310\320\023\235\255\356\344
\105\173\211\125\367\212\037\142\122\204\022\263\302\100\227\343
\212\037\107\221\246\164\132\322\370\261\143\050\020\270\263\011
\270\126\167\100\242\046\230\171\306\376\337\045\356\076\345\240
\177\324\141\017\121\113\074\077\214\332\341\160\164\330\302\150
\241\371\301\014\351\241\342\177\273\125\074\166\006\356\152\116
\314\222\210\060\115\232\275\117\013\110\232\204\265\230\243\325
\373\163\301\127\141\335\050\126\165\023\256\207\216\347\014\121
\011\020\165\210\114\274\215\371\173\074\324\042\110\037\052\334
\353\153\273\104\261\313\063\161\062\106\257\255\112\361\214\350
\164\072\254\347\032\042\163\200\322\060\367\045\102\307\042\073
\073\022\255\226\056\306\303\166\007\252\040\267\065\111\127\351
\222\111\350\166\026\162\061\147\053\226\176\212\243\307\224\126
\042\277\152\113\176\001\041\262\043\062\337\344\232\104\155\131
\133\135\365\000\240\034\233\306\170\227\215\220\377\233\310\252
\264\257\021\121\071\136\331\373\147\255\325\133\021\235\062\232
\033\275\325\272\133\245\311\313\045\151\123\125\047\134\340\312
\066\313\210\141\373\036\267\320\313\356\026\373\323\246\114\336
\222\245\324\342\337\365\006\124\336\056\235\113\264\223\060\252
\201\316\335\032\334\121\163\015\117\160\351\345\266\026\041\031
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\377\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
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\245\025\047\027\036\331\016\060\015\006\011\052\206\110\206\367
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\161\126\162\262\236\032\116\234\325\053\230\044\135\233\153\173
\260\063\202\011\275\337\045\106\352\230\236\266\033\376\203\074
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\307\245\374\125\113\363\360\177\271\145\075\047\150\320\314\153
\372\123\235\341\221\032\311\135\032\226\155\062\207\355\003\040
\310\002\316\132\276\331\352\375\262\115\304\057\033\337\137\172
\365\370\213\306\356\061\072\045\121\125\147\215\144\062\173\351
\236\303\202\272\052\055\351\036\264\340\110\006\242\374\147\257
\037\042\002\163\373\040\012\257\235\124\113\241\315\377\140\107
\260\077\135\357\033\126\275\227\041\226\055\012\321\136\235\070
\002\107\154\271\364\366\043\045\270\240\152\232\053\167\010\372
\304\261\050\220\046\130\010\074\342\176\252\327\075\157\272\061
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\017\341\316\166\206\004\043\305\300\214\022\133\375\333\204\240
\044\361\110\377\144\174\320\276\134\026\321\357\231\255\300\037
\373\313\256\274\070\042\006\046\144\332\332\227\016\077\050\025
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\142\101\363\146\322\217\252\170\225\124\040\303\132\056\164\053
\325\321\276\030\151\300\254\325\244\317\071\272\121\204\003\145
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\354\236\355\005\035\344\310\326\035\206\313
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GTS Root R2"
Issuer: CN=GTS Root R2,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:ae:c5:8d:04:25:1a:ab:11:25:aa
Subject: CN=GTS Root R2,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
8D:25:CD:97:22:9D:BF:70:35:6B:DA:4E:B3:CC:73:40:31:E2:4C:F0:0F:AF:CF:D3:2D:C7:6E:B5:84:1C:7E:A8
Fingerprint (SHA1): 9A:44:49:76:32:DB:DE:FA:D0:BC:FB:5A:7B:17:BD:9E:56:09:24:94
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\232\104\111\166\062\333\336\372\320\274\373\132\173\027\275\236
\126\011\044\224
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\036\071\300\123\346\036\051\202\013\312\122\125\066\135\127\334
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\256\305\215\004\045\032\253\021\045\252
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GTS Root R3"
#
Issuer: CN=GTS Root R3,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:b8:82:eb:20:f8:25:27:6d:3d:66
Subject: CN=GTS Root R3,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
34:D8:A7:3E:E2:08:D9:BC:DB:0D:95:65:20:93:4B:4E:40:E6:94:82:59:6E:8B:6F:73:C8:42:6B:01:0A:6F:48
Fingerprint (SHA1): ED:E5:71:80:2B:C8:92:B9:5B:83:3C:D2:32:68:3F:09:CD:A0:1E:46
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124

\123\040\122\157\157\164\040\122\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\270\202\353\040\370\045\047\155\075\146
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\011\060\202\001\216\240\003\002\001\002\002\015\002
\003\345\270\202\353\040\370\045\047\155\075\146\060\012\006\010
\052\206\110\316\075\004\003\003\060\107\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\042\060\040\006\003\125\004\012
\023\031\107\157\157\147\154\145\040\124\162\165\163\164\040\123
\145\162\166\151\143\145\163\040\114\114\103\061\024\060\022\006
\003\125\004\003\023\013\107\124\123\040\122\157\157\164\040\122
\063\060\036\027\015\061\066\060\066\062\062\060\060\060\060\060
\060\132\027\015\063\066\060\066\062\062\060\060\060\060\060\060
\132\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154
\145\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163
\040\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107
\124\123\040\122\157\157\164\040\122\063\060\166\060\020\006\007
\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142
\000\004\037\117\063\207\063\051\212\241\204\336\313\307\041\130
\101\211\352\126\235\053\113\205\306\035\114\047\274\177\046\121
\162\157\342\237\326\243\312\314\105\024\106\213\255\357\176\206
\214\354\261\176\057\377\251\161\235\030\204\105\004\101\125\156
\053\352\046\177\273\220\001\343\113\031\272\344\124\226\105\011
\261\325\154\221\104\255\204\023\216\232\214\015\200\014\062\366
\340\047\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\301\361\046\272\240\055\256\205\201\317\323\361\052\022
\275\270\012\147\375\274\060\012\006\010\052\206\110\316\075\004
\003\003\003\151\000\060\146\002\061\000\366\341\040\225\024\173
\124\243\220\026\021\277\204\310\352\157\153\027\236\036\106\230
\040\233\237\323\015\331\254\323\057\315\174\370\133\056\125\273
\277\335\222\367\244\014\334\061\341\242\002\061\000\374\227\146
\146\345\103\026\023\203\335\307\337\057\276\024\070\355\001\316
\261\027\032\021\165\351\275\003\217\046\176\204\345\311\140\246
\225\327\124\131\267\347\021\054\211\324\271\356\027
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GTS Root R3"
Issuer: CN=GTS Root R3,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:b8:82:eb:20:f8:25:27:6d:3d:66
Subject: CN=GTS Root R3,O=Google Trust Services LLC,C=US

Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
34:D8:A7:3E:E2:08:D9:BC:DB:0D:95:65:20:93:4B:4E:40:E6:94:82:59:6E:8B:6F:73:C8:42:6B:01:0A:6F:48
Fingerprint (SHA1): ED:E5:71:80:2B:C8:92:B9:5B:83:3C:D2:32:68:3F:09:CD:A0:1E:46
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\355\345\161\200\053\310\222\271\133\203\074\322\062\150\077\011
\315\240\036\106
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\076\347\235\130\002\224\106\121\224\345\340\042\112\213\347\163
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\270\202\353\040\370\045\047\155\075\146
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GTS Root R4"
#
Issuer: CN=GTS Root R4,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:c0:68:ef:63:1a:9c:72:90:50:52
Subject: CN=GTS Root R4,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
34:9D:FA:40:58:C5:E2:63:12:3B:39:8A:E7:95:57:3C:4E:13:13:C8:3F:E6:8F:93:55:6C:D5:E8:03:1B:3C:7D
Fingerprint (SHA1): 77:D3:03:67:B5:E0:0C:15:F6:0C:38:61:DF:7C:E1:3B:92:46:4D:47
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R4"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\064
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\300\150\357\143\032\234\162\220\120\122
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\011\060\202\001\216\240\003\002\001\002\002\015\002
\003\345\300\150\357\143\032\234\162\220\120\122\060\012\006\010
\052\206\110\316\075\004\003\003\060\107\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\042\060\040\006\003\125\004\012
\023\031\107\157\157\147\154\145\040\124\162\165\163\164\040\123
\145\162\166\151\143\145\163\040\114\114\103\061\024\060\022\006
\003\125\004\003\023\013\107\124\123\040\122\157\157\164\040\122
\064\060\036\027\015\061\066\060\066\062\062\060\060\060\060\060
\060\132\027\015\063\066\060\066\062\062\060\060\060\060\060\060
\132\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154
\145\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163
\040\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107
\124\123\040\122\157\157\164\040\122\064\060\166\060\020\006\007
\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142
\000\004\363\164\163\247\150\213\140\256\103\270\065\305\201\060
\173\113\111\235\373\301\141\316\346\336\106\275\153\325\141\030
\065\256\100\335\163\367\211\221\060\132\353\074\356\205\174\242
\100\166\073\251\306\270\107\330\052\347\222\221\152\163\351\261
\162\071\237\051\237\242\230\323\137\136\130\206\145\017\241\204
\145\006\321\334\213\311\307\163\310\214\152\057\345\304\253\321
\035\212\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\200\114\326\353\164\377\111\066\243\325\330\374\265\076
\305\152\360\224\035\214\060\012\006\010\052\206\110\316\075\004
\003\003\003\151\000\060\146\002\061\000\350\100\377\203\336\003
\364\237\256\035\172\247\056\271\257\117\366\203\035\016\055\205

\001\035\321\331\152\354\017\302\257\307\136\126\136\134\325\034
\130\042\050\013\367\060\266\057\261\174\002\061\000\360\141\074
\247\364\240\202\343\041\325\204\035\163\206\234\055\257\312\064
\233\361\237\271\043\066\342\274\140\003\235\200\263\232\126\310
\341\342\273\024\171\312\315\041\324\224\265\111\103
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GTS Root R4"
Issuer: CN=GTS Root R4,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:c0:68:ef:63:1a:9c:72:90:50:52
Subject: CN=GTS Root R4,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
34:9D:FA:40:58:C5:E2:63:12:3B:39:8A:E7:95:57:3C:4E:13:13:C8:3F:E6:8F:93:55:6C:D5:E8:03:1B:3C:7D
Fingerprint (SHA1): 77:D3:03:67:B5:E0:0C:15:F6:0C:38:61:DF:7C:E1:3B:92:46:4D:47
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\167\323\003\147\265\340\014\025\366\014\070\141\337\174\341\073
\222\106\115\107
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\103\226\203\167\031\115\166\263\235\145\122\344\035\042\245\350
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\300\150\357\143\032\234\162\220\120\122
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Telia Root CA v2"

#
Issuer: CN=Telia Root CA v2,O=Telia Finland Oyj,C=FI
Serial Number:01:67:5f:27:d6:fe:7a:e3:e4:ac:be:09:5b:05:9e
Subject: CN=Telia Root CA v2,O=Telia Finland Oyj,C=FI
Not Valid Before: Thu Nov 29 11:55:54 2018
Not Valid After : Sun Nov 29 11:55:54 2043
Fingerprint (SHA-256):
24:2B:69:74:2F:CB:1E:5B:2A:BF:98:89:8B:94:57:21:87:54:4E:5B:4D:99:11:78:65:73:62:1F:6A:74:B8:2C
Fingerprint (SHA1): B9:99:CD:D1:73:50:8A:C4:47:05:08:9C:8C:88:FB:BE:A0:2B:40:CD
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telia Root CA v2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\106\111\061
\032\060\030\006\003\125\004\012\014\021\124\145\154\151\141\040
\106\151\156\154\141\156\144\040\117\171\152\061\031\060\027\006
\003\125\004\003\014\020\124\145\154\151\141\040\122\157\157\164
\040\103\101\040\166\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\106\111\061
\032\060\030\006\003\125\004\012\014\021\124\145\154\151\141\040
\106\151\156\154\141\156\144\040\117\171\152\061\031\060\027\006
\003\125\004\003\014\020\124\145\154\151\141\040\122\157\157\164
\040\103\101\040\166\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\001\147\137\047\326\376\172\343\344\254\276\011\133\005
\236
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\164\060\202\003\134\240\003\002\001\002\002\017\001
\147\137\047\326\376\172\343\344\254\276\011\133\005\236\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\060\104\061
\013\060\011\006\003\125\004\006\023\002\106\111\061\032\060\030
\006\003\125\004\012\014\021\124\145\154\151\141\040\106\151\156
\154\141\156\144\040\117\171\152\061\031\060\027\006\003\125\004
\003\014\020\124\145\154\151\141\040\122\157\157\164\040\103\101
\040\166\062\060\036\027\015\061\070\061\061\062\071\061\061\065
\065\065\064\132\027\015\064\063\061\061\062\071\061\061\065\065
\065\064\132\060\104\061\013\060\011\006\003\125\004\006\023\002
\106\111\061\032\060\030\006\003\125\004\012\014\021\124\145\154
\151\141\040\106\151\156\154\141\156\144\040\117\171\152\061\031
\060\027\006\003\125\004\003\014\020\124\145\154\151\141\040\122

\157\157\164\040\103\101\040\166\062\060\202\002\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017
\000\060\202\002\012\002\202\002\001\000\262\320\077\007\274\342
\173\320\153\231\370\342\167\151\347\316\235\244\003\274\202\155
\241\376\201\145\037\114\047\254\216\000\272\026\173\353\060\152
\000\300\263\164\150\176\262\257\307\325\142\263\172\077\120\312
\214\066\104\044\143\322\066\351\014\205\366\103\166\325\114\241
\140\162\147\342\050\063\245\313\061\270\072\042\043\064\270\175
\275\126\042\100\235\352\364\173\003\255\150\374\262\201\117\230
\320\164\352\215\345\175\315\143\303\243\366\336\222\302\130\031
\340\226\273\305\304\251\075\245\164\226\376\257\371\211\252\275
\225\027\124\330\170\104\361\014\167\025\222\340\230\102\247\244
\326\252\040\222\315\301\240\263\226\262\072\204\102\215\175\325
\225\344\326\333\351\142\304\130\263\171\305\214\323\065\063\203
\237\165\241\122\047\141\070\361\131\075\216\120\340\275\171\074
\347\154\226\376\136\331\002\145\264\216\134\320\021\064\337\135
\277\122\247\201\000\303\177\231\105\231\025\325\027\310\012\123
\354\143\363\231\175\314\151\022\206\302\027\360\001\236\277\204
\274\321\122\313\033\222\146\316\244\123\345\241\277\304\333\011
\326\346\211\126\053\310\343\174\336\343\377\211\345\065\156\050
\350\154\013\043\121\251\045\005\353\110\370\335\261\312\372\154
\010\121\357\267\030\154\104\312\046\341\163\306\211\006\201\345
\212\254\260\342\051\306\271\044\263\153\104\021\364\245\103\302
\114\103\345\160\066\214\266\063\127\172\225\056\202\240\364\134
\020\263\141\203\366\002\005\206\056\174\055\154\334\003\106\156
\065\223\325\172\225\057\336\040\330\133\176\224\220\004\152\272
\131\075\004\005\165\235\067\242\016\056\075\353\301\244\122\203
\376\320\153\324\146\216\334\306\351\022\116\035\052\127\252\020
\274\174\136\202\175\246\246\311\362\055\271\365\027\047\255\321
\016\211\124\053\225\372\300\255\035\230\024\170\063\102\206\012
\251\163\265\373\164\015\267\033\060\031\304\132\016\034\047\267
\332\030\320\377\212\310\005\272\361\252\034\242\067\267\346\110
\244\106\054\224\352\250\166\142\107\213\020\123\007\110\127\154
\342\222\115\266\256\005\313\334\301\112\136\217\254\075\031\116
\302\355\140\165\053\333\301\312\102\325\002\003\001\000\001\243
\143\060\141\060\037\006\003\125\035\043\004\030\060\026\200\024
\162\254\344\063\171\252\105\207\366\375\254\035\236\326\307\057
\206\330\044\071\060\035\006\003\125\035\016\004\026\004\024\162
\254\344\063\171\252\105\207\366\375\254\035\236\326\307\057\206
\330\044\071\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\002\001\000\240\073\131\247\011\224\076\066
\204\322\176\057\071\245\226\227\372\021\255\374\147\363\161\011
\362\262\211\204\147\104\257\271\357\355\226\354\234\144\333\062
\060\157\147\232\254\176\137\262\253\001\066\176\201\372\344\204
\136\322\254\066\340\153\142\305\175\113\016\202\155\322\166\142
\321\376\227\370\237\060\174\030\371\264\122\167\202\035\166\333

\323\035\251\360\301\232\000\275\155\165\330\175\347\372\307\070
\243\234\160\350\106\171\003\257\056\164\333\165\370\156\123\014
\003\310\231\032\211\065\031\074\323\311\124\174\250\360\054\346
\156\007\171\157\152\341\346\352\221\202\151\012\035\303\176\131
\242\236\153\106\025\230\133\323\257\106\035\142\310\316\200\122
\111\021\077\311\004\022\303\023\174\077\073\212\226\333\074\240
\036\012\264\213\124\262\044\147\015\357\202\313\276\074\175\321
\342\177\256\026\326\126\130\271\332\040\261\203\025\241\357\212
\115\062\157\101\057\023\122\202\224\327\032\301\170\242\121\335
\053\160\155\267\032\371\367\260\340\147\227\126\333\174\141\123
\011\003\050\002\100\307\263\330\375\234\160\152\306\050\303\205
\351\342\355\032\223\240\336\113\230\242\204\076\005\167\001\226
\075\373\264\040\017\234\162\002\172\022\057\325\243\272\121\170
\257\052\053\104\145\116\265\375\012\350\301\315\171\207\141\053
\336\200\127\105\277\147\361\233\221\136\245\244\354\131\110\020
\015\070\307\260\372\303\104\155\004\365\170\120\034\222\226\133
\332\365\270\056\272\133\317\345\360\152\235\113\057\130\163\055
\117\055\304\034\076\364\263\077\253\025\016\073\031\101\212\244
\301\127\022\146\161\114\372\123\343\127\353\142\225\011\236\124
\335\321\302\074\127\074\275\070\255\230\144\267\270\003\232\123
\126\140\135\263\330\102\033\134\113\022\212\034\353\353\175\306
\172\151\307\047\177\244\370\213\362\344\224\146\207\113\351\224
\007\011\022\171\212\262\353\164\004\334\316\364\104\131\340\026
\312\305\054\130\327\074\173\317\142\206\152\120\175\065\066\146
\247\373\067\347\050\307\330\320\255\245\151\224\217\350\301\337
\044\370\033\007\061\207\201\330\135\366\350\050\330\112\122\200
\254\023\356\120\024\036\230\307
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Telia Root CA v2"
Issuer: CN=Telia Root CA v2,O=Telia Finland Oyj,C=FI
Serial Number:01:67:5f:27:d6:fe:7a:e3:e4:ac:be:09:5b:05:9e
Subject: CN=Telia Root CA v2,O=Telia Finland Oyj,C=FI
Not Valid Before: Thu Nov 29 11:55:54 2018
Not Valid After : Sun Nov 29 11:55:54 2043
Fingerprint (SHA-256):
24:2B:69:74:2F:CB:1E:5B:2A:BF:98:89:8B:94:57:21:87:54:4E:5B:4D:99:11:78:65:73:62:1F:6A:74:B8:2C
Fingerprint (SHA1): B9:99:CD:D1:73:50:8A:C4:47:05:08:9C:8C:88:FB:BE:A0:2B:40:CD
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telia Root CA v2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\271\231\315\321\163\120\212\304\107\005\010\234\214\210\373\276

\240\053\100\315
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\016\217\254\252\202\337\205\261\364\334\020\034\374\231\331\110
END
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\106\111\061
\032\060\030\006\003\125\004\012\014\021\124\145\154\151\141\040
\106\151\156\154\141\156\144\040\117\171\152\061\031\060\027\006
\003\125\004\003\014\020\124\145\154\151\141\040\122\157\157\164
\040\103\101\040\166\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\001\147\137\047\326\376\172\343\344\254\276\011\133\005
\236
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST BR Root CA 1 2020"
#
Issuer: CN=D-TRUST BR Root CA 1 2020,O=D-Trust GmbH,C=DE
Serial Number:7c:c9:8f:2b:84:d7:df:ea:0f:c9:65:9a:d3:4b:4d:96
Subject: CN=D-TRUST BR Root CA 1 2020,O=D-Trust GmbH,C=DE
Not Valid Before: Tue Feb 11 09:45:00 2020
Not Valid After : Sun Feb 11 09:44:59 2035
Fingerprint (SHA-256):
E5:9A:AA:81:60:09:C2:2B:FF:5B:25:BA:D3:7D:F3:06:F0:49:79:7C:1F:81:D8:5A:B0:89:E6:57:BD:8F:00:44
Fingerprint (SHA1): 1F:5B:98:F0:E3:B5:F7:74:3C:ED:E6:B0:36:7D:32:CD:F4:09:41:67
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST BR Root CA 1 2020"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\102\122\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061

\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\102\122\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\174\311\217\053\204\327\337\352\017\311\145\232\323\113
\115\226
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\333\060\202\002\140\240\003\002\001\002\002\020\174
\311\217\053\204\327\337\352\017\311\145\232\323\113\115\226\060
\012\006\010\052\206\110\316\075\004\003\003\060\110\061\013\060
\011\006\003\125\004\006\023\002\104\105\061\025\060\023\006\003
\125\004\012\023\014\104\055\124\162\165\163\164\040\107\155\142
\110\061\042\060\040\006\003\125\004\003\023\031\104\055\124\122
\125\123\124\040\102\122\040\122\157\157\164\040\103\101\040\061
\040\062\060\062\060\060\036\027\015\062\060\060\062\061\061\060
\071\064\065\060\060\132\027\015\063\065\060\062\061\061\060\071
\064\064\065\071\132\060\110\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\025\060\023\006\003\125\004\012\023\014\104
\055\124\162\165\163\164\040\107\155\142\110\061\042\060\040\006
\003\125\004\003\023\031\104\055\124\122\125\123\124\040\102\122
\040\122\157\157\164\040\103\101\040\061\040\062\060\062\060\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\306\313\307\050\321\373\204\365\232
\357\102\024\040\341\103\153\156\165\255\374\053\003\204\324\166
\223\045\327\131\073\101\145\153\036\346\064\052\273\164\366\022
\316\350\155\347\253\344\074\116\077\104\010\213\315\026\161\313
\277\222\231\364\244\327\074\120\124\122\220\205\203\170\224\147
\147\243\034\011\031\075\165\064\205\336\355\140\175\307\014\264
\101\122\271\156\345\356\102\243\202\001\015\060\202\001\011\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\163\221\020\253\377
\125\263\132\174\011\045\325\262\272\010\240\153\253\037\155\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\201\306\006\003\125\035\037\004\201\276\060\201\273\060\076\240
\074\240\072\206\070\150\164\164\160\072\057\057\143\162\154\056
\144\055\164\162\165\163\164\056\156\145\164\057\143\162\154\057
\144\055\164\162\165\163\164\137\142\162\137\162\157\157\164\137
\143\141\137\061\137\062\060\062\060\056\143\162\154\060\171\240
\167\240\165\206\163\154\144\141\160\072\057\057\144\151\162\145
\143\164\157\162\171\056\144\055\164\162\165\163\164\056\156\145
\164\057\103\116\075\104\055\124\122\125\123\124\045\062\060\102
\122\045\062\060\122\157\157\164\045\062\060\103\101\045\062\060
\061\045\062\060\062\060\062\060\054\117\075\104\055\124\162\165
\163\164\045\062\060\107\155\142\110\054\103\075\104\105\077\143
\145\162\164\151\146\151\143\141\164\145\162\145\166\157\143\141

\164\151\157\156\154\151\163\164\060\012\006\010\052\206\110\316
\075\004\003\003\003\151\000\060\146\002\061\000\224\220\055\023
\372\341\143\370\141\143\350\255\205\170\124\221\234\270\223\070
\076\032\101\332\100\026\123\102\010\312\057\216\361\076\201\126
\300\252\330\355\030\304\260\256\364\076\372\046\002\061\000\363
\050\342\306\333\053\231\373\267\121\270\044\243\244\224\172\032
\077\346\066\342\003\127\063\212\060\313\202\307\326\024\021\325
\165\143\133\024\225\234\037\001\317\330\325\162\247\017\073
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST BR Root CA 1 2020"
Issuer: CN=D-TRUST BR Root CA 1 2020,O=D-Trust GmbH,C=DE
Serial Number:7c:c9:8f:2b:84:d7:df:ea:0f:c9:65:9a:d3:4b:4d:96
Subject: CN=D-TRUST BR Root CA 1 2020,O=D-Trust GmbH,C=DE
Not Valid Before: Tue Feb 11 09:45:00 2020
Not Valid After : Sun Feb 11 09:44:59 2035
Fingerprint (SHA-256):
E5:9A:AA:81:60:09:C2:2B:FF:5B:25:BA:D3:7D:F3:06:F0:49:79:7C:1F:81:D8:5A:B0:89:E6:57:BD:8F:00:44
Fingerprint (SHA1): 1F:5B:98:F0:E3:B5:F7:74:3C:ED:E6:B0:36:7D:32:CD:F4:09:41:67
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST BR Root CA 1 2020"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\037\133\230\360\343\265\367\164\074\355\346\260\066\175\062\315
\364\011\101\147
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\265\252\113\325\355\367\343\125\056\217\162\012\363\165\270\355
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\102\122\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\174\311\217\053\204\327\337\352\017\311\145\232\323\113
\115\226
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST EV Root CA 1 2020"
#
Issuer: CN=D-TRUST EV Root CA 1 2020,O=D-Trust GmbH,C=DE
Serial Number:5f:02:41:d7:7a:87:7c:4c:03:a3:ac:96:8d:fb:ff:d0
Subject: CN=D-TRUST EV Root CA 1 2020,O=D-Trust GmbH,C=DE
Not Valid Before: Tue Feb 11 10:00:00 2020
Not Valid After : Sun Feb 11 09:59:59 2035
Fingerprint (SHA-256):
08:17:0D:1A:A3:64:53:90:1A:2F:95:92:45:E3:47:DB:0C:8D:37:AB:AA:BC:56:B8:1A:A1:00:DC:95:89:70:DB
Fingerprint (SHA1): 61:DB:8C:21:59:69:03:90:D8:7C:9C:12:86:54:CF:9D:3D:F4:DD:07
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST EV Root CA 1 2020"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\105\126\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\105\126\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\137\002\101\327\172\207\174\114\003\243\254\226\215\373
\377\320
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\333\060\202\002\140\240\003\002\001\002\002\020\137
\002\101\327\172\207\174\114\003\243\254\226\215\373\377\320\060
\012\006\010\052\206\110\316\075\004\003\003\060\110\061\013\060
\011\006\003\125\004\006\023\002\104\105\061\025\060\023\006\003
\125\004\012\023\014\104\055\124\162\165\163\164\040\107\155\142
\110\061\042\060\040\006\003\125\004\003\023\031\104\055\124\122
\125\123\124\040\105\126\040\122\157\157\164\040\103\101\040\061
\040\062\060\062\060\060\036\027\015\062\060\060\062\061\061\061
\060\060\060\060\060\132\027\015\063\065\060\062\061\061\060\071

\065\071\065\071\132\060\110\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\025\060\023\006\003\125\004\012\023\014\104
\055\124\162\165\163\164\040\107\155\142\110\061\042\060\040\006
\003\125\004\003\023\031\104\055\124\122\125\123\124\040\105\126
\040\122\157\157\164\040\103\101\040\061\040\062\060\062\060\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\361\013\335\206\103\040\031\337\227
\205\350\042\112\233\317\235\230\277\264\005\046\311\313\343\246
\322\217\305\236\170\173\061\211\251\211\255\047\074\145\020\202
\374\337\303\235\116\360\063\043\304\322\062\365\034\260\337\063
\027\135\305\360\261\212\371\357\271\267\024\312\051\112\302\017
\251\177\165\145\111\052\060\147\364\144\367\326\032\167\332\303
\302\227\141\102\173\111\255\243\202\001\015\060\202\001\011\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\177\020\001\026\067
\072\244\050\344\120\370\244\367\354\153\062\266\376\351\213\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\201\306\006\003\125\035\037\004\201\276\060\201\273\060\076\240
\074\240\072\206\070\150\164\164\160\072\057\057\143\162\154\056
\144\055\164\162\165\163\164\056\156\145\164\057\143\162\154\057
\144\055\164\162\165\163\164\137\145\166\137\162\157\157\164\137
\143\141\137\061\137\062\060\062\060\056\143\162\154\060\171\240
\167\240\165\206\163\154\144\141\160\072\057\057\144\151\162\145
\143\164\157\162\171\056\144\055\164\162\165\163\164\056\156\145
\164\057\103\116\075\104\055\124\122\125\123\124\045\062\060\105
\126\045\062\060\122\157\157\164\045\062\060\103\101\045\062\060
\061\045\062\060\062\060\062\060\054\117\075\104\055\124\162\165
\163\164\045\062\060\107\155\142\110\054\103\075\104\105\077\143
\145\162\164\151\146\151\143\141\164\145\162\145\166\157\143\141
\164\151\157\156\154\151\163\164\060\012\006\010\052\206\110\316
\075\004\003\003\003\151\000\060\146\002\061\000\312\074\306\052
\165\302\136\165\142\071\066\000\140\132\213\301\223\231\314\331
\333\101\073\073\207\231\027\073\325\314\117\312\042\367\240\200
\313\371\264\261\033\126\365\162\322\374\031\321\002\061\000\221
\367\060\223\077\020\106\053\161\244\320\073\104\233\300\051\002
\005\262\101\167\121\363\171\132\236\216\024\240\116\102\322\133
\201\363\064\152\003\347\042\070\120\133\355\031\117\103\026
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST EV Root CA 1 2020"
Issuer: CN=D-TRUST EV Root CA 1 2020,O=D-Trust GmbH,C=DE
Serial Number:5f:02:41:d7:7a:87:7c:4c:03:a3:ac:96:8d:fb:ff:d0
Subject: CN=D-TRUST EV Root CA 1 2020,O=D-Trust GmbH,C=DE
Not Valid Before: Tue Feb 11 10:00:00 2020
Not Valid After : Sun Feb 11 09:59:59 2035

Fingerprint (SHA-256):
08:17:0D:1A:A3:64:53:90:1A:2F:95:92:45:E3:47:DB:0C:8D:37:AB:AA:BC:56:B8:1A:A1:00:DC:95:89:70:DB
Fingerprint (SHA1): 61:DB:8C:21:59:69:03:90:D8:7C:9C:12:86:54:CF:9D:3D:F4:DD:07
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST EV Root CA 1 2020"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\141\333\214\041\131\151\003\220\330\174\234\022\206\124\317\235
\075\364\335\007
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\214\055\235\160\237\110\231\021\006\021\373\351\313\060\300\156
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\105\126\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\137\002\101\327\172\207\174\114\003\243\254\226\215\373
\377\320
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert TLS ECC P384 Root G5"
#
Issuer: CN=DigiCert TLS ECC P384 Root G5,O="DigiCert, Inc.",C=US
Serial Number:09:e0:93:65:ac:f7:d9:c8:b9:3e:1c:0b:04:2a:2e:f3
Subject: CN=DigiCert TLS ECC P384 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
01:8E:13:F0:77:25:32:CF:80:9B:D1:B1:72:81:86:72:83:FC:48:C6:E1:3B:E9:C6:98:12:85:4A:49:0C:1B:05
Fingerprint (SHA1): 17:F3:DE:5E:9F:0F:19:E9:8E:F6:1F:32:26:6E:20:C4:07:AE:30:EE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert TLS ECC P384 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509

CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\046\060\044\006\003\125\004
\003\023\035\104\151\147\151\103\145\162\164\040\124\114\123\040
\105\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\046\060\044\006\003\125\004
\003\023\035\104\151\147\151\103\145\162\164\040\124\114\123\040
\105\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\011\340\223\145\254\367\331\310\271\076\034\013\004\052
\056\363
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\031\060\202\001\237\240\003\002\001\002\002\020\011
\340\223\145\254\367\331\310\271\076\034\013\004\052\056\363\060
\012\006\010\052\206\110\316\075\004\003\003\060\116\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\104\151\147\151\103\145\162\164\054\040\111
\156\143\056\061\046\060\044\006\003\125\004\003\023\035\104\151
\147\151\103\145\162\164\040\124\114\123\040\105\103\103\040\120
\063\070\064\040\122\157\157\164\040\107\065\060\036\027\015\062
\061\060\061\061\065\060\060\060\060\060\060\132\027\015\064\066
\060\061\061\064\062\063\065\071\065\071\132\060\116\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\104\151\147\151\103\145\162\164\054\040\111
\156\143\056\061\046\060\044\006\003\125\004\003\023\035\104\151
\147\151\103\145\162\164\040\124\114\123\040\105\103\103\040\120
\063\070\064\040\122\157\157\164\040\107\065\060\166\060\020\006
\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003
\142\000\004\301\104\241\317\021\227\120\232\336\043\202\065\007
\315\320\313\030\235\322\361\177\167\065\117\073\335\224\162\122
\355\302\073\370\354\372\173\153\130\040\354\231\256\311\374\150
\263\165\271\333\011\354\310\023\365\116\306\012\035\146\060\114
\273\037\107\012\074\141\020\102\051\174\245\010\016\340\042\351
\323\065\150\316\233\143\237\204\265\231\115\130\240\216\365\124
\347\225\311\243\102\060\100\060\035\006\003\125\035\016\004\026
\004\024\301\121\105\120\131\253\076\347\054\132\372\040\042\022
\007\200\210\174\021\152\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\061\000\211\152\215\107\347

\354\374\156\125\003\331\147\154\046\116\203\306\375\311\373\053
\023\274\267\172\214\264\145\322\151\151\143\023\143\073\046\120
\056\001\241\171\006\221\235\110\277\302\276\002\060\107\303\025
\173\261\240\221\231\111\223\250\074\174\350\106\006\213\054\362
\061\000\224\235\142\310\211\275\031\204\024\351\245\373\001\270
\015\166\103\214\056\123\313\174\337\014\027\226\120
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert TLS ECC P384 Root G5"
Issuer: CN=DigiCert TLS ECC P384 Root G5,O="DigiCert, Inc.",C=US
Serial Number:09:e0:93:65:ac:f7:d9:c8:b9:3e:1c:0b:04:2a:2e:f3
Subject: CN=DigiCert TLS ECC P384 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
01:8E:13:F0:77:25:32:CF:80:9B:D1:B1:72:81:86:72:83:FC:48:C6:E1:3B:E9:C6:98:12:85:4A:49:0C:1B:05
Fingerprint (SHA1): 17:F3:DE:5E:9F:0F:19:E9:8E:F6:1F:32:26:6E:20:C4:07:AE:30:EE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert TLS ECC P384 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\027\363\336\136\237\017\031\351\216\366\037\062\046\156\040\304
\007\256\060\356
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\323\161\004\152\103\034\333\246\131\341\250\243\252\305\161\355
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\046\060\044\006\003\125\004
\003\023\035\104\151\147\151\103\145\162\164\040\124\114\123\040
\105\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\011\340\223\145\254\367\331\310\271\076\034\013\004\052
\056\363
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert TLS RSA4096 Root G5"
#
Issuer: CN=DigiCert TLS RSA4096 Root G5,O="DigiCert, Inc.",C=US
Serial Number:08:f9:b4:78:a8:fa:7e:da:6a:33:37:89:de:7c:cf:8a
Subject: CN=DigiCert TLS RSA4096 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
37:1A:00:DC:05:33:B3:72:1A:7E:EB:40:E8:41:9E:70:79:9D:2B:0A:0F:2C:1D:80:69:31:65:F7:CE:C4:AD:75
Fingerprint (SHA1): A7:88:49:DC:5D:7C:75:8C:8C:DE:39:98:56:B3:AA:D0:B2:A5:71:35
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert TLS RSA4096 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\045\060\043\006\003\125\004
\003\023\034\104\151\147\151\103\145\162\164\040\124\114\123\040
\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\045\060\043\006\003\125\004
\003\023\034\104\151\147\151\103\145\162\164\040\124\114\123\040
\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\010\371\264\170\250\372\176\332\152\063\067\211\336\174
\317\212
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\146\060\202\003\116\240\003\002\001\002\002\020\010
\371\264\170\250\372\176\332\152\063\067\211\336\174\317\212\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\115
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060
\025\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164
\054\040\111\156\143\056\061\045\060\043\006\003\125\004\003\023
\034\104\151\147\151\103\145\162\164\040\124\114\123\040\122\123
\101\064\060\071\066\040\122\157\157\164\040\107\065\060\036\027
\015\062\061\060\061\061\065\060\060\060\060\060\060\132\027\015
\064\066\060\061\061\064\062\063\065\071\065\071\132\060\115\061
\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060\025

\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164\054
\040\111\156\143\056\061\045\060\043\006\003\125\004\003\023\034
\104\151\147\151\103\145\162\164\040\124\114\123\040\122\123\101
\064\060\071\066\040\122\157\157\164\040\107\065\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\263\320\364
\311\171\021\235\375\374\146\201\347\314\325\344\274\354\201\076
\152\065\216\056\267\347\336\257\371\007\115\317\060\235\352\011
\013\231\275\154\127\332\030\112\270\170\254\072\071\250\246\110
\254\056\162\345\275\353\361\032\315\347\244\003\251\077\021\264
\330\057\211\026\373\224\001\075\273\057\370\023\005\241\170\034
\216\050\340\105\340\203\364\131\033\225\263\256\176\003\105\345
\276\302\102\376\356\362\074\266\205\023\230\062\235\026\250\051
\302\013\034\070\334\237\061\167\134\277\047\243\374\047\254\267
\053\275\164\233\027\055\362\201\332\135\260\341\043\027\076\210
\112\022\043\320\352\317\235\336\003\027\261\102\112\240\026\114
\244\155\223\351\077\072\356\072\174\235\130\235\364\116\217\374
\073\043\310\155\270\342\005\332\314\353\354\303\061\364\327\247
\051\124\200\317\104\133\114\157\060\236\363\314\335\037\224\103
\235\115\177\160\160\015\324\072\321\067\360\154\235\233\300\024
\223\130\357\315\101\070\165\274\023\003\225\174\177\343\134\351
\325\015\325\342\174\020\142\252\153\360\075\166\363\077\243\350
\260\301\375\357\252\127\115\254\206\247\030\264\051\301\054\016
\277\144\276\051\214\330\002\055\315\134\057\362\177\357\025\364
\014\025\254\012\260\361\323\015\117\152\115\167\227\001\240\361
\146\267\267\316\357\316\354\354\245\165\312\254\343\341\143\367
\270\241\004\310\274\173\077\135\055\026\042\126\355\110\111\376
\247\057\171\060\045\233\272\153\055\077\235\073\304\027\347\035
\056\373\362\317\246\374\343\024\054\226\230\041\214\264\221\351
\031\140\203\362\060\053\006\163\120\325\230\073\006\351\307\212
\014\140\214\050\370\122\233\156\341\366\115\273\006\044\233\327
\053\046\077\375\052\057\161\365\326\044\276\177\061\236\017\155
\350\217\117\115\243\077\377\065\352\337\111\136\101\217\206\371
\361\167\171\113\033\264\243\136\057\373\106\002\320\146\023\136
\136\205\117\316\330\160\210\173\316\001\265\226\227\327\315\175
\375\202\370\302\044\301\312\001\071\117\215\242\301\024\100\037
\234\146\325\014\011\106\326\362\320\321\110\166\126\072\103\313
\266\012\021\071\272\214\023\154\006\265\236\317\353\002\003\001
\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026\004
\024\121\063\034\355\066\100\257\027\323\045\315\151\150\362\257
\116\043\076\263\101\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\015\006\011\052\206\110\206\367\015
\001\001\014\005\000\003\202\002\001\000\140\246\257\133\137\127
\332\211\333\113\120\251\304\043\065\041\377\320\141\060\204\221
\267\077\020\317\045\216\311\277\106\064\331\301\041\046\034\160
\031\162\036\243\311\207\376\251\103\144\226\072\310\123\004\012
\266\101\273\304\107\000\331\237\030\030\073\262\016\363\064\352

\044\367\335\257\040\140\256\222\050\137\066\347\135\344\336\307
\074\333\120\071\255\273\075\050\115\226\174\166\306\133\364\301
\333\024\245\253\031\142\007\030\100\137\227\221\334\234\307\253
\265\121\015\346\151\123\125\314\071\175\332\305\021\125\162\305
\073\213\211\370\064\055\244\027\345\027\346\231\175\060\210\041
\067\315\060\027\075\270\362\274\250\165\240\103\334\076\211\113
\220\256\155\003\340\034\243\240\226\011\273\175\243\267\052\020
\104\113\106\007\064\143\355\061\271\004\356\243\233\232\256\346
\061\170\364\352\044\141\073\253\130\144\377\273\207\047\142\045
\201\337\334\241\057\366\355\247\377\172\217\121\056\060\370\244
\001\322\205\071\137\001\231\226\157\132\133\160\031\106\376\206
\140\076\255\200\020\011\335\071\045\057\130\177\273\322\164\360
\367\106\037\106\071\112\330\123\320\363\056\073\161\245\324\157
\374\363\147\344\007\217\335\046\031\341\215\133\372\243\223\021
\233\351\310\072\303\125\150\232\222\341\122\166\070\350\341\272
\275\373\117\325\357\263\347\110\203\061\360\202\041\343\266\276
\247\253\157\357\237\337\114\317\001\270\142\152\043\075\347\011
\115\200\033\173\060\244\303\335\007\177\064\276\244\046\262\366
\101\350\011\035\343\040\230\252\067\117\377\367\361\342\051\160
\061\107\077\164\320\024\026\372\041\212\002\325\212\011\224\167
\056\362\131\050\213\174\120\222\012\146\170\070\203\165\304\265
\132\250\021\306\345\301\235\146\125\317\123\304\257\327\165\205
\251\102\023\126\354\041\167\201\223\132\014\352\226\331\111\312
\241\010\362\227\073\155\233\004\030\044\104\216\174\001\362\334
\045\330\136\206\232\261\071\333\365\221\062\152\321\246\160\212
\242\367\336\244\105\205\046\250\036\214\135\051\133\310\113\330
\232\152\003\136\160\362\205\117\154\113\150\057\312\124\366\214
\332\062\376\303\153\203\077\070\306\176
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert TLS RSA4096 Root G5"
Issuer: CN=DigiCert TLS RSA4096 Root G5,O="DigiCert, Inc.",C=US
Serial Number:08:f9:b4:78:a8:fa:7e:da:6a:33:37:89:de:7c:cf:8a
Subject: CN=DigiCert TLS RSA4096 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
37:1A:00:DC:05:33:B3:72:1A:7E:EB:40:E8:41:9E:70:79:9D:2B:0A:0F:2C:1D:80:69:31:65:F7:CE:C4:AD:75
Fingerprint (SHA1): A7:88:49:DC:5D:7C:75:8C:8C:DE:39:98:56:B3:AA:D0:B2:A5:71:35
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert TLS RSA4096 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\247\210\111\334\135\174\165\214\214\336\071\230\126\263\252\320
\262\245\161\065
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\254\376\367\064\226\251\362\263\264\022\113\344\047\101\157\341
END
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\045\060\043\006\003\125\004
\003\023\034\104\151\147\151\103\145\162\164\040\124\114\123\040
\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\010\371\264\170\250\372\176\332\152\063\067\211\336\174
\317\212
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert SMIME ECC P384 Root G5"
#
Issuer: CN=DigiCert SMIME ECC P384 Root G5,O="DigiCert, Inc.",C=US
Serial Number:05:3f:6e:a0:06:01:72:7d:ed:3f:c3:a3:b6:a3:d6:ef
Subject: CN=DigiCert SMIME ECC P384 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
E8:E8:17:65:36:A6:0C:C2:C4:E1:01:87:C3:BE:FC:A2:0E:F2:63:49:70:18:F5:66:D5:BE:A0:F9:4D:0C:11:1B
Fingerprint (SHA1): 1C:B8:A7:08:C9:0D:20:79:01:A0:B2:36:7F:F0:95:65:E4:53:24:FE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert SMIME ECC P384 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\003\023\037\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\105\103\103\040\120\063\070\064\040\122\157\157\164\040
\107\065
END
CKA_ID UTF8 "0"

CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\003\023\037\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\105\103\103\040\120\063\070\064\040\122\157\157\164\040
\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\077\156\240\006\001\162\175\355\077\303\243\266\243
\326\357
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\034\060\202\001\243\240\003\002\001\002\002\020\005
\077\156\240\006\001\162\175\355\077\303\243\266\243\326\357\060
\012\006\010\052\206\110\316\075\004\003\003\060\120\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\104\151\147\151\103\145\162\164\054\040\111
\156\143\056\061\050\060\046\006\003\125\004\003\023\037\104\151
\147\151\103\145\162\164\040\123\115\111\115\105\040\105\103\103
\040\120\063\070\064\040\122\157\157\164\040\107\065\060\036\027
\015\062\061\060\061\061\065\060\060\060\060\060\060\132\027\015
\064\066\060\061\061\064\062\063\065\071\065\071\132\060\120\061
\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060\025
\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164\054
\040\111\156\143\056\061\050\060\046\006\003\125\004\003\023\037
\104\151\147\151\103\145\162\164\040\123\115\111\115\105\040\105
\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\026\235\125\345\266\324\373\373\147
\153\032\324\241\252\322\167\225\076\210\345\007\237\266\160\146
\040\050\244\210\354\160\065\257\263\062\377\067\023\112\236\274
\001\003\336\204\301\270\306\346\145\107\211\362\023\125\277\315
\245\036\010\140\177\255\177\350\141\222\051\317\011\107\136\013
\034\300\037\244\277\362\133\274\230\357\231\114\314\160\153\266
\272\320\050\035\277\276\004\243\102\060\100\060\035\006\003\125
\035\016\004\026\004\024\163\172\153\226\333\102\007\213\122\146
\302\144\062\027\376\340\147\220\056\255\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\012\006\010\052
\206\110\316\075\004\003\003\003\147\000\060\144\002\060\067\104
\365\062\200\343\161\353\364\155\317\174\314\221\232\303\156\161
\330\322\043\135\222\115\202\102\155\134\141\225\366\221\365\247
\010\366\152\227\351\234\224\055\230\160\375\063\266\011\002\060
\007\074\057\271\130\202\136\017\243\142\250\223\147\360\040\303
\151\277\003\054\073\120\247\073\257\101\070\311\122\110\221\326
\016\373\274\140\060\174\144\077\022\036\105\177\121\076\364\246
END

CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert SMIME ECC P384 Root G5"
Issuer: CN=DigiCert SMIME ECC P384 Root G5,O="DigiCert, Inc.",C=US
Serial Number:05:3f:6e:a0:06:01:72:7d:ed:3f:c3:a3:b6:a3:d6:ef
Subject: CN=DigiCert SMIME ECC P384 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
E8:E8:17:65:36:A6:0C:C2:C4:E1:01:87:C3:BE:FC:A2:0E:F2:63:49:70:18:F5:66:D5:BE:A0:F9:4D:0C:11:1B
Fingerprint (SHA1): 1C:B8:A7:08:C9:0D:20:79:01:A0:B2:36:7F:F0:95:65:E4:53:24:FE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert SMIME ECC P384 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\034\270\247\010\311\015\040\171\001\240\262\066\177\360\225\145
\344\123\044\376
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\246\376\364\122\066\104\330\356\015\267\003\013\357\164\263\003
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\003\023\037\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\105\103\103\040\120\063\070\064\040\122\157\157\164\040
\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\077\156\240\006\001\162\175\355\077\303\243\266\243
\326\357
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert SMIME RSA4096 Root G5"
#
Issuer: CN=DigiCert SMIME RSA4096 Root G5,O="DigiCert, Inc.",C=US
Serial Number:05:f6:ba:04:23:83:46:cb:7d:5c:e6:b9:5b:ba:1c:55
Subject: CN=DigiCert SMIME RSA4096 Root G5,O="DigiCert, Inc.",C=US

Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
90:37:0D:3E:FA:88:BF:58:C3:01:05:BA:25:10:4A:35:84:60:A7:FA:52:DF:C2:01:1D:F2:33:A0:F4:17:91:2A
Fingerprint (SHA1): 5B:C5:AD:E2:9A:A7:54:DA:84:89:53:A5:FE:D7:5B:46:86:D0:57:08
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert SMIME RSA4096 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\047\060\045\006\003\125\004
\003\023\036\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\122\123\101\064\060\071\066\040\122\157\157\164\040\107
\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\047\060\045\006\003\125\004
\003\023\036\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\122\123\101\064\060\071\066\040\122\157\157\164\040\107
\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\366\272\004\043\203\106\313\175\134\346\271\133\272
\034\125
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\152\060\202\003\122\240\003\002\001\002\002\020\005
\366\272\004\043\203\106\313\175\134\346\271\133\272\034\125\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\117
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060
\025\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164
\054\040\111\156\143\056\061\047\060\045\006\003\125\004\003\023
\036\104\151\147\151\103\145\162\164\040\123\115\111\115\105\040
\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065\060
\036\027\015\062\061\060\061\061\065\060\060\060\060\060\060\132
\027\015\064\066\060\061\061\064\062\063\065\071\065\071\132\060
\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027
\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145\162
\164\054\040\111\156\143\056\061\047\060\045\006\003\125\004\003
\023\036\104\151\147\151\103\145\162\164\040\123\115\111\115\105
\040\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065

\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\340\152\133\331\370\371\175\354\265\173\357\137\335\134\064
\330\332\135\321\313\145\165\253\041\174\133\000\324\202\157\105
\205\101\212\251\022\002\162\062\360\024\365\003\165\273\143\227
\111\017\100\231\013\032\036\126\247\322\320\341\253\335\345\004
\033\343\037\024\022\002\210\365\240\200\011\366\047\232\120\360
\272\343\242\340\254\152\024\221\265\153\070\020\172\242\061\341
\221\033\267\271\360\053\133\310\167\011\166\267\121\304\066\012
\231\123\124\104\045\267\011\065\206\027\005\126\223\075\101\267
\002\327\142\037\212\222\021\207\352\021\155\352\010\021\334\261
\170\110\111\222\366\264\121\200\170\043\330\376\341\126\032\072
\220\023\126\064\211\325\342\225\213\137\336\262\314\373\077\070
\267\205\367\352\236\277\056\241\056\057\115\175\152\021\056\066
\240\377\021\010\004\225\125\340\033\073\147\223\251\224\125\352
\062\355\006\072\177\302\177\343\255\023\047\321\064\101\263\060
\303\277\264\210\370\003\202\244\337\076\253\170\167\240\131\223
\161\347\335\353\000\004\173\314\110\071\050\340\036\243\025\151
\310\066\262\241\013\227\337\125\326\357\221\234\244\366\026\367
\121\012\356\003\043\221\334\004\377\340\335\070\366\042\003\000
\302\007\161\032\022\311\327\106\052\224\033\315\326\273\033\356
\277\276\115\120\130\260\013\315\060\166\051\365\317\345\266\152
\057\166\260\260\151\152\320\155\145\030\065\176\223\274\162\027
\301\125\102\315\057\302\045\273\364\375\035\241\144\042\124\135
\342\236\162\101\204\156\161\226\352\105\007\266\136\172\112\206
\235\163\144\167\070\003\322\017\123\245\125\040\304\115\377\150
\157\125\251\352\335\161\344\117\331\205\243\174\116\051\002\236
\013\011\362\032\123\314\000\246\335\321\064\366\015\301\060\261
\234\002\144\254\065\355\245\260\051\261\322\225\063\017\322\040
\063\275\354\043\113\362\031\371\332\230\144\344\054\061\037\056
\341\215\034\004\225\050\115\214\130\315\113\345\163\202\206\214
\354\250\326\171\134\373\144\273\334\014\114\050\366\027\257\342
\150\326\026\206\230\333\374\001\334\061\272\370\234\016\371\050
\106\112\341\375\226\006\105\171\021\150\027\145\134\213\046\207
\133\002\003\001\000\001\243\102\060\100\060\035\006\003\125\035
\016\004\026\004\024\321\243\324\127\035\117\125\333\165\114\134
\102\236\143\026\316\264\306\073\037\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\015\006\011\052\206
\110\206\367\015\001\001\014\005\000\003\202\002\001\000\007\247
\012\336\123\273\232\353\160\277\262\066\220\315\344\247\270\361
\014\344\135\132\035\170\145\374\311\270\036\043\021\127\174\151
\065\155\001\377\123\120\277\007\016\272\307\001\077\130\052\224
\165\003\253\034\013\043\334\033\212\036\067\075\035\130\217\163
\331\263\052\157\337\020\240\133\014\247\312\260\177\271\044\242
\001\065\062\345\136\106\101\353\330\177\163\347\102\351\244\121
\046\167\201\012\250\353\017\012\120\235\176\212\040\147\374\013
\216\072\021\323\305\214\140\030\331\113\261\374\324\361\264\111

\116\256\207\341\321\373\166\241\137\363\006\317\227\226\014\351
\236\165\201\134\123\015\042\374\066\346\111\156\164\333\000\205
\215\174\042\240\216\373\020\114\324\142\023\133\357\113\162\046
\213\374\116\212\217\376\227\020\123\305\170\213\102\144\033\137
\340\211\375\273\011\177\120\340\124\205\046\021\152\035\145\371
\111\051\334\174\066\337\373\075\367\322\254\356\062\215\156\246
\175\071\234\105\304\312\015\365\073\264\171\123\245\057\126\307
\121\305\212\114\144\135\220\103\043\216\153\114\027\170\314\350
\277\365\073\344\250\110\317\255\233\014\337\062\112\323\331\022
\216\043\170\015\055\257\237\257\236\074\011\302\227\000\355\072
\151\034\161\077\071\337\323\217\304\146\365\357\066\224\017\363
\335\222\266\226\137\220\246\335\163\252\246\040\224\224\045\152
\011\014\162\344\023\043\140\114\243\312\027\056\173\147\000\333
\320\315\352\172\037\071\046\127\211\060\167\313\116\345\225\105
\117\137\373\066\134\075\371\040\265\072\020\045\117\223\062\132
\356\301\226\350\351\126\004\260\111\141\115\354\170\250\235\030
\301\377\330\352\057\126\357\225\053\173\004\136\147\343\125\100
\355\071\004\371\013\171\365\152\214\134\017\211\232\220\307\315
\213\336\333\046\065\241\156\315\263\102\362\242\017\073\014\216
\223\377\024\317\374\367\223\367\344\101\010\156\031\122\021\017
\123\031\163\170\014\317\330\205\201\370\255\125\310\260\236\106
\143\257\234\122\356\134\277\360\300\133\067\036\011\040\322\076
\043\306\241\025\112\016\066\176\060\305\171\152\274\042\210\331
\014\122\100\037\335\116\017\147\046\026\322\255\027\034
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert SMIME RSA4096 Root G5"
Issuer: CN=DigiCert SMIME RSA4096 Root G5,O="DigiCert, Inc.",C=US
Serial Number:05:f6:ba:04:23:83:46:cb:7d:5c:e6:b9:5b:ba:1c:55
Subject: CN=DigiCert SMIME RSA4096 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
90:37:0D:3E:FA:88:BF:58:C3:01:05:BA:25:10:4A:35:84:60:A7:FA:52:DF:C2:01:1D:F2:33:A0:F4:17:91:2A
Fingerprint (SHA1): 5B:C5:AD:E2:9A:A7:54:DA:84:89:53:A5:FE:D7:5B:46:86:D0:57:08
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert SMIME RSA4096 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\133\305\255\342\232\247\124\332\204\211\123\245\376\327\133\106
\206\320\127\010
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL

\321\173\340\265\077\065\162\237\175\276\013\245\244\035\251\156
END
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\047\060\045\006\003\125\004
\003\023\036\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\122\123\101\064\060\071\066\040\122\157\157\164\040\107
\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\366\272\004\043\203\106\313\175\134\346\271\133\272
\034\125
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certainly Root R1"
#
Issuer: CN=Certainly Root R1,O=Certainly,C=US
Serial Number:00:8e:0f:f9:4b:90:71:68:65:33:54:f4:d4:44:39:b7:e0
Subject: CN=Certainly Root R1,O=Certainly,C=US
Not Valid Before: Thu Apr 01 00:00:00 2021
Not Valid After : Sun Apr 01 00:00:00 2046
Fingerprint (SHA-256):
77:B8:2C:D8:64:4C:43:05:F7:AC:C5:CB:15:6B:45:67:50:04:03:3D:51:C6:0C:62:02:A8:E0:C3:34:67:D3:A0
Fingerprint (SHA1): A0:50:EE:0F:28:71:F4:27:B2:12:6D:6F:50:96:25:BA:CC:86:42:AF
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certainly Root R1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\122\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\122\061

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\216\017\371\113\220\161\150\145\063\124\364\324\104
\071\267\340
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\107\060\202\003\057\240\003\002\001\002\002\021\000
\216\017\371\113\220\161\150\145\063\124\364\324\104\071\267\340
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022
\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151\156
\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145\162
\164\141\151\156\154\171\040\122\157\157\164\040\122\061\060\036
\027\015\062\061\060\064\060\061\060\060\060\060\060\060\132\027
\015\064\066\060\064\060\061\060\060\060\060\060\060\132\060\075
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022\060
\020\006\003\125\004\012\023\011\103\145\162\164\141\151\156\154
\171\061\032\060\030\006\003\125\004\003\023\021\103\145\162\164
\141\151\156\154\171\040\122\157\157\164\040\122\061\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\320\066
\324\037\352\335\253\344\321\266\346\373\042\300\335\023\015\152
\173\042\023\034\227\074\150\143\146\062\234\003\265\215\244\201
\203\332\170\060\021\317\334\262\053\276\222\277\216\344\304\023
\276\244\150\114\332\002\150\026\164\276\262\335\004\344\153\052
\335\067\037\140\054\333\365\367\241\174\225\267\014\160\206\056
\361\072\357\122\367\314\323\233\371\213\276\016\337\061\267\235
\150\134\222\246\365\345\363\012\064\265\377\173\242\344\207\241
\306\257\027\000\357\003\221\355\251\034\116\161\075\322\213\154
\211\364\170\206\346\152\111\240\316\265\322\260\253\233\366\364
\324\056\343\162\371\066\306\353\025\267\045\214\072\374\045\015
\263\042\163\041\164\310\112\226\141\222\365\057\013\030\245\364
\255\342\356\101\275\001\171\372\226\214\215\027\002\060\264\371
\257\170\032\214\264\066\020\020\007\005\160\320\364\061\220\212
\121\305\206\046\171\262\021\210\136\305\360\012\124\315\111\246
\277\002\234\322\104\247\355\343\170\357\106\136\155\161\321\171
\160\034\106\137\121\351\311\067\334\137\176\151\173\101\337\064
\105\340\073\204\364\241\212\012\066\236\067\314\142\122\341\211
\015\050\371\172\043\261\015\075\075\232\375\235\201\357\054\220
\300\173\104\116\273\111\340\016\112\126\222\274\313\265\335\171
\027\211\221\336\141\211\164\222\250\343\062\205\276\116\205\244
\113\131\313\053\305\170\216\161\124\320\002\067\231\214\345\111
\352\340\124\162\244\021\006\057\013\214\301\133\276\265\241\260
\123\156\234\270\140\221\037\131\153\371\055\364\224\012\227\265
\354\305\166\003\124\033\145\122\272\114\222\126\121\065\240\100
\330\051\333\256\122\166\073\055\060\100\233\212\320\102\126\264
\267\210\001\244\207\073\123\226\315\243\026\217\363\146\252\027
\261\307\140\340\301\103\005\014\356\233\133\140\157\006\134\207

\133\047\371\100\021\236\234\063\301\267\345\065\127\005\177\047
\316\027\040\214\034\374\361\373\332\061\051\111\355\365\013\204
\247\117\301\366\116\302\050\234\372\356\340\257\007\373\063\021
\172\041\117\013\041\020\266\100\072\253\042\072\004\234\213\233
\204\206\162\232\322\247\245\304\264\165\221\251\053\043\002\003
\001\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
\026\004\024\340\252\077\045\215\237\104\134\301\072\350\056\256
\167\114\204\076\147\014\364\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\002\001\000\271\127\257\270\022
\332\127\203\217\150\013\063\035\003\123\125\364\225\160\344\053
\075\260\071\353\372\211\142\375\367\326\030\004\057\041\064\335
\361\150\360\325\226\132\336\302\200\243\301\215\306\152\367\131
\167\256\025\144\317\133\171\005\167\146\352\214\323\153\015\335
\361\131\054\301\063\245\060\200\025\105\007\105\032\061\042\266
\222\000\253\231\115\072\217\167\257\251\042\312\057\143\312\025
\326\307\306\360\075\154\374\034\015\230\020\141\236\021\242\042
\327\012\362\221\172\153\071\016\057\060\303\066\111\237\340\351
\017\002\104\120\067\224\125\175\352\237\366\073\272\224\245\114
\351\274\076\121\264\350\312\222\066\124\155\134\045\050\332\335
\255\024\375\323\356\342\042\005\353\320\362\267\150\022\327\132
\212\101\032\306\222\245\132\073\143\105\117\277\341\072\167\042
\057\134\277\106\371\132\003\205\023\102\137\312\336\123\327\142
\265\246\065\004\302\107\377\231\375\204\337\134\316\351\136\200
\050\101\362\175\347\036\220\330\117\166\076\202\074\015\374\245
\003\372\173\032\331\105\036\140\332\304\216\371\374\053\311\173
\225\305\052\377\252\211\337\202\061\017\162\377\014\047\327\012
\036\126\000\120\036\014\220\301\226\265\330\024\205\273\247\015
\026\301\370\007\044\033\272\205\241\032\005\011\200\272\225\143
\311\072\354\045\237\177\235\272\244\107\025\233\104\160\361\152
\113\326\070\136\103\363\030\176\120\156\351\132\050\346\145\346
\167\033\072\375\035\276\003\046\243\333\324\341\273\176\226\047
\053\035\356\244\373\332\045\124\023\003\336\071\306\303\037\115
\220\354\217\033\112\322\034\355\205\225\070\120\171\106\326\301
\220\120\061\251\134\232\156\035\365\063\126\213\247\231\322\362
\310\054\063\223\222\060\307\116\214\145\063\020\144\027\375\044
\027\226\321\215\302\072\152\053\353\023\213\104\362\041\363\112
\032\267\167\137\327\355\210\244\162\345\071\037\225\235\276\147
\301\160\021\075\273\364\370\111\267\343\046\227\072\237\322\137
\174\373\300\231\174\071\051\340\173\035\277\015\247\217\322\051
\064\156\044\025\313\336\220\136\277\032\304\146\352\302\346\272
\071\137\212\231\251\101\131\007\260\054\257
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certainly Root R1"
Issuer: CN=Certainly Root R1,O=Certainly,C=US
Serial Number:00:8e:0f:f9:4b:90:71:68:65:33:54:f4:d4:44:39:b7:e0
Subject: CN=Certainly Root R1,O=Certainly,C=US
Not Valid Before: Thu Apr 01 00:00:00 2021
Not Valid After : Sun Apr 01 00:00:00 2046
Fingerprint (SHA-256):
77:B8:2C:D8:64:4C:43:05:F7:AC:C5:CB:15:6B:45:67:50:04:03:3D:51:C6:0C:62:02:A8:E0:C3:34:67:D3:A0
Fingerprint (SHA1): A0:50:EE:0F:28:71:F4:27:B2:12:6D:6F:50:96:25:BA:CC:86:42:AF
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certainly Root R1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\240\120\356\017\050\161\364\047\262\022\155\157\120\226\045\272
\314\206\102\257
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\007\160\324\076\202\207\240\372\063\066\023\364\372\063\347\022
END
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\122\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\216\017\371\113\220\161\150\145\063\124\364\324\104
\071\267\340
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certainly Root E1"
#
Issuer: CN=Certainly Root E1,O=Certainly,C=US
Serial Number:06:25:33:b1:47:03:33:27:5c:f9:8d:9a:b9:bf:cc:f8
Subject: CN=Certainly Root E1,O=Certainly,C=US
Not Valid Before: Thu Apr 01 00:00:00 2021
Not Valid After : Sun Apr 01 00:00:00 2046
Fingerprint (SHA-256):
B4:58:5F:22:E4:AC:75:6A:4E:86:12:A1:36:1C:5D:9D:03:1A:93:FD:84:FE:BB:77:8F:A3:06:8B:0F:C4:2D:C2
Fingerprint (SHA1): F9:E1:6D:DC:01:89:CF:D5:82:45:63:3E:C5:37:7D:C2:EB:93:6F:2B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certainly Root E1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\105\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\105\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\006\045\063\261\107\003\063\047\134\371\215\232\271\277
\314\370
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\367\060\202\001\175\240\003\002\001\002\002\020\006
\045\063\261\107\003\063\047\134\371\215\232\271\277\314\370\060
\012\006\010\052\206\110\316\075\004\003\003\060\075\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\022\060\020\006\003
\125\004\012\023\011\103\145\162\164\141\151\156\154\171\061\032
\060\030\006\003\125\004\003\023\021\103\145\162\164\141\151\156
\154\171\040\122\157\157\164\040\105\061\060\036\027\015\062\061
\060\064\060\061\060\060\060\060\060\060\132\027\015\064\066\060
\064\060\061\060\060\060\060\060\060\132\060\075\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\022\060\020\006\003\125
\004\012\023\011\103\145\162\164\141\151\156\154\171\061\032\060
\030\006\003\125\004\003\023\021\103\145\162\164\141\151\156\154
\171\040\122\157\157\164\040\105\061\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\336\157\370\177\034\337\355\371\107\207\206\261\244\300\212
\370\202\227\200\352\217\310\112\136\052\175\210\150\247\001\142
\024\221\044\172\134\236\243\027\175\212\206\041\064\030\120\033
\020\336\320\067\113\046\307\031\140\200\351\064\275\140\031\066
\100\326\051\207\011\074\221\172\366\274\023\043\335\131\116\004
\136\317\310\002\034\030\123\301\061\330\332\040\351\104\215\344
\166\243\102\060\100\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\363\050\030\313\144\165\356\051\052\353\355\256\043\130\070
\205\353\310\042\007\060\012\006\010\052\206\110\316\075\004\003

\003\003\150\000\060\145\002\061\000\261\216\132\040\303\262\031
\142\115\336\260\117\337\156\322\160\212\361\237\176\152\214\346
\272\336\203\151\312\151\263\251\005\265\226\222\027\207\302\322
\352\320\173\316\330\101\133\174\256\002\060\106\336\352\313\135
\232\354\062\302\145\026\260\114\060\134\060\363\332\116\163\206
\006\330\316\211\004\110\067\067\370\335\063\121\235\160\257\173
\125\330\001\056\175\005\144\016\206\270\221
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certainly Root E1"
Issuer: CN=Certainly Root E1,O=Certainly,C=US
Serial Number:06:25:33:b1:47:03:33:27:5c:f9:8d:9a:b9:bf:cc:f8
Subject: CN=Certainly Root E1,O=Certainly,C=US
Not Valid Before: Thu Apr 01 00:00:00 2021
Not Valid After : Sun Apr 01 00:00:00 2046
Fingerprint (SHA-256):
B4:58:5F:22:E4:AC:75:6A:4E:86:12:A1:36:1C:5D:9D:03:1A:93:FD:84:FE:BB:77:8F:A3:06:8B:0F:C4:2D:C2
Fingerprint (SHA1): F9:E1:6D:DC:01:89:CF:D5:82:45:63:3E:C5:37:7D:C2:EB:93:6F:2B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certainly Root E1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\371\341\155\334\001\211\317\325\202\105\143\076\305\067\175\302
\353\223\157\053
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\012\236\312\315\076\122\120\306\066\363\113\243\355\247\123\351
END
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\105\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\006\045\063\261\107\003\063\047\134\371\215\232\271\277
\314\370
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "E-Tugra Global Root CA RSA v3"
#
Issuer: CN=E-Tugra Global Root CA RSA v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Serial Number:0d:4d:c5:cd:16:22:95:96:08:7e:b8:0b:7f:15:06:34:fb:79:10:34
Subject: CN=E-Tugra Global Root CA RSA v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Not Valid Before: Wed Mar 18 09:07:17 2020
Not Valid After : Sun Mar 12 09:07:17 2045
Fingerprint (SHA-256): EF:66:B0:B1:0A:3C:DB:9F:2E:36:48:C7:6B:D2:AF:18:EA:D2:BF:E6:F1:17:65:5E:28:C4:06:0D:A1:A3:F4:C2
Fingerprint (SHA1): E9:A8:5D:22:14:52:1C:5B:AA:0A:B4:BE:24:6A:23:8A:C9:BA:E2:A9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Global Root CA RSA v3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\122\123\101
\040\166\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\122\123\101
\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\015\115\305\315\026\042\225\226\010\176\270\013\177\025
\006\064\373\171\020\064
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\363\060\202\003\333\240\003\002\001\002\002\024\015
\115\305\315\026\042\225\226\010\176\270\013\177\025\006\064\373

\171\020\064\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\201\200\061\013\060\011\006\003\125\004\006\023\002
\124\122\061\017\060\015\006\003\125\004\007\023\006\101\156\153
\141\162\141\061\031\060\027\006\003\125\004\012\023\020\105\055
\124\165\147\162\141\040\105\102\107\040\101\056\123\056\061\035
\060\033\006\003\125\004\013\023\024\105\055\124\165\147\162\141
\040\124\162\165\163\164\040\103\145\156\164\145\162\061\046\060
\044\006\003\125\004\003\023\035\105\055\124\165\147\162\141\040
\107\154\157\142\141\154\040\122\157\157\164\040\103\101\040\122
\123\101\040\166\063\060\036\027\015\062\060\060\063\061\070\060
\071\060\067\061\067\132\027\015\064\065\060\063\061\062\060\071
\060\067\061\067\132\060\201\200\061\013\060\011\006\003\125\004
\006\023\002\124\122\061\017\060\015\006\003\125\004\007\023\006
\101\156\153\141\162\141\061\031\060\027\006\003\125\004\012\023
\020\105\055\124\165\147\162\141\040\105\102\107\040\101\056\123
\056\061\035\060\033\006\003\125\004\013\023\024\105\055\124\165
\147\162\141\040\124\162\165\163\164\040\103\145\156\164\145\162
\061\046\060\044\006\003\125\004\003\023\035\105\055\124\165\147
\162\141\040\107\154\157\142\141\154\040\122\157\157\164\040\103
\101\040\122\123\101\040\166\063\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\242\146\360\211\267\162\173
\356\011\311\143\322\323\103\335\136\303\246\204\070\112\361\215
\201\273\024\275\107\350\100\027\363\075\303\170\105\162\246\056
\220\336\232\072\324\040\161\312\274\237\035\113\227\012\307\061
\272\076\327\376\045\251\052\216\066\364\321\057\307\267\251\135
\063\334\060\160\370\100\154\113\262\246\061\141\321\064\074\075
\061\172\307\257\304\247\247\204\341\227\244\350\113\366\027\174
\356\074\007\355\342\212\127\334\266\373\370\103\045\120\352\047
\201\250\206\274\217\122\112\226\072\140\032\226\273\375\163\364
\205\375\203\375\177\204\155\064\154\177\152\267\113\001\003\277
\255\151\267\327\062\331\365\127\152\351\206\202\076\245\146\061
\263\026\075\302\363\046\140\062\323\122\036\260\154\244\067\076
\364\365\257\353\341\337\200\006\317\052\101\347\146\011\341\113
\227\347\167\275\041\155\051\266\147\303\055\176\355\326\171\145
\321\317\072\266\321\261\136\126\141\120\172\132\316\116\120\061
\200\003\230\107\347\344\030\174\104\132\306\244\263\073\306\306
\303\072\360\154\303\213\310\244\221\005\363\365\331\266\252\006
\241\267\253\344\261\352\041\024\134\203\244\374\377\266\120\323
\214\022\046\231\166\160\351\300\017\246\164\374\273\320\033\170
\316\162\222\342\050\234\274\346\351\011\330\072\323\211\346\276
\056\167\337\001\012\157\226\366\345\215\074\115\122\166\032\126
\341\163\176\027\254\075\255\154\243\122\022\030\160\346\200\116
\063\362\176\046\062\254\005\215\070\244\346\166\074\237\020\151
\016\155\235\322\301\171\040\153\133\317\063\215\321\224\166\065
\347\135\125\307\267\254\050\253\106\314\347\073\041\265\012\012
\344\112\131\334\201\065\113\104\225\022\012\147\245\241\377\133
\000\007\322\300\314\371\077\374\237\063\362\000\370\214\154\207

\235\006\055\361\357\343\346\006\372\305\146\023\133\374\120\007
\236\161\206\262\332\157\164\060\317\223\123\350\334\042\326\336
\040\037\141\215\243\056\243\170\062\220\154\334\254\062\265\005
\344\365\074\063\015\326\340\207\167\027\114\235\260\330\011\250
\015\127\367\104\205\360\310\004\276\134\135\132\343\027\216\124
\143\151\177\111\164\144\005\214\243\002\003\001\000\001\243\143
\060\141\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\037\006\003\125\035\043\004\030\060\026\200\024
\262\264\256\346\055\367\046\325\252\165\055\166\113\300\033\123
\041\320\110\357\060\035\006\003\125\035\016\004\026\004\024\262
\264\256\346\055\367\046\325\252\165\055\166\113\300\033\123\041
\320\110\357\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\211\250\162\177\214\353\316\056\030
\304\020\200\055\020\014\377\373\024\315\004\340\024\074\116\232
\373\237\051\277\042\236\127\271\202\163\022\143\046\265\314\220
\351\322\052\051\356\234\055\314\054\231\276\105\047\344\261\161
\355\344\070\225\061\101\362\175\172\143\170\337\312\066\026\057
\202\210\237\274\021\107\117\166\115\310\055\216\353\337\055\174
\116\073\332\256\366\343\332\135\024\246\256\350\205\104\235\006
\156\216\373\357\172\112\152\055\053\050\030\376\277\220\054\165
\026\237\017\352\226\175\005\356\233\023\245\104\154\370\003\320
\335\043\341\375\003\022\022\010\364\030\064\263\340\067\013\167
\021\001\110\277\141\264\265\370\031\331\313\115\352\243\214\357
\375\360\006\265\155\222\364\112\141\120\204\355\354\111\323\344
\276\150\346\056\343\061\013\124\013\032\222\326\202\330\266\242
\145\074\146\004\371\125\332\154\373\333\265\024\146\115\224\203
\073\315\036\246\053\262\376\167\100\206\253\347\337\012\311\375
\366\335\207\126\030\330\260\054\125\140\226\372\010\176\122\220
\365\113\246\056\207\174\313\040\333\006\076\240\135\003\167\175
\242\074\023\033\051\242\023\125\240\075\024\042\257\157\270\320
\232\033\162\335\005\001\215\206\140\277\244\147\356\265\245\015
\321\177\346\032\053\142\146\303\007\272\347\240\110\034\070\303
\351\105\373\247\177\374\355\002\150\032\312\167\022\167\246\000
\125\050\024\354\326\307\022\242\033\145\102\351\221\350\313\076
\207\211\124\135\331\257\235\227\234\151\347\012\377\017\132\170
\213\143\052\114\175\107\224\077\336\113\351\123\320\060\361\305
\366\236\111\337\073\240\221\243\243\376\315\130\314\352\337\257
\157\050\073\240\151\233\217\354\254\256\053\124\235\233\004\261
\107\040\257\226\022\076\143\224\035\004\347\056\273\206\307\014
\232\210\277\166\107\357\367\260\013\227\146\322\104\317\140\122
\007\341\325\054\112\072\047\141\167\312\327\217\347\207\016\060
\377\014\273\004\342\141\303\242\310\227\141\216\264\060\152\074
\155\302\007\137\112\163\057\077\371\026\212\001\146\357\272\221
\312\122\127\173\256\324\346\017\335\013\172\177\213\236\046\040
\317\073\357\201\161\203\131
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE

CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "E-Tugra Global Root CA RSA v3"
Issuer: CN=E-Tugra Global Root CA RSA v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Serial Number:0d:4d:c5:cd:16:22:95:96:08:7e:b8:0b:7f:15:06:34:fb:79:10:34
Subject: CN=E-Tugra Global Root CA RSA v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Not Valid Before: Wed Mar 18 09:07:17 2020
Not Valid After : Sun Mar 12 09:07:17 2045
Fingerprint (SHA-256):
EF:66:B0:B1:0A:3C:DB:9F:2E:36:48:C7:6B:D2:AF:18:EA:D2:BF:E6:F1:17:65:5E:28:C4:06:0D:A1:A3:F4:C2
Fingerprint (SHA1): E9:A8:5D:22:14:52:1C:5B:AA:0A:B4:BE:24:6A:23:8A:C9:BA:E2:A9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Global Root CA RSA v3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\351\250\135\042\024\122\034\133\252\012\264\276\044\152\043\212
\311\272\342\251
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\042\276\020\366\302\370\003\210\163\137\063\051\107\050\107\244
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\122\123\101
\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\015\115\305\315\026\042\225\226\010\176\270\013\177\025
\006\064\373\171\020\064
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "E-Tugra Global Root CA ECC v3"
#

Issuer: CN=E-Tugra Global Root CA ECC v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Serial Number:26:46:19:77:31:e1:4f:6f:28:36:de:39:51:86:e6:d4:97:88:22:c1
Subject: CN=E-Tugra Global Root CA ECC v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Not Valid Before: Wed Mar 18 09:46:58 2020
Not Valid After : Sun Mar 12 09:46:58 2045
Fingerprint (SHA-256): 87:3F:46:85:FA:7F:56:36:25:25:2E:6D:36:BC:D7:F1:6F:C2:49:51:F2:64:E4:7E:1B:95:4F:49:08:CD:CA:13
Fingerprint (SHA1): 8A:2F:AF:57:53:B1:B0:E6:A1:04:EC:5B:6A:69:71:6D:F6:1C:E2:84
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Global Root CA ECC v3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\105\103\103
\040\166\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\105\103\103
\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\046\106\031\167\061\341\117\157\050\066\336\071\121\206
\346\324\227\210\042\301
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\245\060\202\002\052\240\003\002\001\002\002\024\046
\106\031\167\061\341\117\157\050\066\336\071\121\206\346\324\227
\210\042\301\060\012\006\010\052\206\110\316\075\004\003\003\060
\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122\061
\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162\141

\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165\147
\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033\006
\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124\162
\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006\003
\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154\157
\142\141\154\040\122\157\157\164\040\103\101\040\105\103\103\040
\166\063\060\036\027\015\062\060\060\063\061\070\060\071\064\066
\065\070\132\027\015\064\065\060\063\061\062\060\071\064\066\065
\070\132\060\201\200\061\013\060\011\006\003\125\004\006\023\002
\124\122\061\017\060\015\006\003\125\004\007\023\006\101\156\153
\141\162\141\061\031\060\027\006\003\125\004\012\023\020\105\055
\124\165\147\162\141\040\105\102\107\040\101\056\123\056\061\035
\060\033\006\003\125\004\013\023\024\105\055\124\165\147\162\141
\040\124\162\165\163\164\040\103\145\156\164\145\162\061\046\060
\044\006\003\125\004\003\023\035\105\055\124\165\147\162\141\040
\107\154\157\142\141\154\040\122\157\157\164\040\103\101\040\105
\103\103\040\166\063\060\166\060\020\006\007\052\206\110\316\075
\002\001\006\005\053\201\004\000\042\003\142\000\004\216\230\051
\277\307\020\036\047\333\253\003\314\050\054\330\136\110\031\020
\051\314\313\131\201\314\214\270\222\027\211\203\052\222\366\303
\244\035\114\142\325\237\326\240\106\334\034\274\166\301\343\107
\320\133\023\332\347\245\263\146\110\347\041\232\112\117\206\012
\175\154\352\115\062\200\012\262\172\011\233\151\113\230\201\342
\056\354\002\160\226\037\375\365\106\316\312\334\202\243\143\060
\141\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\037\006\003\125\035\043\004\030\060\026\200\024\377
\202\061\162\076\371\304\146\154\255\070\236\321\260\121\210\245
\220\314\365\060\035\006\003\125\035\016\004\026\004\024\377\202
\061\162\076\371\304\146\154\255\070\236\321\260\121\210\245\220
\314\365\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\012\006\010\052\206\110\316\075\004\003\003\003\151
\000\060\146\002\061\000\346\005\130\151\141\345\055\312\015\313
\361\031\010\275\326\375\121\222\032\176\143\124\004\220\221\232
\065\221\071\231\372\007\251\146\223\272\310\150\324\212\077\372
\355\156\026\002\047\267\002\061\000\335\132\027\053\166\035\145
\102\226\246\254\135\212\171\126\330\212\033\337\232\336\137\307
\120\217\261\133\161\014\046\337\152\100\000\354\063\221\041\161
\276\150\344\043\244\331\255\241\067
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "E-Tugra Global Root CA ECC v3"
Issuer: CN=E-Tugra Global Root CA ECC v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Serial Number:26:46:19:77:31:e1:4f:6f:28:36:de:39:51:86:e6:d4:97:88:22:c1
Subject: CN=E-Tugra Global Root CA ECC v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR

Not Valid Before: Wed Mar 18 09:46:58 2020
Not Valid After : Sun Mar 12 09:46:58 2045
Fingerprint (SHA-256):
87:3F:46:85:FA:7F:56:36:25:25:2E:6D:36:BC:D7:F1:6F:C2:49:51:F2:64:E4:7E:1B:95:4F:49:08:CD:CA:13
Fingerprint (SHA1): 8A:2F:AF:57:53:B1:B0:E6:A1:04:EC:5B:6A:69:71:6D:F6:1C:E2:84
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Global Root CA ECC v3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\212\057\257\127\123\261\260\346\241\004\354\133\152\151\161\155
\366\034\342\204
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\106\274\201\273\361\265\036\367\113\226\274\024\342\347\047\144
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\105\103\103
\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\046\106\031\167\061\341\117\157\050\066\336\071\121\206
\346\324\227\210\042\301
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Found in path(s):
* /opt/cola/permits/1376728696_1659511778.8175886/0/ca-certificates-20220614-tar-bz2/ca-certificates-20220614/certdata.txt
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/* c_rehash.c - Create hash symlinks for certificates
* C implementation based on the original Perl and shell versions
*
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*/

Found in path(s):
* /opt/cola/permits/1376728696_1659511778.8175886/0/ca-certificates-20220614-tar-bz2/ca-certificates-20220614/c_rehash.c
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* /opt/cola/permits/1376728696_1659511778.8175886/0/ca-certificates-20220614-tar-bz2/ca-certificates-20220614/mk-ca-bundle.pl

1.364 prometheus-client 1.11.1

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1.365 alpine-baselayout-data 3.2.0-r22

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* Create mount directories in fstab
*
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*
* usage: mkmntdirs [fstab]
*
*/

Found in path(s):
* /opt/cola/permits/1344023347_1657891184.8459775/0/alpine-baselayout-3-2-0-r22-tar-gz/mkmntdirs.c
* /opt/cola/permits/1344023347_1657891184.8459775/0/alpine-baselayout-3-2-0-r22-tar-gz/alpine-baselayout-tar-gz/mkmntdirs.c

1.366 common-ancestor-path 1.0.1

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1.367 supports-color 7.2.0

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1.368 netty-transport-classes-epoll 4.1.78.Final

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*/
/**
   * Set the {@code TCP_MD5SIG} option on the socket. See {@code linux/tcp.h} for more details.

* Keys can only be set on, not read to prevent a potential leak, as they are confidential.
* Allowing them being read would mean anyone with access to the channel could get them.
*/
/**
* Set the {@code TCP_QUICKACK} option on the socket.
* See TCP_QUICKACK
* for more details.
*/

Found in path(s):
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollSocketChannelConfig.java
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* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/LinuxSocket.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/NativeStaticallyReferencedJniMethods.java
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* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollDomainDatagramChannel.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollDomainDatagramChannelConfig.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/SegmentedDatagramPacket.java

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/**
   * Set the {@code TCP_MD5SIG} option on the socket. See {@code linux/tcp.h} for more details.
   * Keys can only be set on, not read to prevent a potential leak, as they are confidential.
   * Allowing them being read would mean anyone with access to the channel could get them.
   */
```

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* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollServerSocketChannelConfig.java

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* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/META-INF/maven/io.netty/netty-transport-classes-epoll/pom.xml
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* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/AbstractEpollStreamChannel.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollEventArray.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollDomainSocketChannel.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/AbstractEpollServerChannel.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollChannelConfig.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollMode.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollRecvByteAllocatorHandle.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/TcpMd5Util.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollDomainSocketChannelConfig.java
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* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollRecvByteAllocatorStreamingHandle.java

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* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollSocketChannel.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollEventLoop.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/AbstractEpollChannel.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/Epoll.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollDatagramChannel.java
* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollTcpInfo.java
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* /opt/cola/permits/1424749357_1663931821.2561636/0/netty-transport-classes-epoll-4-1-78-final-sources-1-jar/io/netty/channel/epoll/EpollServerSocketChannel.java

1.369 speakeasy 0.1.0

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1.370 npm-user-validate 1.0.1

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1.371 s3transfer 0.3.7

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1.372 read-package-json-fast 2.0.3

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1.373 mcookie 2.38-r1

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Version 2.1, February 1999

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./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

!"#$%&'()*+,-
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

!"#$%&'()*+,-

./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

!"#$%&'()*+,-
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~WEV @@
WEV[B "1
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1.376 vertx-mail-client 4.3.2

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1.378 punycode 2.1.1

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1.379 form3tech-oss-jwt-go 3.2.3+incompatible

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1.380 curl 7.83.1-r4

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1.381 kerberos 1.19.3-r0

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cmd/krb5/kadmin/server/ipropd_svc.c
cmd/krb5/kproplog/kproplog.c
cmd/krb5/slave/kpropd_rpc.c
lib/gss_mechs/mech_krb5/et/kdb5_err.c
lib/gss_mechs/mech_spnego/mech/gssapiP_spnego.h
lib/gss_mechs/mech_spnego/mech/spnego_mech.c
lib/krb5/kadm5/kadm_host_srv_names.c
lib/krb5/kdb/kdb_convert.c
lib/krb5/kdb/kdb_hdr.h
lib/krb5/kdb/kdb_log.c
lib/krb5/kdb/kdb_log.h
lib/libgss/g_accept_sec_context.c
lib/libgss/g_acquire_cred.c
lib/libgss/g_canon_name.c
lib/libgss/g_compare_name.c
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lib/libgss/g_userok.c
lib/libgss/g_utils.c
lib/libgss/g_verify.c
lib/libgss/gssd_pname_to_uid.c
uts/common/gssapi/include/gssapi_err_generic.h
uts/common/gssapi/include/mechglueP.h

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lib/gssapi/generic/gssapi_err_generic.et
lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c

lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

and the initial implementation of incremental propagation, including the following new or changed files:

include/iprop_hdr.h
kadmin/server/ipropd_svc.c
lib/kdb/iprop.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
kprop/kpropd_rpc.c
kprop/kproplog.c

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lib/libgss/g_process_context.c
lib/libgss/g_rel_buffer.c
lib/libgss/g_rel_cred.c
lib/libgss/g_rel_name.c
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lib/libgss/g_utils.c
lib/libgss/g_verify.c
lib/libgss/gssd_pname_to_uid.c
uts/common/gssapi/include/gssapi_err_generic.h
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lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
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lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

and the initial implementation of incremental propagation, including the following new or changed files:

include/iprop_hdr.h
kadmin/server/ipropd_svc.c
lib/kdb/iprop.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
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1.390 antlr-runtime 4.10.1

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Manifest-Version: 1.0
Created-By: Apache Maven Bundle Plugin
Build-Jdk-Spec: 11
Implementation-Title: ANTLR 4 Runtime
Implementation-Version: 4.10.1
Implementation-Vendor: ANTLR
Automatic-Module-Name: org.antlr.antlr4.runtime
Bnd-LastModified: 1650059202027
Build-Jdk: 11.0.13
Built-By: parrt
Bundle-Description: The ANTLR 4 Runtime
Bundle-DocURL: http://www.antlr.org
Bundle-License: http://www.antlr.org/license.html
Bundle-ManifestVersion: 2
Bundle-Name: ANTLR 4 Runtime
Bundle-SymbolicName: org.antlr.antlr4-runtime
Bundle-Vendor: ANTLR
Bundle-Version: 4.10.1
Export-Package: org.antlr.v4.runtime;uses:="org.antlr.v4.runtime.atn,org
.antlr.v4.runtime.dfa,org.antlr.v4.runtime.misc,org.antlr.v4.runtime.tr
ee,org.antlr.v4.runtime.tree.pattern";version="4.10.1",org.antlr.v4.run
time.misc;uses:="org.antlr.v4.runtime";version="4.10.1",org.antlr.v4.ru
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on="4.10.1",org.antlr.v4.runtime.tree.xpath;uses:="org.antlr.v4.runtime
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rg.antlr.v4.runtime.tree.pattern;uses:="org.antlr.v4.runtime,org.antlr.
v4.runtime.misc,org.antlr.v4.runtime.tree";version="4.10.1",org.antlr.v
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Implementation-URL: http://www.antlr.org/runtime/antlr4-runtime
Implementation-Vendor-Id: org.antlr
Import-Package: org.antlr.v4.gui,org.antlr.v4.runtime,org.antlr.v4.runti
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e.xpath
Require-Capability: osgi.ee;filter:="(&(osgi.ee=JavaSE)(version=1.8))"

Tool: Bnd-5.1.1.202006162103

Found in path(s):
* /opt/cola/permits/1449238805_1666539776.0912645/0/antlr4-runtime-4-10-1-1-jar/META-INF/MANIFEST.MF
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* /opt/cola/permits/1449238805_1666539776.0912645/0/antlr4-runtime-4-10-1-1-jar/META-INF/maven/org.antlr/antlr4-runtime/pom.xml

1.391 open-ldap 2.6.3-r0

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Version 3.1, 31 March 2009

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Version 3.1, 31 March 2009

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Date: Wed, Jul 22, 2020 at 8:54 PM
Subject: Re: Add BiasedUrn to SciPy?
To: Matt Haberland <mhaberla@calpoly.edu>
Cc: Warren Weckesser <warren.weckesser@gmail.com>

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and I'm working on improving the capabilities of our statistics subpackage
scipy.stats. We'd like to add both Fisher's and Wallenius' noncentral
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We found your BiasedUrn package, and we'd love to wrap it, but we can't
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Thank you for considering it!
Matt
--
Matt Haberland
Assistant Professor
BioResource and Agricultural Engineering
08A-3K, Cal Poly

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NotoColorEmoji.ttf, from https://github.com/googlefonts/noto-emoji
AdobeVFPrototype.ttf, from https://github.com/adobe-fonts/adobe-variable-font-prototype
TINY5x3GX.ttf, from http://velvetyne.fr/fonts/tiny
ArefRuqaa-Regular.ttf, from https://github.com/google/fonts/tree/master/ofl/arefruqaa
ter-x20b.pcf, from http://terminus-font.sourceforge.net/
BungeeColor-Regular_colr_Windows.ttf, from https://github.com/djrrb/bungee
OpenSans.woff2, from https://fonts.googleapis.com/css?family=Open+Sans

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GIMP Palette
Name: custompalette
Columns: 4
#
 0   0   0   Index 3
65 38 30   Index 4
103 62 49   Index 6
79 73 72   Index 7

114 101 97 Index 8
208 127 100 Index 9
151 144 142 Index 10
221 207 199 Index 11
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Name: badpalettefile
Columns: 4
#
 0   0   0   Index 3
0123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
34567890123456789
103 62 49   Index 6
79 73 72   Index 7
114 101 97   Index 8
208 127 100   Index 9
151 144 142   Index 10
221 207 199   Index 11
GIMP Palette
Name: Test
Columns: 0
#
GIMP Palette
Name: badpaletteentry
Columns: 4
#
 0   0   0   Index 3
65 38
103 62 49   Index 6
79 73 72   Index 7
114 101 97   Index 8
208 127 100   Index 9
151 144 142   Index 10
221 207 199   Index 11

1.398 less 590-r0

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1.399 libnpmteam 4.0.3

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analysis/common/src/resources/org/apache/lucene/analysis/bg/stopwords.txt,
analysis/common/src/resources/org/apache/lucene/analysis/hi/stopwords.txt,
analysis/common/src/resources/org/apache/lucene/analysis/bn/stopwords.txt
See http://members.unine.ch/jacques.savoy/clef/index.html.

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analysis/common/src/java/org/apache/lucene/analysis/de/GermanLightStemmer.java
analysis/common/src/java/org/apache/lucene/analysis/de/GermanMinimalStemmer.java
analysis/common/src/java/org/apache/lucene/analysis/es/SpanishLightStemmer.java
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analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchMinimalStemmer.java
analysis/common/src/java/org/apache/lucene/analysis/hu/HungarianLightStemmer.java
analysis/common/src/java/org/apache/lucene/analysis/it/ItalianLightStemmer.java
analysis/common/src/java/org/apache/lucene/analysis/pt/PortugueseLightStemmer.java
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===
Nori Korean Morphological Analyzer - Apache Lucene Integration
===

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1.403 fecha 4.2.3

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1.404 pb 1.0.28

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1.405 libc-utils 0.7.2-r3

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1.406 validate-npm-package-license 3.0.4

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validate-npm-package-license
============================

Give me a string and I'll tell you if it's a valid npm package license string.

```javascript
var valid = require('validate-npm-package-license');
```

SPDX license identifiers are valid license strings:

```javascript
```

```
var assert = require('assert');
var validSPDXExpression = {
 validForNewPackages: true,
 validForOldPackages: true,
 spdx: true
};

assert.deepEqual(valid('MIT'), validSPDXExpression);
assert.deepEqual(valid('BSD-2-Clause'), validSPDXExpression);
assert.deepEqual(valid('Apache-2.0'), validSPDXExpression);
assert.deepEqual(valid('ISC'), validSPDXExpression);
```
The function will return a warning and suggestion for nearly-correct license identifiers:

```javascript
assert.deepEqual(
 valid('Apache 2.0'),
 {
   validForOldPackages: false,
   validForNewPackages: false,
   warnings: [
     'license should be ' +
     'a valid SPDX license expression (without "LicenseRef"), ' +
     '"UNLICENSED", or ' +
     '"SEE LICENSE IN <filename>"',
     'license is similar to the valid expression "Apache-2.0"'
   ]
 }
);
```

SPDX expressions are valid, too ...

```javascript
// Simple SPDX license expression for dual licensing
assert.deepEqual(
 valid('(GPL-3.0-only OR BSD-2-Clause)'),
 validSPDXExpression
);
```

... except if they contain `LicenseRef`:

```javascript
var warningAboutLicenseRef = {
 validForOldPackages: false,
 validForNewPackages: false,
```

 spdx: true,
 warnings: [
   'license should be ' +
   'a valid SPDX license expression (without "LicenseRef"), ' +
   '"UNLICENSED", or ' +
   '"SEE LICENSE IN <filename>"',
 ]
};

assert.deepEqual(
 valid('LicenseRef-Made-Up'),
 warningAboutLicenseRef
);

assert.deepEqual(
 valid('(MIT OR LicenseRef-Made-Up)'),
 warningAboutLicenseRef
);
```

If you can't describe your licensing terms with standardized SPDX identifiers, put the terms in a file in the package and point users there:

```javascript
assert.deepEqual(
 valid('SEE LICENSE IN LICENSE.txt'),
 {
   validForNewPackages: true,
   validForOldPackages: true,
   inFile: 'LICENSE.txt'
 }
);

assert.deepEqual(
 valid('SEE LICENSE IN license.md'),
 {
   validForNewPackages: true,
   validForOldPackages: true,
   inFile: 'license.md'
 }
);
```

If there aren't any licensing terms, use `UNLICENSED`:

```javascript
var unlicensed = {
 validForNewPackages: true,
```
```

```
 validForOldPackages: true,
 unlicensed: true
};
assert.deepEqual(valid('UNLICENSED'), unlicensed);
assert.deepEqual(valid('UNLICENCED'), unlicensed);
```

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1.407 proc-log 2.0.1

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1.408 github.com/timescale/timescaledb-parallel-copy 0.4.0

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1.409 strict-event-emitter-types 2.0.0

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1.410 libedit 20210910.3.1-r0

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1.411 diff 5.0.0

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1.412 cryptography 3.4.8

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1.413 jackc-pgtype 1.11.0

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1.414 dom-walk 0.1.2

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* markupsafe._speedups
* ~~~~~~~~~~~~~~~~~~~~
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* /opt/cola/permits/1160876786_1620411589.43/0/sailfishos-mirror-markupsafe-1-1-1-0-g22c946d-1-tar-gz/sailfishos-mirror-markupsafe-22c946d/src/markupsafe/_speedups.c

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1.416 expat 2.5.0-r0

1.416.1 Available under license :

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1.417 lsblk 2.38-r1

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* /opt/cola/permits/1449238907_1666539770.4757168/0/postgis-geometry-2021-1-0-sources-jar/net/postgis/jdbc/geometry/GeometryTokenizer.java
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/*
* GeometryCollection.java
*
* PostGIS extension for PostgreSQL JDBC driver - geometry model
*
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*
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* PostGIS extension for PostgreSQL JDBC driver - geometry model
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* /opt/cola/permits/1449238907_1666539770.4757168/0/postgis-geometry-2021-1-0-sources-jar/net/postgis/jdbc/geometry/util/VersionFunctions.java
* /opt/cola/permits/1449238907_1666539770.4757168/0/postgis-geometry-2021-1-0-sources-jar/net/postgis/jdbc/geometry/util/VersionUtil.java
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* /opt/cola/permits/1449238907_1666539770.4757168/0/postgis-geometry-2021-1-0-sources-jar/net/postgis/jdbc/geometry/binary/ByteGetter.java
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/*
* LineString.java

*
* PostGIS extension for PostgreSQL JDBC driver - geometry model
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* /opt/cola/permits/1449238907_1666539770.4757168/0/postgis-geometry-2021-1-0-sources-jar/net/postgis/jdbc/geometry/LineString.java

1.429 xtend 4.0.2

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1.430 jbcrypt 0.4.3

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* /opt/cola/permits/1193924658_1666815529.2625084/0/jbcrypt-0-4-3-sources-jar/org/mindrot/jbcrypt/BCrypt.java

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```xml
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
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 <groupId>de.svenkubiak</groupId>
 <artifactId>jBCrypt</artifactId>
 <version>0.4.3</version>
 <packaging>bundle</packaging>
 <name>jBCrypt</name>
 <url>http://www.mindrot.org/projects/jBCrypt</url>
 <properties>
  <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
 </properties>
 <licenses>
  <license>
   <name>ISC/BSD licence</name>
   <url>http://www.mindrot.org/files/jBCrypt/LICENSE</url>
  </license>
 </licenses>
 <developers>
  <developer>
   <name>Damien Miller</name>
   <email>djm@mindrot.org</email>
  </developer>
 </developers>
 <scm>
  <connection>scm:git:git@github.com:svenkubiak/jBCrypt.git</connection>
  <developerConnection>scm:git:git@github.com:svenkubiak/jBCrypt.git</developerConnection>
  <url>git@github.com:svenkubiak/jBCrypt.git</url>
  <tag>0.4.3</tag>
 </scm>
 <description>A Java implementation of OpenBSD's Blowfish password hashing code
http://www.mindrot.org/projects/jBCrypt</description>
 <build>
  <plugins>
   <plugin>
    <groupId>org.apache.maven.plugins</groupId>
    <artifactId>maven-compiler-plugin</artifactId>
    <version>3.8.1</version>
    <configuration>
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     <target>1.8</target>
     <debug>false</debug>
     <optimize>true</optimize>
    </configuration>
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   <plugin>
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</plugin>
<plugin>
 <groupId>org.apache.maven.plugins</groupId>
 <artifactId>maven-source-plugin</artifactId>
 <version>3.0.1</version>
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   <id>attach-sources</id>
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    <goal>jar-no-fork</goal>
   </goals>
  </execution>
 </executions>
</plugin>
<plugin>
 <groupId>org.apache.maven.plugins</groupId>
 <artifactId>maven-javadoc-plugin</artifactId>
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  <execution>
   <id>attach-javadocs</id>
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    <goal>jar</goal>
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  </execution>
 </executions>
</plugin>
<plugin>
 <groupId>org.codehaus.mojo</groupId>
 <artifactId>sonar-maven-plugin</artifactId>
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</plugin>
<plugin>
 <groupId>org.apache.maven.plugins</groupId>
 <artifactId>maven-deploy-plugin</artifactId>
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</plugin>
<plugin>
 <groupId>org.apache.maven.plugins</groupId>
 <artifactId>maven-clean-plugin</artifactId>
 <version>3.1.0</version>
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<plugin>
 <groupId>org.apache.maven.plugins</groupId>
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<plugin>
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 <artifactId>maven-surefire-plugin</artifactId>
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 <groupId>org.apache.maven.plugins</groupId>
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<plugin>
 <groupId>org.apache.maven.plugins</groupId>
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<plugin>
 <groupId>org.apache.maven.plugins</groupId>
 <artifactId>maven-resources-plugin</artifactId>
 <version>3.1.0</version>
</plugin>
<plugin>
 <groupId>org.apache.maven.plugins</groupId>
 <artifactId>maven-release-plugin</artifactId>
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  <autoVersionSubmodules>true</autoVersionSubmodules>
  <goals>deploy</goals>
 </configuration>
</plugin>
<plugin>
 <groupId>org.codehaus.mojo</groupId>
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 <version>2.7</version>
</plugin>
<plugin>
 <groupId>org.apache.maven.plugins</groupId>
 <artifactId>maven-enforcer-plugin</artifactId>
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 <executions>
  <execution>
   <id>enforce-maven</id>
   <goals>
    <goal>enforce</goal>
   </goals>
   <configuration>
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       <requireMavenVersion>
        <version>3.5.0</version>
       </requireMavenVersion>
      </rules>
     </configuration>
    </execution>
   </executions>
  </plugin>
 </plugins>
</build>
<dependencies>
 <dependency>
  <groupId>junit</groupId>
  <artifactId>junit</artifactId>
  <version>4.13.1</version>
  <scope>test</scope>
 </dependency>
</dependencies>
<distributionManagement>
 <snapshotRepository>
  <id>ossrh</id>
  <url>https://oss.sonatype.org/content/repositories/snapshots</url>
 </snapshotRepository>
 <repository>
  <id>ossrh</id>
  <url>https://oss.sonatype.org/service/local/staging/deploy/maven2/</url>
 </repository>
</distributionManagement>
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  <id>release-sign-artifacts</id>
  <activation>
   <property>
    <name>performRelease</name>
    <value>true</value>
   </property>
  </activation>
  <build>
   <plugins>
    <plugin>
     <groupId>org.apache.maven.plugins</groupId>
     <artifactId>maven-gpg-plugin</artifactId>
     <version>1.6</version>
     <executions>
      <execution>
       <id>sign-artifacts</id>
       <phase>verify</phase>
```

<goals>
<goal>sign</goal>
</goals>
</execution>
</executions>
</plugin>
</plugins>
</build>
</profile>
</profiles>
</project>

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* /opt/cola/permits/1193924658_1666815529.2625084/0/jbcrypt-0-4-3-sources-jar/META-INF/maven/de.svenkubiak/jBCrypt/pom.xml

1.431 npm-packlist 5.1.1

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* Ported from Webkit
* http://svn.webkit.org/repository/webkit/trunk/Source/WebCore/platform/graphics/UnitBezier.h
*/

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* /opt/cola/permits/1073112331_1612411859.96/0/mapbox-unitbezier-0-0-0-tgz/package/index.js

1.433 har-validator 5.1.5

1.433.1 Available under license :

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1.434 setpriv 2.38-r1

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43mI,5WEV @@ WEV @mImImIAmImImI0mImImI*mImI
A0mImImI...
lost+found...

;9GimCN7g

!"#$%&'()*+,-
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

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WEV[B "1

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1.435 write-file-atomic 4.0.1

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1.436 npmcli-promise-spawn 3.0.0

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1.437 @npmcli/fs 2.1.0

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1.438 icu 71.1-r2

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title: Legalities

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```
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## Commands to generate dependency files
GEN_DEPS.c= $(CC) -E -MM $(DEFS) $(CPPFLAGS)
GEN_DEPS.cc= $(CXX) -E -MM $(DEFS) $(CPPFLAGS)

## Flags for position independent code
SHAREDLIBCFLAGS = -fPIC
SHAREDLIBCXXFLAGS = -fPIC
SHAREDLIBCPPFLAGS = -DPIC

## Additional flags when building libraries and with threads
THREADSCPPFLAGS = -D_REENTRANT
LIBCPPFLAGS =

## Compiler switch to embed a runtime search path
LD_RPATH=
LD_RPATH_PRE= -Wl,-rpath,

## Compiler switch to embed a library name
LD_SONAME = -Wl,-soname -Wl,$(notdir $(MIDDLE_SO_TARGET))

## Shared library options
LD_SOOPTIONS= -Wl,-Bsymbolic

## Shared object suffix
SO = so
## Non-shared intermediate object suffix
STATIC_O = ao

## Compilation rules
%.$(STATIC_O): $(srcdir)/%.c
 $(COMPILE.c) $(STATICCPPFLAGS) $(STATICCFLAGS) -o $@ $<
%.o: $(srcdir)/%.c
 $(COMPILE.c) $(DYNAMICCPPFLAGS) $(DYNAMICCFLAGS) -o $@ $<

%.$(STATIC_O): $(srcdir)/%.cpp
 $(COMPILE.cc) $(STATICCPPFLAGS) $(STATICCXXFLAGS) -o $@ $<
%.o: $(srcdir)/%.cpp
```

```
 $(COMPILE.cc) $(DYNAMICCPPFLAGS) $(DYNAMICCXXFLAGS) -o $@ $<


## Dependency rules
%.d: $(srcdir)/%.c
 @echo "generating dependency information for $<"
 @$(SHELL) -ec '$(GEN_DEPS.c) $< \
  | sed '\''s/\($*\)\.o[ :]*/\1.o $@ : /g'\'' > $@; \
  [ -s $@ ] || rm -f $@'

%.d: $(srcdir)/%.cpp
 @echo "generating dependency information for $<"
 @$(SHELL) -ec '$(GEN_DEPS.cc) $< \
  | sed '\''s/\($*\)\.o[ :]*/\1.o $@ : /g'\'' > $@; \
  [ -s $@ ] || rm -f $@'

## Versioned libraries rules

%.$(SO).$(SO_TARGET_VERSION_MAJOR): %.$(SO).$(SO_TARGET_VERSION)
 $(RM) $@ && ln -s ${<F} $@
%.$(SO): %.$(SO).$(SO_TARGET_VERSION_MAJOR)
 $(RM) $@ && ln -s ${*F}.$(SO).$(SO_TARGET_VERSION) $@

##  Bind internal references

# LDflags that pkgdata will use
BIR_LDFLAGS= -Wl,-Bsymbolic

# Dependencies [i.e. map files] for the final library
BIR_DEPS=

## Remove shared library 's'
STATIC_PREFIX_WHEN_USED =
STATIC_PREFIX =

## End BSD-specific setup
```

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#
This file is derived from the above dictionary version of Nov 22, 2020
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File: aclocal.m4 (only for ICU4C)
Section: pkg.m4 - Macros to locate and utilise pkg-config.

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-- vile: txtmode file-encoding=utf-8

1.440 fill-range 7.0.1

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1.441 v8 9.4.146.26

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Written by: Philip Hazel
Email local part: ph10
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A. HISTORY OF THE SOFTWARE
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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see https://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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1.445 busybox 1.35.0-r17

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1.448 htop 3.2.0-r1

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1.452 gmp 6.2.1-r2

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<one line to give the program's name and a brief idea of what it does.>
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Gnomovision version 69, Copyright (C) year name of author
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This is free software, and you are welcome to redistribute it
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<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

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The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

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Version 3, 29 June 2007

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Version 3, 29 June 2007

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Main Mesa code    src/mesa/             MIT
Device drivers    src/mesa/drivers/*    MIT, generally

Gallium code      src/gallium/          MIT

Ext headers       GL/glext.h            Khronos
                  GL/glxext.h           Khronos
                  GL/wglext.h           Khronos
                  KHR/khrplatform.h     Khronos
```

****

----
include/GL/gl.h :

Mesa 3-D graphics library

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****

----
include/GL/glext.h
include/GL/glxext.h
include/GL/wglxext.h :

****

----
include/KHR/khrplatform.h :

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<pre>

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Bert Belder: wepoll v 1.5.8

wepoll License
```
wepoll - epoll for Windows
https://github.com/piscisaureus/wepoll

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```

1.457 x-time-rate 0.0.0-20210220033141-f8bda1e9f3ba

1.457.1 Available under license :

1.458 pyyaml 5.4.1

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1.459 python-babel 2.11.0

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1.460 bzip2 1.0.8-r1

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Julian Seward, jseward@acm.org
bzip2/libbzip2 version 1.0.8 of 13 July 2019

1.461 murmurhash-js 1.0.0

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MurmurHash.js

An optimized JavaScript implementation of the MurmurHash algorithms.

These algorithms take a JavaScript string (and a seed), and quickly create a non-cryptographic 32-bit hash from it.
And by quick I mean sub-millisecond performance.

More information about these algorithms can be found at:

* [MurmurHash Homepage](http://sites.google.com/site/murmurhash/)
* [Wikipedia Entry on MurmurHash](http://en.wikipedia.org/wiki/MurmurHash)

Install

    npm install murmurhash-js

API

```javascript
var murmur = require("murmurhash-js")
```

Methods

`murmur.murmur2(key, seed)`
Runs the murmur2 hash algorithm on the string `key` with initial seed `seed`.

`murmur.murmur3(key, seed)`
Runs the murmur3 hash algorithm on the string `key` with initial seed `seed`.

Note `require("murmur-hash")` is the same as `murmur.murmur3`

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* /opt/cola/permits/1112206883_1607050903.98/0/murmurhash-js-1-0-0-1-tgz/package/README.md

1.462 futures 3.3.0

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1.463 blas 3.10.1-r0

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1.464 jackson-annotations 2.14.0

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1.471 textwrap3 0.9.2

1.471.1 Available under license :

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Metadata-Version: 1.1
Name: textwrap3
Version: 0.9.2
Summary: textwrap from Python 3.6 backport (plus a few tweaks)
Home-page: https://github.com/jonathaneunice/textwrap3

Author: Jonathan Eunice
Author-email: jonathan.eunice@gmail.com
License: Python Software Foundation License
Description:

```
| |travisci| |version| |versions| |impls| |wheel| |coverage|

.. |travisci| image:: https://api.travis-ci.org/jonathaneunice/textwrap3.svg
    :target: http://travis-ci.org/jonathaneunice/textwrap3

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``textwrap3`` is a compatibility back-port of Python 3.6's ``textwrap``
module that supports Python 2.6 forward. (Though honestly, if you're not
already using *at least* 2.7, you're way behind the times!)

This makes a few new
APIs such as ``shorten`` and the ``max_lines`` parameter available
in a compatible way to all Python versions typically in current use.

Import and use it like you would ``textwrap`` from the standard library::

    from textwrap3 import wrap

    text = 'long text here...'
    print(wrap(text, 40))

The standard `textwrap documentation <https://docs.python.org/3.6/library/textwrap.html>`_
is the best reference material.
```

Bias and Tweaks
===============

By design, Python 3 sensibilities and expectations rule. Especially when processing text that includes Unicode characters, ``textwrap3``'s results may differ a bit from those of the ``textwrap`` of the underlying Python version (esp. 2.x). In particular, ``textwrap3`` uses the ``re.UNICODE`` flag so that non-ASCII characters such as accented letters are considered legitimate word characters.

It also adds one tweak, considering the Unicode em-dash (``'\N{EM DASH}'`` or ``u'\u2014'``) identical to the simulated ASCII em-dash ``'--'``.

Notes
=====

* See ``CHANGES.yml`` for the Change Log.

* This module is almost entirely the work of Gregory P. Ward (``textwrap``'s original author) plus enhancements from the Python community. This separate packaging is just a delivery and compatibility vehicle. It contributes cross-Python version compatibility shims, a few additional tests, and better handling of real em-dashes. The vast majority of functionality still comes from the standard ``textwrap`` code base, as of the Python 3.6 release.

Installation
============

To install or upgrade to the latest version::

```
pip install -U textwrap3
```

You may need to prefix these with ``sudo`` to authorize installation. In environments without super-user privileges, you may want to use ``pip``'s ``--user`` option, to install only for a single user, rather than system-wide. Depending on your system configuration, you may also need to use separate ``pip2`` and ``pip3`` programs to install for Python 2 and 3 respectively.

Keywords: text wrap fill textwrap
Platform: UNKNOWN
Classifier: Development Status :: 4 - Beta
Classifier: Operating System :: OS Independent
Classifier: License :: OSI Approved :: Python Software Foundation License
Classifier: Intended Audience :: Developers

Classifier: Programming Language :: Python
Classifier: Programming Language :: Python :: 2
Classifier: Programming Language :: Python :: 2.6
Classifier: Programming Language :: Python :: 2.7
Classifier: Programming Language :: Python :: 3
Classifier: Programming Language :: Python :: 3.3
Classifier: Programming Language :: Python :: 3.4
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Classifier: Topic :: Text Processing
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Found in path(s):
* /opt/cola/permits/1193924620_1629395698.03/0/textwrap3-0-9-2-zip/textwrap3-0.9.2/textwrap3.egg-info/PKG-INFO
* /opt/cola/permits/1193924620_1629395698.03/0/textwrap3-0-9-2-zip/textwrap3-0.9.2/PKG-INFO

1.472 unique-filename 1.1.1

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1.473 libpng 1.6.37

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Version 2, June 1991

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1.475 bash 5.1.16-r2

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1.477 tiff 4.4.0-r0

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1.478 env-paths 2.2.1

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1.481 click 8.1.3

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=============
click-contrib
=============

As the userbase of Click grows, more and more major feature requests pop up in
Click's bugtracker. As reasonable as it may be for those features to be bundled
with Click instead of being a standalone project, many of those requested
features are either highly experimental or have unproven practical use, while
potentially being a burden to maintain.

This is why click-contrib_ exists. The GitHub organization is a collection of
possibly experimental third-party packages whose featureset does not belong
into Click, but also a playground for major features that may be added to Click
in the future. It is also meant to coordinate and concentrate effort on writing
third-party extensions for Click, and to ease the effort of searching for such
extensions. In that sense it could be described as a low-maintenance
alternative to extension repositories of other frameworks.

Please note that the quality and stability of those packages may be different
than what you expect from Click itself. While published under a common
organization, they are still projects separate from Click.

.. _click-contrib: https://github.com/click-contrib/

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Metadata-Version: 2.1
Name: click

Version: 8.1.3
Summary: Composable command line interface toolkit
Home-page: https://palletsprojects.com/p/click/
Author: Armin Ronacher
Author-email: armin.ronacher@active-4.com
Maintainer: Pallets
Maintainer-email: contact@palletsprojects.com
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Platform: UNKNOWN
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Classifier: Intended Audience :: Developers
Classifier: License :: OSI Approved :: BSD License
Classifier: Operating System :: OS Independent
Classifier: Programming Language :: Python
Requires-Python: >=3.7
Description-Content-Type: text/x-rst
License-File: LICENSE.rst

\$ click_
==========

Click is a Python package for creating beautiful command line interfaces in a composable way with as little code as necessary. It's the "Command Line Interface Creation Kit". It's highly configurable but comes with sensible defaults out of the box.

It aims to make the process of writing command line tools quick and fun while also preventing any frustration caused by the inability to implement an intended CLI API.

Click in three points:

- Arbitrary nesting of commands
- Automatic help page generation
- Supports lazy loading of subcommands at runtime

Installing

Install and update using `pip`_:

```
.. code-block:: text

   $ pip install -U click

.. _pip: https://pip.pypa.io/en/stable/getting-started/


A Simple Example
----------------

.. code-block:: python

   import click

   @click.command()
   @click.option("--count", default=1, help="Number of greetings.")
   @click.option("--name", prompt="Your name", help="The person to greet.")
   def hello(count, name):
       """Simple program that greets NAME for a total of COUNT times."""
       for _ in range(count):
           click.echo(f"Hello, {name}!")

   if __name__ == '__main__':
       hello()

.. code-block:: text

   $ python hello.py --count=3
   Your name: Click
   Hello, Click!
   Hello, Click!
   Hello, Click!


Donate
------

The Pallets organization develops and supports Click and other popular
packages. In order to grow the community of contributors and users, and
allow the maintainers to devote more time to the projects, `please
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Links
-----
```

- Documentation: https://click.palletsprojects.com/
- Changes: https://click.palletsprojects.com/changes/
- PyPI Releases: https://pypi.org/project/click/
- Source Code: https://github.com/pallets/click
- Issue Tracker: https://github.com/pallets/click/issues
- Website: https://palletsprojects.com/p/click
- Twitter: https://twitter.com/PalletsTeam
- Chat: https://discord.gg/pallets

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```
[metadata]
name = click
version = attr: click.__version__
url = https://palletsprojects.com/p/click/
project_urls =
 Donate = https://palletsprojects.com/donate
 Documentation = https://click.palletsprojects.com/
 Changes = https://click.palletsprojects.com/changes/
 Source Code = https://github.com/pallets/click/
 Issue Tracker = https://github.com/pallets/click/issues/
 Twitter = https://twitter.com/PalletsTeam
 Chat = https://discord.gg/pallets
license = BSD-3-Clause
license_files = LICENSE.rst
author = Armin Ronacher
author_email = armin.ronacher@active-4.com
maintainer = Pallets
maintainer_email = contact@palletsprojects.com
description = Composable command line interface toolkit
long_description = file: README.rst
long_description_content_type = text/x-rst
classifiers =
 Development Status :: 5 - Production/Stable
 Intended Audience :: Developers
 License :: OSI Approved :: BSD License
 Operating System :: OS Independent
 Programming Language :: Python

[options]
packages = find:
package_dir = = src
include_package_data = True
python_requires = >= 3.7
```

```
[options.packages.find]
where = src

[tool:pytest]
testpaths = tests
filterwarnings =
 error

[coverage:run]
branch = True
source =
 click
 tests

[coverage:paths]
source =
 src
 */site-packages

[flake8]
select = B, E, F, W, B9, ISC
ignore =
 E203
 E501
 E722
 W503
max-line-length = 80
per-file-ignores =
 src/click/__init__.py: F401

[mypy]
files = src/click
python_version = 3.7
show_error_codes = True
disallow_subclassing_any = True
disallow_untyped_calls = True
disallow_untyped_defs = True
disallow_incomplete_defs = True
check_untyped_defs = True
no_implicit_optional = True
local_partial_types = True
no_implicit_reexport = True
strict_equality = True
warn_redundant_casts = True
warn_unused_configs = True
warn_unused_ignores = True
warn_return_any = True
```

warn_unreachable = True

[mypy-colorama.*]
ignore_missing_imports = True

[mypy-importlib_metadata.*]
ignore_missing_imports = True

[egg_info]
tag_build =
tag_date = 0

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1.482 verror 1.10.0

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1.483 path-to-regexp 0.1.7

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1.484 has-unicode 2.0.1

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1.485 kerberos 1.19.3-r2

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cmd/krb5/slave/kpropd_rpc.c
lib/gss_mechs/mech_krb5/et/kdb5_err.c
lib/gss_mechs/mech_spnego/mech/gssapiP_spnego.h
lib/gss_mechs/mech_spnego/mech/spnego_mech.c
lib/krb5/kadm5/kadm_host_srv_names.c
lib/krb5/kdb/kdb_convert.c
lib/krb5/kdb/kdb_hdr.h
lib/krb5/kdb/kdb_log.c
lib/krb5/kdb/kdb_log.h
lib/libgss/g_accept_sec_context.c
lib/libgss/g_acquire_cred.c
lib/libgss/g_canon_name.c
lib/libgss/g_compare_name.c
lib/libgss/g_context_time.c
lib/libgss/g_delete_sec_context.c
lib/libgss/g_dsp_name.c
lib/libgss/g_dsp_status.c
lib/libgss/g_dup_name.c
lib/libgss/g_exp_sec_context.c
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lib/libgss/g_init_sec_context.c
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lib/libgss/g_store_cred.c
lib/libgss/g_unseal.c
lib/libgss/g_userok.c
lib/libgss/g_utils.c
lib/libgss/g_verify.c
lib/libgss/gssd_pname_to_uid.c
uts/common/gssapi/include/gssapi_err_generic.h
uts/common/gssapi/include/mechglueP.h

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lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
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lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

and the initial implementation of incremental propagation, including
the following new or changed files:

include/iprop_hdr.h
kadmin/server/ipropd_svc.c
lib/kdb/iprop.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
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1.494 set-blocking 2.0.0

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1.496 grpc-websocket-proxy 0.0.0-20201229170055-e5319fda7802

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1.497 networkx 2.6.2

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..
  Local variables:
  coding: utf-8
  mode: text
  mode: rst
  End:
  vim: fileencoding=utf-8 filetype=rst :

1.499 flask-babel 2.0.0

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1.500 @npmcli/name-from-folder 1.0.1

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1.503 xhr 2.6.0

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1.506 grpc-go 1.41.0

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1.507 preact 10.11.0

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1.508 gunicorn 20.1.0

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1.509 oauth-sign 0.9.0

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*
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* Created 07.02.2003
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1.513 on-headers 1.0.2

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1.514 humanize-ms 1.2.1

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1.515 etcd-client 3.5.5

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1.516 geographiclib 1.52

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1.519 safe-stable-stringify 2.4.0

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1.521 cffi 1.15.1

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================
An HTTP(s) proxy `http.Agent` implementation for HTTP
[![Build Status](https://github.com/TooTallNate/node-http-proxy-
agent/workflows/Node%20CI/badge.svg)](https://github.com/TooTallNate/node-http-proxy-
agent/actions?workflow=Node+CI)

This module provides an `http.Agent` implementation that connects to a specified
HTTP or HTTPS proxy server, and can be used with the built-in `http` module.

__Note:__ For HTTP proxy usage with the `https` module, check out
[`node-https-proxy-agent`](https://github.com/TooTallNate/node-https-proxy-agent).

Installation

Install with `npm`:

``` bash
$ npm install http-proxy-agent
```

Example

``` js
var url = require('url');
var http = require('http');
var HttpProxyAgent = require('http-proxy-agent');

// HTTP/HTTPS proxy to connect to
var proxy = process.env.http_proxy || 'http://168.63.76.32:3128';
console.log('using proxy server %j', proxy);
```

```
// HTTP endpoint for the proxy to connect to
var endpoint = process.argv[2] || 'http://nodejs.org/api/';
console.log('attempting to GET %j', endpoint);
var opts = url.parse(endpoint);

// create an instance of the `HttpProxyAgent` class with the proxy server information
var agent = new HttpProxyAgent(proxy);
opts.agent = agent;

http.get(opts, function (res) {
 console.log('"response" event!', res.headers);
 res.pipe(process.stdout);
});
```

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* /opt/cola/permits/1268307379_1644390612.12/0/http-proxy-agent-5-0-0-tgz/package/README.md

1.527 postcss 8.4.18

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* /opt/cola/permits/1449238825_1666539760.5527818/0/postgis-jdbc-2021-1-0-sources-jar/net/postgis/jdbc/PGgeometry.java
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* /opt/cola/permits/1449238825_1666539760.5527818/0/postgis-jdbc-2021-1-0-sources-jar/net/postgis/jdbc/DriverWrapper.java
* /opt/cola/permits/1449238825_1666539760.5527818/0/postgis-jdbc-2021-1-0-sources-jar/net/postgis/jdbc/PGgeographyLW.java
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*
* PostGIS extension for PostgreSQL JDBC driver - current version identification
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1.532 ajv 6.12.6

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name = Jinja2
version = attr: jinja2.__version__
url = https://palletsprojects.com/p/jinja/
project_urls =
 Donate = https://palletsprojects.com/donate

```
 Documentation = https://jinja.palletsprojects.com/
 Changes = https://jinja.palletsprojects.com/changes/
 Source Code = https://github.com/pallets/jinja/
 Issue Tracker = https://github.com/pallets/jinja/issues/
 Twitter = https://twitter.com/PalletsTeam
 Chat = https://discord.gg/pallets
license = BSD-3-Clause
license_files = LICENSE.rst
author = Armin Ronacher
author_email = armin.ronacher@active-4.com
maintainer = Pallets
maintainer_email = contact@palletsprojects.com
description = A very fast and expressive template engine.
long_description = file: README.rst
long_description_content_type = text/x-rst
classifiers =
 Development Status :: 5 - Production/Stable
 Environment :: Web Environment
 Intended Audience :: Developers
 License :: OSI Approved :: BSD License
 Operating System :: OS Independent
 Programming Language :: Python
 Topic :: Internet :: WWW/HTTP :: Dynamic Content
 Topic :: Text Processing :: Markup :: HTML

[options]
packages = find:
package_dir = = src
include_package_data = True
python_requires = >= 3.7

[options.packages.find]
where = src

[options.entry_points]
babel.extractors =
 jinja2 = jinja2.ext:babel_extract[i18n]

[tool:pytest]
testpaths = tests
filterwarnings =
 error
 ignore:The loop argument:DeprecationWarning:asyncio[.]base_events:542

[coverage:run]
branch = True
source =
 jinja2
```

 tests

[coverage:paths]
source =
 src
 */site-packages

[flake8]
select = B, E, F, W, B9, ISC
ignore =
 E203
 E501
 E722
 W503
max-line-length = 80
per-file-ignores =
 src/jinja2/__init__.py: F401

[mypy]
files = src/jinja2
python_version = 3.7
show_error_codes = True
disallow_subclassing_any = True
disallow_untyped_calls = True
disallow_untyped_defs = True
disallow_incomplete_defs = True
no_implicit_optional = True
local_partial_types = True
no_implicit_reexport = True
strict_equality = True
warn_redundant_casts = True
warn_unused_configs = True
warn_unused_ignores = True
warn_return_any = True
warn_unreachable = True

[mypy-jinja2.defaults]
no_implicit_reexport = False

[mypy-markupsafe]
no_implicit_reexport = False

[egg_info]
tag_build =
tag_date = 0

Found in path(s):
* /opt/cola/permits/1318182303_1651721512.71/0/jinja2-3-1-2-tar-gz/Jinja2-3.1.2/setup.cfg

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Metadata-Version: 2.1
Name: Jinja2
Version: 3.1.2
Summary: A very fast and expressive template engine.
Home-page: https://palletsprojects.com/p/jinja/
Author: Armin Ronacher
Author-email: armin.ronacher@active-4.com
Maintainer: Pallets
Maintainer-email: contact@palletsprojects.com
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Project-URL: Donate, https://palletsprojects.com/donate
Project-URL: Documentation, https://jinja.palletsprojects.com/
Project-URL: Changes, https://jinja.palletsprojects.com/changes/
Project-URL: Source Code, https://github.com/pallets/jinja/
Project-URL: Issue Tracker, https://github.com/pallets/jinja/issues/
Project-URL: Twitter, https://twitter.com/PalletsTeam
Project-URL: Chat, https://discord.gg/pallets
Platform: UNKNOWN
Classifier: Development Status :: 5 - Production/Stable
Classifier: Environment :: Web Environment
Classifier: Intended Audience :: Developers
Classifier: License :: OSI Approved :: BSD License
Classifier: Operating System :: OS Independent
Classifier: Programming Language :: Python
Classifier: Topic :: Internet :: WWW/HTTP :: Dynamic Content
Classifier: Topic :: Text Processing :: Markup :: HTML
Requires-Python: >=3.7
Description-Content-Type: text/x-rst
Provides-Extra: i18n
License-File: LICENSE.rst

Jinja
=====

Jinja is a fast, expressive, extensible templating engine. Special
placeholders in the template allow writing code similar to Python
syntax. Then the template is passed data to render the final document.

It includes:

- Template inheritance and inclusion.
- Define and import macros within templates.
- HTML templates can use autoescaping to prevent XSS from untrusted
  user input.
- A sandboxed environment can safely render untrusted templates.
- AsyncIO support for generating templates and calling async

functions.
- I18N support with Babel.
- Templates are compiled to optimized Python code just-in-time and cached, or can be compiled ahead-of-time.
- Exceptions point to the correct line in templates to make debugging easier.
- Extensible filters, tests, functions, and even syntax.

Jinja's philosophy is that while application logic belongs in Python if possible, it shouldn't make the template designer's job difficult by restricting functionality too much.

Installing

Install and update using `pip`_:

.. code-block:: text

```
$ pip install -U Jinja2
```

.. _pip: https://pip.pypa.io/en/stable/getting-started/

In A Nutshell

.. code-block:: jinja

```
{% extends "base.html" %}
{% block title %}Members{% endblock %}
{% block content %}
  <ul>
  {% for user in users %}
    <li><a href="{{ user.url }}">{{ user.username }}</a></li>
  {% endfor %}
  </ul>
{% endblock %}
```

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The Pallets organization develops and supports Jinja and other popular packages. In order to grow the community of contributors and users, and allow the maintainers to devote more time to the projects, `please donate today`_.

.. _please donate today: https://palletsprojects.com/donate

Links

- Documentation: https://jinja.palletsprojects.com/
- Changes: https://jinja.palletsprojects.com/changes/
- PyPI Releases: https://pypi.org/project/Jinja2/
- Source Code: https://github.com/pallets/jinja/
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- Website: https://palletsprojects.com/p/jinja/
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- Chat: https://discord.gg/pallets

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* /opt/cola/permits/1318182303_1651721512.71/0/jinja2-3-1-2-tar-gz/Jinja2-3.1.2/PKG-INFO
* /opt/cola/permits/1318182303_1651721512.71/0/jinja2-3-1-2-tar-gz/Jinja2-3.1.2/src/Jinja2.egg-info/PKG-INFO
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1.536 ssri 9.0.1

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1.537 libtiff 4.4.0-r0

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1.538 libtirpc 1.3.2-r1

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1.539 @mapbox/jsonlint-lines-primitives 2.0.2

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1.540 walk-up-path 1.0.0

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1.541 pysyncobj 0.3.11

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1.542 treeverse 2.0.0

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1.543 netty-codec-dns 4.1.78.Final

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* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/AbstractDnsOptPseudoRrRecord.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DnsPtrRecord.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DnsOptPseudoRecord.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DnsOptEcsRecord.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DefaultDnsPtrRecord.java
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* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/TcpDnsQueryEncoder.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/TcpDnsResponseDecoder.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DnsResponseDecoder.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DnsCodecUtil.java
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* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/TcpDnsResponseEncoder.java
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* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DnsMessage.java
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* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DnsResponse.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DnsQuery.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/AbstractDnsMessage.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/package-info.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DefaultDnsResponse.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DatagramDnsResponse.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DnsQuestion.java
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* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DnsSection.java
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* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DnsMessageUtil.java
* /opt/cola/permits/1425043659_1663940588.391567/0/netty-codec-dns-4-1-78-final-sources-1-jar/io/netty/handler/codec/dns/DefaultDnsRecordEncoder.java

1.544 reflections 0.10.2

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1.545 @npmcli/disparity-colors 2.0.0

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1.546 spdx-correct 3.1.1

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1.547 glob 7.2.3

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1.548 color-name 1.1.3

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1.549 mkdirp 1.0.4

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1.550 fastest-levenshtein 1.0.12

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1.551 parse-srcset 1.0.2

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1.552 util-linux 2.38-r1

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*/

```
NR START   END SECTORS SIZE NAME UUID
1    32  7679    7648 3.7M      8f8378c0-01
2  7680 16383    8704 4.3M      8f8378c0-02
5  7936 12799    4864 2.4M
6 12544 16127    3584 1.8M
```

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Version 3, 29 June 2007

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x   ?"U@,5 @mISmIN<GimCN7g1u|E
43mI,5WEV @@ WEV   @mImImIAmImImI0mImImI*mImI
A0mImImI...
lost+found...

;9GimCN7g

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1.553 cookie-signature 1.0.6

1.553.1 Available under license :

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cookie-signature

 Sign and unsign cookies.

Example

```js
var cookie = require('cookie-signature');

var val = cookie.sign('hello', 'tobiiscool');
val.should.equal('hello.DGDUkGlIkCzPz+C0B064FNgHdEjox7ch8tOBGslZ5QI');

var val = cookie.sign('hello', 'tobiiscool');
cookie.unsign(val, 'tobiiscool').should.equal('hello');
cookie.unsign(val, 'luna').should.be.false;
```

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* /opt/cola/permits/1110631391_1606919057.82/0/cookie-signature-1-0-6-5-tgz/package/Readme.md

1.554 lapack 3.10.1-r0

1.554.1 Available under license :

1.555 bzip2 1.0.8

1.556 node.js 16.17.1-r0

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{
 'variables': {

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  'openssl/ssl/d1_lib.c',
  'openssl/ssl/d1_msg.c',
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  'openssl/ssl/tls_srp.c',
  'openssl/crypto/aes/aes_cbc.c',
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'openssl/crypto/aes/aes_ofb.c',
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    'openssl/crypto/x509v3/v3_utl.c',
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    'openssl/engines/e_capi.c',
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  ],
  'openssl_sources_BSD-x86_64': [
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    './config/archs/BSD-x86_64/asm/crypto/bn/rsaz-avx2.s',
    './config/archs/BSD-x86_64/asm/crypto/bn/rsaz-x86_64.s',
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    './config/archs/BSD-x86_64/asm/crypto/bn/x86_64-mont.s',
    './config/archs/BSD-x86_64/asm/crypto/bn/x86_64-mont5.s',
    './config/archs/BSD-x86_64/asm/crypto/camellia/cmll-x86_64.s',
    './config/archs/BSD-x86_64/asm/crypto/chacha/chacha-x86_64.s',
    './config/archs/BSD-x86_64/asm/crypto/ec/ecp_nistz256-x86_64.s',
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    './config/archs/BSD-x86_64/asm/crypto/md5/md5-x86_64.s',
    './config/archs/BSD-x86_64/asm/crypto/modes/aesni-gcm-x86_64.s',
    './config/archs/BSD-x86_64/asm/crypto/modes/ghash-x86_64.s',
    './config/archs/BSD-x86_64/asm/crypto/poly1305/poly1305-x86_64.s',
    './config/archs/BSD-x86_64/asm/crypto/rc4/rc4-md5-x86_64.s',
    './config/archs/BSD-x86_64/asm/crypto/rc4/rc4-x86_64.s',
    './config/archs/BSD-x86_64/asm/crypto/sha/keccak1600-x86_64.s',
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    'SHA1_ASM',
```

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      'VPAES_ASM',
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      'POLY1305_ASM',
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      '-pthread',
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    './crypto',
    './crypto/include/internal',
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  'libraries': ['<@(openssl_ex_libs_BSD-x86_64)'],
  'sources': ['<@(openssl_sources)', '<@(openssl_sources_BSD-x86_64)'],
}
```

PCRE LICENCE

PCRE is a library of functions to support regular expressions whose syntax
and semantics are as close as possible to those of the Perl 5 language.

Release 7 of PCRE is distributed under the terms of the "BSD" licence, as
specified below. The documentation for PCRE, supplied in the "doc"
directory, is distributed under the same terms as the software itself.

The basic library functions are written in C and are freestanding. Also
included in the distribution is a set of C++ wrapper functions.

THE BASIC LIBRARY FUNCTIONS

Written by: Philip Hazel
Email local part: ph10
Email domain: cam.ac.uk

University of Cambridge Computing Service,
Cambridge, England.

THE C++ WRAPPER FUNCTIONS

Contributed by: Google Inc.

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```
name: License update
on:
 schedule:
   # 00:00:00 every Monday
   # https://crontab.guru/#0_0_*_*_1
   - cron: 0 0 * * 1
 workflow_dispatch:

permissions:
 contents: read

jobs:
 update_license:
   permissions:
     contents: write  # for gr2m/create-or-update-pull-request-action to push local changes
     pull-requests: write  # for gr2m/create-or-update-pull-request-action to create a PR
   if: github.repository == 'nodejs/node'
   runs-on: ubuntu-latest
   steps:
     - uses: actions/checkout@v3
       with:
         persist-credentials: false
     - run: ./tools/license-builder.sh  # Run the license builder tool
     - uses: gr2m/create-or-update-pull-request-action@6720400cad8e74d7adc64640e4e6ea6748b83d8f
       # Creates a PR or update the Action's existing PR, or
       # no-op if the base branch is already up-to-date.
       env:
         GITHUB_TOKEN: ${{ secrets.GITHUB_TOKEN }}
       with:
         author: Node.js GitHub Bot <github-bot@iojs.org>
         branch: actions/license-builder
         title: 'doc: run license-builder'
         body: >
```

License is likely out of date. This is an automatically generated PR by
 the `license-builder.yml` GitHub Action, which runs `license-builder.sh`
 and submits a new PR or updates an existing PR.
commit-message: 'doc: run license-builder'
labels: meta

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This license applies to all parts of V8 that are not externally
maintained libraries. The externally maintained libraries used by V8
are:

- PCRE test suite, located in
  test/mjsunit/third_party/regexp-pcre/regexp-pcre.js. This is based on the
  test suite from PCRE-7.3, which is copyrighted by the University
  of Cambridge and Google, Inc. The copyright notice and license
  are embedded in regexp-pcre.js.

- Layout tests, located in test/mjsunit/third_party/object-keys. These are
  based on layout tests from webkit.org which are copyrighted by
  Apple Computer, Inc. and released under a 3-clause BSD license.

- Strongtalk assembler, the basis of the files assembler-arm-inl.h,

assembler-arm.cc, assembler-arm.h, assembler-ia32-inl.h,
assembler-ia32.cc, assembler-ia32.h, assembler-x64-inl.h,
assembler-x64.cc, assembler-x64.h, assembler-mips-inl.h,
assembler-mips.cc, assembler-mips.h, assembler.cc and assembler.h.
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under a 3-clause BSD license.

- Valgrind client API header, located at src/third_party/valgrind/valgrind.h
  This is released under the BSD license.

- The Wasm C/C++ API headers, located at third_party/wasm-api/wasm.{h,hh}
  This is released under the Apache license. The API's upstream prototype
  implementation also formed the basis of V8's implementation in
  src/wasm/c-api.cc.

These libraries have their own licenses; we recommend you read them,
as their terms may differ from the terms below.

Further license information can be found in LICENSE files located in
sub-directories.

```
{
 'variables': {
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     'openssl/ssl/bio_ssl.c',
     'openssl/ssl/d1_lib.c',
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     'openssl/ssl/pqueue.c',
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     'openssl/ssl/record/rec_layer_s3.c',
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     'openssl/ssl/record/ssl3_record.c',
     'openssl/ssl/record/ssl3_record_tls13.c',
     'openssl/ssl/s3_cbc.c',
     'openssl/ssl/s3_enc.c',
```

'openssl/ssl/s3_lib.c',
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'openssl/crypto/x509/x509_cmp.c',
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  'openssl/crypto/x509v3/v3_admis.c',
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  'openssl/crypto/x509v3/v3_skey.c',
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  'openssl/crypto/x509v3/v3_utl.c',
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  'openssl/engines/e_padlock.c',
],
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  './config/archs/BSD-x86/asm_avx2/crypto/aes/aesni-x86.s',
  './config/archs/BSD-x86/asm_avx2/crypto/aes/vpaes-x86.s',
  './config/archs/BSD-x86/asm_avx2/crypto/bf/bf-586.s',
  './config/archs/BSD-x86/asm_avx2/crypto/bn/bn-586.s',
  './config/archs/BSD-x86/asm_avx2/crypto/bn/co-586.s',
  './config/archs/BSD-x86/asm_avx2/crypto/bn/x86-gf2m.s',
  './config/archs/BSD-x86/asm_avx2/crypto/bn/x86-mont.s',
  './config/archs/BSD-x86/asm_avx2/crypto/camellia/cmll-x86.s',
  './config/archs/BSD-x86/asm_avx2/crypto/chacha/chacha-x86.s',
  './config/archs/BSD-x86/asm_avx2/crypto/des/crypt586.s',
  './config/archs/BSD-x86/asm_avx2/crypto/des/des-586.s',
  './config/archs/BSD-x86/asm_avx2/crypto/ec/ecp_nistz256-x86.s',
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      './config/archs/BSD-x86/asm_avx2/crypto/poly1305/poly1305-x86.s',
      './config/archs/BSD-x86/asm_avx2/crypto/rc4/rc4-586.s',
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      './config/archs/BSD-x86/asm_avx2/crypto/sha/sha256-586.s',
      './config/archs/BSD-x86/asm_avx2/crypto/sha/sha512-586.s',
      './config/archs/BSD-x86/asm_avx2/crypto/whrlpool/wp-mmx.s',
      './config/archs/BSD-x86/asm_avx2/crypto/x86cpuid.s',
      './config/archs/BSD-x86/asm_avx2/engines/e_padlock-x86.s',
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      'OPENSSL_IA32_SSE2',
      'OPENSSL_BN_ASM_MONT',
      'OPENSSL_BN_ASM_GF2m',
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      'SHA256_ASM',
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      'RC4_ASM',
      'MD5_ASM',
      'RMD160_ASM',
      'AESNI_ASM',
      'VPAES_ASM',
      'WHIRLPOOL_ASM',
      'GHASH_ASM',
      'ECP_NISTZ256_ASM',
      'POLY1305_ASM',
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    './include',
    './crypto',
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  './crypto/include/internal',
 ],
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 'libraries': ['<@(openssl_ex_libs_BSD-x86)'],
 'sources': ['<@(openssl_sources)', '<@(openssl_sources_BSD-x86)'],
}
```

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   'KECCAK1600_ASM',
   'RC4_ASM',
   'MD5_ASM',
   'AESNI_ASM',
   'VPAES_ASM',
   'GHASH_ASM',
   'ECP_NISTZ256_ASM',
   'X25519_ASM',
   'POLY1305_ASM',
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  'openssl_cflags_BSD-x86_64': [
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  'openssl/apps/ca.c',
  'openssl/apps/ciphers.c',
  'openssl/apps/cms.c',
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  'openssl/apps/crl2p7.c',
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  'openssl/apps/dsaparam.c',
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  'openssl/apps/errstr.c',
  'openssl/apps/gendsa.c',
  'openssl/apps/genpkey.c',
  'openssl/apps/genrsa.c',
  'openssl/apps/nseq.c',
  'openssl/apps/ocsp.c',
  'openssl/apps/openssl.c',
  'openssl/apps/passwd.c',
  'openssl/apps/pkcs12.c',
  'openssl/apps/pkcs7.c',
  'openssl/apps/pkcs8.c',
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  'openssl/apps/s_server.c',
  'openssl/apps/s_time.c',
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  'openssl/apps/srp.c',
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    'openssl/apps/app_rand.c',
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    'openssl/apps/bf_prefix.c',
    'openssl/apps/opt.c',
    'openssl/apps/s_cb.c',
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  ],
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 'include_dirs': [
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 'cflags' : ['<@(openssl_cflags_BSD-x86_64)'],
 'libraries': ['<@(openssl_ex_libs_BSD-x86_64)'],
 'sources': ['<@(openssl_cli_srcs_BSD-x86_64)'],
}
```

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A. HISTORY OF THE SOFTWARE
==========================

Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see https://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

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    'openssl/engines/e_padlock.c',
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   'openssl_defines_BSD-x86_64': [
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    'L_ENDIAN',
    'OPENSSL_PIC',
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   'openssl_cflags_BSD-x86_64': [
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    '-pthread',
    '-Wall -O3',
   ],
   'openssl_ex_libs_BSD-x86_64': [
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   './crypto/include/internal',
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  'defines': ['<@(openssl_defines_BSD-x86_64)'],
  'cflags' : ['<@(openssl_cflags_BSD-x86_64)'],
  'libraries': ['<@(openssl_ex_libs_BSD-x86_64)'],
  'sources': ['<@(openssl_sources)', '<@(openssl_sources_BSD-x86_64)'],
}
```

wcwidth.js: JavaScript Portng of Markus Kuhn's wcwidth() Implementation
===

This package is a JavaScript porting of `wcwidth()` implementation
[by Markus Kuhn](http://www.cl.cam.ac.uk/~mgk25/ucs/wcwidth.c).

(The MIT License)

```
{
 'variables': {
   'openssl_defines_BSD-x86_64': [
     'NDEBUG',
     'L_ENDIAN',
     'OPENSSL_PIC',
   ],
```

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],
'openssl_cli_srcs_BSD-x86_64': [
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  'openssl/apps/ca.c',
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  'openssl/apps/cms.c',
  'openssl/apps/crl.c',
  'openssl/apps/crl2p7.c',
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  'openssl/apps/dsa.c',
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  'openssl/apps/genrsa.c',
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  'openssl/apps/rsa.c',
  'openssl/apps/rsautl.c',
  'openssl/apps/s_client.c',
  'openssl/apps/s_server.c',
  'openssl/apps/s_time.c',
  'openssl/apps/sess_id.c',
  'openssl/apps/smime.c',
```

```
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      'openssl/apps/spkac.c',
      'openssl/apps/srp.c',
      'openssl/apps/storeutl.c',
      'openssl/apps/ts.c',
      'openssl/apps/verify.c',
      'openssl/apps/version.c',
      'openssl/apps/x509.c',
      'openssl/apps/app_rand.c',
      'openssl/apps/apps.c',
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      'openssl/apps/opt.c',
      'openssl/apps/s_cb.c',
      'openssl/apps/s_socket.c',
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  'include_dirs': [
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  ],
  'cflags' : ['<@(openssl_cflags_BSD-x86_64)'],
  'libraries': ['<@(openssl_ex_libs_BSD-x86_64)'],
  'sources': ['<@(openssl_cli_srcs_BSD-x86_64)'],
}
```

Minizlib was created by Isaac Z. Schlueter.
It is a derivative work of the Node.js project.

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     'openssl/ssl/pqueue.c',
     'openssl/ssl/record/dtls1_bitmap.c',
     'openssl/ssl/record/rec_layer_d1.c',
     'openssl/ssl/record/rec_layer_s3.c',
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     'openssl/ssl/record/ssl3_record_tls13.c',
     'openssl/ssl/s3_cbc.c',
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```

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'openssl/crypto/asn1/x_val.c',
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Chinese/Japanese Word Break Dictionary Data (cjdict.txt)

The word list in cjdict.txt are generated by combining three word lists
listed below with further processing for compound word breaking. The
frequency is generated with an iterative training against Google web
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Section: pkg.m4 - Macros to locate and utilise pkg-config.

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File: config.guess (only for ICU4C)

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A. HISTORY OF THE SOFTWARE
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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see https://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes

2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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#
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#

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```
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Google double-conversion

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File: aclocal.m4 (only for ICU4C)
Section: pkg.m4 - Macros to locate and utilise pkg-config.

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File: config.guess (only for ICU4C)

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```
{
 'variables': {
  'openssl_defines_BSD-x86': [
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  'openssl_cflags_BSD-x86': [
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  'openssl_ex_libs_BSD-x86': [
   '-pthread',
  ],
  'openssl_cli_srcs_BSD-x86': [
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   'openssl/apps/ca.c',
   'openssl/apps/ciphers.c',
```

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'openssl/apps/srp.c',
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'openssl/apps/ts.c',
'openssl/apps/verify.c',
'openssl/apps/version.c',
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'openssl/apps/app_rand.c',
'openssl/apps/apps.c',
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  ],
 },
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  './include',
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 'cflags' : ['<@(openssl_cflags_BSD-x86)'],
 'libraries': ['<@(openssl_ex_libs_BSD-x86)'],
 'sources': ['<@(openssl_cli_srcs_BSD-x86)'],
}
```

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   'RMD160_ASM',
   'AESNI_ASM',
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  'openssl_cflags_BSD-x86': [
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  ],
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    'openssl/apps/rehash.c',
    'openssl/apps/req.c',
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    'openssl/apps/rsautl.c',
    'openssl/apps/s_client.c',
    'openssl/apps/s_server.c',
    'openssl/apps/s_time.c',
    'openssl/apps/sess_id.c',
    'openssl/apps/smime.c',
    'openssl/apps/speed.c',
    'openssl/apps/spkac.c',
```

```
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      'openssl/apps/app_rand.c',
      'openssl/apps/apps.c',
      'openssl/apps/bf_prefix.c',
      'openssl/apps/opt.c',
      'openssl/apps/s_cb.c',
      'openssl/apps/s_socket.c',
    ],
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  'defines': ['<@(openssl_defines_BSD-x86)'],
  'include_dirs': [
    './include',
  ],
  'cflags' : ['<@(openssl_cflags_BSD-x86)'],
  'libraries': ['<@(openssl_ex_libs_BSD-x86)'],
  'sources': ['<@(openssl_cli_srcs_BSD-x86)'],
}
```

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* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/Buffer.java
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/netty_unix_buffer.h
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* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/netty_unix_util.c
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/LimitsStaticallyReferencedJniMethods.java
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/netty_unix_util.h
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* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/PeerCredentials.java
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/netty_unix_limits.h
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/Limits.java
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* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/netty_unix_jni.h
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* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/Errors.java
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/ServerDomainSocketChannel.java
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/netty_unix_socket.c
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/netty_unix_errors.h
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/UnixChannel.java
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/DomainSocketAddress.java
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/FileDescriptor.java
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/netty_unix_errors.c
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* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/NativeInetAddress.java
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/Socket.java
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* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/netty_unix_filedescriptor.c
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/netty_unix_filedescriptor.h
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/DomainSocketChannelConfig.java
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* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/package-info.java
* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/Unix.java
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* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-

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* /opt/cola/permits/1350828745_1656063998.9734578/0/netty-transport-native-unix-common-4-1-78-final-sources-1-jar/io/netty/channel/unix/IntegerUnixChannelOption.java

1.558 mime 1.6.0

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1.559 protobuf 3.19.4

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1.562 gorilla 1.4.2

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1.564 pam 1.5.2-r0

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1.577 pflag 1.0.5

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Contributors

- Chris McDonough, 2011/02/16
- Wichert Akkerman, 2012/02/02

A. HISTORY OF THE SOFTWARE
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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
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(2) According to Richard Stallman, 1.6.1 is not GPL-compatible,
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This package contains a modified version of ca-bundle.crt:

ca-bundle.crt -- Bundle of CA Root Certificates

Certificate data from Mozilla as of: Thu Nov 3 19:04:19 2011#
This is a bundle of X.509 certificates of public Certificate Authorities
(CA). These were automatically extracted from Mozilla's root certificates
file (certdata.txt). This file can be found in the mozilla source tree:
http://mxr.mozilla.org/mozilla/source/security/nss/lib/ckfw/builtins/certdata.txt?raw=1#
It contains the certificates in PEM format and therefore
can be directly used with curl / libcurl / php_curl, or with
an Apache+mod_ssl webserver for SSL client authentication.
Just configure this file as the SSLCACertificateFile.#

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@(#) $RCSfile: certdata.txt,v $ $Revision: 1.80 $ $Date: 2011/11/03 15:11:58 $

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In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)

2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
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A. HISTORY OF THE SOFTWARE
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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

Footnotes:

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(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

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1.582 flask 2.1.3

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.. currentmodule:: flask

Blog Blueprint
==============

You'll use the same techniques you learned about when writing the authentication blueprint to write the blog blueprint. The blog should list all posts, allow logged in users to create posts, and allow the author of a post to edit or delete it.

As you implement each view, keep the development server running. As you save your changes, try going to the URL in your browser and testing them out.

The Blueprint

Define the blueprint and register it in the application factory.

.. code-block:: python
   :caption: ``flaskr/blog.py``

```
from flask import (
    Blueprint, flash, g, redirect, render_template, request, url_for
)
from werkzeug.exceptions import abort

from flaskr.auth import login_required
from flaskr.db import get_db

bp = Blueprint('blog', __name__)
```

Import and register the blueprint from the factory using :meth:`app.register_blueprint() <Flask.register_blueprint>`. Place the new code at the end of the factory function before returning the app.

.. code-block:: python
   :caption: ``flaskr/__init__.py``

```
def create_app():
    app = ...
    # existing code omitted

    from . import blog
    app.register_blueprint(blog.bp)
    app.add_url_rule('/', endpoint='index')

    return app
```

Unlike the auth blueprint, the blog blueprint does not have a ``url_prefix``. So the ``index`` view will be at ``/``, the ``create`` view at ``/create``, and so on. The blog is the main feature of Flaskr, so it makes sense that the blog index will be the main index.

However, the endpoint for the ``index`` view defined below will be ``blog.index``. Some of the authentication views referred to a plain ``index`` endpoint. :meth:`app.add_url_rule() <Flask.add_url_rule>` associates the endpoint name ``'index'`` with the ``/`` url so that ``url_for('index')`` or ``url_for('blog.index')`` will both work, generating the same ``/`` URL either way.

In another application you might give the blog blueprint a ``url_prefix`` and define a separate ``index`` view in the application

factory, similar to the ``hello`` view. Then the ``index`` and
``blog.index`` endpoints and URLs would be different.

Index

The index will show all of the posts, most recent first. A ``JOIN`` is
used so that the author information from the ``user`` table is
available in the result.

```
.. code-block:: python
   :caption: ``flaskr/blog.py``

   @bp.route('/')
   def index():
       db = get_db()
       posts = db.execute(
           'SELECT p.id, title, body, created, author_id, username'
           ' FROM post p JOIN user u ON p.author_id = u.id'
           ' ORDER BY created DESC'
       ).fetchall()
       return render_template('blog/index.html', posts=posts)

.. code-block:: html+jinja
   :caption: ``flaskr/templates/blog/index.html``

   {% extends 'base.html' %}

   {% block header %}
     <h1>{% block title %}Posts{% endblock %}</h1>
     {% if g.user %}
       <a class="action" href="{{ url_for('blog.create') }}">New</a>
     {% endif %}
   {% endblock %}

   {% block content %}
     {% for post in posts %}
       <article class="post">
         <header>
           <div>
             <h1>{{ post['title'] }}</h1>
             <div class="about">by {{ post['username'] }} on {{ post['created'].strftime('%Y-%m-%d') }}</div>
           </div>
           {% if g.user['id'] == post['author_id'] %}
             <a class="action" href="{{ url_for('blog.update', id=post['id']) }}">Edit</a>
           {% endif %}
         </header>
```

```
        <p class="body">{{ post['body'] }}</p>
      </article>
      {% if not loop.last %}
        <hr>
      {% endif %}
    {% endfor %}
  {% endblock %}
```

When a user is logged in, the ``header`` block adds a link to the ``create`` view. When the user is the author of a post, they'll see an "Edit" link to the ``update`` view for that post. ``loop.last`` is a special variable available inside `Jinja for loops`_. It's used to display a line after each post except the last one, to visually separate them.

.. _Jinja for loops: https://jinja.palletsprojects.com/templates/#for

Create

The ``create`` view works the same as the auth ``register`` view. Either the form is displayed, or the posted data is validated and the post is added to the database or an error is shown.

The ``login_required`` decorator you wrote earlier is used on the blog views. A user must be logged in to visit these views, otherwise they will be redirected to the login page.

```
.. code-block:: python
   :caption: ``flaskr/blog.py``

   @bp.route('/create', methods=('GET', 'POST'))
   @login_required
   def create():
       if request.method == 'POST':
           title = request.form['title']
           body = request.form['body']
           error = None

           if not title:
               error = 'Title is required.'

           if error is not None:
               flash(error)
           else:
               db = get_db()
               db.execute(
```

```
            'INSERT INTO post (title, body, author_id)'
            ' VALUES (?, ?, ?)',
            (title, body, g.user['id'])
        )
        db.commit()
        return redirect(url_for('blog.index'))

    return render_template('blog/create.html')
```

.. code-block:: html+jinja
   :caption: ``flaskr/templates/blog/create.html``

```
{% extends 'base.html' %}

{% block header %}
  <h1>{% block title %}New Post{% endblock %}</h1>
{% endblock %}

{% block content %}
  <form method="post">
    <label for="title">Title</label>
    <input name="title" id="title" value="{{ request.form['title'] }}" required>
    <label for="body">Body</label>
    <textarea name="body" id="body">{{ request.form['body'] }}</textarea>
    <input type="submit" value="Save">
  </form>
{% endblock %}
```

Update

Both the ``update`` and ``delete`` views will need to fetch a ``post``
by ``id`` and check if the author matches the logged in user. To avoid
duplicating code, you can write a function to get the ``post`` and call
it from each view.

.. code-block:: python
   :caption: ``flaskr/blog.py``

```
def get_post(id, check_author=True):
    post = get_db().execute(
        'SELECT p.id, title, body, created, author_id, username'
        ' FROM post p JOIN user u ON p.author_id = u.id'
        ' WHERE p.id = ?',
        (id,)
    ).fetchone()
```

```
       if post is None:
           abort(404, f"Post id {id} doesn't exist.")

       if check_author and post['author_id'] != g.user['id']:
           abort(403)

       return post
```

:func:`abort` will raise a special exception that returns an HTTP status code. It takes an optional message to show with the error, otherwise a default message is used. ``404`` means "Not Found", and ``403`` means "Forbidden". (``401`` means "Unauthorized", but you redirect to the login page instead of returning that status.)

The ``check_author`` argument is defined so that the function can be used to get a ``post`` without checking the author. This would be useful if you wrote a view to show an individual post on a page, where the user doesn't matter because they're not modifying the post.

```
.. code-block:: python
   :caption: ``flaskr/blog.py``

   @bp.route('/<int:id>/update', methods=('GET', 'POST'))
   @login_required
   def update(id):
       post = get_post(id)

       if request.method == 'POST':
           title = request.form['title']
           body = request.form['body']
           error = None

           if not title:
               error = 'Title is required.'

           if error is not None:
               flash(error)
           else:
               db = get_db()
               db.execute(
                   'UPDATE post SET title = ?, body = ?'
                   ' WHERE id = ?',
                   (title, body, id)
               )
               db.commit()
               return redirect(url_for('blog.index'))

       return render_template('blog/update.html', post=post)
```

Unlike the views you've written so far, the ``update`` function takes an argument, ``id``. That corresponds to the ``<int:id>`` in the route. A real URL will look like ``/1/update``. Flask will capture the ``1``, ensure it's an :class:`int`, and pass it as the ``id`` argument. If you don't specify ``int:`` and instead do ``<id>``, it will be a string. To generate a URL to the update page, :func:`url_for` needs to be passed the ``id`` so it knows what to fill in: ``url_for('blog.update', id=post['id'])``. This is also in the ``index.html`` file above.

The ``create`` and ``update`` views look very similar. The main difference is that the ``update`` view uses a ``post`` object and an ``UPDATE`` query instead of an ``INSERT``. With some clever refactoring, you could use one view and template for both actions, but for the tutorial it's clearer to keep them separate.

```
.. code-block:: html+jinja
   :caption: ``flaskr/templates/blog/update.html``

   {% extends 'base.html' %}

   {% block header %}
     <h1>{% block title %}Edit "{{ post['title'] }}"{% endblock %}</h1>
   {% endblock %}

   {% block content %}
     <form method="post">
       <label for="title">Title</label>
       <input name="title" id="title"
         value="{{ request.form['title'] or post['title'] }}" required>
       <label for="body">Body</label>
       <textarea name="body" id="body">{{ request.form['body'] or post['body'] }}</textarea>
       <input type="submit" value="Save">
     </form>
     <hr>
     <form action="{{ url_for('blog.delete', id=post['id']) }}" method="post">
       <input class="danger" type="submit" value="Delete" onclick="return confirm('Are you sure?');">
     </form>
   {% endblock %}
```

This template has two forms. The first posts the edited data to the current page (``/<id>/update``). The other form contains only a button and specifies an ``action`` attribute that posts to the delete view instead. The button uses some JavaScript to show a confirmation dialog before submitting.

The pattern ``{{ request.form['title'] or post['title'] }}`` is used to choose what data appears in the form. When the form hasn't been submitted, the original ``post`` data appears, but if invalid form data was posted you want to display that so the user can fix the error, so ``request.form`` is used instead. :data:`request` is another variable that's automatically available in templates.

Delete

The delete view doesn't have its own template, the delete button is part of ``update.html`` and posts to the ``/<id>/delete`` URL. Since there is no template, it will only handle the ``POST`` method and then redirect to the ``index`` view.

```
.. code-block:: python
   :caption: ``flaskr/blog.py``

   @bp.route('/<int:id>/delete', methods=('POST',))
   @login_required
   def delete(id):
       get_post(id)
       db = get_db()
       db.execute('DELETE FROM post WHERE id = ?', (id,))
       db.commit()
       return redirect(url_for('blog.index'))
```

Congratulations, you've now finished writing your application! Take some time to try out everything in the browser. However, there's still more to do before the project is complete.

Continue to :doc:`install`.

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Metadata-Version: 2.1
Name: Flask
Version: 2.1.3
Summary: A simple framework for building complex web applications.
Home-page: https://palletsprojects.com/p/flask

Author: Armin Ronacher
Author-email: armin.ronacher@active-4.com
Maintainer: Pallets
Maintainer-email: contact@palletsprojects.com
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Project-URL: Source Code, https://github.com/pallets/flask/
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Classifier: Development Status :: 5 - Production/Stable
Classifier: Environment :: Web Environment
Classifier: Framework :: Flask
Classifier: Intended Audience :: Developers
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Classifier: Operating System :: OS Independent
Classifier: Programming Language :: Python
Classifier: Topic :: Internet :: WWW/HTTP :: Dynamic Content
Classifier: Topic :: Internet :: WWW/HTTP :: WSGI
Classifier: Topic :: Internet :: WWW/HTTP :: WSGI :: Application
Classifier: Topic :: Software Development :: Libraries :: Application Frameworks
Requires-Python: >=3.7
Description-Content-Type: text/x-rst
Provides-Extra: async
Provides-Extra: dotenv
License-File: LICENSE.rst

Flask
=====

Flask is a lightweight `WSGI`_ web application framework. It is designed
to make getting started quick and easy, with the ability to scale up to
complex applications. It began as a simple wrapper around `Werkzeug`_
and `Jinja`_ and has become one of the most popular Python web
application frameworks.

Flask offers suggestions, but doesn't enforce any dependencies or
project layout. It is up to the developer to choose the tools and
libraries they want to use. There are many extensions provided by the
community that make adding new functionality easy.

.. _WSGI: https://wsgi.readthedocs.io/
.. _Werkzeug: https://werkzeug.palletsprojects.com/
.. _Jinja: https://jinja.palletsprojects.com/

Installing

Install and update using `pip`_:

.. code-block:: text

```
$ pip install -U Flask
```

.. _pip: https://pip.pypa.io/en/stable/getting-started/

A Simple Example

.. code-block:: python

```
# save this as app.py
from flask import Flask

app = Flask(__name__)

@app.route("/")
def hello():
    return "Hello, World!"
```

.. code-block:: text

```
$ flask run
  * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
```

Contributing

For guidance on setting up a development environment and how to make a
contribution to Flask, see the `contributing guidelines`_.

.. _contributing guidelines: https://github.com/pallets/flask/blob/main/CONTRIBUTING.rst

Donate

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Links

- Documentation: https://flask.palletsprojects.com/
- Changes: https://flask.palletsprojects.com/changes/
- PyPI Releases: https://pypi.org/project/Flask/
- Source Code: https://github.com/pallets/flask/
- Issue Tracker: https://github.com/pallets/flask/issues/
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* /opt/cola/permits/1363154996_1660769742.2096725/0/flask-2-1-3-tar-gz/Flask-2.1.3/src/Flask.egg-info/PKG-INFO
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Flask leverages Jinja2 as its template engine. You are obviously free to use

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[metadata]
name = Flask
version = attr: flask.__version__
url = https://palletsprojects.com/p/flask
project_urls =
 Donate = https://palletsprojects.com/donate
 Documentation = https://flask.palletsprojects.com/
 Changes = https://flask.palletsprojects.com/changes/
 Source Code = https://github.com/pallets/flask/
 Issue Tracker = https://github.com/pallets/flask/issues/
 Twitter = https://twitter.com/PalletsTeam
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license = BSD-3-Clause
author = Armin Ronacher
author_email = armin.ronacher@active-4.com
maintainer = Pallets
maintainer_email = contact@palletsprojects.com
description = A simple framework for building complex web applications.
long_description = file: README.rst
long_description_content_type = text/x-rst

```
classifiers =
 Development Status :: 5 - Production/Stable
 Environment :: Web Environment
 Framework :: Flask
 Intended Audience :: Developers
 License :: OSI Approved :: BSD License
 Operating System :: OS Independent
 Programming Language :: Python
 Topic :: Internet :: WWW/HTTP :: Dynamic Content
 Topic :: Internet :: WWW/HTTP :: WSGI
 Topic :: Internet :: WWW/HTTP :: WSGI :: Application
 Topic :: Software Development :: Libraries :: Application Frameworks

[options]
packages = find:
package_dir = = src
include_package_data = True
python_requires = >= 3.7

[options.packages.find]
where = src

[options.entry_points]
console_scripts =
 flask = flask.cli:main

[tool:pytest]
testpaths = tests
filterwarnings =
 error

[coverage:run]
branch = True
source =
 flask
 tests

[coverage:paths]
source =
 src
 */site-packages

[flake8]
select = B, E, F, W, B9, ISC
ignore =
 E203
 E402
 E501
```

E722
 W503
max-line-length = 80
per-file-ignores =
 src/flask/__init__.py: F401

[mypy]
files = src/flask, tests/typing
python_version = 3.7
show_error_codes = True
allow_redefinition = True
disallow_subclassing_any = True
no_implicit_optional = True
local_partial_types = True
strict_equality = True
warn_redundant_casts = True
warn_unused_configs = True
warn_unused_ignores = True

[mypy-asgiref.*]
ignore_missing_imports = True

[mypy-blinker.*]
ignore_missing_imports = True

[mypy-dotenv.*]
ignore_missing_imports = True

[mypy-cryptography.*]
ignore_missing_imports = True

[mypy-importlib_metadata]
ignore_missing_imports = True

[egg_info]
tag_build =
tag_date = 0

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* /opt/cola/permits/1363154996_1660769742.2096725/0/flask-2-1-3-tar-gz/Flask-2.1.3/examples/javascript/LICENSE.rst
* /opt/cola/permits/1363154996_1660769742.2096725/0/flask-2-1-3-tar-gz/Flask-2.1.3/LICENSE.rst

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3. The extension must use an open source license. The Python web

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1.583 clockwork 0.2.2

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Clockwork - a clock process to replace cron
===

Cron is non-ideal for running scheduled application tasks, especially in an app deployed to multiple machines. [More details.](http://adam.heroku.com/past/2010/4/13/rethinking_cron/)

Clockwork is a cron replacement. It runs as a lightweight, long-running Ruby process which sits alongside your web processes (Mongrel/Thin) and your worker processes (DJ/Resque/Minion/Stalker) to schedule recurring work at particular times or dates. For example, refreshing feeds on an hourly basis, or send reminder emails on a nightly basis, or generating invoices once a month on the 1st.

Quickstart

Create clock.rb:

```
require 'clockwork'
include Clockwork

handler do |job|
  puts "Running #{job}"
end

every(10.seconds, 'frequent.job')
every(3.minutes, 'less.frequent.job')
every(1.hour, 'hourly.job')

every(1.day, 'midnight.job', :at => '00:00')
```

Run it with the clockwork binary:

```
$ clockwork clock.rb
[2010-05-25 18:16:46 -0700] Starting clock for 4 events: [ frequent.job less.frequent.job hourly.job midnight.job ]
[2010-05-25 18:16:46 -0700] -> frequent.job
```

Use with queueing

The clock process only makes sense as a place to schedule work to be done, not
to do the work. It avoids locking by running as a single process, but this
makes it impossible to parallelize. For doing the work, you should be using a
job queueing system, such as
[Delayed Job](http://www.therailsway.com/2009/7/22/do-it-later-with-delayed-job),
[Beanstalk/Stalker](http://adam.heroku.com/past/2010/4/24/beanstalk_a_simple_and_fast_queueing_backend/),
[RabbitMQ/Minion](http://adamblog.heroku.com/past/2009/9/28/background_jobs_with_rabbitmq_and_minion/),
or
[Resque](http://github.com/blog/542-introducing-resque). This design allows a
simple clock process with no locks, but also offers near infinite horizontal
scalability.

For example, if you're using Beanstalk/Staker:

```
require 'stalker'

handler { |job| Stalker.enqueue(job) }

every(1.hour, 'feeds.refresh')
every(1.day, 'reminders.send', :at => '01:30')
```

Using a queueing system which doesn't require that your full application be
loaded is preferable, because the clock process can keep a tiny memory
footprint. If you're using DJ or Resque, however, you can go ahead and load
your full application enviroment, and use per-event blocks to call DJ or Resque
enqueue methods. For example, with DJ/Rails:

```
require 'config/boot'
require 'config/environment'

every(1.hour, 'feeds.refresh') { Feed.send_later(:refresh) }
every(1.day, 'reminders.send', :at => '01:30') { Reminder.send_later(:send_reminders) }
```

Anatomy of a clock file
----

clock.rb is standard Ruby. Since we include the Clockwork module (the
clockwork binary does this automatically, or you can do it explicitly), this

exposes a small DSL ("handler" and "every") to define the handler for events, and then the events themselves.

The handler typically looks like this:

```
  handler { |job| enqueue_your_job(job) }
```

This block will be invoked every time an event is triggered, with the job name passed in. In most cases, you should be able to pass the job name directly through to your queueing system.

The second part of the file are the events, which roughly resembles a crontab:

```
  every(5.minutes, 'thing.do')
  every(1.hour, 'otherthing.do')
```

In the first line of this example, an event will be triggered once every five minutes, passing the job name 'thing.do' into the handler. The handler shown above would thus call enqueue_your_job('thing.do').

You can also pass a custom block to the handler, for job queueing systems that rely on classes rather than job names (i.e. DJ and Resque). In this case, you need not define a general event handler, and instead provide one with each event:

```
  every(5.minutes, 'thing.do') { Thing.send_later(:do) }
```

If you provide a custom handler for the block, the job name is used only for logging.

You can also use blocks to do more complex checks:

```
  every(1.day, 'check.leap.year') do
    Stalker.enqueue('leap.year.party') if Time.now.year % 4 == 0
  end
```

In production

Only one clock process should ever be running across your whole application deployment. For example, if your app is running on three VPS machines (two app servers and one database), your app machines might have the following process topography:

* App server 1: 3 web (thin start), 3 workers (rake jobs:work), 1 clock (clockwork clock.rb)
* App server 2: 3 web (thin start), 3 workers (rake jobs:work)

You should use Monit, God, Upstart, or Inittab to keep your clock process running the same way you keep your web and workers running.

Meta

Created by Adam Wiggins

Inspired by [rufus-scheduler](http://rufus.rubyforge.org/rufus-scheduler/) and [http://github.com/bvandenbos/resque-scheduler](resque-scehduler)

Design assistance from Peter van Hardenberg and Matthew Soldo

Patches contributed by Mark McGranaghan

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http://github.com/adamwiggins/clockwork

Found in path(s):
* /opt/cola/permits/1213082843_1634008352.31/0/clockwork-0-2-2-1-gem/data-tar-gz/README.md

1.584 clone 1.0.4

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1.585 cpp 11.2.1_git20220219-r2

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1.586 flask-mail 0.9.1

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1.587 nopt 5.0.0

1.587.1 Available under license :

1.588 jheaps 0.13

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Manifest-Version: 1.0
Bundle-Description: A free, production-ready, efficient Java library c
ontaining a collection of heap data-structures.
Automatic-Module-Name: org.jheaps
Bundle-License: http://www.apache.org/licenses/LICENSE-2.0.txt
Bundle-SymbolicName: org.jheaps
Built-By: michail
Bnd-LastModified: 1567431643849
Bundle-ManifestVersion: 2
Bundle-Vendor: Dimitrios Michail
Import-Package: org.jheaps,org.jheaps.annotations

Require-Capability: osgi.ee;filter:="(&(osgi.ee=JavaSE)(version=1.6))"
Tool: Bnd-4.1.0.201810181252
Export-Package: org.jheaps;version="0.13.0",org.jheaps.monotone;uses:=
"org.jheaps,org.jheaps.annotations";version="0.13.0",org.jheaps.dag;u
ses:="org.jheaps,org.jheaps.annotations";version="0.13.0",org.jheaps.
array;uses:="org.jheaps,org.jheaps.annotations";version="0.13.0",org.
jheaps.annotations;version="0.13.0",org.jheaps.tree;uses:="org.jheaps
,org.jheaps.annotations";version="0.13.0"
Bundle-Name: JHeaps
Bundle-Version: 0.13.0
Created-By: Apache Maven Bundle Plugin
Build-Jdk: 1.8.0_222

Found in path(s):
* /opt/cola/permits/1193924596_1629395572.53/0/jheaps-0-13-jar/META-INF/MANIFEST.MF

1.589 spdx-license-ids 3.0.11

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root = true

[*]
charset = utf-8
end_of_line = lf
indent_style = tab
tab_width = 2
insert_final_newline = true
trim_trailing_whitespace = true

[*.{md,yml}]
indent_style = space

[*.md]
trim_trailing_whitespace = false
---
name: Node.js CI
on: [push]
jobs:
 test:
   runs-on: ubuntu-latest
   steps:
     - uses: actions/checkout@v2
     - uses: actions/setup-node@v1
     - run: npm ci
     - run: npm test
spdx-license-ids

```
[![npm version](https://img.shields.io/npm/v/spdx-license-ids.svg)](https://www.npmjs.com/package/spdx-license-ids)
[![Github Actions](https://action-badges.now.sh/shinnn/spdx-license-ids)](https://wdp9fww0r9.execute-api.us-west-2.amazonaws.com/production/results/shinnn/spdx-license-ids)
```

A list of [SPDX license](https://spdx.org/licenses/) identifiers

Installation

[Download JSON directly](https://raw.githubusercontent.com/shinnn/spdx-license-ids/main/index.json), or [use](https://docs.npmjs.com/cli/install) [npm](https://docs.npmjs.com/about-npm/):

```
npm install spdx-license-ids
```

[Node.js](https://nodejs.org/) API

require('spdx-license-ids')

Type: `string[]`

All license IDs except for the currently deprecated ones.

```javascript
const ids = require('spdx-license-ids');
//=> ['0BSD', 'AAL', 'ADSL', 'AFL-1.1', 'AFL-1.2', 'AFL-2.0', 'AFL-2.1', 'AFL-3.0', 'AGPL-1.0-only', ...]

ids.includes('BSD-3-Clause'); //=> true
ids.includes('CC-BY-1.0'); //=> true

ids.includes('GPL-3.0'); //=> false
```

require('spdx-license-ids/deprecated')

Type: `string[]`

Deprecated license IDs.

```javascript
const deprecatedIds = require('spdx-license-ids/deprecated');
//=> ['AGPL-1.0', 'AGPL-3.0', 'GFDL-1.1', 'GFDL-1.2', 'GFDL-1.3', 'GPL-1.0', 'GPL-2.0', ...]

deprecatedIds.includes('BSD-3-Clause'); //=> false
deprecatedIds.includes('CC-BY-1.0'); //=> false

deprecatedIds.includes('GPL-3.0'); //=> true
```

```

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* text=auto
---
name: 'Check Latest SPDX License List'
on:
 workflow_dispatch:
   inputs: {}
 schedule:
   - cron: '0 0 */7 * *'
jobs:
 check:
   runs-on: ubuntu-latest
   steps:
     - uses: actions/checkout@v2
     - uses: actions/setup-node@v1
     - run: npm run latest
[*.workflow]
indent_style = space

# 1.590 x-net 0.0.0-20211112202133-69e39bad7dc2

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```

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1.591 idna 13.0.0

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1.592 caseless 0.12.0

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1.593 paranamer 2.8

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* /opt/cola/permits/1150909240_1617718312.14/0/paranamer-2-8-sources-5-jar/com/thoughtworks/paranamer/ParameterNamesNotFoundException.java
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1.594 body-parser 1.20.1

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1.595 pcre 8.45-r2

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Email local part: Philip.Hazel

Email domain: gmail.com

University of Cambridge Computing Service,
Cambridge, England.

PCRE JUST-IN-TIME COMPILATION SUPPORT

Written by: Zoltan Herczeg
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1.596 etcd-raft 3.5.5

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1.597 httpagentparser 1.9.5

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1.598 jackson-databind 2.14.0

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1.599 python-certifi 2022.9.24

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SHA-1 implementation in NDK

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zlib

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https://hg.mozilla.org/mozilla-central/file/tip/security/nss/lib/ckfw/builtins/certdata.txt
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Just configure this file as the SSLCACertificateFile.#

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1.600 pyyaml 6.0

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1.601 python-requests 2.25.1

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1.603 idna-ssl 1.1.0

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1.604 path-is-absolute 1.0.1

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1.605 csrf 3.1.0

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1.607 just-diff 5.0.3

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1.608 prometheus-common 0.26.0

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1.609 json-schema-traverse 0.4.1

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1.610 forever-agent 0.6.1

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1.612 x-crypto 0.0.0-20220411220226-7b82a4e95df4

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1.613 python-etcd 0.4.5

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Metadata-Version: 1.1
Name: python-etcd
Version: 0.4.5
Summary: A python client for etcd

Home-page: http://github.com/jplana/python-etcd
Author: Jose Plana
Author-email: jplana@gmail.com
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Description: python-etcd documentation
        ========================

        A python client for Etcd https://github.com/coreos/etcd

        Official documentation: http://python-etcd.readthedocs.org/

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        Installation

        Pre-requirements
        ~~~~~~~~~~~~~~~~

        This version of python-etcd will only work correctly with the etcd server version 2.0.x or later. If you are running an older version of etcd, please use python-etcd 0.3.3 or earlier.

        This client is known to work with python 2.7 and with python 3.3 or above. It is not tested or expected to work in more outdated versions of python.

        From source
        ~~~~~~~~~~~

        .. code:: bash

            $ python setup.py install

        Usage

        The basic methods of the client have changed compared to previous versions, to reflect the new API structure; however a compatibility layer has been maintained so that you don't necessarily need to rewrite all your existing code.

        Create a client object
        ~~~~~~~~~~~~~~~~~~~~~~

        .. code:: python
        ~~~~~~~~~~~~~~~~~~~~~~

```
import etcd

client = etcd.Client() # this will create a client against etcd server running on localhost on port 4001
client = etcd.Client(port=4002)
client = etcd.Client(host='127.0.0.1', port=4003)
client = etcd.Client(host=(('127.0.0.1', 4001), ('127.0.0.1', 4002), ('127.0.0.1', 4003)))
client = etcd.Client(host='127.0.0.1', port=4003, allow_redirect=False) # wont let you run sensitive commands on non-leader machines, default is true
# If you have defined a SRV record for _etcd._tcp.example.com pointing to the clients
client = etcd.Client(srv_domain='example.com', protocol="https")
# create a client against https://api.example.com:443/etcd
client = etcd.Client(host='api.example.com', protocol='https', port=443, version_prefix='/etcd')
```

Write a key
~~~~~~~~~~~

.. code:: python

```
client.write('/nodes/n1', 1)
# with ttl
client.write('/nodes/n2', 2, ttl=4)  # sets the ttl to 4 seconds
client.set('/nodes/n2', 1) # Equivalent, for compatibility reasons.
```

Read a key
~~~~~~~~~~

.. code:: python

```
client.read('/nodes/n2').value
client.read('/nodes', recursive = True) #get all the values of a directory, recursively.
client.get('/nodes/n2').value

# raises etcd.EtcdKeyNotFound when key not found
try:
    client.read('/invalid/path')
except etcd.EtcdKeyNotFound:
    # do something
    print "error"
```

Delete a key
~~~~~~~~~~~~~

.. code:: python

```
client.delete('/nodes/n1')
```

Atomic Compare and Swap
~~~~~~~~~~~~~

~~~~~~~~~~~~~~~~~~~~~~~

.. code:: python

client.write('/nodes/n2', 2, prevValue = 4) # will set /nodes/n2 's value to 2 only if its previous value was 4 and
client.write('/nodes/n2', 2, prevExist = False) # will set /nodes/n2 's value to 2 only if the key did not exist before
client.write('/nodes/n2', 2, prevIndex = 30) # will set /nodes/n2 's value to 2 only if the key was last modified at index 30
client.test_and_set('/nodes/n2', 2, 4) #equivalent to client.write('/nodes/n2', 2, prevValue = 4)

You can also atomically update a result:

.. code:: python

result = client.read('/foo')
print(result.value) # bar
result.value += u'bar'
updated = client.update(result) # if any other client wrote '/foo' in the meantime this will fail
print(updated.value) # barbar

Watch a key
~~~~~~~~~~~

.. code:: python

client.read('/nodes/n1', wait = True) # will wait till the key is changed, and return once its changed
client.read('/nodes/n1', wait = True, timeout=30) # will wait till the key is changed, and return once its changed, or exit with an exception after 30 seconds.
client.read('/nodes/n1', wait = True, waitIndex = 10) # get all changes on this key starting from index 10
client.watch('/nodes/n1') #equivalent to client.read('/nodes/n1', wait = True)
client.watch('/nodes/n1', index = 10)

Refreshing key TTL
~~~~~~~~~~~~~~~~~~

(Since etcd 2.3.0) Keys in etcd can be refreshed without notifying current watchers.

This can be achieved by setting the refresh to true when updating a TTL.

You cannot update the value of a key when refreshing it.

.. code:: python

client.write('/nodes/n1', 'value', ttl=30) # sets the ttl to 30 seconds
client.refresh('/nodes/n1', ttl=600) # refresh ttl to 600 seconds, without notifying current watchers
~~~~~~~~~~~~~~~~~~

Locking module
~~~~~~~~~~~~~~

.. code:: python

```
# Initialize the lock object:
# NOTE: this does not acquire a lock yet
client = etcd.Client()
# Or you can custom lock prefix, default is '/_locks/' if you are using HEAD
client = etcd.Client(lock_prefix='/my_etcd_root/_locks')
lock = etcd.Lock(client, 'my_lock_name')

# Use the lock object:
lock.acquire(blocking=True, # will block until the lock is acquired
      lock_ttl=None) # lock will live until we release it
lock.is_acquired  # True
lock.acquire(lock_ttl=60) # renew a lock
lock.release() # release an existing lock
lock.is_acquired  # False

# The lock object may also be used as a context manager:
client = etcd.Client()
with etcd.Lock(client, 'customer1') as my_lock:
    do_stuff()
    my_lock.is_acquired  # True
    my_lock.acquire(lock_ttl=60)
my_lock.is_acquired  # False
```

Get machines in the cluster
~~~~~~~~~~~~~~~~~~~~~~~~~~~

.. code:: python

```
client.machines
```

Get leader of the cluster
~~~~~~~~~~~~~~~~~~~~~~~~~

.. code:: python

```
client.leader
```

Generate a sequential key in a directory
~~~~~~

.. code:: python

```
x = client.write("/dir/name", "value", append=True)
print("generated key: " + x.key)
print("stored value: " + x.value)
```

List contents of a directory
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

.. code:: python

```
#stick a couple values in the directory
client.write("/dir/name", "value1", append=True)
client.write("/dir/name", "value2", append=True)

directory = client.get("/dir/name")

# loop through directory children
for result in directory.children:
  print(result.key + ": " + result.value)

# or just get the first child value
print(directory.children.next().value)
```

Development setup

To create a buildout,

.. code:: bash

```
$ python bootstrap.py
$ bin/buildout
```

to test you should have etcd available in your system path:

.. code:: bash

```
$ bin/test
```

to generate documentation,

.. code:: bash

```
$ cd docs
$ make
```

Release HOWTO

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

To make a release

1) Update release date/version in NEWS.txt and setup.py
2) Run 'python setup.py sdist'
3) Test the generated source distribution in dist/
4) Upload to PyPI: 'python setup.py sdist register upload'

News
====
0.4.5

Release date: 3-Mar-2017

* Remove dnspython2/3 requirement
* Change property name setter in lock
* Fixed acl tests
* Added version/cluster_version properties to client
* Fixes in lock when used as context manager
* Fixed improper usage of urllib3 exceptions
* Minor fixes for error classes
* In lock return modifiedIndex to watch changes
* In lock fix context manager exception handling
* Improvments to the documentation
* Remove _base_uri only after refresh from cluster
* Avoid double update of _machines_cache

0.4.4

Release date: 10-Jan-2017

* Fix some tests
* Use sys,version_info tuple, instead of named tuple
* Improve & fix documentation
* Fix python3 specific problem when blocking on contented lock
* Add refresh key method
* Add custom lock prefix support

0.4.3

Release date: 14-Dec-2015

* Fix check for parameters in case of connection error
* Python 3.5 compatibility and general python3 cleanups
* Added authentication and module for managing ACLs
* Added srv record-based DNS discovery

* Fixed (again) logging of cluster id changes
* Fixed leader lookup
* Properly retry request on exception
* Client: clean up open connections when deleting

0.4.2

Release date: 8-Oct-2015

* Fixed lock documentation
* Fixed lock sequences due to etcd 2.2 change
* Better exception management during response processing
* Fixed logging of cluster ID changes
* Fixed subtree results
* Do not check cluster ID if etcd responses don't contain the ID
* Added a cause to EtcdConnectionFailed

0.4.1

Release date: 1-Aug-2015

* Added client-side leader election
* Added stats endpoints
* Added logging
* Better exception handling
* Check for cluster ID on each request
* Added etcd.Client.members and fixed etcd.Client.leader
* Removed locking and election etcd support
* Allow the use of etcd proxies with reconnections
* Implement pop: Remove key from etc and return the corresponding value.
* Eternal watcher can be now recursive
* Fix etcd.Client machines
* Do not send parameters with `None` value to etcd
* Support ttl=0 in write.
* Moved pyOpenSSL into test requirements.
* Always set certificate information so redirects from http to https work.

0.3.3

Release date: 12-Apr-2015

* Forward leaves_only value in get_subtree() recursive calls
* Fix README prevExists->prevExist
* Added configurable version_prefix
* Added support for recursive watch
* Better error handling support (more detailed exceptions)

* Fixed some unreliable tests

0.3.2

Release date: 4-Aug-2014

* Fixed generated documentation version.

0.3.1

Release date: 4-Aug-2014

* Added consisten read option
* Fixed timeout parameter in read()
* Added atomic delete parameter support
* Fixed delete behaviour
* Added update method that allows atomic updated on results
* Fixed checks on write()
* Added leaves generator to EtcdResult and get_subtree for recursive fetch
* Added etcd_index to EtcdResult
* Changed ethernal -> eternal
* Updated urllib3 & pyOpenSSL libraries
* Several performance fixes
* Better parsing of etcd_index and raft_index
* Removed duplicated tests
* Added several integration and unit tests
* Use etcd v0.3.0 in travis
* Execute test using `python setup.py test` and nose

0.3.0

Release date: 18-Jan-2014

* API v2 support
* Python 3.3 compatibility

0.2.1

Release data: 30-Nov-2013

* SSL support
* Added support for subdirectories in results.
* Improve test
* Added support for reconnections, allowing death node tolerance.

0.2.0

Release date: 30-Sep-2013

* Allow fetching of multiple keys (sub-nodes)

0.1

Release date: 18-Sep-2013

* Initial release

Keywords: etcd raft distributed log api client
Platform: UNKNOWN
Classifier: Topic :: System :: Distributed Computing
Classifier: Topic :: Software Development :: Libraries
Classifier: License :: OSI Approved :: MIT License
Classifier: Programming Language :: Python :: 2
Classifier: Programming Language :: Python :: 3
Classifier: Topic :: Database :: Front-Ends

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* /opt/cola/permits/1112217808_1607049972.97/0/python-etcd-0-4-5-1-tar-gz/python-etcd-0.4.5/src/python_etcd.egg-info/PKG-INFO
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```
from setuptools import setup, find_packages
import sys, os

here = os.path.abspath(os.path.dirname(__file__))
README = open(os.path.join(here, 'README.rst')).read()
NEWS = open(os.path.join(here, 'NEWS.txt')).read()


version = '0.4.5'

install_requires = [
  'urllib3>=1.7.1',
```

```
    'dnspython>=1.13.0'
]

test_requires = [
    'mock',
    'nose',
    'pyOpenSSL>=0.14'
]

setup(
    name='python-etcd',
    version=version,
    description="A python client for etcd",
    long_description=README + '\n\n' + NEWS,
    classifiers=[
        "Topic :: System :: Distributed Computing",
        "Topic :: Software Development :: Libraries",
        "License :: OSI Approved :: MIT License",
        "Programming Language :: Python :: 2",
        "Programming Language :: Python :: 3",
        "Topic :: Database :: Front-Ends",
    ],
    keywords='etcd raft distributed log api client',
    author='Jose Plana',
    author_email='jplana@gmail.com',
    url='http://github.com/jplana/python-etcd',
    license='MIT',
    packages=find_packages('src'),
    package_dir = {'': 'src'},
    include_package_data=True,
    zip_safe=False,
    install_requires=install_requires,
    tests_require=test_requires,
    test_suite='nose.collector',
)
```

Found in path(s):
* /opt/cola/permits/1112217808_1607049972.97/0/python-etcd-0-4-5-1-tar-gz/python-etcd-0.4.5/setup.py

1.614 promise-call-limit 1.0.1

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1.615 indent-string 4.0.0

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1.616 netty-handler-proxy 4.1.78.Final

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* /opt/cola/permits/1425043675_1663940646.553722/0/netty-handler-proxy-4-1-78-final-sources-1-jar/io/netty/handler/proxy/HttpProxyHandler.java
* /opt/cola/permits/1425043675_1663940646.553722/0/netty-handler-proxy-4-1-78-final-sources-1-jar/io/netty/handler/proxy/Socks5ProxyHandler.java
* /opt/cola/permits/1425043675_1663940646.553722/0/netty-handler-proxy-4-1-78-final-sources-1-jar/io/netty/handler/proxy/ProxyConnectException.java
* /opt/cola/permits/1425043675_1663940646.553722/0/netty-handler-proxy-4-1-78-final-sources-1-jar/io/netty/handler/proxy/package-info.java
* /opt/cola/permits/1425043675_1663940646.553722/0/netty-handler-proxy-4-1-78-final-sources-1-jar/io/netty/handler/proxy/ProxyHandler.java
* /opt/cola/permits/1425043675_1663940646.553722/0/netty-handler-proxy-4-1-78-final-sources-1-jar/io/netty/handler/proxy/Socks4ProxyHandler.java

1.617 github.com/pbnjay/memory 0.0.0-20190104145345-974d429e7ae4

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1.618 boto3 1.20.54

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1.620 jinja2 2.11.3

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Metadata-Version: 2.1
Name: Jinja2
Version: 2.11.3
Summary: A very fast and expressive template engine.
Home-page: https://palletsprojects.com/p/jinja/
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License: BSD-3-Clause
Project-URL: Documentation, https://jinja.palletsprojects.com/
Project-URL: Code, https://github.com/pallets/jinja
Project-URL: Issue tracker, https://github.com/pallets/jinja/issues
Description: Jinja
=====

Jinja is a fast, expressive, extensible templating engine. Special placeholders in the template allow writing code similar to Python syntax. Then the template is passed data to render the final document.

It includes:

- Template inheritance and inclusion.
- Define and import macros within templates.
- HTML templates can use autoescaping to prevent XSS from untrusted user input.
- A sandboxed environment can safely render untrusted templates.
- AsyncIO support for generating templates and calling async functions.
- I18N support with Babel.

- Templates are compiled to optimized Python code just-in-time and cached, or can be compiled ahead-of-time.
- Exceptions point to the correct line in templates to make debugging easier.
- Extensible filters, tests, functions, and even syntax.

Jinja's philosophy is that while application logic belongs in Python if possible, it shouldn't make the template designer's job difficult by restricting functionality too much.

Installing

Install and update using `pip`_:

.. code-block:: text

```
$ pip install -U Jinja2
```

.. _pip: https://pip.pypa.io/en/stable/quickstart/

In A Nutshell

.. code-block:: jinja

```
{% extends "base.html" %}
{% block title %}Members{% endblock %}
{% block content %}
  <ul>
  {% for user in users %}
    <li><a href="{{ user.url }}">{{ user.username }}</a></li>
  {% endfor %}
  </ul>
{% endblock %}
```

Links

- Website: https://palletsprojects.com/p/jinja/
- Documentation: https://jinja.palletsprojects.com/
- Releases: https://pypi.org/project/Jinja2/
- Code: https://github.com/pallets/jinja
- Issue tracker: https://github.com/pallets/jinja/issues
- Test status: https://dev.azure.com/pallets/jinja/_build

- Official chat: https://discord.gg/t6rrQZH

Platform: UNKNOWN
Classifier: Development Status :: 5 - Production/Stable
Classifier: Environment :: Web Environment
Classifier: Intended Audience :: Developers
Classifier: License :: OSI Approved :: BSD License
Classifier: Operating System :: OS Independent
Classifier: Programming Language :: Python
Classifier: Programming Language :: Python :: 2
Classifier: Programming Language :: Python :: 2.7
Classifier: Programming Language :: Python :: 3
Classifier: Programming Language :: Python :: 3.5
Classifier: Programming Language :: Python :: 3.6
Classifier: Programming Language :: Python :: 3.7
Classifier: Programming Language :: Python :: 3.8
Classifier: Programming Language :: Python :: Implementation :: CPython
Classifier: Programming Language :: Python :: Implementation :: PyPy
Classifier: Topic :: Internet :: WWW/HTTP :: Dynamic Content
Classifier: Topic :: Software Development :: Libraries :: Python Modules
Classifier: Topic :: Text Processing :: Markup :: HTML
Requires-Python: >=2.7, !=3.0.*, !=3.1.*, !=3.2.*, !=3.3.*, !=3.4.*
Description-Content-Type: text/x-rst
Provides-Extra: i18n

Found in path(s):
* /opt/cola/permits/1160876753_1620411588.74/0/jinja2-2-11-3-1-tar-gz/Jinja2-2.11.3/PKG-INFO
* /opt/cola/permits/1160876753_1620411588.74/0/jinja2-2-11-3-1-tar-gz/Jinja2-2.11.3/src/Jinja2.egg-info/PKG-INFO
No license file was found, but licenses were detected in source scan.

```
import io
import re

from setuptools import find_packages
from setuptools import setup

with io.open("README.rst", "rt", encoding="utf8") as f:
  readme = f.read()

with io.open("src/jinja2/__init__.py", "rt", encoding="utf8") as f:
  version = re.search(r'__version__ = "(.*?)"', f.read(), re.M).group(1)

setup(
  name="Jinja2",
  version=version,
  url="https://palletsprojects.com/p/jinja/",
  project_urls={
```

```
        "Documentation": "https://jinja.palletsprojects.com/",
        "Code": "https://github.com/pallets/jinja",
        "Issue tracker": "https://github.com/pallets/jinja/issues",
    },
    license="BSD-3-Clause",
    author="Armin Ronacher",
    author_email="armin.ronacher@active-4.com",
    maintainer="Pallets",
    maintainer_email="contact@palletsprojects.com",
    description="A very fast and expressive template engine.",
    long_description=readme,
    classifiers=[
        "Development Status :: 5 - Production/Stable",
        "Environment :: Web Environment",
        "Intended Audience :: Developers",
        "License :: OSI Approved :: BSD License",
        "Operating System :: OS Independent",
        "Programming Language :: Python",
        "Programming Language :: Python :: 2",
        "Programming Language :: Python :: 2.7",
        "Programming Language :: Python :: 3",
        "Programming Language :: Python :: 3.5",
        "Programming Language :: Python :: 3.6",
        "Programming Language :: Python :: 3.7",
        "Programming Language :: Python :: 3.8",
        "Programming Language :: Python :: Implementation :: CPython",
        "Programming Language :: Python :: Implementation :: PyPy",
        "Topic :: Internet :: WWW/HTTP :: Dynamic Content",
        "Topic :: Software Development :: Libraries :: Python Modules",
        "Topic :: Text Processing :: Markup :: HTML",
    ],
    packages=find_packages("src"),
    package_dir={"": "src"},
    include_package_data=True,
    python_requires=">=2.7, !=3.0.*, !=3.1.*, !=3.2.*, !=3.3.*, !=3.4.*",
    install_requires=["MarkupSafe>=0.23"],
    extras_require={"i18n": ["Babel>=0.8"]},
    entry_points={"babel.extractors": ["jinja2 = jinja2.ext:babel_extract[i18n]"]},
)
```

Found in path(s):
* /opt/cola/permits/1160876753_1620411588.74/0/jinja2-2-11-3-1-tar-gz/Jinja2-2.11.3/setup.py

1.621 sfdisk 2.38-r1

1.621.1 Available under license :


```
NR START   END SECTORS SIZE NAME UUID
1    32  7679    7648 3.7M      8f8378c0-01
2  7680 16383    8704 4.3M      8f8378c0-02
5  7936 12799    4864 2.4M
6 12544 16127    3584 1.8M
```

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Version 3, 29 June 2007

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1.627 minipass-sized 1.0.3

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1.628 pmdarima 2.0.1

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1.629 asynckit 0.4.0

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1.630 setprototypeof 1.2.0

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1.631 tinyqueue 2.0.3

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io.helidon.config.yaml.internal.YamlConfigParser

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io.helidon.config.yaml.internal.YamlFileTypeDetector

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* /opt/cola/permits/1212207596_1633726302.78/0/helidon-config-yaml-1-2-0-sources-1-jar/META-INF/services/java.nio.file.spi.FileTypeDetector

1.633 icu 71

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Commands to generate dependency files
GEN_DEPS.c= $(CC) -E -MM $(DEFS) $(CPPFLAGS)
GEN_DEPS.cc= $(CXX) -E -MM $(DEFS) $(CPPFLAGS)

Flags for position independent code
SHAREDLIBCFLAGS = -fPIC
SHAREDLIBCXXFLAGS = -fPIC
SHAREDLIBCPPFLAGS = -DPIC

Additional flags when building libraries and with threads
THREADSCPPFLAGS = -D_REENTRANT
LIBCPPFLAGS =

```
## Compiler switch to embed a runtime search path
LD_RPATH=
LD_RPATH_PRE= -Wl,-rpath,

## Compiler switch to embed a library name
LD_SONAME = -Wl,-soname -Wl,$(notdir $(MIDDLE_SO_TARGET))

## Shared library options
LD_SOOPTIONS= -Wl,-Bsymbolic

## Shared object suffix
SO = so
## Non-shared intermediate object suffix
STATIC_O = ao

## Compilation rules
%.$(STATIC_O): $(srcdir)/%.c
 $(COMPILE.c) $(STATICCPPFLAGS) $(STATICCFLAGS) -o $@ $<
%.o: $(srcdir)/%.c
 $(COMPILE.c) $(DYNAMICCPPFLAGS) $(DYNAMICCFLAGS) -o $@ $<

%.$(STATIC_O): $(srcdir)/%.cpp
 $(COMPILE.cc) $(STATICCPPFLAGS) $(STATICCXXFLAGS) -o $@ $<
%.o: $(srcdir)/%.cpp
 $(COMPILE.cc) $(DYNAMICCPPFLAGS) $(DYNAMICCXXFLAGS) -o $@ $<


## Dependency rules
%.d: $(srcdir)/%.c
 @echo "generating dependency information for $<"
 @$(SHELL) -ec '$(GEN_DEPS.c) $< \
  | sed '\''s/\($*\)\.o[ :]*/\1.o $@ : /g'\'' > $@; \
  [ -s $@ ] || rm -f $@'

%.d: $(srcdir)/%.cpp
 @echo "generating dependency information for $<"
 @$(SHELL) -ec '$(GEN_DEPS.cc) $< \
  | sed '\''s/\($*\)\.o[ :]*/\1.o $@ : /g'\'' > $@; \
  [ -s $@ ] || rm -f $@'

## Versioned libraries rules

%.$(SO).$(SO_TARGET_VERSION_MAJOR): %.$(SO).$(SO_TARGET_VERSION)
 $(RM) $@ && ln -s ${<F} $@
%.$(SO): %.$(SO).$(SO_TARGET_VERSION_MAJOR)
 $(RM) $@ && ln -s ${*F}.$(SO).$(SO_TARGET_VERSION) $@

##  Bind internal references
```

```
# LDflags that pkgdata will use
BIR_LDFLAGS= -Wl,-Bsymbolic

# Dependencies [i.e. map files] for the final library
BIR_DEPS=

## Remove shared library 's'
STATIC_PREFIX_WHEN_USED =
STATIC_PREFIX =

## End BSD-specific setup
```

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Section: pkg.m4 - Macros to locate and utilise pkg-config.

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namely the `configure` script.)

File: config.guess (only for ICU4C)

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File: install-sh (only for ICU4C)

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1.634 libucontext 1.2-r0

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1.635 spdx-exceptions 2.3.0

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Found in path(s):
* /opt/cola/permits/1136088994_1613675065.5/0/spdx-exceptions-2-3-0-5-tgz/package/README.md

1.636 geos 3.10.2-r0

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1.639 jackc-pgpassfile 1.0.0

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1.640 npm-audit-report 3.0.0

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1.641 openjpeg 2.5.0

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Glenn Randers-Pehrson
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1.642 contrib-instrumentation-google.golang.org-grpc-otelgrpc 0.25.0

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1.643 promise-inflight 1.0.1

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1.644 shapely 1.7.1

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1.645 kuler 2.0.0

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1.646 ldapts 3.2.4

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return new resultCodeErrors_1.ConfidentialityRequiredError(message);

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__exportStar(require("./ConfidentialityRequiredError"), exports);

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* /opt/cola/permits/1452676258_1666815131.1983101/0/ldapts-3-2-4-tgz/package/errors/resultCodeErrors/index.js
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```
export * from './AdminLimitExceededError';
export * from './AffectsMultipleDSAsError';
export * from './AliasDerefProblemError';
export * from './AliasProblemError';
export * from './AlreadyExistsError';
export * from './AuthMethodNotSupportedError';
export * from './BusyError';
export * from './ConfidentialityRequiredError';
export * from './ConstraintViolationError';
export * from './InappropriateAuthError';
export * from './InappropriateMatchingError';
export * from './InsufficientAccessError';
export * from './InvalidCredentialsError';
export * from './InvalidDNSyntaxError';
export * from './InvalidSyntaxError';
export * from './IsLeafError';
export * from './LoopDetectError';
export * from './NamingViolationError';
export * from './NoObjectClassModsError';
export * from './NoSuchAttributeError';
export * from './NoSuchObjectError';
export * from './NotAllowedOnNonLeafError';
export * from './NotAllowedOnRDNError';
export * from './ObjectClassViolationError';
export * from './OperationsError';
export * from './ProtocolError';
export * from './ResultCodeError';
export * from './ResultsTooLargeError';
export * from './SaslBindInProgressError';
export * from './SizeLimitExceededError';
export * from './StrongAuthRequiredError';
export * from './TimeLimitExceededError';
export * from './TLSNotSupportedError';
export * from './TypeOrValueExistsError';
export * from './UnavailableCriticalExtensionError';
export * from './UnavailableError';
export * from './UndefinedTypeError';
export * from './UnknownStatusCodeError';
export * from './UnwillingToPerformError';
```

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{"version":3,"file":"ConfidentialityRequiredError.js","sourceRoot":"./","sources":["errors/resultCodeErrors/ConfidentialityRequiredError.ts"],"names":[],"mappings":";;;;AAAA,uDAAoD;AAEpD,MAAa,4BAA6B,SAAQ,iCAAe;IAC/D,YAAmB,OAAgB;QACjC,KAAK,CACH,EAAE,EACF,OAAO;YACL,gMAAgM,CACnM,CAAC;IACJ,CAAC;CACF;AARD,oEAQC"}

Found in path(s):
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- Showing empathy towards other community members

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- Public or private harassment
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```
import { ResultCodeError } from './ResultCodeError';
export declare class ConfidentialityRequiredError extends ResultCodeError {
  constructor(message?: string);
```

}

Found in path(s):
* /opt/cola/permits/1452676258_1666815131.1983101/0/ldapts-3-2-4-tgz/package/errors/resultCodeErrors/ConfidentialityRequiredError.d.ts
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//# sourceMappingURL=ConfidentialityRequiredError.js.map

Found in path(s):
* /opt/cola/permits/1452676258_1666815131.1983101/0/ldapts-3-2-4-tgz/package/errors/resultCodeErrors/ConfidentialityRequiredError.js

1.647 libnetfilter-cttimeout 1.2.3-r0

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*
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* /opt/cola/permits/1344947999_1657894591.0906107/0/alpine-baselayout-3-2-0-r22-tar-gz/mkmntdirs.c

1.652 cyrus-sasl 2.1.28-r0

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1.653 busybox 1.35.0-r17

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Julian Seward, Cambridge, UK.
jseward@bzip.org
bzip2/libbzip2 version 1.0.4 of 20 December 2006
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1.654 idna 2.9

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Found in path(s):
* /opt/cola/permits/1110783928_1606854170.13/0/kjd-idna-v2-9-0-g1233a73-1-tar-gz/kjd-idna-8a6016e/LICENSE.rst
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```
"""
A library to support the Internationalised Domain Names in Applications
(IDNA) protocol as specified in RFC 5890 et.al. This new methodology,
known as IDNA 2008, can generate materially different results to the
previous standard. The library can act as a drop-in replacement for
the "encodings.idna" module.
"""

import io, sys
from setuptools import setup


def main():
```

```
    python_version = sys.version_info[:2]
    if python_version < (2,7):
        raise SystemExit("Sorry, Python 2.7 or newer required")

    package_data = {}
    exec(open('idna/package_data.py').read(), package_data)

    arguments = {
        'name': 'idna',
        'packages': ['idna'],
        'version': package_data['__version__'],
        'description': 'Internationalized Domain Names in Applications (IDNA)',
        'long_description': io.open("README.rst", encoding="UTF-8").read(),
        'author': 'Kim Davies',
        'author_email': 'kim@cynosure.com.au',
        'license': 'BSD-like',
        'url': 'https://github.com/kjd/idna',
        'classifiers': [
            'Development Status :: 5 - Production/Stable',
            'Intended Audience :: Developers',
            'Intended Audience :: System Administrators',
            'License :: OSI Approved :: BSD License',
            'Operating System :: OS Independent',
            'Programming Language :: Python',
            'Programming Language :: Python :: 2',
            'Programming Language :: Python :: 2.7',
            'Programming Language :: Python :: 3',
            'Programming Language :: Python :: 3.4',
            'Programming Language :: Python :: 3.5',
            'Programming Language :: Python :: 3.6',
            'Programming Language :: Python :: 3.7',
            'Programming Language :: Python :: 3.8',
            'Programming Language :: Python :: Implementation :: CPython',
            'Programming Language :: Python :: Implementation :: PyPy',
            'Topic :: Internet :: Name Service (DNS)',
            'Topic :: Software Development :: Libraries :: Python Modules',
            'Topic :: Utilities',
        ],
        'python_requires': '>=2.7, !=3.0.*, !=3.1.*, !=3.2.*, !=3.3.*',
        'test_suite': 'tests',
    }

    setup(**arguments)

if __name__ == '__main__':
    main()
```

Found in path(s):

* /opt/cola/permits/1110783928_1606854170.13/0/kjd-idna-v2-9-0-g1233a73-1-tar-gz/kjd-idna-8a6016e/setup.py

1.655 cli-table3 0.6.2

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1.656 rndm 1.2.0

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1.660 pytz 2020.4

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1.662 depd 2.0.0

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1.664 github.com/timescale/timescaledb-tune 0.14.1

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lib/erl/src/Makefile.am

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```

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```
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*/
```

(By Douglas Crockford <douglas@crockford.com>)

For lib/cpp/src/thrift/windows/SocketPair.cpp

```
/* socketpair.c
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*/
```

For lib/py/compat/win32/stdint.h

Codegen template in t_html_generator.h

For t_cl_generator.cc

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1.668 py3-more-itertools 8.13.0-r0

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1.669 groupcache 0.0.0-20210331224755-41bb18bfe9da

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1.670 is-plain-object 5.0.0

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1.673 balanced-match 1.0.2

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1.676 sass 1.55.0

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1.677 libnpmversion 3.0.6

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1.678 safe-stable-stringify 2.4.1

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1.679 promise-all-reject-late 1.0.1

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1.680 htmlparser2 6.1.0

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1.681 jsonschema 3.2.0

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1.682 idna 2.10

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* /opt/cola/permits/1110905341_1606871385.15/0/kjd-idna-v2-10-0-ge5c11db-1-tar-gz/kjd-idna-b8defb9/LICENSE.rst

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```
"""
A library to support the Internationalised Domain Names in Applications
(IDNA) protocol as specified in RFC 5890 et.al. This new methodology,
known as IDNA 2008, can generate materially different results to the
previous standard. The library can act as a drop-in replacement for
the "encodings.idna" module.
"""

import io, sys
from setuptools import setup


def main():

  python_version = sys.version_info[:2]
  if python_version < (2,7):
    raise SystemExit("Sorry, Python 2.7 or newer required")

  package_data = {}
  exec(open('idna/package_data.py').read(), package_data)

  arguments = {
    'name': 'idna',
    'packages': ['idna'],
    'version': package_data['__version__'],
    'description': 'Internationalized Domain Names in Applications (IDNA)',
    'long_description': io.open("README.rst", encoding="UTF-8").read(),
    'author': 'Kim Davies',
    'author_email': 'kim@cynosure.com.au',
    'license': 'BSD-like',
    'url': 'https://github.com/kjd/idna',
    'classifiers': [
      'Development Status :: 5 - Production/Stable',
      'Intended Audience :: Developers',
      'Intended Audience :: System Administrators',
      'License :: OSI Approved :: BSD License',
      'Operating System :: OS Independent',
      'Programming Language :: Python',
      'Programming Language :: Python :: 2',
      'Programming Language :: Python :: 2.7',
      'Programming Language :: Python :: 3',
      'Programming Language :: Python :: 3.4',
      'Programming Language :: Python :: 3.5',
      'Programming Language :: Python :: 3.6',
      'Programming Language :: Python :: 3.7',
      'Programming Language :: Python :: 3.8',
```

```
        'Programming Language :: Python :: Implementation :: CPython',
        'Programming Language :: Python :: Implementation :: PyPy',
        'Topic :: Internet :: Name Service (DNS)',
        'Topic :: Software Development :: Libraries :: Python Modules',
        'Topic :: Utilities',
      ],
      'python_requires': '>=2.7, !=3.0.*, !=3.1.*, !=3.2.*, !=3.3.*',
    }

    setup(**arguments)

if __name__ == '__main__':
    main()
```

Found in path(s):

* /opt/cola/permits/1110905341_1606871385.15/0/kjd-idna-v2-10-0-ge5c11db-1-tar-gz/kjd-idna-b8defb9/setup.py

1.683 ecc-jsbn 0.1.2

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1.684 python-certifi 2022.09.24

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file (certdata.txt). This file can be found in the mozilla source tree:
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It contains the certificates in PEM format and therefore
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an Apache+mod_ssl webserver for SSL client authentication.
Just configure this file as the SSLCACertificateFile.#

@(#) $RCSfile: certdata.txt,v $ $Revision: 1.80 $ $Date: 2011/11/03 15:11:58 $

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1.688 libnsl 2.0.0-r0

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1.691 cpp 11.2.1_git20220219-r2

1.691.1 Available under license :

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```
From d7064ab25a561bb99c3d0b35663154656013aed2 Mon Sep 17 00:00:00 2001
From: Ariadne Conill <ariadne@dereferenced.org>
Date: Fri, 21 Aug 2020 07:06:30 +0000
Subject: [PATCH] ada: libgnarl compatibility for musl

---
gcc/ada/libgnarl/s-osinte__linux.ads | 11 ------
gcc/ada/libgnarl/s-taprop__linux.adb | 53 ++--------------------------
2 files changed, 3 insertions(+), 61 deletions(-)

diff --git a/gcc/ada/libgnarl/s-osinte__linux.ads b/gcc/ada/libgnarl/s-osinte__linux.ads
index 2272f83d68d..1d78456544a 100644
--- a/gcc/ada/libgnarl/s-osinte__linux.ads
+++ b/gcc/ada/libgnarl/s-osinte__linux.ads
@@ -401,12 +401,6 @@ package System.OS_Interface is
   PTHREAD_RWLOCK_PREFER_WRITER_NP              : constant := 1;
   PTHREAD_RWLOCK_PREFER_WRITER_NONRECURSIVE_NP : constant := 2;

-   function pthread_rwlockattr_setkind_np
-     (attr : access pthread_rwlockattr_t;
-      pref : int) return int;
-   pragma Import
-     (C, pthread_rwlockattr_setkind_np, "pthread_rwlockattr_setkind_np");
-
   function pthread_rwlock_init
     (mutex : access pthread_rwlock_t;
      attr  : access pthread_rwlockattr_t) return int;
@@ -468,11 +462,6 @@ package System.OS_Interface is
      protocol : int) return int;
   pragma Import (C, pthread_mutexattr_setprotocol);

-   function pthread_mutexattr_setprioceiling
```

```
-     (attr        : access pthread_mutexattr_t;
-      prioceiling : int) return int;
-   pragma Import (C, pthread_mutexattr_setprioceiling);
-
   type struct_sched_param is record
      sched_priority : int;  --  scheduling priority
   end record;
diff --git a/gcc/ada/libgnarl/s-taprop__linux.adb b/gcc/ada/libgnarl/s-taprop__linux.adb
index 757a6cdfdad..82df94f6a00 100644
--- a/gcc/ada/libgnarl/s-taprop__linux.adb
+++ b/gcc/ada/libgnarl/s-taprop__linux.adb
@@ -198,9 +198,6 @@ package body System.Task_Primitives.Operations is
   pragma Import
     (C, GNAT_pthread_condattr_setup, "__gnat_pthread_condattr_setup");

-   function GNAT_has_cap_sys_nice return C.int;
-   pragma Import
-     (C, GNAT_has_cap_sys_nice, "__gnat_has_cap_sys_nice");
   --  We do not have pragma Linker_Options ("-lcap"); here, because this
   --  library is not present on many Linux systems. 'libcap' is the Linux
   --  "capabilities" library, called by __gnat_has_cap_sys_nice.
@@ -210,38 +207,6 @@ package body System.Task_Primitives.Operations is
   --  Convert Ada priority to Linux priority. Priorities are 1 .. 99 on
   --  GNU/Linux, so we map 0 .. 98 to 1 .. 99.

-   function Get_Ceiling_Support return Boolean;
-   --  Get the value of the Ceiling_Support constant (see below).
-   --  Note well: If this function or related code is modified, it should be
-   --  tested by hand, because automated testing doesn't exercise it.
-
-   -------------------------
-   -- Get_Ceiling_Support --
-   -------------------------
-
-   function Get_Ceiling_Support return Boolean is
-      Ceiling_Support : Boolean := False;
-   begin
-      if Locking_Policy /= 'C' then
-         return False;
-      end if;
-
-      declare
-         function geteuid return Integer;
-         pragma Import (C, geteuid, "geteuid");
-         Superuser : constant Boolean := geteuid = 0;
-         Has_Cap : constant C.int := GNAT_has_cap_sys_nice;
-         pragma Assert (Has_Cap in 0 | 1);
-      begin
```

```
-         Ceiling_Support := Superuser or else Has_Cap = 1;
-      end;
-
-      return Ceiling_Support;
-   end Get_Ceiling_Support;
-
-   pragma Warnings (Off, "non-preelaborable call not allowed*");
-   Ceiling_Support : constant Boolean := Get_Ceiling_Support;
-   pragma Warnings (On, "non-preelaborable call not allowed*");
   --  True if the locking policy is Ceiling_Locking, and the current process
   --  has permission to use this policy. The process has permission if it is
   --  running as 'root', or if the capability was set by the setcap command,
@@ -344,7 +309,9 @@ package body System.Task_Primitives.Operations is
   -- Init_Mutex --
   ----------------

+   pragma Warnings (Off, "formal parameter * is not referenced");
   function Init_Mutex (L : RTS_Lock_Ptr; Prio : Any_Priority) return C.int is
+   pragma Warnings (On, "formal parameter * is not referenced");
      Mutex_Attr : aliased pthread_mutexattr_t;
      Result, Result_2 : C.int;

@@ -356,16 +323,7 @@ package body System.Task_Primitives.Operations is
         return Result;
      end if;

-      if Ceiling_Support then
-         Result := pthread_mutexattr_setprotocol
-           (Mutex_Attr'Access, PTHREAD_PRIO_PROTECT);
-         pragma Assert (Result = 0);
-
-         Result := pthread_mutexattr_setprioceiling
-           (Mutex_Attr'Access, Prio_To_Linux_Prio (Prio));
-         pragma Assert (Result = 0);
-
-      elsif Locking_Policy = 'I' then
+      if Locking_Policy = 'I' then
         Result := pthread_mutexattr_setprotocol
           (Mutex_Attr'Access, PTHREAD_PRIO_INHERIT);
         pragma Assert (Result = 0);
@@ -405,11 +363,6 @@ package body System.Task_Primitives.Operations is
           Result := pthread_rwlockattr_init (RWlock_Attr'Access);
          pragma Assert (Result = 0);

-           Result := pthread_rwlockattr_setkind_np
-             (RWlock_Attr'Access,
-              PTHREAD_RWLOCK_PREFER_WRITER_NONRECURSIVE_NP);
-           pragma Assert (Result = 0);
```

-

 Result := pthread_rwlock_init (L.RW'Access, RWlock_Attr'Access);

 pragma Assert (Result in 0 | ENOMEM);

--
2.35.1

Found in path(s):
* /opt/cola/permits/1327775260_1657893467.828745/0/gcc-11-2-1-tar-gz/0031-ada-libgnarl-compatibility-for-musl.patch
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From 4ea687132408a7c662706c4a7eb3c61b7773d735 Mon Sep 17 00:00:00 2001
From: "H.J. Lu" <hjl.tools@gmail.com>
Date: Fri, 21 Jan 2022 13:24:00 -0800
Subject: [PATCH] x86: Properly disable -fsplit-stack support on non-glibc
targets

Revert x86 changes in

commit c163647ffbc9a20c8feb6e079dbecccfe016c82e
Author: Soren Tempel <soeren@soeren-tempel.net>
Date: Fri Jan 21 19:22:46 2022 +0000

 Disable -fsplit-stack support on non-glibc targets

and change ix86_supports_split_stack to return true only on glibc.

 PR bootstrap/104170
 * common/config/i386/i386-common.c (ix86_supports_split_stack):
 Return true only on glibc.
 * config/i386/gnu-user-common.h (STACK_CHECK_STATIC_BUILTIN):
 Revert commit c163647ffbc.
 * config/i386/gnu.h (TARGET_LIBC_PROVIDES_SSP): Likewise.
---
gcc/common/config/i386/i386-common.c | 17 +++++++++++------
gcc/config/i386/gnu-user-common.h | 5 ++---
gcc/config/i386/gnu.h | 5 +----
3 files changed, 14 insertions(+), 13 deletions(-)

diff --git a/gcc/common/config/i386/i386-common.c b/gcc/common/config/i386/i386-common.c
index 96549aa7d7e..a3b5258e828 100644
--- a/gcc/common/config/i386/i386-common.c
+++ b/gcc/common/config/i386/i386-common.c
@@ -1696,16 +1696,21 @@ ix86_option_init_struct (struct gcc_options *opts)
 field in the TCB, so they cannot be used together. */

static bool

```
-ix86_supports_split_stack (bool report ATTRIBUTE_UNUSED,
+ix86_supports_split_stack (bool report,
      struct gcc_options *opts ATTRIBUTE_UNUSED)
{
+#ifdef TARGET_THREAD_SPLIT_STACK_OFFSET
+  if (opts->x_linux_libc != LIBC_GLIBC)
+#endif
+    {
+      if (report)
+ error ("%<-fsplit-stack%> currently only supported on GNU/Linux");
+      return false;
+    }
+
  bool ret = true;

-#ifndef TARGET_THREAD_SPLIT_STACK_OFFSET
-  if (report)
-    error ("%<-fsplit-stack%> currently only supported on GNU/Linux");
-  ret = false;
-#else
+#ifdef TARGET_THREAD_SPLIT_STACK_OFFSET
  if (!HAVE_GAS_CFI_PERSONALITY_DIRECTIVE)
    {
      if (report)
diff --git a/gcc/config/i386/gnu-user-common.h b/gcc/config/i386/gnu-user-common.h
index 6e13315b5a3..00226f5a455 100644
--- a/gcc/config/i386/gnu-user-common.h
+++ b/gcc/config/i386/gnu-user-common.h
@@ -66,8 +66,7 @@ along with GCC; see the file COPYING3.  If not see
#define STACK_CHECK_STATIC_BUILTIN 1

/* We only build the -fsplit-stack support in libgcc if the
-   assembler has full support for the CFI directives and
-   targets glibc.  */
-#if HAVE_GAS_CFI_PERSONALITY_DIRECTIVE && OPTION_GLIBC
+   assembler has full support for the CFI directives.  */
+#if HAVE_GAS_CFI_PERSONALITY_DIRECTIVE
#define TARGET_CAN_SPLIT_STACK
#endif
diff --git a/gcc/config/i386/gnu.h b/gcc/config/i386/gnu.h
index afd3e8e8841..25fbc07f58c 100644
--- a/gcc/config/i386/gnu.h
+++ b/gcc/config/i386/gnu.h
@@ -35,10 +35,7 @@ along with GCC.  If not, see <http://www.gnu.org/licenses/>.
   crti.o%s %{static:crtbeginT.o%s;shared|pie:crtbeginS.o%s;:crtbegin.o%s}"
#endif

-/* -fsplit-stack uses a field in the TCB at a fixed offset. This
```

```
-   field is only available for glibc.  Disable -fsplit-stack for
-   other libc implementations to avoid silent TCB corruptions.  */
-#if defined (TARGET_LIBC_PROVIDES_SSP) && OPTION_GLIBC
+#ifdef TARGET_LIBC_PROVIDES_SSP

/* i386 glibc provides __stack_chk_guard in %gs:0x14.  */
#define TARGET_THREAD_SSP_OFFSET	0x14
--
2.35.1
```

Found in path(s):

* /opt/cola/permits/1327775260_1657893467.828745/0/gcc-11-2-1-tar-gz/0047-x86-Properly-disable-fsplit-stack-support-on-non-gli.patch

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```
From 52ce9c86c0c89ae45e0d08cc232682e1811aa8f2 Mon Sep 17 00:00:00 2001
From: Drew DeVault <sir@cmpwn.com>
Date: Wed, 9 Dec 2020 16:07:26 +0000
Subject: [PATCH] configure: Add --enable-autolink-libatomic, use in
LINK_GCC_C_SEQUENCE_SPEC [PR81358]

This fixes issues with RISC-V.
---
Makefile.in          |  1 +
gcc/config.in        |  6 ++++++
gcc/config/gnu-user.h | 12 +++++++++++-
gcc/configure        | 34 +++++++++++++++++++++++++++++++---
gcc/configure.ac     | 22 +++++++++++++++++++++-
gcc/doc/install.texi |  8 ++++++++
gcc/doc/tm.texi      |  8 +++++++-
gcc/doc/tm.texi.in   |  8 +++++++-
gcc/gcc.c            | 12 +++++++++++-
9 files changed, 103 insertions(+), 8 deletions(-)

diff --git a/Makefile.in b/Makefile.in
index f97db1ef569..7e577ed3dbb 100644
--- a/Makefile.in
+++ b/Makefile.in
@@ -222,6 +222,7 @@ HOST_EXPORTS = \
 RANLIB_FOR_TARGET="$(RANLIB_FOR_TARGET)"; export RANLIB_FOR_TARGET; \
 READELF_FOR_TARGET="$(READELF_FOR_TARGET)"; export READELF_FOR_TARGET; \
 TOPLEVEL_CONFIGURE_ARGUMENTS="$(TOPLEVEL_CONFIGURE_ARGUMENTS)"; export
TOPLEVEL_CONFIGURE_ARGUMENTS; \
+ TARGET_CONFIGDIRS="$(TARGET_CONFIGDIRS)"; export TARGET_CONFIGDIRS; \
 HOST_LIBS="$(STAGE1_LIBS)"; export HOST_LIBS; \
 GMPLIBS="$(HOST_GMPLIBS)"; export GMPLIBS; \
 GMPINC="$(HOST_GMPINC)"; export GMPINC; \
diff --git a/gcc/config.in b/gcc/config.in
```

```
index 059c818c895..2a560417440 100644
--- a/gcc/config.in
+++ b/gcc/config.in
@@ -106,6 +106,12 @@
#endif


+/* Define if libatomic should always be linked. */
+#ifndef USED_FOR_TARGET
+#undef ENABLE_AUTOLINK_LIBATOMIC
+#endif
+
+
/* Define to 1 to specify that we are using the BID decimal floating point
   format instead of DPD */
#ifndef USED_FOR_TARGET
diff --git a/gcc/config/gnu-user.h b/gcc/config/gnu-user.h
index 902378e1bad..daf7727a01a 100644
--- a/gcc/config/gnu-user.h
+++ b/gcc/config/gnu-user.h
@@ -109,8 +109,18 @@ see the files COPYING3 and COPYING.RUNTIME respectively.  If not, see
#define LINK_EH_SPEC "%{!static|static-pie:--eh-frame-hdr} "
#endif

+#if !defined(LINK_LIBATOMIC_SPEC) && defined(ENABLE_AUTOLINK_LIBATOMIC)
+#  ifdef LD_AS_NEEDED_OPTION
+#    define LINK_LIBATOMIC_SPEC LD_AS_NEEDED_OPTION " -latomic "
LD_NO_AS_NEEDED_OPTION
+#  else
+#    define LINK_LIBATOMIC_SPEC "-latomic"
+#  endif
+#elif !defined(LINK_LIBATOMIC_SPEC)
+#  define LINK_LIBATOMIC_SPEC ""
+#endif
+
#define GNU_USER_TARGET_LINK_GCC_C_SEQUENCE_SPEC \
-  "%{static|static-pie:--start-group} %G %{!nolibc:%L} \
+  "%{static|static-pie:--start-group} %G %{!nolibc:" LINK_LIBATOMIC_SPEC " %L} \
   %{static|static-pie:--end-group}%{!static:%{!static-pie:%G}}"

#undef LINK_GCC_C_SEQUENCE_SPEC
diff --git a/gcc/configure b/gcc/configure
index 592e81e40f6..8672298f23f 100755
--- a/gcc/configure
+++ b/gcc/configure
@@ -978,6 +978,7 @@ with_changes_root_url
enable_languages
with_multilib_list
```

```
with_multilib_generator
+enable_autolink_libatomic
with_zstd
with_zstd_include
with_zstd_lib
@@ -1707,6 +1708,9 @@ Optional Features:
  --disable-shared        don't provide a shared libgcc
  --disable-gcov          don't provide libgcov and related host tools
  --enable-languages=LIST specify which front-ends to build
+  --enable-autolink-libatomic
+                          enable automatic linking of libatomic (ignored if
+                          not built)
  --disable-rpath         do not hardcode runtime library paths
  --enable-sjlj-exceptions
                          arrange to use setjmp/longjmp exception handling
@@ -8070,7 +8074,6 @@ else
fi



-
# Check whether --with-multilib-generator was given.
if test "${with_multilib_generator+set}" = set; then :
  withval=$with_multilib_generator; :
@@ -8078,6 +8081,32 @@ else
  with_multilib_generator=default
fi

+# If libatomic is available, whether it should be linked automatically
+# Check whether --enable-autolink-libatomic was given.
+if test "${enable_autolink_libatomic+set}" = set; then :
+  enableval=$enable_autolink_libatomic;
+  case $enable_autolink_libatomic in
+    yes | no) ;;
+    *) as_fn_error $? "'$enable_autolink_libatomic' is an invalid value for
+--enable-autolink-libatomic.  Valid choices are 'yes' and 'no'." "$LINENO" 5 ;;
+  esac
+
+else
+  enable_autolink_libatomic=''
+fi
+
+
+if test x$enable_autolink_libatomic = xyes; then
+  if echo " ${TARGET_CONFIGDIRS} " | grep " libatomic " > /dev/null 2>&1 ; then
+
+$as_echo "#define ENABLE_AUTOLINK_LIBATOMIC 1" >>confdefs.h
+
+  else
```

```
+    { $as_echo "$as_me:${as_lineno-$LINENO}: WARNING: libatomic is not build for this target, --enable-
autolink-libatomic ignored" >&5
+$as_echo "$as_me: WARNING: libatomic is not build for this target, --enable-autolink-libatomic ignored" >&2;}
+  fi
+fi
+

# -------------------------
# Checks for other programs
@@ -19501,7 +19530,7 @@ else
  lt_dlunknown=0; lt_dlno_uscore=1; lt_dlneed_uscore=2
  lt_status=$lt_dlunknown
  cat > conftest.$ac_ext <<_LT_EOF
-#line 19501 "configure"
+#line 19158 "configure"
#include "confdefs.h"

#if HAVE_DLFCN_H
@@ -34068,4 +34097,3 @@ if test -n "$ac_unrecognized_opts" && test "$enable_option_checking" != no; then
$as_echo "$as_me: WARNING: unrecognized options: $ac_unrecognized_opts" >&2;}
fi

-
diff --git a/gcc/configure.ac b/gcc/configure.ac
index 1577529ffb7..e96691f69ba 100644
--- a/gcc/configure.ac
+++ b/gcc/configure.ac
@@ -1149,6 +1149,27 @@ AC_ARG_WITH(multilib-generator,
:,
with_multilib_generator=default)

+# If libatomic is available, whether it should be linked automatically
+AC_ARG_ENABLE(autolink-libatomic,
+[AS_HELP_STRING([--enable-autolink-libatomic],
+  [enable automatic linking of libatomic (ignored if not built)])],
+[
+  case $enable_autolink_libatomic in
+    yes | no) ;;
+    *) AC_MSG_ERROR(['$enable_autolink_libatomic' is an invalid value for
+--enable-autolink-libatomic.  Valid choices are 'yes' and 'no'.]) ;;
+  esac
+], [enable_autolink_libatomic=''])
+
+if test x$enable_autolink_libatomic = xyes; then
+  if echo " ${TARGET_CONFIGDIRS} " | grep " libatomic " > /dev/null 2>&1 ; then
+    AC_DEFINE(ENABLE_AUTOLINK_LIBATOMIC, 1,
+ [Define if libatomic should always be linked.])
+  else
```

```
+    AC_MSG_WARN([libatomic is not build for this target, --enable-autolink-libatomic ignored])
+  fi
+fi
+
# -------------------------
# Checks for other programs
# -------------------------
@@ -7729,4 +7750,3 @@ done
],
[subdirs='$subdirs'])
AC_OUTPUT
-
diff --git a/gcc/doc/install.texi b/gcc/doc/install.texi
index 4c38244ae58..4a544e6a4ee 100644
--- a/gcc/doc/install.texi
+++ b/gcc/doc/install.texi
@@ -2213,6 +2213,14 @@ files, but these changed header paths may conflict with some compilation
environments.  Enabled by default, and may be disabled using
@option{--disable-canonical-system-headers}.

+@item --enable-autolink-libatomic
+@itemx --disable-autolink-libatomic
+Tell GCC that it should automatically link libatomic; if supported by
+the linker, the file is only linked as needed. This flag is ignored
+when libatomic is not built. Note that this conigure flag is in particular
+useful when building an offloading-target compiler; as for those, a
+user had to specify @code{-foffload=target=-latomic} otherwise.
+
@item --with-glibc-version=@var{major}.@var{minor}
Tell GCC that when the GNU C Library (glibc) is used on the target it
will be version @var{major}.@var{minor} or later.  Normally this can
diff --git a/gcc/doc/tm.texi b/gcc/doc/tm.texi
index b370bc76b25..acc78273983 100644
--- a/gcc/doc/tm.texi
+++ b/gcc/doc/tm.texi
@@ -381,7 +381,13 @@ the argument @option{-lgcc} to tell the linker to do the search.

@defmac LINK_GCC_C_SEQUENCE_SPEC
The sequence in which libgcc and libc are specified to the linker.
-By default this is @code{%G %L %G}.
+By default this is @code{%G LINK_LIBATOMIC_SPEC %L %G}.
+@end defmac
+
+@defmac LINK_LIBATOMIC_SPEC
+This macro is used in the default @code{LINK_GCC_C_SEQUENCE_SPEC} to link
+libatomic. By default, it is unset unless @code{ENABLE_AUTOLINK_LIBATOMIC}
+is set.
@end defmac
```

```
@defmac POST_LINK_SPEC
diff --git a/gcc/doc/tm.texi.in b/gcc/doc/tm.texi.in
index 2974dae2701..80e003a38ce 100644
--- a/gcc/doc/tm.texi.in
+++ b/gcc/doc/tm.texi.in
@@ -381,7 +381,13 @@ the argument @option{-lgcc} to tell the linker to do the search.

@defmac LINK_GCC_C_SEQUENCE_SPEC
The sequence in which libgcc and libc are specified to the linker.
-By default this is @code{%G %L %G}.
+By default this is @code{%G LINK_LIBATOMIC_SPEC %L %G}.
+@end defmac
+
+@defmac LINK_LIBATOMIC_SPEC
+This macro is used in the default @code{LINK_GCC_C_SEQUENCE_SPEC} to link
+libatomic. By default, it is unset unless @code{ENABLE_AUTOLINK_LIBATOMIC}
+is set.
@end defmac

@defmac POST_LINK_SPEC
diff --git a/gcc/gcc.c b/gcc/gcc.c
index 22dbbf85850..90aa576037a 100644
--- a/gcc/gcc.c
+++ b/gcc/gcc.c
@@ -980,13 +980,23 @@ proper position among the other output files.  */
# define ASM_DEBUG_OPTION_SPEC ""
#endif

+#if !defined(LINK_LIBATOMIC_SPEC) && defined(ENABLE_AUTOLINK_LIBATOMIC)
+#  ifdef LD_AS_NEEDED_OPTION
+#    define LINK_LIBATOMIC_SPEC LD_AS_NEEDED_OPTION " -latomic "
LD_NO_AS_NEEDED_OPTION
+#  else
+#    define LINK_LIBATOMIC_SPEC "-latomic"
+#  endif
+#elif !defined(LINK_LIBATOMIC_SPEC)
+#  define LINK_LIBATOMIC_SPEC ""
+#endif
+
/* Here is the spec for running the linker, after compiling all files.  */

/* This is overridable by the target in case they need to specify the
   -lgcc and -lc order specially, yet not require them to override all
   of LINK_COMMAND_SPEC.  */
#ifndef LINK_GCC_C_SEQUENCE_SPEC
-#define LINK_GCC_C_SEQUENCE_SPEC "%G %{!nolibc:%L %G}"
+#define LINK_GCC_C_SEQUENCE_SPEC "%G %{!nolibc:" LINK_LIBATOMIC_SPEC " %L %G}"
```

#endif

#ifdef ENABLE_DEFAULT_SSP
--
2.35.1

Found in path(s):
* /opt/cola/permits/1327775260_1657893467.828745/0/gcc-11-2-1-tar-gz/0039-configure-Add-enable-autolink-libatomic-use-in-LINK_.patch
No license file was found, but licenses were detected in source scan.

```
From 8de5d46c530ceca9f4add46d5cae3cd52c38eba3 Mon Sep 17 00:00:00 2001
From: Ariadne Conill <ariadne@dereferenced.org>
Date: Fri, 21 Aug 2020 06:46:56 +0000
Subject: [PATCH] On linux targets pass --as-needed by default to the linker,
but always link the sanitizer libraries with --no-as-needed.

---
gcc/config/aarch64/aarch64-linux.h |  1 +
gcc/config/alpha/linux-elf.h       |  2 +-
gcc/config/arm/linux-elf.h         |  1 +
gcc/config/gnu-user.h              |  6 +++---
gcc/config/i386/gnu-user.h         |  2 +-
gcc/config/i386/gnu-user64.h       |  1 +
gcc/config/ia64/linux.h            |  2 +-
gcc/config/mips/gnu-user.h         |  1 +
gcc/config/riscv/linux.h           |  1 +
gcc/config/rs6000/linux64.h        |  4 ++--
gcc/config/rs6000/sysv4.h          |  2 +-
gcc/config/s390/linux.h            |  2 +-
gcc/config/sparc/linux.h           |  2 +-
gcc/gcc.c                          | 28 ++++++++++++++++++++--------
14 files changed, 36 insertions(+), 19 deletions(-)

diff --git a/gcc/config/aarch64/aarch64-linux.h b/gcc/config/aarch64/aarch64-linux.h
index 7f2529a2a1d..b097e1688aa 100644
--- a/gcc/config/aarch64/aarch64-linux.h
+++ b/gcc/config/aarch64/aarch64-linux.h
@@ -35,6 +35,7 @@
#define CPP_SPEC "%{pthread:-D_REENTRANT}"

#define LINUX_TARGET_LINK_SPEC  "%{h*}  \
+   --as-needed     \
   %{static:-Bstatic}    \
   %{shared:-shared}    \
   %{symbolic:-Bsymbolic}   \
diff --git a/gcc/config/alpha/linux-elf.h b/gcc/config/alpha/linux-elf.h
index c1dae8ca2cf..a87dc740171 100644
```

```
--- a/gcc/config/alpha/linux-elf.h
+++ b/gcc/config/alpha/linux-elf.h
@@ -37,7 +37,7 @@ along with GCC; see the file COPYING3.  If not see

#define ELF_DYNAMIC_LINKER GNU_USER_DYNAMIC_LINKER

-#define LINK_SPEC "-m elf64alpha %{G*} %{relax:-relax}  \
+#define LINK_SPEC "-m elf64alpha --as-needed %{G*} %{relax:-relax}  \
  %{O*:-O3} %{!O*:-O1}      \
  %{shared:-shared}      \
  %{!shared:       \
diff --git a/gcc/config/arm/linux-elf.h b/gcc/config/arm/linux-elf.h
index 0c1c4e70b6b..8b581afacdd 100644
--- a/gcc/config/arm/linux-elf.h
+++ b/gcc/config/arm/linux-elf.h
@@ -70,6 +70,7 @@
    %{rdynamic:-export-dynamic} \
    %{!shared:-dynamic-linker " GNU_USER_DYNAMIC_LINKER "}} \
   -X \
+   --as-needed \
   %{mbig-endian:-EB} %{mlittle-endian:-EL}" \
   SUBTARGET_EXTRA_LINK_SPEC

diff --git a/gcc/config/gnu-user.h b/gcc/config/gnu-user.h
index 5ebbf42a13d..902378e1bad 100644
--- a/gcc/config/gnu-user.h
+++ b/gcc/config/gnu-user.h
@@ -136,7 +136,7 @@ see the files COPYING3 and COPYING.RUNTIME respectively.  If not, see
#define LIBASAN_EARLY_SPEC "%{!shared:libasan_preinit%O%s} " \
  "%{static-libasan:%{!shared:" \
  LD_STATIC_OPTION " --whole-archive -lasan --no-whole-archive " \
-  LD_DYNAMIC_OPTION "}}%{!static-libasan:-lasan}"
+  LD_DYNAMIC_OPTION "}}%{!static-libasan:%{!fuse-ld=gold:--push-state} --no-as-needed -lasan %{fuse-ld=gold:--as-needed;:--pop-state}}"
#undef LIBHWASAN_EARLY_SPEC
#define LIBHWASAN_EARLY_SPEC "%{static-libhwasan:%{!shared:" \
  LD_STATIC_OPTION " --whole-archive -lhwasan --no-whole-archive " \
@@ -145,12 +145,12 @@ see the files COPYING3 and COPYING.RUNTIME respectively.  If not, see
#define LIBTSAN_EARLY_SPEC "%{!shared:libtsan_preinit%O%s} " \
  "%{static-libtsan:%{!shared:" \
  LD_STATIC_OPTION " --whole-archive -ltsan --no-whole-archive " \
-  LD_DYNAMIC_OPTION "}}%{!static-libtsan:-ltsan}"
+  LD_DYNAMIC_OPTION "}}%{!static-libtsan:%{!fuse-ld=gold:--push-state} --no-as-needed -ltsan %{fuse-ld=gold:--as-needed;:--pop-state}}"
#undef LIBLSAN_EARLY_SPEC
#define LIBLSAN_EARLY_SPEC "%{!shared:liblsan_preinit%O%s} " \
  "%{static-liblsan:%{!shared:" \
  LD_STATIC_OPTION " --whole-archive -llsan --no-whole-archive " \
```

```
-  LD_DYNAMIC_OPTION "}}%{!static-liblsan:-llsan}"
+  LD_DYNAMIC_OPTION "}}%{!static-liblsan:%{!fuse-ld=gold:--push-state} --no-as-needed -llsan %{fuse-ld=gold:--as-needed;:--pop-state}}"
#endif

#undef TARGET_F951_OPTIONS
diff --git a/gcc/config/i386/gnu-user.h b/gcc/config/i386/gnu-user.h
index a23e7ab3eb7..12ac8cb93a9 100644
--- a/gcc/config/i386/gnu-user.h
+++ b/gcc/config/i386/gnu-user.h
@@ -68,7 +68,7 @@ along with GCC; see the file COPYING3.  If not see
  { "link_emulation", GNU_USER_LINK_EMULATION },\
  { "dynamic_linker", GNU_USER_DYNAMIC_LINKER }

-#define GNU_USER_TARGET_LINK_SPEC "-m %(link_emulation) %{shared:-shared} \
+#define GNU_USER_TARGET_LINK_SPEC "-m %(link_emulation) --as-needed %{shared:-shared} \
  %{!shared: \
    %{!static: \
      %{!static-pie: \
diff --git a/gcc/config/i386/gnu-user64.h b/gcc/config/i386/gnu-user64.h
index f3e25b1412a..712b0f1c30e 100644
--- a/gcc/config/i386/gnu-user64.h
+++ b/gcc/config/i386/gnu-user64.h
@@ -56,6 +56,7 @@ see the files COPYING3 and COPYING.RUNTIME respectively.  If not, see
                  "%{" SPEC_64 ":-m " GNU_USER_LINK_EMULATION64 "} \
                   %{" SPEC_32 ":-m " GNU_USER_LINK_EMULATION32 "} \
                   %{" SPEC_X32 ":-m " GNU_USER_LINK_EMULATIONX32 "} \
+  --as-needed \
  %{shared:-shared} \
  %{!shared: \
    %{!static: \
diff --git a/gcc/config/ia64/linux.h b/gcc/config/ia64/linux.h
index ac40c3dfd3f..6e19e25c35a 100644
--- a/gcc/config/ia64/linux.h
+++ b/gcc/config/ia64/linux.h
@@ -58,7 +58,7 @@ do {      \
#define GLIBC_DYNAMIC_LINKER "/lib/ld-linux-ia64.so.2"

#undef LINK_SPEC
-#define LINK_SPEC "\
+#define LINK_SPEC " --as-needed \
  %{shared:-shared} \
  %{!shared: \
    %{!static: \
diff --git a/gcc/config/mips/gnu-user.h b/gcc/config/mips/gnu-user.h
index a390bcece83..be0ee289367 100644
--- a/gcc/config/mips/gnu-user.h
+++ b/gcc/config/mips/gnu-user.h
```

```
@@ -55,6 +55,7 @@ along with GCC; see the file COPYING3.  If not see
#undef GNU_USER_TARGET_LINK_SPEC
#define GNU_USER_TARGET_LINK_SPEC "\
  %{G*} %{EB} %{EL} %{mips*} %{shared} \
+ -as-needed \
  %{!shared: \
    %{!static: \
      %{rdynamic:-export-dynamic} \
diff --git a/gcc/config/riscv/linux.h b/gcc/config/riscv/linux.h
index fce5b896e6e..ee29979dd34 100644
--- a/gcc/config/riscv/linux.h
+++ b/gcc/config/riscv/linux.h
@@ -58,6 +58,7 @@ along with GCC; see the file COPYING3.  If not see
  "%{mabi=ilp32:_ilp32}"

#define LINK_SPEC "\
+-as-needed \
-melf" XLEN_SPEC DEFAULT_ENDIAN_SPEC "riscv" LD_EMUL_SUFFIX " \
%{mno-relax:--no-relax} \
%{mbig-endian:-EB} \
diff --git a/gcc/config/rs6000/linux64.h b/gcc/config/rs6000/linux64.h
index e3f2cd254f6..43499ed29cf 100644
--- a/gcc/config/rs6000/linux64.h
+++ b/gcc/config/rs6000/linux64.h
@@ -374,13 +374,13 @@ extern int dot_symbols;
        " -m elf64ppc")
#endif

-#define LINK_OS_LINUX_SPEC32 LINK_OS_LINUX_EMUL32 " %{!shared: %{!static: \
+#define LINK_OS_LINUX_SPEC32 LINK_OS_LINUX_EMUL32 " --as-needed %{!shared: %{!static: \
  %{!static-pie: \
    %{rdynamic:-export-dynamic} \
    -dynamic-linker " GNU_USER_DYNAMIC_LINKER32 "}}} \
  %(link_os_extra_spec32)"

-#define LINK_OS_LINUX_SPEC64 LINK_OS_LINUX_EMUL64 " %{!shared: %{!static: \
+#define LINK_OS_LINUX_SPEC64 LINK_OS_LINUX_EMUL64 " --as-needed %{!shared: %{!static: \
  %{!static-pie: \
    %{rdynamic:-export-dynamic} \
    -dynamic-linker " GNU_USER_DYNAMIC_LINKER64 "}}} \
diff --git a/gcc/config/rs6000/sysv4.h b/gcc/config/rs6000/sysv4.h
index 510abe169c5..3c1f3a8ec5d 100644
--- a/gcc/config/rs6000/sysv4.h
+++ b/gcc/config/rs6000/sysv4.h
@@ -789,7 +789,7 @@ GNU_USER_TARGET_CC1_SPEC
#define GNU_USER_DYNAMIC_LINKER GLIBC_DYNAMIC_LINKER
#endif
```

```
-#define LINK_OS_LINUX_SPEC "-m elf32ppclinux %{!shared: %{!static: \
+#define LINK_OS_LINUX_SPEC "-m elf32ppclinux --as-needed %{!shared: %{!static: \
  %{rdynamic:-export-dynamic} \
  -dynamic-linker " GNU_USER_DYNAMIC_LINKER "}}"

diff --git a/gcc/config/s390/linux.h b/gcc/config/s390/linux.h
index daa48fdfc2b..2fcfc5d770f 100644
--- a/gcc/config/s390/linux.h
+++ b/gcc/config/s390/linux.h
@@ -82,7 +82,7 @@ along with GCC; see the file COPYING3.  If not see

#undef  LINK_SPEC
#define LINK_SPEC \
-  "%{m31:-m elf_s390}%{m64:-m elf64_s390} \
+  "%{m31:-m elf_s390}%{m64:-m elf64_s390} --as-needed \
   %{shared:-shared} \
   %{!shared: \
      %{static:-static} \
diff --git a/gcc/config/sparc/linux.h b/gcc/config/sparc/linux.h
index 2550d7ee8f0..7596d0b2757 100644
--- a/gcc/config/sparc/linux.h
+++ b/gcc/config/sparc/linux.h
@@ -81,7 +81,7 @@ extern const char *host_detect_local_cpu (int argc, const char **argv);
#define GLIBC_DYNAMIC_LINKER "/lib/ld-linux.so.2"

#undef  LINK_SPEC
-#define LINK_SPEC "-m elf32_sparc %{shared:-shared} \
+#define LINK_SPEC "-m elf32_sparc --as-needed %{shared:-shared} \
  %{!mno-relax:%{!r:-relax}} \
  %{!shared: \
    %{!static: \
diff --git a/gcc/gcc.c b/gcc/gcc.c
index faf9ce76b3d..1ad5da6d769 100644
--- a/gcc/gcc.c
+++ b/gcc/gcc.c
@@ -737,8 +737,11 @@ proper position among the other output files.  */
#ifdef LIBASAN_EARLY_SPEC
#define LIBASAN_SPEC STATIC_LIBASAN_LIBS
#elif defined(HAVE_LD_STATIC_DYNAMIC)
-#define LIBASAN_SPEC "%{static-libasan:" LD_STATIC_OPTION \
-      "} -lasan %{static-libasan:" LD_DYNAMIC_OPTION "}" \
+#define LIBASAN_SPEC "%{static-libasan:" LD_STATIC_OPTION "}" \
+      " %{!static-libasan:%{!fuse-ld=gold:--push-state }--no-as-needed}" \
+      " -lasan " \
+      " %{static-libasan:" LD_DYNAMIC_OPTION "}" \
+      " %{!static-libasan:%{fuse-ld=gold:--as-needed;:--pop-state}}" \
       STATIC_LIBASAN_LIBS
#else
```

```
#define LIBASAN_SPEC "-lasan" STATIC_LIBASAN_LIBS
@@ -773,8 +776,11 @@ proper position among the other output files.  */
#ifdef LIBTSAN_EARLY_SPEC
#define LIBTSAN_SPEC STATIC_LIBTSAN_LIBS
#elif defined(HAVE_LD_STATIC_DYNAMIC)
-#define LIBTSAN_SPEC "%{static-libtsan:" LD_STATIC_OPTION \
-      "} -ltsan %{static-libtsan:" LD_DYNAMIC_OPTION "}" \
+#define LIBTSAN_SPEC "%{static-libtsan:" LD_STATIC_OPTION "}" \
+      " %{!static-libtsan:%{!fuse-ld=gold:--push-state }--no-as-needed}" \
+      " -ltsan " \
+      " %{static-libtsan:" LD_DYNAMIC_OPTION "}" \
+      " %{!static-libtsan:%{fuse-ld=gold:--as-needed;:--pop-state}}" \
      STATIC_LIBTSAN_LIBS
#else
#define LIBTSAN_SPEC "-ltsan" STATIC_LIBTSAN_LIBS
@@ -791,8 +797,11 @@ proper position among the other output files.  */
#ifdef LIBLSAN_EARLY_SPEC
#define LIBLSAN_SPEC STATIC_LIBLSAN_LIBS
#elif defined(HAVE_LD_STATIC_DYNAMIC)
-#define LIBLSAN_SPEC "%{static-liblsan:" LD_STATIC_OPTION \
-      "} -llsan %{static-liblsan:" LD_DYNAMIC_OPTION "}" \
+#define LIBLSAN_SPEC "%{static-liblsan:" LD_STATIC_OPTION "}" \
+      " %{!static-liblsan:%{!fuse-ld=gold:--push-state }--no-as-needed}" \
+      " -llsan " \
+      " %{static-liblsan:" LD_DYNAMIC_OPTION "}" \
+      " %{!static-liblsan:%{fuse-ld=gold:--as-needed;:--pop-state}}" \
      STATIC_LIBLSAN_LIBS
#else
#define LIBLSAN_SPEC "-llsan" STATIC_LIBLSAN_LIBS
@@ -807,8 +816,11 @@ proper position among the other output files.  */
#define STATIC_LIBUBSAN_LIBS \
  " %{static-libubsan|static:%:include(libsanitizer.spec)%(link_libubsan)}"
#ifdef HAVE_LD_STATIC_DYNAMIC
-#define LIBUBSAN_SPEC "%{static-libubsan:" LD_STATIC_OPTION \
-      "} -lubsan %{static-libubsan:" LD_DYNAMIC_OPTION "}" \
+#define LIBUBSAN_SPEC "%{static-libubsan:" LD_STATIC_OPTION "}" \
+      " %{!static-libubsan:%{!fuse-ld=gold:--push-state }--no-as-needed}" \
+      " -lubsan " \
+      " %{static-libubsan:" LD_DYNAMIC_OPTION "}" \
+      " %{!static-libubsan:%{fuse-ld=gold:--as-needed;:--pop-state}}" \
      STATIC_LIBUBSAN_LIBS
#else
#define LIBUBSAN_SPEC "-lubsan" STATIC_LIBUBSAN_LIBS
--
2.35.1
```

Found in path(s):

* /opt/cola/permits/1327775260_1657893467.828745/0/gcc-11-2-1-tar-gz/0005-On-linux-targets-pass-as-needed-

by-default-to-the-li.patch
No license file was found, but licenses were detected in source scan.

From 72f32e3383129ad139df76d9a063fac9b03079b1 Mon Sep 17 00:00:00 2001
From: Alex McGrath <amk@amk.ie>
Date: Wed, 13 Oct 2021 23:24:27 +0100
Subject: [PATCH] Fix attempt to use poisoned calloc error in libgccjit

This moves usages of pthread.h to above any usage of system.h as it
included #pragma GCC poison calloc
---
gcc/jit/jit-playback.c | 4 ++--
gcc/jit/jit-recording.c | 4 ++--
gcc/jit/libgccjit.c | 3 ++-
3 files changed, 6 insertions(+), 5 deletions(-)

diff --git a/gcc/jit/jit-playback.c b/gcc/jit/jit-playback.c
index cee9daa8220..a5600084933 100644
--- a/gcc/jit/jit-playback.c
+++ b/gcc/jit/jit-playback.c
@@ -18,6 +18,8 @@ You should have received a copy of the GNU General Public License
along with GCC; see the file COPYING3. If not see
<http://www.gnu.org/licenses/>. */

+#include <pthread.h>
+
#include "config.h"
#include "system.h"
#include "coretypes.h"
@@ -41,8 +43,6 @@ along with GCC; see the file COPYING3. If not see
#include "diagnostic.h"
#include "stmt.h"

-#include <pthread.h>
-
#include "jit-playback.h"
#include "jit-result.h"
#include "jit-builtins.h"
diff --git a/gcc/jit/jit-recording.c b/gcc/jit/jit-recording.c
index 117ff70114c..d2634a546b1 100644
--- a/gcc/jit/jit-recording.c
+++ b/gcc/jit/jit-recording.c
@@ -18,6 +18,8 @@ You should have received a copy of the GNU General Public License
along with GCC; see the file COPYING3. If not see
<http://www.gnu.org/licenses/>. */

+#include <pthread.h>
+

```
#include "config.h"
#include "system.h"
#include "coretypes.h"
@@ -25,8 +27,6 @@ along with GCC; see the file COPYING3.  If not see
#include "pretty-print.h"
#include "toplev.h"

-#include <pthread.h>
-
#include "jit-builtins.h"
#include "jit-recording.h"
#include "jit-playback.h"
diff --git a/gcc/jit/libgccjit.c b/gcc/jit/libgccjit.c
index 0cc650f9810..2f44481eeb0 100644
--- a/gcc/jit/libgccjit.c
+++ b/gcc/jit/libgccjit.c
@@ -18,13 +18,14 @@ You should have received a copy of the GNU General Public License
along with GCC; see the file COPYING3.  If not see
<http://www.gnu.org/licenses/>.  */

+#include <pthread.h>
+
#include "config.h"
#include "system.h"
#include "coretypes.h"
#include "timevar.h"
#include "typed-splay-tree.h"
#include "cppbuiltin.h"
-#include <pthread.h>

#include "libgccjit.h"
#include "jit-recording.h"
--
2.35.1
```

Found in path(s):

* /opt/cola/permits/1327775260_1657893467.828745/0/gcc-11-2-1-tar-gz/0042-Fix-attempt-to-use-poisoned-calloc-error-in-libgccji.patch

No license file was found, but licenses were detected in source scan.

```
From 18d44a7f8d801cc6926a73e2dda2f0ce859dc561 Mon Sep 17 00:00:00 2001
From: Ariadne Conill <ariadne@dereferenced.org>
Date: Fri, 21 Aug 2020 07:01:06 +0000
Subject: [PATCH] add fortify-headers paths

---
gcc/config/linux.h | 2 ++
1 file changed, 2 insertions(+)
```

diff --git a/gcc/config/linux.h b/gcc/config/linux.h
index 4e1db60fced..7fcf402b416 100644
--- a/gcc/config/linux.h
+++ b/gcc/config/linux.h
@@ -167,6 +167,8 @@ see the files COPYING3 and COPYING.RUNTIME respectively. If not, see

```
#ifdef NATIVE_SYSTEM_HEADER_DIR
#define INCLUDE_DEFAULTS_MUSL_NATIVE   \
+    { NATIVE_SYSTEM_HEADER_DIR "/fortify", 0, 0, 0, 1, 2 }, \
+    { NATIVE_SYSTEM_HEADER_DIR "/fortify", 0, 0, 0, 1, 0 }, \
    { NATIVE_SYSTEM_HEADER_DIR, 0, 0, 0, 1, 2 }, \
    { NATIVE_SYSTEM_HEADER_DIR, 0, 0, 0, 1, 0 },
#else
--
2.35.1
```

Found in path(s):
* /opt/cola/permits/1327775260_1657893467.828745/0/gcc-11-2-1-tar-gz/0021-add-fortify-headers-paths.patch
No license file was found, but licenses were detected in source scan.

From 2c6bf28619c9b3bf713f7f5319c5d750a6c297ae Mon Sep 17 00:00:00 2001
From: =?UTF-8?q?S=C3=B6ren=20Tempel?= <soeren@soeren-tempel.net>
Date: Fri, 21 Jan 2022 19:22:46 +0000
Subject: [PATCH] Disable -fsplit-stack support on non-glibc targets
MIME-Version: 1.0
Content-Type: text/plain; charset=UTF-8
Content-Transfer-Encoding: 8bit

The -fsplit-stack option requires the pthread_t TCB definition in the libc to provide certain struct fields at specific hardcoded offsets. As far as I know, only glibc provides these fields at the required offsets. Most notably, musl libc does not have these fields. However, since gcc accesses the fields using a fixed offset, this does not cause a compile-time error, but instead results in a silent memory corruption at run-time with musl libc. For example, on s390x libgcc's __stack_split_initialize CTOR will overwrite the cancel field in the pthread_t TCB on musl.

The -fsplit-stack option is used within the gcc code base itself by gcc-go (if available). On musl-based systems with split-stack support (i.e. s390x or x86) this causes Go programs compiled with gcc-go to misbehave at run-time.

This patch fixes gcc-go on musl by disabling -fsplit-stack in gcc itself since it is not supported on non-glibc targets anyhow. This is achieved by checking if gcc targets a glibc-based system. This check has been added for x86 and s390x, the rs6000 config already checks for

TARGET_GLIBC_MAJOR. Other architectures do not have split-stack
support. With this patch applied, the gcc-go configure script will
detect that -fsplit-stack support is not available and will not use it.

See https://www.openwall.com/lists/musl/2012/10/16/12

This patch was written under the assumption that glibc is the only libc
implementation which supports the required fields at the required
offsets in the pthread_t TCB. The patch has been tested on Alpine Linux
Edge on the s390x and x86 architectures by bootstrapping Google's Go
implementation with gcc-go.

Signed-off-by: SÃ¶ren Tempel <soeren@soeren-tempel.net>

gcc/ChangeLog:

```
 * common/config/s390/s390-common.c (s390_supports_split_stack):
 Only support split-stack on glibc targets.
 * config/i386/gnu-user-common.h (STACK_CHECK_STATIC_BUILTIN): Ditto.
 * config/i386/gnu.h (defined): Ditto.
---
gcc/common/config/s390/s390-common.c | 14 ++++++++++----
gcc/config/i386/gnu-user-common.h    |  5 +++--
gcc/config/i386/gnu.h                |  5 ++++-
3 files changed, 17 insertions(+), 7 deletions(-)

diff --git a/gcc/common/config/s390/s390-common.c b/gcc/common/config/s390/s390-common.c
index b6bc8501742..8c1e590322d 100644
--- a/gcc/common/config/s390/s390-common.c
+++ b/gcc/common/config/s390/s390-common.c
@@ -116,13 +116,19 @@ s390_handle_option (struct gcc_options *opts ATTRIBUTE_UNUSED,

/* -fsplit-stack uses a field in the TCB, available with glibc-2.23.
   We don't verify it, since earlier versions just have padding at
-   its place, which works just as well.  */
+   its place, which works just as well.  For other libc implementations
+   we disable the feature entirely to avoid corrupting the TCB.  */

static bool
-s390_supports_split_stack (bool report ATTRIBUTE_UNUSED,
-      struct gcc_options *opts ATTRIBUTE_UNUSED)
+s390_supports_split_stack (bool report,
+      struct gcc_options *opts)
{
-  return true;
+  if (opts->x_linux_libc == LIBC_GLIBC)
+    return true;
+
```

```
+  if (report)
+    error ("%<-fsplit-stack%> currently only supported on GNU/Linux");
+  return false;
}

#undef TARGET_DEFAULT_TARGET_FLAGS
diff --git a/gcc/config/i386/gnu-user-common.h b/gcc/config/i386/gnu-user-common.h
index 00226f5a455..6e13315b5a3 100644
--- a/gcc/config/i386/gnu-user-common.h
+++ b/gcc/config/i386/gnu-user-common.h
@@ -66,7 +66,8 @@ along with GCC; see the file COPYING3.  If not see
#define STACK_CHECK_STATIC_BUILTIN 1

/* We only build the -fsplit-stack support in libgcc if the
-   assembler has full support for the CFI directives.  */
-#if HAVE_GAS_CFI_PERSONALITY_DIRECTIVE
+   assembler has full support for the CFI directives and
+   targets glibc.  */
+#if HAVE_GAS_CFI_PERSONALITY_DIRECTIVE && OPTION_GLIBC
#define TARGET_CAN_SPLIT_STACK
#endif
diff --git a/gcc/config/i386/gnu.h b/gcc/config/i386/gnu.h
index 25fbc07f58c..afd3e8e8841 100644
--- a/gcc/config/i386/gnu.h
+++ b/gcc/config/i386/gnu.h
@@ -35,7 +35,10 @@ along with GCC.  If not, see <http://www.gnu.org/licenses/>.
   crti.o%s %{static:crtbeginT.o%s;shared|pie:crtbeginS.o%s;:crtbegin.o%s}"
#endif

-#ifdef TARGET_LIBC_PROVIDES_SSP
+/* -fsplit-stack uses a field in the TCB at a fixed offset. This
+   field is only available for glibc.  Disable -fsplit-stack for
+   other libc implementations to avoid silent TCB corruptions.  */
+#if defined (TARGET_LIBC_PROVIDES_SSP) && OPTION_GLIBC

/* i386 glibc provides __stack_chk_guard in %gs:0x14.  */
#define TARGET_THREAD_SSP_OFFSET        0x14
--
2.35.1
```

Found in path(s):

* /opt/cola/permits/1327775260_1657893467.828745/0/gcc-11-2-1-tar-gz/0046-Disable-fsplit-stack-support-on-non-glibc-targets.patch

No license file was found, but licenses were detected in source scan.

From 7b5108375bb67532af30d1e7f553ac5f3b1096fe Mon Sep 17 00:00:00 2001
From: Jakub Jelinek <jakub@redhat.com>
Date: Mon, 24 Jan 2022 11:13:39 +0100

Subject: [PATCH] properly disable -fsplit-stack on non-glibc targets
[PR104170]
MIME-Version: 1.0
Content-Type: text/plain; charset=UTF-8
Content-Transfer-Encoding: 8bit

On Sat, Jan 22, 2022 at 10:32:21AM +0100, Martin Liška wrote:
> I've just noticed the patch broke a few cross compilers:
>
> s390x-ibm-tpf:
>
> /home/marxin/buildworker/zen2-cross-compilers/build/gcc/common/config/s390/s390-common.cc: In function ‘bool s390_supports_split_stack(bool, gcc_options*)’:
> /home/marxin/buildworker/zen2-cross-compilers/build/gcc/common/config/s390/s390-common.cc:126:13: error: ‘struct gcc_options’ has no member named ‘x_linux_libc’
>   126 | if (opts->x_linux_libc == LIBC_GLIBC)
> | ^~~~~~~~~~~~
>
> i686-kopensolaris-gnu, i686-symbolics-gnu
>
> /home/marxin/buildworker/zen2-cross-compilers/build/gcc/common/config/i386/i386-common.cc: In function ‘bool ix86_supports_split_stack(bool, gcc_options*)’:
> /home/marxin/buildworker/zen2-cross-compilers/build/gcc/common/config/i386/i386-common.cc:1721:13: error: ‘struct gcc_options’ has no member named ‘x_linux_libc’
> 1721 | if (opts->x_linux_libc != LIBC_GLIBC)
> | ^~~~~~~~~~~~
> make[1]: *** [Makefile:2418: i386-common.o] Error 1
>
> Can you please take a look? Btw. do you have a bugzilla account?

I bet instead of opts->x_linux_libc != LIBC_GLIBC it needs to use
#ifdef OPTION_GLIBC
  if (!OPTION_GLIBC)
#endif
or so. I think the first committed patch actually used that
but used it in #if directive, which is wrong because it is something
that needs to be evaluated at runtime.

That doesn't work well either, because the *supports_split_stack
hooks have opts argument and OPTION_GLIBC doesn't take that.

So, here is a patch that introduces OPTION_*_P macros that take opts
as an argument and redefines OPTION_* using those (similarly to how
the option scripts create TARGET_*_P and TARGET_* macros).

2022-01-24 Jakub Jelinek <jakub@redhat.com>

 PR bootstrap/104170

* config/linux.h (OPTION_GLIBC_P, OPTION_UCLIBC_P,
OPTION_BIONIC_P, OPTION_MUSL_P): Define.
(OPTION_GLIBC, OPTION_UCLIBC, OPTION_BIONIC, OPTION_MUSL): Redefine
using OPTION_*_P macros.
* config/alpha/linux.h (OPTION_GLIBC_P, OPTION_UCLIBC_P,
OPTION_BIONIC_P, OPTION_MUSL_P): Define.
(OPTION_GLIBC, OPTION_UCLIBC, OPTION_BIONIC, OPTION_MUSL): Redefine
using OPTION_*_P macros.
* config/rs6000/linux.h (OPTION_GLIBC_P, OPTION_UCLIBC_P,
OPTION_BIONIC_P, OPTION_MUSL_P): Define.
(OPTION_GLIBC, OPTION_UCLIBC, OPTION_BIONIC, OPTION_MUSL): Redefine
using OPTION_*_P macros.
* config/rs6000/linux64.h (OPTION_GLIBC_P, OPTION_UCLIBC_P,
OPTION_BIONIC_P, OPTION_MUSL_P): Define.
(OPTION_GLIBC, OPTION_UCLIBC, OPTION_BIONIC, OPTION_MUSL): Redefine
using OPTION_*_P macros.
* config/fuchsia.h (OPTION_MUSL_P): Redefine.
* config/glibc-stdint.h (OPTION_MUSL_P): Define if not defined.
* common/config/s390/s390-common.cc (s390_supports_split_stack): Re-add
ATTRIBUTE_UNUSED to opts parameter. If OPTION_GLIBC_P is defined, use
OPTION_GLIBC_P (opts) as condition, otherwise assume if (false).
* common/config/i386/i386-common.cc (ix86_supports_split_stack): If
OPTION_GLIBC_P is defined use !OPTION_GLIBC_P (opts) as condition,
otherwise assume if (true).

```
---
gcc/common/config/i386/i386-common.c |  4 ++--
gcc/common/config/s390/s390-common.c |  6 ++++--
gcc/config/alpha/linux.h             | 25 +++++++++++++++----------
gcc/config/fuchsia.h                 |  2 ++
gcc/config/glibc-stdint.h            |  3 +++
gcc/config/linux.h                   | 25 +++++++++++++++----------
gcc/config/rs6000/linux.h            | 25 +++++++++++++++----------
gcc/config/rs6000/linux64.h          | 25 +++++++++++++++----------
8 files changed, 71 insertions(+), 44 deletions(-)

diff --git a/gcc/common/config/i386/i386-common.c b/gcc/common/config/i386/i386-common.c
index a3b5258e828..864e68ab985 100644
--- a/gcc/common/config/i386/i386-common.c
+++ b/gcc/common/config/i386/i386-common.c
@@ -1699,8 +1699,8 @@ static bool
ix86_supports_split_stack (bool report,
      struct gcc_options *opts ATTRIBUTE_UNUSED)
{
-#ifdef TARGET_THREAD_SPLIT_STACK_OFFSET
-  if (opts->x_linux_libc != LIBC_GLIBC)
+#if defined(TARGET_THREAD_SPLIT_STACK_OFFSET) && defined(OPTION_GLIBC_P)
+  if (!OPTION_GLIBC_P (opts))
#endif
```

```
    {
      if (report)
diff --git a/gcc/common/config/s390/s390-common.c b/gcc/common/config/s390/s390-common.c
index 8c1e590322d..11116f131cb 100644
--- a/gcc/common/config/s390/s390-common.c
+++ b/gcc/common/config/s390/s390-common.c
@@ -121,10 +121,12 @@ s390_handle_option (struct gcc_options *opts ATTRIBUTE_UNUSED,

static bool
s390_supports_split_stack (bool report,
-      struct gcc_options *opts)
+      struct gcc_options *opts ATTRIBUTE_UNUSED)
{
-  if (opts->x_linux_libc == LIBC_GLIBC)
+#ifdef OPTION_GLIBC_P
+  if (OPTION_GLIBC_P (opts))
    return true;
+#endif

  if (report)
    error ("%<-fsplit-stack%> currently only supported on GNU/Linux");
diff --git a/gcc/config/alpha/linux.h b/gcc/config/alpha/linux.h
index bde7fb0d292..812ec8ecb31 100644
--- a/gcc/config/alpha/linux.h
+++ b/gcc/config/alpha/linux.h
@@ -58,18 +58,23 @@ along with GCC; see the file COPYING3.  If not see
#define WCHAR_TYPE "int"

#ifdef SINGLE_LIBC
-#define OPTION_GLIBC  (DEFAULT_LIBC == LIBC_GLIBC)
-#define OPTION_UCLIBC (DEFAULT_LIBC == LIBC_UCLIBC)
-#define OPTION_BIONIC (DEFAULT_LIBC == LIBC_BIONIC)
-#undef OPTION_MUSL
-#define OPTION_MUSL   (DEFAULT_LIBC == LIBC_MUSL)
+#define OPTION_GLIBC_P(opts) (DEFAULT_LIBC == LIBC_GLIBC)
+#define OPTION_UCLIBC_P(opts) (DEFAULT_LIBC == LIBC_UCLIBC)
+#define OPTION_BIONIC_P(opts) (DEFAULT_LIBC == LIBC_BIONIC)
+#undef OPTION_MUSL_P
+#define OPTION_MUSL_P(opts) (DEFAULT_LIBC == LIBC_MUSL)
#else
-#define OPTION_GLIBC  (linux_libc == LIBC_GLIBC)
-#define OPTION_UCLIBC (linux_libc == LIBC_UCLIBC)
-#define OPTION_BIONIC (linux_libc == LIBC_BIONIC)
-#undef OPTION_MUSL
-#define OPTION_MUSL   (linux_libc == LIBC_MUSL)
+#define OPTION_GLIBC_P(opts) ((opts)->x_linux_libc == LIBC_GLIBC)
+#define OPTION_UCLIBC_P(opts) ((opts)->x_linux_libc == LIBC_UCLIBC)
+#define OPTION_BIONIC_P(opts) ((opts)->x_linux_libc == LIBC_BIONIC)
```

```
+#undef OPTION_MUSL_P
+#define OPTION_MUSL_P(opts) ((opts)->x_linux_libc == LIBC_MUSL)
#endif
+#define OPTION_GLIBC  OPTION_GLIBC_P (&global_options)
+#define OPTION_UCLIBC  OPTION_UCLIBC_P (&global_options)
+#define OPTION_BIONIC  OPTION_BIONIC_P (&global_options)
+#undef OPTION_MUSL
+#define OPTION_MUSL  OPTION_MUSL_P (&global_options)

/* Determine what functions are present at the runtime;
   this includes full c99 runtime and sincos.  */
diff --git a/gcc/config/fuchsia.h b/gcc/config/fuchsia.h
index 54602dc300d..47c0dfd8b81 100644
--- a/gcc/config/fuchsia.h
+++ b/gcc/config/fuchsia.h
@@ -52,6 +52,8 @@ along with GCC; see the file COPYING3.  If not see
/* We are using MUSL as our libc.  */
#undef  OPTION_MUSL
#define OPTION_MUSL 1
+#undef  OPTION_MUSL_P
+#define OPTION_MUSL_P(opts) 1

#ifndef TARGET_SUB_OS_CPP_BUILTINS
#define TARGET_SUB_OS_CPP_BUILTINS()
diff --git a/gcc/config/glibc-stdint.h b/gcc/config/glibc-stdint.h
index c8d7ba18d1c..f095197514f 100644
--- a/gcc/config/glibc-stdint.h
+++ b/gcc/config/glibc-stdint.h
@@ -27,6 +27,9 @@ see the files COPYING3 and COPYING.RUNTIME respectively.  If not, see
#ifndef OPTION_MUSL
#define OPTION_MUSL 0
#endif
+#ifndef OPTION_MUSL_P
+#define OPTION_MUSL_P(opts) 0
+#endif

#define SIG_ATOMIC_TYPE "int"

diff --git a/gcc/config/linux.h b/gcc/config/linux.h
index 7fcf402b416..ab62a1741f7 100644
--- a/gcc/config/linux.h
+++ b/gcc/config/linux.h
@@ -29,18 +29,23 @@ see the files COPYING3 and COPYING.RUNTIME respectively.  If not, see

/* C libraries supported on Linux.  */
#ifdef SINGLE_LIBC
-#define OPTION_GLIBC  (DEFAULT_LIBC == LIBC_GLIBC)
-#define OPTION_UCLIBC (DEFAULT_LIBC == LIBC_UCLIBC)
```

```
-#define OPTION_BIONIC (DEFAULT_LIBC == LIBC_BIONIC)
-#undef OPTION_MUSL
-#define OPTION_MUSL   (DEFAULT_LIBC == LIBC_MUSL)
+#define OPTION_GLIBC_P(opts) (DEFAULT_LIBC == LIBC_GLIBC)
+#define OPTION_UCLIBC_P(opts) (DEFAULT_LIBC == LIBC_UCLIBC)
+#define OPTION_BIONIC_P(opts) (DEFAULT_LIBC == LIBC_BIONIC)
+#undef OPTION_MUSL_P
+#define OPTION_MUSL_P(opts) (DEFAULT_LIBC == LIBC_MUSL)
#else
-#define OPTION_GLIBC  (linux_libc == LIBC_GLIBC)
-#define OPTION_UCLIBC (linux_libc == LIBC_UCLIBC)
-#define OPTION_BIONIC (linux_libc == LIBC_BIONIC)
-#undef OPTION_MUSL
-#define OPTION_MUSL   (linux_libc == LIBC_MUSL)
+#define OPTION_GLIBC_P(opts) ((opts)->x_linux_libc == LIBC_GLIBC)
+#define OPTION_UCLIBC_P(opts) ((opts)->x_linux_libc == LIBC_UCLIBC)
+#define OPTION_BIONIC_P(opts) ((opts)->x_linux_libc == LIBC_BIONIC)
+#undef OPTION_MUSL_P
+#define OPTION_MUSL_P(opts) ((opts)->x_linux_libc == LIBC_MUSL)
#endif
+#define OPTION_GLIBC  OPTION_GLIBC_P (&global_options)
+#define OPTION_UCLIBC  OPTION_UCLIBC_P (&global_options)
+#define OPTION_BIONIC  OPTION_BIONIC_P (&global_options)
+#undef OPTION_MUSL
+#define OPTION_MUSL  OPTION_MUSL_P (&global_options)

#define GNU_USER_TARGET_OS_CPP_BUILTINS()   \
   do {       \
diff --git a/gcc/config/rs6000/linux.h b/gcc/config/rs6000/linux.h
index 47c9d9ac0b6..be04462d357 100644
--- a/gcc/config/rs6000/linux.h
+++ b/gcc/config/rs6000/linux.h
@@ -27,18 +27,23 @@
#define NO_PROFILE_COUNTERS 1

#ifdef SINGLE_LIBC
-#define OPTION_GLIBC  (DEFAULT_LIBC == LIBC_GLIBC)
-#define OPTION_UCLIBC (DEFAULT_LIBC == LIBC_UCLIBC)
-#define OPTION_BIONIC (DEFAULT_LIBC == LIBC_BIONIC)
-#undef OPTION_MUSL
-#define OPTION_MUSL   (DEFAULT_LIBC == LIBC_MUSL)
+#define OPTION_GLIBC_P(opts) (DEFAULT_LIBC == LIBC_GLIBC)
+#define OPTION_UCLIBC_P(opts) (DEFAULT_LIBC == LIBC_UCLIBC)
+#define OPTION_BIONIC_P(opts) (DEFAULT_LIBC == LIBC_BIONIC)
+#undef OPTION_MUSL_P
+#define OPTION_MUSL_P(opts) (DEFAULT_LIBC == LIBC_MUSL)
#else
-#define OPTION_GLIBC  (linux_libc == LIBC_GLIBC)
```

```
-#define OPTION_UCLIBC (linux_libc == LIBC_UCLIBC)
-#define OPTION_BIONIC (linux_libc == LIBC_BIONIC)
-#undef OPTION_MUSL
-#define OPTION_MUSL   (linux_libc == LIBC_MUSL)
+#define OPTION_GLIBC_P(opts) ((opts)->x_linux_libc == LIBC_GLIBC)
+#define OPTION_UCLIBC_P(opts) ((opts)->x_linux_libc == LIBC_UCLIBC)
+#define OPTION_BIONIC_P(opts) ((opts)->x_linux_libc == LIBC_BIONIC)
+#undef OPTION_MUSL_P
+#define OPTION_MUSL_P(opts) ((opts)->x_linux_libc == LIBC_MUSL)
#endif
+#define OPTION_GLIBC  OPTION_GLIBC_P (&global_options)
+#define OPTION_UCLIBC  OPTION_UCLIBC_P (&global_options)
+#define OPTION_BIONIC  OPTION_BIONIC_P (&global_options)
+#undef OPTION_MUSL
+#define OPTION_MUSL  OPTION_MUSL_P (&global_options)

/* Determine what functions are present at the runtime;
   this includes full c99 runtime and sincos.  */
diff --git a/gcc/config/rs6000/linux64.h b/gcc/config/rs6000/linux64.h
index 43499ed29cf..1d73a09a476 100644
--- a/gcc/config/rs6000/linux64.h
+++ b/gcc/config/rs6000/linux64.h
@@ -267,18 +267,23 @@ extern int dot_symbols;
#define OS_MISSING_POWERPC64 !TARGET_64BIT

#ifdef SINGLE_LIBC
-#define OPTION_GLIBC  (DEFAULT_LIBC == LIBC_GLIBC)
-#define OPTION_UCLIBC (DEFAULT_LIBC == LIBC_UCLIBC)
-#define OPTION_BIONIC (DEFAULT_LIBC == LIBC_BIONIC)
-#undef OPTION_MUSL
-#define OPTION_MUSL   (DEFAULT_LIBC == LIBC_MUSL)
+#define OPTION_GLIBC_P(opts) (DEFAULT_LIBC == LIBC_GLIBC)
+#define OPTION_UCLIBC_P(opts) (DEFAULT_LIBC == LIBC_UCLIBC)
+#define OPTION_BIONIC_P(opts) (DEFAULT_LIBC == LIBC_BIONIC)
+#undef OPTION_MUSL_P
+#define OPTION_MUSL_P(opts) (DEFAULT_LIBC == LIBC_MUSL)
#else
-#define OPTION_GLIBC  (linux_libc == LIBC_GLIBC)
-#define OPTION_UCLIBC (linux_libc == LIBC_UCLIBC)
-#define OPTION_BIONIC (linux_libc == LIBC_BIONIC)
-#undef OPTION_MUSL
-#define OPTION_MUSL   (linux_libc == LIBC_MUSL)
+#define OPTION_GLIBC_P(opts) ((opts)->x_linux_libc == LIBC_GLIBC)
+#define OPTION_UCLIBC_P(opts) ((opts)->x_linux_libc == LIBC_UCLIBC)
+#define OPTION_BIONIC_P(opts) ((opts)->x_linux_libc == LIBC_BIONIC)
+#undef OPTION_MUSL_P
+#define OPTION_MUSL_P(opts) ((opts)->x_linux_libc == LIBC_MUSL)
#endif
```

+#define OPTION_GLIBC OPTION_GLIBC_P (&global_options)
+#define OPTION_UCLIBC OPTION_UCLIBC_P (&global_options)
+#define OPTION_BIONIC OPTION_BIONIC_P (&global_options)
+#undef OPTION_MUSL
+#define OPTION_MUSL OPTION_MUSL_P (&global_options)

/* Determine what functions are present at the runtime;
   this includes full c99 runtime and sincos. */
--
2.35.1

Found in path(s):
* /opt/cola/permits/1327775260_1657893467.828745/0/gcc-11-2-1-tar-gz/0049-properly-disable-fsplit-stack-on-non-glibc-targets-P.patch
No license file was found, but licenses were detected in source scan.

From 18bcf23cae4069ffe9d9f64e851193d29dd4814f Mon Sep 17 00:00:00 2001
From: =?UTF-8?q?S=C3=B6ren=20Tempel?= <soeren+git@soeren-tempel.net>
Date: Mon, 3 Jan 2022 07:14:48 +0100
Subject: [PATCH] riscv: disable multilib support
MIME-Version: 1.0
Content-Type: text/plain; charset=UTF-8
Content-Transfer-Encoding: 8bit

From the musl wiki [1]:

 musl does not support sharing an include directory between archs
 […], and thus is not compatible with GCC-style multilib. It is
 recommended that distributions build GCC with multilib disabled,
 and use library directories named lib, not lib64 or lib32.

For this reason, we patch existing GCC configuration files (gcc/config)
to pin MULTILIB_OSDIRNAMES to lib, there is also a corresponding GCC
upstream bug about this issue [2]. Avoiding the use of lib64 and lib32
directories is a bit more difficult on the RISC-V architecture. This is
due to the fact that the default RISC-V configuration does not only use
the lib64 and lib32 directories but also subdirectories within these
directories for different RISC-V ABIs (e.g. lp64d, lp64, …) [3].

This patch aligns the RISC-V configuration with other architectures by
pinning MULTILIB_OSDIRNAMES to lib for rv64gc (our default RISC-V
-march). Furthermore, this patch removes the ABI-specific startfile
prefix spec. Since both of these impact the default LIBRARY_PATH [4]
this patch thereby aligns the default RISC-V LIBRARY_PATH with that from
other Alpine architectures and thereby fixes #13369 [5].

Incidentally, this also fixes gccgo on riscv64, as without this patch
gccgo is otherwise not able to find the *.gox files for the Go standard

library.

[1]: https://wiki.musl-libc.org/guidelines-for-distributions.html#Multilib/multi_arch
[2]: https://gcc.gnu.org/bugzilla/show_bug.cgi?id=90077
[3]: https://gcc.gnu.org/bugzilla/show_bug.cgi?id=103889#c14
[4]:
https://gcc.gnu.org/git/?p=gcc.git;a=blob;f=gcc/gcc.c;h=d4c8746b0aa322286decf92aa72a12f0a393b655;hb=HEAD#l9122
[5]: https://gitlab.alpinelinux.org/alpine/aports/-/issues/13369

```
---
gcc/config/riscv/linux.h | 6 ------
gcc/config/riscv/t-linux | 7 +++++--
2 files changed, 5 insertions(+), 8 deletions(-)

diff --git a/gcc/config/riscv/linux.h b/gcc/config/riscv/linux.h
index ee29979dd34..fe8a82d6702 100644
--- a/gcc/config/riscv/linux.h
+++ b/gcc/config/riscv/linux.h
@@ -71,9 +71,3 @@ along with GCC; see the file COPYING3.  If not see
   %{static:-static}}"

#define TARGET_ASM_FILE_END file_end_indicate_exec_stack
-
-#define STARTFILE_PREFIX_SPEC    \
-   "/lib" XLEN_SPEC "/" ABI_SPEC "/ "  \
-   "/usr/lib" XLEN_SPEC "/" ABI_SPEC "/ " \
-   "/lib/ "     \
-   "/usr/lib/ "
diff --git a/gcc/config/riscv/t-linux b/gcc/config/riscv/t-linux
index 216d2776a18..1a8a863853e 100644
--- a/gcc/config/riscv/t-linux
+++ b/gcc/config/riscv/t-linux
@@ -1,3 +1,6 @@
-# Only XLEN and ABI affect Linux multilib dir names, e.g. /lib32/ilp32d/
-MULTILIB_DIRNAMES := $(patsubst rv32%,lib32,$(patsubst rv64%,lib64,$(MULTILIB_DIRNAMES)))
+MULTILIB_OPTIONS := march=rv64gc
+MULTILIB_DIRNAMES := rv64gc
+
+MULTILIB_DIRNAMES := $(patsubst rv32%,lib32,$(patsubst rv64%,lib,$(MULTILIB_DIRNAMES)))
MULTILIB_OSDIRNAMES := $(patsubst lib%,../lib%,$(MULTILIB_DIRNAMES))
+MULTILIB_MATCHES := march?rv64gc=march?rv64imafdc
--
2.35.1
```

Found in path(s):
* /opt/cola/permits/1327775260_1657893467.828745/0/gcc-11-2-1-tar-gz/0029-riscv-disable-multilib-support.patch
No license file was found, but licenses were detected in source scan.

From 400bae077d11c3a2ee9f4c8b96c31bbf39416a4f Mon Sep 17 00:00:00 2001
From: =?UTF-8?q?S=C3=B6ren=20Tempel?= <soeren@soeren-tempel.net>
Date: Mon, 21 Feb 2022 04:13:47 +0100
Subject: [PATCH] x86: Fix -fsplit-stack feature detection via
TARGET_CAN_SPLIT_STACK
MIME-Version: 1.0
Content-Type: text/plain; charset=UTF-8
Content-Transfer-Encoding: 8bit

Since commit c163647ffbc9a20c8feb6e079dbecccfe016c82e -fsplit-stack
is only supported on glibc targets. However, this original commit
required some fixups. As part of the fixup, the changes to the
gnu-user-common.h and gnu.h where partially reverted in commit
60953a23d57b13a672f751bec0c6eefc059eb1ab thus causing TARGET_CAN_SPLIT_STACK
to be defined for non-glibc targets even though -fsplit-stack is
actually not supported and attempting to use it causes a runtime error.

This causes gcc internal code, such as ./gcc/go/gospec.c to not
correctly detect that -fsplit-stack is not supported and thus causes
gccgo to fail compilation on non-glibc targets.

This commit ensures that TARGET_CAN_SPLIT_STACK is set based on the
changes performed in 2c31a8be4a5db11a0a0e97c366dded6362421086, i.e.
the new OPTION_GLIBC_P macro is now used to detect if -fsplit-stack is
supported in the x86 header files.

The proposed changes have been tested on x86_64 Alpine Linux (which uses
musl libc) and fix compilation of gccgo for this target.

Signed-off-by: Sören Tempel <soeren@soeren-tempel.net>

gcc/ChangeLog:

 * config/i386/gnu-user-common.h (defined): Only define
 TARGET_CAN_SPLIT_STACK for glibc targets.
 * config/i386/gnu.h (defined): Ditto.
---
gcc/config/i386/gnu-user-common.h | 5 +++--
gcc/config/i386/gnu.h | 5 +++--
2 files changed, 6 insertions(+), 4 deletions(-)

diff --git a/gcc/config/i386/gnu-user-common.h b/gcc/config/i386/gnu-user-common.h
index 00226f5a455..4e3fbb1de05 100644
--- a/gcc/config/i386/gnu-user-common.h
+++ b/gcc/config/i386/gnu-user-common.h
@@ -66,7 +66,8 @@ along with GCC; see the file COPYING3. If not see
#define STACK_CHECK_STATIC_BUILTIN 1

```
/* We only build the -fsplit-stack support in libgcc if the
-   assembler has full support for the CFI directives.  */
-#if HAVE_GAS_CFI_PERSONALITY_DIRECTIVE
+   assembler has full support for the CFI directives.  Also
+   we only support -fsplit-stack on glibc targets.  */
+#if HAVE_GAS_CFI_PERSONALITY_DIRECTIVE && defined(OPTION_GLIBC_P)
#define TARGET_CAN_SPLIT_STACK
#endif
diff --git a/gcc/config/i386/gnu.h b/gcc/config/i386/gnu.h
index 25fbc07f58c..41a6a37dfee 100644
--- a/gcc/config/i386/gnu.h
+++ b/gcc/config/i386/gnu.h
@@ -41,8 +41,9 @@ along with GCC.  If not, see <http://www.gnu.org/licenses/>.
#define TARGET_THREAD_SSP_OFFSET        0x14

/* We only build the -fsplit-stack support in libgcc if the
-   assembler has full support for the CFI directives.  */
-#if HAVE_GAS_CFI_PERSONALITY_DIRECTIVE
+   assembler has full support for the CFI directives.  Also
+   we only support -fsplit-stack on glibc targets.  */
+#if HAVE_GAS_CFI_PERSONALITY_DIRECTIVE && defined(OPTION_GLIBC_P)
#define TARGET_CAN_SPLIT_STACK
#endif
/* We steal the last transactional memory word.  */
--
2.35.1
```

Found in path(s):
* /opt/cola/permits/1327775260_1657893467.828745/0/gcc-11-2-1-tar-gz/0050-x86-Fix-fsplit-stack-feature-detection-via-TARGET_CA.patch
No license file was found, but licenses were detected in source scan.

```
From 586e82425a024d85d1bd9952ca51d8a671aa9b5d Mon Sep 17 00:00:00 2001
From: Ariadne Conill <ariadne@dereferenced.org>
Date: Fri, 21 Aug 2020 06:57:51 +0000
Subject: [PATCH] dlang: update zlib binding

---
libphobos/src/std/zlib.d | 266 ++++++++++++++++++++++++++++-----------
1 file changed, 196 insertions(+), 70 deletions(-)

diff --git a/libphobos/src/std/zlib.d b/libphobos/src/std/zlib.d
index e6cce240fd5..bd2fe37ebec 100644
--- a/libphobos/src/std/zlib.d
+++ b/libphobos/src/std/zlib.d
@@ -1,7 +1,7 @@
// Written in the D programming language.
```

```
/**
- * Compress/decompress data using the $(HTTP www._zlib.net, _zlib library).
+ * Compress/decompress data using the $(HTTP www.zlib.net, zlib library).
 *
 * Examples:
 *
@@ -43,12 +43,12 @@
 * References:
 *  $(HTTP en.wikipedia.org/wiki/Zlib, Wikipedia)
 *
- * Copyright: Copyright Digital Mars 2000 - 2011.
+ * Copyright: Copyright The D Language Foundation 2000 - 2011.
 * License:   $(HTTP www.boost.org/LICENSE_1_0.txt, Boost License 1.0).
 * Authors:   $(HTTP digitalmars.com, Walter Bright)
- * Source:    $(PHOBOSSRC std/_zlib.d)
+ * Source:    $(PHOBOSSRC std/zlib.d)
 */
-/*          Copyright Digital Mars 2000 - 2011.
+/*          Copyright The D Language Foundation 2000 - 2011.
 * Distributed under the Boost Software License, Version 1.0.
 *    (See accompanying file LICENSE_1_0.txt or copy at
 *          http://www.boost.org/LICENSE_1_0.txt)
@@ -75,9 +75,9 @@ enum

class ZlibException : Exception
{
-    this(int errnum)
-    {    string msg;
-
+    private static string getmsg(int errnum) nothrow @nogc pure @safe
+    {
+        string msg;
        switch (errnum)
        {
            case Z_STREAM_END:      msg = "stream end"; break;
@@ -90,7 +90,12 @@ class ZlibException : Exception
            case Z_VERSION_ERROR:   msg = "version error"; break;
            default:                msg = "unknown error";  break;
        }
-        super(msg);
+        return msg;
+    }
+
+    this(int errnum)
+    {
+        super(getmsg(errnum));
    }
}
```

```
@@ -104,7 +109,7 @@ class ZlibException : Exception
 *     buf = buffer containing input data
 *
 * Returns:
- *     A $(D uint) checksum for the provided input data and starting checksum
+ *     A `uint` checksum for the provided input data and starting checksum
 *
 * See_Also:
 *     $(LINK http://en.wikipedia.org/wiki/Adler-32)
@@ -147,7 +152,7 @@ uint adler32(uint adler, const(void)[] buf)
 *     buf = buffer containing input data
 *
 * Returns:
- *     A $(D uint) checksum for the provided input data and starting checksum
+ *     A `uint` checksum for the provided input data and starting checksum
 *
 * See_Also:
 *     $(LINK http://en.wikipedia.org/wiki/Cyclic_redundancy_check)
@@ -191,13 +196,14 @@ uint crc32(uint crc, const(void)[] buf)
ubyte[] compress(const(void)[] srcbuf, int level)
in
{
-    assert(-1 <= level && level <= 9);
+    assert(-1 <= level && level <= 9, "Compression level needs to be within [-1, 9].");
}
-body
+do
{
    import core.memory : GC;
+    import std.array : uninitializedArray;
    auto destlen = srcbuf.length + ((srcbuf.length + 1023) / 1024) + 12;
-    auto destbuf = new ubyte[destlen];
+    auto destbuf = uninitializedArray!(ubyte[])(destlen);
    auto err = etc.c.zlib.compress2(destbuf.ptr, &destlen, cast(ubyte *) srcbuf.ptr, srcbuf.length, level);
    if (err)
    {
@@ -276,7 +282,7 @@ void[] uncompress(const(void)[] srcbuf, size_t destlen = 0u, int winbits = 15)
                throw new ZlibException(err);
        }
    }
-    assert(0);
+    assert(0, "Unreachable code");
}

@system unittest
@@ -370,9 +376,9 @@ class Compress
    this(int level, HeaderFormat header = HeaderFormat.deflate)
```

```
    in
    {
-       assert(1 <= level && level <= 9);
+       assert(1 <= level && level <= 9, "Legal compression level are in [1, 9].");
    }
-   body
+   do
    {
        this.level = level;
        this.gzip = header == HeaderFormat.gzip;
@@ -406,6 +412,7 @@ class Compress
    const(void)[] compress(const(void)[] buf)
    {
        import core.memory : GC;
+       import std.array : uninitializedArray;
        int err;
        ubyte[] destbuf;

@@ -420,7 +427,7 @@ class Compress
            inited = 1;
        }

-       destbuf = new ubyte[zs.avail_in + buf.length];
+       destbuf = uninitializedArray!(ubyte[])(zs.avail_in + buf.length);
        zs.next_out = destbuf.ptr;
        zs.avail_out = to!uint(destbuf.length);

@@ -461,9 +468,10 @@ class Compress
    void[] flush(int mode = Z_FINISH)
    in
    {
-       assert(mode == Z_FINISH || mode == Z_SYNC_FLUSH || mode == Z_FULL_FLUSH);
+       assert(mode == Z_FINISH || mode == Z_SYNC_FLUSH || mode == Z_FULL_FLUSH,
+               "Mode must be either Z_FINISH, Z_SYNC_FLUSH or Z_FULL_FLUSH.");
    }
-   body
+   do
    {
        import core.memory : GC;
        ubyte[] destbuf;
@@ -523,6 +531,7 @@ class UnCompress
    z_stream zs;
    int inited;
    int done;
+   bool inputEnded;
    size_t destbufsize;

    HeaderFormat format;
```

```
@@ -571,16 +580,16 @@ class UnCompress
     const(void)[] uncompress(const(void)[] buf)
     in
     {
-        assert(!done);
+        assert(!done, "Buffer has been flushed.");
     }
-    body
+    do
     {
+        if (inputEnded || !buf.length)
+            return null;
+
         import core.memory : GC;
+        import std.array : uninitializedArray;
         int err;
-        ubyte[] destbuf;
-
-        if (buf.length == 0)
-            return null;

         if (!inited)
         {
@@ -598,26 +607,152 @@ class UnCompress

         if (!destbufsize)
             destbufsize = to!uint(buf.length) * 2;
-        destbuf = new ubyte[zs.avail_in * 2 + destbufsize];
-        zs.next_out = destbuf.ptr;
-        zs.avail_out = to!uint(destbuf.length);
-
-        if (zs.avail_in)
-            buf = zs.next_in[0 .. zs.avail_in] ~ cast(ubyte[]) buf;
+        auto destbuf = uninitializedArray!(ubyte[])(destbufsize);
+        size_t destFill;

         zs.next_in = cast(ubyte*) buf.ptr;
         zs.avail_in = to!uint(buf.length);

-        err = inflate(&zs, Z_NO_FLUSH);
-        if (err != Z_STREAM_END && err != Z_OK)
+        while (true)
         {
-            GC.free(destbuf.ptr);
-            error(err);
+            auto oldAvailIn = zs.avail_in;
+
+            zs.next_out = destbuf[destFill .. $].ptr;
```

```
+           zs.avail_out = to!uint(destbuf.length - destFill);
+
+           err = inflate(&zs, Z_NO_FLUSH);
+           if (err == Z_STREAM_END)
+           {
+               inputEnded = true;
+               break;
+           }
+           else if (err != Z_OK)
+           {
+               GC.free(destbuf.ptr);
+               error(err);
+           }
+           else if (!zs.avail_in)
+               break;
+
+           /*
+               According to the zlib manual inflate() stops when either there's
+               no more data to uncompress or the output buffer is full
+               So at this point, the output buffer is too full
+           */
+
+           destFill = destbuf.length;
+
+           if (destbuf.capacity)
+           {
+               if (destbuf.length < destbuf.capacity)
+                   destbuf.length = destbuf.capacity;
+               else
+               {
+                   auto newLength = GC.extend(destbuf.ptr, destbufsize, destbufsize);
+
+                   if (newLength && destbuf.length < destbuf.capacity)
+                       destbuf.length = destbuf.capacity;
+                   else
+                       destbuf.length += destbufsize;
+               }
+           }
+           else
+               destbuf.length += destbufsize;
        }
+
        destbuf.length = destbuf.length - zs.avail_out;
        return destbuf;
    }

+   // Test for issues 3191 and 9505
+   @system unittest
```

```
+   {
+       import std.algorithm.comparison;
+       import std.array;
+       import std.file;
+       import std.zlib;
+
+       // Data that can be easily compressed
+       ubyte[1024] originalData;
+
+       // This should yield a compression ratio of at least 1/2
+       auto compressedData = compress(originalData, 9);
+       assert(compressedData.length < originalData.length / 2,
+               "The compression ratio is too low to accurately test this situation");
+
+       auto chunkSize = compressedData.length / 4;
+       assert(chunkSize < compressedData.length,
+               "The length of the compressed data is too small to accurately test this situation");
+
+       auto decompressor = new UnCompress();
+       ubyte[originalData.length] uncompressedData;
+       ubyte[] reusedBuf;
+       int progress;
+
+       reusedBuf.length = chunkSize;
+
+       for (int i = 0; i < compressedData.length; i += chunkSize)
+       {
+           auto len = min(chunkSize, compressedData.length - i);
+           // simulate reading from a stream in small chunks
+           reusedBuf[0 .. len] = compressedData[i .. i + len];
+
+           // decompress using same input buffer
+           auto chunk = decompressor.uncompress(reusedBuf);
+           assert(progress + chunk.length <= originalData.length,
+                   "The uncompressed result is bigger than the original data");
+
+           uncompressedData[progress .. progress + chunk.length] = cast(const ubyte[]) chunk[];
+           progress += chunk.length;
+       }
+
+       auto chunk = decompressor.flush();
+       assert(progress + chunk.length <= originalData.length,
+               "The uncompressed result is bigger than the original data");
+
+       uncompressedData[progress .. progress + chunk.length] = cast(const ubyte[]) chunk[];
+       progress += chunk.length;
+
+       assert(progress == originalData.length,
```

```
+                "The uncompressed and the original data sizes differ");
+        assert(originalData[] == uncompressedData[],
+                "The uncompressed and the original data differ");
+    }
+
+    @system unittest
+    {
+        ubyte[1024] invalidData;
+        auto decompressor = new UnCompress();
+
+        try
+        {
+            auto uncompressedData = decompressor.uncompress(invalidData);
+        }
+        catch (ZlibException e)
+        {
+            assert(e.msg == "data error");
+            return;
+        }
+
+        assert(false, "Corrupted data didn't result in an error");
+    }
+
+    @system unittest
+    {
+        ubyte[2014] originalData = void;
+        auto compressedData = compress(originalData, 9);
+
+        auto decompressor = new UnCompress();
+        auto uncompressedData = decompressor.uncompress(compressedData ~ cast(ubyte[]) "whatever");
+
+        assert(originalData.length == uncompressedData.length,
+                "The uncompressed and the original data sizes differ");
+        assert(originalData[] == uncompressedData[],
+                "The uncompressed and the original data differ");
+        assert(!decompressor.uncompress("whatever").length,
+                "Compression continued after the end");
+    }
+
     /**
      * Decompress and return any remaining data.
      * The returned data should be appended to that returned by uncompress().
@@ -626,49 +761,40 @@ class UnCompress
     void[] flush()
     in
     {
-        assert(!done);
+        assert(!done, "Buffer has been flushed before.");
```

```
     }
     out
     {
-        assert(done);
+        assert(done, "Flushing failed.");
     }
-    body
+    do
     {
-        import core.memory : GC;
-        ubyte[] extra;
-        ubyte[] destbuf;
-        int err;
-
        done = 1;
-        if (!inited)
-            return null;
+        return null;
+    }

-     L1:
-        destbuf = new ubyte[zs.avail_in * 2 + 100];
-        zs.next_out = destbuf.ptr;
-        zs.avail_out = to!uint(destbuf.length);
+    /// Returns true if all input data has been decompressed and no further data
+    /// can be decompressed (inflate() returned Z_STREAM_END)
+    @property bool empty() const
+    {
+        return inputEnded;
+    }

-        err = etc.c.zlib.inflate(&zs, Z_NO_FLUSH);
-        if (err == Z_OK && zs.avail_out == 0)
-        {
-            extra ~= destbuf;
-            goto L1;
-        }
-        if (err != Z_STREAM_END)
-        {
-            GC.free(destbuf.ptr);
-            if (err == Z_OK)
-                err = Z_BUF_ERROR;
-            error(err);
-        }
-        destbuf = destbuf.ptr[0 .. zs.next_out - destbuf.ptr];
-        err = etc.c.zlib.inflateEnd(&zs);
-        inited = 0;
-        if (err)
```

```
-           error(err);
-       if (extra.length)
-           destbuf = extra ~ destbuf;
-       return destbuf;
+    ///
+    @system unittest
+    {
+        // some random data
+        ubyte[1024] originalData = void;
+
+        // append garbage data (or don't, this works in both cases)
+        auto compressedData = cast(ubyte[]) compress(originalData) ~ cast(ubyte[]) "whatever";
+
+        auto decompressor = new UnCompress();
+        auto uncompressedData = decompressor.uncompress(compressedData);
+
+        assert(uncompressedData[] == originalData[],
+                "The uncompressed and the original data differ");
+        assert(decompressor.empty, "The UnCompressor reports not being done");
    }
}

--
2.35.1
```

Found in path(s):
* /opt/cola/permits/1327775260_1657893467.828745/0/gcc-11-2-1-tar-gz/0016-dlang-update-zlib-binding.patch

1.692 timescaledb-tune 0.14.1

1.692.1 Available under license :

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1.693 blinker 1.5

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Blinker Documentation
=====================

.. image:: _static/blinker-named.png
   :align: center

Blinker provides fast & simple object-to-object and broadcast signaling for Python objects.

The core of Blinker is quite small but provides powerful features:

- a global registry of named signals
- anonymous signals
- custom name registries
- permanently or temporarily connected receivers
- automatically disconnected receivers via weak referencing
- sending arbitrary data payloads
- collecting return values from signal receivers
- thread safety

Blinker was written by Jason Kirtand and is provided under the MIT License. The library supports Python 2.7 and Python 3.5 or later; or Jython 2.7 or later; or PyPy 2.7 or later.

Decoupling With Named Signals

Named signals are created with :func:`signal`:

.. code-block:: python

```
>>> from blinker import signal
>>> initialized = signal('initialized')
>>> initialized is signal('initialized')
True
```

Every call to ``signal('name')`` returns the same signal object, allowing unconnected parts of code (different modules, plugins, anything) to all use the same signal without requiring any code sharing or special imports.

Subscribing to Signals

:meth:`Signal.connect` registers a function to be invoked each time the signal is emitted. Connected functions are always passed the object that caused the signal to be emitted.

.. code-block:: python

```
>>> def subscriber(sender):
...     print("Got a signal sent by %r" % sender)
...
```

```
>>> ready = signal('ready')
>>> ready.connect(subscriber)
<function subscriber at 0x...>
```

Emitting Signals

Code producing events of interest can :meth:`Signal.send` notifications to all connected receivers.

Below, a simple ``Processor`` class emits a ``ready`` signal when it's about to process something, and ``complete`` when it is done. It passes ``self`` to the :meth:`~Signal.send` method, signifying that that particular instance was responsible for emitting the signal.

.. code-block:: python

```
>>> class Processor:
...    def __init__(self, name):
...        self.name = name
...
...    def go(self):
...        ready = signal('ready')
...        ready.send(self)
...        print("Processing.")
...        complete = signal('complete')
...        complete.send(self)
...
...    def __repr__(self):
...        return '<Processor %s>' % self.name
...
>>> processor_a = Processor('a')
>>> processor_a.go()
Got a signal sent by <Processor a>
Processing.
```

Notice the ``complete`` signal in ``go()``? No receivers have connected to ``complete`` yet, and that's a-ok. Calling :meth:`~Signal.send` on a signal with no receivers will result in no notifications being sent, and these no-op sends are optimized to be as inexpensive as possible.

Subscribing to Specific Senders

The default connection to a signal invokes the receiver function when any sender emits it. The :meth:`Signal.connect` function accepts an optional argument to restrict the subscription to one specific sending object:

.. code-block:: python

```
>>> def b_subscriber(sender):
...     print("Caught signal from processor_b.")
...     assert sender.name == 'b'
...
>>> processor_b = Processor('b')
>>> ready.connect(b_subscriber, sender=processor_b)
<function b_subscriber at 0x...>
```

This function has been subscribed to ``ready`` but only when sent by ``processor_b``:

.. code-block:: python

```
>>> processor_a.go()
Got a signal sent by <Processor a>
Processing.
>>> processor_b.go()
Got a signal sent by <Processor b>
Caught signal from processor_b.
Processing.
```

Sending and Receiving Data Through Signals

Additional keyword arguments can be passed to :meth:`~Signal.send`. These will in turn be passed to the connected functions:

.. code-block:: python

```
>>> send_data = signal('send-data')
>>> @send_data.connect
... def receive_data(sender, **kw):
...     print("Caught signal from %r, data %r" % (sender, kw))
...     return 'received!'
...
>>> result = send_data.send('anonymous', abc=123)
Caught signal from 'anonymous', data {'abc': 123}
```

The return value of :meth:`~Signal.send` collects the return values of each connected function as a list of (``receiver function``, ``return value``) pairs:

.. code-block:: python

```
 >>> result
 [(<function receive_data at 0x...>, 'received!')]
```

Anonymous Signals

Signals need not be named. The :class:`Signal` constructor creates a unique signal each time it is invoked. For example, an alternative implementation of the Processor from above might provide the processing signals as class attributes:

.. code-block:: python

```
 >>> from blinker import Signal
 >>> class AltProcessor:
 ...    on_ready = Signal()
 ...    on_complete = Signal()
 ...
 ...    def __init__(self, name):
 ...        self.name = name
 ...
 ...    def go(self):
 ...        self.on_ready.send(self)
 ...        print("Alternate processing.")
 ...        self.on_complete.send(self)
 ...
 ...    def __repr__(self):
 ...        return '<AltProcessor %s>' % self.name
 ...
```

``connect`` as a Decorator

You may have noticed the return value of :meth:`~Signal.connect` in the console output in the sections above. This allows ``connect`` to be used as a decorator on functions:

.. code-block:: python

```
 >>> apc = AltProcessor('c')
 >>> @apc.on_complete.connect
 ... def completed(sender):
 ...     print "AltProcessor %s completed!" % sender.name
 ...
```

```
>>> apc.go()
Alternate processing.
AltProcessor c completed!
```

While convenient, this form unfortunately does not allow the ``sender`` or ``weak`` arguments to be customized for the connected function. For this, :meth:`~Signal.connect_via` can be used:

.. code-block:: python

```
>>> dice_roll = signal('dice_roll')
>>> @dice_roll.connect_via(1)
... @dice_roll.connect_via(3)
... @dice_roll.connect_via(5)
... def odd_subscriber(sender):
...     print("Observed dice roll %r." % sender)
...
>>> result = dice_roll.send(3)
Observed dice roll 3.
```

Optimizing Signal Sending

Signals are optimized to send very quickly, whether receivers are connected or not. If the keyword data to be sent with a signal is expensive to compute, it can be more efficient to check to see if any receivers are connected first by testing the :attr:`~Signal.receivers` property:

.. code-block:: python

```
>>> bool(signal('ready').receivers)
True
>>> bool(signal('complete').receivers)
False
>>> bool(AltProcessor.on_complete.receivers)
True
```

Checking for a receiver listening for a particular sender is also possible:

.. code-block:: python

```
>>> signal('ready').has_receivers_for(processor_a)
True
```

Documenting Signals

Both named and anonymous signals can be passed a ``doc`` argument at
construction to set the pydoc help text for the signal. This
documentation will be picked up by most documentation generators (such
as sphinx) and is nice for documenting any additional data parameters
that will be sent down with the signal.

See the documentation of the :obj:`receiver_connected` built-in signal
for an example.

API Documentation

All public API members can (and should) be imported from ``blinker``::

 from blinker import ANY, signal

.. currentmodule:: blinker.base

Basic Signals
+++++++++++++

.. autodata:: blinker.base.ANY

.. autodata:: blinker.base.receiver_connected

.. autoclass:: Signal
  :members:
  :undoc-members:

Named Signals
+++++++++++++

.. function:: signal(name, doc=None)

 Return the :class:`NamedSignal` *name*, creating it if required.

 Repeated calls to this function will return the same signal object.
 Signals are created in a global :class:`Namespace`.

.. autoclass:: NamedSignal
  :show-inheritance:
  :members:

.. autoclass:: Namespace

:show-inheritance:
  :members: signal

.. autoclass:: WeakNamespace
  :show-inheritance:
  :members: signal

Changes
=======

.. include:: ../CHANGES.rst

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===========

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* /opt/cola/permits/1396666907_1667492354.8706143/0/blinker-1-5-tar-gz/blinker-1.5/docs/index.rst
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```
try:
   from setuptools import setup
except ImportError:
   from distutils.core import setup

readme = open('README.rst').read()
import blinker
version = blinker.__version__

setup(name="blinker",
     version=version,
     packages=['blinker'],
     author='Jason Kirtland',
     author_email='jek@discorporate.us',
     maintainer="Pallets Ecosystem",
     maintainer_email="contact@palletsprojects.com",
     description='Fast, simple object-to-object and broadcast signaling',
     keywords='signal emit events broadcast',
     long_description=readme,
     long_description_content_type="text/x-rst",
     license='MIT License',
     url='https://blinker.readthedocs.io',
     project_urls={
       'Source': 'https://github.com/pallets-eco/blinker',
     },
     python_requires='>=2.7, !=3.0.*, !=3.1.*, !=3.2.*, !=3.3.*, !=3.4.*',
     classifiers=[
         'Development Status :: 5 - Production/Stable',
         'Intended Audience :: Developers',
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         'Programming Language :: Python',
         'Topic :: Software Development :: Libraries',
         ],
)
```

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Metadata-Version: 2.1
Name: blinker
Version: 1.5
Summary: Fast, simple object-to-object and broadcast signaling
Home-page: https://blinker.readthedocs.io
Author: Jason Kirtland
Author-email: jek@discorporate.us
Maintainer: Pallets Ecosystem

Maintainer-email: contact@palletsprojects.com
License: MIT License
Project-URL: Source, https://github.com/pallets-eco/blinker
Keywords: signal emit events broadcast
Classifier: Development Status :: 5 - Production/Stable
Classifier: Intended Audience :: Developers
Classifier: License :: OSI Approved :: MIT License
Classifier: Operating System :: OS Independent
Classifier: Programming Language :: Python
Classifier: Topic :: Software Development :: Libraries
Requires-Python: >=2.7, !=3.0.*, !=3.1.*, !=3.2.*, !=3.3.*, !=3.4.*
Description-Content-Type: text/x-rst
License-File: LICENSE.rst

Blinker
=======

Blinker provides a fast dispatching system that allows any number of interested parties to subscribe to events, or "signals".

Signal receivers can subscribe to specific senders or receive signals sent by any sender.

.. code-block:: pycon

```
    >>> from blinker import signal
    >>> started = signal('round-started')
    >>> def each(round):
    ...     print "Round %s!" % round
    ...
    >>> started.connect(each)

    >>> def round_two(round):
    ...     print "This is round two."
    ...
    >>> started.connect(round_two, sender=2)

    >>> for round in range(1, 4):
    ...     started.send(round)
    ...
    Round 1!
    Round 2!
    This is round two.
    Round 3!
```

Links

- Documentation: https://blinker.readthedocs.io/
- Changes: https://blinker.readthedocs.io/#changes
- PyPI Releases: https://pypi.org/project/blinker/
- Source Code: https://github.com/pallets-eco/blinker/
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1.694 npm-profile 6.2.0

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1.695 util-linux 2.38-r1

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```
NR START   END SECTORS SIZE NAME UUID
1    32  7679    7648 3.7M      8f8378c0-01
2  7680 16383    8704 4.3M      8f8378c0-02
5  7936 12799    4864 2.4M
6 12544 16127    3584 1.8M
```

version.

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```
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1.703 go-isatty 0.0.11

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As per item (3), we are required to provide a brief summary of
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1.705 media-typer 0.3.0

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1.706 netty-codec-socks 4.1.78.Final

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1.707 go.opentelemetry.io/otel/exporters/otlp/otlptr

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1.710 urllib3 1.26.12

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NR START   END SECTORS SIZE NAME UUID
1    32  7679    7648 3.7M      8f8378c0-01
2  7680 16383    8704 4.3M      8f8378c0-02
5  7936 12799    4864 2.4M
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Version 2.1, February 1999

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io.vertx.core.impl.launcher.commands.StopCommandFactory

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See [svn changeset r39632](https://github.com/unicode-org/icu/commit/0001f6c5e92f6f3a8d66c7dbc47cc24df7633a71) for an example; there should be only two files to update.

```
## -*-makefile-*-
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## Commands to generate dependency files
GEN_DEPS.c= $(CC) -E -MM $(DEFS) $(CPPFLAGS)
GEN_DEPS.cc= $(CXX) -E -MM $(DEFS) $(CPPFLAGS)

## Flags for position independent code
SHAREDLIBCFLAGS = -fPIC
SHAREDLIBCXXFLAGS = -fPIC
SHAREDLIBCPPFLAGS = -DPIC

## Additional flags when building libraries and with threads
THREADSCPPFLAGS = -D_REENTRANT
LIBCPPFLAGS =

## Compiler switch to embed a runtime search path
LD_RPATH=
LD_RPATH_PRE= -Wl,-rpath,

## Compiler switch to embed a library name
LD_SONAME = -Wl,-soname -Wl,$(notdir $(MIDDLE_SO_TARGET))

## Shared library options
LD_SOOPTIONS= -Wl,-Bsymbolic

## Shared object suffix
SO = so
## Non-shared intermediate object suffix
STATIC_O = ao

## Compilation rules
%.$(STATIC_O): $(srcdir)/%.c
```

```
 $(COMPILE.c) $(STATICCPPFLAGS) $(STATICCFLAGS) -o $@ $<
%.o: $(srcdir)/%.c
 $(COMPILE.c) $(DYNAMICCPPFLAGS) $(DYNAMICCFLAGS) -o $@ $<

%.$(STATIC_O): $(srcdir)/%.cpp
 $(COMPILE.cc) $(STATICCPPFLAGS) $(STATICCXXFLAGS) -o $@ $<
%.o: $(srcdir)/%.cpp
 $(COMPILE.cc) $(DYNAMICCPPFLAGS) $(DYNAMICCXXFLAGS) -o $@ $<


## Dependency rules
%.d: $(srcdir)/%.c
 @echo "generating dependency information for $<"
 @$(SHELL) -ec '$(GEN_DEPS.c) $< \
  | sed '\''s/\($*\)\.o[ :]*/\1.o $@ : /g'\'' > $@; \
  [ -s $@ ] || rm -f $@'

%.d: $(srcdir)/%.cpp
 @echo "generating dependency information for $<"
 @$(SHELL) -ec '$(GEN_DEPS.cc) $< \
  | sed '\''s/\($*\)\.o[ :]*/\1.o $@ : /g'\'' > $@; \
  [ -s $@ ] || rm -f $@'

## Versioned libraries rules

%.$(SO).$(SO_TARGET_VERSION_MAJOR): %.$(SO).$(SO_TARGET_VERSION)
 $(RM) $@ && ln -s ${<F} $@
%.$(SO): %.$(SO).$(SO_TARGET_VERSION_MAJOR)
 $(RM) $@ && ln -s ${*F}.$(SO).$(SO_TARGET_VERSION) $@

##  Bind internal references

# LDflags that pkgdata will use
BIR_LDFLAGS= -Wl,-Bsymbolic

# Dependencies [i.e. map files] for the final library
BIR_DEPS=

## Remove shared library 's'
STATIC_PREFIX_WHEN_USED =
STATIC_PREFIX =

## End BSD-specific setup
```

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lib/erl/src/Makefile.am

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For the lib/nodejs/lib/thrift/json_parse.js:

/*
json_parse.js

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*/
(By Douglas Crockford <douglas@crockford.com>)

For lib/cpp/src/thrift/windows/SocketPair.cpp

/* socketpair.c
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*/

For lib/py/compat/win32/stdint.h

// ISO C9x compliant stdint.h for Microsoft Visual Studio
// Based on ISO/IEC 9899:TC2 Committee draft (May 6, 2005) WG14/N1124
//
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//
//

Codegen template in t_html_generator.h

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*
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*
* Designed and built with all the love in the world @twitter by @mdo and @fat.

For t_cl_generator.cc

* Copyright (c) 2008- Patrick Collison <patrick@collison.ie>
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1.721 isstream 0.1.2

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Tags: blog, custom-background, custom-colors, editor-style, featured-images, footer-widgets, full-width-template, rtl-language-support, sticky-post, theme-options, threaded-comments, translation-ready, block-styles, wide-blocks, custom-menu, custom-logo, entertainment, one-column, two-columns, three-columns, four-columns, right-sidebar, left-sidebar, e-commerce, post-formats
Tested up to: 5.5.1
Requires at least: 5.0
Requires PHP: 5.4 or higher
Stable tag: 2.0.0

Extremely fast and highly customizable WordPress theme.

== Description ==

Greenlet is an extremely fast theme. It gives you 100/100 in Lighthouse tool if followed the following:
(Things a theme cant control)

- Your server is fast!
- Your sever user https and http/2

Use Greenlet as base theme and as a starting point to create a child theme according to your need.
Greenlet also is SEO friendly. Theme integrates schema.org efficiently for Search Engine Optimization.

= Greenlet Features: =

- Scores 100/100 Google's Lighthouse Page Speed Tool
- Extremely Lightweight (~25KB)
- Schema Markup Added
- Does not need jQuery
- Select Greenlet CSS Framework or Bootstrap
- 12 Column Design System
- Customize Column Sequence
- 8 Global Predefined Layouts (extendable)
- Unlimited Individual Post Layout
- Unlimited Header and Footer layout (Rows & Columns)

- Pagination - Default (Newer and Older Posts)
- Pagination - Numbered
- Pagination - Numbered Ajax
- Pagination - Load More Ajax
- Pagination - Infinite Scroll
- ML Support
- RTL Support
- Change Theme design via customizer
- Change Theme behaviour via tons of hooks
- Tons of Color options
- Tons of Google Fonts
- Mobile Ready
- Page Builders Ready
- Add Logo, Menu & Togglers to headers & footers
- Header and Footer Contents from Widgets or Template File
- 2 to 12 Sidebars Customizable
- Enable or Disable Breadcrumb
- Custom Breadcrumb Separator
- Toggle Featured Image in Post List
- Toggle Comments on Posts and Pages
- Toggle Post Author Info
- Toggle WP Emoji, WP Embed and Block editor scripts and styles
- WooCommerce Support
- Editor style matching to Frontend
- Theme Presets

== Changelog ==

- New: Visual CSS editor under "Extra Styles".
- New: Unlimited Headers and Footers creator.
- New: Individual post/page layout selector
- Improvement: All visual styles are moved to "Extra Styles".
- Improvement: Bootstrap update to 4.5.3.
- Improvement: Show logo, title & tagline independently.
- Improvement: Full-width & full-width container block support

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/*!
 * Fuse.js v3.4.5 - Lightweight fuzzy-search (http://fusejs.io)
 *
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/**
* style.css
*
* Theme Name: Greenlet
* Theme URI: https://greenletwp.com
* Description: Greenlet is an extremely fast, lightweight best SEO WordPress theme made for blogs, personal portfolio, business, and Woocommerce Stores. While Greenlet setup is quick and easy, it provides dozens of options for customization without affecting the speed and size of your website. Features: 100/100 Google Page Speed score | Extremely Lightweight (~25KB) | Schema Markup Added | No jQuery | 12 Column Design System | 8 Predefined Layouts (extendable) | Unlimited Post Layout | Unlimited Header and Footer layout | Pagination (Default, Numbered, Ajax, Load More, Infinite Scroll) | ML Support | RTL Support | Visual style edtor | Mobile Ready | Breadcrumb | WooCommerce Support | Theme Presets and so much more.
* Version: 2.0.0
* Tested up to: 5.5.1
* Requires PHP: 5.4 or higher
* Author: Greenlet Team
* Author URI: https://greenletwp.com/about/
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* License URI: http://www.gnu.org/licenses/gpl-2.0.html
* Tags: blog, custom-background, custom-colors, editor-style, featured-images, footer-widgets, full-width-template, rtl-language-support, sticky-post, theme-options, threaded-comments, translation-ready, block-styles, wide-blocks, custom-menu, custom-logo, entertainment, one-column, two-columns, three-columns, four-columns, right-sidebar, left-sidebar, e-commerce, post-formats
* Text Domain: greenlet
* Domain Path: /library/languages
*/

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* /opt/cola/permits/1458922050_1667377150.4233828/0/codefoxes-greenlet-v2-0-0-0-g473820d-tar-gz/codefoxes-greenlet-473820d/src/frontend/css/bootstrap.css
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```
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```
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/**!
* wp-color-picker-alpha
*
* Overwrite Automattic Iris for enabled Alpha Channel in wpColorPicker
* Only run in input and is defined data alpha in true
*
* Version: 2.1.4
* https://github.com/kallookoo/wp-color-picker-alpha
* Licensed under the GPLv2 license or later.
*/

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* /opt/cola/permits/1458922050_1667377150.4233828/0/codefoxes-greenlet-v2-0-0-0-g473820d-tar-gz/codefoxes-greenlet-473820d/src/frontend/js/bootstrap.js

1.723 minimist 1.2.6

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1.724 safe-buffer 5.1.2

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1.725 @npmcli/run-script 4.1.7

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1.728 yallist 4.0.0

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1.734 libnsl 2.0.0-r0

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1.738 vertx-json-schema 4.3.2

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1.743 docutils 0.15.2

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI) in the Netherlands as a successor of a language called ABC. Guido is Python's principal author, although it includes many contributions from others. The last version released from CWI was Python 1.2. In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI) in Reston, Virginia where he released several versions of the software. Python 1.6 was the last of the versions released by CNRI. In 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. Python 2.0 was the first and only release from BeOpen.com.

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NR START   END SECTORS SIZE NAME UUID
1    32  7679    7648 3.7M      8f8378c0-01
2  7680 16383    8704 4.3M      8f8378c0-02
5  7936 12799    4864 2.4M
6 12544 16127    3584 1.8M
```

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Codegen template in t_html_generator.h

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1.748 typing-extensions 4.4.0

1.748.1 Available under license :

A. HISTORY OF THE SOFTWARE
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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see https://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no

2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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1.749 libnpmexec 4.0.8

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1.750 bzip2 1.0.8-r1

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Julian Seward, jseward@acm.org
bzip2/libbzip2 version 1.0.8 of 13 July 2019

1.751 go-etcd-io-bbolt 1.3.6

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1.758 rimraf 3.0.2

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1.762 mako 1.2.3

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1.764 icu-data-full 71.1-r2

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title: Legalities
parent: Release & Milestone Tasks
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nav_order: 70

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-*-makefile-*-
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Commands to generate dependency files
GEN_DEPS.c= $(CC) -E -MM $(DEFS) $(CPPFLAGS)
GEN_DEPS.cc= $(CXX) -E -MM $(DEFS) $(CPPFLAGS)

Flags for position independent code
SHAREDLIBCFLAGS = -fPIC
SHAREDLIBCXXFLAGS = -fPIC
SHAREDLIBCPPFLAGS = -DPIC

Additional flags when building libraries and with threads
THREADSCPPFLAGS = -D_REENTRANT
LIBCPPFLAGS =

Compiler switch to embed a runtime search path
LD_RPATH=
LD_RPATH_PRE= -Wl,-rpath,

```
## Compiler switch to embed a library name
LD_SONAME = -Wl,-soname -Wl,$(notdir $(MIDDLE_SO_TARGET))

## Shared library options
LD_SOOPTIONS= -Wl,-Bsymbolic

## Shared object suffix
SO = so
## Non-shared intermediate object suffix
STATIC_O = ao

## Compilation rules
%.$(STATIC_O): $(srcdir)/%.c
 $(COMPILE.c) $(STATICCPPFLAGS) $(STATICCFLAGS) -o $@ $<
%.o: $(srcdir)/%.c
 $(COMPILE.c) $(DYNAMICCPPFLAGS) $(DYNAMICCFLAGS) -o $@ $<

%.$(STATIC_O): $(srcdir)/%.cpp
 $(COMPILE.cc) $(STATICCPPFLAGS) $(STATICCXXFLAGS) -o $@ $<
%.o: $(srcdir)/%.cpp
 $(COMPILE.cc) $(DYNAMICCPPFLAGS) $(DYNAMICCXXFLAGS) -o $@ $<


## Dependency rules
%.d: $(srcdir)/%.c
 @echo "generating dependency information for $<"
 @$(SHELL) -ec '$(GEN_DEPS.c) $< \
  | sed '\''s/\($*\)\.o[ :]*/\1.o $@ : /g'\'' > $@; \
  [ -s $@ ] || rm -f $@'

%.d: $(srcdir)/%.cpp
 @echo "generating dependency information for $<"
 @$(SHELL) -ec '$(GEN_DEPS.cc) $< \
  | sed '\''s/\($*\)\.o[ :]*/\1.o $@ : /g'\'' > $@; \
  [ -s $@ ] || rm -f $@'

## Versioned libraries rules

%.$(SO).$(SO_TARGET_VERSION_MAJOR): %.$(SO).$(SO_TARGET_VERSION)
 $(RM) $@ && ln -s ${<F} $@
%.$(SO): %.$(SO).$(SO_TARGET_VERSION_MAJOR)
 $(RM) $@ && ln -s ${*F}.$(SO).$(SO_TARGET_VERSION) $@

##  Bind internal references

# LDflags that pkgdata will use
BIR_LDFLAGS= -Wl,-Bsymbolic
```

Dependencies [i.e. map files] for the final library
BIR_DEPS=

Remove shared library 's'
STATIC_PREFIX_WHEN_USED =
STATIC_PREFIX =

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1.765 go.etcd.io/etcd/etcdctl/v3 (devel)

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1.766 xz 5.2.5-r1

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==================

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CC0 1.0 Universal

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    'openssl/ssl/d1_lib.c',
    'openssl/ssl/d1_msg.c',
    'openssl/ssl/d1_srtp.c',
    'openssl/ssl/methods.c',
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'openssl/ssl/packet.c',
'openssl/ssl/pqueue.c',
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  './config/archs/BSD-x86/asm_avx2/crypto/poly1305/poly1305-x86.s',
  './config/archs/BSD-x86/asm_avx2/crypto/rc4/rc4-586.s',
  './config/archs/BSD-x86/asm_avx2/crypto/ripemd/rmd-586.s',
  './config/archs/BSD-x86/asm_avx2/crypto/sha/sha1-586.s',
  './config/archs/BSD-x86/asm_avx2/crypto/sha/sha256-586.s',
  './config/archs/BSD-x86/asm_avx2/crypto/sha/sha512-586.s',
  './config/archs/BSD-x86/asm_avx2/crypto/whrlpool/wp-mmx.s',
  './config/archs/BSD-x86/asm_avx2/crypto/x86cpuid.s',
  './config/archs/BSD-x86/asm_avx2/engines/e_padlock-x86.s',
],
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  'OPENSSL_CPUID_OBJ',
  'OPENSSL_BN_ASM_PART_WORDS',
  'OPENSSL_IA32_SSE2',
  'OPENSSL_BN_ASM_MONT',
  'OPENSSL_BN_ASM_GF2m',
  'SHA1_ASM',
```

```
      'SHA256_ASM',
      'SHA512_ASM',
      'RC4_ASM',
      'MD5_ASM',
      'RMD160_ASM',
      'AESNI_ASM',
      'VPAES_ASM',
      'WHIRLPOOL_ASM',
      'GHASH_ASM',
      'ECP_NISTZ256_ASM',
      'POLY1305_ASM',
    ],
    'openssl_cflags_BSD-x86': [
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      '-Wall -O3 -fomit-frame-pointer',
      '-pthread',
      '-Wall -O3 -fomit-frame-pointer',
    ],
    'openssl_ex_libs_BSD-x86': [
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    ],
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    './crypto',
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  'cflags' : ['<@(openssl_cflags_BSD-x86)'],
  'libraries': ['<@(openssl_ex_libs_BSD-x86)'],
  'sources': ['<@(openssl_sources)', '<@(openssl_sources_BSD-x86)'],
}
```

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```
{
 'variables': {
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     'NDEBUG',
     'L_ENDIAN',
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     'OPENSSL_CPUID_OBJ',
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     'OPENSSL_BN_ASM_MONT',
     'OPENSSL_BN_ASM_MONT5',
     'OPENSSL_BN_ASM_GF2m',
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     'VPAES_ASM',
     'GHASH_ASM',
     'ECP_NISTZ256_ASM',
     'X25519_ASM',
     'POLY1305_ASM',
   ],
   'openssl_cflags_BSD-x86_64': [
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     '-Wall -O3',
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  '-pthread',
],
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  'openssl/apps/ca.c',
  'openssl/apps/ciphers.c',
  'openssl/apps/cms.c',
  'openssl/apps/crl.c',
  'openssl/apps/crl2p7.c',
  'openssl/apps/dgst.c',
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  'openssl/apps/dsa.c',
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  'openssl/apps/ec.c',
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  'openssl/apps/ocsp.c',
  'openssl/apps/openssl.c',
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  'openssl/apps/pkcs7.c',
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  'openssl/apps/s_server.c',
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  'openssl/apps/srp.c',
  'openssl/apps/storeutl.c',
  'openssl/apps/ts.c',
  'openssl/apps/verify.c',
```

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    'openssl/apps/x509.c',
    'openssl/apps/app_rand.c',
    'openssl/apps/apps.c',
    'openssl/apps/bf_prefix.c',
    'openssl/apps/opt.c',
    'openssl/apps/s_cb.c',
    'openssl/apps/s_socket.c',
  ],
 },
 'defines': ['<@(openssl_defines_BSD-x86_64)'],
 'include_dirs': [
  './include',
 ],
 'cflags' : ['<@(openssl_cflags_BSD-x86_64)'],
 'libraries': ['<@(openssl_ex_libs_BSD-x86_64)'],
 'sources': ['<@(openssl_cli_srcs_BSD-x86_64)'],
}
```

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A. HISTORY OF THE SOFTWARE
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Python was created in the early 1990s by Guido van Rossum at Stichting
Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands
as a successor of a language called ABC. Guido remains Python's
principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for
National Research Initiatives (CNRI, see http://www.cnri.reston.va.us)
in Reston, Virginia where he released several versions of the
software.

In May 2000, Guido and the Python core development team moved to
BeOpen.com to form the BeOpen PythonLabs team. In October of the same
year, the PythonLabs team moved to Digital Creations, which became
Zope Corporation. In 2001, the Python Software Foundation (PSF, see
https://www.python.org/psf/) was formed, a non-profit organization
created specifically to own Python-related Intellectual Property.
Zope Corporation was a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for
the Open Source Definition). Historically, most, but not all, Python
releases have also been GPL-compatible; the table below summarizes
the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no

2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

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Lao Word Break Dictionary Data (laodict.txt)

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Google double-conversion

File: aclocal.m4 (only for ICU4C)
Section: pkg.m4 - Macros to locate and utilise pkg-config.

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File: config.guess (only for ICU4C)

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  'openssl/crypto/x509v3/v3_pci.c',
  'openssl/crypto/x509v3/v3_pcia.c',
  'openssl/crypto/x509v3/v3_pcons.c',
  'openssl/crypto/x509v3/v3_pku.c',
  'openssl/crypto/x509v3/v3_pmaps.c',
  'openssl/crypto/x509v3/v3_prn.c',
  'openssl/crypto/x509v3/v3_purp.c',
  'openssl/crypto/x509v3/v3_skey.c',
  'openssl/crypto/x509v3/v3_sxnet.c',
  'openssl/crypto/x509v3/v3_tlsf.c',
  'openssl/crypto/x509v3/v3_utl.c',
  'openssl/crypto/x509v3/v3err.c',
  'openssl/engines/e_capi.c',
  'openssl/engines/e_padlock.c',
],
'openssl_sources_BSD-x86_64': [
  './config/archs/BSD-x86_64/asm_avx2/crypto/aes/aesni-mb-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/aes/aesni-sha1-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/aes/aesni-sha256-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/aes/aesni-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/aes/vpaes-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/bn/rsaz-avx2.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/bn/rsaz-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/bn/x86_64-gf2m.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/bn/x86_64-mont.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/bn/x86_64-mont5.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/camellia/cmll-x86_64.s',
```

```
  './config/archs/BSD-x86_64/asm_avx2/crypto/chacha/chacha-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/ec/ecp_nistz256-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/ec/x25519-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/md5/md5-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/modes/aesni-gcm-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/modes/ghash-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/poly1305/poly1305-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/rc4/rc4-md5-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/rc4/rc4-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/sha/keccak1600-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/sha/sha1-mb-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/sha/sha1-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/sha/sha256-mb-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/sha/sha256-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/sha/sha512-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/whrlpool/wp-x86_64.s',
  './config/archs/BSD-x86_64/asm_avx2/crypto/x86_64cpuid.s',
  './config/archs/BSD-x86_64/asm_avx2/engines/e_padlock-x86_64.s',
],
'openssl_defines_BSD-x86_64': [
  'NDEBUG',
  'L_ENDIAN',
  'OPENSSL_PIC',
  'OPENSSL_CPUID_OBJ',
  'OPENSSL_IA32_SSE2',
  'OPENSSL_BN_ASM_MONT',
  'OPENSSL_BN_ASM_MONT5',
  'OPENSSL_BN_ASM_GF2m',
  'SHA1_ASM',
  'SHA256_ASM',
  'SHA512_ASM',
  'KECCAK1600_ASM',
  'RC4_ASM',
  'MD5_ASM',
  'AESNI_ASM',
  'VPAES_ASM',
  'GHASH_ASM',
  'ECP_NISTZ256_ASM',
  'X25519_ASM',
  'POLY1305_ASM',
],
'openssl_cflags_BSD-x86_64': [
  '-Wa,--noexecstack',
  '-Wall -O3',
  '-pthread',
  '-Wall -O3',
],
'openssl_ex_libs_BSD-x86_64': [
```

```
    '-pthread',
   ],
  },
  'include_dirs': [
   '.',
   './include',
   './crypto',
   './crypto/include/internal',
  ],
  'defines': ['<@(openssl_defines_BSD-x86_64)'],
  'cflags' : ['<@(openssl_cflags_BSD-x86_64)'],
  'libraries': ['<@(openssl_ex_libs_BSD-x86_64)'],
  'sources': ['<@(openssl_sources)', '<@(openssl_sources_BSD-x86_64)'],
}
```
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```
{
 'variables': {
   'openssl_defines_BSD-x86': [
     'NDEBUG',
     'L_ENDIAN',
     'OPENSSL_PIC',
   ],
   'openssl_cflags_BSD-x86': [
     '-Wall -O3 -fomit-frame-pointer',
     '-pthread',
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   ],
   'openssl_ex_libs_BSD-x86': [
     '-pthread',
   ],
   'openssl_cli_srcs_BSD-x86': [
     'openssl/apps/asn1pars.c',
     'openssl/apps/ca.c',
     'openssl/apps/ciphers.c',
     'openssl/apps/cms.c',
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     'openssl/apps/crl2p7.c',
     'openssl/apps/dgst.c',
     'openssl/apps/dhparam.c',
     'openssl/apps/dsa.c',
     'openssl/apps/dsaparam.c',
     'openssl/apps/ec.c',
     'openssl/apps/ecparam.c',
     'openssl/apps/enc.c',
     'openssl/apps/engine.c',
     'openssl/apps/errstr.c',
     'openssl/apps/gendsa.c',
     'openssl/apps/genpkey.c',
     'openssl/apps/genrsa.c',
     'openssl/apps/nseq.c',
     'openssl/apps/ocsp.c',
     'openssl/apps/openssl.c',
     'openssl/apps/passwd.c',
     'openssl/apps/pkcs12.c',
     'openssl/apps/pkcs7.c',
     'openssl/apps/pkcs8.c',
     'openssl/apps/pkey.c',
     'openssl/apps/pkeyparam.c',
     'openssl/apps/pkeyutl.c',
     'openssl/apps/prime.c',
     'openssl/apps/rand.c',
     'openssl/apps/rehash.c',
     'openssl/apps/req.c',
```

```
    'openssl/apps/rsa.c',
    'openssl/apps/rsautl.c',
    'openssl/apps/s_client.c',
    'openssl/apps/s_server.c',
    'openssl/apps/s_time.c',
    'openssl/apps/sess_id.c',
    'openssl/apps/smime.c',
    'openssl/apps/speed.c',
    'openssl/apps/spkac.c',
    'openssl/apps/srp.c',
    'openssl/apps/storeutl.c',
    'openssl/apps/ts.c',
    'openssl/apps/verify.c',
    'openssl/apps/version.c',
    'openssl/apps/x509.c',
    'openssl/apps/app_rand.c',
    'openssl/apps/apps.c',
    'openssl/apps/bf_prefix.c',
    'openssl/apps/opt.c',
    'openssl/apps/s_cb.c',
    'openssl/apps/s_socket.c',
   ],
  },
  'defines': ['<@(openssl_defines_BSD-x86)'],
  'include_dirs': [
   './include',
  ],
  'cflags' : ['<@(openssl_cflags_BSD-x86)'],
  'libraries': ['<@(openssl_ex_libs_BSD-x86)'],
  'sources': ['<@(openssl_cli_srcs_BSD-x86)'],
}
```

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wcwidth.js: JavaScript Portng of Markus Kuhn's wcwidth() Implementation
===

This package is a JavaScript porting of `wcwidth()` implementation
[by Markus Kuhn](http://www.cl.cam.ac.uk/~mgk25/ucs/wcwidth.c).

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```
{
 'variables': {
   'openssl_defines_BSD-x86': [
     'NDEBUG',
     'L_ENDIAN',
     'OPENSSL_PIC',
     'OPENSSL_CPUID_OBJ',
     'OPENSSL_BN_ASM_PART_WORDS',
     'OPENSSL_IA32_SSE2',
     'OPENSSL_BN_ASM_MONT',
     'OPENSSL_BN_ASM_GF2m',
     'SHA1_ASM',
     'SHA256_ASM',
     'SHA512_ASM',
     'RC4_ASM',
     'MD5_ASM',
     'RMD160_ASM',
     'AESNI_ASM',
     'VPAES_ASM',
     'WHIRLPOOL_ASM',
     'GHASH_ASM',
     'ECP_NISTZ256_ASM',
     'POLY1305_ASM',
   ],
   'openssl_cflags_BSD-x86': [
     '-Wa,--noexecstack',
     '-Wall -O3 -fomit-frame-pointer',
     '-pthread',
     '-Wall -O3 -fomit-frame-pointer',
   ],
   'openssl_ex_libs_BSD-x86': [
     '-pthread',
   ],
   'openssl_cli_srcs_BSD-x86': [
     'openssl/apps/asn1pars.c',
     'openssl/apps/ca.c',
     'openssl/apps/ciphers.c',
     'openssl/apps/cms.c',
     'openssl/apps/crl.c',
     'openssl/apps/crl2p7.c',
     'openssl/apps/dgst.c',
     'openssl/apps/dhparam.c',
     'openssl/apps/dsa.c',
     'openssl/apps/dsaparam.c',
```

```
      'openssl/apps/ec.c',
      'openssl/apps/ecparam.c',
      'openssl/apps/enc.c',
      'openssl/apps/engine.c',
      'openssl/apps/errstr.c',
      'openssl/apps/gendsa.c',
      'openssl/apps/genpkey.c',
      'openssl/apps/genrsa.c',
      'openssl/apps/nseq.c',
      'openssl/apps/ocsp.c',
      'openssl/apps/openssl.c',
      'openssl/apps/passwd.c',
      'openssl/apps/pkcs12.c',
      'openssl/apps/pkcs7.c',
      'openssl/apps/pkcs8.c',
      'openssl/apps/pkey.c',
      'openssl/apps/pkeyparam.c',
      'openssl/apps/pkeyutl.c',
      'openssl/apps/prime.c',
      'openssl/apps/rand.c',
      'openssl/apps/rehash.c',
      'openssl/apps/req.c',
      'openssl/apps/rsa.c',
      'openssl/apps/rsautl.c',
      'openssl/apps/s_client.c',
      'openssl/apps/s_server.c',
      'openssl/apps/s_time.c',
      'openssl/apps/sess_id.c',
      'openssl/apps/smime.c',
      'openssl/apps/speed.c',
      'openssl/apps/spkac.c',
      'openssl/apps/srp.c',
      'openssl/apps/storeutl.c',
      'openssl/apps/ts.c',
      'openssl/apps/verify.c',
      'openssl/apps/version.c',
      'openssl/apps/x509.c',
      'openssl/apps/app_rand.c',
      'openssl/apps/apps.c',
      'openssl/apps/bf_prefix.c',
      'openssl/apps/opt.c',
      'openssl/apps/s_cb.c',
      'openssl/apps/s_socket.c',
    ],
  },
  'defines': ['<@(openssl_defines_BSD-x86)'],
  'include_dirs': [
    './include',
```

```
 ],
 'cflags' : ['<@(openssl_cflags_BSD-x86)'],
 'libraries': ['<@(openssl_ex_libs_BSD-x86)'],
 'sources': ['<@(openssl_cli_srcs_BSD-x86)'],
}
```

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 'variables': {
   'openssl_defines_BSD-x86_64': [
     'NDEBUG',
     'L_ENDIAN',
     'OPENSSL_PIC',
   ],
   'openssl_cflags_BSD-x86_64': [
     '-Wall -O3',
     '-pthread',
     '-Wall -O3',
   ],
   'openssl_ex_libs_BSD-x86_64': [
     '-pthread',
   ],
   'openssl_cli_srcs_BSD-x86_64': [
     'openssl/apps/asn1pars.c',
     'openssl/apps/ca.c',
     'openssl/apps/ciphers.c',
     'openssl/apps/cms.c',
     'openssl/apps/crl.c',
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     'openssl/apps/dgst.c',
     'openssl/apps/dhparam.c',
     'openssl/apps/dsa.c',
     'openssl/apps/dsaparam.c',
     'openssl/apps/ec.c',
     'openssl/apps/ecparam.c',
     'openssl/apps/enc.c',
     'openssl/apps/engine.c',
     'openssl/apps/errstr.c',
     'openssl/apps/gendsa.c',
     'openssl/apps/genpkey.c',
     'openssl/apps/genrsa.c',
     'openssl/apps/nseq.c',
     'openssl/apps/ocsp.c',
     'openssl/apps/openssl.c',
     'openssl/apps/passwd.c',
     'openssl/apps/pkcs12.c',
     'openssl/apps/pkcs7.c',
     'openssl/apps/pkcs8.c',
     'openssl/apps/pkey.c',
```

```
    'openssl/apps/pkeyparam.c',
    'openssl/apps/pkeyutl.c',
    'openssl/apps/prime.c',
    'openssl/apps/rand.c',
    'openssl/apps/rehash.c',
    'openssl/apps/req.c',
    'openssl/apps/rsa.c',
    'openssl/apps/rsautl.c',
    'openssl/apps/s_client.c',
    'openssl/apps/s_server.c',
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    'openssl/apps/sess_id.c',
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    'openssl/apps/srp.c',
    'openssl/apps/storeutl.c',
    'openssl/apps/ts.c',
    'openssl/apps/verify.c',
    'openssl/apps/version.c',
    'openssl/apps/x509.c',
    'openssl/apps/app_rand.c',
    'openssl/apps/apps.c',
    'openssl/apps/bf_prefix.c',
    'openssl/apps/opt.c',
    'openssl/apps/s_cb.c',
    'openssl/apps/s_socket.c',
   ],
  },
  'defines': ['<@(openssl_defines_BSD-x86_64)'],
  'include_dirs': [
   './include',
  ],
  'cflags' : ['<@(openssl_cflags_BSD-x86_64)'],
  'libraries': ['<@(openssl_ex_libs_BSD-x86_64)'],
  'sources': ['<@(openssl_cli_srcs_BSD-x86_64)'],
 }
```

Minizlib was created by Isaac Z. Schlueter.
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1.776 mypy-extensions 0.4.3

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1.777 grid-index 1.1.0

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1.778 @mapbox/tiny-sdf 1.2.5

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1.779 mpdecimal 2.5.1-r1

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1.781 openssl 1.1.1s-r0

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<signature of Ty Coon>, 1 April 1989
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The End

1.782 types-uuid 8.3.4

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* /opt/cola/permits/1269652279_1644565998.85/0/google-protobuf-3-19-4-gem/data-tar-gz/lib/google/protobuf.rb
* /opt/cola/permits/1269652279_1644565998.85/0/google-protobuf-3-19-4-gem/data-tar-gz/lib/google/protobuf/repeated_field.rb
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* /opt/cola/permits/1269652279_1644565998.85/0/google-protobuf-3-19-4-gem/data-tar-gz/ext/google/protobuf_c/protobuf.c
* /opt/cola/permits/1269652279_1644565998.85/0/google-protobuf-3-19-4-gem/data-tar-gz/ext/google/protobuf_c/repeated_field.c
* /opt/cola/permits/1269652279_1644565998.85/0/google-protobuf-3-19-4-gem/data-tar-gz/ext/google/protobuf_c/protobuf.h
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* /opt/cola/permits/1269652279_1644565998.85/0/google-protobuf-3-19-4-gem/data-tar-gz/ext/google/protobuf_c/defs.h
* /opt/cola/permits/1269652279_1644565998.85/0/google-protobuf-3-19-4-gem/data-tar-gz/ext/google/protobuf_c/message.h
* /opt/cola/permits/1269652279_1644565998.85/0/google-protobuf-3-19-4-gem/data-tar-gz/ext/google/protobuf_c/convert.c
* /opt/cola/permits/1269652279_1644565998.85/0/google-protobuf-3-19-4-gem/data-tar-gz/ext/google/protobuf_c/map.h
* /opt/cola/permits/1269652279_1644565998.85/0/google-protobuf-3-19-4-gem/data-tar-gz/ext/google/protobuf_c/convert.h

1.784 gzip 1.12-r0

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1.785 py3-packaging 21.3-r0

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1.786 nghttp2 1.47.0-r0

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1.787 etag 1.8.1

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1.788 netty-handler 4.1.78.Final

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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/JettyAlpnSslEngine.java
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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/OpenSslEngineMap.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/JdkSslServerContext.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-

jar/io/netty/handler/ssl/JdkNpnApplicationProtocolNegotiator.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/OpenSslServerSessionContext.java
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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/util/FingerprintTrustManagerFactory.java
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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/JdkDefaultApplicationProtocolNegotiator.java
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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/util/KeyManagerFactoryWrapper.java
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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/PemPrivateKey.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/Java8SslUtils.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/OpenSslKeyMaterialManager.java
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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/Ciphers.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/SslContextOption.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/AsyncRunnable.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/OpenSslAsyncPrivateKeyMethod.java

* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/OpenSslContextOption.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/BouncyCastle.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/BouncyCastleAlpnSslUtils.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/OpenSslClientSessionCache.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/OpenSslSessionId.java

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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/timeout/ReadTimeoutHandler.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/logging/LogLevel.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/timeout/IdleStateHandler.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/util/package-info.java
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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/stream/ChunkedFile.java
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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/stream/ChunkedNioStream.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/timeout/package-info.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/NotSslRecordException.java
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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/stream/package-info.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/stream/ChunkedWriteHandler.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/stream/ChunkedStream.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/timeout/WriteTimeoutHandler.java
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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/logging/LoggingHandler.java
* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/timeout/WriteTimeoutException.java

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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/ApplicationProtocolNegotiationHandler.java
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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/ssl/util/LazyJavaxX509Certificate.java
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* /opt/cola/permits/1350827988_1656063956.1981592/0/netty-handler-4-1-78-final-sources-1-jar/io/netty/handler/traffic/GlobalTrafficShapingHandler.java
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1.789 finalhandler 1.2.0

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* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/web/BadHttpRequest.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/FieldInfo.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/reflect/Metalevel.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/NotFoundException.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/expr/NewExpr.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/Mnemonic.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/proxy/RuntimeSupport.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/convert/TransformNew.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/proxy/ProxyObjectInputStream.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/reflect/Loader.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/convert/TransformWriteField.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/ExceptionsAttribute.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtPrimitiveType.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-

jar/javassist/bytecode/analysis/SubroutineScanner.java

1.793 libxslt 1.1.35-r0

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1.794 fastutil 8.5.8

1.794.1 Available under license :

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1.795 libucontext 1.2-r0

1.795.1 Available under license :

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1.796 @npmcli/package-json 2.0.0

1.796.1 Available under license :

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1.797 type-is 1.6.18

1.797.1 Available under license :

1.798 python-engineio 4.3.4

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1.799 node-gyp 9.0.0

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1.800 ca-certificates 20220614-r0

1.800.1 Available under license :

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/* c_rehash.c - Create hash symlinks for certificates
* C implementation based on the original Perl and shell versions
*
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*/

Found in path(s):
* /opt/cola/permits/1376394069_1659497040.3993607/0/ca-certificates-20220614-tar-bz2/ca-certificates-20220614/c_rehash.c

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#
certdata.txt
#
This file contains the object definitions for the certs and other
information "built into" NSS.
#
Object definitions:
#
Certificates
#
-- Attribute --   -- type --   -- value --

```
#  CKA_CLASS                    CK_OBJECT_CLASS     CKO_CERTIFICATE
#  CKA_TOKEN                    CK_BBOOL            CK_TRUE
#  CKA_PRIVATE                  CK_BBOOL            CK_FALSE
#  CKA_MODIFIABLE               CK_BBOOL            CK_FALSE
#  CKA_LABEL                    UTF8                (varies)
#  CKA_CERTIFICATE_TYPE         CK_CERTIFICATE_TYPE CKC_X_509
#  CKA_SUBJECT                  DER+base64          (varies)
#  CKA_ID                       byte array          (varies)
#  CKA_ISSUER                   DER+base64          (varies)
#  CKA_SERIAL_NUMBER            DER+base64          (varies)
#  CKA_VALUE                    DER+base64          (varies)
#  CKA_NSS_EMAIL                ASCII7              (unused here)
#  CKA_NSS_SERVER_DISTRUST_AFTER DER+base64         (varies)
#  CKA_NSS_EMAIL_DISTRUST_AFTER  DER+base64         (varies)
#
#   Trust
#
#  -- Attribute --              -- type --          -- value --
#  CKA_CLASS                    CK_OBJECT_CLASS     CKO_TRUST
#  CKA_TOKEN                    CK_BBOOL            CK_TRUE
#  CKA_PRIVATE                  CK_BBOOL            CK_FALSE
#  CKA_MODIFIABLE               CK_BBOOL            CK_FALSE
#  CKA_LABEL                    UTF8                (varies)
#  CKA_ISSUER                   DER+base64          (varies)
#  CKA_SERIAL_NUMBER            DER+base64          (varies)
#  CKA_CERT_HASH                binary+base64       (varies)
#  CKA_EXPIRES                  CK_DATE             (not used here)
#  CKA_TRUST_DIGITAL_SIGNATURE  CK_TRUST            (varies)
#  CKA_TRUST_NON_REPUDIATION    CK_TRUST            (varies)
#  CKA_TRUST_KEY_ENCIPHERMENT   CK_TRUST            (varies)
#  CKA_TRUST_DATA_ENCIPHERMENT  CK_TRUST            (varies)
#  CKA_TRUST_KEY_AGREEMENT      CK_TRUST            (varies)
#  CKA_TRUST_KEY_CERT_SIGN      CK_TRUST            (varies)
#  CKA_TRUST_CRL_SIGN           CK_TRUST            (varies)
#  CKA_TRUST_SERVER_AUTH        CK_TRUST            (varies)
#  CKA_TRUST_CLIENT_AUTH        CK_TRUST            (varies)
#  CKA_TRUST_CODE_SIGNING       CK_TRUST            (varies)
#  CKA_TRUST_EMAIL_PROTECTION   CK_TRUST            (varies)
#  CKA_TRUST_IPSEC_END_SYSTEM   CK_TRUST            (varies)
#  CKA_TRUST_IPSEC_TUNNEL       CK_TRUST            (varies)
#  CKA_TRUST_IPSEC_USER         CK_TRUST            (varies)
#  CKA_TRUST_TIME_STAMPING      CK_TRUST            (varies)
#  CKA_TRUST_STEP_UP_APPROVED   CK_BBOOL            (varies)
#  (other trust attributes can be defined)
#

#
# The object to tell NSS that this is a root list and we don't
```

have to go looking for others.
#
BEGINDATA
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_BUILTIN_ROOT_LIST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Mozilla Builtin Roots"

#
Certificate "GlobalSign Root CA"
#
Issuer: CN=GlobalSign Root CA,OU=Root CA,O=GlobalSign nv-sa,C=BE
Serial Number:04:00:00:00:00:01:15:4b:5a:c3:94
Subject: CN=GlobalSign Root CA,OU=Root CA,O=GlobalSign nv-sa,C=BE
Not Valid Before: Tue Sep 01 12:00:00 1998
Not Valid After : Fri Jan 28 12:00:00 2028
Fingerprint (SHA-256):
EB:D4:10:40:E4:BB:3E:C7:42:C9:E3:81:D3:1E:F2:A4:1A:48:B6:68:5C:96:E7:CE:F3:C1:DF:6C:D4:33:1C:99
Fingerprint (SHA1): B1:BC:96:8B:D4:F4:9D:62:2A:A8:9A:81:F2:15:01:52:A4:1D:82:9C
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\020\060\016\006\003
\125\004\013\023\007\122\157\157\164\040\103\101\061\033\060\031
\006\003\125\004\003\023\022\107\154\157\142\141\154\123\151\147
\156\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\020\060\016\006\003
\125\004\013\023\007\122\157\157\164\040\103\101\061\033\060\031
\006\003\125\004\003\023\022\107\154\157\142\141\154\123\151\147
\156\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\025\113\132\303\224
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\165\060\202\002\135\240\003\002\001\002\002\013\004

\000\000\000\000\001\025\113\132\303\224\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\060\127\061\013\060\011\006
\003\125\004\006\023\002\102\105\061\031\060\027\006\003\125\004
\012\023\020\107\154\157\142\141\154\123\151\147\156\040\156\166
\055\163\141\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\033\060\031\006\003\125\004\003\023\022
\107\154\157\142\141\154\123\151\147\156\040\122\157\157\164\040
\103\101\060\036\027\015\071\070\060\071\060\061\061\062\060\060
\060\060\132\027\015\062\070\060\061\062\070\061\062\060\060\060
\060\132\060\127\061\013\060\011\006\003\125\004\006\023\002\102
\105\061\031\060\027\006\003\125\004\012\023\020\107\154\157\142
\141\154\123\151\147\156\040\156\166\055\163\141\061\020\060\016
\006\003\125\004\013\023\007\122\157\157\164\040\103\101\061\033
\060\031\006\003\125\004\003\023\022\107\154\157\142\141\154\123
\151\147\156\040\122\157\157\164\040\103\101\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\332\016\346\231
\215\316\243\343\117\212\176\373\361\213\203\045\153\352\110\037
\361\052\260\271\225\021\004\275\360\143\321\342\147\146\317\034
\335\317\033\110\053\356\215\211\216\232\257\051\200\145\253\351
\307\055\022\313\253\034\114\160\007\241\075\012\060\315\025\215
\117\370\335\324\214\120\025\034\357\120\356\304\056\367\374\351
\122\362\221\175\340\155\325\065\060\216\136\103\163\362\101\351
\325\152\343\262\211\072\126\071\070\157\006\074\210\151\133\052
\115\305\247\124\270\154\211\314\233\371\074\312\345\375\211\365
\022\074\222\170\226\326\334\164\156\223\104\141\321\215\307\106
\262\165\016\206\350\031\212\325\155\154\325\170\026\225\242\351
\310\012\070\353\362\044\023\117\163\124\223\023\205\072\033\274
\036\064\265\213\005\214\271\167\213\261\333\037\040\221\253\011
\123\156\220\316\173\067\164\271\160\107\221\042\121\143\026\171
\256\261\256\101\046\010\310\031\053\321\106\252\110\326\144\052
\327\203\064\377\054\052\301\154\031\103\112\007\205\347\323\174
\366\041\150\357\352\362\122\237\177\223\220\317\002\003\001\000
\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\140\173\146\032\105\015\227\312\211\120\057\175\004\315\064
\250\377\374\375\113\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\001\001\000\326\163\347\174\117\166\320
\215\277\354\272\242\276\064\305\050\062\265\174\374\154\234\054
\053\275\011\236\123\277\153\136\252\021\110\266\345\010\243\263
\312\075\141\115\323\106\011\263\076\303\240\343\143\125\033\362
\272\357\255\071\341\103\271\070\243\346\057\212\046\073\357\240
\120\126\371\306\012\375\070\315\304\013\160\121\224\227\230\004
\337\303\137\224\325\025\311\024\101\234\304\135\165\144\025\015
\377\125\060\354\206\217\377\015\357\054\271\143\106\366\252\374
\337\274\151\375\056\022\110\144\232\340\225\360\246\357\051\217
\001\261\025\265\014\035\245\376\151\054\151\044\170\036\263\247

\034\161\142\356\312\310\227\254\027\135\212\302\370\107\206\156
\052\304\126\061\225\320\147\211\205\053\371\154\246\135\106\235
\014\252\202\344\231\121\335\160\267\333\126\075\141\344\152\341
\134\326\366\376\075\336\101\314\007\256\143\122\277\123\123\364
\053\351\307\375\266\367\202\137\205\322\101\030\333\201\263\004
\034\305\037\244\200\157\025\040\311\336\014\210\012\035\326\146
\125\342\374\110\311\051\046\151\340
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root CA"
Issuer: CN=GlobalSign Root CA,OU=Root CA,O=GlobalSign nv-sa,C=BE
Serial Number:04:00:00:00:00:01:15:4b:5a:c3:94
Subject: CN=GlobalSign Root CA,OU=Root CA,O=GlobalSign nv-sa,C=BE
Not Valid Before: Tue Sep 01 12:00:00 1998
Not Valid After : Fri Jan 28 12:00:00 2028
Fingerprint (SHA-256):
EB:D4:10:40:E4:BB:3E:C7:42:C9:E3:81:D3:1E:F2:A4:1A:48:B6:68:5C:96:E7:CE:F3:C1:DF:6C:D4:33:1C:99
Fingerprint (SHA1): B1:BC:96:8B:D4:F4:9D:62:2A:A8:9A:81:F2:15:01:52:A4:1D:82:9C
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\261\274\226\213\324\364\235\142\052\250\232\201\362\025\001\122
\244\035\202\234
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\076\105\122\025\011\121\222\341\267\135\067\237\261\207\051\212
END
CKA_ISSUER MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\020\060\016\006\003
\125\004\013\023\007\122\157\157\164\040\103\101\061\033\060\031
\006\003\125\004\003\023\022\107\154\157\142\141\154\123\151\147
\156\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\025\113\132\303\224
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Verisign Class 1 Public Primary Certification Authority - G3"
#
Issuer: CN=VeriSign Class 1 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Serial Number:00:8b:5b:75:56:84:54:85:0b:00:cf:af:38:48:ce:b1:a4
Subject: CN=VeriSign Class 1 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Not Valid Before: Fri Oct 01 00:00:00 1999
Not Valid After : Wed Jul 16 23:59:59 2036
Fingerprint (SHA-256):
CB:B5:AF:18:5E:94:2A:24:02:F9:EA:CB:C0:ED:5B:B8:76:EE:A3:C1:22:36:23:D0:04:47:E4:F3:BA:55:4B:65
Fingerprint (SHA1): 20:42:85:DC:F7:EB:76:41:95:57:8E:13:6B:D4:B7:D1:E9:8E:46:A5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Verisign Class 1 Public Primary Certification Authority - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\061\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\061\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171

\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\213\133\165\126\204\124\205\013\000\317\257\070\110
\316\261\244
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\032\060\202\003\002\002\021\000\213\133\165\126\204
\124\205\013\000\317\257\070\110\316\261\244\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\060\201\312\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\126\145\162\151\123\151\147\156\054\040\111
\156\143\056\061\037\060\035\006\003\125\004\013\023\026\126\145
\162\151\123\151\147\156\040\124\162\165\163\164\040\116\145\164
\167\157\162\153\061\072\060\070\006\003\125\004\013\023\061\050
\143\051\040\061\071\071\071\040\126\145\162\151\123\151\147\156
\054\040\111\156\143\056\040\055\040\106\157\162\040\141\165\164
\150\157\162\151\172\145\144\040\165\163\145\040\157\156\154\171
\061\105\060\103\006\003\125\004\003\023\074\126\145\162\151\123
\151\147\156\040\103\154\141\163\163\040\061\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\063\060\036\027\015\071\071\061\060\060
\061\060\060\060\060\060\060\132\027\015\063\066\060\067\061\066
\062\063\065\071\065\071\132\060\201\312\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\027\060\025\006\003\125\004\012
\023\016\126\145\162\151\123\151\147\156\054\040\111\156\143\056
\061\037\060\035\006\003\125\004\013\023\026\126\145\162\151\123
\151\147\156\040\124\162\165\163\164\040\116\145\164\167\157\162
\153\061\072\060\070\006\003\125\004\013\023\061\050\143\051\040
\061\071\071\071\040\126\145\162\151\123\151\147\156\054\040\111
\156\143\056\040\055\040\106\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\105\060
\103\006\003\125\004\003\023\074\126\145\162\151\123\151\147\156
\040\103\154\141\163\163\040\061\040\120\165\142\154\151\143\040
\120\162\151\155\141\162\171\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040
\055\040\107\063\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\335\204\324\271\264\371\247\330\363\004\170
\234\336\075\334\154\023\026\331\172\335\044\121\146\300\307\046
\131\015\254\006\010\302\224\321\063\037\360\203\065\037\156\033
\310\336\252\156\025\116\124\047\357\304\155\032\354\013\343\016
\360\104\245\127\307\100\130\036\243\107\037\161\354\140\366\155
\224\310\030\071\355\376\102\030\126\337\344\114\111\020\170\116
\001\166\065\143\022\066\335\146\274\001\004\066\243\125\150\325
\242\066\011\254\253\041\046\124\006\255\077\312\024\340\254\312

\255\006\035\225\342\370\235\361\340\140\377\302\177\165\053\114
\314\332\376\207\231\041\352\272\376\076\124\327\322\131\170\333
\074\156\317\240\023\000\032\270\047\241\344\276\147\226\312\240
\305\263\234\335\311\165\236\353\060\232\137\243\315\331\256\170
\031\077\043\351\134\333\051\275\255\125\310\033\124\214\143\366
\350\246\352\307\067\022\134\243\051\036\002\331\333\037\073\264
\327\017\126\107\201\025\004\112\257\203\047\321\305\130\210\301
\335\366\252\247\243\030\332\150\252\155\021\121\341\277\145\153
\237\226\166\321\075\002\003\001\000\001\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\253\146
\215\327\263\272\307\232\266\346\125\320\005\361\237\061\215\132
\252\331\252\106\046\017\161\355\245\255\123\126\142\001\107\052
\104\351\376\077\164\013\023\233\271\364\115\033\262\321\137\262
\266\322\210\134\263\237\315\313\324\247\331\140\225\204\072\370
\301\067\035\141\312\347\260\305\345\221\332\124\246\254\061\201
\256\227\336\315\010\254\270\300\227\200\177\156\162\244\347\151
\023\225\145\037\304\223\074\375\171\217\004\324\076\117\352\367
\236\316\315\147\174\117\145\002\377\221\205\124\163\307\377\066
\367\206\055\354\320\136\117\377\021\237\162\006\326\270\032\361
\114\015\046\145\342\104\200\036\307\237\343\335\350\012\332\354
\245\040\200\151\150\241\117\176\341\153\317\007\101\372\203\216
\274\070\335\260\056\021\261\153\262\102\314\232\274\371\110\042
\171\112\031\017\262\034\076\040\164\331\152\303\276\362\050\170
\023\126\171\117\155\120\352\033\260\265\127\261\067\146\130\043
\363\334\017\337\012\207\304\357\206\005\325\070\024\140\231\243
\113\336\006\226\161\054\362\333\266\037\244\357\077\356
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
For Email Distrust After: Wed Aug 31 00:00:00 2022
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\062\060\070\063\061\060\060\060\060\060\060\132
END

Trust for "Verisign Class 1 Public Primary Certification Authority - G3"
Issuer: CN=VeriSign Class 1 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Serial Number:00:8b:5b:75:56:84:54:85:0b:00:cf:af:38:48:ce:b1:a4
Subject: CN=VeriSign Class 1 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Not Valid Before: Fri Oct 01 00:00:00 1999
Not Valid After : Wed Jul 16 23:59:59 2036
Fingerprint (SHA-256):
CB:B5:AF:18:5E:94:2A:24:02:F9:EA:CB:C0:ED:5B:B8:76:EE:A3:C1:22:36:23:D0:04:47:E4:F3:BA:55:4B:65
Fingerprint (SHA1): 20:42:85:DC:F7:EB:76:41:95:57:8E:13:6B:D4:B7:D1:E9:8E:46:A5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Verisign Class 1 Public Primary Certification Authority - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\040\102\205\334\367\353\166\101\225\127\216\023\153\324\267\321
\351\216\106\245
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\261\107\274\030\127\321\030\240\170\055\354\161\350\052\225\163
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\061\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\213\133\165\126\204\124\205\013\000\317\257\070\110
\316\261\244
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Verisign Class 2 Public Primary Certification Authority - G3"
#
Issuer: CN=VeriSign Class 2 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Serial Number:61:70:cb:49:8c:5f:98:45:29:e7:b0:a6:d9:50:5b:7a
Subject: CN=VeriSign Class 2 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Not Valid Before: Fri Oct 01 00:00:00 1999
Not Valid After : Wed Jul 16 23:59:59 2036
Fingerprint (SHA-256):
92:A9:D9:83:3F:E1:94:4D:B3:66:E8:BF:AE:7A:95:B6:48:0C:2D:6C:6C:2A:1B:E6:5D:42:36:B6:08:FC:A1:BB
Fingerprint (SHA1): 61:EF:43:D7:7F:CA:D4:61:51:BC:98:E0:C3:59:12:AF:9F:EB:63:11
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Verisign Class 2 Public Primary Certification Authority - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\062\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\062\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\141\160\313\111\214\137\230\105\051\347\260\246\331\120
\133\172
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\031\060\202\003\001\002\020\141\160\313\111\214\137
\230\105\051\347\260\246\331\120\133\172\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\060\201\312\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003\125
\004\012\023\016\126\145\162\151\123\151\147\156\054\040\111\156
\143\056\061\037\060\035\006\003\125\004\013\023\026\126\145\162
\151\123\151\147\156\040\124\162\165\163\164\040\116\145\164\167
\157\162\153\061\072\060\070\006\003\125\004\013\023\061\050\143

\051\040\061\071\071\071\040\126\145\162\151\123\151\147\156\054
\040\111\156\143\056\040\055\040\106\157\162\040\141\165\164\150
\157\162\151\172\145\144\040\165\163\145\040\157\156\154\171\061
\105\060\103\006\003\125\004\003\023\074\126\145\162\151\123\151
\147\156\040\103\154\141\163\163\040\062\040\120\165\142\154\151
\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\063\060\036\027\015\071\071\061\060\060\061
\060\060\060\060\060\060\132\027\015\063\066\060\067\061\066\062
\063\065\071\065\071\132\060\201\312\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\027\060\025\006\003\125\004\012\023
\016\126\145\162\151\123\151\147\156\054\040\111\156\143\056\061
\037\060\035\006\003\125\004\013\023\026\126\145\162\151\123\151
\147\156\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\072\060\070\006\003\125\004\013\023\061\050\143\051\040\061
\071\071\071\040\126\145\162\151\123\151\147\156\054\040\111\156
\143\056\040\055\040\106\157\162\040\141\165\164\150\157\162\151
\172\145\144\040\165\163\145\040\157\156\154\171\061\105\060\103
\006\003\125\004\003\023\074\126\145\162\151\123\151\147\156\040
\103\154\141\163\163\040\062\040\120\165\142\154\151\143\040\120
\162\151\155\141\162\171\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\055
\040\107\063\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\257\012\015\302\325\054\333\147\271\055\345\224
\047\335\245\276\340\260\115\217\263\141\126\074\326\174\303\364
\315\076\206\313\242\210\342\341\330\244\151\305\265\342\277\301
\246\107\120\136\106\071\213\325\226\272\265\157\024\277\020\316
\047\023\236\005\107\233\061\172\023\330\037\331\323\002\067\213
\255\054\107\360\216\201\006\247\015\060\014\353\367\074\017\040
\035\334\162\106\356\245\002\310\133\303\311\126\151\114\305\030
\301\221\173\013\325\023\000\233\274\357\303\110\076\106\140\040
\205\052\325\220\266\315\213\240\314\062\335\267\375\100\125\262
\120\034\126\256\314\215\167\115\307\040\115\247\061\166\357\150
\222\212\220\036\010\201\126\262\255\151\243\122\320\313\034\304
\043\075\037\231\376\114\350\026\143\216\306\010\216\366\061\366
\322\372\345\166\335\265\034\222\243\111\315\315\001\315\150\315
\251\151\272\243\353\035\015\234\244\040\246\301\240\305\321\106
\114\027\155\322\254\146\077\226\214\340\204\324\066\377\042\131
\305\371\021\140\250\137\004\175\362\032\366\045\102\141\017\304
\112\270\076\211\002\003\001\000\001\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\001\001\000\064\046\025
\074\300\215\115\103\111\035\275\351\041\222\327\146\234\267\336
\305\270\320\344\135\137\166\042\300\046\371\204\072\072\371\214
\265\373\354\140\361\350\316\004\260\310\335\247\003\217\060\363
\230\337\244\346\244\061\337\323\034\013\106\334\162\040\077\256
\356\005\074\244\063\077\013\071\254\160\170\163\113\231\053\337
\060\302\124\260\250\073\125\241\376\026\050\315\102\275\164\156

\200\333\047\104\247\316\104\135\324\033\220\230\015\036\102\224
\261\000\054\004\320\164\243\002\005\042\143\143\315\203\265\373
\301\155\142\153\151\165\375\135\160\101\271\365\277\174\337\276
\301\062\163\042\041\213\130\201\173\025\221\172\272\343\144\110
\260\177\373\066\045\332\225\320\361\044\024\027\335\030\200\153
\106\043\071\124\365\216\142\011\004\035\224\220\246\233\346\045
\342\102\105\252\270\220\255\276\010\217\251\013\102\030\224\317
\162\071\341\261\103\340\050\317\267\347\132\154\023\153\111\263
\377\343\030\174\211\213\063\135\254\063\327\247\371\332\072\125
\311\130\020\371\252\357\132\266\317\113\113\337\052
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
For Email Distrust After: Wed Aug 31 00:00:00 2022
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\062\060\070\063\061\060\060\060\060\060\060\132
END

Trust for "Verisign Class 2 Public Primary Certification Authority - G3"
Issuer: CN=VeriSign Class 2 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Serial Number:61:70:cb:49:8c:5f:98:45:29:e7:b0:a6:d9:50:5b:7a
Subject: CN=VeriSign Class 2 Public Primary Certification Authority - G3,OU="(c) 1999 VeriSign, Inc. - For authorized use only",OU=VeriSign Trust Network,O="VeriSign, Inc.",C=US
Not Valid Before: Fri Oct 01 00:00:00 1999
Not Valid After : Wed Jul 16 23:59:59 2036
Fingerprint (SHA-256):
92:A9:D9:83:3F:E1:94:4D:B3:66:E8:BF:AE:7A:95:B6:48:0C:2D:6C:6C:2A:1B:E6:5D:42:36:B6:08:FC:A1:BB
Fingerprint (SHA1): 61:EF:43:D7:7F:CA:D4:61:51:BC:98:E0:C3:59:12:AF:9F:EB:63:11
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Verisign Class 2 Public Primary Certification Authority - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\141\357\103\327\177\312\324\141\121\274\230\340\303\131\022\257
\237\353\143\021
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\370\276\304\143\042\311\250\106\164\213\270\035\036\112\053\366
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145

\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\062\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\141\160\313\111\214\137\230\105\051\347\260\246\331\120
\133\172
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust.net Premium 2048 Secure Server CA"
#
Issuer: CN=Entrust.net Certification Authority (2048),OU=(c) 1999 Entrust.net Limited,OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.),O=Entrust.net
Serial Number: 946069240 (0x3863def8)
Subject: CN=Entrust.net Certification Authority (2048),OU=(c) 1999 Entrust.net Limited,OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.),O=Entrust.net
Not Valid Before: Fri Dec 24 17:50:51 1999
Not Valid After : Tue Jul 24 14:15:12 2029
Fingerprint (SHA-256):
6D:C4:71:72:E0:1C:BC:B0:BF:62:58:0D:89:5F:E2:B8:AC:9A:D4:F8:73:80:1E:0C:10:B9:C8:37:D2:1E:B1:77
Fingerprint (SHA1): 50:30:06:09:1D:97:D4:F5:AE:39:F7:CB:E7:92:7D:7D:65:2D:34:31
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust.net Premium 2048 Secure Server CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\264\061\024\060\022\006\003\125\004\012\023\013\105\156
\164\162\165\163\164\056\156\145\164\061\100\060\076\006\003\125
\004\013\024\067\167\167\167\056\145\156\164\162\165\163\164\056
\156\145\164\057\103\120\123\137\062\060\064\070\040\151\156\143
\157\162\160\056\040\142\171\040\162\145\146\056\040\050\154\151
\155\151\164\163\040\154\151\141\142\056\051\061\045\060\043\006
\003\125\004\013\023\034\050\143\051\040\061\071\071\071\040\105
\156\164\162\165\163\164\056\156\145\164\040\114\151\155\151\164
\145\144\061\063\060\061\006\003\125\004\003\023\052\105\156\164
\162\165\163\164\056\156\145\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171

\040\050\062\060\064\070\051
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\264\061\024\060\022\006\003\125\004\012\023\013\105\156
\164\162\165\163\164\056\156\145\164\061\100\060\076\006\003\125
\004\013\024\067\167\167\167\056\145\156\164\162\165\163\164\056
\156\145\164\057\103\120\123\137\062\060\064\070\040\151\156\143
\157\162\160\056\040\142\171\040\162\145\146\056\040\050\154\151
\155\151\164\163\040\154\151\141\142\056\051\061\045\060\043\006
\003\125\004\013\023\034\050\143\051\040\061\071\071\071\040\105
\156\164\162\165\163\164\056\156\145\164\040\114\151\155\151\164
\145\144\061\063\060\061\006\003\125\004\003\023\052\105\156\164
\162\165\163\164\056\156\145\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\050\062\060\064\070\051
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\070\143\336\370
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\052\060\202\003\022\240\003\002\001\002\002\004\070
\143\336\370\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\201\264\061\024\060\022\006\003\125\004\012\023\013
\105\156\164\162\165\163\164\056\156\145\164\061\100\060\076\006
\003\125\004\013\024\067\167\167\167\056\145\156\164\162\165\163
\164\056\156\145\164\057\103\120\123\137\062\060\064\070\040\151
\156\143\157\162\160\056\040\142\171\040\162\145\146\056\040\050
\154\151\155\151\164\163\040\154\151\141\142\056\051\061\045\060
\043\006\003\125\004\013\023\034\050\143\051\040\061\071\071\071
\040\105\156\164\162\165\163\164\056\156\145\164\040\114\151\155
\151\164\145\144\061\063\060\061\006\003\125\004\003\023\052\105
\156\164\162\165\163\164\056\156\145\164\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\050\062\060\064\070\051\060\036\027\015\071\071\061
\062\062\064\061\067\065\060\065\061\132\027\015\062\071\060\067
\062\064\061\064\061\065\061\062\132\060\201\264\061\024\060\022
\006\003\125\004\012\023\013\105\156\164\162\165\163\164\056\156
\145\164\061\100\060\076\006\003\125\004\013\024\067\167\167\167
\056\145\156\164\162\165\163\164\056\156\145\164\057\103\120\123
\137\062\060\064\070\040\151\156\143\157\162\160\056\040\142\171
\040\162\145\146\056\040\050\154\151\155\151\164\163\040\154\151
\141\142\056\051\061\045\060\043\006\003\125\004\013\023\034\050
\143\051\040\061\071\071\071\040\105\156\164\162\165\163\164\056
\156\145\164\040\114\151\155\151\164\145\144\061\063\060\061\006
\003\125\004\003\023\052\105\156\164\162\165\163\164\056\156\145
\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\040\050\062\060\064\070\051

\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001
\000\255\115\113\251\022\206\262\352\243\040\007\025\026\144\052
\053\113\321\277\013\112\115\216\355\200\166\245\147\267\170\100
\300\163\102\310\150\300\333\123\053\335\136\270\166\230\065\223
\213\032\235\174\023\072\016\037\133\267\036\317\345\044\024\036
\261\201\251\215\175\270\314\153\113\003\361\002\014\334\253\245
\100\044\000\177\164\224\241\235\010\051\263\210\013\365\207\167
\235\125\315\344\303\176\327\152\144\253\205\024\206\225\133\227
\062\120\157\075\310\272\146\014\343\374\275\270\111\301\166\211
\111\031\375\300\250\275\211\243\147\057\306\237\274\161\031\140
\270\055\351\054\311\220\166\146\173\224\342\257\170\326\145\123
\135\074\326\234\262\317\051\003\371\057\244\120\262\324\110\316
\005\062\125\212\375\262\144\114\016\344\230\007\165\333\177\337
\271\010\125\140\205\060\051\371\173\110\244\151\206\343\065\077
\036\206\135\172\172\025\275\357\000\216\025\042\124\027\000\220
\046\223\274\016\111\150\221\277\370\107\323\235\225\102\301\016
\115\337\157\046\317\303\030\041\142\146\103\160\326\325\300\007
\341\002\003\001\000\001\243\102\060\100\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\125\344\201\321\021\200\276\330\211\271
\010\243\061\371\241\044\011\026\271\160\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\073\233
\217\126\233\060\347\123\231\174\172\171\247\115\227\327\031\225
\220\373\006\037\312\063\174\106\143\217\226\146\044\372\100\033
\041\047\312\346\162\163\362\117\376\061\231\375\310\014\114\150
\123\306\200\202\023\230\372\266\255\332\135\075\361\316\156\366
\025\021\224\202\014\356\077\225\257\021\253\017\327\057\336\037
\003\217\127\054\036\311\273\232\032\104\225\353\030\117\246\037
\315\175\127\020\057\233\004\011\132\204\265\156\330\035\072\341
\326\236\321\154\171\136\171\034\024\305\343\320\114\223\073\145
\074\355\337\075\276\246\345\225\032\303\265\031\303\275\136\133
\273\377\043\357\150\031\313\022\223\047\134\003\055\157\060\320
\036\266\032\254\336\132\367\321\252\250\047\246\376\171\201\304
\171\231\063\127\272\022\260\251\340\102\154\223\312\126\336\376
\155\204\013\010\213\176\215\352\327\230\041\306\363\347\074\171
\057\136\234\321\114\025\215\341\354\042\067\314\232\103\013\227
\334\200\220\215\263\147\233\157\110\010\025\126\317\277\361\053
\174\136\232\166\351\131\220\305\174\203\065\021\145\121
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Entrust.net Premium 2048 Secure Server CA"
Issuer: CN=Entrust.net Certification Authority (2048),OU=(c) 1999 Entrust.net Limited,OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.),O=Entrust.net

Serial Number: 946069240 (0x3863def8)
Subject: CN=Entrust.net Certification Authority (2048),OU=(c) 1999 Entrust.net Limited,OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.),O=Entrust.net
Not Valid Before: Fri Dec 24 17:50:51 1999
Not Valid After : Tue Jul 24 14:15:12 2029
Fingerprint (SHA-256):
6D:C4:71:72:E0:1C:BC:B0:BF:62:58:0D:89:5F:E2:B8:AC:9A:D4:F8:73:80:1E:0C:10:B9:C8:37:D2:1E:B1:77
Fingerprint (SHA1): 50:30:06:09:1D:97:D4:F5:AE:39:F7:CB:E7:92:7D:7D:65:2D:34:31
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust.net Premium 2048 Secure Server CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\120\060\006\011\035\227\324\365\256\071\367\313\347\222\175\175
\145\055\064\061
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\356\051\061\274\062\176\232\346\350\265\367\121\264\064\161\220
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\264\061\024\060\022\006\003\125\004\012\023\013\105\156
\164\162\165\163\164\056\156\145\164\061\100\060\076\006\003\125
\004\013\024\067\167\167\167\056\145\156\164\162\165\163\164\056
\156\145\164\057\103\120\123\137\062\060\064\070\040\151\156\143
\157\162\160\056\040\142\171\040\162\145\146\056\040\050\154\151
\155\151\164\163\040\154\151\141\142\056\051\061\045\060\043\006
\003\125\004\013\023\034\050\143\051\040\061\071\071\071\040\105
\156\164\162\165\163\164\056\156\145\164\040\114\151\155\151\164
\145\144\061\063\060\061\006\003\125\004\003\023\052\105\156\164
\162\165\163\164\056\156\145\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\050\062\060\064\070\051
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\070\143\336\370
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Baltimore CyberTrust Root"
#
Issuer: CN=Baltimore CyberTrust Root,OU=CyberTrust,O=Baltimore,C=IE
Serial Number: 33554617 (0x20000b9)
Subject: CN=Baltimore CyberTrust Root,OU=CyberTrust,O=Baltimore,C=IE

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# Not Valid Before: Fri May 12 18:46:00 2000
# Not Valid After : Mon May 12 23:59:00 2025
# Fingerprint (SHA-256):
16:AF:57:A9:F6:76:B0:AB:12:60:95:AA:5E:BA:DE:F2:2A:B3:11:19:D6:44:AC:95:CD:4B:93:DB:F3:F2:6A:EB
# Fingerprint (SHA1): D4:DE:20:D0:5E:66:FC:53:FE:1A:50:88:2C:78:DB:28:52:CA:E4:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Baltimore CyberTrust Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\111\105\061
\022\060\020\006\003\125\004\012\023\011\102\141\154\164\151\155
\157\162\145\061\023\060\021\006\003\125\004\013\023\012\103\171
\142\145\162\124\162\165\163\164\061\042\060\040\006\003\125\004
\003\023\031\102\141\154\164\151\155\157\162\145\040\103\171\142
\145\162\124\162\165\163\164\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\111\105\061
\022\060\020\006\003\125\004\012\023\011\102\141\154\164\151\155
\157\162\145\061\023\060\021\006\003\125\004\013\023\012\103\171
\142\145\162\124\162\165\163\164\061\042\060\040\006\003\125\004
\003\023\031\102\141\154\164\151\155\157\162\145\040\103\171\142
\145\162\124\162\165\163\164\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\002\000\000\271
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\167\060\202\002\137\240\003\002\001\002\002\004\002
\000\000\271\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\132\061\013\060\011\006\003\125\004\006\023\002\111
\105\061\022\060\020\006\003\125\004\012\023\011\102\141\154\164
\151\155\157\162\145\061\023\060\021\006\003\125\004\013\023\012
\103\171\142\145\162\124\162\165\163\164\061\042\060\040\006\003
\125\004\003\023\031\102\141\154\164\151\155\157\162\145\040\103
\171\142\145\162\124\162\165\163\164\040\122\157\157\164\060\036
\027\015\060\060\060\065\061\062\061\070\064\066\060\060\132\027
\015\062\065\060\065\061\062\062\063\065\071\060\060\132\060\132
\061\013\060\011\006\003\125\004\006\023\002\111\105\061\022\060
\020\006\003\125\004\012\023\011\102\141\154\164\151\155\157\162
\145\061\023\060\021\006\003\125\004\013\023\012\103\171\142\145
\162\124\162\165\163\164\061\042\060\040\006\003\125\004\003\023
\031\102\141\154\164\151\155\157\162\145\040\103\171\142\145\162
\124\162\165\163\164\040\122\157\157\164\060\202\001\042\060\015
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\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\243\004\273\042\253
\230\075\127\350\046\162\232\265\171\324\051\342\341\350\225\200
\261\260\343\133\216\053\051\232\144\337\241\135\355\260\011\005
\155\333\050\056\316\142\242\142\376\264\210\332\022\353\070\353
\041\235\300\101\053\001\122\173\210\167\323\034\217\307\272\271
\210\265\152\011\347\163\350\021\100\247\321\314\312\142\215\055
\345\217\013\246\120\322\250\120\303\050\352\365\253\045\207\212
\232\226\034\251\147\270\077\014\325\367\371\122\023\057\302\033
\325\160\160\360\217\300\022\312\006\313\232\341\331\312\063\172
\167\326\370\354\271\361\150\104\102\110\023\322\300\302\244\256
\136\140\376\266\246\005\374\264\335\007\131\002\324\131\030\230
\143\365\245\143\340\220\014\175\135\262\006\172\363\205\352\353
\324\003\256\136\204\076\137\377\025\355\151\274\371\071\066\162
\165\317\167\122\115\363\311\220\054\271\075\345\311\043\123\077
\037\044\230\041\134\007\231\051\275\306\072\354\347\156\206\072
\153\227\164\143\063\275\150\030\061\360\170\215\166\277\374\236
\216\135\052\206\247\115\220\334\047\032\071\002\003\001\000\001
\243\105\060\103\060\035\006\003\125\035\016\004\026\004\024\345
\235\131\060\202\107\130\314\254\372\010\124\066\206\173\072\265
\004\115\360\060\022\006\003\125\035\023\001\001\377\004\010\060
\006\001\001\377\002\001\003\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\006\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\001\001\000\205\014\135\216\344
\157\121\150\102\005\240\335\273\117\047\045\204\003\275\367\144
\375\055\327\060\343\244\020\027\353\332\051\051\266\171\077\166
\366\031\023\043\270\020\012\371\130\244\324\141\160\275\004\141
\152\022\212\027\325\012\275\305\274\060\174\326\351\014\045\215
\206\100\117\354\314\243\176\070\306\067\021\117\355\335\150\061
\216\114\322\263\001\164\356\276\165\136\007\110\032\177\160\377
\026\134\204\300\171\205\270\005\375\177\276\145\021\243\017\300
\002\264\370\122\067\071\004\325\251\061\172\030\277\240\052\364
\022\231\367\243\105\202\343\074\136\365\235\236\265\310\236\174
\056\310\244\236\116\010\024\113\155\375\160\155\153\032\143\275
\144\346\037\267\316\360\362\237\056\273\033\267\362\120\210\163
\222\302\342\343\026\215\232\062\002\253\216\030\335\351\020\021
\356\176\065\253\220\257\076\060\224\172\320\063\075\247\145\017
\365\374\216\236\142\317\107\104\054\001\135\273\035\265\062\322
\107\322\070\056\320\376\201\334\062\152\036\265\356\074\325\374
\347\201\035\031\303\044\102\352\143\071\251
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Baltimore CyberTrust Root"
Issuer: CN=Baltimore CyberTrust Root,OU=CyberTrust,O=Baltimore,C=IE
Serial Number: 33554617 (0x20000b9)

Subject: CN=Baltimore CyberTrust Root,OU=CyberTrust,O=Baltimore,C=IE
Not Valid Before: Fri May 12 18:46:00 2000
Not Valid After : Mon May 12 23:59:00 2025
Fingerprint (SHA-256):
16:AF:57:A9:F6:76:B0:AB:12:60:95:AA:5E:BA:DE:F2:2A:B3:11:19:D6:44:AC:95:CD:4B:93:DB:F3:F2:6A:EB
Fingerprint (SHA1): D4:DE:20:D0:5E:66:FC:53:FE:1A:50:88:2C:78:DB:28:52:CA:E4:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Baltimore CyberTrust Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\324\336\040\320\136\146\374\123\376\032\120\210\054\170\333\050
\122\312\344\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\254\266\224\245\234\027\340\327\221\122\233\261\227\006\246\344
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\111\105\061
\022\060\020\006\003\125\004\012\023\011\102\141\154\164\151\155
\157\162\145\061\023\060\021\006\003\125\004\013\023\012\103\171
\142\145\162\124\162\165\163\164\061\042\060\040\006\003\125\004
\003\023\031\102\141\154\164\151\155\157\162\145\040\103\171\142
\145\162\124\162\165\163\164\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\002\000\000\271
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust Root Certification Authority"
#
Issuer: CN=Entrust Root Certification Authority,OU="(c) 2006 Entrust, Inc.",OU=www.entrust.net/CPS is incorporated by reference,O="Entrust, Inc.",C=US
Serial Number: 1164660820 (0x456b5054)
Subject: CN=Entrust Root Certification Authority,OU="(c) 2006 Entrust, Inc.",OU=www.entrust.net/CPS is incorporated by reference,O="Entrust, Inc.",C=US
Not Valid Before: Mon Nov 27 20:23:42 2006
Not Valid After : Fri Nov 27 20:53:42 2026
Fingerprint (SHA-256):
73:C1:76:43:4F:1B:C6:D5:AD:F4:5B:0E:76:E7:27:28:7C:8D:E5:76:16:C1:E6:E6:14:1A:2B:2C:BC:7D:8E:4C
Fingerprint (SHA1): B3:1E:B1:B7:40:E3:6C:84:02:DA:DC:37:D4:4D:F5:D4:67:49:52:F9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\260\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\167\167\167\056\145\156\164\162\165\163\164\056\156
\145\164\057\103\120\123\040\151\163\040\151\156\143\157\162\160
\157\162\141\164\145\144\040\142\171\040\162\145\146\145\162\145
\156\143\145\061\037\060\035\006\003\125\004\013\023\026\050\143
\051\040\062\060\060\066\040\105\156\164\162\165\163\164\054\040
\111\156\143\056\061\055\060\053\006\003\125\004\003\023\044\105
\156\164\162\165\163\164\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\260\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\167\167\167\056\145\156\164\162\165\163\164\056\156
\145\164\057\103\120\123\040\151\163\040\151\156\143\157\162\160
\157\162\141\164\145\144\040\142\171\040\162\145\146\145\162\145
\156\143\145\061\037\060\035\006\003\125\004\013\023\026\050\143
\051\040\062\060\060\066\040\105\156\164\162\165\163\164\054\040
\111\156\143\056\061\055\060\053\006\003\125\004\003\023\044\105
\156\164\162\165\163\164\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\105\153\120\124
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\221\060\202\003\171\240\003\002\001\002\002\004\105
\153\120\124\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\201\260\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\026\060\024\006\003\125\004\012\023\015\105\156\164
\162\165\163\164\054\040\111\156\143\056\061\071\060\067\006\003
\125\004\013\023\060\167\167\167\056\145\156\164\162\165\163\164
\056\156\145\164\057\103\120\123\040\151\163\040\151\156\143\157
\162\160\157\162\141\164\145\144\040\142\171\040\162\145\146\145
\162\145\156\143\145\061\037\060\035\006\003\125\004\013\023\026
\050\143\051\040\062\060\060\066\040\105\156\164\162\165\163\164

\054\040\111\156\143\056\061\055\060\053\006\003\125\004\003\023
\044\105\156\164\162\165\163\164\040\122\157\157\164\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\060\036\027\015\060\066\061\061\062\067\062
\060\062\063\064\062\132\027\015\062\066\061\061\062\067\062\060
\065\063\064\062\132\060\201\260\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\026\060\024\006\003\125\004\012\023\015
\105\156\164\162\165\163\164\054\040\111\156\143\056\061\071\060
\067\006\003\125\004\013\023\060\167\167\167\056\145\156\164\162
\165\163\164\056\156\145\164\057\103\120\123\040\151\163\040\151
\156\143\157\162\160\157\162\141\164\145\144\040\142\171\040\162
\145\146\145\162\145\156\143\145\061\037\060\035\006\003\125\004
\013\023\026\050\143\051\040\062\060\060\066\040\105\156\164\162
\165\163\164\054\040\111\156\143\056\061\055\060\053\006\003\125
\004\003\023\044\105\156\164\162\165\163\164\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\266\225\266\103\102\372\306
\155\052\157\110\337\224\114\071\127\005\356\303\171\021\101\150
\066\355\354\376\232\001\217\241\070\050\374\367\020\106\146\056
\115\036\032\261\032\116\306\321\300\225\210\260\311\377\061\213
\063\003\333\267\203\173\076\040\204\136\355\262\126\050\247\370
\340\271\100\161\067\305\313\107\016\227\052\150\300\042\225\142
\025\333\107\331\365\320\053\377\202\113\311\255\076\336\114\333
\220\200\120\077\011\212\204\000\354\060\012\075\030\315\373\375
\052\131\232\043\225\027\054\105\236\037\156\103\171\155\014\134
\230\376\110\247\305\043\107\134\136\375\156\347\036\264\366\150
\105\321\206\203\133\242\212\215\261\343\051\200\376\045\161\210
\255\276\274\217\254\122\226\113\252\121\215\344\023\061\031\350
\116\115\237\333\254\263\152\325\274\071\124\161\312\172\172\177
\220\335\175\035\200\331\201\273\131\046\302\021\376\346\223\342
\367\200\344\145\373\064\067\016\051\200\160\115\257\070\206\056
\236\177\127\257\236\027\256\353\034\313\050\041\137\266\034\330
\347\242\004\042\371\323\332\330\313\002\003\001\000\001\243\201
\260\060\201\255\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\053\006\003\125\035\020\004\044\060\042
\200\017\062\060\060\066\061\061\062\067\062\060\062\063\064\062
\132\201\017\062\060\062\066\061\061\062\067\062\060\065\063\064
\062\132\060\037\006\003\125\035\043\004\030\060\026\200\024\150
\220\344\147\244\246\123\200\307\206\146\244\361\367\113\103\373
\204\275\155\060\035\006\003\125\035\016\004\026\004\024\150\220
\344\147\244\246\123\200\307\206\146\244\361\367\113\103\373\204
\275\155\060\035\006\011\052\206\110\206\366\175\007\101\000\004
\020\060\016\033\010\126\067\056\061\072\064\056\060\003\002\004
\220\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\001\001\000\223\324\060\260\327\003\040\052\320\371\143

\350\221\014\005\040\251\137\031\312\173\162\116\324\261\333\320
\226\373\124\132\031\054\014\010\367\262\274\205\250\235\177\155
\073\122\263\052\333\347\324\204\214\143\366\017\313\046\001\221
\120\154\364\137\024\342\223\164\300\023\236\060\072\120\343\264
\140\305\034\360\042\104\215\161\107\254\310\032\311\351\233\232
\000\140\023\377\160\176\137\021\115\111\033\263\025\122\173\311
\124\332\277\235\225\257\153\232\330\236\351\361\344\103\215\342
\021\104\072\277\257\275\203\102\163\122\213\252\273\247\051\317
\365\144\034\012\115\321\274\252\254\237\052\320\377\177\177\332
\175\352\261\355\060\045\301\204\332\064\322\133\170\203\126\354
\234\066\303\046\342\021\366\147\111\035\222\253\214\373\353\377
\172\356\205\112\247\120\200\360\247\134\112\224\056\137\005\231
\074\122\101\340\315\264\143\317\001\103\272\234\203\334\217\140
\073\363\132\264\264\173\256\332\013\220\070\165\357\201\035\146
\322\367\127\160\066\263\277\374\050\257\161\045\205\133\023\376
\036\177\132\264\074
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Entrust Root Certification Authority"
Issuer: CN=Entrust Root Certification Authority,OU="(c) 2006 Entrust, Inc.",OU=www.entrust.net/CPS is incorporated by reference,O="Entrust, Inc.",C=US
Serial Number: 1164660820 (0x456b5054)
Subject: CN=Entrust Root Certification Authority,OU="(c) 2006 Entrust, Inc.",OU=www.entrust.net/CPS is incorporated by reference,O="Entrust, Inc.",C=US
Not Valid Before: Mon Nov 27 20:23:42 2006
Not Valid After : Fri Nov 27 20:53:42 2026
Fingerprint (SHA-256):
73:C1:76:43:4F:1B:C6:D5:AD:F4:5B:0E:76:E7:27:28:7C:8D:E5:76:16:C1:E6:E6:14:1A:2B:2C:BC:7D:8E:4C
Fingerprint (SHA1): B3:1E:B1:B7:40:E3:6C:84:02:DA:DC:37:D4:4D:F5:D4:67:49:52:F9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\263\036\261\267\100\343\154\204\002\332\334\067\324\115\365\324
\147\111\122\371
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\326\245\303\355\135\335\076\000\301\075\207\222\037\035\077\344
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\260\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\071\060\067\006\003\125\004

\013\023\060\167\167\167\056\145\156\164\162\165\163\164\056\156
\145\164\057\103\120\123\040\151\163\040\151\156\143\157\162\160
\157\162\141\164\145\144\040\142\171\040\162\145\146\145\162\145
\156\143\145\061\037\060\035\006\003\125\004\013\023\026\050\143
\051\040\062\060\060\066\040\105\156\164\162\165\163\164\054\040
\111\156\143\056\061\055\060\053\006\003\125\004\003\023\044\105
\156\164\162\165\163\164\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\105\153\120\124
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum Root CA"
#
Issuer: CN=Certum CA,O=Unizeto Sp. z o.o.,C=PL
Serial Number: 65568 (0x10020)
Subject: CN=Certum CA,O=Unizeto Sp. z o.o.,C=PL
Not Valid Before: Tue Jun 11 10:46:39 2002
Not Valid After : Fri Jun 11 10:46:39 2027
Fingerprint (SHA-256):
D8:E0:FE:BC:1D:B2:E3:8D:00:94:0F:37:D2:7D:41:34:4D:99:3E:73:4B:99:D5:65:6D:97:78:D4:D8:14:36:24
Fingerprint (SHA1): 62:52:DC:40:F7:11:43:A2:2F:DE:9E:F7:34:8E:06:42:51:B1:81:18
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145\164
\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060\020
\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145\164
\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060\020
\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103\101
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\001\000\040
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\014\060\202\001\364\240\003\002\001\002\002\003\001
\000\040\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145
\164\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060
\020\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103
\101\060\036\027\015\060\062\060\066\061\061\061\060\064\066\063
\071\132\027\015\062\067\060\066\061\061\061\060\064\066\063\071
\132\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145
\164\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060
\020\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103
\101\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\316\261\301\056\323\117\174\315\045\316\030\076\117\304
\214\157\200\152\163\310\133\121\370\233\322\334\273\000\134\261
\240\374\165\003\356\201\360\210\356\043\122\351\346\025\063\215
\254\055\011\305\166\371\053\071\200\211\344\227\113\220\245\250
\170\370\163\103\173\244\141\260\330\130\314\341\154\146\176\234
\363\011\136\125\143\204\325\250\357\363\261\056\060\150\263\304
\074\330\254\156\215\231\132\220\116\064\334\066\232\217\201\210
\120\267\155\226\102\011\363\327\225\203\015\101\113\260\152\153
\370\374\017\176\142\237\147\304\355\046\137\020\046\017\010\117
\360\244\127\050\316\217\270\355\105\366\156\356\045\135\252\156
\071\276\344\223\057\331\107\240\162\353\372\246\133\257\312\123
\077\342\016\306\226\126\021\156\367\351\146\251\046\330\177\225
\123\355\012\205\210\272\117\051\245\102\214\136\266\374\205\040
\000\252\150\013\241\032\205\001\234\304\106\143\202\210\266\042
\261\356\376\252\106\131\176\317\065\054\325\266\332\135\367\110
\063\024\124\266\353\331\157\316\315\210\326\253\033\332\226\073
\035\131\002\003\001\000\001\243\023\060\021\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\270\215\316\357\347\024\272\317\356\260\104\222\154\264\071\076
\242\204\156\255\270\041\167\322\324\167\202\207\346\040\101\201
\356\342\370\021\267\143\321\027\067\276\031\166\044\034\004\032
\114\353\075\252\147\157\055\324\315\376\145\061\160\305\033\246
\002\012\272\140\173\155\130\302\232\111\376\143\062\013\153\343
\072\300\254\253\073\260\350\323\011\121\214\020\203\306\064\340
\305\053\340\032\266\140\024\047\154\062\167\214\274\262\162\230
\317\315\314\077\271\310\044\102\024\326\127\374\346\046\103\251
\035\345\200\220\316\003\124\050\076\367\077\323\370\115\355\152
\012\072\223\023\233\073\024\043\023\143\234\077\321\207\047\171
\345\114\121\343\001\255\205\135\032\073\261\325\163\020\244\323

\362\274\156\144\365\132\126\220\250\307\016\114\164\017\056\161
\073\367\310\107\364\151\157\025\362\021\136\203\036\234\174\122
\256\375\002\332\022\250\131\147\030\333\274\160\335\233\261\151
\355\200\316\211\100\110\152\016\065\312\051\146\025\041\224\054
\350\140\052\233\205\112\100\363\153\212\044\354\006\026\054\163
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum Root CA"
Issuer: CN=Certum CA,O=Unizeto Sp. z o.o.,C=PL
Serial Number: 65568 (0x10020)
Subject: CN=Certum CA,O=Unizeto Sp. z o.o.,C=PL
Not Valid Before: Tue Jun 11 10:46:39 2002
Not Valid After : Fri Jun 11 10:46:39 2027
Fingerprint (SHA-256):
D8:E0:FE:BC:1D:B2:E3:8D:00:94:0F:37:D2:7D:41:34:4D:99:3E:73:4B:99:D5:65:6D:97:78:D4:D8:14:36:24
Fingerprint (SHA1): 62:52:DC:40:F7:11:43:A2:2F:DE:9E:F7:34:8E:06:42:51:B1:81:18
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\142\122\334\100\367\021\103\242\057\336\236\367\064\216\006\102
\121\261\201\030
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\054\217\237\146\035\030\220\261\107\046\235\216\206\202\214\251
END
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145\164
\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060\020
\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\001\000\040
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Comodo AAA Services root"
#

Issuer: CN=AAA Certificate Services,O=Comodo CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number: 1 (0x1)
Subject: CN=AAA Certificate Services,O=Comodo CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Thu Jan 01 00:00:00 2004
Not Valid After : Sun Dec 31 23:59:59 2028
Fingerprint (SHA-256):
D7:A7:A0:FB:5D:7E:27:31:D7:71:E9:48:4E:BC:DE:F7:1D:5F:0C:3E:0A:29:48:78:2B:C8:3E:E0:EA:69:9E:F4
Fingerprint (SHA1): D1:EB:23:A4:6D:17:D6:8F:D9:25:64:C2:F1:F1:60:17:64:D8:E3:49
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Comodo AAA Services root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\173\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\033\060\031\006\003\125\004\010\014\022\107\162\145\141\164\145
\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016
\006\003\125\004\007\014\007\123\141\154\146\157\162\144\061\032
\060\030\006\003\125\004\012\014\021\103\157\155\157\144\157\040
\103\101\040\114\151\155\151\164\145\144\061\041\060\037\006\003
\125\004\003\014\030\101\101\101\040\103\145\162\164\151\146\151
\143\141\164\145\040\123\145\162\166\151\143\145\163
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\173\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\033\060\031\006\003\125\004\010\014\022\107\162\145\141\164\145
\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016
\006\003\125\004\007\014\007\123\141\154\146\157\162\144\061\032
\060\030\006\003\125\004\012\014\021\103\157\155\157\144\157\040
\103\101\040\114\151\155\151\164\145\144\061\041\060\037\006\003
\125\004\003\014\030\101\101\101\040\103\145\162\164\151\146\151
\143\141\164\145\040\123\145\162\166\151\143\145\163
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\062\060\202\003\032\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\173\061\013\060\011\006\003\125\004\006\023\002\107\102\061\033
\060\031\006\003\125\004\010\014\022\107\162\145\141\164\145\162
\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016\006
\003\125\004\007\014\007\123\141\154\146\157\162\144\061\032\060
\030\006\003\125\004\012\014\021\103\157\155\157\144\157\040\103
\101\040\114\151\155\151\164\145\144\061\041\060\037\006\003\125
\004\003\014\030\101\101\101\040\103\145\162\164\151\146\151\143

\141\164\145\040\123\145\162\166\151\143\145\163\060\036\027\015
\060\064\060\061\060\061\060\060\060\060\060\060\132\027\015\062
\070\061\062\063\061\062\063\065\071\065\071\132\060\173\061\013
\060\011\006\003\125\004\006\023\002\107\102\061\033\060\031\006
\003\125\004\010\014\022\107\162\145\141\164\145\162\040\115\141
\156\143\150\145\163\164\145\162\061\020\060\016\006\003\125\004
\007\014\007\123\141\154\146\157\162\144\061\032\060\030\006\003
\125\004\012\014\021\103\157\155\157\144\157\040\103\101\040\114
\151\155\151\164\145\144\061\041\060\037\006\003\125\004\003\014
\030\101\101\101\040\103\145\162\164\151\146\151\143\141\164\145
\040\123\145\162\166\151\143\145\163\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\276\100\235\364\156\341
\352\166\207\034\115\105\104\216\276\106\310\203\006\235\301\052
\376\030\037\216\344\002\372\363\253\135\120\212\026\061\013\232
\006\320\305\160\042\315\111\055\124\143\314\266\156\150\106\013
\123\352\313\114\044\300\274\162\116\352\361\025\256\364\124\232
\022\012\303\172\262\063\140\342\332\211\125\363\042\130\363\336
\334\317\357\203\206\242\214\224\117\237\150\362\230\220\106\204
\047\307\166\277\343\314\065\054\213\136\007\144\145\202\300\110
\260\250\221\371\141\237\166\040\120\250\221\307\146\265\353\170
\142\003\126\360\212\032\023\352\061\243\036\240\231\375\070\366
\366\047\062\130\157\007\365\153\270\373\024\053\257\267\252\314
\326\143\137\163\214\332\005\231\250\070\250\313\027\170\066\121
\254\351\236\364\170\072\215\317\017\331\102\342\230\014\253\057
\237\016\001\336\357\237\231\111\361\055\337\254\164\115\033\230
\265\107\305\345\051\321\371\220\030\307\142\234\276\203\307\046
\173\076\212\045\307\300\335\235\346\065\150\020\040\235\217\330
\336\322\303\204\234\015\136\350\057\311\002\003\001\000\001\243
\201\300\060\201\275\060\035\006\003\125\035\016\004\026\004\024
\240\021\012\043\076\226\361\007\354\342\257\051\357\202\245\177
\320\060\244\264\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\173\006\003\125\035\037\004\164\060\162
\060\070\240\066\240\064\206\062\150\164\164\160\072\057\057\143
\162\154\056\143\157\155\157\144\157\143\141\056\143\157\155\057
\101\101\101\103\145\162\164\151\146\151\143\141\164\145\123\145
\162\166\151\143\145\163\056\143\162\154\060\066\240\064\240\062
\206\060\150\164\164\160\072\057\057\143\162\154\056\143\157\155
\157\144\157\056\156\145\164\057\101\101\101\103\145\162\164\151
\146\151\143\141\164\145\123\145\162\166\151\143\145\163\056\143
\162\154\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\003\202\001\001\000\010\126\374\002\360\233\350\377\244\372
\326\173\306\104\200\316\117\304\305\366\000\130\314\246\266\274
\024\111\150\004\166\350\346\356\135\354\002\017\140\326\215\120
\030\117\046\116\001\343\346\260\245\356\277\274\164\124\101\277
\375\374\022\270\307\117\132\364\211\140\005\177\140\267\005\112
\363\366\361\302\277\304\271\164\206\266\055\175\153\314\322\363

\106\335\057\306\340\152\303\303\064\003\054\175\226\335\132\302
\016\247\012\231\301\005\213\253\014\057\363\134\072\317\154\067
\125\011\207\336\123\100\154\130\357\374\266\253\145\156\004\366
\033\334\074\340\132\025\306\236\331\361\131\110\060\041\145\003
\154\354\351\041\163\354\233\003\241\340\067\255\240\025\030\217
\372\272\002\316\247\054\251\020\023\054\324\345\010\046\253\042
\227\140\370\220\136\164\324\242\232\123\275\362\251\150\340\242
\156\302\327\154\261\243\017\236\277\353\150\347\126\362\256\362
\343\053\070\072\011\201\265\153\205\327\276\055\355\077\032\267
\262\143\342\365\142\054\202\324\152\000\101\120\361\071\203\237
\225\351\066\226\230\156
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Comodo AAA Services root"
Issuer: CN=AAA Certificate Services,O=Comodo CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number: 1 (0x1)
Subject: CN=AAA Certificate Services,O=Comodo CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Thu Jan 01 00:00:00 2004
Not Valid After : Sun Dec 31 23:59:59 2028
Fingerprint (SHA-256):
D7:A7:A0:FB:5D:7E:27:31:D7:71:E9:48:4E:BC:DE:F7:1D:5F:0C:3E:0A:29:48:78:2B:C8:3E:E0:EA:69:9E:F4
Fingerprint (SHA1): D1:EB:23:A4:6D:17:D6:8F:D9:25:64:C2:F1:F1:60:17:64:D8:E3:49
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Comodo AAA Services root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\321\353\043\244\155\027\326\217\331\045\144\302\361\361\140\027
\144\330\343\111
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\111\171\004\260\353\207\031\254\107\260\274\021\121\233\164\320
END
CKA_ISSUER MULTILINE_OCTAL
\060\173\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\033\060\031\006\003\125\004\010\014\022\107\162\145\141\164\145
\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016
\006\003\125\004\007\014\007\123\141\154\146\157\162\144\061\032
\060\030\006\003\125\004\012\014\021\103\157\155\157\144\157\040
\103\101\040\114\151\155\151\164\145\144\061\041\060\037\006\003
\125\004\003\014\030\101\101\101\040\103\145\162\164\151\146\151
\143\141\164\145\040\123\145\162\166\151\143\145\163
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "QuoVadis Root CA 2"
#
Issuer: CN=QuoVadis Root CA 2,O=QuoVadis Limited,C=BM
Serial Number: 1289 (0x509)
Subject: CN=QuoVadis Root CA 2,O=QuoVadis Limited,C=BM
Not Valid Before: Fri Nov 24 18:27:00 2006
Not Valid After : Mon Nov 24 18:23:33 2031
Fingerprint (SHA-256):
85:A0:DD:7D:D7:20:AD:B7:FF:05:F8:3D:54:2B:20:9D:C7:FF:45:28:F7:D6:77:B1:83:89:FE:A5:E5:C4:9E:86
Fingerprint (SHA1): CA:3A:FB:CF:12:40:36:4B:44:B2:16:20:88:80:48:39:19:93:7C:F7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\005\011
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\267\060\202\003\237\240\003\002\001\002\002\002\005
\011\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003

\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062\060\036\027\015\060\066\061\061\062
\064\061\070\062\067\060\060\132\027\015\063\061\061\061\062\064
\061\070\062\063\063\063\132\060\105\061\013\060\011\006\003\125
\004\006\023\002\102\115\061\031\060\027\006\003\125\004\012\023
\020\121\165\157\126\141\144\151\163\040\114\151\155\151\164\145
\144\061\033\060\031\006\003\125\004\003\023\022\121\165\157\126
\141\144\151\163\040\122\157\157\164\040\103\101\040\062\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\232
\030\312\113\224\015\000\055\257\003\051\212\360\017\201\310\256
\114\031\205\035\010\237\253\051\104\205\363\057\201\255\062\036
\220\106\277\243\206\046\032\036\376\176\034\030\072\134\234\140
\027\052\072\164\203\063\060\175\141\124\021\313\355\253\340\346
\322\242\176\365\153\157\030\267\012\013\055\375\351\076\357\012
\306\263\020\351\334\302\106\027\370\135\375\244\332\377\236\111
\132\234\346\063\346\044\226\367\077\272\133\053\034\172\065\302
\326\147\376\253\146\120\213\155\050\140\053\357\327\140\303\307
\223\274\215\066\221\363\177\370\333\021\023\304\234\167\166\301
\256\267\002\152\201\172\251\105\203\342\005\346\271\126\301\224
\067\217\110\161\143\042\354\027\145\007\225\212\113\337\217\306
\132\012\345\260\343\137\136\153\021\253\014\371\205\353\104\351
\370\004\163\362\351\376\134\230\214\365\163\257\153\264\176\315
\324\134\002\053\114\071\341\262\225\225\055\102\207\327\325\263
\220\103\267\154\023\361\336\335\366\304\370\211\077\321\165\365
\222\303\221\325\212\210\320\220\354\334\155\336\211\302\145\161
\226\213\015\003\375\234\277\133\026\254\222\333\352\376\171\174
\255\353\257\367\026\313\333\315\045\053\345\037\373\232\237\342
\121\314\072\123\014\110\346\016\275\311\264\166\006\122\346\021
\023\205\162\143\003\004\340\004\066\053\040\031\002\350\164\247
\037\266\311\126\146\360\165\045\334\147\301\016\141\140\210\263
\076\321\250\374\243\332\035\260\321\261\043\124\337\104\166\155
\355\101\330\301\262\042\266\123\034\337\065\035\334\241\167\052
\061\344\055\365\345\345\333\310\340\377\345\200\327\013\143\240
\377\063\241\017\272\054\025\025\352\227\263\322\242\265\276\362
\214\226\036\032\217\035\154\244\141\067\271\206\163\063\327\227
\226\236\043\175\202\244\114\201\342\241\321\272\147\137\225\007
\243\047\021\356\026\020\173\274\105\112\114\262\004\322\253\357
\325\375\014\121\316\120\152\010\061\371\221\332\014\217\144\134
\003\303\072\213\040\077\156\215\147\075\072\326\376\175\133\210
\311\136\373\314\141\334\213\063\167\323\104\062\065\011\142\004
\222\026\020\330\236\047\107\373\073\041\343\370\353\035\133\002
\003\001\000\001\243\201\260\060\201\255\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\013\006\003\125
\035\017\004\004\003\002\001\006\060\035\006\003\125\035\016\004
\026\004\024\032\204\142\274\110\114\063\045\004\324\356\320\366
\003\304\031\106\321\224\153\060\156\006\003\125\035\043\004\147
\060\145\200\024\032\204\142\274\110\114\063\045\004\324\356\320

\366\003\304\031\106\321\224\153\241\111\244\107\060\105\061\013
\060\011\006\003\125\004\006\023\002\102\115\061\031\060\027\006
\003\125\004\012\023\020\121\165\157\126\141\144\151\163\040\114
\151\155\151\164\145\144\061\033\060\031\006\003\125\004\003\023
\022\121\165\157\126\141\144\151\163\040\122\157\157\164\040\103
\101\040\062\202\002\005\011\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\002\001\000\076\012\026\115\237
\006\133\250\256\161\135\057\005\057\147\346\023\105\203\304\066
\366\363\300\046\014\015\265\107\144\135\370\264\162\311\106\245
\003\030\047\125\211\170\175\166\352\226\064\200\027\040\334\347
\203\370\215\374\007\270\332\137\115\056\147\262\204\375\331\104
\374\167\120\201\346\174\264\311\015\013\162\123\370\166\007\007
\101\107\226\014\373\340\202\046\223\125\214\376\042\037\140\145
\174\137\347\046\263\367\062\220\230\120\324\067\161\125\366\222
\041\170\367\225\171\372\370\055\046\207\146\126\060\167\246\067
\170\063\122\020\130\256\077\141\216\362\152\261\357\030\176\112
\131\143\312\215\242\126\325\247\057\274\126\037\317\071\301\342
\373\012\250\025\054\175\115\172\143\306\154\227\104\074\322\157
\303\112\027\012\370\220\322\127\242\031\121\245\055\227\101\332
\007\117\251\120\332\220\215\224\106\341\076\360\224\375\020\000
\070\365\073\350\100\341\264\156\126\032\040\314\157\130\215\355
\056\105\217\326\351\223\077\347\261\054\337\072\326\042\214\334
\204\273\042\157\320\370\344\306\071\351\004\210\074\303\272\353
\125\172\155\200\231\044\365\154\001\373\370\227\260\224\133\353
\375\322\157\361\167\150\015\065\144\043\254\270\125\241\003\321
\115\102\031\334\370\165\131\126\243\371\250\111\171\370\257\016
\271\021\240\174\267\152\355\064\320\266\046\142\070\032\207\014
\370\350\375\056\323\220\177\007\221\052\035\326\176\134\205\203
\231\260\070\010\077\351\136\371\065\007\344\311\142\156\127\177
\247\120\225\367\272\310\233\346\216\242\001\305\326\146\277\171
\141\363\074\034\341\271\202\134\135\240\303\351\330\110\275\031
\242\021\024\031\156\262\206\033\150\076\110\067\032\210\267\135
\226\136\234\307\357\047\142\010\342\221\031\134\322\361\041\335
\272\027\102\202\227\161\201\123\061\251\237\366\175\142\277\162
\341\243\223\035\314\212\046\132\011\070\320\316\327\015\200\026
\264\170\245\072\207\114\215\212\245\325\106\227\362\054\020\271
\274\124\042\300\001\120\151\103\236\364\262\357\155\370\354\332
\361\343\261\357\337\221\217\124\052\013\045\301\046\031\304\122
\020\005\145\325\202\020\352\302\061\315\056
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 2"
Issuer: CN=QuoVadis Root CA 2,O=QuoVadis Limited,C=BM
Serial Number: 1289 (0x509)
Subject: CN=QuoVadis Root CA 2,O=QuoVadis Limited,C=BM

Not Valid Before: Fri Nov 24 18:27:00 2006
Not Valid After : Mon Nov 24 18:23:33 2031
Fingerprint (SHA-256):
85:A0:DD:7D:D7:20:AD:B7:FF:05:F8:3D:54:2B:20:9D:C7:FF:45:28:F7:D6:77:B1:83:89:FE:A5:E5:C4:9E:86
Fingerprint (SHA1): CA:3A:FB:CF:12:40:36:4B:44:B2:16:20:88:80:48:39:19:93:7C:F7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\312\072\373\317\022\100\066\113\104\262\026\040\210\200\110\071
\031\223\174\367
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\136\071\173\335\370\272\354\202\351\254\142\272\014\124\000\053
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\005\011
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "QuoVadis Root CA 3"
#
Issuer: CN=QuoVadis Root CA 3,O=QuoVadis Limited,C=BM
Serial Number: 1478 (0x5c6)
Subject: CN=QuoVadis Root CA 3,O=QuoVadis Limited,C=BM
Not Valid Before: Fri Nov 24 19:11:23 2006
Not Valid After : Mon Nov 24 19:06:44 2031
Fingerprint (SHA-256):
18:F1:FC:7F:20:5D:F8:AD:DD:EB:7F:E0:07:DD:57:E3:AF:37:5A:9C:4D:8D:73:54:6B:F4:F1:FE:D1:E1:8D:35
Fingerprint (SHA1): 1F:49:14:F7:D8:74:95:1D:DD:AE:02:C0:BE:FD:3A:2D:82:75:51:85
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 3"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\005\306
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\235\060\202\004\205\240\003\002\001\002\002\002\005
\306\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063\060\036\027\015\060\066\061\061\062
\064\061\071\061\061\062\063\132\027\015\063\061\061\061\062\064
\061\071\060\066\064\064\132\060\105\061\013\060\011\006\003\125
\004\006\023\002\102\115\061\031\060\027\006\003\125\004\012\023
\020\121\165\157\126\141\144\151\163\040\114\151\155\151\164\145
\144\061\033\060\031\006\003\125\004\003\023\022\121\165\157\126
\141\144\151\163\040\122\157\157\164\040\103\101\040\063\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\314
\127\102\026\124\234\346\230\323\323\115\356\376\355\307\237\103
\071\112\145\263\350\026\210\064\333\015\131\221\164\317\222\270
\004\100\255\002\113\061\253\274\215\221\150\330\040\016\032\001
\342\032\173\116\027\135\342\212\267\077\231\032\315\353\141\253
\302\145\246\037\267\267\275\267\217\374\375\160\217\013\240\147
\276\001\242\131\317\161\346\017\051\166\377\261\126\171\105\053
\037\236\172\124\350\243\051\065\150\244\001\117\017\244\056\067
\357\033\277\343\217\020\250\162\253\130\127\347\124\206\310\311
\363\133\332\054\332\135\216\156\074\243\076\332\373\202\345\335
\362\134\262\005\063\157\212\066\316\320\023\116\377\277\112\014
\064\114\246\303\041\275\120\004\125\353\261\273\235\373\105\036
\144\025\336\125\001\214\002\166\265\313\241\077\102\151\274\057
\275\150\103\026\126\211\052\067\141\221\375\246\256\116\300\313

\024\145\224\067\113\222\006\357\004\320\310\234\210\333\013\173
\201\257\261\075\052\304\145\072\170\266\356\334\200\261\322\323
\231\234\072\356\153\132\153\263\215\267\325\316\234\302\276\245
\113\057\026\261\236\150\073\006\157\256\175\237\370\336\354\314
\051\247\230\243\045\103\057\357\361\137\046\341\210\115\370\136
\156\327\331\024\156\031\063\151\247\073\204\211\223\304\123\125
\023\241\121\170\100\370\270\311\242\356\173\272\122\102\203\236
\024\355\005\122\132\131\126\247\227\374\235\077\012\051\330\334
\117\221\016\023\274\336\225\244\337\213\231\276\254\233\063\210
\357\265\201\257\033\306\042\123\310\366\307\356\227\024\260\305
\174\170\122\310\360\316\156\167\140\204\246\351\052\166\040\355
\130\001\027\060\223\351\032\213\340\163\143\331\152\222\224\111
\116\264\255\112\205\304\243\042\060\374\011\355\150\042\163\246
\210\014\125\041\130\305\341\072\237\052\335\312\341\220\340\331
\163\253\154\200\270\350\013\144\223\240\234\214\031\377\263\322
\014\354\221\046\207\212\263\242\341\160\217\054\012\345\315\155
\150\121\353\332\077\005\177\213\062\346\023\134\153\376\137\100
\342\042\310\264\264\144\117\326\272\175\110\076\250\151\014\327
\273\206\161\311\163\270\077\073\235\045\113\332\377\100\353\002
\003\001\000\001\243\202\001\225\060\202\001\221\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\201\341
\006\003\125\035\040\004\201\331\060\201\326\060\201\323\006\011
\053\006\001\004\001\276\130\000\003\060\201\305\060\201\223\006
\010\053\006\001\005\005\007\002\002\060\201\206\032\201\203\101
\156\171\040\165\163\145\040\157\146\040\164\150\151\163\040\103
\145\162\164\151\146\151\143\141\164\145\040\143\157\156\163\164
\151\164\165\164\145\163\040\141\143\143\145\160\164\141\156\143
\145\040\157\146\040\164\150\145\040\121\165\157\126\141\144\151
\163\040\122\157\157\164\040\103\101\040\063\040\103\145\162\164
\151\146\151\143\141\164\145\040\120\157\154\151\143\171\040\057
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\120
\162\141\143\164\151\143\145\040\123\164\141\164\145\155\145\156
\164\056\060\055\006\010\053\006\001\005\005\007\002\001\026\041
\150\164\164\160\072\057\057\167\167\167\056\161\165\157\166\141
\144\151\163\147\154\157\142\141\154\056\143\157\155\057\143\160
\163\060\013\006\003\125\035\017\004\004\003\002\001\006\060\035
\006\003\125\035\016\004\026\004\024\362\300\023\340\202\103\076
\373\356\057\147\062\226\065\134\333\270\313\002\320\060\156\006
\003\125\035\043\004\147\060\145\200\024\362\300\023\340\202\103
\076\373\356\057\147\062\226\065\134\333\270\313\002\320\241\111
\244\107\060\105\061\013\060\011\006\003\125\004\006\023\002\102
\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\033\060\031
\006\003\125\004\003\023\022\121\165\157\126\141\144\151\163\040
\122\157\157\164\040\103\101\040\063\202\002\005\306\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\002\001
\000\117\255\240\054\114\372\300\362\157\367\146\125\253\043\064
\356\347\051\332\303\133\266\260\203\331\320\320\342\041\373\363

\140\247\073\135\140\123\047\242\233\366\010\042\052\347\277\240
\162\345\234\044\152\061\261\220\172\047\333\204\021\211\047\246
\167\132\070\327\277\254\206\374\356\135\203\274\006\306\321\167
\153\017\155\044\057\113\172\154\247\007\226\312\343\204\237\255
\210\213\035\253\026\215\133\146\027\331\026\364\213\200\322\335
\370\262\166\303\374\070\023\252\014\336\102\151\053\156\363\074
\353\200\047\333\365\246\104\015\237\132\125\131\013\325\015\122
\110\305\256\237\362\057\200\305\352\062\120\065\022\227\056\301
\341\377\361\043\210\121\070\237\362\146\126\166\347\017\121\227
\245\122\014\115\111\121\225\066\075\277\242\113\014\020\035\206
\231\114\252\363\162\021\223\344\352\366\233\332\250\135\247\115
\267\236\002\256\163\000\310\332\043\003\350\371\352\031\164\142
\000\224\313\042\040\276\224\247\131\265\202\152\276\231\171\172
\251\362\112\044\122\367\164\375\272\116\346\250\035\002\156\261
\015\200\104\301\256\323\043\067\137\273\205\174\053\222\056\350
\176\245\213\335\231\341\277\047\157\055\135\252\173\207\376\012
\335\113\374\216\365\046\344\156\160\102\156\063\354\061\236\173
\223\301\344\311\151\032\075\300\153\116\042\155\356\253\130\115
\306\320\101\301\053\352\117\022\207\136\353\105\330\154\365\230
\002\323\240\330\125\212\006\231\031\242\240\167\321\060\236\254
\314\165\356\203\365\260\142\071\317\154\127\342\114\322\221\013
\016\165\050\033\232\277\375\032\103\361\312\167\373\073\217\141
\270\151\050\026\102\004\136\160\052\034\041\330\217\341\275\043
\133\055\164\100\222\331\143\031\015\163\335\151\274\142\107\274
\340\164\053\262\353\175\276\101\033\265\300\106\305\241\042\313
\137\116\301\050\222\336\030\272\325\052\050\273\021\213\027\223
\230\231\140\224\134\043\317\132\047\227\136\013\005\006\223\067
\036\073\151\066\353\251\236\141\035\217\062\332\216\014\326\164
\076\173\011\044\332\001\167\107\304\073\315\064\214\231\365\312
\341\045\141\063\262\131\033\342\156\327\067\127\266\015\251\022
\332
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 3"
Issuer: CN=QuoVadis Root CA 3,O=QuoVadis Limited,C=BM
Serial Number: 1478 (0x5c6)
Subject: CN=QuoVadis Root CA 3,O=QuoVadis Limited,C=BM
Not Valid Before: Fri Nov 24 19:11:23 2006
Not Valid After : Mon Nov 24 19:06:44 2031
Fingerprint (SHA-256):
18:F1:FC:7F:20:5D:F8:AD:DD:EB:7F:E0:07:DD:57:E3:AF:37:5A:9C:4D:8D:73:54:6B:F4:F1:FE:D1:E1:8D:35
Fingerprint (SHA1): 1F:49:14:F7:D8:74:95:1D:DD:AE:02:C0:BE:FD:3A:2D:82:75:51:85
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\037\111\024\367\330\164\225\035\335\256\002\300\276\375\072\055
\202\165\121\205
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\061\205\074\142\224\227\143\271\252\375\211\116\257\157\340\317
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\005\306
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Security Communication Root CA"
#
Issuer: OU=Security Communication RootCA1,O=SECOM Trust.net,C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication RootCA1,O=SECOM Trust.net,C=JP
Not Valid Before: Tue Sep 30 04:20:49 2003
Not Valid After : Sat Sep 30 04:20:49 2023
Fingerprint (SHA-256):
E7:5E:72:ED:9F:56:0E:EC:6E:B4:80:00:73:A4:3F:C3:AD:19:19:5A:39:22:82:01:78:95:97:4A:99:02:6B:6C
Fingerprint (SHA1): 36:B1:2B:49:F9:81:9E:D7:4C:9E:BC:38:0F:C6:56:8F:5D:AC:B2:F7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\030\060\026\006\003\125\004\012\023\017\123\105\103\117\115\040
\124\162\165\163\164\056\156\145\164\061\047\060\045\006\003\125
\004\013\023\036\123\145\143\165\162\151\164\171\040\103\157\155
\155\165\156\151\143\141\164\151\157\156\040\122\157\157\164\103
\101\061

END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\030\060\026\006\003\125\004\012\023\017\123\105\103\117\115\040
\124\162\165\163\164\056\156\145\164\061\047\060\045\006\003\125
\004\013\023\036\123\145\143\165\162\151\164\171\040\103\157\155
\155\165\156\151\143\141\164\151\157\156\040\122\157\157\164\103
\101\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\132\060\202\002\102\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\120\061\013\060\011\006\003\125\004\006\023\002\112\120\061\030
\060\026\006\003\125\004\012\023\017\123\105\103\117\115\040\124
\162\165\163\164\056\156\145\164\061\047\060\045\006\003\125\004
\013\023\036\123\145\143\165\162\151\164\171\040\103\157\155\155
\165\156\151\143\141\164\151\157\156\040\122\157\157\164\103\101
\061\060\036\027\015\060\063\060\071\063\060\060\064\062\060\064
\071\132\027\015\062\063\060\071\063\060\060\064\062\060\064\071
\132\060\120\061\013\060\011\006\003\125\004\006\023\002\112\120
\061\030\060\026\006\003\125\004\012\023\017\123\105\103\117\115
\040\124\162\165\163\164\056\156\145\164\061\047\060\045\006\003
\125\004\013\023\036\123\145\143\165\162\151\164\171\040\103\157
\155\155\165\156\151\143\141\164\151\157\156\040\122\157\157\164
\103\101\061\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\263\263\376\177\323\155\261\357\026\174\127\245
\014\155\166\212\057\113\277\144\373\114\356\212\360\363\051\174
\365\377\356\052\340\351\351\272\133\144\042\232\232\157\054\072
\046\151\121\005\231\046\334\325\034\152\161\306\232\175\036\235
\335\174\154\306\214\147\147\112\076\370\161\260\031\047\251\011
\014\246\225\277\113\214\014\372\125\230\073\330\350\042\241\113
\161\070\171\254\227\222\151\263\211\176\352\041\150\006\230\024
\226\207\322\141\066\274\155\047\126\236\127\356\300\300\126\375
\062\317\244\331\216\302\043\327\215\250\363\330\045\254\227\344
\160\070\364\266\072\264\235\073\227\046\103\243\241\274\111\131
\162\114\043\060\207\001\130\366\116\276\034\150\126\146\257\315
\101\135\310\263\115\052\125\106\253\037\332\036\342\100\075\333
\315\175\271\222\200\234\067\335\014\226\144\235\334\042\367\144
\213\337\141\336\025\224\122\025\240\175\122\311\113\250\041\311
\306\261\355\313\303\225\140\321\017\360\253\160\370\337\313\115
\176\354\326\372\253\331\275\177\124\362\245\351\171\372\331\326
\166\044\050\163\002\003\001\000\001\243\077\060\075\060\035\006
\003\125\035\016\004\026\004\024\240\163\111\231\150\334\205\133

\145\343\233\050\057\127\237\275\063\274\007\110\060\013\006\003
\125\035\017\004\004\003\002\001\006\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\150\100
\251\250\273\344\117\135\171\263\005\265\027\263\140\023\353\306
\222\135\340\321\323\152\376\373\276\233\155\277\307\005\155\131
\040\304\034\360\267\332\204\130\002\143\372\110\026\357\117\245
\013\367\112\230\362\077\236\033\255\107\153\143\316\010\107\353
\122\077\170\234\257\115\256\370\325\117\317\232\230\052\020\101
\071\122\304\335\331\233\016\357\223\001\256\262\056\312\150\102
\044\102\154\260\263\072\076\315\351\332\110\304\025\313\351\371
\007\017\222\120\111\212\335\061\227\137\311\351\067\252\073\131
\145\227\224\062\311\263\237\076\072\142\130\305\111\255\142\016
\161\245\062\252\057\306\211\166\103\100\023\023\147\075\242\124
\045\020\313\361\072\362\331\372\333\111\126\273\246\376\247\101
\065\303\340\210\141\311\210\307\337\066\020\042\230\131\352\260
\112\373\126\026\163\156\254\115\367\042\241\117\255\035\172\055
\105\047\345\060\301\136\362\332\023\313\045\102\121\225\107\003
\214\154\041\314\164\102\355\123\377\063\213\217\017\127\001\026
\057\317\246\356\311\160\042\024\275\375\276\154\013\003
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Security Communication Root CA"
Issuer: OU=Security Communication RootCA1,O=SECOM Trust.net,C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication RootCA1,O=SECOM Trust.net,C=JP
Not Valid Before: Tue Sep 30 04:20:49 2003
Not Valid After : Sat Sep 30 04:20:49 2023
Fingerprint (SHA-256):
E7:5E:72:ED:9F:56:0E:EC:6E:B4:80:00:73:A4:3F:C3:AD:19:19:5A:39:22:82:01:78:95:97:4A:99:02:6B:6C
Fingerprint (SHA1): 36:B1:2B:49:F9:81:9E:D7:4C:9E:BC:38:0F:C6:56:8F:5D:AC:B2:F7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\066\261\053\111\371\201\236\327\114\236\274\070\017\306\126\217
\135\254\262\367
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\361\274\143\152\124\340\265\047\365\315\347\032\343\115\156\112
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\112\120\061

\030\060\026\006\003\125\004\012\023\017\123\105\103\117\115\040
\124\162\165\163\164\056\156\145\164\061\047\060\045\006\003\125
\004\013\023\036\123\145\143\165\162\151\164\171\040\103\157\155
\155\165\156\151\143\141\164\151\157\156\040\122\157\157\164\103
\101\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Camerfirma Chambers of Commerce Root"
#
Issuer: CN=Chambers of Commerce Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Serial Number: 0 (0x0)
Subject: CN=Chambers of Commerce Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Not Valid Before: Tue Sep 30 16:13:43 2003
Not Valid After : Wed Sep 30 16:13:44 2037
Fingerprint (SHA-256):
0C:25:8A:12:A5:67:4A:EF:25:F2:8B:A7:DC:FA:EC:EE:A3:48:E5:41:E6:F5:CC:4E:E6:3B:71:B3:61:60:6A:C3
Fingerprint (SHA1): 6E:3A:55:A4:19:0C:19:5C:93:84:3C:C0:DB:72:2E:31:30:61:F0:B1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Camerfirma Chambers of Commerce Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060
\040\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155

\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060
\040\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\275\060\202\003\245\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061\047
\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155\145
\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101\070
\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004\013
\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150\141
\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060\040
\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163\040
\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157\164
\060\036\027\015\060\063\060\071\063\060\061\066\061\063\064\063
\132\027\015\063\067\060\071\063\060\061\066\061\063\064\064\132
\060\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060
\040\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164\060\202\001\040\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\015\000\060\202\001\010\002\202\001
\001\000\267\066\125\345\245\135\030\060\340\332\211\124\221\374
\310\307\122\370\057\120\331\357\261\165\163\145\107\175\033\133
\272\165\305\374\241\210\044\372\057\355\312\010\112\071\124\304
\121\172\265\332\140\352\070\074\201\262\313\361\273\331\221\043
\077\110\001\160\165\251\005\052\255\037\161\363\311\124\075\035
\006\152\100\076\263\014\205\356\134\033\171\302\142\304\270\066
\216\065\135\001\014\043\004\107\065\252\233\140\116\240\146\075
\313\046\012\234\100\241\364\135\230\277\161\253\245\000\150\052
\355\203\172\017\242\024\265\324\042\263\200\260\074\014\132\121
\151\055\130\030\217\355\231\236\361\256\342\225\346\366\107\250
\326\014\017\260\130\130\333\303\146\067\236\233\221\124\063\067
\322\224\034\152\110\311\311\362\245\332\245\014\043\367\043\016
\234\062\125\136\161\234\204\005\121\232\055\375\346\116\052\064
\132\336\312\100\067\147\014\124\041\125\167\332\012\014\314\227

\256\200\334\224\066\112\364\076\316\066\023\036\123\344\254\116
\072\005\354\333\256\162\234\070\213\320\071\073\211\012\076\167
\376\165\002\001\003\243\202\001\104\060\202\001\100\060\022\006
\003\125\035\023\001\001\377\004\010\060\006\001\001\377\002\001
\014\060\074\006\003\125\035\037\004\065\060\063\060\061\240\057
\240\055\206\053\150\164\164\160\072\057\057\143\162\154\056\143
\150\141\155\142\145\162\163\151\147\156\056\157\162\147\057\143
\150\141\155\142\145\162\163\162\157\157\164\056\143\162\154\060
\035\006\003\125\035\016\004\026\004\024\343\224\365\261\115\351
\333\241\051\133\127\213\115\166\006\166\341\321\242\212\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\021
\006\011\140\206\110\001\206\370\102\001\001\004\004\003\002\000
\007\060\047\006\003\125\035\021\004\040\060\036\201\034\143\150
\141\155\142\145\162\163\162\157\157\164\100\143\150\141\155\142
\145\162\163\151\147\156\056\157\162\147\060\047\006\003\125\035
\022\004\040\060\036\201\034\143\150\141\155\142\145\162\163\162
\157\157\164\100\143\150\141\155\142\145\162\163\151\147\156\056
\157\162\147\060\130\006\003\125\035\040\004\121\060\117\060\115
\006\013\053\006\001\004\001\201\207\056\012\003\001\060\076\060
\074\006\010\053\006\001\005\005\007\002\001\026\060\150\164\164
\160\072\057\057\143\160\163\056\143\150\141\155\142\145\162\163
\151\147\156\056\157\162\147\057\143\160\163\057\143\150\141\155
\142\145\162\163\162\157\157\164\056\150\164\155\154\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\014\101\227\302\032\206\300\042\174\237\373\220\363\032\321
\003\261\357\023\371\041\137\004\234\332\311\245\215\047\154\226
\207\221\276\101\220\001\162\223\347\036\175\137\366\211\306\135
\247\100\011\075\254\111\105\105\334\056\215\060\150\262\011\272
\373\303\057\314\272\013\337\077\167\173\106\175\072\022\044\216
\226\217\074\005\012\157\322\224\050\035\155\014\300\056\210\042
\325\330\317\035\023\307\360\110\327\327\005\247\317\307\107\236
\073\074\064\310\200\117\324\024\273\374\015\120\367\372\263\354
\102\137\251\335\155\310\364\165\317\173\301\162\046\261\001\034
\134\054\375\172\116\264\001\305\005\127\271\347\074\252\005\331
\210\351\007\106\101\316\357\101\201\256\130\337\203\242\256\312
\327\167\037\347\000\074\235\157\216\344\062\011\035\115\170\064
\170\064\074\224\233\046\355\117\161\306\031\172\275\040\042\110
\132\376\113\175\003\267\347\130\276\306\062\116\164\036\150\335
\250\150\133\263\076\356\142\175\331\200\350\012\165\172\267\356
\264\145\232\041\220\340\252\320\230\274\070\265\163\074\213\370
\334
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
For Email Distrust After: Mon Mar 01 00:00:00 2021
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\061\060\063\060\061\060\060\060\060\060\060\132
END

Trust for "Camerfirma Chambers of Commerce Root"
Issuer: CN=Chambers of Commerce Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Serial Number: 0 (0x0)
Subject: CN=Chambers of Commerce Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Not Valid Before: Tue Sep 30 16:13:43 2003
Not Valid After : Wed Sep 30 16:13:44 2037
Fingerprint (SHA-256):
0C:25:8A:12:A5:67:4A:EF:25:F2:8B:A7:DC:FA:EC:EE:A3:48:E5:41:E6:F5:CC:4E:E6:3B:71:B3:61:60:6A:C3
Fingerprint (SHA1): 6E:3A:55:A4:19:0C:19:5C:93:84:3C:C0:DB:72:2E:31:30:61:F0:B1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Camerfirma Chambers of Commerce Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\156\072\125\244\031\014\031\134\223\204\074\300\333\162\056\061
\060\141\360\261
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\260\001\356\024\331\257\051\030\224\166\216\361\151\063\052\204
END
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060
\040\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Camerfirma Global Chambersign Root"
#
Issuer: CN=Global Chambersign Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU

Serial Number: 0 (0x0)
Subject: CN=Global Chambersign Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Not Valid Before: Tue Sep 30 16:14:18 2003
Not Valid After : Wed Sep 30 16:14:18 2037
Fingerprint (SHA-256):
EF:3C:B4:17:FC:8E:BF:6F:97:87:6C:9E:4E:CE:39:DE:1E:A5:FE:64:91:41:D1:02:8B:7D:11:C0:B2:29:8C:ED
Fingerprint (SHA1): 33:9B:6B:14:50:24:9B:55:7A:01:87:72:84:D9:E0:2F:C3:D2:D8:E9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Camerfirma Global Chambersign Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\175\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\040\060
\036\006\003\125\004\003\023\027\107\154\157\142\141\154\040\103
\150\141\155\142\145\162\163\151\147\156\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\175\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\040\060
\036\006\003\125\004\003\023\027\107\154\157\142\141\154\040\103
\150\141\155\142\145\162\163\151\147\156\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\305\060\202\003\255\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\175\061\013\060\011\006\003\125\004\006\023\002\105\125\061\047
\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155\145
\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101\070
\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004\013
\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150\141
\155\142\145\162\163\151\147\156\056\157\162\147\061\040\060\036
\006\003\125\004\003\023\027\107\154\157\142\141\154\040\103\150

\141\155\142\145\162\163\151\147\156\040\122\157\157\164\060\036
\027\015\060\063\060\071\063\060\061\066\061\064\061\070\132\027
\015\063\067\060\071\063\060\061\066\061\064\061\070\132\060\175
\061\013\060\011\006\003\125\004\006\023\002\105\125\061\047\060
\045\006\003\125\004\012\023\036\101\103\040\103\141\155\145\162
\146\151\162\155\141\040\123\101\040\103\111\106\040\101\070\062
\067\064\063\062\070\067\061\043\060\041\006\003\125\004\013\023
\032\150\164\164\160\072\057\057\167\167\167\056\143\150\141\155
\142\145\162\163\151\147\156\056\157\162\147\061\040\060\036\006
\003\125\004\003\023\027\107\154\157\142\141\154\040\103\150\141
\155\142\145\162\163\151\147\156\040\122\157\157\164\060\202\001
\040\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\001\015\000\060\202\001\010\002\202\001\001\000\242\160
\242\320\237\102\256\133\027\307\330\175\317\024\203\374\117\311
\241\267\023\257\212\327\236\076\004\012\222\213\140\126\372\264
\062\057\210\115\241\140\010\364\267\011\116\240\111\057\111\326
\323\337\235\227\132\237\224\004\160\354\077\131\331\267\314\146
\213\230\122\050\011\002\337\305\057\204\215\172\227\167\277\354
\100\235\045\162\253\265\077\062\230\373\267\267\374\162\204\345
\065\207\371\125\372\243\037\016\157\056\050\335\151\240\331\102
\020\306\370\265\104\302\320\103\177\333\274\344\242\074\152\125
\170\012\167\251\330\352\031\062\267\057\376\134\077\033\356\261
\230\354\312\255\172\151\105\343\226\017\125\366\346\355\165\352
\145\350\062\126\223\106\211\250\045\212\145\006\356\153\277\171
\007\320\361\267\257\355\054\115\222\273\300\250\137\247\147\175
\004\362\025\010\160\254\222\326\175\004\322\063\373\114\266\013
\013\373\032\311\304\215\003\251\176\134\362\120\253\022\245\241
\317\110\120\245\357\322\310\032\023\372\260\177\261\202\034\167
\152\017\137\334\013\225\217\357\103\176\346\105\011\045\002\001
\003\243\202\001\120\060\202\001\114\060\022\006\003\125\035\023
\001\001\377\004\010\060\006\001\001\377\002\001\014\060\077\006
\003\125\035\037\004\070\060\066\060\064\240\062\240\060\206\056
\150\164\164\160\072\057\057\143\162\154\056\143\150\141\155\142
\145\162\163\151\147\156\056\157\162\147\057\143\150\141\155\142
\145\162\163\151\147\156\162\157\157\164\056\143\162\154\060\035
\006\003\125\035\016\004\026\004\024\103\234\066\237\260\236\060
\115\306\316\137\255\020\253\345\003\245\372\251\024\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\021\006
\011\140\206\110\001\206\370\102\001\001\004\004\003\002\000\007
\060\052\006\003\125\035\021\004\043\060\041\201\037\143\150\141
\155\142\145\162\163\151\147\156\162\157\157\164\100\143\150\141
\155\142\145\162\163\151\147\156\056\157\162\147\060\052\006\003
\125\035\022\004\043\060\041\201\037\143\150\141\155\142\145\162
\163\151\147\156\162\157\157\164\100\143\150\141\155\142\145\162
\163\151\147\156\056\157\162\147\060\133\006\003\125\035\040\004
\124\060\122\060\120\006\013\053\006\001\004\001\201\207\056\012
\001\001\060\101\060\077\006\010\053\006\001\005\005\007\002\001
\026\063\150\164\164\160\072\057\057\143\160\163\056\143\150\141

\155\142\145\162\163\151\147\156\056\157\162\147\057\143\160\163
\057\143\150\141\155\142\145\162\163\151\147\156\162\157\157\164
\056\150\164\155\154\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\001\001\000\074\073\160\221\371\004\124
\047\221\341\355\355\376\150\177\141\135\345\101\145\117\062\361
\030\005\224\152\034\336\037\160\333\076\173\062\002\064\265\014
\154\241\212\174\245\364\217\377\324\330\255\027\325\055\004\321
\077\130\200\342\201\131\210\276\300\343\106\223\044\376\220\275
\046\242\060\055\350\227\046\127\065\211\164\226\030\366\025\342
\257\044\031\126\002\002\262\272\017\024\352\306\212\146\301\206
\105\125\213\276\222\276\234\244\004\307\111\074\236\350\051\172
\211\327\376\257\377\150\365\245\027\220\275\254\231\314\245\206
\127\011\147\106\333\326\026\302\106\361\344\251\120\365\217\321
\222\025\323\137\076\306\000\111\072\156\130\262\321\321\047\015
\045\310\062\370\040\021\315\175\062\063\110\224\124\114\335\334
\171\304\060\237\353\216\270\125\265\327\210\134\305\152\044\075
\262\323\005\003\121\306\007\357\314\024\162\164\075\156\162\316
\030\050\214\112\240\167\345\011\053\105\104\107\254\267\147\177
\001\212\005\132\223\276\241\301\377\370\347\016\147\244\107\111
\166\135\165\220\032\365\046\217\360
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
For Email Distrust After: Mon Mar 01 00:00:00 2021
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\061\060\063\060\061\060\060\060\060\060\060\132
END

Trust for "Camerfirma Global Chambersign Root"
Issuer: CN=Global Chambersign Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Serial Number: 0 (0x0)
Subject: CN=Global Chambersign Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Not Valid Before: Tue Sep 30 16:14:18 2003
Not Valid After : Wed Sep 30 16:14:18 2037
Fingerprint (SHA-256):
EF:3C:B4:17:FC:8E:BF:6F:97:87:6C:9E:4E:CE:39:DE:1E:A5:FE:64:91:41:D1:02:8B:7D:11:C0:B2:29:8C:ED
Fingerprint (SHA1): 33:9B:6B:14:50:24:9B:55:7A:01:87:72:84:D9:E0:2F:C3:D2:D8:E9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Camerfirma Global Chambersign Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\063\233\153\024\120\044\233\125\172\001\207\162\204\331\340\057
\303\322\330\351
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\346\173\277\006\320\117\103\355\304\172\145\212\373\153\031
END
CKA_ISSUER MULTILINE_OCTAL
\060\175\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\040\060
\036\006\003\125\004\003\023\027\107\154\157\142\141\154\040\103
\150\141\155\142\145\162\163\151\147\156\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "XRamp Global CA Root"
#
Issuer: CN=XRamp Global Certification Authority,O=XRamp Security Services Inc,OU=www.xrampsecurity.com,C=US
Serial Number:50:94:6c:ec:18:ea:d5:9c:4d:d5:97:ef:75:8f:a0:ad
Subject: CN=XRamp Global Certification Authority,O=XRamp Security Services Inc,OU=www.xrampsecurity.com,C=US
Not Valid Before: Mon Nov 01 17:14:04 2004
Not Valid After : Mon Jan 01 05:37:19 2035
Fingerprint (SHA-256):
CE:CD:DC:90:50:99:D8:DA:DF:C5:B1:D2:09:B7:37:CB:E2:C1:8C:FB:2C:10:C0:FF:0B:CF:0D:32:86:FC:1A:A2
Fingerprint (SHA1): B8:01:86:D1:EB:9C:86:A5:41:04:CF:30:54:F3:4C:52:B7:E5:58:C6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "XRamp Global CA Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\036\060\034\006\003\125\004\013\023\025\167\167\167\056\170
\162\141\155\160\163\145\143\165\162\151\164\171\056\143\157\155
\061\044\060\042\006\003\125\004\012\023\033\130\122\141\155\160
\040\123\145\143\165\162\151\164\171\040\123\145\162\166\151\143
\145\163\040\111\156\143\061\055\060\053\006\003\125\004\003\023
\044\130\122\141\155\160\040\107\154\157\142\141\154\040\103\145

\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\036\060\034\006\003\125\004\013\023\025\167\167\167\056\170
\162\141\155\160\163\145\143\165\162\151\164\171\056\143\157\155
\061\044\060\042\006\003\125\004\012\023\033\130\122\141\155\160
\040\123\145\143\165\162\151\164\171\040\123\145\162\166\151\143
\145\163\040\111\156\143\061\055\060\053\006\003\125\004\003\023
\044\130\122\141\155\160\040\107\154\157\142\141\154\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\120\224\154\354\030\352\325\234\115\325\227\357\165\217
\240\255
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\060\060\202\003\030\240\003\002\001\002\002\020\120
\224\154\354\030\352\325\234\115\325\227\357\165\217\240\255\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\202\061\013\060\011\006\003\125\004\006\023\002\125\123\061\036
\060\034\006\003\125\004\013\023\025\167\167\167\056\170\162\141
\155\160\163\145\143\165\162\151\164\171\056\143\157\155\061\044
\060\042\006\003\125\004\012\023\033\130\122\141\155\160\040\123
\145\143\165\162\151\164\171\040\123\145\162\166\151\143\145\163
\040\111\156\143\061\055\060\053\006\003\125\004\003\023\044\130
\122\141\155\160\040\107\154\157\142\141\154\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\060\036\027\015\060\064\061\061\060\061\061\067\061
\064\060\064\132\027\015\063\065\060\061\060\061\060\065\063\067
\061\071\132\060\201\202\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\036\060\034\006\003\125\004\013\023\025\167\167
\167\056\170\162\141\155\160\163\145\143\165\162\151\164\171\056
\143\157\155\061\044\060\042\006\003\125\004\012\023\033\130\122
\141\155\160\040\123\145\143\165\162\151\164\171\040\123\145\162
\166\151\143\145\163\040\111\156\143\061\055\060\053\006\003\125
\004\003\023\044\130\122\141\155\160\040\107\154\157\142\141\154
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\230\044\036\275\025\264\272
\337\307\214\245\047\266\070\013\151\363\266\116\250\054\056\041
\035\134\104\337\041\135\176\043\164\376\136\176\264\112\267\246
\255\037\256\340\006\026\342\233\133\331\147\164\153\135\200\217
\051\235\206\033\331\234\015\230\155\166\020\050\130\344\145\260

\177\112\230\171\237\340\303\061\176\200\053\265\214\300\100\073
\021\206\320\313\242\206\066\140\244\325\060\202\155\331\156\320
\017\022\004\063\227\137\117\141\132\360\344\371\221\253\347\035
\073\274\350\317\364\153\055\064\174\342\110\141\034\216\363\141
\104\314\157\240\112\251\224\260\115\332\347\251\064\172\162\070
\250\101\314\074\224\021\175\353\310\246\214\267\206\313\312\063
\073\331\075\067\213\373\172\076\206\054\347\163\327\012\127\254
\144\233\031\353\364\017\004\010\212\254\003\027\031\144\364\132
\045\042\215\064\054\262\366\150\035\022\155\323\212\036\024\332
\304\217\246\342\043\205\325\172\015\275\152\340\351\354\354\027
\273\102\033\147\252\045\355\105\203\041\374\301\311\174\325\142
\076\372\362\305\055\323\375\324\145\002\003\001\000\001\243\201
\237\060\201\234\060\023\006\011\053\006\001\004\001\202\067\024
\002\004\006\036\004\000\103\000\101\060\013\006\003\125\035\017
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\306\117\242\075\006\143\204\011\234\316\142\344\004\254
\215\134\265\351\266\033\060\066\006\003\125\035\037\004\057\060
\055\060\053\240\051\240\047\206\045\150\164\164\160\072\057\057
\143\162\154\056\170\162\141\155\160\163\145\143\165\162\151\164
\171\056\143\157\155\057\130\107\103\101\056\143\162\154\060\020
\006\011\053\006\001\004\001\202\067\025\001\004\003\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\221\025\071\003\001\033\147\373\112\034\371\012
\140\133\241\332\115\227\142\371\044\123\047\327\202\144\116\220
\056\303\111\033\053\232\334\374\250\170\147\065\361\035\360\021
\275\267\110\343\020\366\015\337\077\322\311\266\252\125\244\110
\272\002\333\336\131\056\025\133\073\235\026\175\107\327\067\352
\137\115\166\022\066\273\037\327\241\201\004\106\040\243\054\155
\251\236\001\176\077\051\316\000\223\337\375\311\222\163\211\211
\144\236\347\053\344\034\221\054\322\271\316\175\316\157\061\231
\323\346\276\322\036\220\360\011\024\171\134\043\253\115\322\332
\041\037\115\231\171\235\341\317\047\237\020\233\034\210\015\260
\212\144\101\061\270\016\154\220\044\244\233\134\161\217\272\273
\176\034\033\333\152\200\017\041\274\351\333\246\267\100\364\262
\213\251\261\344\357\232\032\320\075\151\231\356\250\050\243\341
\074\263\360\262\021\234\317\174\100\346\335\347\103\175\242\330
\072\265\251\215\362\064\231\304\324\020\341\006\375\011\204\020
\073\356\304\114\364\354\047\174\102\302\164\174\202\212\011\311
\264\003\045\274
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "XRamp Global CA Root"
Issuer: CN=XRamp Global Certification Authority,O=XRamp Security Services Inc,OU=www.xrampsecurity.com,C=US

Serial Number:50:94:6c:ec:18:ea:d5:9c:4d:d5:97:ef:75:8f:a0:ad
Subject: CN=XRamp Global Certification Authority,O=XRamp Security Services Inc,OU=www.xrampsecurity.com,C=US
Not Valid Before: Mon Nov 01 17:14:04 2004
Not Valid After : Mon Jan 01 05:37:19 2035
Fingerprint (SHA-256):
CE:CD:DC:90:50:99:D8:DA:DF:C5:B1:D2:09:B7:37:CB:E2:C1:8C:FB:2C:10:C0:FF:0B:CF:0D:32:86:FC:1A:A2
Fingerprint (SHA1): B8:01:86:D1:EB:9C:86:A5:41:04:CF:30:54:F3:4C:52:B7:E5:58:C6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "XRamp Global CA Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\270\001\206\321\353\234\206\245\101\004\317\060\124\363\114\122
\267\345\130\306
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\241\013\104\263\312\020\330\000\156\235\017\330\017\222\012\321
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\036\060\034\006\003\125\004\013\023\025\167\167\167\056\170
\162\141\155\160\163\145\143\165\162\151\164\171\056\143\157\155
\061\044\060\042\006\003\125\004\012\023\033\130\122\141\155\160
\040\123\145\143\165\162\151\164\171\040\123\145\162\166\151\143
\145\163\040\111\156\143\061\055\060\053\006\003\125\004\003\023
\044\130\122\141\155\160\040\107\154\157\142\141\154\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\120\224\154\354\030\352\325\234\115\325\227\357\165\217
\240\255
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Go Daddy Class 2 CA"
#
Issuer: OU=Go Daddy Class 2 Certification Authority,O="The Go Daddy Group, Inc.",C=US
Serial Number: 0 (0x0)
Subject: OU=Go Daddy Class 2 Certification Authority,O="The Go Daddy Group, Inc.",C=US
Not Valid Before: Tue Jun 29 17:06:20 2004
Not Valid After : Thu Jun 29 17:06:20 2034

Fingerprint (SHA-256):
C3:84:6B:F2:4B:9E:93:CA:64:27:4C:0E:C6:7C:1E:CC:5E:02:4F:FC:AC:D2:D7:40:19:35:0E:81:FE:54:6A:E4
Fingerprint (SHA1): 27:96:BA:E6:3F:18:01:E2:77:26:1B:A0:D7:77:70:02:8F:20:EE:E4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Go Daddy Class 2 CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\124\150\145\040\107\157
\040\104\141\144\144\171\040\107\162\157\165\160\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\013\023\050\107\157\040
\104\141\144\144\171\040\103\154\141\163\163\040\062\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\124\150\145\040\107\157
\040\104\141\144\144\171\040\107\162\157\165\160\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\013\023\050\107\157\040
\104\141\144\144\171\040\103\154\141\163\163\040\062\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\000\060\202\002\350\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061\041
\060\037\006\003\125\004\012\023\030\124\150\145\040\107\157\040
\104\141\144\144\171\040\107\162\157\165\160\054\040\111\156\143
\056\061\061\060\057\006\003\125\004\013\023\050\107\157\040\104
\141\144\144\171\040\103\154\141\163\163\040\062\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\060\036\027\015\060\064\060\066\062\071\061\067
\060\066\062\060\132\027\015\063\064\060\066\062\071\061\067\060
\066\062\060\132\060\143\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\041\060\037\006\003\125\004\012\023\030\124\150
\145\040\107\157\040\104\141\144\144\171\040\107\162\157\165\160
\054\040\111\156\143\056\061\061\060\057\006\003\125\004\013\023
\050\107\157\040\104\141\144\144\171\040\103\154\141\163\163\040
\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040

\101\165\164\150\157\162\151\164\171\060\202\001\040\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\015
\000\060\202\001\010\002\202\001\001\000\336\235\327\352\127\030
\111\241\133\353\327\137\110\206\352\276\335\377\344\357\147\034
\364\145\150\263\127\161\240\136\167\273\355\233\111\351\160\200
\075\126\030\143\010\157\332\362\314\320\077\177\002\124\042\124
\020\330\262\201\324\300\165\075\113\177\307\167\303\076\170\253
\032\003\265\040\153\057\152\053\261\305\210\176\304\273\036\260
\301\330\105\047\157\252\067\130\367\207\046\327\330\055\366\251
\027\267\037\162\066\116\246\027\077\145\230\222\333\052\156\135
\242\376\210\340\013\336\177\345\215\025\341\353\313\072\325\342
\022\242\023\055\330\216\257\137\022\075\240\010\005\010\266\134
\245\145\070\004\105\231\036\243\140\140\164\305\101\245\162\142
\033\142\305\037\157\137\032\102\276\002\121\145\250\256\043\030
\152\374\170\003\251\115\177\200\303\372\253\132\374\241\100\244
\312\031\026\376\262\310\357\136\163\015\356\167\275\232\366\171
\230\274\261\007\147\242\025\015\335\240\130\306\104\173\012\076
\142\050\137\272\101\007\123\130\317\021\176\070\164\305\370\377
\265\151\220\217\204\164\352\227\033\257\002\001\003\243\201\300
\060\201\275\060\035\006\003\125\035\016\004\026\004\024\322\304
\260\322\221\324\114\021\161\263\141\313\075\241\376\335\250\152
\324\343\060\201\215\006\003\125\035\043\004\201\205\060\201\202
\200\024\322\304\260\322\221\324\114\021\161\263\141\313\075\241
\376\335\250\152\324\343\241\147\244\145\060\143\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\041\060\037\006\003\125
\004\012\023\030\124\150\145\040\107\157\040\104\141\144\144\171
\040\107\162\157\165\160\054\040\111\156\143\056\061\061\060\057
\006\003\125\004\013\023\050\107\157\040\104\141\144\144\171\040
\103\154\141\163\163\040\062\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\202
\001\000\060\014\006\003\125\035\023\004\005\060\003\001\001\377
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\062\113\363\262\312\076\221\374\022\306\241\007
\214\216\167\240\063\006\024\134\220\036\030\367\010\246\075\012
\031\371\207\200\021\156\151\344\226\027\060\377\064\221\143\162
\070\356\314\034\001\243\035\224\050\244\061\366\172\304\124\327
\366\345\061\130\003\242\314\316\142\333\224\105\163\265\277\105
\311\044\265\325\202\002\255\043\171\151\215\270\266\115\316\317
\114\312\063\043\350\034\210\252\235\213\101\156\026\311\040\345
\211\236\315\073\332\160\367\176\231\046\040\024\124\045\253\156
\163\205\346\233\041\235\012\154\202\016\250\370\302\014\372\020
\036\154\226\357\207\015\304\017\141\213\255\356\203\053\225\370
\216\222\204\162\071\353\040\352\203\355\203\315\227\156\010\274
\353\116\046\266\163\053\344\323\366\114\376\046\161\342\141\021
\164\112\377\127\032\207\017\165\110\056\317\121\151\027\240\002
\022\141\225\325\321\100\262\020\114\356\304\254\020\103\246\245
\236\012\325\225\142\232\015\317\210\202\305\062\014\344\053\237
\105\346\015\237\050\234\261\271\052\132\127\255\067\017\257\035

\177\333\275\237
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Go Daddy Class 2 CA"
Issuer: OU=Go Daddy Class 2 Certification Authority,O="The Go Daddy Group, Inc.",C=US
Serial Number: 0 (0x0)
Subject: OU=Go Daddy Class 2 Certification Authority,O="The Go Daddy Group, Inc.",C=US
Not Valid Before: Tue Jun 29 17:06:20 2004
Not Valid After : Thu Jun 29 17:06:20 2034
Fingerprint (SHA-256):
C3:84:6B:F2:4B:9E:93:CA:64:27:4C:0E:C6:7C:1E:CC:5E:02:4F:FC:AC:D2:D7:40:19:35:0E:81:FE:54:6A:E4
Fingerprint (SHA1): 27:96:BA:E6:3F:18:01:E2:77:26:1B:A0:D7:77:70:02:8F:20:EE:E4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Go Daddy Class 2 CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\047\226\272\346\077\030\001\342\167\046\033\240\327\167\160\002
\217\040\356\344
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\221\336\006\045\253\332\375\062\027\014\273\045\027\052\204\147
END
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\124\150\145\040\107\157
\040\104\141\144\144\171\040\107\162\157\165\160\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\013\023\050\107\157\040
\104\141\144\144\171\040\103\154\141\163\163\040\062\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Starfield Class 2 CA"
#
Issuer: OU=Starfield Class 2 Certification Authority,O="Starfield Technologies, Inc.",C=US

Serial Number: 0 (0x0)
Subject: OU=Starfield Class 2 Certification Authority,O="Starfield Technologies, Inc.",C=US
Not Valid Before: Tue Jun 29 17:39:16 2004
Not Valid After : Thu Jun 29 17:39:16 2034
Fingerprint (SHA-256):
14:65:FA:20:53:97:B8:76:FA:A6:F0:A9:95:8E:55:90:E4:0F:CC:7F:AA:4F:B7:C2:C8:67:75:21:FB:5F:B6:58
Fingerprint (SHA1): AD:7E:1C:28:B0:64:EF:8F:60:03:40:20:14:C3:D0:E3:37:0E:B5:8A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Class 2 CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\045\060\043\006\003\125\004\012\023\034\123\164\141\162\146\151
\145\154\144\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\062\060\060\006\003\125\004\013\023
\051\123\164\141\162\146\151\145\154\144\040\103\154\141\163\163
\040\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\045\060\043\006\003\125\004\012\023\034\123\164\141\162\146\151
\145\154\144\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\062\060\060\006\003\125\004\013\023
\051\123\164\141\162\146\151\145\154\144\040\103\154\141\163\163
\040\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\017\060\202\002\367\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\150\061\013\060\011\006\003\125\004\006\023\002\125\123\061\045
\060\043\006\003\125\004\012\023\034\123\164\141\162\146\151\145
\154\144\040\124\145\143\150\156\157\154\157\147\151\145\163\054
\040\111\156\143\056\061\062\060\060\006\003\125\004\013\023\051
\123\164\141\162\146\151\145\154\144\040\103\154\141\163\163\040
\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\060\036\027\015\060\064\060
\066\062\071\061\067\063\071\061\066\132\027\015\063\064\060\066
\062\071\061\067\063\071\061\066\132\060\150\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\045\060\043\006\003\125\004

\012\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143
\150\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061
\062\060\060\006\003\125\004\013\023\051\123\164\141\162\146\151
\145\154\144\040\103\154\141\163\163\040\062\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\060\202\001\040\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\015\000\060\202\001\010\002
\202\001\001\000\267\062\310\376\351\161\246\004\205\255\014\021
\144\337\316\115\357\310\003\030\207\077\241\253\373\074\246\237
\360\303\241\332\324\330\156\053\123\220\373\044\244\076\204\360
\236\350\137\354\345\047\104\365\050\246\077\173\336\340\052\360
\310\257\123\057\236\312\005\001\223\036\217\146\034\071\247\115
\372\132\266\163\004\045\146\353\167\177\347\131\306\112\231\045
\024\124\353\046\307\363\177\031\325\060\160\217\257\260\106\052
\377\255\353\051\355\327\237\252\004\207\243\324\371\211\245\064
\137\333\103\221\202\066\331\146\074\261\270\271\202\375\234\072
\076\020\310\073\357\006\145\146\172\233\031\030\075\377\161\121
\074\060\056\137\276\075\167\163\262\135\006\154\303\043\126\232
\053\205\046\222\034\247\002\263\344\077\015\257\010\171\202\270
\066\075\352\234\323\065\263\274\151\312\365\314\235\350\375\144
\215\027\200\063\156\136\112\135\231\311\036\207\264\235\032\300
\325\156\023\065\043\136\337\233\137\075\357\326\367\166\302\352
\076\273\170\015\034\102\147\153\004\330\370\326\332\157\213\362
\104\240\001\253\002\001\003\243\201\305\060\201\302\060\035\006
\003\125\035\016\004\026\004\024\277\137\267\321\316\335\037\206
\364\133\125\254\334\327\020\302\016\251\210\347\060\201\222\006
\003\125\035\043\004\201\212\060\201\207\200\024\277\137\267\321
\316\335\037\206\364\133\125\254\334\327\020\302\016\251\210\347
\241\154\244\152\060\150\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\045\060\043\006\003\125\004\012\023\034\123\164
\141\162\146\151\145\154\144\040\124\145\143\150\156\157\154\157
\147\151\145\163\054\040\111\156\143\056\061\062\060\060\006\003
\125\004\013\023\051\123\164\141\162\146\151\145\154\144\040\103
\154\141\163\163\040\062\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\202\001
\000\060\014\006\003\125\035\023\004\005\060\003\001\001\377\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\001\001\000\005\235\077\210\235\321\311\032\125\241\254\151\363
\363\131\332\233\001\207\032\117\127\251\241\171\011\052\333\367
\057\262\036\314\307\136\152\330\203\207\241\227\357\111\065\076
\167\006\101\130\142\277\216\130\270\012\147\077\354\263\335\041
\146\037\311\124\372\162\314\075\114\100\330\201\257\167\236\203
\172\273\242\307\365\064\027\216\331\021\100\364\374\054\052\115
\025\177\247\142\135\056\045\323\000\013\040\032\035\150\371\027
\270\364\275\213\355\050\131\335\115\026\213\027\203\310\262\145
\307\055\172\245\252\274\123\206\155\335\127\244\312\370\040\101
\013\150\360\364\373\164\276\126\135\172\171\365\371\035\205\343
\055\225\276\365\161\220\103\314\215\037\232\000\012\207\051\351

\125\042\130\000\043\352\343\022\103\051\133\107\010\335\214\101
\152\145\006\250\345\041\252\101\264\225\041\225\271\175\321\064
\253\023\326\255\274\334\342\075\071\315\275\076\165\160\241\030
\131\003\311\042\264\217\234\325\136\052\327\245\266\324\012\155
\370\267\100\021\106\232\037\171\016\142\277\017\227\354\340\057
\037\027\224
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Starfield Class 2 CA"
Issuer: OU=Starfield Class 2 Certification Authority,O="Starfield Technologies, Inc.",C=US
Serial Number: 0 (0x0)
Subject: OU=Starfield Class 2 Certification Authority,O="Starfield Technologies, Inc.",C=US
Not Valid Before: Tue Jun 29 17:39:16 2004
Not Valid After : Thu Jun 29 17:39:16 2034
Fingerprint (SHA-256):
14:65:FA:20:53:97:B8:76:FA:A6:F0:A9:95:8E:55:90:E4:0F:CC:7F:AA:4F:B7:C2:C8:67:75:21:FB:5F:B6:58
Fingerprint (SHA1): AD:7E:1C:28:B0:64:EF:8F:60:03:40:20:14:C3:D0:E3:37:0E:B5:8A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Class 2 CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\255\176\034\050\260\144\357\217\140\003\100\040\024\303\320\343
\067\016\265\212
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\062\112\113\273\310\143\151\233\276\164\232\306\335\035\106\044
END
CKA_ISSUER MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\045\060\043\006\003\125\004\012\023\034\123\164\141\162\146\151
\145\154\144\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\062\060\060\006\003\125\004\013\023
\051\123\164\141\162\146\151\145\154\144\040\103\154\141\163\163
\040\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Assured ID Root CA"
#
Issuer: CN=DigiCert Assured ID Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0c:e7:e0:e5:17:d8:46:fe:8f:e5:60:fc:1b:f0:30:39
Subject: CN=DigiCert Assured ID Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
3E:90:99:B5:01:5E:8F:48:6C:00:BC:EA:9D:11:1E:E7:21:FA:BA:35:5A:89:BC:F1:DF:69:56:1E:3D:C6:32:5C
Fingerprint (SHA1): 05:63:B8:63:0D:62:D7:5A:BB:C8:AB:1E:4B:DF:B5:A8:99:B2:4D:43
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\014\347\340\345\027\330\106\376\217\345\140\374\033\360
\060\071
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\267\060\202\002\237\240\003\002\001\002\002\020\014
\347\340\345\027\330\106\376\217\345\140\374\033\360\060\071\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\145
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167

\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\044\060\042\006\003\125\004\003\023\033\104\151\147\151\103\145
\162\164\040\101\163\163\165\162\145\144\040\111\104\040\122\157
\157\164\040\103\101\060\036\027\015\060\066\061\061\061\060\060
\060\060\060\060\060\132\027\015\063\061\061\061\061\060\060\060
\060\060\060\060\132\060\145\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\025\060\023\006\003\125\004\012\023\014\104
\151\147\151\103\145\162\164\040\111\156\143\061\031\060\027\006
\003\125\004\013\023\020\167\167\167\056\144\151\147\151\143\145
\162\164\056\143\157\155\061\044\060\042\006\003\125\004\003\023
\033\104\151\147\151\103\145\162\164\040\101\163\163\165\162\145
\144\040\111\104\040\122\157\157\164\040\103\101\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\255\016\025
\316\344\103\200\134\261\207\363\267\140\371\161\022\245\256\334
\046\224\210\252\364\316\365\040\071\050\130\140\014\370\200\332
\251\025\225\062\141\074\265\261\050\204\212\212\334\237\012\014
\203\027\172\217\220\254\212\347\171\123\134\061\204\052\366\017
\230\062\066\166\314\336\335\074\250\242\357\152\373\041\362\122
\141\337\237\040\327\037\342\261\331\376\030\144\322\022\133\137
\371\130\030\065\274\107\315\241\066\371\153\177\324\260\070\076
\301\033\303\214\063\331\330\057\030\376\050\017\263\247\203\326
\303\156\104\300\141\065\226\026\376\131\234\213\166\155\327\361
\242\113\015\053\377\013\162\332\236\140\320\216\220\065\306\170
\125\207\040\241\317\345\155\012\310\111\174\061\230\063\154\042
\351\207\320\062\132\242\272\023\202\021\355\071\027\235\231\072
\162\241\346\372\244\331\325\027\061\165\256\205\175\042\256\077
\001\106\206\366\050\171\310\261\332\344\127\027\304\176\034\016
\260\264\222\246\126\263\275\262\227\355\252\247\360\267\305\250
\077\225\026\320\377\241\226\353\010\137\030\167\117\002\003\001
\000\001\243\143\060\141\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\105\353\242\257\364\222\313\202\061\055\121\213\247\247
\041\235\363\155\310\017\060\037\006\003\125\035\043\004\030\060
\026\200\024\105\353\242\257\364\222\313\202\061\055\121\213\247
\247\041\235\363\155\310\017\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\001\001\000\242\016\274\337\342
\355\360\343\162\163\172\144\224\277\367\162\146\330\062\344\102
\165\142\256\207\353\362\325\331\336\126\263\237\314\316\024\050
\271\015\227\140\134\022\114\130\344\323\075\203\111\105\130\227
\065\151\032\250\107\352\126\306\171\253\022\330\147\201\204\337
\177\011\074\224\346\270\046\054\040\275\075\263\050\211\367\137
\377\042\342\227\204\037\351\145\357\207\340\337\301\147\111\263
\135\353\262\011\052\353\046\355\170\276\175\077\053\363\267\046
\065\155\137\211\001\266\111\133\237\001\005\233\253\075\045\301
\314\266\177\302\361\157\206\306\372\144\150\353\201\055\224\353
\102\267\372\214\036\335\142\361\276\120\147\267\154\275\363\361

\037\153\014\066\007\026\177\067\174\251\133\155\172\361\022\106
\140\203\327\047\004\276\113\316\227\276\303\147\052\150\021\337
\200\347\014\063\146\277\023\015\024\156\363\177\037\143\020\036
\372\215\033\045\155\154\217\245\267\141\001\261\322\243\046\241
\020\161\235\255\342\303\371\303\231\121\267\053\007\010\316\056
\346\120\262\247\372\012\105\057\242\360\362
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Assured ID Root CA"
Issuer: CN=DigiCert Assured ID Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0c:e7:e0:e5:17:d8:46:fe:8f:e5:60:fc:1b:f0:30:39
Subject: CN=DigiCert Assured ID Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
3E:90:99:B5:01:5E:8F:48:6C:00:BC:EA:9D:11:1E:E7:21:FA:BA:35:5A:89:BC:F1:DF:69:56:1E:3D:C6:32:5C
Fingerprint (SHA1): 05:63:B8:63:0D:62:D7:5A:BB:C8:AB:1E:4B:DF:B5:A8:99:B2:4D:43
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\005\143\270\143\015\142\327\132\273\310\253\036\113\337\265\250
\231\262\115\103
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\207\316\013\173\052\016\111\000\341\130\161\233\067\250\223\162
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\014\347\340\345\027\330\106\376\217\345\140\374\033\360
\060\071
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Global Root CA"
#
Issuer: CN=DigiCert Global Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:08:3b:e0:56:90:42:46:b1:a1:75:6a:c9:59:91:c7:4a
Subject: CN=DigiCert Global Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
43:48:A0:E9:44:4C:78:CB:26:5E:05:8D:5E:89:44:B4:D8:4F:96:62:BD:26:DB:25:7F:89:34:A4:43:C7:01:61
Fingerprint (SHA1): A8:98:5D:3A:65:E5:E5:C4:B2:D7:D6:6D:40:C6:DD:2F:B1:9C:54:36
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\010\073\340\126\220\102\106\261\241\165\152\311\131\221
\307\112
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\257\060\202\002\227\240\003\002\001\002\002\020\010
\073\340\126\220\102\106\261\241\165\152\311\131\221\307\112\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\141
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164

\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\040\060\036\006\003\125\004\003\023\027\104\151\147\151\103\145
\162\164\040\107\154\157\142\141\154\040\122\157\157\164\040\103
\101\060\036\027\015\060\066\061\061\061\060\060\060\060\060\060
\060\132\027\015\063\061\061\061\061\060\060\060\060\060\060\060
\132\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103
\145\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013
\023\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143
\157\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147
\151\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157
\164\040\103\101\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\342\073\341\021\162\336\250\244\323\243\127
\252\120\242\217\013\167\220\311\242\245\356\022\316\226\133\001
\011\040\314\001\223\247\116\060\267\123\367\103\304\151\000\127
\235\342\215\042\335\207\006\100\000\201\011\316\316\033\203\277
\337\315\073\161\106\342\326\146\307\005\263\166\047\026\217\173
\236\036\225\175\356\267\110\243\010\332\326\257\172\014\071\006
\145\177\112\135\037\274\027\370\253\276\356\050\327\164\177\172
\170\231\131\205\150\156\134\043\062\113\277\116\300\350\132\155
\343\160\277\167\020\277\374\001\366\205\331\250\104\020\130\062
\251\165\030\325\321\242\276\107\342\047\152\364\232\063\370\111
\010\140\213\324\137\264\072\204\277\241\252\112\114\175\076\317
\117\137\154\166\136\240\113\067\221\236\334\042\346\155\316\024
\032\216\152\313\376\315\263\024\144\027\307\133\051\236\062\277
\362\356\372\323\013\102\324\253\267\101\062\332\014\324\357\370
\201\325\273\215\130\077\265\033\350\111\050\242\160\332\061\004
\335\367\262\026\362\114\012\116\007\250\355\112\075\136\265\177
\243\220\303\257\047\002\003\001\000\001\243\143\060\141\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\035\006\003\125\035\016\004\026\004\024\003\336\120\065\126\321
\114\273\146\360\243\342\033\033\303\227\262\075\321\125\060\037
\006\003\125\035\043\004\030\060\026\200\024\003\336\120\065\126
\321\114\273\146\360\243\342\033\033\303\227\262\075\321\125\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\001\001\000\313\234\067\252\110\023\022\012\372\335\104\234\117
\122\260\364\337\256\004\365\171\171\010\243\044\030\374\113\053
\204\300\055\271\325\307\376\364\301\037\130\313\270\155\234\172
\164\347\230\051\253\021\265\343\160\240\241\315\114\210\231\223
\214\221\160\342\253\017\034\276\223\251\377\143\325\344\007\140
\323\243\277\235\133\011\361\325\216\343\123\364\216\143\372\077
\247\333\264\146\337\142\146\326\321\156\101\215\362\055\265\352
\167\112\237\235\130\342\053\131\300\100\043\355\055\050\202\105
\076\171\124\222\046\230\340\200\110\250\067\357\360\326\171\140
\026\336\254\350\016\315\156\254\104\027\070\057\111\332\341\105

\076\052\271\066\123\317\072\120\006\367\056\350\304\127\111\154
\141\041\030\325\004\255\170\074\054\072\200\153\247\353\257\025
\024\351\330\211\301\271\070\154\342\221\154\212\377\144\271\167
\045\127\060\300\033\044\243\341\334\351\337\107\174\265\264\044
\010\005\060\354\055\275\013\277\105\277\120\271\251\363\353\230
\001\022\255\310\210\306\230\064\137\215\012\074\306\351\325\225
\225\155\336
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Global Root CA"
Issuer: CN=DigiCert Global Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:08:3b:e0:56:90:42:46:b1:a1:75:6a:c9:59:91:c7:4a
Subject: CN=DigiCert Global Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
43:48:A0:E9:44:4C:78:CB:26:5E:05:8D:5E:89:44:B4:D8:4F:96:62:BD:26:DB:25:7F:89:34:A4:43:C7:01:61
Fingerprint (SHA1): A8:98:5D:3A:65:E5:E5:C4:B2:D7:D6:6D:40:C6:DD:2F:B1:9C:54:36
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\250\230\135\072\145\345\345\304\262\327\326\155\100\306\335\057
\261\234\124\066
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\171\344\251\204\015\175\072\226\327\300\117\342\103\114\211\056
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\010\073\340\126\220\102\106\261\241\165\152\311\131\221
\307\112
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert High Assurance EV Root CA"
#
Issuer: CN=DigiCert High Assurance EV Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:02:ac:5c:26:6a:0b:40:9b:8f:0b:79:f2:ae:46:25:77
Subject: CN=DigiCert High Assurance EV Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
74:31:E5:F4:C3:C1:CE:46:90:77:4F:0B:61:E0:54:40:88:3B:A9:A0:1E:D0:0B:A6:AB:D7:80:6E:D3:B1:18:CF
Fingerprint (SHA1): 5F:B7:EE:06:33:E2:59:DB:AD:0C:4C:9A:E6:D3:8F:1A:61:C7:DC:25
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert High Assurance EV Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\053\060\051\006\003\125\004\003\023\042\104\151\147\151
\103\145\162\164\040\110\151\147\150\040\101\163\163\165\162\141
\156\143\145\040\105\126\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\053\060\051\006\003\125\004\003\023\042\104\151\147\151
\103\145\162\164\040\110\151\147\150\040\101\163\163\165\162\141
\156\143\145\040\105\126\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\002\254\134\046\152\013\100\233\217\013\171\362\256\106
\045\167
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\305\060\202\002\255\240\003\002\001\002\002\020\002
\254\134\046\152\013\100\233\217\013\171\362\256\106\045\167\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\154
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060

\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\053\060\051\006\003\125\004\003\023\042\104\151\147\151\103\145
\162\164\040\110\151\147\150\040\101\163\163\165\162\141\156\143
\145\040\105\126\040\122\157\157\164\040\103\101\060\036\027\015
\060\066\061\061\061\060\060\060\060\060\060\060\132\027\015\063
\061\061\061\061\060\060\060\060\060\060\060\132\060\154\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\025\060\023\006
\003\125\004\012\023\014\104\151\147\151\103\145\162\164\040\111
\156\143\061\031\060\027\006\003\125\004\013\023\020\167\167\167
\056\144\151\147\151\143\145\162\164\056\143\157\155\061\053\060
\051\006\003\125\004\003\023\042\104\151\147\151\103\145\162\164
\040\110\151\147\150\040\101\163\163\165\162\141\156\143\145\040
\105\126\040\122\157\157\164\040\103\101\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\306\314\345\163\346
\373\324\273\345\055\055\062\246\337\345\201\077\311\315\045\111
\266\161\052\303\325\224\064\147\242\012\034\260\137\151\246\100
\261\304\267\262\217\320\230\244\251\101\131\072\323\334\224\326
\074\333\164\070\244\112\314\115\045\202\367\112\245\123\022\070
\356\363\111\155\161\221\176\143\266\253\246\137\303\244\204\370
\117\142\121\276\370\305\354\333\070\222\343\006\345\010\221\014
\304\050\101\125\373\313\132\211\025\176\161\350\065\277\115\162
\011\075\276\072\070\120\133\167\061\033\215\263\307\044\105\232
\247\254\155\000\024\132\004\267\272\023\353\121\012\230\101\101
\042\116\145\141\207\201\101\120\246\171\134\211\336\031\112\127
\325\056\346\135\034\123\054\176\230\315\032\006\026\244\150\163
\320\064\004\023\134\241\161\323\132\174\125\333\136\144\341\067
\207\060\126\004\345\021\264\051\200\022\361\171\071\210\242\002
\021\174\047\146\267\210\267\170\362\312\012\250\070\253\012\144
\302\277\146\135\225\204\301\241\045\036\207\135\032\120\013\040
\022\314\101\273\156\013\121\070\270\113\313\002\003\001\000\001
\243\143\060\141\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\261\076\303\151\003\370\277\107\001\324\230\046\032\010\002\357
\143\144\053\303\060\037\006\003\125\035\043\004\030\060\026\200
\024\261\076\303\151\003\370\277\107\001\324\230\046\032\010\002
\357\143\144\053\303\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\001\001\000\034\032\006\227\334\327\234
\237\074\210\146\006\010\127\041\333\041\107\370\052\147\252\277
\030\062\166\100\020\127\301\212\363\172\331\021\145\216\065\372
\236\374\105\265\236\331\114\061\113\270\221\350\103\054\216\263
\170\316\333\343\123\171\161\326\345\041\224\001\332\125\207\232
\044\144\366\212\146\314\336\234\067\315\250\064\261\151\233\043
\310\236\170\042\053\160\103\343\125\107\061\141\031\357\130\305
\205\057\116\060\366\240\061\026\043\310\347\342\145\026\063\313

\277\032\033\240\075\370\312\136\213\061\213\140\010\211\055\014
\006\134\122\267\304\371\012\230\321\025\137\237\022\276\174\066
\143\070\275\104\244\177\344\046\053\012\304\227\151\015\351\214
\342\300\020\127\270\310\166\022\221\125\362\110\151\330\274\052
\002\133\017\104\324\040\061\333\364\272\160\046\135\220\140\236
\274\113\027\011\057\264\313\036\103\150\311\007\047\301\322\134
\367\352\041\271\150\022\234\074\234\277\236\374\200\134\233\143
\315\354\107\252\045\047\147\240\067\363\000\202\175\124\327\251
\370\351\056\023\243\167\350\037\112
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert High Assurance EV Root CA"
Issuer: CN=DigiCert High Assurance EV Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:02:ac:5c:26:6a:0b:40:9b:8f:0b:79:f2:ae:46:25:77
Subject: CN=DigiCert High Assurance EV Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
74:31:E5:F4:C3:C1:CE:46:90:77:4F:0B:61:E0:54:40:88:3B:A9:A0:1E:D0:0B:A6:AB:D7:80:6E:D3:B1:18:CF
Fingerprint (SHA1): 5F:B7:EE:06:33:E2:59:DB:AD:0C:4C:9A:E6:D3:8F:1A:61:C7:DC:25
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert High Assurance EV Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\137\267\356\006\063\342\131\333\255\014\114\232\346\323\217\032
\141\307\334\045
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\324\164\336\127\134\071\262\323\234\205\203\305\300\145\111\212
END
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\053\060\051\006\003\125\004\003\023\042\104\151\147\151
\103\145\162\164\040\110\151\147\150\040\101\163\163\165\162\141
\156\143\145\040\105\126\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\002\254\134\046\152\013\100\233\217\013\171\362\256\106
\045\167
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SwissSign Platinum CA - G2"
#
Issuer: CN=SwissSign Platinum CA - G2,O=SwissSign AG,C=CH
Serial Number:4e:b2:00:67:0c:03:5d:4f
Subject: CN=SwissSign Platinum CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:36:00 2006
Not Valid After : Sat Oct 25 08:36:00 2036
Fingerprint (SHA-256):
3B:22:2E:56:67:11:E9:92:30:0D:C0:B1:5A:B9:47:3D:AF:DE:F8:C8:4D:0C:EF:7D:33:17:B4:C1:82:1D:14:36
Fingerprint (SHA1): 56:E0:FA:C0:3B:8F:18:23:55:18:E5:D3:11:CA:E8:C2:43:31:AB:66
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Platinum CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\043\060\041\006\003\125\004\003\023
\032\123\167\151\163\163\123\151\147\156\040\120\154\141\164\151
\156\165\155\040\103\101\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\043\060\041\006\003\125\004\003\023
\032\123\167\151\163\163\123\151\147\156\040\120\154\141\164\151
\156\165\155\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\116\262\000\147\014\003\135\117
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\301\060\202\003\251\240\003\002\001\002\002\010\116
\262\000\147\014\003\135\117\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\111\061\013\060\011\006\003\125\004
\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023\014
\123\167\151\163\163\123\151\147\156\040\101\107\061\043\060\041
\006\003\125\004\003\023\032\123\167\151\163\163\123\151\147\156
\040\120\154\141\164\151\156\165\155\040\103\101\040\055\040\107

\062\060\036\027\015\060\066\061\060\062\065\060\070\063\066\060
\060\132\027\015\063\066\061\060\062\065\060\070\063\066\060\060
\132\060\111\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163
\123\151\147\156\040\101\107\061\043\060\041\006\003\125\004\003
\023\032\123\167\151\163\163\123\151\147\156\040\120\154\141\164
\151\156\165\155\040\103\101\040\055\040\107\062\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\312\337\242
\002\342\332\370\374\007\026\261\336\140\252\336\226\134\144\037
\307\057\176\317\147\372\104\102\326\166\143\225\256\353\257\162
\040\212\105\107\206\142\170\206\326\040\071\046\364\256\243\375
\043\347\245\234\265\042\041\031\267\067\223\042\300\120\234\202
\173\324\325\004\104\134\313\264\302\237\222\276\044\330\173\147
\042\342\151\137\345\005\170\324\207\331\161\160\063\045\123\264
\207\073\051\220\050\066\232\125\104\060\150\244\203\227\177\015
\036\234\166\377\025\235\140\227\000\215\212\205\003\354\200\276
\352\054\156\020\121\222\314\176\325\243\063\330\326\111\336\130
\052\257\366\026\353\113\173\220\062\227\271\272\235\130\361\370
\127\111\004\036\242\135\006\160\335\161\333\371\335\213\232\033
\214\317\075\243\115\316\313\174\366\273\234\240\372\011\316\043
\142\262\351\015\037\342\162\050\217\237\254\150\040\175\157\073
\250\205\061\011\177\013\307\350\145\351\343\170\016\011\147\060
\213\064\202\373\135\340\314\235\201\155\142\356\010\036\004\054
\116\233\354\376\251\117\137\375\151\170\357\011\037\241\264\277
\372\363\357\220\036\114\005\213\036\352\172\221\172\303\327\345
\373\060\274\154\033\020\130\230\367\032\137\320\051\062\003\023
\106\115\141\152\205\114\122\164\057\006\037\173\021\342\204\227
\306\231\363\155\177\327\147\203\176\023\150\330\161\050\132\330
\316\335\350\020\024\232\376\155\043\207\156\216\132\160\074\325
\215\011\000\247\252\274\260\061\067\155\310\204\024\036\133\275
\105\143\040\153\113\164\214\275\333\072\016\301\317\132\026\217
\245\230\362\166\211\262\023\022\073\013\167\167\254\273\345\074
\051\112\222\162\312\141\032\053\136\114\342\203\164\167\372\065
\110\172\205\115\215\232\123\304\337\170\312\227\221\110\053\105
\053\001\367\034\032\242\355\030\272\012\275\203\372\157\274\215
\127\223\073\324\324\246\316\036\361\240\261\316\253\375\053\050
\232\117\033\327\303\162\333\244\304\277\135\114\365\335\173\226
\151\356\150\200\346\347\230\272\066\267\376\156\355\053\275\040
\370\145\031\332\125\011\176\045\334\376\141\142\162\371\176\030
\002\357\143\264\320\373\257\345\073\143\214\147\217\002\003\001
\000\001\243\201\254\060\201\251\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\120\257\314\007\207\025\107\157\070\305\264\145
\321\336\225\252\351\337\234\314\060\037\006\003\125\035\043\004
\030\060\026\200\024\120\257\314\007\207\025\107\157\070\305\264
\145\321\336\225\252\351\337\234\314\060\106\006\003\125\035\040

\004\077\060\075\060\073\006\011\140\205\164\001\131\001\001\001
\001\060\056\060\054\006\010\053\006\001\005\005\007\002\001\026
\040\150\164\164\160\072\057\057\162\145\160\157\163\151\164\157
\162\171\056\163\167\151\163\163\163\151\147\156\056\143\157\155
\057\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\002\001\000\010\205\246\365\026\014\374\104\032\301\143
\340\371\125\106\010\374\160\034\102\050\226\216\267\305\301\101
\165\116\011\161\171\345\155\226\312\113\245\210\140\320\060\164
\270\312\010\334\264\060\236\100\007\026\153\145\225\167\001\256
\244\267\065\013\201\332\161\025\251\164\027\070\173\130\312\371
\057\373\300\145\166\215\133\001\271\175\336\202\075\144\270\276
\024\164\243\012\124\323\054\225\030\027\065\365\121\153\077\217
\242\226\141\071\170\153\113\345\246\240\370\123\337\121\020\223
\142\347\200\057\342\321\340\274\216\066\106\167\063\354\270\373
\216\232\054\211\115\061\021\017\046\236\004\273\267\004\215\013
\362\271\374\132\235\073\026\267\057\310\230\253\376\212\120\131
\056\243\073\374\051\135\213\301\113\311\342\212\023\035\261\277
\273\102\035\122\335\116\330\024\136\020\306\061\007\357\161\047
\367\033\071\011\334\202\352\213\263\225\206\136\375\365\332\135
\061\246\340\061\266\224\346\104\111\164\305\026\345\367\037\003
\141\050\305\310\313\022\240\102\113\371\153\210\010\215\264\062
\030\363\165\237\304\177\000\117\005\225\234\243\027\002\303\263
\123\233\252\040\071\051\053\146\372\235\257\136\263\222\322\265
\246\341\032\371\055\101\151\201\024\264\264\265\355\211\075\316
\373\251\235\065\102\104\261\034\024\163\201\317\052\001\065\232
\061\325\055\217\155\204\337\200\115\127\343\077\305\204\165\332
\211\306\060\273\353\217\313\042\010\240\256\252\361\003\154\072
\113\115\011\245\016\162\306\126\153\041\102\116\043\045\024\150
\256\166\012\174\014\007\160\144\371\232\057\366\005\071\046\306
\014\217\031\177\103\136\156\364\133\025\057\333\141\135\346\147
\057\077\010\224\371\140\264\230\061\332\164\361\204\223\161\115
\137\373\140\130\321\373\304\301\155\211\242\273\040\037\235\161
\221\313\062\233\023\075\076\175\222\122\065\254\222\224\242\323
\030\302\174\307\352\257\166\005\026\335\147\047\302\176\034\007
\042\041\363\100\012\033\064\007\104\023\302\204\152\216\337\031
\132\277\177\353\035\342\032\070\321\134\257\107\222\153\200\265
\060\245\311\215\330\253\061\201\037\337\302\146\067\323\223\251
\205\206\171\145\322
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SwissSign Platinum CA - G2"
Issuer: CN=SwissSign Platinum CA - G2,O=SwissSign AG,C=CH
Serial Number:4e:b2:00:67:0c:03:5d:4f
Subject: CN=SwissSign Platinum CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:36:00 2006

Not Valid After : Sat Oct 25 08:36:00 2036
Fingerprint (SHA-256):
3B:22:2E:56:67:11:E9:92:30:0D:C0:B1:5A:B9:47:3D:AF:DE:F8:C8:4D:0C:EF:7D:33:17:B4:C1:82:1D:14:36
Fingerprint (SHA1): 56:E0:FA:C0:3B:8F:18:23:55:18:E5:D3:11:CA:E8:C2:43:31:AB:66
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Platinum CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\126\340\372\300\073\217\030\043\125\030\345\323\021\312\350\302
\103\061\253\146
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\311\230\047\167\050\036\075\016\025\074\204\000\270\205\003\346
END
CKA_ISSUER MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\043\060\041\006\003\125\004\003\023
\032\123\167\151\163\163\123\151\147\156\040\120\154\141\164\151
\156\165\155\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\116\262\000\147\014\003\135\117
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SwissSign Gold CA - G2"
#
Issuer: CN=SwissSign Gold CA - G2,O=SwissSign AG,C=CH
Serial Number:00:bb:40:1c:43:f5:5e:4f:b0
Subject: CN=SwissSign Gold CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:30:35 2006
Not Valid After : Sat Oct 25 08:30:35 2036
Fingerprint (SHA-256):
62:DD:0B:E9:B9:F5:0A:16:3E:A0:F8:E7:5C:05:3B:1E:CA:57:EA:55:C8:68:8F:64:7C:68:81:F2:C8:35:7B:95
Fingerprint (SHA1): D8:C5:38:8A:B7:30:1B:1B:6E:D4:7A:E6:45:25:3A:6F:9F:1A:27:61
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Gold CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509

CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\037\060\035\006\003\125\004\003\023
\026\123\167\151\163\163\123\151\147\156\040\107\157\154\144\040
\103\101\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\037\060\035\006\003\125\004\003\023
\026\123\167\151\163\163\123\151\147\156\040\107\157\154\144\040
\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\273\100\034\103\365\136\117\260
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\272\060\202\003\242\240\003\002\001\002\002\011\000
\273\100\034\103\365\136\117\260\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\060\105\061\013\060\011\006\003\125
\004\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023
\014\123\167\151\163\163\123\151\147\156\040\101\107\061\037\060
\035\006\003\125\004\003\023\026\123\167\151\163\163\123\151\147
\156\040\107\157\154\144\040\103\101\040\055\040\107\062\060\036
\027\015\060\066\061\060\062\065\060\070\063\060\063\065\132\027
\015\063\066\061\060\062\065\060\070\063\060\063\065\132\060\105
\061\013\060\011\006\003\125\004\006\023\002\103\110\061\025\060
\023\006\003\125\004\012\023\014\123\167\151\163\163\123\151\147
\156\040\101\107\061\037\060\035\006\003\125\004\003\023\026\123
\167\151\163\163\123\151\147\156\040\107\157\154\144\040\103\101
\040\055\040\107\062\060\202\002\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002
\012\002\202\002\001\000\257\344\356\176\213\044\016\022\156\251
\120\055\026\104\073\222\222\134\312\270\135\204\222\102\023\052
\274\145\127\202\100\076\127\044\315\120\213\045\052\267\157\374
\357\242\320\300\037\002\044\112\023\226\217\043\023\346\050\130
\000\243\107\307\006\247\204\043\053\273\275\226\053\177\125\314
\213\301\127\037\016\142\145\017\335\075\126\212\163\332\256\176
\155\272\201\034\176\102\214\040\065\331\103\115\204\372\204\333
\122\054\363\016\047\167\013\153\277\021\057\162\170\237\056\330
\076\346\030\067\132\052\162\371\332\142\220\222\225\312\037\234
\351\263\074\053\313\363\001\023\277\132\317\301\265\012\140\275
\335\265\231\144\123\270\240\226\263\157\342\046\167\221\214\340
\142\020\002\237\064\017\244\325\222\063\121\336\276\215\272\204
\172\140\074\152\333\237\053\354\336\336\001\077\156\115\345\120
\206\313\264\257\355\104\100\305\312\132\214\332\322\053\174\250

\356\276\246\345\012\252\016\245\337\005\122\267\125\307\042\135
\062\152\227\227\143\023\333\311\333\171\066\173\205\072\112\305
\122\211\371\044\347\235\167\251\202\377\125\034\245\161\151\053
\321\002\044\362\263\046\324\153\332\004\125\345\301\012\307\155
\060\067\220\052\344\236\024\063\136\026\027\125\305\133\265\313
\064\211\222\361\235\046\217\241\007\324\306\262\170\120\333\014
\014\013\174\013\214\101\327\271\351\335\214\210\367\243\115\262
\062\314\330\027\332\315\267\316\146\235\324\375\136\377\275\227
\076\051\165\347\176\247\142\130\257\045\064\245\101\307\075\274
\015\120\312\003\003\017\010\132\037\225\163\170\142\277\257\162
\024\151\016\245\345\003\016\170\216\046\050\102\360\007\013\142
\040\020\147\071\106\372\251\003\314\004\070\172\146\357\040\203
\265\214\112\126\216\221\000\374\216\134\202\336\210\240\303\342
\150\156\175\215\357\074\335\145\364\135\254\121\357\044\200\256
\252\126\227\157\371\255\175\332\141\077\230\167\074\245\221\266
\034\214\046\332\145\242\011\155\301\342\124\343\271\312\114\114
\200\217\167\173\140\232\036\337\266\362\110\036\016\272\116\124
\155\230\340\341\242\032\242\167\120\317\304\143\222\354\107\031
\235\353\346\153\316\301\002\003\001\000\001\243\201\254\060\201
\251\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\035\006\003\125\035\016\004\026\004\024\133\045\173
\226\244\145\121\176\270\071\363\300\170\146\136\350\072\347\360
\356\060\037\006\003\125\035\043\004\030\060\026\200\024\133\045
\173\226\244\145\121\176\270\071\363\300\170\146\136\350\072\347
\360\356\060\106\006\003\125\035\040\004\077\060\075\060\073\006
\011\140\205\164\001\131\001\002\001\001\060\056\060\054\006\010
\053\006\001\005\005\007\002\001\026\040\150\164\164\160\072\057
\057\162\145\160\157\163\151\164\157\162\171\056\163\167\151\163
\163\163\151\147\156\056\143\157\155\057\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\002\001\000\047\272
\343\224\174\361\256\300\336\027\346\345\330\325\365\124\260\203
\364\273\315\136\005\173\117\237\165\146\257\074\350\126\176\374
\162\170\070\003\331\053\142\033\000\271\370\351\140\315\314\316
\121\212\307\120\061\156\341\112\176\030\057\151\131\266\075\144
\201\053\343\203\204\346\042\207\216\175\340\356\002\231\141\270
\036\364\270\053\210\022\026\204\302\061\223\070\226\061\246\271
\073\123\077\303\044\223\126\133\151\222\354\305\301\273\070\000
\343\354\027\251\270\334\307\174\001\203\237\062\107\272\122\042
\064\035\062\172\011\126\247\174\045\066\251\075\113\332\300\202
\157\012\273\022\310\207\113\047\021\371\036\055\307\223\077\236
\333\137\046\153\122\331\056\212\361\024\306\104\215\025\251\267
\277\275\336\246\032\356\256\055\373\110\167\027\376\273\354\257
\030\365\052\121\360\071\204\227\225\154\156\033\303\053\304\164
\140\171\045\260\012\047\337\337\136\322\071\317\105\175\102\113
\337\263\054\036\305\306\135\312\125\072\240\234\151\232\217\332
\357\262\260\074\237\207\154\022\053\145\160\025\122\061\032\044
\317\157\061\043\120\037\214\117\217\043\303\164\101\143\034\125

\250\024\335\076\340\121\120\317\361\033\060\126\016\222\260\202
\205\330\203\313\042\144\274\055\270\045\325\124\242\270\006\352
\255\222\244\044\240\301\206\265\112\023\152\107\317\056\013\126
\225\124\313\316\232\333\152\264\246\262\333\101\010\206\047\167
\367\152\240\102\154\013\070\316\327\165\120\062\222\302\337\053
\060\042\110\320\325\101\070\045\135\244\351\135\237\306\224\165
\320\105\375\060\227\103\217\220\253\012\307\206\163\140\112\151
\055\336\245\170\327\006\332\152\236\113\076\167\072\040\023\042
\001\320\277\150\236\143\140\153\065\115\013\155\272\241\075\300
\223\340\177\043\263\125\255\162\045\116\106\371\322\026\357\260
\144\301\001\236\351\312\240\152\230\016\317\330\140\362\057\111
\270\344\102\341\070\065\026\364\310\156\117\367\201\126\350\272
\243\276\043\257\256\375\157\003\340\002\073\060\166\372\033\155
\101\317\001\261\351\270\311\146\364\333\046\363\072\244\164\362
\111\044\133\311\260\320\127\301\372\076\172\341\227\311
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SwissSign Gold CA - G2"
Issuer: CN=SwissSign Gold CA - G2,O=SwissSign AG,C=CH
Serial Number:00:bb:40:1c:43:f5:5e:4f:b0
Subject: CN=SwissSign Gold CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:30:35 2006
Not Valid After : Sat Oct 25 08:30:35 2036
Fingerprint (SHA-256):
62:DD:0B:E9:B9:F5:0A:16:3E:A0:F8:E7:5C:05:3B:1E:CA:57:EA:55:C8:68:8F:64:7C:68:81:F2:C8:35:7B:95
Fingerprint (SHA1): D8:C5:38:8A:B7:30:1B:1B:6E:D4:7A:E6:45:25:3A:6F:9F:1A:27:61
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Gold CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\330\305\070\212\267\060\033\033\156\324\172\346\105\045\072\157
\237\032\047\141
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\044\167\331\250\221\321\073\372\210\055\302\377\370\315\063\223
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\037\060\035\006\003\125\004\003\023
\026\123\167\151\163\163\123\151\147\156\040\107\157\154\144\040
\103\101\040\055\040\107\062
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\273\100\034\103\365\136\117\260
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SwissSign Silver CA - G2"
#
Issuer: CN=SwissSign Silver CA - G2,O=SwissSign AG,C=CH
Serial Number:4f:1b:d4:2f:54:bb:2f:4b
Subject: CN=SwissSign Silver CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:32:46 2006
Not Valid After : Sat Oct 25 08:32:46 2036
Fingerprint (SHA-256):
BE:6C:4D:A2:BB:B9:BA:59:B6:F3:93:97:68:37:42:46:C3:C0:05:99:3F:A9:8F:02:0D:1D:ED:BE:D4:8A:81:D5
Fingerprint (SHA1): 9B:AA:E5:9F:56:EE:21:CB:43:5A:BE:25:93:DF:A7:F0:40:D1:1D:CB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Silver CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\041\060\037\006\003\125\004\003\023
\030\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145
\162\040\103\101\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\041\060\037\006\003\125\004\003\023
\030\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145
\162\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\117\033\324\057\124\273\057\113
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\275\060\202\003\245\240\003\002\001\002\002\010\117
\033\324\057\124\273\057\113\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\107\061\013\060\011\006\003\125\004
\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023\014

\123\167\151\163\163\123\151\147\156\040\101\107\061\041\060\037
\006\003\125\004\003\023\030\123\167\151\163\163\123\151\147\156
\040\123\151\154\166\145\162\040\103\101\040\055\040\107\062\060
\036\027\015\060\066\061\060\062\065\060\070\063\062\064\066\132
\027\015\063\066\061\060\062\065\060\070\063\062\064\066\132\060
\107\061\013\060\011\006\003\125\004\006\023\002\103\110\061\025
\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123\151
\147\156\040\101\107\061\041\060\037\006\003\125\004\003\023\030
\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145\162
\040\103\101\040\055\040\107\062\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\304\361\207\177\323\170\061
\367\070\311\370\303\231\103\274\307\367\274\067\347\116\161\272
\113\217\245\163\035\134\156\230\256\003\127\256\070\067\103\057
\027\075\037\310\316\150\020\301\170\256\031\003\053\020\372\054
\171\203\366\350\271\150\271\125\362\004\104\247\071\371\374\004
\213\036\361\242\115\047\371\141\173\272\267\345\242\023\266\353
\141\076\320\154\321\346\373\372\136\355\035\264\236\240\065\133
\241\222\313\360\111\222\376\205\012\005\076\346\331\013\342\117
\273\334\225\067\374\221\351\062\065\042\321\037\072\116\047\205
\235\260\025\224\062\332\141\015\107\115\140\102\256\222\107\350
\203\132\120\130\351\212\213\271\135\241\334\335\231\112\037\066
\147\273\110\344\203\266\067\353\110\072\257\017\147\217\027\007
\350\004\312\357\152\061\207\324\300\266\371\224\161\173\147\144
\270\266\221\112\102\173\145\056\060\152\014\365\220\356\225\346
\362\315\202\354\331\241\112\354\366\262\113\345\105\205\346\155
\170\223\004\056\234\202\155\066\251\304\061\144\037\206\203\013
\052\364\065\012\170\311\125\317\101\260\107\351\060\237\231\276
\141\250\006\204\271\050\172\137\070\331\033\251\070\260\203\177
\163\301\303\073\110\052\202\017\041\233\270\314\250\065\303\204
\033\203\263\076\276\244\225\151\001\072\211\000\170\004\331\311
\364\231\031\253\126\176\133\213\206\071\025\221\244\020\054\011
\062\200\140\263\223\300\052\266\030\013\235\176\215\111\362\020
\112\177\371\325\106\057\031\222\243\231\247\046\254\273\214\074
\346\016\274\107\007\334\163\121\361\160\144\057\010\371\264\107
\035\060\154\104\352\051\067\205\222\150\146\274\203\070\376\173
\071\056\323\120\360\037\373\136\140\266\251\246\372\047\101\361
\233\030\162\362\365\204\164\112\311\147\304\124\256\110\144\337
\214\321\156\260\035\341\007\217\010\036\231\234\161\351\114\330
\245\367\107\022\037\164\321\121\236\206\363\302\242\043\100\013
\163\333\113\246\347\163\006\214\301\240\351\301\131\254\106\372
\346\057\370\317\161\234\106\155\271\304\025\215\070\171\003\105
\110\357\304\135\327\010\356\207\071\042\206\262\015\017\130\103
\367\161\251\110\056\375\352\326\037\002\003\001\000\001\243\201
\254\060\201\251\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\027\240\315\301\344\101\266\072\133\073\313\105\235\275\034\302

\230\372\206\130\060\037\006\003\125\035\043\004\030\060\026\200
\024\027\240\315\301\344\101\266\072\133\073\313\105\235\275\034
\302\230\372\206\130\060\106\006\003\125\035\040\004\077\060\075
\060\073\006\011\140\205\164\001\131\001\003\001\001\060\056\060
\054\006\010\053\006\001\005\005\007\002\001\026\040\150\164\164
\160\072\057\057\162\145\160\157\163\151\164\157\162\171\056\163
\167\151\163\163\163\151\147\156\056\143\157\155\057\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\002\001
\000\163\306\201\340\047\322\055\017\340\225\060\342\232\101\177
\120\054\137\137\142\141\251\206\152\151\030\014\164\111\326\135
\204\352\101\122\030\157\130\255\120\126\040\152\306\275\050\151
\130\221\334\221\021\065\251\072\035\274\032\245\140\236\330\037
\177\105\221\151\331\176\273\170\162\301\006\017\052\316\217\205
\160\141\254\240\315\013\270\071\051\126\204\062\116\206\273\075
\304\052\331\327\037\162\356\376\121\241\042\101\261\161\002\143
\032\202\260\142\253\136\127\022\037\337\313\335\165\240\300\135
\171\220\214\033\340\120\346\336\061\376\230\173\160\137\245\220
\330\255\370\002\266\157\323\140\335\100\113\042\305\075\255\072
\172\237\032\032\107\221\171\063\272\202\334\062\151\003\226\156
\037\113\360\161\376\343\147\162\240\261\277\134\213\344\372\231
\042\307\204\271\033\215\043\227\077\355\045\340\317\145\273\365
\141\004\357\335\036\262\132\101\042\132\241\237\135\054\350\133
\311\155\251\014\014\170\252\140\306\126\217\001\132\014\150\274
\151\031\171\304\037\176\227\005\277\305\351\044\121\136\324\325
\113\123\355\331\043\132\066\003\145\243\301\003\255\101\060\363
\106\033\205\220\257\145\265\325\261\344\026\133\170\165\035\227
\172\155\131\251\052\217\173\336\303\207\211\020\231\111\163\170
\310\075\275\121\065\164\052\325\361\176\151\033\052\273\073\275
\045\270\232\132\075\162\141\220\146\207\356\014\326\115\324\021
\164\013\152\376\013\003\374\243\125\127\211\376\112\313\256\133
\027\005\310\362\215\043\061\123\070\322\055\152\077\202\271\215
\010\152\367\136\101\164\156\303\021\176\007\254\051\140\221\077
\070\312\127\020\015\275\060\057\307\245\346\101\240\332\256\005
\207\232\240\244\145\154\114\011\014\211\272\270\323\271\300\223
\212\060\372\215\345\232\153\025\001\116\147\252\332\142\126\076
\204\010\146\322\304\066\175\247\076\020\374\210\340\324\200\345
\000\275\252\363\116\006\243\172\152\371\142\162\343\011\117\353
\233\016\001\043\361\237\273\174\334\334\154\021\227\045\262\362
\264\143\024\322\006\052\147\214\203\365\316\352\007\330\232\152
\036\354\344\012\273\052\114\353\011\140\071\316\312\142\330\056
\156
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SwissSign Silver CA - G2"
Issuer: CN=SwissSign Silver CA - G2,O=SwissSign AG,C=CH

Serial Number:4f:1b:d4:2f:54:bb:2f:4b
Subject: CN=SwissSign Silver CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:32:46 2006
Not Valid After : Sat Oct 25 08:32:46 2036
Fingerprint (SHA-256):
BE:6C:4D:A2:BB:B9:BA:59:B6:F3:93:97:68:37:42:46:C3:C0:05:99:3F:A9:8F:02:0D:1D:ED:BE:D4:8A:81:D5
Fingerprint (SHA1): 9B:AA:E5:9F:56:EE:21:CB:43:5A:BE:25:93:DF:A7:F0:40:D1:1D:CB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Silver CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\233\252\345\237\126\356\041\313\103\132\276\045\223\337\247\360
\100\321\035\313
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\340\006\241\311\175\317\311\374\015\300\126\165\226\330\142\023
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\041\060\037\006\003\125\004\003\023
\030\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145
\162\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\117\033\324\057\124\273\057\113
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SecureTrust CA"
#
Issuer: CN=SecureTrust CA,O=SecureTrust Corporation,C=US
Serial Number:0c:f0:8e:5c:08:16:a5:ad:42:7f:f0:eb:27:18:59:d0
Subject: CN=SecureTrust CA,O=SecureTrust Corporation,C=US
Not Valid Before: Tue Nov 07 19:31:18 2006
Not Valid After : Mon Dec 31 19:40:55 2029
Fingerprint (SHA-256):
F1:C1:B5:0A:E5:A2:0D:D8:03:0E:C9:F6:BC:24:82:3D:D3:67:B5:25:57:59:B4:E7:1B:61:FC:E9:F7:37:5D:73
Fingerprint (SHA1): 87:82:C6:C3:04:35:3B:CF:D2:96:92:D2:59:3E:7D:44:D9:34:FF:11
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SecureTrust CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\027\060\025\006\003\125\004\003\023\016\123\145\143\165
\162\145\124\162\165\163\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\027\060\025\006\003\125\004\003\023\016\123\145\143\165
\162\145\124\162\165\163\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\014\360\216\134\010\026\245\255\102\177\360\353\047\030
\131\320
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\270\060\202\002\240\240\003\002\001\002\002\020\014
\360\216\134\010\026\245\255\102\177\360\353\047\030\131\320\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\110
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\040\060
\036\006\003\125\004\012\023\027\123\145\143\165\162\145\124\162
\165\163\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\027\060\025\006\003\125\004\003\023\016\123\145\143\165\162\145
\124\162\165\163\164\040\103\101\060\036\027\015\060\066\061\061
\060\067\061\071\063\061\061\070\132\027\015\062\071\061\062\063
\061\061\071\064\060\065\065\132\060\110\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\040\060\036\006\003\125\004\012
\023\027\123\145\143\165\162\145\124\162\165\163\164\040\103\157
\162\160\157\162\141\164\151\157\156\061\027\060\025\006\003\125
\004\003\023\016\123\145\143\165\162\145\124\162\165\163\164\040
\103\101\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\253\244\201\345\225\315\365\366\024\216\302\117\312
\324\342\170\225\130\234\101\341\015\231\100\044\027\071\221\063
\146\351\276\341\203\257\142\134\211\321\374\044\133\141\263\340
\021\021\101\034\035\156\360\270\273\370\336\247\201\272\246\110
\306\237\035\275\276\216\251\101\076\270\224\355\051\032\324\216
\322\003\035\003\357\155\015\147\034\127\327\006\255\312\310\365
\376\016\257\146\045\110\004\226\013\135\243\272\026\303\010\117
\321\106\370\024\134\362\310\136\001\231\155\375\210\314\206\250
\301\157\061\102\154\122\076\150\313\363\031\064\337\273\207\030

\126\200\046\304\320\334\300\157\337\336\240\302\221\026\240\144
\021\113\104\274\036\366\347\372\143\336\146\254\166\244\161\243
\354\066\224\150\172\167\244\261\347\016\057\201\172\342\265\162
\206\357\242\153\213\360\017\333\323\131\077\272\162\274\104\044
\234\343\163\263\367\257\127\057\102\046\235\251\164\272\000\122
\362\113\315\123\174\107\013\066\205\016\146\251\010\227\026\064
\127\301\146\367\200\343\355\160\124\307\223\340\056\050\025\131
\207\272\273\002\003\001\000\001\243\201\235\060\201\232\060\023
\006\011\053\006\001\004\001\202\067\024\002\004\006\036\004\000
\103\000\101\060\013\006\003\125\035\017\004\004\003\002\001\206
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\102\062\266\026
\372\004\375\376\135\113\172\303\375\367\114\100\035\132\103\257
\060\064\006\003\125\035\037\004\055\060\053\060\051\240\047\240
\045\206\043\150\164\164\160\072\057\057\143\162\154\056\163\145
\143\165\162\145\164\162\165\163\164\056\143\157\155\057\123\124
\103\101\056\143\162\154\060\020\006\011\053\006\001\004\001\202
\067\025\001\004\003\002\001\000\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\001\001\000\060\355\117\112
\341\130\072\122\162\133\265\246\243\145\030\246\273\121\073\167
\351\235\352\323\237\134\340\105\145\173\015\312\133\342\160\120
\262\224\005\024\256\111\307\215\101\007\022\163\224\176\014\043
\041\375\274\020\177\140\020\132\162\365\230\016\254\354\271\177
\335\172\157\135\323\034\364\377\210\005\151\102\251\005\161\310
\267\254\046\350\056\264\214\152\377\161\334\270\261\337\231\274
\174\041\124\053\344\130\242\273\127\051\256\236\251\243\031\046
\017\231\056\010\260\357\375\151\317\231\032\011\215\343\247\237
\053\311\066\064\173\044\263\170\114\225\027\244\006\046\036\266
\144\122\066\137\140\147\331\234\305\005\164\013\347\147\043\322
\010\374\210\351\256\213\177\341\060\364\067\176\375\306\062\332
\055\236\104\060\060\154\356\007\336\322\064\374\322\377\100\366
\113\364\146\106\006\124\246\362\062\012\143\046\060\153\233\321
\334\213\107\272\341\271\325\142\320\242\240\364\147\005\170\051
\143\032\157\004\326\370\306\114\243\232\261\067\264\215\345\050
\113\035\236\054\302\270\150\274\355\002\356\061
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SecureTrust CA"
Issuer: CN=SecureTrust CA,O=SecureTrust Corporation,C=US
Serial Number:0c:f0:8e:5c:08:16:a5:ad:42:7f:f0:eb:27:18:59:d0
Subject: CN=SecureTrust CA,O=SecureTrust Corporation,C=US
Not Valid Before: Tue Nov 07 19:31:18 2006
Not Valid After : Mon Dec 31 19:40:55 2029
Fingerprint (SHA-256):
F1:C1:B5:0A:E5:A2:0D:D8:03:0E:C9:F6:BC:24:82:3D:D3:67:B5:25:57:59:B4:E7:1B:61:FC:E9:F7:37:5D:73

Fingerprint (SHA1): 87:82:C6:C3:04:35:3B:CF:D2:96:92:D2:59:3E:7D:44:D9:34:FF:11
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SecureTrust CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\207\202\306\303\004\065\073\317\322\226\222\322\131\076\175\104
\331\064\377\021
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\334\062\303\247\155\045\127\307\150\011\235\352\055\251\242\321
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\027\060\025\006\003\125\004\003\023\016\123\145\143\165
\162\145\124\162\165\163\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\014\360\216\134\010\026\245\255\102\177\360\353\047\030
\131\320
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Secure Global CA"
#
Issuer: CN=Secure Global CA,O=SecureTrust Corporation,C=US
Serial Number:07:56:22:a4:e8:d4:8a:89:4d:f4:13:c8:f0:f8:ea:a5
Subject: CN=Secure Global CA,O=SecureTrust Corporation,C=US
Not Valid Before: Tue Nov 07 19:42:28 2006
Not Valid After : Mon Dec 31 19:52:06 2029
Fingerprint (SHA-256):
42:00:F5:04:3A:C8:59:0E:BB:52:7D:20:9E:D1:50:30:29:FB:CB:D4:1C:A1:B5:06:EC:27:F1:5A:DE:7D:AC:69
Fingerprint (SHA1): 3A:44:73:5A:E5:81:90:1F:24:86:61:46:1E:3B:9C:C4:5F:F5:3A:1B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Secure Global CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061

\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\031\060\027\006\003\125\004\003\023\020\123\145\143\165
\162\145\040\107\154\157\142\141\154\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\031\060\027\006\003\125\004\003\023\020\123\145\143\165
\162\145\040\107\154\157\142\141\154\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\007\126\042\244\350\324\212\211\115\364\023\310\360\370
\352\245
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\274\060\202\002\244\240\003\002\001\002\002\020\007
\126\042\244\350\324\212\211\115\364\023\310\360\370\352\245\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\112
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\040\060
\036\006\003\125\004\012\023\027\123\145\143\165\162\145\124\162
\165\163\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\031\060\027\006\003\125\004\003\023\020\123\145\143\165\162\145
\040\107\154\157\142\141\154\040\103\101\060\036\027\015\060\066
\061\061\060\067\061\071\064\062\062\070\132\027\015\062\071\061
\062\063\061\061\071\065\062\060\066\132\060\112\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\040\060\036\006\003\125
\004\012\023\027\123\145\143\165\162\145\124\162\165\163\164\040
\103\157\162\160\157\162\141\164\151\157\156\061\031\060\027\006
\003\125\004\003\023\020\123\145\143\165\162\145\040\107\154\157
\142\141\154\040\103\101\060\202\001\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\257\065\056\330\254\154\125\151\006
\161\345\023\150\044\263\117\330\314\041\107\370\361\140\070\211
\211\003\351\275\352\136\106\123\011\334\134\365\132\350\367\105
\052\002\353\061\141\327\051\063\114\316\307\174\012\067\176\017
\272\062\230\341\035\227\257\217\307\334\311\070\226\363\333\032
\374\121\355\150\306\320\156\244\174\044\321\256\102\310\226\120
\143\056\340\376\165\376\230\247\137\111\056\225\343\071\063\144
\216\036\244\137\220\322\147\074\262\331\376\101\271\125\247\011
\216\162\005\036\213\335\104\205\202\102\320\111\300\035\140\360
\321\027\054\225\353\366\245\301\222\243\305\302\247\010\140\015
\140\004\020\226\171\236\026\064\346\251\266\372\045\105\071\310
\036\145\371\223\365\252\361\122\334\231\230\075\245\206\032\014
\065\063\372\113\245\004\006\025\034\061\200\357\252\030\153\302
\173\327\332\316\371\063\040\325\365\275\152\063\055\201\004\373

\260\134\324\234\243\342\134\035\343\251\102\165\136\173\324\167
\357\071\124\272\311\012\030\033\022\231\111\057\210\113\375\120
\142\321\163\347\217\172\103\002\003\001\000\001\243\201\235\060
\201\232\060\023\006\011\053\006\001\004\001\202\067\024\002\004
\006\036\004\000\103\000\101\060\013\006\003\125\035\017\004\004
\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\257\104\004\302\101\176\110\203\333\116\071\002\354\354\204\172
\346\316\311\244\060\064\006\003\125\035\037\004\055\060\053\060
\051\240\047\240\045\206\043\150\164\164\160\072\057\057\143\162
\154\056\163\145\143\165\162\145\164\162\165\163\164\056\143\157
\155\057\123\107\103\101\056\143\162\154\060\020\006\011\053\006
\001\004\001\202\067\025\001\004\003\002\001\000\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\143\032\010\100\175\244\136\123\015\167\330\172\256\037\015\013
\121\026\003\357\030\174\310\343\257\152\130\223\024\140\221\262
\204\334\210\116\276\071\212\072\363\346\202\211\135\001\067\263
\253\044\244\025\016\222\065\132\112\104\136\116\127\372\165\316
\037\110\316\146\364\074\100\046\222\230\154\033\356\044\106\014
\027\263\122\245\333\245\221\221\317\067\323\157\347\047\010\072
\116\031\037\072\247\130\134\027\317\171\077\213\344\247\323\046
\043\235\046\017\130\151\374\107\176\262\320\215\213\223\277\051
\117\103\151\164\166\147\113\317\007\214\346\002\367\265\341\264
\103\265\113\055\024\237\371\334\046\015\277\246\107\164\006\330
\210\321\072\051\060\204\316\322\071\200\142\033\250\307\127\111
\274\152\125\121\147\025\112\276\065\007\344\325\165\230\067\171
\060\024\333\051\235\154\305\151\314\107\125\242\060\367\314\134
\177\302\303\230\034\153\116\026\200\353\172\170\145\105\242\000
\032\257\014\015\125\144\064\110\270\222\271\361\264\120\051\362
\117\043\037\332\154\254\037\104\341\335\043\170\121\133\307\026
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Secure Global CA"
Issuer: CN=Secure Global CA,O=SecureTrust Corporation,C=US
Serial Number:07:56:22:a4:e8:d4:8a:89:4d:f4:13:c8:f0:f8:ea:a5
Subject: CN=Secure Global CA,O=SecureTrust Corporation,C=US
Not Valid Before: Tue Nov 07 19:42:28 2006
Not Valid After : Mon Dec 31 19:52:06 2029
Fingerprint (SHA-256):
42:00:F5:04:3A:C8:59:0E:BB:52:7D:20:9E:D1:50:30:29:FB:CB:D4:1C:A1:B5:06:EC:27:F1:5A:DE:7D:AC:69
Fingerprint (SHA1): 3A:44:73:5A:E5:81:90:1F:24:86:61:46:1E:3B:9C:C4:5F:F5:3A:1B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "Secure Global CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\072\104\163\132\345\201\220\037\044\206\141\106\036\073\234\304
\137\365\072\033
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\317\364\047\015\324\355\334\145\026\111\155\075\332\277\156\336
END
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\031\060\027\006\003\125\004\003\023\020\123\145\143\165
\162\145\040\107\154\157\142\141\154\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\007\126\042\244\350\324\212\211\115\364\023\310\360\370
\352\245
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "COMODO Certification Authority"
#
Issuer: CN=COMODO Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:4e:81:2d:8a:82:65:e0:0b:02:ee:3e:35:02:46:e5:3d
Subject: CN=COMODO Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Fri Dec 01 00:00:00 2006
Not Valid After : Mon Dec 31 23:59:59 2029
Fingerprint (SHA-256):
0C:2C:D6:3D:F7:80:6F:A3:99:ED:E8:09:11:6B:57:5B:F8:79:89:F0:65:18:F9:80:8C:86:05:03:17:8B:AF:66
Fingerprint (SHA1): 66:31:BF:9E:F7:4F:9E:B6:C9:D5:A6:0C:BA:6A:BE:D1:F7:BD:EF:7B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\201\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061

\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\047\060\045\006
\003\125\004\003\023\036\103\117\115\117\104\117\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\201\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\047\060\045\006
\003\125\004\003\023\036\103\117\115\117\104\117\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\116\201\055\212\202\145\340\013\002\356\076\065\002\106
\345\075
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\035\060\202\003\005\240\003\002\001\002\002\020\116
\201\055\212\202\145\340\013\002\356\076\065\002\106\345\075\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\201\061\013\060\011\006\003\125\004\006\023\002\107\102\061\033
\060\031\006\003\125\004\010\023\022\107\162\145\141\164\145\162
\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016\006
\003\125\004\007\023\007\123\141\154\146\157\162\144\061\032\060
\030\006\003\125\004\012\023\021\103\117\115\117\104\117\040\103
\101\040\114\151\155\151\164\145\144\061\047\060\045\006\003\125
\004\003\023\036\103\117\115\117\104\117\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\060\036\027\015\060\066\061\062\060\061\060\060\060\060
\060\060\132\027\015\062\071\061\062\063\061\062\063\065\071\065
\071\132\060\201\201\061\013\060\011\006\003\125\004\006\023\002
\107\102\061\033\060\031\006\003\125\004\010\023\022\107\162\145
\141\164\145\162\040\115\141\156\143\150\145\163\164\145\162\061
\020\060\016\006\003\125\004\007\023\007\123\141\154\146\157\162
\144\061\032\060\030\006\003\125\004\012\023\021\103\117\115\117
\104\117\040\103\101\040\114\151\155\151\164\145\144\061\047\060
\045\006\003\125\004\003\023\036\103\117\115\117\104\117\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\060\202\001\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\320\100\213\213\162\343\221\033\367
\121\301\033\124\004\230\323\251\277\301\346\212\135\073\207\373

\273\210\316\015\343\057\077\006\226\360\242\051\120\231\256\333
\073\241\127\260\164\121\161\315\355\102\221\115\101\376\251\310
\330\152\206\167\104\273\131\146\227\120\136\264\324\054\160\104
\317\332\067\225\102\151\074\060\304\161\263\122\360\041\115\241
\330\272\071\174\034\236\243\044\235\362\203\026\230\252\026\174
\103\233\025\133\267\256\064\221\376\324\142\046\030\106\232\077
\353\301\371\361\220\127\353\254\172\015\213\333\162\060\152\146
\325\340\106\243\160\334\150\331\377\004\110\211\167\336\265\351
\373\147\155\101\351\274\071\275\062\331\142\002\361\261\250\075
\156\067\234\342\057\342\323\242\046\213\306\270\125\103\210\341
\043\076\245\322\044\071\152\107\253\000\324\241\263\251\045\376
\015\077\247\035\272\323\121\301\013\244\332\254\070\357\125\120
\044\005\145\106\223\064\117\055\215\255\306\324\041\031\322\216
\312\005\141\161\007\163\107\345\212\031\022\275\004\115\316\116
\234\245\110\254\273\046\367\002\003\001\000\001\243\201\216\060
\201\213\060\035\006\003\125\035\016\004\026\004\024\013\130\345
\213\306\114\025\067\244\100\251\060\251\041\276\107\066\132\126
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\111\006\003\125\035\037\004\102\060\100\060\076\240
\074\240\072\206\070\150\164\164\160\072\057\057\143\162\154\056
\143\157\155\157\144\157\143\141\056\143\157\155\057\103\117\115
\117\104\117\103\145\162\164\151\146\151\143\141\164\151\157\156
\101\165\164\150\157\162\151\164\171\056\143\162\154\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\076\230\236\233\366\033\351\327\071\267\170\256\035\162\030
\111\323\207\344\103\202\353\077\311\252\365\250\265\357\125\174
\041\122\145\371\325\015\341\154\364\076\214\223\163\221\056\002
\304\116\007\161\157\300\217\070\141\010\250\036\201\012\300\057
\040\057\101\213\221\334\110\105\274\361\306\336\272\166\153\063
\310\000\055\061\106\114\355\347\235\317\210\224\377\063\300\126
\350\044\206\046\270\330\070\070\337\052\153\335\022\314\307\077
\107\027\114\242\302\006\226\011\326\333\376\077\074\106\101\337
\130\342\126\017\074\073\301\034\223\065\331\070\122\254\356\310
\354\056\060\116\224\065\264\044\037\113\170\151\332\362\002\070
\314\225\122\223\360\160\045\131\234\040\147\304\356\371\213\127
\141\364\222\166\175\077\204\215\125\267\350\345\254\325\361\365
\031\126\246\132\373\220\034\257\223\353\345\034\324\147\227\135
\004\016\276\013\203\246\027\203\271\060\022\240\305\063\025\005
\271\015\373\307\005\166\343\330\112\215\374\064\027\243\306\041
\050\276\060\105\061\036\307\170\276\130\141\070\254\073\342\001
\145
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "COMODO Certification Authority"

Issuer: CN=COMODO Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:4e:81:2d:8a:82:65:e0:0b:02:ee:3e:35:02:46:e5:3d
Subject: CN=COMODO Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Fri Dec 01 00:00:00 2006
Not Valid After : Mon Dec 31 23:59:59 2029
Fingerprint (SHA-256):
0C:2C:D6:3D:F7:80:6F:A3:99:ED:E8:09:11:6B:57:5B:F8:79:89:F0:65:18:F9:80:8C:86:05:03:17:8B:AF:66
Fingerprint (SHA1): 66:31:BF:9E:F7:4F:9E:B6:C9:D5:A6:0C:BA:6A:BE:D1:F7:BD:EF:7B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\146\061\277\236\367\117\236\266\311\325\246\014\272\152\276\321
\367\275\357\173
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\134\110\334\367\102\162\354\126\224\155\034\314\161\065\200\165
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\201\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\047\060\045\006
\003\125\004\003\023\036\103\117\115\117\104\117\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\116\201\055\212\202\145\340\013\002\356\076\065\002\106
\345\075
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Network Solutions Certificate Authority"
#
Issuer: CN=Network Solutions Certificate Authority,O=Network Solutions L.L.C.,C=US
Serial Number:57:cb:33:6f:c2:5c:16:e6:47:16:17:e3:90:31:68:e0
Subject: CN=Network Solutions Certificate Authority,O=Network Solutions L.L.C.,C=US

Not Valid Before: Fri Dec 01 00:00:00 2006
Not Valid After : Mon Dec 31 23:59:59 2029
Fingerprint (SHA-256):
15:F0:BA:00:A3:AC:7A:F3:AC:88:4C:07:2B:10:11:A0:77:BD:77:C0:97:F4:01:64:B2:F8:59:8A:BD:83:86:0C
Fingerprint (SHA1): 74:F8:A3:C3:EF:E7:B3:90:06:4B:83:90:3C:21:64:60:20:E5:DF:CE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Network Solutions Certificate Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\116\145\164\167\157\162
\153\040\123\157\154\165\164\151\157\156\163\040\114\056\114\056
\103\056\061\060\060\056\006\003\125\004\003\023\047\116\145\164
\167\157\162\153\040\123\157\154\165\164\151\157\156\163\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\116\145\164\167\157\162
\153\040\123\157\154\165\164\151\157\156\163\040\114\056\114\056
\103\056\061\060\060\056\006\003\125\004\003\023\047\116\145\164
\167\157\162\153\040\123\157\154\165\164\151\157\156\163\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\127\313\063\157\302\134\026\346\107\026\027\343\220\061
\150\340
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\346\060\202\002\316\240\003\002\001\002\002\020\127
\313\063\157\302\134\026\346\107\026\027\343\220\061\150\340\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\142
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\041\060
\037\006\003\125\004\012\023\030\116\145\164\167\157\162\153\040
\123\157\154\165\164\151\157\156\163\040\114\056\114\056\103\056
\061\060\060\056\006\003\125\004\003\023\047\116\145\164\167\157
\162\153\040\123\157\154\165\164\151\157\156\163\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\060\036\027\015\060\066\061\062\060\061\060\060\060\060
\060\060\132\027\015\062\071\061\062\063\061\062\063\065\071\065
\071\132\060\142\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\041\060\037\006\003\125\004\012\023\030\116\145\164\167

\157\162\153\040\123\157\154\165\164\151\157\156\163\040\114\056
\114\056\103\056\061\060\060\056\006\003\125\004\003\023\047\116
\145\164\167\157\162\153\040\123\157\154\165\164\151\157\156\163
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\060\202\001\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\344\274\176\222\060\155\306\330\216
\053\013\274\106\316\340\047\226\336\336\371\372\022\323\074\063
\163\263\004\057\274\161\214\345\237\266\042\140\076\137\135\316
\011\377\202\014\033\232\121\120\032\046\211\335\325\141\135\031
\334\022\017\055\012\242\103\135\027\320\064\222\040\352\163\317
\070\054\006\046\011\172\162\367\372\120\062\370\302\223\323\151
\242\043\316\101\261\314\344\325\037\066\321\212\072\370\214\143
\342\024\131\151\355\015\323\177\153\350\270\003\345\117\152\345
\230\143\151\110\005\276\056\377\063\266\351\227\131\151\370\147
\031\256\223\141\226\104\025\323\162\260\077\274\152\175\354\110
\177\215\303\253\252\161\053\123\151\101\123\064\265\260\271\305
\006\012\304\260\105\365\101\135\156\211\105\173\075\073\046\214
\164\302\345\322\321\175\262\021\324\373\130\062\042\232\200\311
\334\375\014\351\177\136\003\227\316\073\000\024\207\047\160\070
\251\216\156\263\047\166\230\121\340\005\343\041\253\032\325\205
\042\074\051\265\232\026\305\200\250\364\273\153\060\217\057\106
\002\242\261\014\042\340\323\002\003\001\000\001\243\201\227\060
\201\224\060\035\006\003\125\035\016\004\026\004\024\041\060\311
\373\000\327\116\230\332\207\252\052\320\247\056\261\100\061\247
\114\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\122\006\003\125\035\037\004\113\060\111\060\107\240
\105\240\103\206\101\150\164\164\160\072\057\057\143\162\154\056
\156\145\164\163\157\154\163\163\154\056\143\157\155\057\116\145
\164\167\157\162\153\123\157\154\165\164\151\157\156\163\103\145
\162\164\151\146\151\143\141\164\145\101\165\164\150\157\162\151
\164\171\056\143\162\154\060\015\006\011\052\206\110\206\367\015
\001\001\005\005\000\003\202\001\001\000\273\256\113\347\267\127
\353\177\252\055\267\163\107\205\152\301\344\245\035\344\347\074
\351\364\131\145\167\265\172\133\132\215\045\066\340\172\227\056
\070\300\127\140\203\230\006\203\237\271\166\172\156\120\340\272
\210\054\374\105\314\030\260\231\225\121\016\354\035\270\210\377
\207\120\034\202\302\343\340\062\200\277\240\013\107\310\303\061
\357\231\147\062\200\117\027\041\171\014\151\134\336\136\064\256
\002\265\046\352\120\337\177\030\145\054\311\362\143\341\251\007
\376\174\161\037\153\063\044\152\036\005\367\005\150\300\152\022
\313\056\136\141\313\256\050\323\176\302\264\146\221\046\137\074
\056\044\137\313\130\017\353\050\354\257\021\226\363\334\173\157
\300\247\210\362\123\167\263\140\136\256\256\050\332\065\054\157
\064\105\323\046\341\336\354\133\117\047\153\026\174\275\104\004
\030\202\263\211\171\027\020\161\075\172\242\026\116\365\001\315
\244\154\145\150\241\111\166\134\103\311\330\274\066\147\154\245

\224\265\324\314\271\275\152\065\126\041\336\330\303\353\373\313
\244\140\114\260\125\240\240\173\127\262
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Network Solutions Certificate Authority"
Issuer: CN=Network Solutions Certificate Authority,O=Network Solutions L.L.C.,C=US
Serial Number:57:cb:33:6f:c2:5c:16:e6:47:16:17:e3:90:31:68:e0
Subject: CN=Network Solutions Certificate Authority,O=Network Solutions L.L.C.,C=US
Not Valid Before: Fri Dec 01 00:00:00 2006
Not Valid After : Mon Dec 31 23:59:59 2029
Fingerprint (SHA-256):
15:F0:BA:00:A3:AC:7A:F3:AC:88:4C:07:2B:10:11:A0:77:BD:77:C0:97:F4:01:64:B2:F8:59:8A:BD:83:86:0C
Fingerprint (SHA1): 74:F8:A3:C3:EF:E7:B3:90:06:4B:83:90:3C:21:64:60:20:E5:DF:CE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Network Solutions Certificate Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\164\370\243\303\357\347\263\220\006\113\203\220\074\041\144\140
\040\345\337\316
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\323\363\246\026\300\372\153\035\131\261\055\226\115\016\021\056
END
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\116\145\164\167\157\162
\153\040\123\157\154\165\164\151\157\156\163\040\114\056\114\056
\103\056\061\060\060\056\006\003\125\004\003\023\047\116\145\164
\167\157\162\153\040\123\157\154\165\164\151\157\156\163\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\127\313\063\157\302\134\026\346\107\026\027\343\220\061
\150\340
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "COMODO ECC Certification Authority"

#
Issuer: CN=COMODO ECC Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:1f:47:af:aa:62:00:70:50:54:4c:01:9e:9b:63:99:2a
Subject: CN=COMODO ECC Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Thu Mar 06 00:00:00 2008
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
17:93:92:7A:06:14:54:97:89:AD:CE:2F:8F:34:F7:F0:B6:6D:0F:3A:E3:A3:B8:4D:21:EC:15:DB:BA:4F:AD:C7
Fingerprint (SHA1): 9F:74:4E:9F:2B:4D:BA:EC:0F:31:2C:50:B6:56:3B:8E:2D:93:C3:11
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO ECC Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\105\103\103
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\105\103\103
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\037\107\257\252\142\000\160\120\124\114\001\236\233\143
\231\052
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\211\060\202\002\017\240\003\002\001\002\002\020\037
\107\257\252\142\000\160\120\124\114\001\236\233\143\231\052\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\205\061\013

\060\011\006\003\125\004\006\023\002\107\102\061\033\060\031\006
\003\125\004\010\023\022\107\162\145\141\164\145\162\040\115\141
\156\143\150\145\163\164\145\162\061\020\060\016\006\003\125\004
\007\023\007\123\141\154\146\157\162\144\061\032\060\030\006\003
\125\004\012\023\021\103\117\115\117\104\117\040\103\101\040\114
\151\155\151\164\145\144\061\053\060\051\006\003\125\004\003\023
\042\103\117\115\117\104\117\040\105\103\103\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\060\036\027\015\060\070\060\063\060\066\060\060\060
\060\060\060\132\027\015\063\070\060\061\061\070\062\063\065\071
\065\071\132\060\201\205\061\013\060\011\006\003\125\004\006\023
\002\107\102\061\033\060\031\006\003\125\004\010\023\022\107\162
\145\141\164\145\162\040\115\141\156\143\150\145\163\164\145\162
\061\020\060\016\006\003\125\004\007\023\007\123\141\154\146\157
\162\144\061\032\060\030\006\003\125\004\012\023\021\103\117\115
\117\104\117\040\103\101\040\114\151\155\151\164\145\144\061\053
\060\051\006\003\125\004\003\023\042\103\117\115\117\104\117\040
\105\103\103\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\060\166\060\020\006
\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003
\142\000\004\003\107\173\057\165\311\202\025\205\373\165\344\221
\026\324\253\142\231\365\076\122\013\006\316\101\000\177\227\341
\012\044\074\035\001\004\356\075\322\215\011\227\014\340\165\344
\372\373\167\212\052\365\003\140\113\066\213\026\043\026\255\011
\161\364\112\364\050\120\264\376\210\034\156\077\154\057\057\011
\131\133\245\133\013\063\231\342\303\075\211\371\152\054\357\262
\323\006\351\243\102\060\100\060\035\006\003\125\035\016\004\026
\004\024\165\161\247\031\110\031\274\235\235\352\101\107\337\224
\304\110\167\231\323\171\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\061\000\357\003\133\172\254
\267\170\012\162\267\210\337\377\265\106\024\011\012\372\240\346
\175\010\306\032\207\275\030\250\163\275\046\312\140\014\235\316
\231\237\317\134\017\060\341\276\024\061\352\002\060\024\364\223
\074\111\247\063\172\220\106\107\263\143\175\023\233\116\267\157
\030\067\200\123\376\335\040\340\065\232\066\321\307\001\271\346
\334\335\363\377\035\054\072\026\127\331\222\071\326
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "COMODO ECC Certification Authority"
Issuer: CN=COMODO ECC Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:1f:47:af:aa:62:00:70:50:54:4c:01:9e:9b:63:99:2a
Subject: CN=COMODO ECC Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater

Manchester,C=GB
Not Valid Before: Thu Mar 06 00:00:00 2008
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
17:93:92:7A:06:14:54:97:89:AD:CE:2F:8F:34:F7:F0:B6:6D:0F:3A:E3:A3:B8:4D:21:EC:15:DB:BA:4F:AD:C7
Fingerprint (SHA1): 9F:74:4E:9F:2B:4D:BA:EC:0F:31:2C:50:B6:56:3B:8E:2D:93:C3:11
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO ECC Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\237\164\116\237\053\115\272\354\017\061\054\120\266\126\073\216
\055\223\303\021
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\174\142\377\164\235\061\123\136\150\112\325\170\252\036\277\043
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\105\103\103
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\037\107\257\252\142\000\160\120\124\114\001\236\233\143
\231\052
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "OISTE WISeKey Global Root GA CA"
#
Issuer: CN=OISTE WISeKey Global Root GA CA,OU=OISTE Foundation Endorsed,OU=Copyright (c) 2005,O=WISeKey,C=CH
Serial Number:41:3d:72:c7:f4:6b:1f:81:43:7d:f1:d2:28:54:df:9a
Subject: CN=OISTE WISeKey Global Root GA CA,OU=OISTE Foundation Endorsed,OU=Copyright (c) 2005,O=WISeKey,C=CH
Not Valid Before: Sun Dec 11 16:03:44 2005
Not Valid After : Fri Dec 11 16:09:51 2037

Fingerprint (SHA-256):
41:C9:23:86:6A:B4:CA:D6:B7:AD:57:80:81:58:2E:02:07:97:A6:CB:DF:4F:FF:78:CE:83:96:B3:89:37:D7:F5
Fingerprint (SHA1): 59:22:A1:E1:5A:EA:16:35:21:F8:98:39:6A:46:46:B0:44:1B:0F:A9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GA CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113
\145\171\061\033\060\031\006\003\125\004\013\023\022\103\157\160
\171\162\151\147\150\164\040\050\143\051\040\062\060\060\065\061
\042\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040
\106\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162
\163\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111
\123\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142
\141\154\040\122\157\157\164\040\107\101\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113
\145\171\061\033\060\031\006\003\125\004\013\023\022\103\157\160
\171\162\151\147\150\164\040\050\143\051\040\062\060\060\065\061
\042\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040
\106\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162
\163\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111
\123\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142
\141\154\040\122\157\157\164\040\107\101\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\101\075\162\307\364\153\037\201\103\175\361\322\050\124
\337\232
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\361\060\202\002\331\240\003\002\001\002\002\020\101
\075\162\307\364\153\037\201\103\175\361\322\050\124\337\232\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\212\061\013\060\011\006\003\125\004\006\023\002\103\110\061\020
\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145\171
\061\033\060\031\006\003\125\004\013\023\022\103\157\160\171\162
\151\147\150\164\040\050\143\051\040\062\060\060\065\061\042\060
\040\006\003\125\004\013\023\031\117\111\123\124\105\040\106\157
\165\156\144\141\164\151\157\156\040\105\156\144\157\162\163\145
\144\061\050\060\046\006\003\125\004\003\023\037\117\111\123\124
\105\040\127\111\123\145\113\145\171\040\107\154\157\142\141\154

\040\122\157\157\164\040\107\101\040\103\101\060\036\027\015\060
\065\061\062\061\061\061\066\060\063\064\064\132\027\015\063\067
\061\062\061\061\061\066\060\071\065\061\132\060\201\212\061\013
\060\011\006\003\125\004\006\023\002\103\110\061\020\060\016\006
\003\125\004\012\023\007\127\111\123\145\113\145\171\061\033\060
\031\006\003\125\004\013\023\022\103\157\160\171\162\151\147\150
\164\040\050\143\051\040\062\060\060\065\061\042\060\040\006\003
\125\004\013\023\031\117\111\123\124\105\040\106\157\165\156\144
\141\164\151\157\156\040\105\156\144\157\162\163\145\144\061\050
\060\046\006\003\125\004\003\023\037\117\111\123\124\105\040\127
\111\123\145\113\145\171\040\107\154\157\142\141\154\040\122\157
\157\164\040\107\101\040\103\101\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\313\117\263\000\233\075\066
\335\371\321\111\152\153\020\111\037\354\330\053\262\306\370\062
\201\051\103\225\114\232\031\043\041\025\105\336\343\310\034\121
\125\133\256\223\350\067\377\053\153\351\324\352\276\052\335\250
\121\053\327\146\303\141\134\140\002\310\365\316\162\173\073\270
\362\116\145\010\232\315\244\152\031\301\001\273\163\246\327\366
\303\335\315\274\244\213\265\231\141\270\001\242\243\324\115\324
\005\075\221\255\370\264\010\161\144\257\160\361\034\153\176\366
\303\167\235\044\163\173\344\014\214\341\331\066\341\231\213\005
\231\013\355\105\061\011\312\302\000\333\367\162\240\226\252\225
\207\320\216\307\266\141\163\015\166\146\214\334\033\264\143\242
\237\177\223\023\060\361\241\047\333\331\377\054\125\210\221\240
\340\117\007\260\050\126\214\030\033\227\104\216\211\335\340\027
\156\347\052\357\217\071\012\061\204\202\330\100\024\111\056\172
\101\344\247\376\343\144\314\301\131\161\113\054\041\247\133\175
\340\035\321\056\201\233\303\330\150\367\275\226\033\254\160\261
\026\024\013\333\140\271\046\001\005\002\003\001\000\001\243\121
\060\117\060\013\006\003\125\035\017\004\004\003\002\001\206\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\263\003\176\256\066
\274\260\171\321\334\224\046\266\021\276\041\262\151\206\224\060
\020\006\011\053\006\001\004\001\202\067\025\001\004\003\002\001
\000\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\001\001\000\113\241\377\013\207\156\263\371\301\103\261
\110\363\050\300\035\056\311\011\101\372\224\000\034\244\244\253
\111\117\217\075\036\357\115\157\275\274\244\366\362\046\060\311
\020\312\035\210\373\164\031\037\205\105\275\260\154\121\371\066
\176\333\365\114\062\072\101\117\133\107\317\350\013\055\266\304
\031\235\164\305\107\306\073\152\017\254\024\333\074\364\163\234
\251\005\337\000\334\164\170\372\370\065\140\131\002\023\030\174
\274\373\115\260\040\155\103\273\140\060\172\147\063\134\305\231
\321\370\055\071\122\163\373\214\252\227\045\134\162\331\010\036
\253\116\074\343\201\061\237\003\246\373\300\376\051\210\125\332
\204\325\120\003\266\342\204\243\246\066\252\021\072\001\341\030
\113\326\104\150\263\075\371\123\164\204\263\106\221\106\226\000

\267\200\054\266\341\343\020\342\333\242\347\050\217\001\226\142
\026\076\000\343\034\245\066\201\030\242\114\122\166\300\021\243
\156\346\035\272\343\132\276\066\123\305\076\165\217\206\151\051
\130\123\265\234\273\157\237\134\305\030\354\335\057\341\230\311
\374\276\337\012\015
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "OISTE WISeKey Global Root GA CA"
Issuer: CN=OISTE WISeKey Global Root GA CA,OU=OISTE Foundation Endorsed,OU=Copyright (c) 2005,O=WISeKey,C=CH
Serial Number:41:3d:72:c7:f4:6b:1f:81:43:7d:f1:d2:28:54:df:9a
Subject: CN=OISTE WISeKey Global Root GA CA,OU=OISTE Foundation Endorsed,OU=Copyright (c) 2005,O=WISeKey,C=CH
Not Valid Before: Sun Dec 11 16:03:44 2005
Not Valid After : Fri Dec 11 16:09:51 2037
Fingerprint (SHA-256):
41:C9:23:86:6A:B4:CA:D6:B7:AD:57:80:81:58:2E:02:07:97:A6:CB:DF:4F:FF:78:CE:83:96:B3:89:37:D7:F5
Fingerprint (SHA1): 59:22:A1:E1:5A:EA:16:35:21:F8:98:39:6A:46:46:B0:44:1B:0F:A9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GA CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\131\042\241\341\132\352\026\065\041\370\230\071\152\106\106\260
\104\033\017\251
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\274\154\121\063\247\351\323\146\143\124\025\162\033\041\222\223
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113
\145\171\061\033\060\031\006\003\125\004\013\023\022\103\157\160
\171\162\151\147\150\164\040\050\143\051\040\062\060\060\065\061
\042\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040
\106\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162
\163\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111
\123\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142
\141\154\040\122\157\157\164\040\107\101\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\101\075\162\307\364\153\037\201\103\175\361\322\050\124
\337\232
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certigna"
#
Issuer: CN=Certigna,O=Dhimyotis,C=FR
Serial Number:00:fe:dc:e3:01:0f:c9:48:ff
Subject: CN=Certigna,O=Dhimyotis,C=FR
Not Valid Before: Fri Jun 29 15:13:05 2007
Not Valid After : Tue Jun 29 15:13:05 2027
Fingerprint (SHA-256):
E3:B6:A2:DB:2E:D7:CE:48:84:2F:7A:C5:32:41:C7:B7:1D:54:14:4B:FB:40:C1:1F:3F:1D:0B:42:F5:EE:A1:2D
Fingerprint (SHA1): B1:2E:13:63:45:86:A4:6F:1A:B2:60:68:37:58:2D:C4:AC:FD:94:97
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certigna"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\064\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\021\060\017\006\003\125\004\003\014\010\103\145
\162\164\151\147\156\141
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\064\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\021\060\017\006\003\125\004\003\014\010\103\145
\162\164\151\147\156\141
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\376\334\343\001\017\311\110\377
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\250\060\202\002\220\240\003\002\001\002\002\011\000
\376\334\343\001\017\311\110\377\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\060\064\061\013\060\011\006\003\125
\004\006\023\002\106\122\061\022\060\020\006\003\125\004\012\014
\011\104\150\151\155\171\157\164\151\163\061\021\060\017\006\003
\125\004\003\014\010\103\145\162\164\151\147\156\141\060\036\027
\015\060\067\060\066\062\071\061\065\061\063\060\065\132\027\015
\062\067\060\066\062\071\061\065\061\063\060\065\132\060\064\061
\013\060\011\006\003\125\004\006\023\002\106\122\061\022\060\020

\006\003\125\004\012\014\011\104\150\151\155\171\157\164\151\163
\061\021\060\017\006\003\125\004\003\014\010\103\145\162\164\151
\147\156\141\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\310\150\361\311\326\326\263\064\165\046\202\036
\354\264\276\352\134\341\046\355\021\107\141\341\242\174\026\170
\100\041\344\140\236\132\310\143\341\304\261\226\222\377\030\155
\151\043\341\053\142\367\335\342\066\057\221\007\271\110\317\016
\354\171\266\054\347\064\113\160\010\045\243\074\207\033\031\362
\201\007\017\070\220\031\323\021\376\206\264\362\321\136\036\036
\226\315\200\154\316\073\061\223\266\362\240\320\251\225\022\175
\245\232\314\153\310\204\126\212\063\251\347\042\025\123\026\360
\314\027\354\127\137\351\242\012\230\011\336\343\137\234\157\334
\110\343\205\013\025\132\246\272\237\254\110\343\011\262\367\364
\062\336\136\064\276\034\170\135\102\133\316\016\042\217\115\220
\327\175\062\030\263\013\054\152\277\216\077\024\021\211\040\016
\167\024\265\075\224\010\207\367\045\036\325\262\140\000\354\157
\052\050\045\156\052\076\030\143\027\045\077\076\104\040\026\366
\046\310\045\256\005\112\264\347\143\054\363\214\026\123\176\134
\373\021\032\010\301\106\142\237\042\270\361\302\215\151\334\372
\072\130\006\337\002\003\001\000\001\243\201\274\060\201\271\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\032\355\376\101\071
\220\264\044\131\276\001\362\122\325\105\366\132\071\334\021\060
\144\006\003\125\035\043\004\135\060\133\200\024\032\355\376\101
\071\220\264\044\131\276\001\362\122\325\105\366\132\071\334\021
\241\070\244\066\060\064\061\013\060\011\006\003\125\004\006\023
\002\106\122\061\022\060\020\006\003\125\004\012\014\011\104\150
\151\155\171\157\164\151\163\061\021\060\017\006\003\125\004\003
\014\010\103\145\162\164\151\147\156\141\202\011\000\376\334\343
\001\017\311\110\377\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\021\006\011\140\206\110\001\206\370\102
\001\001\004\004\003\002\000\007\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\001\001\000\205\003\036\222
\161\366\102\257\341\243\141\236\353\363\300\017\362\245\324\332
\225\346\326\276\150\066\075\176\156\037\114\212\357\321\017\041
\155\136\245\122\143\316\022\370\357\052\332\157\353\067\376\023
\002\307\313\073\076\042\153\332\141\056\177\324\162\075\335\060
\341\036\114\100\031\214\017\327\234\321\203\060\173\230\131\334
\175\306\271\014\051\114\241\063\242\353\147\072\145\204\323\226
\342\355\166\105\160\217\265\053\336\371\043\326\111\156\074\024
\265\306\237\065\036\120\320\301\217\152\160\104\002\142\313\256
\035\150\101\247\252\127\350\123\252\007\322\006\366\325\024\006
\013\221\003\165\054\154\162\265\141\225\232\015\213\271\015\347
\365\337\124\315\336\346\330\326\011\010\227\143\345\301\056\260
\267\104\046\300\046\300\257\125\060\236\073\325\066\052\031\004
\364\134\036\377\317\054\267\377\320\375\207\100\021\325\021\043
\273\110\300\041\251\244\050\055\375\025\370\260\116\053\364\060

\133\041\374\021\221\064\276\101\357\173\235\227\165\377\227\225
\300\226\130\057\352\273\106\327\273\344\331\056
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certigna"
Issuer: CN=Certigna,O=Dhimyotis,C=FR
Serial Number:00:fe:dc:e3:01:0f:c9:48:ff
Subject: CN=Certigna,O=Dhimyotis,C=FR
Not Valid Before: Fri Jun 29 15:13:05 2007
Not Valid After : Tue Jun 29 15:13:05 2027
Fingerprint (SHA-256):
E3:B6:A2:DB:2E:D7:CE:48:84:2F:7A:C5:32:41:C7:B7:1D:54:14:4B:FB:40:C1:1F:3F:1D:0B:42:F5:EE:A1:2D
Fingerprint (SHA1): B1:2E:13:63:45:86:A4:6F:1A:B2:60:68:37:58:2D:C4:AC:FD:94:97
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certigna"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\261\056\023\143\105\206\244\157\032\262\140\150\067\130\055\304
\254\375\224\227
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\253\127\246\133\175\102\202\031\265\330\130\046\050\136\375\377
END
CKA_ISSUER MULTILINE_OCTAL
\060\064\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\021\060\017\006\003\125\004\003\014\010\103\145
\162\164\151\147\156\141
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\376\334\343\001\017\311\110\377
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ePKI Root Certification Authority"
#
Issuer: OU=ePKI Root Certification Authority,O="Chunghwa Telecom Co., Ltd.",C=TW
Serial Number:15:c8:bd:65:47:5c:af:b8:97:00:5e:e4:06:d2:bc:9d
Subject: OU=ePKI Root Certification Authority,O="Chunghwa Telecom Co., Ltd.",C=TW

Not Valid Before: Mon Dec 20 02:31:27 2004
Not Valid After : Wed Dec 20 02:31:27 2034
Fingerprint (SHA-256):
C0:A6:F4:DC:63:A2:4B:FD:CF:54:EF:2A:6A:08:2A:0A:72:DE:35:80:3E:2F:F5:FF:52:7A:E5:D8:72:06:DF:D5
Fingerprint (SHA1): 67:65:0D:F1:7E:8E:7E:5B:82:40:A4:F4:56:4B:CF:E2:3D:69:C6:F0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ePKI Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\136\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\052\060\050\006\003\125\004\013\014\041\145
\120\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\136\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\052\060\050\006\003\125\004\013\014\041\145
\120\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\025\310\275\145\107\134\257\270\227\000\136\344\006\322
\274\235
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\260\060\202\003\230\240\003\002\001\002\002\020\025
\310\275\145\107\134\257\270\227\000\136\344\006\322\274\235\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\136
\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043\060
\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167\141
\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114\164
\144\056\061\052\060\050\006\003\125\004\013\014\041\145\120\113
\111\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060\036
\027\015\060\064\061\062\062\060\060\062\063\061\062\067\132\027
\015\063\064\061\062\062\060\060\062\063\061\062\067\132\060\136
\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043\060
\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167\141
\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114\164
\144\056\061\052\060\050\006\003\125\004\013\014\041\145\120\113

\111\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\341
\045\017\356\215\333\210\063\165\147\315\255\037\175\072\116\155
\235\323\057\024\363\143\164\313\001\041\152\067\352\204\120\007
\113\046\133\011\103\154\041\236\152\310\325\003\365\140\151\217
\314\360\042\344\037\347\367\152\042\061\267\054\025\362\340\376
\000\152\103\377\207\145\306\265\032\301\247\114\155\042\160\041
\212\061\362\227\164\211\011\022\046\034\236\312\331\022\242\225
\074\332\351\147\277\010\240\144\343\326\102\267\105\357\227\364
\366\365\327\265\112\025\002\130\175\230\130\113\140\274\315\327
\015\232\023\063\123\321\141\371\172\325\327\170\263\232\063\367
\000\206\316\035\115\224\070\257\250\354\170\121\160\212\134\020
\203\121\041\367\021\075\064\206\136\345\110\315\227\201\202\065
\114\031\354\145\366\153\305\005\241\356\107\023\326\263\041\047
\224\020\012\331\044\073\272\276\104\023\106\060\077\227\074\330
\327\327\152\356\073\070\343\053\324\227\016\271\033\347\007\111
\177\067\052\371\167\170\317\124\355\133\106\235\243\200\016\221
\103\301\326\133\137\024\272\237\246\215\044\107\100\131\277\162
\070\262\066\154\067\377\231\321\135\016\131\012\253\151\367\300
\262\004\105\172\124\000\256\276\123\366\265\347\341\370\074\243
\061\322\251\376\041\122\144\305\246\147\360\165\007\006\224\024
\201\125\306\047\344\001\217\027\301\152\161\327\276\113\373\224
\130\175\176\021\063\261\102\367\142\154\030\326\317\011\150\076
\177\154\366\036\217\142\255\245\143\333\011\247\037\042\102\101
\036\157\231\212\076\327\371\077\100\172\171\260\245\001\222\322
\235\075\010\025\245\020\001\055\263\062\166\250\225\015\263\172
\232\373\007\020\170\021\157\341\217\307\272\017\045\032\164\052
\345\034\230\101\231\337\041\207\350\225\006\152\012\263\152\107
\166\145\366\072\317\217\142\027\031\173\012\050\315\032\322\203
\036\041\307\054\277\276\377\141\150\267\147\033\273\170\115\215
\316\147\345\344\301\216\267\043\146\342\235\220\165\064\230\251
\066\053\212\232\224\271\235\354\314\212\261\370\045\211\134\132
\266\057\214\037\155\171\044\247\122\150\303\204\065\342\146\215
\143\016\045\115\325\031\262\346\171\067\247\042\235\124\061\002
\003\001\000\001\243\152\060\150\060\035\006\003\125\035\016\004
\026\004\024\036\014\367\266\147\362\341\222\046\011\105\300\125
\071\056\167\077\102\112\242\060\014\006\003\125\035\023\004\005
\060\003\001\001\377\060\071\006\004\147\052\007\000\004\061\060
\057\060\055\002\001\000\060\011\006\005\053\016\003\002\032\005
\000\060\007\006\005\147\052\003\000\000\004\024\105\260\302\307
\012\126\174\356\133\170\014\225\371\030\123\301\246\034\330\020
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\002\001\000\011\263\203\123\131\001\076\225\111\271\361\201
\272\371\166\040\043\265\047\140\164\324\152\231\064\136\154\000
\123\331\237\362\246\261\044\007\104\152\052\306\245\216\170\022
\350\107\331\130\033\023\052\136\171\233\237\012\052\147\246\045

\077\006\151\126\163\303\212\146\110\373\051\201\127\164\006\312
\234\352\050\350\070\147\046\053\361\325\265\077\145\223\370\066
\135\216\215\215\100\040\207\031\352\357\047\300\075\264\071\017
\045\173\150\120\164\125\234\014\131\175\132\075\101\224\045\122
\010\340\107\054\025\061\031\325\277\007\125\306\273\022\265\227
\364\137\203\205\272\161\301\331\154\201\021\166\012\012\260\277
\202\227\367\352\075\372\372\354\055\251\050\224\073\126\335\322
\121\056\256\300\275\010\025\214\167\122\064\226\326\233\254\323
\035\216\141\017\065\173\233\256\071\151\013\142\140\100\040\066
\217\257\373\066\356\055\010\112\035\270\277\233\134\370\352\245
\033\240\163\246\330\370\156\340\063\004\137\150\252\047\207\355
\331\301\220\234\355\275\343\152\065\257\143\337\253\030\331\272
\346\351\112\352\120\212\017\141\223\036\342\055\031\342\060\224
\065\222\135\016\266\007\257\031\200\217\107\220\121\113\056\115
\335\205\342\322\012\122\012\027\232\374\032\260\120\002\345\001
\243\143\067\041\114\104\304\233\121\231\021\016\163\234\006\217
\124\056\247\050\136\104\071\207\126\055\067\275\205\104\224\341
\014\113\054\234\303\222\205\064\141\313\017\270\233\112\103\122
\376\064\072\175\270\351\051\334\166\251\310\060\370\024\161\200
\306\036\066\110\164\042\101\134\207\202\350\030\161\213\101\211
\104\347\176\130\133\250\270\215\023\351\247\154\303\107\355\263
\032\235\142\256\215\202\352\224\236\335\131\020\303\255\335\342
\115\343\061\325\307\354\350\362\260\376\222\036\026\012\032\374
\331\363\370\047\266\311\276\035\264\154\144\220\177\364\344\304
\133\327\067\256\102\016\335\244\032\157\174\210\124\305\026\156
\341\172\150\056\370\072\277\015\244\074\211\073\170\247\116\143
\203\004\041\010\147\215\362\202\111\320\133\375\261\315\017\203
\204\324\076\040\205\367\112\075\053\234\375\052\012\011\115\352
\201\370\021\234
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ePKI Root Certification Authority"
Issuer: OU=ePKI Root Certification Authority,O="Chunghwa Telecom Co., Ltd.",C=TW
Serial Number:15:c8:bd:65:47:5c:af:b8:97:00:5e:e4:06:d2:bc:9d
Subject: OU=ePKI Root Certification Authority,O="Chunghwa Telecom Co., Ltd.",C=TW
Not Valid Before: Mon Dec 20 02:31:27 2004
Not Valid After : Wed Dec 20 02:31:27 2034
Fingerprint (SHA-256):
C0:A6:F4:DC:63:A2:4B:FD:CF:54:EF:2A:6A:08:2A:0A:72:DE:35:80:3E:2F:F5:FF:52:7A:E5:D8:72:06:DF:D5
Fingerprint (SHA1): 67:65:0D:F1:7E:8E:7E:5B:82:40:A4:F4:56:4B:CF:E2:3D:69:C6:F0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ePKI Root Certification Authority"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\147\145\015\361\176\216\176\133\202\100\244\364\126\113\317\342
\075\151\306\360
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\033\056\000\312\046\006\220\075\255\376\157\025\150\323\153\263
END
CKA_ISSUER MULTILINE_OCTAL
\060\136\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\052\060\050\006\003\125\004\013\014\041\145
\120\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\025\310\275\145\107\134\257\270\227\000\136\344\006\322
\274\235
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "certSIGN ROOT CA"
#
Issuer: OU=certSIGN ROOT CA,O=certSIGN,C=RO
Serial Number:20:06:05:16:70:02
Subject: OU=certSIGN ROOT CA,O=certSIGN,C=RO
Not Valid Before: Tue Jul 04 17:20:04 2006
Not Valid After : Fri Jul 04 17:20:04 2031
Fingerprint (SHA-256):
EA:A9:62:C4:FA:4A:6B:AF:EB:E4:15:19:6D:35:1C:CD:88:8D:4F:53:F3:FA:8A:E6:D7:C4:66:A9:4E:60:42:BB
Fingerprint (SHA1): FA:B7:EE:36:97:26:62:FB:2D:B0:2A:F6:BF:03:FD:E8:7C:4B:2F:9B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "certSIGN ROOT CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\021\060\017\006\003\125\004\012\023\010\143\145\162\164\123\111
\107\116\061\031\060\027\006\003\125\004\013\023\020\143\145\162
\164\123\111\107\116\040\122\117\117\124\040\103\101
END
CKA_ID UTF8 "0"

CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\021\060\017\006\003\125\004\012\023\010\143\145\162\164\123\111
\107\116\061\031\060\027\006\003\125\004\013\023\020\143\145\162
\164\123\111\107\116\040\122\117\117\124\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\006\040\006\005\026\160\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\070\060\202\002\040\240\003\002\001\002\002\006\040
\006\005\026\160\002\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\060\073\061\013\060\011\006\003\125\004\006\023
\002\122\117\061\021\060\017\006\003\125\004\012\023\010\143\145
\162\164\123\111\107\116\061\031\060\027\006\003\125\004\013\023
\020\143\145\162\164\123\111\107\116\040\122\117\117\124\040\103
\101\060\036\027\015\060\066\060\067\060\064\061\067\062\060\060
\064\132\027\015\063\061\060\067\060\064\061\067\062\060\060\064
\132\060\073\061\013\060\011\006\003\125\004\006\023\002\122\117
\061\021\060\017\006\003\125\004\012\023\010\143\145\162\164\123
\111\107\116\061\031\060\027\006\003\125\004\013\023\020\143\145
\162\164\123\111\107\116\040\122\117\117\124\040\103\101\060\202
\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000\267
\063\271\176\310\045\112\216\265\333\264\050\033\252\127\220\350
\321\042\323\144\272\323\223\350\324\254\206\141\100\152\140\127
\150\124\204\115\274\152\124\002\005\377\337\233\232\052\256\135
\007\217\112\303\050\177\357\373\053\372\171\361\307\255\360\020
\123\044\220\213\146\311\250\210\253\257\132\243\000\351\276\272
\106\356\133\163\173\054\027\202\201\136\142\054\241\002\145\263
\275\305\053\000\176\304\374\003\063\127\015\355\342\372\316\135
\105\326\070\315\065\266\262\301\320\234\201\112\252\344\262\001
\134\035\217\137\231\304\261\255\333\210\041\353\220\010\202\200
\363\060\243\103\346\220\202\256\125\050\111\355\133\327\251\020
\070\016\376\217\114\133\233\106\352\101\365\260\010\164\303\320
\210\063\266\174\327\164\337\334\204\321\103\016\165\071\241\045
\100\050\352\170\313\016\054\056\071\235\214\213\156\026\034\057
\046\202\020\342\343\145\224\012\004\300\136\367\135\133\370\020
\342\320\272\172\113\373\336\067\000\000\032\133\050\343\322\234
\163\076\062\207\230\241\311\121\057\327\336\254\063\263\117\002
\003\001\000\001\243\102\060\100\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\306\060\035\006\003\125\035\016
\004\026\004\024\340\214\233\333\045\111\263\361\174\206\326\262
\102\207\013\320\153\240\331\344\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\001\001\000\076\322\034\211
\056\065\374\370\165\335\346\177\145\210\364\162\114\311\054\327
\062\116\363\335\031\171\107\275\216\073\133\223\017\120\111\044

\023\153\024\006\162\357\011\323\241\241\343\100\204\311\347\030
\062\164\074\110\156\017\237\113\324\367\036\323\223\206\144\124
\227\143\162\120\325\125\317\372\040\223\002\242\233\303\043\223
\116\026\125\166\240\160\171\155\315\041\037\317\057\055\274\031
\343\210\061\370\131\032\201\011\310\227\246\164\307\140\304\133
\314\127\216\262\165\375\033\002\011\333\131\157\162\223\151\367
\061\101\326\210\070\277\207\262\275\026\171\371\252\344\276\210
\045\335\141\047\043\034\265\061\007\004\066\264\032\220\275\240
\164\161\120\211\155\274\024\343\017\206\256\361\253\076\307\240
\011\314\243\110\321\340\333\144\347\222\265\317\257\162\103\160
\213\371\303\204\074\023\252\176\222\233\127\123\223\372\160\302
\221\016\061\371\233\147\135\351\226\070\136\137\263\163\116\210
\025\147\336\236\166\020\142\040\276\125\151\225\103\000\071\115
\366\356\260\132\116\111\104\124\130\137\102\203
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "certSIGN ROOT CA"
Issuer: OU=certSIGN ROOT CA,O=certSIGN,C=RO
Serial Number:20:06:05:16:70:02
Subject: OU=certSIGN ROOT CA,O=certSIGN,C=RO
Not Valid Before: Tue Jul 04 17:20:04 2006
Not Valid After : Fri Jul 04 17:20:04 2031
Fingerprint (SHA-256):
EA:A9:62:C4:FA:4A:6B:AF:EB:E4:15:19:6D:35:1C:CD:88:8D:4F:53:F3:FA:8A:E6:D7:C4:66:A9:4E:60:42:BB
Fingerprint (SHA1): FA:B7:EE:36:97:26:62:FB:2D:B0:2A:F6:BF:03:FD:E8:7C:4B:2F:9B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "certSIGN ROOT CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\372\267\356\066\227\046\142\373\055\260\052\366\277\003\375\350
\174\113\057\233
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\030\230\300\326\351\072\374\371\260\365\014\367\113\001\104\027
END
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\021\060\017\006\003\125\004\012\023\010\143\145\162\164\123\111
\107\116\061\031\060\027\006\003\125\004\013\023\020\143\145\162
\164\123\111\107\116\040\122\117\117\124\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\006\040\006\005\026\160\002

END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "NetLock Arany (Class Gold) Ftanúsítvány"
#
Issuer: CN=NetLock Arany (Class Gold) F..tan..s..tv..ny,OU=Tan..s..tv..nykiad..k (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Serial Number:49:41:2c:e4:00:10
Subject: CN=NetLock Arany (Class Gold) F..tan..s..tv..ny,OU=Tan..s..tv..nykiad..k (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Not Valid Before: Thu Dec 11 15:08:21 2008
Not Valid After : Wed Dec 06 15:08:21 2028
Fingerprint (SHA-256):
6C:61:DA:C3:A2:DE:F0:31:50:6B:E0:36:D2:A6:FE:40:19:94:FB:D1:3D:F9:C8:D4:66:59:92:74:C4:46:EC:98
Fingerprint (SHA1): 06:08:3F:59:3F:15:A1:04:A0:69:A4:6B:A9:03:D0:06:B7:97:09:91
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NetLock Arany (Class Gold) Ftanúsítvány"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\247\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\025\060\023\006\003\125\004\012\014\014\116\145
\164\114\157\143\153\040\113\146\164\056\061\067\060\065\006\003
\125\004\013\014\056\124\141\156\303\272\163\303\255\164\166\303
\241\156\171\153\151\141\144\303\263\153\040\050\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\051\061\065\060\063\006\003\125\004\003\014\054\116\145
\164\114\157\143\153\040\101\162\141\156\171\040\050\103\154\141
\163\163\040\107\157\154\144\051\040\106\305\221\164\141\156\303
\272\163\303\255\164\166\303\241\156\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\247\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\025\060\023\006\003\125\004\012\014\014\116\145
\164\114\157\143\153\040\113\146\164\056\061\067\060\065\006\003
\125\004\013\014\056\124\141\156\303\272\163\303\255\164\166\303
\241\156\171\153\151\141\144\303\263\153\040\050\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\051\061\065\060\063\006\003\125\004\003\014\054\116\145

\164\114\157\143\153\040\101\162\141\156\171\040\050\103\154\141
\163\163\040\107\157\154\144\051\040\106\305\221\164\141\156\303
\272\163\303\255\164\166\303\241\156\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\006\111\101\054\344\000\020
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\025\060\202\002\375\240\003\002\001\002\002\006\111
\101\054\344\000\020\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\060\201\247\061\013\060\011\006\003\125\004\006
\023\002\110\125\061\021\060\017\006\003\125\004\007\014\010\102
\165\144\141\160\145\163\164\061\025\060\023\006\003\125\004\012
\014\014\116\145\164\114\157\143\153\040\113\146\164\056\061\067
\060\065\006\003\125\004\013\014\056\124\141\156\303\272\163\303
\255\164\166\303\241\156\171\153\151\141\144\303\263\153\040\050
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\051\061\065\060\063\006\003\125\004\003
\014\054\116\145\164\114\157\143\153\040\101\162\141\156\171\040
\050\103\154\141\163\163\040\107\157\154\144\051\040\106\305\221
\164\141\156\303\272\163\303\255\164\166\303\241\156\171\060\036
\027\015\060\070\061\062\061\061\061\065\060\070\062\061\132\027
\015\062\070\061\062\060\066\061\065\060\070\062\061\132\060\201
\247\061\013\060\011\006\003\125\004\006\023\002\110\125\061\021
\060\017\006\003\125\004\007\014\010\102\165\144\141\160\145\163
\164\061\025\060\023\006\003\125\004\012\014\014\116\145\164\114
\157\143\153\040\113\146\164\056\061\067\060\065\006\003\125\004
\013\014\056\124\141\156\303\272\163\303\255\164\166\303\241\156
\171\153\151\141\144\303\263\153\040\050\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\123\145\162\166\151\143\145\163
\051\061\065\060\063\006\003\125\004\003\014\054\116\145\164\114
\157\143\153\040\101\162\141\156\171\040\050\103\154\141\163\163
\040\107\157\154\144\051\040\106\305\221\164\141\156\303\272\163
\303\255\164\166\303\241\156\171\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\304\044\136\163\276\113\155
\024\303\241\364\343\227\220\156\322\060\105\036\074\356\147\331
\144\340\032\212\177\312\060\312\203\343\040\301\343\364\072\323
\224\137\032\174\133\155\277\060\117\204\047\366\237\037\111\274
\306\231\012\220\362\017\365\177\103\204\067\143\121\213\172\245
\160\374\172\130\315\216\233\355\303\106\154\204\160\135\332\363
\001\220\043\374\116\060\251\176\341\047\143\347\355\144\074\240
\270\311\063\143\376\026\220\377\260\270\375\327\250\300\300\224
\103\013\266\325\131\246\236\126\320\044\037\160\171\257\333\071
\124\015\145\165\331\025\101\224\001\257\136\354\366\215\361\377
\255\144\376\040\232\327\134\353\376\246\037\010\144\243\213\166
\125\255\036\073\050\140\056\207\045\350\252\257\037\306\144\106
\040\267\160\177\074\336\110\333\226\123\267\071\167\344\032\342

\307\026\204\166\227\133\057\273\031\025\205\370\151\205\365\231
\247\251\362\064\247\251\266\246\003\374\157\206\075\124\174\166
\004\233\153\371\100\135\000\064\307\056\231\165\235\345\210\003
\252\115\370\003\322\102\166\300\033\002\003\000\250\213\243\105
\060\103\060\022\006\003\125\035\023\001\001\377\004\010\060\006
\001\001\377\002\001\004\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004
\024\314\372\147\223\360\266\270\320\245\300\036\363\123\375\214
\123\337\203\327\226\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\003\202\001\001\000\253\177\356\034\026\251\234
\074\121\000\240\300\021\010\005\247\231\346\157\001\210\124\141
\156\361\271\030\255\112\255\376\201\100\043\224\057\373\165\174
\057\050\113\142\044\201\202\013\365\141\361\034\156\270\141\070
\353\201\372\142\241\073\132\142\323\224\145\304\341\346\155\202
\370\057\045\160\262\041\046\301\162\121\037\214\054\303\204\220
\303\132\217\272\317\364\247\145\245\353\230\321\373\005\262\106
\165\025\043\152\157\205\143\060\200\360\325\236\037\051\034\302
\154\260\120\131\135\220\133\073\250\015\060\317\277\175\177\316
\361\235\203\275\311\106\156\040\246\371\141\121\272\041\057\173
\276\245\025\143\241\324\225\207\361\236\271\363\211\363\075\205
\270\270\333\276\265\271\051\371\332\067\005\000\111\224\003\204
\104\347\277\103\061\317\165\213\045\321\364\246\144\365\222\366
\253\005\353\075\351\245\013\066\142\332\314\006\137\066\213\266
\136\061\270\052\373\136\366\161\337\104\046\236\304\346\015\221
\264\056\165\225\200\121\152\113\060\246\260\142\241\223\361\233
\330\316\304\143\165\077\131\107\261
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "NetLock Arany (Class Gold) Ftanúsítvány"
Issuer: CN=NetLock Arany (Class Gold) F..tan..s..tv..ny,OU=Tan..s..tv..nykiad..k (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Serial Number:49:41:2c:e4:00:10
Subject: CN=NetLock Arany (Class Gold) F..tan..s..tv..ny,OU=Tan..s..tv..nykiad..k (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Not Valid Before: Thu Dec 11 15:08:21 2008
Not Valid After : Wed Dec 06 15:08:21 2028
Fingerprint (SHA-256):
6C:61:DA:C3:A2:DE:F0:31:50:6B:E0:36:D2:A6:FE:40:19:94:FB:D1:3D:F9:C8:D4:66:59:92:74:C4:46:EC:98
Fingerprint (SHA1): 06:08:3F:59:3F:15:A1:04:A0:69:A4:6B:A9:03:D0:06:B7:97:09:91
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NetLock Arany (Class Gold) Ftanúsítvány"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\006\010\077\131\077\025\241\004\240\151\244\153\251\003\320\006
\267\227\011\221
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\241\267\377\163\335\326\327\064\062\030\337\374\074\255\210
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\247\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\025\060\023\006\003\125\004\012\014\014\116\145
\164\114\157\143\153\040\113\146\164\056\061\067\060\065\006\003
\125\004\013\014\056\124\141\156\303\272\163\303\255\164\166\303
\241\156\171\153\151\141\144\303\263\153\040\050\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\051\061\065\060\063\006\003\125\004\003\014\054\116\145
\164\114\157\143\153\040\101\162\141\156\171\040\050\103\154\141
\163\163\040\107\157\154\144\051\040\106\305\221\164\141\156\303
\272\163\303\255\164\166\303\241\156\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\006\111\101\054\344\000\020
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Hongkong Post Root CA 1"
#
Issuer: CN=Hongkong Post Root CA 1,O=Hongkong Post,C=HK
Serial Number: 1000 (0x3e8)
Subject: CN=Hongkong Post Root CA 1,O=Hongkong Post,C=HK
Not Valid Before: Thu May 15 05:13:14 2003
Not Valid After : Mon May 15 04:52:29 2023
Fingerprint (SHA-256):
F9:E6:7D:33:6C:51:00:2A:C0:54:C6:32:02:2D:66:DD:A2:E7:E3:FF:F1:0A:D0:61:ED:31:D8:BB:B4:10:CF:B2
Fingerprint (SHA1): D6:DA:A8:20:8D:09:D2:15:4D:24:B5:2F:CB:34:6E:B2:58:B2:8A:58
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hongkong Post Root CA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\026\060\024\006\003\125\004\012\023\015\110\157\156\147\153\157
\156\147\040\120\157\163\164\061\040\060\036\006\003\125\004\003

\023\027\110\157\156\147\153\157\156\147\040\120\157\163\164\040
\122\157\157\164\040\103\101\040\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\026\060\024\006\003\125\004\012\023\015\110\157\156\147\153\157
\156\147\040\120\157\163\164\061\040\060\036\006\003\125\004\003
\023\027\110\157\156\147\153\157\156\147\040\120\157\163\164\040
\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\003\350
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\060\060\202\002\030\240\003\002\001\002\002\002\003
\350\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\060\107\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\026\060\024\006\003\125\004\012\023\015\110\157\156\147\153\157
\156\147\040\120\157\163\164\061\040\060\036\006\003\125\004\003
\023\027\110\157\156\147\153\157\156\147\040\120\157\163\164\040
\122\157\157\164\040\103\101\040\061\060\036\027\015\060\063\060
\065\061\065\060\065\061\063\061\064\132\027\015\062\063\060\065
\061\065\060\064\065\062\062\071\132\060\107\061\013\060\011\006
\003\125\004\006\023\002\110\113\061\026\060\024\006\003\125\004
\012\023\015\110\157\156\147\153\157\156\147\040\120\157\163\164
\061\040\060\036\006\003\125\004\003\023\027\110\157\156\147\153
\157\156\147\040\120\157\163\164\040\122\157\157\164\040\103\101
\040\061\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\254\377\070\266\351\146\002\111\343\242\264\341\220
\371\100\217\171\371\342\275\171\376\002\275\356\044\222\035\042
\366\332\205\162\151\376\327\077\011\324\335\221\265\002\234\320
\215\132\341\125\303\120\206\271\051\046\302\343\331\240\361\151
\003\050\040\200\105\042\055\126\247\073\124\225\126\042\131\037
\050\337\037\040\075\155\242\066\276\043\240\261\156\265\261\047
\077\071\123\011\352\253\152\350\164\262\302\145\134\216\277\174
\303\170\204\315\236\026\374\365\056\117\040\052\010\237\167\363
\305\036\304\232\122\146\036\110\136\343\020\006\217\042\230\341
\145\216\033\135\043\146\073\270\245\062\121\310\206\252\241\251
\236\177\166\224\302\246\154\267\101\360\325\310\006\070\346\324
\014\342\363\073\114\155\120\214\304\203\047\301\023\204\131\075
\236\165\164\266\330\002\136\072\220\172\300\102\066\162\354\152
\115\334\357\304\000\337\023\030\127\137\046\170\310\326\012\171
\167\277\367\257\267\166\271\245\013\204\027\135\020\352\157\341
\253\225\021\137\155\074\243\134\115\203\133\362\263\031\212\200
\213\013\207\002\003\001\000\001\243\046\060\044\060\022\006\003
\125\035\023\001\001\377\004\010\060\006\001\001\377\002\001\003

\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\306
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\016\106\325\074\256\342\207\331\136\201\213\002
\230\101\010\214\114\274\332\333\356\047\033\202\347\152\105\354
\026\213\117\205\240\363\262\160\275\132\226\272\312\156\155\356
\106\213\156\347\052\056\226\263\031\063\353\264\237\250\262\067
\356\230\250\227\266\056\266\147\047\324\246\111\375\034\223\145
\166\236\102\057\334\042\154\232\117\362\132\025\071\261\161\327
\053\121\350\155\034\230\300\331\052\364\241\202\173\325\311\101
\242\043\001\164\070\125\213\017\271\056\147\242\040\004\067\332
\234\013\323\027\041\340\217\227\171\064\157\204\110\002\040\063
\033\346\064\104\237\221\160\364\200\136\204\103\302\051\322\154
\022\024\344\141\215\254\020\220\236\204\120\273\360\226\157\105
\237\212\363\312\154\117\372\021\072\025\025\106\303\315\037\203
\133\055\101\022\355\120\147\101\023\075\041\253\224\212\252\116
\174\301\261\373\247\326\265\047\057\227\253\156\340\035\342\321
\034\054\037\104\342\374\276\221\241\234\373\326\051\123\163\206
\237\123\330\103\016\135\326\143\202\161\035\200\164\312\366\342
\002\153\331\132
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Hongkong Post Root CA 1"
Issuer: CN=Hongkong Post Root CA 1,O=Hongkong Post,C=HK
Serial Number: 1000 (0x3e8)
Subject: CN=Hongkong Post Root CA 1,O=Hongkong Post,C=HK
Not Valid Before: Thu May 15 05:13:14 2003
Not Valid After : Mon May 15 04:52:29 2023
Fingerprint (SHA-256):
F9:E6:7D:33:6C:51:00:2A:C0:54:C6:32:02:2D:66:DD:A2:E7:E3:FF:F1:0A:D0:61:ED:31:D8:BB:B4:10:CF:B2
Fingerprint (SHA1): D6:DA:A8:20:8D:09:D2:15:4D:24:B5:2F:CB:34:6E:B2:58:B2:8A:58
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hongkong Post Root CA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\326\332\250\040\215\011\322\025\115\044\265\057\313\064\156\262
\130\262\212\130
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\250\015\157\071\170\271\103\155\167\102\155\230\132\314\043\312
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\026\060\024\006\003\125\004\012\023\015\110\157\156\147\153\157

\156\147\040\120\157\163\164\061\040\060\036\006\003\125\004\003
\023\027\110\157\156\147\153\157\156\147\040\120\157\163\164\040
\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\003\350
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SecureSign RootCA11"
#
Issuer: CN=SecureSign RootCA11,O="Japan Certification Services, Inc.",C=JP
Serial Number: 1 (0x1)
Subject: CN=SecureSign RootCA11,O="Japan Certification Services, Inc.",C=JP
Not Valid Before: Wed Apr 08 04:56:47 2009
Not Valid After : Sun Apr 08 04:56:47 2029
Fingerprint (SHA-256):
BF:0F:EE:FB:9E:3A:58:1A:D5:F9:E9:DB:75:89:98:57:43:D2:61:08:5C:4D:31:4F:6F:5D:72:59:AA:42:16:12
Fingerprint (SHA1): 3B:C4:9F:48:F8:F3:73:A0:9C:1E:BD:F8:5B:B1:C3:65:C7:D8:11:B3
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SecureSign RootCA11"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\053\060\051\006\003\125\004\012\023\042\112\141\160\141\156\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\054\040\111\156\143\056\061\034\060\032
\006\003\125\004\003\023\023\123\145\143\165\162\145\123\151\147
\156\040\122\157\157\164\103\101\061\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\053\060\051\006\003\125\004\012\023\042\112\141\160\141\156\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\054\040\111\156\143\056\061\034\060\032
\006\003\125\004\003\023\023\123\145\143\165\162\145\123\151\147
\156\040\122\157\157\164\103\101\061\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001

END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\155\060\202\002\125\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061\053
\060\051\006\003\125\004\012\023\042\112\141\160\141\156\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145\162
\166\151\143\145\163\054\040\111\156\143\056\061\034\060\032\006
\003\125\004\003\023\023\123\145\143\165\162\145\123\151\147\156
\040\122\157\157\164\103\101\061\061\060\036\027\015\060\071\060
\064\060\070\060\064\065\066\064\067\132\027\015\062\071\060\064
\060\070\060\064\065\066\064\067\132\060\130\061\013\060\011\006
\003\125\004\006\023\002\112\120\061\053\060\051\006\003\125\004
\012\023\042\112\141\160\141\156\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\123\145\162\166\151\143\145\163\054
\040\111\156\143\056\061\034\060\032\006\003\125\004\003\023\023
\123\145\143\165\162\145\123\151\147\156\040\122\157\157\164\103
\101\061\061\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\375\167\252\245\034\220\005\073\313\114\233\063
\213\132\024\105\244\347\220\026\321\337\127\322\041\020\244\027
\375\337\254\326\037\247\344\333\174\367\354\337\270\003\332\224
\130\375\135\162\174\214\077\137\001\147\164\025\226\343\002\074
\207\333\256\313\001\216\302\363\146\306\205\105\364\002\306\072
\265\142\262\257\372\234\277\244\346\324\200\060\230\363\015\266
\223\217\251\324\330\066\362\260\374\212\312\054\241\025\063\225
\061\332\300\033\362\356\142\231\206\143\077\277\335\223\052\203
\250\166\271\023\037\267\316\116\102\205\217\042\347\056\032\362
\225\011\262\005\265\104\116\167\241\040\275\251\362\116\012\175
\120\255\365\005\015\105\117\106\161\375\050\076\123\373\004\330
\055\327\145\035\112\033\372\317\073\260\061\232\065\156\310\213
\006\323\000\221\362\224\010\145\114\261\064\006\000\172\211\342
\360\307\003\131\317\325\326\350\247\062\263\346\230\100\206\305
\315\047\022\213\314\173\316\267\021\074\142\140\007\043\076\053
\100\156\224\200\011\155\266\263\157\167\157\065\010\120\373\002
\207\305\076\211\002\003\001\000\001\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\133\370\115\117\262\245\206\324
\072\322\361\143\232\240\276\011\366\127\267\336\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\240\241\070\026\146\056\247\126\037\041\234\006\372\035\355
\271\042\305\070\046\330\116\117\354\243\177\171\336\106\041\241
\207\167\217\007\010\232\262\244\305\257\017\062\230\013\174\146
\051\266\233\175\045\122\111\103\253\114\056\053\156\172\160\257
\026\016\343\002\154\373\102\346\030\235\105\330\125\310\350\073
\335\347\341\364\056\013\034\064\134\154\130\112\373\214\210\120
\137\225\034\277\355\253\042\265\145\263\205\272\236\017\270\255

\345\172\033\212\120\072\035\275\015\274\173\124\120\013\271\102
\257\125\240\030\201\255\145\231\357\276\344\234\277\304\205\253
\101\262\124\157\334\045\315\355\170\342\216\014\215\011\111\335
\143\173\132\151\226\002\041\250\275\122\131\351\175\065\313\310
\122\312\177\201\376\331\153\323\367\021\355\045\337\370\347\371
\244\372\162\227\204\123\015\245\320\062\030\121\166\131\024\154
\017\353\354\137\200\214\165\103\203\303\205\230\377\114\236\055
\015\344\167\203\223\116\265\226\007\213\050\023\233\214\031\215
\101\047\111\100\356\336\346\043\104\071\334\241\042\326\272\003
\362
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SecureSign RootCA11"
Issuer: CN=SecureSign RootCA11,O="Japan Certification Services, Inc.",C=JP
Serial Number: 1 (0x1)
Subject: CN=SecureSign RootCA11,O="Japan Certification Services, Inc.",C=JP
Not Valid Before: Wed Apr 08 04:56:47 2009
Not Valid After : Sun Apr 08 04:56:47 2029
Fingerprint (SHA-256):
BF:0F:EE:FB:9E:3A:58:1A:D5:F9:E9:DB:75:89:98:57:43:D2:61:08:5C:4D:31:4F:6F:5D:72:59:AA:42:16:12
Fingerprint (SHA1): 3B:C4:9F:48:F8:F3:73:A0:9C:1E:BD:F8:5B:B1:C3:65:C7:D8:11:B3
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SecureSign RootCA11"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\073\304\237\110\370\363\163\240\234\036\275\370\133\261\303\145
\307\330\021\263
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\267\122\164\342\222\264\200\223\362\165\344\314\327\362\352\046
END
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\053\060\051\006\003\125\004\012\023\042\112\141\160\141\156\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\054\040\111\156\143\056\061\034\060\032
\006\003\125\004\003\023\023\123\145\143\165\162\145\123\151\147
\156\040\122\157\157\164\103\101\061\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Microsec e-Szigno Root CA 2009"
#
Issuer: E=info@e-szigno.hu,CN=Microsec e-Szigno Root CA 2009,O=Microsec Ltd.,L=Budapest,C=HU
Serial Number:00:c2:7e:43:04:4e:47:3f:19
Subject: E=info@e-szigno.hu,CN=Microsec e-Szigno Root CA 2009,O=Microsec Ltd.,L=Budapest,C=HU
Not Valid Before: Tue Jun 16 11:30:18 2009
Not Valid After : Sun Dec 30 11:30:18 2029
Fingerprint (SHA-256):
3C:5F:81:FE:A5:FA:B8:2C:64:BF:A2:EA:EC:AF:CD:E8:E0:77:FC:86:20:A7:CA:E5:37:16:3D:F3:6E:DB:F3:78
Fingerprint (SHA1): 89:DF:74:FE:5C:F4:0F:4A:80:F9:E3:37:7D:54:DA:91:E1:01:31:8E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsec e-Szigno Root CA 2009"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151
\143\162\157\163\145\143\040\114\164\144\056\061\047\060\045\006
\003\125\004\003\014\036\115\151\143\162\157\163\145\143\040\145
\055\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040
\062\060\060\071\061\037\060\035\006\011\052\206\110\206\367\015
\001\011\001\026\020\151\156\146\157\100\145\055\163\172\151\147
\156\157\056\150\165
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151
\143\162\157\163\145\143\040\114\164\144\056\061\047\060\045\006
\003\125\004\003\014\036\115\151\143\162\157\163\145\143\040\145
\055\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040
\062\060\060\071\061\037\060\035\006\011\052\206\110\206\367\015
\001\011\001\026\020\151\156\146\157\100\145\055\163\172\151\147
\156\157\056\150\165
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\302\176\103\004\116\107\077\031
END
CKA_VALUE MULTILINE_OCTAL

\060\202\004\012\060\202\002\362\240\003\002\001\002\002\011\000
\302\176\103\004\116\107\077\031\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\201\202\061\013\060\011\006\003
\125\004\006\023\002\110\125\061\021\060\017\006\003\125\004\007
\014\010\102\165\144\141\160\145\163\164\061\026\060\024\006\003
\125\004\012\014\015\115\151\143\162\157\163\145\143\040\114\164
\144\056\061\047\060\045\006\003\125\004\003\014\036\115\151\143
\162\157\163\145\143\040\145\055\123\172\151\147\156\157\040\122
\157\157\164\040\103\101\040\062\060\060\071\061\037\060\035\006
\011\052\206\110\206\367\015\001\011\001\026\020\151\156\146\157
\100\145\055\163\172\151\147\156\157\056\150\165\060\036\027\015
\060\071\060\066\061\066\061\061\063\060\061\070\132\027\015\062
\071\061\062\063\060\061\061\063\060\061\070\132\060\201\202\061
\013\060\011\006\003\125\004\006\023\002\110\125\061\021\060\017
\006\003\125\004\007\014\010\102\165\144\141\160\145\163\164\061
\026\060\024\006\003\125\004\012\014\015\115\151\143\162\157\163
\145\143\040\114\164\144\056\061\047\060\045\006\003\125\004\003
\014\036\115\151\143\162\157\163\145\143\040\145\055\123\172\151
\147\156\157\040\122\157\157\164\040\103\101\040\062\060\060\071
\061\037\060\035\006\011\052\206\110\206\367\015\001\011\001\026
\020\151\156\146\157\100\145\055\163\172\151\147\156\157\056\150
\165\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\351\370\217\363\143\255\332\206\330\247\340\102\373\317
\221\336\246\046\370\231\245\143\160\255\233\256\312\063\100\175
\155\226\156\241\016\104\356\341\023\235\224\102\122\232\275\165
\205\164\054\250\016\035\223\266\030\267\214\054\250\317\373\134
\161\271\332\354\376\350\176\217\344\057\035\262\250\165\207\330
\267\241\345\073\317\231\112\106\320\203\031\175\300\241\022\034
\225\155\112\364\330\307\245\115\063\056\205\071\100\165\176\024
\174\200\022\230\120\307\101\147\270\240\200\141\124\246\154\116
\037\340\235\016\007\351\311\272\063\347\376\300\125\050\054\002
\200\247\031\365\236\334\125\123\003\227\173\007\110\377\231\373
\067\212\044\304\131\314\120\020\143\216\252\251\032\260\204\032
\206\371\137\273\261\120\156\244\321\012\314\325\161\176\037\247
\033\174\365\123\156\042\137\313\053\346\324\174\135\256\326\302
\306\114\345\005\001\331\355\127\374\301\043\171\374\372\310\044
\203\225\363\265\152\121\001\320\167\326\351\022\241\371\032\203
\373\202\033\271\260\227\364\166\006\063\103\111\240\377\013\265
\372\265\002\003\001\000\001\243\201\200\060\176\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006
\003\125\035\016\004\026\004\024\313\017\306\337\102\103\314\075
\313\265\110\043\241\032\172\246\052\273\064\150\060\037\006\003
\125\035\043\004\030\060\026\200\024\313\017\306\337\102\103\314
\075\313\265\110\043\241\032\172\246\052\273\064\150\060\033\006
\003\125\035\021\004\024\060\022\201\020\151\156\146\157\100\145
\055\163\172\151\147\156\157\056\150\165\060\015\006\011\052\206

\110\206\367\015\001\001\013\005\000\003\202\001\001\000\311\321
\016\136\056\325\314\263\174\076\313\374\075\377\015\050\225\223
\004\310\277\332\315\171\270\103\220\360\244\276\357\362\357\041
\230\274\324\324\135\006\366\356\102\354\060\154\240\252\251\312
\361\257\212\372\077\013\163\152\076\352\056\100\176\037\256\124
\141\171\353\056\010\067\327\043\363\214\237\276\035\261\341\244
\165\333\240\342\124\024\261\272\034\051\244\030\366\022\272\242
\024\024\343\061\065\310\100\377\267\340\005\166\127\301\034\131
\362\370\277\344\355\045\142\134\204\360\176\176\037\263\276\371
\267\041\021\314\003\001\126\160\247\020\222\036\033\064\201\036
\255\234\032\303\004\074\355\002\141\326\036\006\363\137\072\207
\362\053\361\105\207\345\075\254\321\307\127\204\275\153\256\334
\330\371\266\033\142\160\013\075\066\311\102\362\062\327\172\141
\346\322\333\075\317\310\251\311\233\334\333\130\104\327\157\070
\257\177\170\323\243\255\032\165\272\034\301\066\174\217\036\155
\034\303\165\106\256\065\005\246\366\134\075\041\356\126\360\311
\202\042\055\172\124\253\160\303\175\042\145\202\160\226
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Microsec e-Szigno Root CA 2009"
Issuer: E=info@e-szigno.hu,CN=Microsec e-Szigno Root CA 2009,O=Microsec Ltd.,L=Budapest,C=HU
Serial Number:00:c2:7e:43:04:4e:47:3f:19
Subject: E=info@e-szigno.hu,CN=Microsec e-Szigno Root CA 2009,O=Microsec Ltd.,L=Budapest,C=HU
Not Valid Before: Tue Jun 16 11:30:18 2009
Not Valid After : Sun Dec 30 11:30:18 2029
Fingerprint (SHA-256):
3C:5F:81:FE:A5:FA:B8:2C:64:BF:A2:EA:EC:AF:CD:E8:E0:77:FC:86:20:A7:CA:E5:37:16:3D:F3:6E:DB:F3:78
Fingerprint (SHA1): 89:DF:74:FE:5C:F4:0F:4A:80:F9:E3:37:7D:54:DA:91:E1:01:31:8E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsec e-Szigno Root CA 2009"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\211\337\164\376\134\364\017\112\200\371\343\067\175\124\332\221
\341\001\061\216
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\370\111\364\003\274\104\055\203\276\110\151\175\051\144\374\261
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151
\143\162\157\163\145\143\040\114\164\144\056\061\047\060\045\006

\003\125\004\003\014\036\115\151\143\162\157\163\145\143\040\145
\055\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040
\062\060\060\071\061\037\060\035\006\011\052\206\110\206\367\015
\001\011\001\026\020\151\156\146\157\100\145\055\163\172\151\147
\156\157\056\150\165
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\302\176\103\004\116\107\077\031
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Root CA - R3"
#
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R3
Serial Number:04:00:00:00:00:01:21:58:53:08:a2
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R3
Not Valid Before: Wed Mar 18 10:00:00 2009
Not Valid After : Sun Mar 18 10:00:00 2029
Fingerprint (SHA-256):
CB:B5:22:D7:B7:F1:27:AD:6A:01:13:86:5B:DF:1C:D4:10:2E:7D:07:59:AF:63:5A:7C:F4:72:0D:C9:63:C5:3B
Fingerprint (SHA1): D6:9B:56:11:48:F0:1C:77:C5:45:78:C1:09:26:DF:5B:85:69:76:AD
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA - R3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\063\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\063\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\041\130\123\010\242

END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\137\060\202\002\107\240\003\002\001\002\002\013\004
\000\000\000\000\001\041\130\123\010\242\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\060\114\061\040\060\036\006
\003\125\004\013\023\027\107\154\157\142\141\154\123\151\147\156
\040\122\157\157\164\040\103\101\040\055\040\122\063\061\023\060
\021\006\003\125\004\012\023\012\107\154\157\142\141\154\123\151
\147\156\061\023\060\021\006\003\125\004\003\023\012\107\154\157
\142\141\154\123\151\147\156\060\036\027\015\060\071\060\063\061
\070\061\060\060\060\060\060\132\027\015\062\071\060\063\061\070
\061\060\060\060\060\060\132\060\114\061\040\060\036\006\003\125
\004\013\023\027\107\154\157\142\141\154\123\151\147\156\040\122
\157\157\164\040\103\101\040\055\040\122\063\061\023\060\021\006
\003\125\004\012\023\012\107\154\157\142\141\154\123\151\147\156
\061\023\060\021\006\003\125\004\003\023\012\107\154\157\142\141
\154\123\151\147\156\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\314\045\166\220\171\006\170\042\026\365
\300\203\266\204\312\050\236\375\005\166\021\305\255\210\162\374
\106\002\103\307\262\212\235\004\137\044\313\056\113\341\140\202
\106\341\122\253\014\201\107\160\154\335\144\321\353\365\054\243
\017\202\075\014\053\256\227\327\266\024\206\020\171\273\073\023
\200\167\214\010\341\111\322\152\142\057\037\136\372\226\150\337
\211\047\225\070\237\006\327\076\311\313\046\131\015\163\336\260
\310\351\046\016\203\025\306\357\133\213\322\004\140\312\111\246
\050\366\151\073\366\313\310\050\221\345\235\212\141\127\067\254
\164\024\334\164\340\072\356\162\057\056\234\373\320\273\277\365
\075\000\341\006\063\350\202\053\256\123\246\072\026\163\214\335
\101\016\040\072\300\264\247\241\351\262\117\220\056\062\140\351
\127\313\271\004\222\150\150\345\070\046\140\165\262\237\167\377
\221\024\357\256\040\111\374\255\100\025\110\321\002\061\141\031
\136\270\227\357\255\167\267\144\232\172\277\137\301\023\357\233
\142\373\015\154\340\124\151\026\251\003\332\156\351\203\223\161
\166\306\151\205\202\027\002\003\001\000\001\243\102\060\100\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\217\360\113\177\250
\056\105\044\256\115\120\372\143\232\213\336\342\335\033\274\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\001\001\000\113\100\333\300\120\252\376\310\014\357\367\226\124
\105\111\273\226\000\011\101\254\263\023\206\206\050\007\063\312
\153\346\164\271\272\000\055\256\244\012\323\365\361\361\017\212
\277\163\147\112\203\307\104\173\170\340\257\156\154\157\003\051
\216\063\071\105\303\216\344\271\127\154\252\374\022\226\354\123
\306\055\344\044\154\271\224\143\373\334\123\150\147\126\076\203
\270\317\065\041\303\311\150\376\316\332\302\123\252\314\220\212
\351\360\135\106\214\225\335\172\130\050\032\057\035\336\315\000

\067\101\217\355\104\155\327\123\050\227\176\363\147\004\036\025
\327\212\226\264\323\336\114\047\244\114\033\163\163\166\364\027
\231\302\037\172\016\343\055\010\255\012\034\054\377\074\253\125
\016\017\221\176\066\353\303\127\111\276\341\056\055\174\140\213
\303\101\121\023\043\235\316\367\062\153\224\001\250\231\347\054
\063\037\072\073\045\322\206\100\316\073\054\206\170\311\141\057
\024\272\356\333\125\157\337\204\356\005\011\115\275\050\330\162
\316\323\142\120\145\036\353\222\227\203\061\331\263\265\312\107
\130\077\137
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root CA - R3"
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R3
Serial Number:04:00:00:00:00:01:21:58:53:08:a2
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R3
Not Valid Before: Wed Mar 18 10:00:00 2009
Not Valid After : Sun Mar 18 10:00:00 2029
Fingerprint (SHA-256):
CB:B5:22:D7:B7:F1:27:AD:6A:01:13:86:5B:DF:1C:D4:10:2E:7D:07:59:AF:63:5A:7C:F4:72:0D:C9:63:C5:3B
Fingerprint (SHA1): D6:9B:56:11:48:F0:1C:77:C5:45:78:C1:09:26:DF:5B:85:69:76:AD
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA - R3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\326\233\126\021\110\360\034\167\305\105\170\301\011\046\337\133
\205\151\166\255
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\337\270\111\312\005\023\125\356\055\272\032\303\076\260\050
END
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\063\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\041\130\123\010\242
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Autoridad de Certificacion Firmaprofesional CIF A62634068"
#
Issuer: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Serial Number:53:ec:3b:ee:fb:b2:48:5f
Subject: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Not Valid Before: Wed May 20 08:38:15 2009
Not Valid After : Tue Dec 31 08:38:15 2030
Fingerprint (SHA-256):
04:04:80:28:BF:1F:28:64:D4:8F:9A:D4:D8:32:94:36:6A:82:88:56:55:3F:3B:14:30:3F:90:14:7F:5D:40:EF
Fingerprint (SHA1): AE:C5:FB:3F:C8:E1:BF:C4:E5:4F:03:07:5A:9A:E8:00:B7:F7:B6:FA
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion Firmaprofesional CIF A62634068"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\123\354\073\356\373\262\110\137
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\024\060\202\003\374\240\003\002\001\002\002\010\123
\354\073\356\373\262\110\137\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\121\061\013\060\011\006\003\125\004
\006\023\002\105\123\061\102\060\100\006\003\125\004\003\014\071
\101\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\040\106\151\162\155\141
\160\162\157\146\145\163\151\157\156\141\154\040\103\111\106\040
\101\066\062\066\063\064\060\066\070\060\036\027\015\060\071\060

\065\062\060\060\070\063\070\061\065\132\027\015\063\060\061\062
\063\061\060\070\063\070\061\065\132\060\121\061\013\060\011\006
\003\125\004\006\023\002\105\123\061\102\060\100\006\003\125\004
\003\014\071\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\040\106\151
\162\155\141\160\162\157\146\145\163\151\157\156\141\154\040\103
\111\106\040\101\066\062\066\063\064\060\066\070\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\312\226\153
\216\352\370\373\361\242\065\340\177\114\332\340\303\122\327\175
\266\020\310\002\136\263\103\052\304\117\152\262\312\034\135\050
\232\170\021\032\151\131\127\257\265\040\102\344\213\017\346\337
\133\246\003\222\057\365\021\344\142\327\062\161\070\331\004\014
\161\253\075\121\176\017\007\337\143\005\134\351\277\224\157\301
\051\202\300\264\332\121\260\301\074\273\255\067\112\134\312\361
\113\066\016\044\253\277\303\204\167\375\250\120\364\261\347\306
\057\322\055\131\215\172\012\116\226\151\122\002\252\066\230\354
\374\372\024\203\014\067\037\311\222\067\177\327\201\055\345\304
\271\340\076\064\376\147\364\076\146\321\323\364\100\317\136\142
\064\017\160\006\076\040\030\132\316\367\162\033\045\154\223\164
\024\223\243\163\261\016\252\207\020\043\131\137\040\005\031\107
\355\150\216\222\022\312\135\374\326\053\262\222\074\040\317\341
\137\257\040\276\240\166\177\166\345\354\032\206\141\063\076\347
\173\264\077\240\017\216\242\271\152\157\271\207\046\157\101\154
\210\246\120\375\152\143\013\365\223\026\033\031\217\262\355\233
\233\311\220\365\001\014\337\031\075\017\076\070\043\311\057\217
\014\321\002\376\033\125\326\116\320\215\074\257\117\244\363\376
\257\052\323\005\235\171\010\241\313\127\061\264\234\310\220\262
\147\364\030\026\223\072\374\107\330\321\170\226\061\037\272\053
\014\137\135\231\255\143\211\132\044\040\166\330\337\375\253\116
\246\042\252\235\136\346\047\212\175\150\051\243\347\212\270\332
\021\273\027\055\231\235\023\044\106\367\305\342\330\237\216\177
\307\217\164\155\132\262\350\162\365\254\356\044\020\255\057\024
\332\377\055\232\106\161\107\276\102\337\273\001\333\364\177\323
\050\217\061\131\133\323\311\002\246\264\122\312\156\227\373\103
\305\010\046\157\212\364\273\375\237\050\252\015\325\105\363\023
\072\035\330\300\170\217\101\147\074\036\224\144\256\173\013\305
\350\331\001\210\071\032\227\206\144\101\325\073\207\014\156\372
\017\306\275\110\024\277\071\115\324\236\101\266\217\226\035\143
\226\223\331\225\006\170\061\150\236\067\006\073\200\211\105\141
\071\043\307\033\104\243\025\345\034\370\222\060\273\002\003\001
\000\001\243\201\357\060\201\354\060\022\006\003\125\035\023\001
\001\377\004\010\060\006\001\001\377\002\001\001\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\145\315\353\253\065\036\000\076\176
\325\164\300\034\264\163\107\016\032\144\057\060\201\246\006\003
\125\035\040\004\201\236\060\201\233\060\201\230\006\004\125\035
\040\000\060\201\217\060\057\006\010\053\006\001\005\005\007\002

\001\026\043\150\164\164\160\072\057\057\167\167\167\056\146\151
\162\155\141\160\162\157\146\145\163\151\157\156\141\154\056\143
\157\155\057\143\160\163\060\134\006\010\053\006\001\005\005\007
\002\002\060\120\036\116\000\120\000\141\000\163\000\145\000\157
\000\040\000\144\000\145\000\040\000\154\000\141\000\040\000\102
\000\157\000\156\000\141\000\156\000\157\000\166\000\141\000\040
\000\064\000\067\000\040\000\102\000\141\000\162\000\143\000\145
\000\154\000\157\000\156\000\141\000\040\000\060\000\070\000\060
\000\061\000\067\060\015\006\011\052\206\110\206\367\015\001\001
\005\005\000\003\202\002\001\000\027\175\240\371\264\335\305\305
\353\255\113\044\265\241\002\253\335\245\210\112\262\017\125\113
\053\127\214\073\345\061\335\376\304\062\361\347\133\144\226\066
\062\030\354\245\062\167\327\343\104\266\300\021\052\200\271\075
\152\156\174\233\323\255\374\303\326\243\346\144\051\174\321\341
\070\036\202\053\377\047\145\257\373\026\025\304\056\161\204\345
\265\377\372\244\107\275\144\062\273\366\045\204\242\047\102\365
\040\260\302\023\020\021\315\020\025\272\102\220\052\322\104\341
\226\046\353\061\110\022\375\052\332\311\006\317\164\036\251\113
\325\207\050\371\171\064\222\076\056\104\350\366\217\117\217\065
\077\045\263\071\334\143\052\220\153\040\137\304\122\022\116\227
\054\052\254\235\227\336\110\362\243\146\333\302\322\203\225\246
\146\247\236\045\017\351\013\063\221\145\012\132\303\331\124\022
\335\257\303\116\016\037\046\136\015\334\263\215\354\325\201\160
\336\322\117\044\005\363\154\116\365\114\111\146\215\321\377\322
\013\045\101\110\376\121\204\306\102\257\200\004\317\320\176\144
\111\344\362\337\242\354\261\114\300\052\035\347\264\261\145\242
\304\274\361\230\364\252\160\007\143\264\270\332\073\114\372\100
\042\060\133\021\246\360\005\016\306\002\003\110\253\206\233\205
\335\333\335\352\242\166\200\163\175\365\234\004\304\105\215\347
\271\034\213\236\352\327\165\321\162\261\336\165\104\347\102\175
\342\127\153\175\334\231\274\075\203\050\352\200\223\215\305\114
\145\301\160\201\270\070\374\103\061\262\366\003\064\107\262\254
\373\042\006\313\036\335\027\107\034\137\146\271\323\032\242\332
\021\261\244\274\043\311\344\276\207\377\271\224\266\370\135\040
\112\324\137\347\275\150\173\145\362\025\036\322\072\251\055\351
\330\153\044\254\227\130\104\107\255\131\030\361\041\145\160\336
\316\064\140\250\100\361\363\074\244\303\050\043\214\376\047\063
\103\100\240\027\074\353\352\073\260\162\246\243\271\112\113\136
\026\110\364\262\274\310\214\222\305\235\237\254\162\066\274\064
\200\064\153\251\213\222\300\270\027\355\354\166\123\365\044\001
\214\263\042\350\113\174\125\306\235\372\243\024\273\145\205\156
\156\117\022\176\012\074\235\225
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Autoridad de Certificacion Firmaprofesional CIF A62634068"

Issuer: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Serial Number:53:ec:3b:ee:fb:b2:48:5f
Subject: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Not Valid Before: Wed May 20 08:38:15 2009
Not Valid After : Tue Dec 31 08:38:15 2030
Fingerprint (SHA-256):
04:04:80:28:BF:1F:28:64:D4:8F:9A:D4:D8:32:94:36:6A:82:88:56:55:3F:3B:14:30:3F:90:14:7F:5D:40:EF
Fingerprint (SHA1): AE:C5:FB:3F:C8:E1:BF:C4:E5:4F:03:07:5A:9A:E8:00:B7:F7:B6:FA
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion Firmaprofesional CIF A62634068"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\256\305\373\077\310\341\277\304\345\117\003\007\132\232\350\000
\267\367\266\372
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\163\072\164\172\354\273\243\226\246\302\344\342\310\233\300\303
END
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\123\354\073\356\373\262\110\137
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Izenpe.com"
#
Issuer: CN=Izenpe.com,O=IZENPE S.A.,C=ES
Serial Number:00:b0:b7:5a:16:48:5f:bf:e1:cb:f5:8b:d7:19:e6:7d
Subject: CN=Izenpe.com,O=IZENPE S.A.,C=ES
Not Valid Before: Thu Dec 13 13:08:28 2007
Not Valid After : Sun Dec 13 08:27:25 2037
Fingerprint (SHA-256):
25:30:CC:8E:98:32:15:02:BA:D9:6F:9B:1F:BA:1B:09:9E:2D:29:9E:0F:45:48:BB:91:4F:36:3B:C0:D4:53:1F
Fingerprint (SHA1): 2F:78:3D:25:52:18:A7:4A:65:39:71:B5:2C:A2:9C:45:15:6F:E9:19
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Izenpe.com"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\070\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\024\060\022\006\003\125\004\012\014\013\111\132\105\116\120\105
\040\123\056\101\056\061\023\060\021\006\003\125\004\003\014\012
\111\172\145\156\160\145\056\143\157\155
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\070\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\024\060\022\006\003\125\004\012\014\013\111\132\105\116\120\105
\040\123\056\101\056\061\023\060\021\006\003\125\004\003\014\012
\111\172\145\156\160\145\056\143\157\155
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\000\260\267\132\026\110\137\277\341\313\365\213\327\031
\346\175
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\361\060\202\003\331\240\003\002\001\002\002\020\000
\260\267\132\026\110\137\277\341\313\365\213\327\031\346\175\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\070
\061\013\060\011\006\003\125\004\006\023\002\105\123\061\024\060
\022\006\003\125\004\012\014\013\111\132\105\116\120\105\040\123
\056\101\056\061\023\060\021\006\003\125\004\003\014\012\111\172
\145\156\160\145\056\143\157\155\060\036\027\015\060\067\061\062
\061\063\061\063\060\070\062\070\132\027\015\063\067\061\062\061
\063\060\070\062\067\062\065\132\060\070\061\013\060\011\006\003
\125\004\006\023\002\105\123\061\024\060\022\006\003\125\004\012
\014\013\111\132\105\116\120\105\040\123\056\101\056\061\023\060
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\056\023\233\064\016\146\173\111\253\144\227\320\106\303\171\235
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CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Izenpe.com"
Issuer: CN=Izenpe.com,O=IZENPE S.A.,C=ES
Serial Number:00:b0:b7:5a:16:48:5f:bf:e1:cb:f5:8b:d7:19:e6:7d
Subject: CN=Izenpe.com,O=IZENPE S.A.,C=ES
Not Valid Before: Thu Dec 13 13:08:28 2007
Not Valid After : Sun Dec 13 08:27:25 2037
Fingerprint (SHA-256):
25:30:CC:8E:98:32:15:02:BA:D9:6F:9B:1F:BA:1B:09:9E:2D:29:9E:0F:45:48:BB:91:4F:36:3B:C0:D4:53:1F
Fingerprint (SHA1): 2F:78:3D:25:52:18:A7:4A:65:39:71:B5:2C:A2:9C:45:15:6F:E9:19
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Izenpe.com"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\057\170\075\045\122\030\247\112\145\071\161\265\054\242\234\105
\025\157\351\031
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\246\260\315\205\200\332\134\120\064\243\071\220\057\125\147\163

END
CKA_ISSUER MULTILINE_OCTAL
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\024\060\022\006\003\125\004\012\014\013\111\132\105\116\120\105
\040\123\056\101\056\061\023\060\021\006\003\125\004\003\014\012
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\346\175
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CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Chambers of Commerce Root - 2008"
#
Issuer: CN=Chambers of Commerce Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Serial Number:00:a3:da:42:7e:a4:b1:ae:da
Subject: CN=Chambers of Commerce Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Not Valid Before: Fri Aug 01 12:29:50 2008
Not Valid After : Sat Jul 31 12:29:50 2038
Fingerprint (SHA-256):
06:3E:4A:FA:C4:91:DF:D3:32:F3:08:9B:85:42:E9:46:17:D8:93:D7:FE:94:4E:10:A7:93:7E:E2:9D:96:93:C0
Fingerprint (SHA1): 78:6A:74:AC:76:AB:14:7F:9C:6A:30:50:BA:9E:A8:7E:FE:9A:CE:3C
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Chambers of Commerce Root - 2008"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
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\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
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END
CKA_ID UTF8 "0"
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\043\017\336\045\072\136\314\117\245\301\265\055\254\044\322\130
\007\336\242\317\151\204\140\063\350\020\015\023\251\043\320\205
\345\216\173\246\236\075\162\023\162\063\365\252\175\306\143\037
\010\364\376\001\177\044\317\053\054\124\011\336\342\053\155\222
\306\071\117\026\352\074\176\172\106\324\105\152\106\250\353\165
\202\126\247\253\240\174\150\023\063\366\235\060\360\157\047\071
\044\043\052\220\375\220\051\065\362\223\337\064\245\306\367\370
\357\214\017\142\112\174\256\323\365\124\370\215\266\232\126\207
\026\202\072\063\253\132\042\010\367\202\272\352\056\340\107\232
\264\265\105\243\005\073\331\334\056\105\100\073\352\334\177\350
\073\353\321\354\046\330\065\244\060\305\072\254\127\236\263\166
\245\040\173\371\036\112\005\142\001\246\050\165\140\227\222\015
\156\076\115\067\103\015\222\025\234\030\042\315\121\231\240\051
\032\074\137\212\062\063\133\060\307\211\057\107\230\017\243\003
\306\366\361\254\337\062\360\331\201\032\344\234\275\366\200\024
\360\321\054\271\205\365\330\243\261\310\245\041\345\034\023\227
\356\016\275\337\051\251\357\064\123\133\323\344\152\023\204\006
\266\062\002\304\122\256\042\322\334\262\041\102\032\332\100\360
\051\311\354\012\014\134\342\320\272\314\110\323\067\012\314\022
\012\212\171\260\075\003\177\151\113\364\064\040\175\263\064\352
\216\113\144\365\076\375\263\043\147\025\015\004\270\360\055\301
\011\121\074\262\154\025\360\245\043\327\203\164\344\345\056\311
\376\230\047\102\306\253\306\236\260\320\133\070\245\233\120\336
\176\030\230\265\105\073\366\171\264\350\367\032\173\006\203\373
\320\213\332\273\307\275\030\253\010\157\074\200\153\100\077\031
\031\272\145\212\346\276\325\134\323\066\327\357\100\122\044\140
\070\147\004\061\354\217\363\202\306\336\271\125\363\073\061\221
\132\334\265\010\025\255\166\045\012\015\173\056\207\342\014\246
\006\274\046\020\155\067\235\354\335\170\214\174\200\305\360\331
\167\110\320
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Chambers of Commerce Root - 2008"

Issuer: CN=Chambers of Commerce Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Serial Number:00:a3:da:42:7e:a4:b1:ae:da
Subject: CN=Chambers of Commerce Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Not Valid Before: Fri Aug 01 12:29:50 2008
Not Valid After : Sat Jul 31 12:29:50 2038
Fingerprint (SHA-256):
06:3E:4A:FA:C4:91:DF:D3:32:F3:08:9B:85:42:E9:46:17:D8:93:D7:FE:94:4E:10:A7:93:7E:E2:9D:96:93:C0
Fingerprint (SHA1): 78:6A:74:AC:76:AB:14:7F:9C:6A:30:50:BA:9E:A8:7E:FE:9A:CE:3C
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Chambers of Commerce Root - 2008"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\170\152\164\254\166\253\024\177\234\152\060\120\272\236\250\176
\376\232\316\074
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\136\200\236\204\132\016\145\013\027\002\363\125\030\052\076\327
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\051\060\047\006\003\125\004\003\023
\040\103\150\141\155\142\145\162\163\040\157\146\040\103\157\155
\155\145\162\143\145\040\122\157\157\164\040\055\040\062\060\060
\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\243\332\102\176\244\261\256\332
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Global Chambersign Root - 2008"
#
Issuer: CN=Global Chambersign Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see

current address at www.camerfirma.com/address),C=EU
Serial Number:00:c9:cd:d3:e9:d5:7d:23:ce
Subject: CN=Global Chambersign Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Not Valid Before: Fri Aug 01 12:31:40 2008
Not Valid After : Sat Jul 31 12:31:40 2038
Fingerprint (SHA-256):
13:63:35:43:93:34:A7:69:80:16:A0:D3:24:DE:72:28:4E:07:9D:7B:52:20:BB:8F:BD:74:78:16:EE:BE:BA:CA
Fingerprint (SHA1): 4A:BD:EE:EC:95:0D:35:9C:89:AE:C7:52:A1:2C:5B:29:F6:D6:AA:0C
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Global Chambersign Root - 2008"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\254\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\047\060\045\006\003\125\004\003\023
\036\107\154\157\142\141\154\040\103\150\141\155\142\145\162\163
\151\147\156\040\122\157\157\164\040\055\040\062\060\060\070
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\254\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\047\060\045\006\003\125\004\003\023
\036\107\154\157\142\141\154\040\103\150\141\155\142\145\162\163
\151\147\156\040\122\157\157\164\040\055\040\062\060\060\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\311\315\323\351\325\175\043\316
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\111\060\202\005\061\240\003\002\001\002\002\011\000
\311\315\323\351\325\175\043\316\060\015\006\011\052\206\110\206

\367\015\001\001\005\005\000\060\201\254\061\013\060\011\006\003
\125\004\006\023\002\105\125\061\103\060\101\006\003\125\004\007
\023\072\115\141\144\162\151\144\040\050\163\145\145\040\143\165
\162\162\145\156\164\040\141\144\144\162\145\163\163\040\141\164
\040\167\167\167\056\143\141\155\145\162\146\151\162\155\141\056
\143\157\155\057\141\144\144\162\145\163\163\051\061\022\060\020
\006\003\125\004\005\023\011\101\070\062\067\064\063\062\070\067
\061\033\060\031\006\003\125\004\012\023\022\101\103\040\103\141
\155\145\162\146\151\162\155\141\040\123\056\101\056\061\047\060
\045\006\003\125\004\003\023\036\107\154\157\142\141\154\040\103
\150\141\155\142\145\162\163\151\147\156\040\122\157\157\164\040
\055\040\062\060\060\070\060\036\027\015\060\070\060\070\060\061
\061\062\063\061\064\060\132\027\015\063\070\060\067\063\061\061
\062\063\061\064\060\132\060\201\254\061\013\060\011\006\003\125
\004\006\023\002\105\125\061\103\060\101\006\003\125\004\007\023
\072\115\141\144\162\151\144\040\050\163\145\145\040\143\165\162
\162\145\156\164\040\141\144\144\162\145\163\163\040\141\164\040
\167\167\167\056\143\141\155\145\162\146\151\162\155\141\056\143
\157\155\057\141\144\144\162\145\163\163\051\061\022\060\020\006
\003\125\004\005\023\011\101\070\062\067\064\063\062\070\067\061
\033\060\031\006\003\125\004\012\023\022\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\056\101\056\061\047\060\045
\006\003\125\004\003\023\036\107\154\157\142\141\154\040\103\150
\141\155\142\145\162\163\151\147\156\040\122\157\157\164\040\055
\040\062\060\060\070\060\202\002\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002
\012\002\202\002\001\000\300\337\126\323\344\072\233\166\105\264
\023\333\377\301\266\031\213\067\101\030\225\122\107\353\027\235
\051\210\216\065\154\006\062\056\107\142\363\111\004\277\175\104
\066\261\161\314\275\132\011\163\325\331\205\104\377\221\127\045
\337\136\066\216\160\321\134\161\103\035\331\332\357\134\322\373
\033\275\072\265\313\255\243\314\104\247\015\256\041\025\077\271
\172\133\222\165\330\244\022\070\211\031\212\267\200\322\342\062
\157\126\234\221\326\210\020\013\263\164\144\222\164\140\363\366
\317\030\117\140\262\043\320\307\073\316\141\113\231\217\302\014
\320\100\262\230\334\015\250\116\243\271\012\256\140\240\255\105
\122\143\272\146\275\150\340\371\276\032\250\201\273\036\101\170
\165\323\301\376\000\125\260\207\124\350\047\220\065\035\114\063
\255\227\374\227\056\230\204\277\054\311\243\277\321\230\021\024
\355\143\370\312\230\210\130\027\231\355\105\003\227\176\074\206
\036\210\214\276\362\221\204\217\145\064\330\000\114\175\267\061
\027\132\051\172\012\030\044\060\243\067\265\172\251\001\175\046
\326\371\016\216\131\361\375\033\063\265\051\073\027\073\101\266
\041\335\324\300\075\245\237\237\037\103\120\311\273\274\154\172
\227\230\356\315\214\037\373\234\121\256\213\160\275\047\237\161
\300\153\254\175\220\146\350\327\135\072\015\260\325\302\215\325
\310\235\235\301\155\320\320\277\121\344\343\370\303\070\066\256
\326\247\165\346\257\204\103\135\223\222\014\152\007\336\073\035

\230\042\326\254\301\065\333\243\240\045\377\162\265\166\035\336
\155\351\054\146\054\122\204\320\105\222\316\034\345\345\063\035
\334\007\123\124\243\252\202\073\232\067\057\334\335\240\144\351
\346\335\275\256\374\144\205\035\074\247\311\006\336\204\377\153
\350\153\032\074\305\242\263\102\373\213\011\076\137\010\122\307
\142\304\324\005\161\277\304\144\344\370\241\203\350\076\022\233
\250\036\324\066\115\057\161\366\215\050\366\203\251\023\322\141
\301\221\273\110\300\064\217\101\214\113\114\333\151\022\377\120
\224\234\040\203\131\163\355\174\241\362\361\375\335\367\111\323
\103\130\240\126\143\312\075\075\345\065\126\131\351\016\312\040
\314\053\113\223\051\017\002\003\001\000\001\243\202\001\152\060
\202\001\146\060\022\006\003\125\035\023\001\001\377\004\010\060
\006\001\001\377\002\001\014\060\035\006\003\125\035\016\004\026
\004\024\271\011\312\234\036\333\323\154\072\153\256\355\124\361
\133\223\006\065\056\136\060\201\341\006\003\125\035\043\004\201
\331\060\201\326\200\024\271\011\312\234\036\333\323\154\072\153
\256\355\124\361\133\223\006\065\056\136\241\201\262\244\201\257
\060\201\254\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\047\060\045\006\003\125\004\003\023
\036\107\154\157\142\141\154\040\103\150\141\155\142\145\162\163
\151\147\156\040\122\157\157\164\040\055\040\062\060\060\070\202
\011\000\311\315\323\351\325\175\043\316\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\075\006\003\125\035
\040\004\066\060\064\060\062\006\004\125\035\040\000\060\052\060
\050\006\010\053\006\001\005\005\007\002\001\026\034\150\164\164
\160\072\057\057\160\157\154\151\143\171\056\143\141\155\145\162
\146\151\162\155\141\056\143\157\155\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\002\001\000\200\210\177
\160\336\222\050\331\005\224\106\377\220\127\251\361\057\337\032
\015\153\372\174\016\034\111\044\171\047\330\106\252\157\051\131
\122\210\160\022\352\335\075\365\233\123\124\157\341\140\242\250
\011\271\354\353\131\174\306\065\361\334\030\351\361\147\345\257
\272\105\340\011\336\312\104\017\302\027\016\167\221\105\172\063
\137\137\226\054\150\213\301\107\217\230\233\075\300\354\313\365
\325\202\222\204\065\321\276\066\070\126\162\061\133\107\055\252
\027\244\143\121\353\012\001\255\177\354\165\236\313\241\037\361
\177\022\261\271\344\144\177\147\326\043\052\364\270\071\135\230
\350\041\247\341\275\075\102\032\164\232\160\257\150\154\120\135
\111\317\377\373\016\135\346\054\107\327\201\072\131\000\265\163
\153\143\040\366\061\105\010\071\016\364\160\176\100\160\132\077
\320\153\102\251\164\075\050\057\002\155\165\162\225\011\215\110

\143\306\306\043\127\222\223\136\065\301\215\371\012\367\054\235
\142\034\366\255\174\335\246\061\036\266\261\307\176\205\046\372
\244\152\265\332\143\060\321\357\223\067\262\146\057\175\005\367
\347\267\113\230\224\065\300\331\072\051\301\235\262\120\063\035
\112\251\132\246\311\003\357\355\364\347\250\156\212\264\127\204
\353\244\077\320\356\252\252\207\133\143\350\223\342\153\250\324
\270\162\170\153\033\355\071\344\135\313\233\252\207\325\117\116
\000\376\331\152\237\074\061\017\050\002\001\175\230\350\247\260
\242\144\236\171\370\110\362\025\251\314\346\310\104\353\077\170
\231\362\173\161\076\074\361\230\247\305\030\022\077\346\273\050
\063\102\351\105\012\174\155\362\206\171\057\305\202\031\175\011
\211\174\262\124\166\210\256\336\301\363\314\341\156\333\061\326
\223\256\231\240\357\045\152\163\230\211\133\072\056\023\210\036
\277\300\222\224\064\033\343\047\267\213\036\157\102\377\347\351
\067\233\120\035\055\242\371\002\356\313\130\130\072\161\274\150
\343\252\301\257\034\050\037\242\334\043\145\077\201\352\256\231
\323\330\060\317\023\015\117\025\311\204\274\247\110\055\370\060
\043\167\330\106\113\171\155\366\214\355\072\177\140\021\170\364
\351\233\256\325\124\300\164\200\321\013\102\237\301
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Global Chambersign Root - 2008"
Issuer: CN=Global Chambersign Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Serial Number:00:c9:cd:d3:e9:d5:7d:23:ce
Subject: CN=Global Chambersign Root - 2008,O=AC Camerfirma S.A.,serialNumber=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Not Valid Before: Fri Aug 01 12:31:40 2008
Not Valid After : Sat Jul 31 12:31:40 2038
Fingerprint (SHA-256):
13:63:35:43:93:34:A7:69:80:16:A0:D3:24:DE:72:28:4E:07:9D:7B:52:20:BB:8F:BD:74:78:16:EE:BE:BA:CA
Fingerprint (SHA1): 4A:BD:EE:EC:95:0D:35:9C:89:AE:C7:52:A1:2C:5B:29:F6:D6:AA:0C
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Global Chambersign Root - 2008"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\112\275\356\354\225\015\065\234\211\256\307\122\241\054\133\051
\366\326\252\014
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\236\200\377\170\001\014\056\301\066\275\376\226\220\156\010\363
END
CKA_ISSUER MULTILINE_OCTAL

\060\201\254\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\047\060\045\006\003\125\004\003\023
\036\107\154\157\142\141\154\040\103\150\141\155\142\145\162\163
\151\147\156\040\122\157\157\164\040\055\040\062\060\060\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\311\315\323\351\325\175\043\316
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Go Daddy Root Certificate Authority - G2"
#
Issuer: CN=Go Daddy Root Certificate Authority - G2,O="GoDaddy.com, Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Go Daddy Root Certificate Authority - G2,O="GoDaddy.com,
Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
45:14:0B:32:47:EB:9C:C8:C5:B4:F0:D7:B5:30:91:F7:32:92:08:9E:6E:5A:63:E2:74:9D:D3:AC:A9:19:8E:DA
Fingerprint (SHA1): 47:BE:AB:C9:22:EA:E8:0E:78:78:34:62:A7:9F:45:C2:54:FD:E6:8B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Go Daddy Root Certificate Authority - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\203\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\032\060\030\006\003\125\004\012
\023\021\107\157\104\141\144\144\171\056\143\157\155\054\040\111
\156\143\056\061\061\060\057\006\003\125\004\003\023\050\107\157
\040\104\141\144\144\171\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\062

END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\203\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\032\060\030\006\003\125\004\012
\023\021\107\157\104\141\144\144\171\056\143\157\155\054\040\111
\156\143\056\061\061\060\057\006\003\125\004\003\023\050\107\157
\040\104\141\144\144\171\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\305\060\202\002\255\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\203\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157\156
\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157\164
\164\163\144\141\154\145\061\032\060\030\006\003\125\004\012\023
\021\107\157\104\141\144\144\171\056\143\157\155\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\003\023\050\107\157\040
\104\141\144\144\171\040\122\157\157\164\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\062\060\036\027\015\060\071\060\071\060\061\060
\060\060\060\060\060\132\027\015\063\067\061\062\063\061\062\063
\065\071\065\071\132\060\201\203\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\020\060\016\006\003\125\004\010\023\007
\101\162\151\172\157\156\141\061\023\060\021\006\003\125\004\007
\023\012\123\143\157\164\164\163\144\141\154\145\061\032\060\030
\006\003\125\004\012\023\021\107\157\104\141\144\144\171\056\143
\157\155\054\040\111\156\143\056\061\061\060\057\006\003\125\004
\003\023\050\107\157\040\104\141\144\144\171\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\277\161\142\010
\361\372\131\064\367\033\311\030\243\367\200\111\130\351\042\203
\023\246\305\040\103\001\073\204\361\346\205\111\237\047\352\366
\204\033\116\240\264\333\160\230\307\062\001\261\005\076\007\116
\356\364\372\117\057\131\060\042\347\253\031\126\153\342\200\007
\374\363\026\165\200\071\121\173\345\371\065\266\164\116\251\215
\202\023\344\266\077\251\003\203\372\242\276\212\025\152\177\336
\013\303\266\031\024\005\312\352\303\250\004\224\073\106\174\062
\015\363\000\146\042\310\215\151\155\066\214\021\030\267\323\262

\034\140\264\070\372\002\214\316\323\335\106\007\336\012\076\353
\135\174\310\174\373\260\053\123\244\222\142\151\121\045\005\141
\032\104\201\214\054\251\103\226\043\337\254\072\201\232\016\051
\305\034\251\351\135\036\266\236\236\060\012\071\316\361\210\200
\373\113\135\314\062\354\205\142\103\045\064\002\126\047\001\221
\264\073\160\052\077\156\261\350\234\210\001\175\237\324\371\333
\123\155\140\235\277\054\347\130\253\270\137\106\374\316\304\033
\003\074\011\353\111\061\134\151\106\263\340\107\002\003\001\000
\001\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004
\024\072\232\205\007\020\147\050\266\357\366\275\005\101\156\040
\301\224\332\017\336\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\003\202\001\001\000\231\333\135\171\325\371\227
\131\147\003\141\361\176\073\006\061\165\055\241\040\216\117\145
\207\264\367\246\234\274\330\351\057\320\333\132\356\317\164\214
\163\264\070\102\332\005\173\370\002\165\270\375\245\261\327\256
\366\327\336\023\313\123\020\176\212\106\321\227\372\267\056\053
\021\253\220\260\047\200\371\350\237\132\351\067\237\253\344\337
\154\263\205\027\235\075\331\044\117\171\221\065\326\137\004\353
\200\203\253\232\002\055\265\020\364\330\220\307\004\163\100\355
\162\045\240\251\237\354\236\253\150\022\231\127\306\217\022\072
\011\244\275\104\375\006\025\067\301\233\344\062\243\355\070\350
\330\144\363\054\176\024\374\002\352\237\315\377\007\150\027\333
\042\220\070\055\172\215\321\124\361\151\343\137\063\312\172\075
\173\012\343\312\177\137\071\345\342\165\272\305\166\030\063\316
\054\360\057\114\255\367\261\347\316\117\250\304\233\112\124\006
\305\177\175\325\010\017\342\034\376\176\027\270\254\136\366\324
\026\262\103\011\014\115\366\247\153\264\231\204\145\312\172\210
\342\342\104\276\134\367\352\034\365
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Go Daddy Root Certificate Authority - G2"
Issuer: CN=Go Daddy Root Certificate Authority - G2,O="GoDaddy.com, Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Go Daddy Root Certificate Authority - G2,O="GoDaddy.com, Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256): 45:14:0B:32:47:EB:9C:C8:C5:B4:F0:D7:B5:30:91:F7:32:92:08:9E:6E:5A:63:E2:74:9D:D3:AC:A9:19:8E:DA
Fingerprint (SHA1): 47:BE:AB:C9:22:EA:E8:0E:78:78:34:62:A7:9F:45:C2:54:FD:E6:8B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Go Daddy Root Certificate Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\107\276\253\311\042\352\350\016\170\170\064\142\247\237\105\302
\124\375\346\213
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\200\072\274\042\301\346\373\215\233\073\047\112\062\033\232\001
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\203\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\032\060\030\006\003\125\004\012
\023\021\107\157\104\141\144\144\171\056\143\157\155\054\040\111
\156\143\056\061\061\060\057\006\003\125\004\003\023\050\107\157
\040\104\141\144\144\171\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Starfield Root Certificate Authority - G2"
#
Issuer: CN=Starfield Root Certificate Authority - G2,O="Starfield Technologies, Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Starfield Root Certificate Authority - G2,O="Starfield Technologies, Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
2C:E1:CB:0B:F9:D2:F9:E1:02:99:3F:BE:21:51:52:C3:B2:DD:0C:AB:DE:1C:68:E5:31:9B:83:91:54:DB:B7:F5
Fingerprint (SHA1): B5:1C:06:7C:EE:2B:0C:3D:F8:55:AB:2D:92:F4:FE:39:D4:E7:0F:0E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Root Certificate Authority - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\062
\060\060\006\003\125\004\003\023\051\123\164\141\162\146\151\145
\154\144\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\062
\060\060\006\003\125\004\003\023\051\123\164\141\162\146\151\145
\154\144\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\335\060\202\002\305\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157\156
\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157\164
\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012\023
\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150\156
\157\154\157\147\151\145\163\054\040\111\156\143\056\061\062\060
\060\006\003\125\004\003\023\051\123\164\141\162\146\151\145\154
\144\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062\060\036\027\015\060\071\060\071\060\061\060\060\060\060\060
\060\132\027\015\063\067\061\062\063\061\062\063\065\071\065\071
\132\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172
\157\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143
\157\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004
\012\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143
\150\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061
\062\060\060\006\003\125\004\003\023\051\123\164\141\162\146\151

\145\154\144\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055
\040\107\062\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\275\355\301\003\374\366\217\374\002\261\157\133
\237\110\331\235\171\342\242\267\003\141\126\030\303\107\266\327
\312\075\065\056\211\103\367\241\151\233\336\212\032\375\023\040
\234\264\111\167\062\051\126\375\271\354\214\335\042\372\162\334
\047\141\227\356\366\132\204\354\156\031\271\211\054\334\204\133
\325\164\373\153\137\305\211\245\020\122\211\106\125\364\270\165
\034\346\177\344\124\256\113\370\125\162\127\002\031\370\027\161
\131\353\036\050\007\164\305\235\110\276\154\264\364\244\260\363
\144\067\171\222\300\354\106\136\177\341\155\123\114\142\257\315
\037\013\143\273\072\235\373\374\171\000\230\141\164\317\046\202
\100\143\363\262\162\152\031\015\231\312\324\016\165\314\067\373
\213\211\301\131\361\142\177\137\263\137\145\060\370\247\267\115
\166\132\036\166\136\064\300\350\226\126\231\212\263\360\177\244
\315\275\334\062\061\174\221\317\340\137\021\370\153\252\111\134
\321\231\224\321\242\343\143\133\011\166\265\126\142\341\113\164
\035\226\324\046\324\010\004\131\320\230\016\016\346\336\374\303
\354\037\220\361\002\003\001\000\001\243\102\060\100\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035
\006\003\125\035\016\004\026\004\024\174\014\062\037\247\331\060
\177\304\175\150\243\142\250\241\316\253\007\133\047\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001\001
\000\021\131\372\045\117\003\157\224\231\073\232\037\202\205\071
\324\166\005\224\136\341\050\223\155\142\135\011\302\240\250\324
\260\165\070\361\064\152\235\344\237\212\206\046\121\346\054\321
\306\055\156\225\040\112\222\001\354\270\212\147\173\061\342\147
\056\214\225\003\046\056\103\235\112\061\366\016\265\014\273\267
\342\067\177\042\272\000\243\016\173\122\373\153\273\073\304\323
\171\121\116\315\220\364\147\007\031\310\074\106\172\015\001\175
\305\130\347\155\346\205\060\027\232\044\304\020\340\004\367\340
\362\177\324\252\012\377\102\035\067\355\224\345\144\131\022\040
\167\070\323\062\076\070\201\165\226\163\372\150\217\261\313\316
\037\305\354\372\234\176\317\176\261\361\007\055\266\374\277\312
\244\277\320\227\005\112\274\352\030\050\002\220\275\124\170\011
\041\161\323\321\175\035\331\026\260\251\141\075\320\012\000\042
\374\307\173\313\011\144\105\013\073\100\201\367\175\174\062\365
\230\312\130\216\175\052\356\220\131\163\144\371\066\164\136\045
\241\365\146\005\056\177\071\025\251\052\373\120\213\216\205\151
\364
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Starfield Root Certificate Authority - G2"
Issuer: CN=Starfield Root Certificate Authority - G2,O="Starfield Technologies,
Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Starfield Root Certificate Authority - G2,O="Starfield Technologies,
Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
2C:E1:CB:0B:F9:D2:F9:E1:02:99:3F:BE:21:51:52:C3:B2:DD:0C:AB:DE:1C:68:E5:31:9B:83:91:54:DB:B7:F5
Fingerprint (SHA1): B5:1C:06:7C:EE:2B:0C:3D:F8:55:AB:2D:92:F4:FE:39:D4:E7:0F:0E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Root Certificate Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\265\034\006\174\356\053\014\075\370\125\253\055\222\364\376\071
\324\347\017\016
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\326\071\201\306\122\176\226\151\374\374\312\146\355\005\362\226
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\062
\060\060\006\003\125\004\003\023\051\123\164\141\162\146\151\145
\154\144\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Starfield Services Root Certificate Authority - G2"
#
Issuer: CN=Starfield Services Root Certificate Authority - G2,O="Starfield Technologies,
Inc.",L=Scottsdale,ST=Arizona,C=US

Serial Number: 0 (0x0)
Subject: CN=Starfield Services Root Certificate Authority - G2,O="Starfield Technologies, Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
56:8D:69:05:A2:C8:87:08:A4:B3:02:51:90:ED:CF:ED:B1:97:4A:60:6A:13:C6:E5:29:0F:CB:2A:E6:3E:DA:B5
Fingerprint (SHA1): 92:5A:8F:8D:2C:6D:04:E0:66:5F:59:6A:FF:22:D8:63:E8:25:6F:3F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Services Root Certificate Authority - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\073
\060\071\006\003\125\004\003\023\062\123\164\141\162\146\151\145
\154\144\040\123\145\162\166\151\143\145\163\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\073
\060\071\006\003\125\004\003\023\062\123\164\141\162\146\151\145
\154\144\040\123\145\162\166\151\143\145\163\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\357\060\202\002\327\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157\156
\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157\164

\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012\023
\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150\156
\157\154\157\147\151\145\163\054\040\111\156\143\056\061\073\060
\071\006\003\125\004\003\023\062\123\164\141\162\146\151\145\154
\144\040\123\145\162\166\151\143\145\163\040\122\157\157\164\040
\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150
\157\162\151\164\171\040\055\040\107\062\060\036\027\015\060\071
\060\071\060\061\060\060\060\060\060\060\132\027\015\063\067\061
\062\063\061\062\063\065\071\065\071\132\060\201\230\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\020\060\016\006\003
\125\004\010\023\007\101\162\151\172\157\156\141\061\023\060\021
\006\003\125\004\007\023\012\123\143\157\164\164\163\144\141\154
\145\061\045\060\043\006\003\125\004\012\023\034\123\164\141\162
\146\151\145\154\144\040\124\145\143\150\156\157\154\157\147\151
\145\163\054\040\111\156\143\056\061\073\060\071\006\003\125\004
\003\023\062\123\164\141\162\146\151\145\154\144\040\123\145\162
\166\151\143\145\163\040\122\157\157\164\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\062\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\325\014\072\304\052\371\116\342\365\276
\031\227\137\216\210\123\261\037\077\313\317\237\040\023\155\051
\072\310\017\175\074\367\153\166\070\143\331\066\140\250\233\136
\134\000\200\262\057\131\177\366\207\371\045\103\206\347\151\033
\122\232\220\341\161\343\330\055\015\116\157\366\310\111\331\266
\363\032\126\256\053\266\164\024\353\317\373\046\343\032\272\035
\226\056\152\073\130\224\211\107\126\377\045\240\223\160\123\203
\332\204\164\024\303\147\236\004\150\072\337\216\100\132\035\112
\116\317\103\221\073\347\126\326\000\160\313\122\356\173\175\256
\072\347\274\061\371\105\366\302\140\317\023\131\002\053\200\314
\064\107\337\271\336\220\145\155\002\317\054\221\246\246\347\336
\205\030\111\174\146\116\243\072\155\251\265\356\064\056\272\015
\003\270\063\337\107\353\261\153\215\045\331\233\316\201\321\105
\106\062\226\160\207\336\002\016\111\103\205\266\154\163\273\144
\352\141\101\254\311\324\124\337\207\057\307\042\262\046\314\237
\131\124\150\237\374\276\052\057\304\125\034\165\100\140\027\205
\002\125\071\213\177\005\002\003\001\000\001\243\102\060\100\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\035\006\003\125\035\016\004\026\004\024\234\137\000\337\252
\001\327\060\053\070\210\242\270\155\112\234\362\021\221\203\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\001\001\000\113\066\246\204\167\151\335\073\031\237\147\043\010
\157\016\141\311\375\204\334\137\330\066\201\315\330\033\101\055
\237\140\335\307\032\150\331\321\156\206\341\210\043\317\023\336
\103\317\342\064\263\004\235\037\051\325\277\370\136\310\325\301
\275\356\222\157\062\164\362\221\202\057\275\202\102\172\255\052
\267\040\175\115\274\172\125\022\302\025\352\275\367\152\225\056

\154\164\237\317\034\264\362\305\001\243\205\320\162\076\255\163
\253\013\233\165\014\155\105\267\216\224\254\226\067\265\240\320
\217\025\107\016\343\350\203\335\217\375\357\101\001\167\314\047
\251\142\205\063\362\067\010\357\161\317\167\006\336\310\031\035
\210\100\317\175\106\035\377\036\307\341\316\377\043\333\306\372
\215\125\116\251\002\347\107\021\106\076\364\375\275\173\051\046
\273\251\141\142\067\050\266\055\052\366\020\206\144\311\160\247
\322\255\267\051\160\171\352\074\332\143\045\237\375\150\267\060
\354\160\373\165\212\267\155\140\147\262\036\310\271\351\330\250
\157\002\213\147\015\115\046\127\161\332\040\374\301\112\120\215
\261\050\272
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Starfield Services Root Certificate Authority - G2"
Issuer: CN=Starfield Services Root Certificate Authority - G2,O="Starfield Technologies, Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Starfield Services Root Certificate Authority - G2,O="Starfield Technologies, Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
56:8D:69:05:A2:C8:87:08:A4:B3:02:51:90:ED:CF:ED:B1:97:4A:60:6A:13:C6:E5:29:0F:CB:2A:E6:3E:DA:B5
Fingerprint (SHA1): 92:5A:8F:8D:2C:6D:04:E0:66:5F:59:6A:FF:22:D8:63:E8:25:6F:3F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Services Root Certificate Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\222\132\217\215\054\155\004\340\146\137\131\152\377\042\330\143
\350\045\157\077
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\027\065\164\257\173\141\034\353\364\371\074\342\356\100\371\242
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\073
\060\071\006\003\125\004\003\023\062\123\164\141\162\146\151\145
\154\144\040\123\145\162\166\151\143\145\163\040\122\157\157\164

\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AffirmTrust Commercial"
#
Issuer: CN=AffirmTrust Commercial,O=AffirmTrust,C=US
Serial Number:77:77:06:27:26:a9:b1:7c
Subject: CN=AffirmTrust Commercial,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:06:06 2010
Not Valid After : Tue Dec 31 14:06:06 2030
Fingerprint (SHA-256):
03:76:AB:1D:54:C5:F9:80:3C:E4:B2:E2:01:A0:EE:7E:EF:7B:57:B6:36:E8:A9:3C:9B:8D:48:60:C9:6F:5F:A7
Fingerprint (SHA1): F9:B5:B6:32:45:5F:9C:BE:EC:57:5F:80:DC:E9:6E:2C:C7:B2:78:B7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Commercial"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\103\157\155\155
\145\162\143\151\141\154
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\103\157\155\155
\145\162\143\151\141\154
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\167\167\006\047\046\251\261\174
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\114\060\202\002\064\240\003\002\001\002\002\010\167

\167\006\047\046\251\261\174\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\104\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\024\060\022\006\003\125\004\012\014\013
\101\146\146\151\162\155\124\162\165\163\164\061\037\060\035\006
\003\125\004\003\014\026\101\146\146\151\162\155\124\162\165\163
\164\040\103\157\155\155\145\162\143\151\141\154\060\036\027\015
\061\060\060\061\062\071\061\064\060\066\060\066\132\027\015\063
\060\061\062\063\061\061\064\060\066\060\066\132\060\104\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\024\060\022\006
\003\125\004\012\014\013\101\146\146\151\162\155\124\162\165\163
\164\061\037\060\035\006\003\125\004\003\014\026\101\146\146\151
\162\155\124\162\165\163\164\040\103\157\155\155\145\162\143\151
\141\154\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\366\033\117\147\007\053\241\025\365\006\042\313\037
\001\262\343\163\105\006\104\111\054\273\111\045\024\326\316\303
\267\253\054\117\306\101\062\224\127\372\022\247\133\016\342\217
\037\036\206\031\247\252\265\055\271\137\015\212\302\257\205\065
\171\062\055\273\034\142\067\362\261\133\112\075\312\315\161\137
\351\102\276\224\350\310\336\371\042\110\144\306\345\253\306\053
\155\255\005\360\372\325\013\317\232\345\360\120\244\213\073\107
\245\043\133\172\172\370\063\077\270\357\231\227\343\040\301\326
\050\211\317\224\373\271\105\355\343\100\027\021\324\164\360\013
\061\342\053\046\152\233\114\127\256\254\040\076\272\105\172\005
\363\275\233\151\025\256\175\116\040\143\304\065\166\072\007\002
\311\067\375\307\107\356\350\361\166\035\163\025\362\227\244\265
\310\172\171\331\102\252\053\177\134\376\316\046\117\243\146\201
\065\257\104\272\124\036\034\060\062\145\235\346\074\223\136\120
\116\172\343\072\324\156\314\032\373\371\322\067\256\044\052\253
\127\003\042\050\015\111\165\177\267\050\332\165\277\216\343\334
\016\171\061\002\003\001\000\001\243\102\060\100\060\035\006\003
\125\035\016\004\026\004\024\235\223\306\123\213\136\312\257\077
\237\036\017\345\231\225\274\044\366\224\217\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011
\052\206\110\206\367\015\001\001\013\005\000\003\202\001\001\000
\130\254\364\004\016\315\300\015\377\012\375\324\272\026\137\051
\275\173\150\231\130\111\322\264\035\067\115\177\047\175\106\006
\135\103\306\206\056\076\163\262\046\175\117\223\251\266\304\052
\232\253\041\227\024\261\336\214\323\253\211\025\330\153\044\324
\361\026\256\330\244\134\324\177\121\216\355\030\001\261\223\143
\275\274\370\141\200\232\236\261\316\102\160\342\251\175\006\045
\175\047\241\376\157\354\263\036\044\332\343\113\125\032\000\073
\065\264\073\331\327\135\060\375\201\023\211\362\302\006\053\355
\147\304\216\311\103\262\134\153\025\211\002\274\142\374\116\362
\265\063\252\262\157\323\012\242\120\343\366\073\350\056\104\302
\333\146\070\251\063\126\110\361\155\033\063\215\015\214\077\140
\067\235\323\312\155\176\064\176\015\237\162\166\213\033\237\162

\375\122\065\101\105\002\226\057\034\262\232\163\111\041\261\111
\107\105\107\264\357\152\064\021\311\115\232\314\131\267\326\002
\236\132\116\145\265\224\256\033\337\051\260\026\361\277\000\236
\007\072\027\144\265\004\265\043\041\231\012\225\073\227\174\357
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AffirmTrust Commercial"
Issuer: CN=AffirmTrust Commercial,O=AffirmTrust,C=US
Serial Number:77:77:06:27:26:a9:b1:7c
Subject: CN=AffirmTrust Commercial,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:06:06 2010
Not Valid After : Tue Dec 31 14:06:06 2030
Fingerprint (SHA-256):
03:76:AB:1D:54:C5:F9:80:3C:E4:B2:E2:01:A0:EE:7E:EF:7B:57:B6:36:E8:A9:3C:9B:8D:48:60:C9:6F:5F:A7
Fingerprint (SHA1): F9:B5:B6:32:45:5F:9C:BE:EC:57:5F:80:DC:E9:6E:2C:C7:B2:78:B7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Commercial"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\371\265\266\062\105\137\234\276\354\127\137\200\334\351\156\054
\307\262\170\267
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\202\222\272\133\357\315\212\157\246\075\125\371\204\366\326\267
END
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\103\157\155\155
\145\162\143\151\141\154
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\167\167\006\047\046\251\261\174
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AffirmTrust Networking"
#

Issuer: CN=AffirmTrust Networking,O=AffirmTrust,C=US
Serial Number:7c:4f:04:39:1c:d4:99:2d
Subject: CN=AffirmTrust Networking,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:08:24 2010
Not Valid After : Tue Dec 31 14:08:24 2030
Fingerprint (SHA-256):
0A:81:EC:5A:92:97:77:F1:45:90:4A:F3:8D:5D:50:9F:66:B5:E2:C5:8F:CD:B5:31:05:8B:0E:17:F3:F0:B4:1B
Fingerprint (SHA1): 29:36:21:02:8B:20:ED:02:F5:66:C5:32:D1:D6:ED:90:9F:45:00:2F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Networking"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\116\145\164\167
\157\162\153\151\156\147
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\116\145\164\167
\157\162\153\151\156\147
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\174\117\004\071\034\324\231\055
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\114\060\202\002\064\240\003\002\001\002\002\010\174
\117\004\071\034\324\231\055\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\104\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\024\060\022\006\003\125\004\012\014\013
\101\146\146\151\162\155\124\162\165\163\164\061\037\060\035\006
\003\125\004\003\014\026\101\146\146\151\162\155\124\162\165\163
\164\040\116\145\164\167\157\162\153\151\156\147\060\036\027\015
\061\060\060\061\062\071\061\064\060\070\062\064\132\027\015\063
\060\061\062\063\061\061\064\060\070\062\064\132\060\104\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\024\060\022\006
\003\125\004\012\014\013\101\146\146\151\162\155\124\162\165\163
\164\061\037\060\035\006\003\125\004\003\014\026\101\146\146\151
\162\155\124\162\165\163\164\040\116\145\164\167\157\162\153\151
\156\147\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202

\001\001\000\264\204\314\063\027\056\153\224\154\153\141\122\240
\353\243\317\171\224\114\345\224\200\231\313\125\144\104\145\217
\147\144\342\006\343\134\067\111\366\057\233\204\204\036\055\362
\140\235\060\116\314\204\205\342\054\317\036\236\376\066\253\063
\167\065\104\330\065\226\032\075\066\350\172\016\330\325\107\241
\152\151\213\331\374\273\072\256\171\132\325\364\326\161\273\232
\220\043\153\232\267\210\164\207\014\036\137\271\236\055\372\253
\123\053\334\273\166\076\223\114\010\010\214\036\242\043\034\324
\152\255\042\272\231\001\056\155\145\313\276\044\146\125\044\113
\100\104\261\033\327\341\302\205\300\336\020\077\075\355\270\374
\361\361\043\123\334\277\145\227\157\331\371\100\161\215\175\275
\225\324\316\276\240\136\047\043\336\375\246\320\046\016\000\051
\353\074\106\360\075\140\277\077\120\322\334\046\101\121\236\024
\067\102\004\243\160\127\250\033\207\355\055\372\173\356\214\012
\343\251\146\211\031\313\101\371\335\104\066\141\317\342\167\106
\310\175\366\364\222\201\066\375\333\064\361\162\176\363\014\026
\275\264\025\002\003\001\000\001\243\102\060\100\060\035\006\003
\125\035\016\004\026\004\024\007\037\322\347\234\332\302\156\242
\100\264\260\172\120\020\120\164\304\310\275\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\211\127\262\026\172\250\302\375\326\331\233\233\064\302\234\264
\062\024\115\247\244\337\354\276\247\276\370\103\333\221\067\316
\264\062\056\120\125\032\065\116\166\103\161\040\357\223\167\116
\025\160\056\207\303\301\035\155\334\313\265\047\324\054\126\321
\122\123\072\104\322\163\310\304\033\005\145\132\142\222\234\356
\101\215\061\333\347\064\352\131\041\325\001\172\327\144\270\144
\071\315\311\355\257\355\113\003\110\247\240\231\001\200\334\145
\243\066\256\145\131\110\117\202\113\310\145\361\127\035\345\131
\056\012\077\154\330\321\365\345\011\264\154\124\000\012\340\025
\115\207\165\155\267\130\226\132\335\155\322\000\240\364\233\110
\276\303\067\244\272\066\340\174\207\205\227\032\025\242\336\056
\242\133\275\257\030\371\220\120\315\160\131\370\047\147\107\313
\307\240\007\072\175\321\054\135\154\031\072\146\265\175\375\221
\157\202\261\276\010\223\333\024\107\361\242\067\307\105\236\074
\307\167\257\144\250\223\337\366\151\203\202\140\362\111\102\064
\355\132\000\124\205\034\026\066\222\014\134\372\246\255\277\333
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AffirmTrust Networking"
Issuer: CN=AffirmTrust Networking,O=AffirmTrust,C=US
Serial Number:7c:4f:04:39:1c:d4:99:2d
Subject: CN=AffirmTrust Networking,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:08:24 2010

Not Valid After : Tue Dec 31 14:08:24 2030
Fingerprint (SHA-256):
0A:81:EC:5A:92:97:77:F1:45:90:4A:F3:8D:5D:50:9F:66:B5:E2:C5:8F:CD:B5:31:05:8B:0E:17:F3:F0:B4:1B
Fingerprint (SHA1): 29:36:21:02:8B:20:ED:02:F5:66:C5:32:D1:D6:ED:90:9F:45:00:2F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Networking"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\051\066\041\002\213\040\355\002\365\146\305\062\321\326\355\220
\237\105\000\057
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\102\145\312\276\001\232\232\114\251\214\101\111\315\300\325\177
END
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\116\145\164\167
\157\162\153\151\156\147
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\174\117\004\071\034\324\231\055
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AffirmTrust Premium"
#
Issuer: CN=AffirmTrust Premium,O=AffirmTrust,C=US
Serial Number:6d:8c:14:46:b1:a6:0a:ee
Subject: CN=AffirmTrust Premium,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:10:36 2010
Not Valid After : Mon Dec 31 14:10:36 2040
Fingerprint (SHA-256):
70:A7:3F:7F:37:6B:60:07:42:48:90:45:34:B1:14:82:D5:BF:0E:69:8E:CC:49:8D:F5:25:77:EB:F2:E9:3B:9A
Fingerprint (SHA1): D8:A6:33:2C:E0:03:6F:B1:85:F6:63:4F:7D:6A:06:65:26:32:28:27
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Premium"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509

CKA_SUBJECT MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\034\060\032\006\003\125\004\003\014\023
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\034\060\032\006\003\125\004\003\014\023
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\155\214\024\106\261\246\012\356
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\106\060\202\003\056\240\003\002\001\002\002\010\155
\214\024\106\261\246\012\356\060\015\006\011\052\206\110\206\367
\015\001\001\014\005\000\060\101\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\024\060\022\006\003\125\004\012\014\013
\101\146\146\151\162\155\124\162\165\163\164\061\034\060\032\006
\003\125\004\003\014\023\101\146\146\151\162\155\124\162\165\163
\164\040\120\162\145\155\151\165\155\060\036\027\015\061\060\060
\061\062\071\061\064\061\060\063\066\132\027\015\064\060\061\062
\063\061\061\064\061\060\063\066\132\060\101\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\024\060\022\006\003\125\004
\012\014\013\101\146\146\151\162\155\124\162\165\163\164\061\034
\060\032\006\003\125\004\003\014\023\101\146\146\151\162\155\124
\162\165\163\164\040\120\162\145\155\151\165\155\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\304\022\337
\251\137\376\101\335\335\365\237\212\343\366\254\341\074\170\232
\274\330\360\177\172\240\063\052\334\215\040\133\256\055\157\347
\223\331\066\160\152\150\317\216\121\243\205\133\147\004\240\020
\044\157\135\050\202\301\227\127\330\110\051\023\266\341\276\221
\115\337\205\014\123\030\232\036\044\242\117\217\360\242\205\013
\313\364\051\177\322\244\130\356\046\115\311\252\250\173\232\331
\372\070\336\104\127\025\345\370\214\310\331\110\342\015\026\047
\035\036\310\203\205\045\267\272\252\125\101\314\003\042\113\055
\221\215\213\346\211\257\146\307\351\377\053\351\074\254\332\322
\263\303\341\150\234\211\370\172\000\126\336\364\125\225\154\373
\272\144\335\142\213\337\013\167\062\353\142\314\046\232\233\273
\252\142\203\114\264\006\172\060\310\051\277\355\006\115\227\271
\034\304\061\053\325\137\274\123\022\027\234\231\127\051\146\167
\141\041\061\007\056\045\111\235\030\362\356\363\053\161\214\265

\272\071\007\111\167\374\357\056\222\220\005\215\055\057\167\173
\357\103\277\065\273\232\330\371\163\247\054\362\320\127\356\050
\116\046\137\217\220\150\011\057\270\370\334\006\351\056\232\076
\121\247\321\042\304\012\247\070\110\154\263\371\377\175\253\206
\127\343\272\326\205\170\167\272\103\352\110\177\366\330\276\043
\155\036\277\321\066\154\130\134\361\356\244\031\124\032\365\003
\322\166\346\341\214\275\074\263\323\110\113\342\310\370\177\222
\250\166\106\234\102\145\076\244\036\301\007\003\132\106\055\270
\227\363\267\325\262\125\041\357\272\334\114\000\227\373\024\225
\047\063\277\350\103\107\106\322\010\231\026\140\073\232\176\322
\346\355\070\352\354\001\036\074\110\126\111\011\307\114\067\000
\236\210\016\300\163\341\157\146\351\162\107\060\076\020\345\013
\003\311\232\102\000\154\305\224\176\141\304\212\337\177\202\032
\013\131\304\131\062\167\263\274\140\151\126\071\375\264\006\173
\054\326\144\066\331\275\110\355\204\037\176\245\042\217\052\270
\102\364\202\267\324\123\220\170\116\055\032\375\201\157\104\327
\073\001\164\226\102\340\000\342\056\153\352\305\356\162\254\273
\277\376\352\252\250\370\334\366\262\171\212\266\147\002\003\001
\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026\004
\024\235\300\147\246\014\042\331\046\365\105\253\246\145\122\021
\047\330\105\254\143\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\015\006\011\052\206\110\206\367\015
\001\001\014\005\000\003\202\002\001\000\263\127\115\020\142\116
\072\344\254\352\270\034\257\062\043\310\263\111\132\121\234\166
\050\215\171\252\127\106\027\325\365\122\366\267\104\350\010\104
\277\030\204\322\013\200\315\305\022\375\000\125\005\141\207\101
\334\265\044\236\074\304\330\310\373\160\236\057\170\226\203\040
\066\336\174\017\151\023\210\245\165\066\230\010\246\306\337\254
\316\343\130\326\267\076\336\272\363\353\064\100\330\242\201\365
\170\077\057\325\245\374\331\242\324\136\004\016\027\255\376\101
\360\345\262\162\372\104\202\063\102\350\055\130\367\126\214\142
\077\272\102\260\234\014\134\176\056\145\046\134\123\117\000\262
\170\176\241\015\231\055\215\270\035\216\242\304\260\375\140\320
\060\244\216\310\004\142\251\304\355\065\336\172\227\355\016\070
\136\222\057\223\160\245\251\234\157\247\175\023\035\176\306\010
\110\261\136\147\353\121\010\045\351\346\045\153\122\051\221\234
\322\071\163\010\127\336\231\006\264\133\235\020\006\341\302\000
\250\270\034\112\002\012\024\320\301\101\312\373\214\065\041\175
\202\070\362\251\124\221\031\065\223\224\155\152\072\305\262\320
\273\211\206\223\350\233\311\017\072\247\172\270\241\360\170\106
\372\374\067\057\345\212\204\363\337\376\004\331\241\150\240\057
\044\342\011\225\006\325\225\312\341\044\226\353\174\366\223\005
\273\355\163\351\055\321\165\071\327\347\044\333\330\116\137\103
\217\236\320\024\071\277\125\160\110\231\127\061\264\234\356\112
\230\003\226\060\037\140\006\356\033\043\376\201\140\043\032\107
\142\205\245\314\031\064\200\157\263\254\032\343\237\360\173\110
\255\325\001\331\147\266\251\162\223\352\055\146\265\262\270\344

\075\074\262\357\114\214\352\353\007\277\253\065\232\125\206\274
\030\246\265\250\136\264\203\154\153\151\100\323\237\334\361\303
\151\153\271\341\155\011\364\361\252\120\166\012\172\175\172\027
\241\125\226\102\231\061\011\335\140\021\215\005\060\176\346\216
\106\321\235\024\332\307\027\344\005\226\214\304\044\265\033\317
\024\007\262\100\370\243\236\101\206\274\004\320\153\226\310\052
\200\064\375\277\357\006\243\335\130\305\205\075\076\217\376\236
\051\340\266\270\011\150\031\034\030\103
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AffirmTrust Premium"
Issuer: CN=AffirmTrust Premium,O=AffirmTrust,C=US
Serial Number:6d:8c:14:46:b1:a6:0a:ee
Subject: CN=AffirmTrust Premium,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:10:36 2010
Not Valid After : Mon Dec 31 14:10:36 2040
Fingerprint (SHA-256):
70:A7:3F:7F:37:6B:60:07:42:48:90:45:34:B1:14:82:D5:BF:0E:69:8E:CC:49:8D:F5:25:77:EB:F2:E9:3B:9A
Fingerprint (SHA1): D8:A6:33:2C:E0:03:6F:B1:85:F6:63:4F:7D:6A:06:65:26:32:28:27
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Premium"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\330\246\063\054\340\003\157\261\205\366\143\117\175\152\006\145
\046\062\050\047
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\304\135\016\110\266\254\050\060\116\012\274\371\070\026\207\127
END
CKA_ISSUER MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\034\060\032\006\003\125\004\003\014\023
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\155\214\024\106\261\246\012\356
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AffirmTrust Premium ECC"
#
Issuer: CN=AffirmTrust Premium ECC,O=AffirmTrust,C=US
Serial Number:74:97:25:8a:c7:3f:7a:54
Subject: CN=AffirmTrust Premium ECC,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:20:24 2010
Not Valid After : Mon Dec 31 14:20:24 2040
Fingerprint (SHA-256):
BD:71:FD:F6:DA:97:E4:CF:62:D1:64:7A:DD:25:81:B0:7D:79:AD:F8:39:7E:B4:EC:BA:9C:5E:84:88:82:14:23
Fingerprint (SHA1): B8:23:6B:00:2F:1D:16:86:53:01:55:6C:11:A4:37:CA:EB:FF:C3:BB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Premium ECC"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\040\060\036\006\003\125\004\003\014\027
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155\040\105\103\103
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\040\060\036\006\003\125\004\003\014\027
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155\040\105\103\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\164\227\045\212\307\077\172\124
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\376\060\202\001\205\240\003\002\001\002\002\010\164
\227\045\212\307\077\172\124\060\012\006\010\052\206\110\316\075
\004\003\003\060\105\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\024\060\022\006\003\125\004\012\014\013\101\146\146
\151\162\155\124\162\165\163\164\061\040\060\036\006\003\125\004
\003\014\027\101\146\146\151\162\155\124\162\165\163\164\040\120
\162\145\155\151\165\155\040\105\103\103\060\036\027\015\061\060
\060\061\062\071\061\064\062\060\062\064\132\027\015\064\060\061
\062\063\061\061\064\062\060\062\064\132\060\105\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\024\060\022\006\003\125
\004\012\014\013\101\146\146\151\162\155\124\162\165\163\164\061

\040\060\036\006\003\125\004\003\014\027\101\146\146\151\162\155
\124\162\165\163\164\040\120\162\145\155\151\165\155\040\105\103
\103\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\015\060\136\033\025\235\003
\320\241\171\065\267\072\074\222\172\312\025\034\315\142\363\234
\046\134\007\075\345\124\372\243\326\314\022\352\364\024\137\350
\216\031\253\057\056\110\346\254\030\103\170\254\320\067\303\275
\262\315\054\346\107\342\032\346\143\270\075\056\057\170\304\117
\333\364\017\244\150\114\125\162\153\225\035\116\030\102\225\170
\314\067\074\221\342\233\145\053\051\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\232\257\051\172\300\021\065\065
\046\121\060\000\303\152\376\100\325\256\326\074\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\012\006
\010\052\206\110\316\075\004\003\003\003\147\000\060\144\002\060
\027\011\363\207\210\120\132\257\310\300\102\277\107\137\365\154
\152\206\340\304\047\164\344\070\123\327\005\177\033\064\343\306
\057\263\312\011\074\067\235\327\347\270\106\361\375\241\342\161
\002\060\102\131\207\103\324\121\337\272\323\011\062\132\316\210
\176\127\075\234\137\102\153\365\007\055\265\360\202\223\371\131
\157\256\144\372\130\345\213\036\343\143\276\265\201\315\157\002
\214\171
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AffirmTrust Premium ECC"
Issuer: CN=AffirmTrust Premium ECC,O=AffirmTrust,C=US
Serial Number:74:97:25:8a:c7:3f:7a:54
Subject: CN=AffirmTrust Premium ECC,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:20:24 2010
Not Valid After : Mon Dec 31 14:20:24 2040
Fingerprint (SHA-256):
BD:71:FD:F6:DA:97:E4:CF:62:D1:64:7A:DD:25:81:B0:7D:79:AD:F8:39:7E:B4:EC:BA:9C:5E:84:88:82:14:23
Fingerprint (SHA1): B8:23:6B:00:2F:1D:16:86:53:01:55:6C:11:A4:37:CA:EB:FF:C3:BB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Premium ECC"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\270\043\153\000\057\035\026\206\123\001\125\154\021\244\067\312
\353\377\303\273
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\144\260\011\125\317\261\325\231\342\276\023\253\246\135\352\115
END

CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\040\060\036\006\003\125\004\003\014\027
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155\040\105\103\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\164\227\045\212\307\077\172\124
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum Trusted Network CA"
#
Issuer: CN=Certum Trusted Network CA,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Serial Number: 279744 (0x444c0)
Subject: CN=Certum Trusted Network CA,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Not Valid Before: Wed Oct 22 12:07:37 2008
Not Valid After : Mon Dec 31 12:07:37 2029
Fingerprint (SHA-256):
5C:58:46:8D:55:F5:8E:49:7E:74:39:82:D2:B5:00:10:B6:D1:65:37:4A:CF:83:A7:D4:A3:2D:B7:68:C4:40:8E
Fingerprint (SHA1): 07:E0:32:E0:20:B7:2C:3F:19:2F:06:28:A2:59:3A:19:A7:0F:06:9E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Network CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145\164
\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040\123
\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145
\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060\040
\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124\162
\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145\164

\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040\123
\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145
\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060\040
\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124\162
\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\004\104\300
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\273\060\202\002\243\240\003\002\001\002\002\003\004
\104\300\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060
\040\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\060\036\027\015\060\070\061\060\062\062\061\062\060\067\063
\067\132\027\015\062\071\061\062\063\061\061\062\060\067\063\067
\132\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060
\040\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\343\373\175\243\162\272\302\360\311\024\207\365\153\001
\116\341\156\100\007\272\155\047\135\177\367\133\055\263\132\307
\121\137\253\244\062\246\141\207\266\156\017\206\322\060\002\227
\370\327\151\127\241\030\071\135\152\144\171\306\001\131\254\074
\061\112\070\174\322\004\322\113\050\350\040\137\073\007\242\314
\115\163\333\363\256\117\307\126\325\132\247\226\211\372\363\253
\150\324\043\206\131\047\317\011\047\274\254\156\162\203\034\060
\162\337\340\242\351\322\341\164\165\031\275\052\236\173\025\124
\004\033\327\103\071\255\125\050\305\342\032\273\364\300\344\256
\070\111\063\314\166\205\237\071\105\322\244\236\362\022\214\121
\370\174\344\055\177\365\254\137\353\026\237\261\055\321\272\314
\221\102\167\114\045\311\220\070\157\333\360\314\373\216\036\227
\131\076\325\140\116\346\005\050\355\111\171\023\113\272\110\333
\057\371\162\323\071\312\376\037\330\064\162\365\264\100\317\061
\001\303\354\336\021\055\027\135\037\270\120\321\136\031\247\151

\336\007\063\050\312\120\225\371\247\124\313\124\206\120\105\251
\371\111\002\003\001\000\001\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\010\166\315\313\007\377\044\366\305
\315\355\273\220\274\342\204\067\106\165\367\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000\246
\250\255\042\316\001\075\246\243\377\142\320\110\235\213\136\162
\260\170\104\343\334\034\257\011\375\043\110\372\275\052\304\271
\125\004\265\020\243\215\047\336\013\202\143\320\356\336\014\067
\171\101\133\042\262\260\232\101\134\246\160\340\324\320\167\313
\043\323\000\340\154\126\057\341\151\015\015\331\252\277\041\201
\120\331\006\245\250\377\225\067\320\252\376\342\263\365\231\055
\105\204\212\345\102\011\327\164\002\057\367\211\330\231\351\274
\047\324\107\215\272\015\106\034\167\317\024\244\034\271\244\061
\304\234\050\164\003\064\377\063\031\046\245\351\015\164\267\076
\227\306\166\350\047\226\243\146\335\341\256\362\101\133\312\230
\126\203\163\160\344\206\032\322\061\101\272\057\276\055\023\132
\166\157\116\350\116\201\016\077\133\003\042\240\022\276\146\130
\021\112\313\003\304\264\052\052\055\226\027\340\071\124\274\110
\323\166\047\235\232\055\006\246\311\354\071\322\253\333\237\232
\013\047\002\065\051\261\100\225\347\371\350\234\125\210\031\106
\326\267\064\365\176\316\071\232\331\070\361\121\367\117\054
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum Trusted Network CA"
Issuer: CN=Certum Trusted Network CA,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Serial Number: 279744 (0x444c0)
Subject: CN=Certum Trusted Network CA,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Not Valid Before: Wed Oct 22 12:07:37 2008
Not Valid After : Mon Dec 31 12:07:37 2029
Fingerprint (SHA-256):
5C:58:46:8D:55:F5:8E:49:7E:74:39:82:D2:B5:00:10:B6:D1:65:37:4A:CF:83:A7:D4:A3:2D:B7:68:C4:40:8E
Fingerprint (SHA1): 07:E0:32:E0:20:B7:2C:3F:19:2F:06:28:A2:59:3A:19:A7:0F:06:9E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Network CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\007\340\062\340\040\267\054\077\031\057\006\050\242\131\072\031
\247\017\006\236
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\325\351\201\100\305\030\151\374\106\054\211\165\142\017\252\170
END
CKA_ISSUER MULTILINE_OCTAL
\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145\164
\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040\123
\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145
\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060\040
\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124\162
\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\004\104\300
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TWCA Root Certification Authority"
#
Issuer: CN=TWCA Root Certification Authority,OU=Root CA,O=TAIWAN-CA,C=TW
Serial Number: 1 (0x1)
Subject: CN=TWCA Root Certification Authority,OU=Root CA,O=TAIWAN-CA,C=TW
Not Valid Before: Thu Aug 28 07:24:33 2008
Not Valid After : Tue Dec 31 15:59:59 2030
Fingerprint (SHA-256):
BF:D8:8F:E1:10:1C:41:AE:3E:80:1B:F8:BE:56:35:0E:E9:BA:D1:A6:B9:BD:51:5E:DC:5C:6D:5B:87:11:AC:44
Fingerprint (SHA1): CF:9E:87:6D:D3:EB:FC:42:26:97:A3:B5:A3:7A:A0:76:A9:06:23:48
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TWCA Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157
\157\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041
\124\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_ID UTF8 "0"

CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157
\157\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041
\124\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\173\060\202\002\143\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061\022
\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116\055
\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157\157
\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041\124
\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\060\036\027\015\060\070\060\070\062\070\060\067\062\064\063\063
\132\027\015\063\060\061\062\063\061\061\065\065\071\065\071\132
\060\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157
\157\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041
\124\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\260\176\162\270\244\003\224\346\247\336\011\070\221\112
\021\100\207\247\174\131\144\024\173\265\021\020\335\376\277\325
\300\273\126\342\205\045\364\065\162\017\370\123\320\101\341\104
\001\302\264\034\303\061\102\026\107\205\063\042\166\262\012\157
\017\345\045\120\117\205\206\276\277\230\056\020\147\036\276\021
\005\206\005\220\304\131\320\174\170\020\260\200\134\267\341\307
\053\165\313\174\237\256\265\321\235\043\067\143\247\334\102\242
\055\222\004\033\120\301\173\270\076\033\311\126\004\213\057\122
\233\255\251\126\351\301\377\255\251\130\207\060\266\201\367\227
\105\374\031\127\073\053\157\344\107\364\231\105\376\035\361\370
\227\243\210\035\067\034\134\217\340\166\045\232\120\370\240\124
\377\104\220\166\043\322\062\306\303\253\006\277\374\373\277\363
\255\175\222\142\002\133\051\323\065\243\223\232\103\144\140\135
\262\372\062\377\073\004\257\115\100\152\371\307\343\357\043\375
\153\313\345\017\213\070\015\356\012\374\376\017\230\237\060\061
\335\154\122\145\371\213\201\276\042\341\034\130\003\272\221\033
\211\007\002\003\001\000\001\243\102\060\100\060\016\006\003\125

\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\152\070\133\046\215\336\213\132\362
\117\172\124\203\031\030\343\010\065\246\272\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000\074
\325\167\075\332\337\211\272\207\014\010\124\152\040\120\222\276
\260\101\075\271\046\144\203\012\057\350\100\300\227\050\047\202
\060\112\311\223\377\152\347\246\000\177\211\102\232\326\021\345
\123\316\057\314\362\332\005\304\376\342\120\304\072\206\175\314
\332\176\020\011\073\222\065\052\123\262\376\353\053\005\331\154
\135\346\320\357\323\152\146\236\025\050\205\172\350\202\000\254
\036\247\011\151\126\102\323\150\121\030\276\124\232\277\104\101
\272\111\276\040\272\151\134\356\270\167\315\316\154\037\255\203
\226\030\175\016\265\024\071\204\361\050\351\055\243\236\173\036
\172\162\132\203\263\171\157\357\264\374\320\012\245\130\117\106
\337\373\155\171\131\362\204\042\122\256\017\314\373\174\073\347
\152\312\107\141\303\172\370\323\222\004\037\270\040\204\341\066
\124\026\307\100\336\073\212\163\334\337\306\011\114\337\354\332
\377\324\123\102\241\311\362\142\035\042\203\074\227\305\371\031
\142\047\254\145\042\327\323\074\306\345\216\262\123\314\111\316
\274\060\376\173\016\063\220\373\355\322\024\221\037\007\257
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TWCA Root Certification Authority"
Issuer: CN=TWCA Root Certification Authority,OU=Root CA,O=TAIWAN-CA,C=TW
Serial Number: 1 (0x1)
Subject: CN=TWCA Root Certification Authority,OU=Root CA,O=TAIWAN-CA,C=TW
Not Valid Before: Thu Aug 28 07:24:33 2008
Not Valid After : Tue Dec 31 15:59:59 2030
Fingerprint (SHA-256):
BF:D8:8F:E1:10:1C:41:AE:3E:80:1B:F8:BE:56:35:0E:E9:BA:D1:A6:B9:BD:51:5E:DC:5C:6D:5B:87:11:AC:44
Fingerprint (SHA1): CF:9E:87:6D:D3:EB:FC:42:26:97:A3:B5:A3:7A:A0:76:A9:06:23:48
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TWCA Root Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\317\236\207\155\323\353\374\102\046\227\243\265\243\172\240\166
\251\006\043\110
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\252\010\217\366\371\173\267\362\261\247\036\233\352\352\275\171
END
CKA_ISSUER MULTILINE_OCTAL

\060\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157
\157\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041
\124\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Explicitly Distrust DigiNotar Root CA"
#
Issuer: E=info@diginotar.nl,CN=DigiNotar Root CA,O=DigiNotar,C=NL
Serial Number:0f:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff
Subject: E=info@diginotar.nl,CN=DigiNotar Root CA,O=DigiNotar,C=NL
Not Valid Before: Fri Jul 27 17:19:37 2007
Not Valid After : Mon Mar 31 18:19:22 2025
Fingerprint (MD5): 0A:A4:D5:CC:BA:B4:FB:A3:59:E3:E6:01:DD:53:D9:4E
Fingerprint (SHA1): C1:77:CB:4B:E0:B4:26:8E:F5:C7:CF:45:99:22:B9:B0:CE:BA:21:2F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Explicitly Distrust DigiNotar Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\022\060\020\006\003\125\004\012\023\011\104\151\147\151\116\157
\164\141\162\061\032\060\030\006\003\125\004\003\023\021\104\151
\147\151\116\157\164\141\162\040\122\157\157\164\040\103\101\061
\040\060\036\006\011\052\206\110\206\367\015\001\011\001\026\021
\151\156\146\157\100\144\151\147\151\156\157\164\141\162\056\156
\154
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\022\060\020\006\003\125\004\012\023\011\104\151\147\151\116\157
\164\141\162\061\032\060\030\006\003\125\004\003\023\021\104\151
\147\151\116\157\164\141\162\040\122\157\157\164\040\103\101\061
\040\060\036\006\011\052\206\110\206\367\015\001\011\001\026\021

\151\156\146\157\100\144\151\147\151\156\157\164\141\162\056\156
\154
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\017\377\377\377\377\377\377\377\377\377\377\377\377\377
\377\377
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\212\060\202\003\162\240\003\002\001\002\002\020\017
\377\377\377\377\377\377\377\377\377\377\377\377\377\377\377\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\137
\061\013\060\011\006\003\125\004\006\023\002\116\114\061\022\060
\020\006\003\125\004\012\023\011\104\151\147\151\116\157\164\141
\162\061\032\060\030\006\003\125\004\003\023\021\104\151\147\151
\116\157\164\141\162\040\122\157\157\164\040\103\101\061\040\060
\036\006\011\052\206\110\206\367\015\001\011\001\026\021\151\156
\146\157\100\144\151\147\151\156\157\164\141\162\056\156\154\060
\036\027\015\060\067\060\067\062\067\061\067\061\071\063\067\132
\027\015\062\065\060\063\063\061\061\070\061\071\062\062\132\060
\137\061\013\060\011\006\003\125\004\006\023\002\116\114\061\022
\060\020\006\003\125\004\012\023\011\104\151\147\151\116\157\164
\141\162\061\032\060\030\006\003\125\004\003\023\021\104\151\147
\151\116\157\164\141\162\040\122\157\157\164\040\103\101\061\040
\060\036\006\011\052\206\110\206\367\015\001\011\001\026\021\151
\156\146\157\100\144\151\147\151\156\157\164\141\162\056\156\154
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\254\260\130\301\000\275\330\041\010\013\053\232\376\156\126
\060\005\237\033\167\220\020\101\134\303\015\207\021\167\216\201
\361\312\174\351\214\152\355\070\164\065\273\332\337\371\273\300
\011\067\264\226\163\201\175\063\032\230\071\367\223\157\225\177
\075\271\261\165\207\272\121\110\350\213\160\076\225\004\305\330
\266\303\026\331\210\260\261\207\035\160\332\206\264\017\024\213
\172\317\020\321\164\066\242\022\173\167\206\112\171\346\173\337
\002\021\150\245\116\206\256\064\130\233\044\023\170\126\042\045
\036\001\213\113\121\161\373\202\314\131\226\151\210\132\150\123
\305\271\015\002\067\313\113\274\146\112\220\176\052\013\005\007
\355\026\137\125\220\165\330\106\311\033\203\342\010\276\361\043
\314\231\035\326\052\017\203\040\025\130\047\202\056\372\342\042
\302\111\261\271\001\201\152\235\155\235\100\167\150\166\116\041
\052\155\204\100\205\116\166\231\174\202\363\363\267\002\131\324
\046\001\033\216\337\255\123\006\321\256\030\335\342\262\072\313
\327\210\070\216\254\133\051\271\031\323\230\371\030\003\317\110
\202\206\146\013\033\151\017\311\353\070\210\172\046\032\005\114
\222\327\044\324\226\362\254\122\055\243\107\325\122\366\077\376
\316\204\006\160\246\252\076\242\362\266\126\064\030\127\242\344
\201\155\347\312\360\152\323\307\221\153\002\203\101\174\025\357
\153\232\144\136\343\320\074\345\261\353\173\135\206\373\313\346

\167\111\315\243\145\334\367\271\234\270\344\013\137\223\317\314
\060\032\062\034\316\034\143\225\245\371\352\341\164\213\236\351
\053\251\060\173\240\030\037\016\030\013\345\133\251\323\321\154
\036\007\147\217\221\113\251\212\274\322\146\252\223\001\210\262
\221\372\061\134\325\246\301\122\010\011\315\012\143\242\323\042
\246\350\241\331\071\006\227\365\156\215\002\220\214\024\173\077
\200\315\033\234\272\304\130\162\043\257\266\126\237\306\172\102
\063\051\007\077\202\311\346\037\005\015\315\114\050\066\213\323
\310\076\034\306\210\357\136\356\211\144\351\035\353\332\211\176
\062\246\151\321\335\314\210\237\321\320\311\146\041\334\006\147
\305\224\172\232\155\142\114\175\314\340\144\200\262\236\107\216
\243\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003\125
\035\016\004\026\004\024\210\150\277\340\216\065\304\073\070\153
\142\367\050\073\204\201\310\014\327\115\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\002\001\000\073\002
\215\313\074\060\350\156\240\255\362\163\263\137\236\045\023\004
\005\323\366\343\213\273\013\171\316\123\336\344\226\305\321\257
\163\274\325\303\320\100\125\174\100\177\315\033\137\011\325\362
\174\237\150\035\273\135\316\172\071\302\214\326\230\173\305\203
\125\250\325\175\100\312\340\036\367\211\136\143\135\241\023\302
\135\212\266\212\174\000\363\043\303\355\205\137\161\166\360\150
\143\252\105\041\071\110\141\170\066\334\361\103\223\324\045\307
\362\200\145\341\123\002\165\121\374\172\072\357\067\253\204\050
\127\014\330\324\324\231\126\154\343\242\376\131\204\264\061\350
\063\370\144\224\224\121\227\253\071\305\113\355\332\335\200\013
\157\174\051\015\304\216\212\162\015\347\123\024\262\140\101\075
\204\221\061\150\075\047\104\333\345\336\364\372\143\105\310\114
\076\230\365\077\101\272\116\313\067\015\272\146\230\361\335\313
\237\134\367\124\066\202\153\054\274\023\141\227\102\370\170\273
\314\310\242\237\312\360\150\275\153\035\262\337\215\157\007\235
\332\216\147\307\107\036\312\271\277\052\102\221\267\143\123\146
\361\102\243\341\364\132\115\130\153\265\344\244\063\255\134\160
\035\334\340\362\353\163\024\221\232\003\301\352\000\145\274\007
\374\317\022\021\042\054\256\240\275\072\340\242\052\330\131\351
\051\323\030\065\244\254\021\137\031\265\265\033\377\042\112\134
\306\172\344\027\357\040\251\247\364\077\255\212\247\232\004\045
\235\016\312\067\346\120\375\214\102\051\004\232\354\271\317\113
\162\275\342\010\066\257\043\057\142\345\312\001\323\160\333\174
\202\043\054\026\061\014\306\066\007\220\172\261\037\147\130\304
\073\130\131\211\260\214\214\120\263\330\206\313\150\243\304\012
\347\151\113\040\316\301\036\126\113\225\251\043\150\330\060\330
\303\353\260\125\121\315\345\375\053\270\365\273\021\237\123\124
\366\064\031\214\171\011\066\312\141\027\045\027\013\202\230\163
\014\167\164\303\325\015\307\250\022\114\307\247\124\161\107\056
\054\032\175\311\343\053\073\110\336\047\204\247\143\066\263\175
\217\240\144\071\044\015\075\173\207\257\146\134\164\033\113\163

\262\345\214\360\206\231\270\345\305\337\204\301\267\353
END

Trust for Certificate "Explicitly Distrust DigiNotar Root CA"
Issuer: E=info@diginotar.nl,CN=DigiNotar Root CA,O=DigiNotar,C=NL
Serial Number:0f:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff
Subject: E=info@diginotar.nl,CN=DigiNotar Root CA,O=DigiNotar,C=NL
Not Valid Before: Fri Jul 27 17:19:37 2007
Not Valid After : Mon Mar 31 18:19:22 2025
Fingerprint (MD5): 0A:A4:D5:CC:BA:B4:FB:A3:59:E3:E6:01:DD:53:D9:4E
Fingerprint (SHA1): C1:77:CB:4B:E0:B4:26:8E:F5:C7:CF:45:99:22:B9:B0:CE:BA:21:2F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Explicitly Distrust DigiNotar Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\301\167\313\113\340\264\046\216\365\307\317\105\231\042\271\260
\316\272\041\057
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\012\244\325\314\272\264\373\243\131\343\346\001\335\123\331\116
END
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\022\060\020\006\003\125\004\012\023\011\104\151\147\151\116\157
\164\141\162\061\032\060\030\006\003\125\004\003\023\021\104\151
\147\151\116\157\164\141\162\040\122\157\157\164\040\103\101\061
\040\060\036\006\011\052\206\110\206\367\015\001\011\001\026\021
\151\156\146\157\100\144\151\147\151\156\157\164\141\162\056\156
\154
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\017\377\377\377\377\377\377\377\377\377\377\377\377\377
\377\377
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_NOT_TRUSTED
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_NOT_TRUSTED
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_NOT_TRUSTED
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Security Communication RootCA2"
#
Issuer: OU=Security Communication RootCA2,O="SECOM Trust Systems CO.,LTD.",C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication RootCA2,O="SECOM Trust Systems CO.,LTD.",C=JP
Not Valid Before: Fri May 29 05:00:39 2009

Not Valid After : Tue May 29 05:00:39 2029
Fingerprint (SHA-256):
51:3B:2C:EC:B8:10:D4:CD:E5:DD:85:39:1A:DF:C6:C2:DD:60:D8:7B:B7:36:D2:B5:21:48:4A:A4:7A:0E:BE:F6
Fingerprint (SHA1): 5F:3B:8C:F2:F8:10:B3:7D:78:B4:CE:EC:19:19:C3:73:34:B9:C7:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication RootCA2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\047\060\045\006\003\125\004\013\023
\036\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\122\157\157\164\103\101\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\047\060\045\006\003\125\004\013\023
\036\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\122\157\157\164\103\101\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\167\060\202\002\137\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061\045
\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040\124
\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117\056
\054\114\124\104\056\061\047\060\045\006\003\125\004\013\023\036
\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156\151
\143\141\164\151\157\156\040\122\157\157\164\103\101\062\060\036
\027\015\060\071\060\065\062\071\060\065\060\060\063\071\132\027
\015\062\071\060\065\062\071\060\065\060\060\063\071\132\060\135
\061\013\060\011\006\003\125\004\006\023\002\112\120\061\045\060
\043\006\003\125\004\012\023\034\123\105\103\117\115\040\124\162
\165\163\164\040\123\171\163\164\145\155\163\040\103\117\056\054
\114\124\104\056\061\047\060\045\006\003\125\004\013\023\036\123
\145\143\165\162\151\164\171\040\103\157\155\155\165\156\151\143
\141\164\151\157\156\040\122\157\157\164\103\101\062\060\202\001
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000

\003\202\001\017\000\060\202\001\012\002\202\001\001\000\320\025
\071\122\261\122\263\272\305\131\202\304\135\122\256\072\103\145
\200\113\307\362\226\274\333\066\227\326\246\144\214\250\136\360
\343\012\034\367\337\227\075\113\256\366\135\354\041\265\101\253
\315\271\176\166\237\276\371\076\066\064\240\073\301\366\061\021
\105\164\223\075\127\200\305\371\211\231\312\345\253\152\324\265
\332\101\220\020\301\326\326\102\211\302\277\364\070\022\225\114
\124\005\367\066\344\105\203\173\024\145\326\334\014\115\321\336
\176\014\253\073\304\025\276\072\126\246\132\157\166\151\122\251
\172\271\310\353\152\232\135\122\320\055\012\153\065\026\011\020
\204\320\152\312\072\006\000\067\107\344\176\127\117\077\213\353
\147\270\210\252\305\276\123\125\262\221\304\175\271\260\205\031
\006\170\056\333\141\032\372\205\365\112\221\241\347\026\325\216
\242\071\337\224\270\160\037\050\077\213\374\100\136\143\203\074
\203\052\032\231\153\317\336\131\152\073\374\157\026\327\037\375
\112\020\353\116\202\026\072\254\047\014\123\361\255\325\044\260
\153\003\120\301\055\074\026\335\104\064\047\032\165\373\002\003
\001\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026
\004\024\012\205\251\167\145\005\230\174\100\201\370\017\227\054
\070\361\012\354\074\317\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\001\001\000\114\072\243\104\254
\271\105\261\307\223\176\310\013\012\102\337\144\352\034\356\131
\154\010\272\211\137\152\312\112\225\236\172\217\007\305\332\105
\162\202\161\016\072\322\314\157\247\264\241\043\273\366\044\237
\313\027\376\214\246\316\302\322\333\314\215\374\161\374\003\051
\301\154\135\063\137\144\266\145\073\211\157\030\166\170\365\334
\242\110\037\031\077\216\223\353\361\372\027\356\315\116\343\004
\022\125\326\345\344\335\373\076\005\174\342\035\136\306\247\274
\227\117\150\072\365\351\056\012\103\266\257\127\134\142\150\174
\267\375\243\212\204\240\254\142\276\053\011\207\064\360\152\001
\273\233\051\126\074\376\000\067\317\043\154\361\116\252\266\164
\106\022\154\221\356\064\325\354\232\221\347\104\276\220\061\162
\325\111\002\366\002\345\364\037\353\174\331\226\125\251\377\354
\212\371\231\107\377\065\132\002\252\004\313\212\133\207\161\051
\221\275\244\264\172\015\275\232\365\127\043\000\007\041\027\077
\112\071\321\005\111\013\247\266\067\201\245\135\214\252\063\136
\201\050\174\247\175\047\353\000\256\215\067
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Security Communication RootCA2"
Issuer: OU=Security Communication RootCA2,O="SECOM Trust Systems CO.,LTD.",C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication RootCA2,O="SECOM Trust Systems CO.,LTD.",C=JP

Not Valid Before: Fri May 29 05:00:39 2009
Not Valid After : Tue May 29 05:00:39 2029
Fingerprint (SHA-256):
51:3B:2C:EC:B8:10:D4:CD:E5:DD:85:39:1A:DF:C6:C2:DD:60:D8:7B:B7:36:D2:B5:21:48:4A:A4:7A:0E:BE:F6
Fingerprint (SHA1): 5F:3B:8C:F2:F8:10:B3:7D:78:B4:CE:EC:19:19:C3:73:34:B9:C7:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication RootCA2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\137\073\214\362\370\020\263\175\170\264\316\354\031\031\303\163
\064\271\307\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\154\071\175\244\016\125\131\262\077\326\101\261\022\120\336\103
END
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\047\060\045\006\003\125\004\013\023
\036\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\122\157\157\164\103\101\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "EC-ACC"
#
Issuer: CN=EC-ACC,OU=Jerarquia Entitats de Certificacio Catalanes,OU=Vegeu https://www.catcert.net/verarrel (c)03,OU=Serveis Publics de Certificacio,O=Agencia Catalana de Certificacio (NIF Q-0801176-I),C=ES
Serial Number:ee:2b:3d:eb:d4:21:de:14:a8:62:ac:04:f3:dd:c4:01
Subject: CN=EC-ACC,OU=Jerarquia Entitats de Certificacio Catalanes,OU=Vegeu https://www.catcert.net/verarrel (c)03,OU=Serveis Publics de Certificacio,O=Agencia Catalana de Certificacio (NIF Q-0801176-I),C=ES
Not Valid Before: Tue Jan 07 23:00:00 2003
Not Valid After : Tue Jan 07 22:59:59 2031
Fingerprint (SHA-256):
88:49:7F:01:60:2F:31:54:24:6A:E2:8C:4D:5A:EF:10:F1:D8:7E:BB:76:62:6F:4A:E0:B7:F9:5B:A7:96:87:99
Fingerprint (SHA1): 28:90:3A:63:5B:52:80:FA:E6:77:4C:0B:6D:A7:D6:BA:A6:4A:F2:E8
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "EC-ACC"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\363\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\073\060\071\006\003\125\004\012\023\062\101\147\145\156\143
\151\141\040\103\141\164\141\154\141\156\141\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\050\116\111\106
\040\121\055\060\070\060\061\061\067\066\055\111\051\061\050\060
\046\006\003\125\004\013\023\037\123\145\162\166\145\151\163\040
\120\165\142\154\151\143\163\040\144\145\040\103\145\162\164\151
\146\151\143\141\143\151\157\061\065\060\063\006\003\125\004\013
\023\054\126\145\147\145\165\040\150\164\164\160\163\072\057\057
\167\167\167\056\143\141\164\143\145\162\164\056\156\145\164\057
\166\145\162\141\162\162\145\154\040\050\143\051\060\063\061\065
\060\063\006\003\125\004\013\023\054\112\145\162\141\162\161\165
\151\141\040\105\156\164\151\164\141\164\163\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\103\141\164\141
\154\141\156\145\163\061\017\060\015\006\003\125\004\003\023\006
\105\103\055\101\103\103
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\363\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\073\060\071\006\003\125\004\012\023\062\101\147\145\156\143
\151\141\040\103\141\164\141\154\141\156\141\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\050\116\111\106
\040\121\055\060\070\060\061\061\067\066\055\111\051\061\050\060
\046\006\003\125\004\013\023\037\123\145\162\166\145\151\163\040
\120\165\142\154\151\143\163\040\144\145\040\103\145\162\164\151
\146\151\143\141\143\151\157\061\065\060\063\006\003\125\004\013
\023\054\126\145\147\145\165\040\150\164\164\160\163\072\057\057
\167\167\167\056\143\141\164\143\145\162\164\056\156\145\164\057
\166\145\162\141\162\162\145\154\040\050\143\051\060\063\061\065
\060\063\006\003\125\004\013\023\054\112\145\162\141\162\161\165
\151\141\040\105\156\164\151\164\141\164\163\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\103\141\164\141
\154\141\156\145\163\061\017\060\015\006\003\125\004\003\023\006
\105\103\055\101\103\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\356\053\075\353\324\041\336\024\250\142\254\004\363\335
\304\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\126\060\202\004\076\240\003\002\001\002\002\020\356

\053\075\353\324\041\336\024\250\142\254\004\363\335\304\001\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\363\061\013\060\011\006\003\125\004\006\023\002\105\123\061\073
\060\071\006\003\125\004\012\023\062\101\147\145\156\143\151\141
\040\103\141\164\141\154\141\156\141\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\040\050\116\111\106\040\121
\055\060\070\060\061\061\067\066\055\111\051\061\050\060\046\006
\003\125\004\013\023\037\123\145\162\166\145\151\163\040\120\165
\142\154\151\143\163\040\144\145\040\103\145\162\164\151\146\151
\143\141\143\151\157\061\065\060\063\006\003\125\004\013\023\054
\126\145\147\145\165\040\150\164\164\160\163\072\057\057\167\167
\167\056\143\141\164\143\145\162\164\056\156\145\164\057\166\145
\162\141\162\162\145\154\040\050\143\051\060\063\061\065\060\063
\006\003\125\004\013\023\054\112\145\162\141\162\161\165\151\141
\040\105\156\164\151\164\141\164\163\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\040\103\141\164\141\154\141
\156\145\163\061\017\060\015\006\003\125\004\003\023\006\105\103
\055\101\103\103\060\036\027\015\060\063\060\061\060\067\062\063
\060\060\060\060\132\027\015\063\061\060\061\060\067\062\062\065
\071\065\071\132\060\201\363\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\073\060\071\006\003\125\004\012\023\062\101
\147\145\156\143\151\141\040\103\141\164\141\154\141\156\141\040
\144\145\040\103\145\162\164\151\146\151\143\141\143\151\157\040
\050\116\111\106\040\121\055\060\070\060\061\061\067\066\055\111
\051\061\050\060\046\006\003\125\004\013\023\037\123\145\162\166
\145\151\163\040\120\165\142\154\151\143\163\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\061\065\060\063\006
\003\125\004\013\023\054\126\145\147\145\165\040\150\164\164\160
\163\072\057\057\167\167\167\056\143\141\164\143\145\162\164\056
\156\145\164\057\166\145\162\141\162\162\145\154\040\050\143\051
\060\063\061\065\060\063\006\003\125\004\013\023\054\112\145\162
\141\162\161\165\151\141\040\105\156\164\151\164\141\164\163\040
\144\145\040\103\145\162\164\151\146\151\143\141\143\151\157\040
\103\141\164\141\154\141\156\145\163\061\017\060\015\006\003\125
\004\003\023\006\105\103\055\101\103\103\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\263\042\307\117\342
\227\102\225\210\107\203\100\366\035\027\363\203\163\044\036\121
\363\230\212\303\222\270\377\100\220\005\160\207\140\311\000\251
\265\224\145\031\042\025\027\302\103\154\146\104\232\015\004\076
\071\157\245\113\172\252\143\267\212\104\235\331\143\221\204\146
\340\050\017\272\102\343\156\216\367\024\047\223\151\356\221\016
\243\137\016\261\353\146\242\162\117\022\023\206\145\172\076\333
\117\007\364\247\011\140\332\072\102\231\307\262\177\263\026\225
\034\307\371\064\265\224\205\325\231\136\240\110\240\176\347\027
\145\270\242\165\270\036\363\345\102\175\257\355\363\212\110\144
\135\202\024\223\330\300\344\377\263\120\162\362\166\366\263\135
\102\120\171\320\224\076\153\014\000\276\330\153\016\116\052\354

\076\322\314\202\242\030\145\063\023\167\236\232\135\032\023\330
\303\333\075\310\227\172\356\160\355\247\346\174\333\161\317\055
\224\142\337\155\326\365\070\276\077\245\205\012\031\270\250\330
\011\165\102\160\304\352\357\313\016\310\064\250\022\042\230\014
\270\023\224\266\113\354\360\320\220\347\047\002\003\001\000\001
\243\201\343\060\201\340\060\035\006\003\125\035\021\004\026\060
\024\201\022\145\143\137\141\143\143\100\143\141\164\143\145\162
\164\056\156\145\164\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004
\024\240\303\213\104\252\067\245\105\277\227\200\132\321\361\170
\242\233\351\135\215\060\177\006\003\125\035\040\004\170\060\166
\060\164\006\013\053\006\001\004\001\365\170\001\003\001\012\060
\145\060\054\006\010\053\006\001\005\005\007\002\001\026\040\150
\164\164\160\163\072\057\057\167\167\167\056\143\141\164\143\145
\162\164\056\156\145\164\057\166\145\162\141\162\162\145\154\060
\065\006\010\053\006\001\005\005\007\002\002\060\051\032\047\126
\145\147\145\165\040\150\164\164\160\163\072\057\057\167\167\167
\056\143\141\164\143\145\162\164\056\156\145\164\057\166\145\162
\141\162\162\145\154\040\060\015\006\011\052\206\110\206\367\015
\001\001\005\005\000\003\202\001\001\000\240\110\133\202\001\366
\115\110\270\071\125\065\234\200\172\123\231\325\132\377\261\161
\073\314\071\011\224\136\326\332\357\276\001\133\135\323\036\330
\375\175\117\315\240\101\340\064\223\277\313\342\206\234\067\222
\220\126\034\334\353\051\005\345\304\236\307\065\337\212\014\315
\305\041\103\351\252\210\345\065\300\031\102\143\132\002\136\244
\110\030\072\205\157\334\235\274\077\235\234\301\207\270\172\141
\010\351\167\013\177\160\253\172\335\331\227\054\144\036\205\277
\274\164\226\241\303\172\022\354\014\032\156\203\014\074\350\162
\106\237\373\110\325\136\227\346\261\241\370\344\357\106\045\224
\234\211\333\151\070\276\354\134\016\126\307\145\121\345\120\210
\210\277\102\325\053\075\345\371\272\236\056\263\312\364\163\222
\002\013\276\114\146\353\040\376\271\313\265\231\177\346\266\023
\372\312\113\115\331\356\123\106\006\073\306\116\255\223\132\201
\176\154\052\113\152\005\105\214\362\041\244\061\220\207\154\145
\234\235\245\140\225\072\122\177\365\321\253\010\156\363\356\133
\371\210\075\176\270\157\156\003\344\102
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
For Server Distrust After: Sat Dec 28 00:00:00 2019
CKA_NSS_SERVER_DISTRUST_AFTER MULTILINE_OCTAL
\061\071\061\062\062\070\060\060\060\060\060\060\132
END
For Email Distrust After: Wed Aug 31 00:00:00 2022
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\062\060\070\063\061\060\060\060\060\060\060\132
END

Trust for "EC-ACC"
Issuer: CN=EC-ACC,OU=Jerarquia Entitats de Certificacio Catalanes,OU=Vegeu https://www.catcert.net/verarrel (c)03,OU=Serveis Publics de Certificacio,O=Agencia Catalana de Certificacio (NIF Q-0801176-I),C=ES
Serial Number:ee:2b:3d:eb:d4:21:de:14:a8:62:ac:04:f3:dd:c4:01
Subject: CN=EC-ACC,OU=Jerarquia Entitats de Certificacio Catalanes,OU=Vegeu https://www.catcert.net/verarrel (c)03,OU=Serveis Publics de Certificacio,O=Agencia Catalana de Certificacio (NIF Q-0801176-I),C=ES
Not Valid Before: Tue Jan 07 23:00:00 2003
Not Valid After : Tue Jan 07 22:59:59 2031
Fingerprint (SHA-256):
88:49:7F:01:60:2F:31:54:24:6A:E2:8C:4D:5A:EF:10:F1:D8:7E:BB:76:62:6F:4A:E0:B7:F9:5B:A7:96:87:99
Fingerprint (SHA1): 28:90:3A:63:5B:52:80:FA:E6:77:4C:0B:6D:A7:D6:BA:A6:4A:F2:E8
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "EC-ACC"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\050\220\072\143\133\122\200\372\346\167\114\013\155\247\326\272
\246\112\362\350
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\353\365\235\051\015\141\371\102\037\174\302\272\155\343\025\011
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\363\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\073\060\071\006\003\125\004\012\023\062\101\147\145\156\143
\151\141\040\103\141\164\141\154\141\156\141\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\050\116\111\106
\040\121\055\060\070\060\061\061\067\066\055\111\051\061\050\060
\046\006\003\125\004\013\023\037\123\145\162\166\145\151\163\040
\120\165\142\154\151\143\163\040\144\145\040\103\145\162\164\151
\146\151\143\141\143\151\157\061\065\060\063\006\003\125\004\013
\023\054\126\145\147\145\165\040\150\164\164\160\163\072\057\057
\167\167\167\056\143\141\164\143\145\162\164\056\156\145\164\057
\166\145\162\141\162\162\145\154\040\050\143\051\060\063\061\065
\060\063\006\003\125\004\013\023\054\112\145\162\141\162\161\165
\151\141\040\105\156\164\151\164\141\164\163\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\103\141\164\141
\154\141\156\145\163\061\017\060\015\006\003\125\004\003\023\006
\105\103\055\101\103\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\356\053\075\353\324\041\336\024\250\142\254\004\363\335
\304\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Actalis Authentication Root CA"
#
Issuer: CN=Actalis Authentication Root CA,O=Actalis S.p.A./03358520967,L=Milan,C=IT
Serial Number:57:0a:11:97:42:c4:e3:cc
Subject: CN=Actalis Authentication Root CA,O=Actalis S.p.A./03358520967,L=Milan,C=IT
Not Valid Before: Thu Sep 22 11:22:02 2011
Not Valid After : Sun Sep 22 11:22:02 2030
Fingerprint (SHA-256):
55:92:60:84:EC:96:3A:64:B9:6E:2A:BE:01:CE:0B:A8:6A:64:FB:FE:BC:C7:AA:B5:AF:C1:55:B3:7F:D7:60:66
Fingerprint (SHA1): F3:73:B3:87:06:5A:28:84:8A:F2:F3:4A:CE:19:2B:DD:C7:8E:9C:AC
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Actalis Authentication Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\124\061
\016\060\014\006\003\125\004\007\014\005\115\151\154\141\156\061
\043\060\041\006\003\125\004\012\014\032\101\143\164\141\154\151
\163\040\123\056\160\056\101\056\057\060\063\063\065\070\065\062
\060\071\066\067\061\047\060\045\006\003\125\004\003\014\036\101
\143\164\141\154\151\163\040\101\165\164\150\145\156\164\151\143
\141\164\151\157\156\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\124\061
\016\060\014\006\003\125\004\007\014\005\115\151\154\141\156\061
\043\060\041\006\003\125\004\012\014\032\101\143\164\141\154\151
\163\040\123\056\160\056\101\056\057\060\063\063\065\070\065\062
\060\071\066\067\061\047\060\045\006\003\125\004\003\014\036\101
\143\164\141\154\151\163\040\101\165\164\150\145\156\164\151\143
\141\164\151\157\156\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\127\012\021\227\102\304\343\314
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\273\060\202\003\243\240\003\002\001\002\002\010\127
\012\021\227\102\304\343\314\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\153\061\013\060\011\006\003\125\004
\006\023\002\111\124\061\016\060\014\006\003\125\004\007\014\005
\115\151\154\141\156\061\043\060\041\006\003\125\004\012\014\032

\101\143\164\141\154\151\163\040\123\056\160\056\101\056\057\060
\063\063\065\070\065\062\060\071\066\067\061\047\060\045\006\003
\125\004\003\014\036\101\143\164\141\154\151\163\040\101\165\164
\150\145\156\164\151\143\141\164\151\157\156\040\122\157\157\164
\040\103\101\060\036\027\015\061\061\060\071\062\062\061\061\062
\062\060\062\132\027\015\063\060\060\071\062\062\061\061\062\062
\060\062\132\060\153\061\013\060\011\006\003\125\004\006\023\002
\111\124\061\016\060\014\006\003\125\004\007\014\005\115\151\154
\141\156\061\043\060\041\006\003\125\004\012\014\032\101\143\164
\141\154\151\163\040\123\056\160\056\101\056\057\060\063\063\065
\070\065\062\060\071\066\067\061\047\060\045\006\003\125\004\003
\014\036\101\143\164\141\154\151\163\040\101\165\164\150\145\156
\164\151\143\141\164\151\157\156\040\122\157\157\164\040\103\101
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\247\306\304\245\051\244\054\357\345\030\305\260\120\243\157
\121\073\237\012\132\311\302\110\070\012\302\034\240\030\177\221
\265\207\271\100\077\335\035\150\037\010\203\325\055\036\210\240
\370\217\126\217\155\231\002\222\220\026\325\137\010\154\211\327
\341\254\274\040\302\261\340\203\121\212\151\115\000\226\132\157
\057\300\104\176\243\016\344\221\315\130\356\334\373\307\036\105
\107\335\047\271\010\001\237\246\041\035\365\101\055\057\114\375
\050\255\340\212\255\042\264\126\145\216\206\124\217\223\103\051
\336\071\106\170\243\060\043\272\315\360\175\023\127\300\135\322
\203\153\110\114\304\253\237\200\132\133\072\275\311\247\042\077
\200\047\063\133\016\267\212\014\135\007\067\010\313\154\322\172
\107\042\104\065\305\314\314\056\216\335\052\355\267\175\146\015
\137\141\121\042\125\033\343\106\343\343\075\320\065\142\232\333
\257\024\310\133\241\314\211\033\341\060\046\374\240\233\037\201
\247\107\037\004\353\243\071\222\006\237\231\323\277\323\352\117
\120\234\031\376\226\207\036\074\145\366\243\030\044\203\206\020
\347\124\076\250\072\166\044\117\201\041\305\343\017\002\370\223
\224\107\040\273\376\324\016\323\150\271\335\304\172\204\202\343
\123\124\171\335\333\234\322\362\007\233\056\266\274\076\355\205
\155\357\045\021\362\227\032\102\141\367\112\227\350\213\261\020
\007\372\145\201\262\242\071\317\367\074\377\030\373\306\361\132
\213\131\342\002\254\173\222\320\116\024\117\131\105\366\014\136
\050\137\260\350\077\105\317\317\257\233\157\373\204\323\167\132
\225\157\254\224\204\236\356\274\300\112\217\112\223\370\104\041
\342\061\105\141\120\116\020\330\343\065\174\114\031\264\336\005
\277\243\006\237\310\265\315\344\037\327\027\006\015\172\225\164
\125\015\150\032\374\020\033\142\144\235\155\340\225\240\303\224
\007\127\015\024\346\275\005\373\270\237\346\337\213\342\306\347
\176\226\366\123\305\200\064\120\050\130\360\022\120\161\027\060
\272\346\170\143\274\364\262\255\233\053\262\376\341\071\214\136
\272\013\040\224\336\173\203\270\377\343\126\215\267\021\351\073
\214\362\261\301\135\235\244\013\114\053\331\262\030\365\265\237
\113\002\003\001\000\001\243\143\060\141\060\035\006\003\125\035

\016\004\026\004\024\122\330\210\072\310\237\170\146\355\211\363
\173\070\160\224\311\002\002\066\320\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125\035
\043\004\030\060\026\200\024\122\330\210\072\310\237\170\146\355
\211\363\173\070\160\224\311\002\002\066\320\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\013
\173\162\207\300\140\246\111\114\210\130\346\035\210\367\024\144
\110\246\330\130\012\016\117\023\065\337\065\035\324\355\006\061
\310\201\076\152\325\335\073\032\062\356\220\075\021\322\056\364
\216\303\143\056\043\146\260\147\276\157\266\300\023\071\140\252
\242\064\045\223\165\122\336\247\235\255\016\207\211\122\161\152
\026\074\031\035\203\370\232\051\145\276\364\077\232\331\360\363
\132\207\041\161\200\115\313\340\070\233\077\273\372\340\060\115
\317\206\323\145\020\031\030\321\227\002\261\053\162\102\150\254
\240\275\116\132\332\030\277\153\230\201\320\375\232\276\136\025
\110\315\021\025\271\300\051\134\264\350\210\367\076\066\256\267
\142\375\036\142\336\160\170\020\034\110\133\332\274\244\070\272
\147\355\125\076\136\127\337\324\003\100\114\201\244\322\117\143
\247\011\102\011\024\374\000\251\302\200\163\117\056\300\100\331
\021\173\110\352\172\002\300\323\353\050\001\046\130\164\301\300
\163\042\155\223\225\375\071\175\273\052\343\366\202\343\054\227
\137\116\037\221\224\372\376\054\243\330\166\032\270\115\262\070
\117\233\372\035\110\140\171\046\342\363\375\251\320\232\350\160
\217\111\172\326\345\275\012\016\333\055\363\215\277\353\343\244
\175\313\307\225\161\350\332\243\174\305\302\370\164\222\004\033
\206\254\244\042\123\100\266\254\376\114\166\317\373\224\062\300
\065\237\166\077\156\345\220\156\240\246\046\242\270\054\276\321
\053\205\375\247\150\310\272\001\053\261\154\164\035\270\163\225
\347\356\267\307\045\360\000\114\000\262\176\266\013\213\034\363
\300\120\236\045\271\340\010\336\066\146\377\067\245\321\273\124
\144\054\311\047\265\113\222\176\145\377\323\055\341\271\116\274
\177\244\101\041\220\101\167\246\071\037\352\236\343\237\320\146
\157\005\354\252\166\176\277\153\026\240\353\265\307\374\222\124
\057\053\021\047\045\067\170\114\121\152\260\363\314\130\135\024
\361\152\110\025\377\302\007\266\261\215\017\216\134\120\106\263
\075\277\001\230\117\262\131\124\107\076\064\173\170\155\126\223
\056\163\352\146\050\170\315\035\024\277\240\217\057\056\270\056
\216\362\024\212\314\351\265\174\373\154\235\014\245\341\226
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Actalis Authentication Root CA"
Issuer: CN=Actalis Authentication Root CA,O=Actalis S.p.A./03358520967,L=Milan,C=IT
Serial Number:57:0a:11:97:42:c4:e3:cc
Subject: CN=Actalis Authentication Root CA,O=Actalis S.p.A./03358520967,L=Milan,C=IT

Not Valid Before: Thu Sep 22 11:22:02 2011
Not Valid After : Sun Sep 22 11:22:02 2030
Fingerprint (SHA-256):
55:92:60:84:EC:96:3A:64:B9:6E:2A:BE:01:CE:0B:A8:6A:64:FB:FE:BC:C7:AA:B5:AF:C1:55:B3:7F:D7:60:66
Fingerprint (SHA1): F3:73:B3:87:06:5A:28:84:8A:F2:F3:4A:CE:19:2B:DD:C7:8E:9C:AC
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Actalis Authentication Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\363\163\263\207\006\132\050\204\212\362\363\112\316\031\053\335
\307\216\234\254
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\151\301\015\117\007\243\033\303\376\126\075\004\274\021\366\246
END
CKA_ISSUER MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\124\061
\016\060\014\006\003\125\004\007\014\005\115\151\154\141\156\061
\043\060\041\006\003\125\004\012\014\032\101\143\164\141\154\151
\163\040\123\056\160\056\101\056\057\060\063\063\065\070\065\062
\060\071\066\067\061\047\060\045\006\003\125\004\003\014\036\101
\143\164\141\154\151\163\040\101\165\164\150\145\156\164\151\143
\141\164\151\157\156\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\127\012\021\227\102\304\343\314
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Buypass Class 2 Root CA"
#
Issuer: CN=Buypass Class 2 Root CA,O=Buypass AS-983163327,C=NO
Serial Number: 2 (0x2)
Subject: CN=Buypass Class 2 Root CA,O=Buypass AS-983163327,C=NO
Not Valid Before: Tue Oct 26 08:38:03 2010
Not Valid After : Fri Oct 26 08:38:03 2040
Fingerprint (SHA-256):
9A:11:40:25:19:7C:5B:B9:5D:94:E6:3D:55:CD:43:79:08:47:B6:46:B2:3C:DF:11:AD:A4:A0:0E:FF:15:FB:48
Fingerprint (SHA1): 49:0A:75:74:DE:87:0A:47:FE:58:EE:F6:C7:6B:EB:C6:0B:12:40:99
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Buypass Class 2 Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\131\060\202\003\101\240\003\002\001\002\002\001\002
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061\035
\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163\163
\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040\060
\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163\040
\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101\060
\036\027\015\061\060\061\060\062\066\060\070\063\070\060\063\132
\027\015\064\060\061\060\062\066\060\070\063\070\060\063\132\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061\035
\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163\163
\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040\060
\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163\040
\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101\060
\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000
\327\307\136\367\301\007\324\167\373\103\041\364\364\365\151\344
\356\062\001\333\243\206\037\344\131\015\272\347\165\203\122\353
\352\034\141\025\110\273\035\007\312\214\256\260\334\226\235\352
\303\140\222\206\202\050\163\234\126\006\377\113\144\360\014\052
\067\111\265\345\317\014\174\356\361\112\273\163\060\145\363\325
\057\203\266\176\343\347\365\236\253\140\371\323\361\235\222\164
\212\344\034\226\254\133\200\351\265\364\061\207\243\121\374\307
\176\241\157\216\123\167\324\227\301\125\063\222\076\030\057\165
\324\255\206\111\313\225\257\124\006\154\330\006\023\215\133\377
\341\046\031\131\300\044\272\201\161\171\220\104\120\150\044\224

\137\270\263\021\361\051\101\141\243\101\313\043\066\325\301\361
\062\120\020\116\177\364\206\223\354\204\323\216\274\113\277\134
\001\116\007\075\334\024\212\224\012\244\352\163\373\013\121\350
\023\007\030\372\016\361\053\321\124\025\175\074\341\367\264\031
\102\147\142\136\167\340\242\125\354\266\331\151\027\325\072\257
\104\355\112\305\236\344\172\047\174\345\165\327\252\313\045\347
\337\153\012\333\017\115\223\116\250\240\315\173\056\362\131\001
\152\267\015\270\007\201\176\213\070\033\070\346\012\127\231\075
\356\041\350\243\365\014\026\335\213\354\064\216\234\052\034\000
\025\027\215\150\203\322\160\237\030\010\315\021\150\325\311\153
\122\315\304\106\217\334\265\363\330\127\163\036\351\224\071\004
\277\323\336\070\336\264\123\354\151\034\242\176\304\217\344\033
\160\255\362\242\371\373\367\026\144\146\151\237\111\121\242\342
\025\030\147\006\112\177\325\154\265\115\263\063\340\141\353\135
\276\351\230\017\062\327\035\113\074\056\132\001\122\221\011\362
\337\352\215\330\006\100\143\252\021\344\376\303\067\236\024\122
\077\364\342\314\362\141\223\321\375\147\153\327\122\256\277\150
\253\100\103\240\127\065\123\170\360\123\370\141\102\007\144\306
\327\157\233\114\070\015\143\254\142\257\066\213\242\163\012\015
\365\041\275\164\252\115\352\162\003\111\333\307\137\035\142\143
\307\375\335\221\354\063\356\365\155\264\156\060\150\336\310\326
\046\260\165\136\173\264\007\040\230\241\166\062\270\115\154\117
\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\311\200\167\340\142\222\202\365\106\234\363
\272\367\114\303\336\270\243\255\071\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\002\001\000\123\137\041
\365\272\260\072\122\071\054\222\260\154\000\311\357\316\040\357
\006\362\226\236\351\244\164\177\172\026\374\267\365\266\373\025
\033\077\253\246\300\162\135\020\261\161\356\274\117\343\255\254
\003\155\056\161\056\257\304\343\255\243\275\014\021\247\264\377
\112\262\173\020\020\037\247\127\101\262\300\256\364\054\131\326
\107\020\210\363\041\121\051\060\312\140\206\257\106\253\035\355
\072\133\260\224\336\104\343\101\010\242\301\354\035\326\375\117
\266\326\107\320\024\013\312\346\312\265\173\167\176\101\037\136
\203\307\266\214\071\226\260\077\226\201\101\157\140\220\342\350
\371\373\042\161\331\175\263\075\106\277\264\204\257\220\034\017
\217\022\152\257\357\356\036\172\256\002\112\212\027\053\166\376
\254\124\211\044\054\117\077\266\262\247\116\214\250\221\227\373
\051\306\173\134\055\271\313\146\266\267\250\133\022\121\205\265
\011\176\142\170\160\376\251\152\140\266\035\016\171\014\375\312
\352\044\200\162\303\227\077\362\167\253\103\042\012\307\353\266
\014\204\202\054\200\153\101\212\010\300\353\245\153\337\231\022
\313\212\325\136\200\014\221\340\046\010\066\110\305\372\070\021
\065\377\045\203\055\362\172\277\332\375\216\376\245\313\105\054
\037\304\210\123\256\167\016\331\232\166\305\216\054\035\243\272
\325\354\062\256\300\252\254\367\321\172\115\353\324\007\342\110

\367\042\216\260\244\237\152\316\216\262\262\140\364\243\042\320
\043\353\224\132\172\151\335\017\277\100\127\254\153\131\120\331
\243\231\341\156\376\215\001\171\047\043\025\336\222\235\173\011
\115\132\347\113\110\060\132\030\346\012\155\346\217\340\322\273
\346\337\174\156\041\202\301\150\071\115\264\230\130\146\142\314
\112\220\136\303\372\047\004\261\171\025\164\231\314\276\255\040
\336\046\140\034\353\126\121\246\243\352\344\243\077\247\377\141
\334\361\132\115\154\062\043\103\356\254\250\356\356\112\022\011
\074\135\161\302\276\171\372\302\207\150\035\013\375\134\151\314
\006\320\232\175\124\231\052\311\071\032\031\257\113\052\103\363
\143\135\132\130\342\057\343\035\344\251\326\320\012\320\236\277
\327\201\011\361\311\307\046\015\254\230\026\126\240
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Buypass Class 2 Root CA"
Issuer: CN=Buypass Class 2 Root CA,O=Buypass AS-983163327,C=NO
Serial Number: 2 (0x2)
Subject: CN=Buypass Class 2 Root CA,O=Buypass AS-983163327,C=NO
Not Valid Before: Tue Oct 26 08:38:03 2010
Not Valid After : Fri Oct 26 08:38:03 2040
Fingerprint (SHA-256):
9A:11:40:25:19:7C:5B:B9:5D:94:E6:3D:55:CD:43:79:08:47:B6:46:B2:3C:DF:11:AD:A4:A0:0E:FF:15:FB:48
Fingerprint (SHA1): 49:0A:75:74:DE:87:0A:47:FE:58:EE:F6:C7:6B:EB:C6:0B:12:40:99
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Buypass Class 2 Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\111\012\165\164\336\207\012\107\376\130\356\366\307\153\353\306
\013\022\100\231
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\106\247\322\376\105\373\144\132\250\131\220\233\170\104\233\051
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\002
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Buypass Class 3 Root CA"
#
Issuer: CN=Buypass Class 3 Root CA,O=Buypass AS-983163327,C=NO
Serial Number: 2 (0x2)
Subject: CN=Buypass Class 3 Root CA,O=Buypass AS-983163327,C=NO
Not Valid Before: Tue Oct 26 08:28:58 2010
Not Valid After : Fri Oct 26 08:28:58 2040
Fingerprint (SHA-256):
ED:F7:EB:BC:A2:7A:2A:38:4D:38:7B:7D:40:10:C6:66:E2:ED:B4:84:3E:4C:29:B4:AE:1D:5B:93:32:E6:B2:4D
Fingerprint (SHA1): DA:FA:F7:FA:66:84:EC:06:8F:14:50:BD:C7:C2:81:A5:BC:A9:64:57
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Buypass Class 3 Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\131\060\202\003\101\240\003\002\001\002\002\001\002
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061\035
\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163\163
\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040\060
\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163\040
\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101\060

\036\027\015\061\060\061\060\062\066\060\070\062\070\065\070\132
\027\015\064\060\061\060\062\066\060\070\062\070\065\070\132\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061\035
\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163\163
\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040\060
\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163\040
\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101\060
\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000
\245\332\012\225\026\120\343\225\362\136\235\166\061\006\062\172
\233\361\020\166\270\000\232\265\122\066\315\044\107\260\237\030
\144\274\232\366\372\325\171\330\220\142\114\042\057\336\070\075
\326\340\250\351\034\054\333\170\021\351\216\150\121\025\162\307
\363\063\207\344\240\135\013\134\340\127\007\052\060\365\315\304
\067\167\050\115\030\221\346\277\325\122\375\161\055\160\076\347
\306\304\212\343\360\050\013\364\166\230\241\213\207\125\262\072
\023\374\267\076\047\067\216\042\343\250\117\052\357\140\273\075
\267\071\303\016\001\107\231\135\022\117\333\103\372\127\241\355
\371\235\276\021\107\046\133\023\230\253\135\026\212\260\067\034
\127\235\105\377\210\226\066\277\273\312\007\173\157\207\143\327
\320\062\152\326\135\154\014\361\263\156\071\342\153\061\056\071
\000\047\024\336\070\300\354\031\146\206\022\350\235\162\026\023
\144\122\307\251\067\034\375\202\060\355\204\030\035\364\256\134
\377\160\023\000\353\261\365\063\172\113\326\125\370\005\215\113
\151\260\365\263\050\066\134\024\304\121\163\115\153\013\361\064
\007\333\027\071\327\334\050\173\153\365\237\363\056\301\117\027
\052\020\363\314\312\350\353\375\153\253\056\232\237\055\202\156
\004\324\122\001\223\055\075\206\374\176\374\337\357\102\035\246
\153\357\271\040\306\367\275\240\247\225\375\247\346\211\044\330
\314\214\064\154\342\043\057\331\022\032\041\271\125\221\157\013
\221\171\031\014\255\100\210\013\160\342\172\322\016\330\150\110
\273\202\023\071\020\130\351\330\052\007\306\022\333\130\333\322
\073\125\020\107\005\025\147\142\176\030\143\246\106\077\011\016
\124\062\136\277\015\142\172\047\357\200\350\333\331\113\006\132
\067\132\045\320\010\022\167\324\157\011\120\227\075\310\035\303
\337\214\105\060\126\306\323\144\253\146\363\300\136\226\234\303
\304\357\303\174\153\213\072\171\177\263\111\317\075\342\211\237
\240\060\113\205\271\234\224\044\171\217\175\153\251\105\150\017
\053\320\361\332\034\313\151\270\312\111\142\155\310\320\143\142
\335\140\017\130\252\217\241\274\005\245\146\242\317\033\166\262
\204\144\261\114\071\122\300\060\272\360\214\113\002\260\266\267
\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\107\270\315\377\345\157\356\370\262\354\057
\116\016\371\045\260\216\074\153\303\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\002\001\000\000\040\043
\101\065\004\220\302\100\142\140\357\342\065\114\327\077\254\342

\064\220\270\241\157\166\372\026\026\244\110\067\054\351\220\302
\362\074\370\012\237\330\201\345\273\133\332\045\054\244\247\125
\161\044\062\366\310\013\362\274\152\370\223\254\262\007\302\137
\237\333\314\310\212\252\276\152\157\341\111\020\314\061\327\200
\273\273\310\330\242\016\144\127\352\242\365\302\251\061\025\322
\040\152\354\374\042\001\050\317\206\270\200\036\251\314\021\245
\074\362\026\263\107\235\374\322\200\041\304\313\320\107\160\101
\241\312\203\031\010\054\155\362\135\167\234\212\024\023\324\066
\034\222\360\345\006\067\334\246\346\220\233\070\217\134\153\033
\106\206\103\102\137\076\001\007\123\124\135\145\175\367\212\163
\241\232\124\132\037\051\103\024\047\302\205\017\265\210\173\032
\073\224\267\035\140\247\265\234\347\051\151\127\132\233\223\172
\103\060\033\003\327\142\310\100\246\252\374\144\344\112\327\221
\123\001\250\040\210\156\234\137\104\271\313\140\201\064\354\157
\323\175\332\110\137\353\264\220\274\055\251\034\013\254\034\325
\242\150\040\200\004\326\374\261\217\057\273\112\061\015\112\206
\034\353\342\066\051\046\365\332\330\304\362\165\141\317\176\256
\166\143\112\172\100\145\223\207\370\036\200\214\206\345\206\326
\217\016\374\123\054\140\350\026\141\032\242\076\103\173\315\071
\140\124\152\365\362\211\046\001\150\203\110\242\063\350\311\004
\221\262\021\064\021\076\352\320\103\031\037\003\223\220\014\377
\121\075\127\364\101\156\341\313\240\276\353\311\143\315\155\314
\344\370\066\252\150\235\355\275\135\227\160\104\015\266\016\065
\334\341\014\135\273\240\121\224\313\176\026\353\021\057\243\222
\105\310\114\161\331\274\311\231\122\127\106\057\120\317\275\065
\151\364\075\025\316\006\245\054\017\076\366\201\272\224\273\303
\273\277\145\170\322\206\171\377\111\073\032\203\014\360\336\170
\354\310\362\115\114\032\336\202\051\370\301\132\332\355\356\346
\047\136\350\105\320\235\034\121\250\150\253\104\343\320\213\152
\343\370\073\273\334\115\327\144\362\121\276\346\252\253\132\351
\061\356\006\274\163\277\023\142\012\237\307\271\227
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Buypass Class 3 Root CA"
Issuer: CN=Buypass Class 3 Root CA,O=Buypass AS-983163327,C=NO
Serial Number: 2 (0x2)
Subject: CN=Buypass Class 3 Root CA,O=Buypass AS-983163327,C=NO
Not Valid Before: Tue Oct 26 08:28:58 2010
Not Valid After : Fri Oct 26 08:28:58 2040
Fingerprint (SHA-256):
ED:F7:EB:BC:A2:7A:2A:38:4D:38:7B:7D:40:10:C6:66:E2:ED:B4:84:3E:4C:29:B4:AE:1D:5B:93:32:E6:B2:4D
Fingerprint (SHA1): DA:FA:F7:FA:66:84:EC:06:8F:14:50:BD:C7:C2:81:A5:BC:A9:64:57
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Buypass Class 3 Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\332\372\367\372\146\204\354\006\217\024\120\275\307\302\201\245
\274\251\144\127
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\075\073\030\236\054\144\132\350\325\210\316\016\371\067\302\354
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "T-TeleSec GlobalRoot Class 3"
#
Issuer: CN=T-TeleSec GlobalRoot Class 3,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Serial Number: 1 (0x1)
Subject: CN=T-TeleSec GlobalRoot Class 3,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Not Valid Before: Wed Oct 01 10:29:56 2008
Not Valid After : Sat Oct 01 23:59:59 2033
Fingerprint (SHA-256):
FD:73:DA:D3:1C:64:4F:F1:B4:3B:EF:0C:CD:DA:96:71:0B:9C:D9:87:5E:CA:7E:31:70:7A:F3:E9:6D:52:2B:BD
Fingerprint (SHA1): 55:A6:72:3E:CB:F2:EC:CD:C3:23:74:70:19:9D:2A:BE:11:E3:81:D1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "T-TeleSec GlobalRoot Class 3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060

\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\303\060\202\002\253\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163\164
\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040\123
\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060\035
\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155\163
\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045\060
\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123\145
\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154\141
\163\163\040\063\060\036\027\015\060\070\061\060\060\061\061\060
\062\071\065\066\132\027\015\063\063\061\060\060\061\062\063\065
\071\065\071\132\060\201\202\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\053\060\051\006\003\125\004\012\014\042\124
\055\123\171\163\164\145\155\163\040\105\156\164\145\162\160\162
\151\163\145\040\123\145\162\166\151\143\145\163\040\107\155\142
\110\061\037\060\035\006\003\125\004\013\014\026\124\055\123\171
\163\164\145\155\163\040\124\162\165\163\164\040\103\145\156\164
\145\162\061\045\060\043\006\003\125\004\003\014\034\124\055\124
\145\154\145\123\145\143\040\107\154\157\142\141\154\122\157\157
\164\040\103\154\141\163\163\040\063\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\275\165\223\360\142\042
\157\044\256\340\172\166\254\175\275\331\044\325\270\267\374\315
\360\102\340\353\170\210\126\136\233\232\124\035\115\014\212\366
\323\317\160\364\122\265\330\223\004\343\106\206\161\101\112\053

\360\052\054\125\003\326\110\303\340\071\070\355\362\134\074\077
\104\274\223\075\141\253\116\315\015\276\360\040\047\130\016\104
\177\004\032\207\245\327\226\024\066\220\320\111\173\241\165\373
\032\153\163\261\370\316\251\011\054\362\123\325\303\024\104\270
\206\245\366\213\053\071\332\243\063\124\331\372\162\032\367\042
\025\034\210\221\153\177\146\345\303\152\200\260\044\363\337\206
\105\210\375\031\177\165\207\037\037\261\033\012\163\044\133\271
\145\340\054\124\310\140\323\146\027\077\341\314\124\063\163\221
\002\072\246\177\173\166\071\242\037\226\266\070\256\265\310\223
\164\035\236\271\264\345\140\235\057\126\321\340\353\136\133\114
\022\160\014\154\104\040\253\021\330\364\031\366\322\234\122\067
\347\372\266\302\061\073\112\324\024\231\255\307\032\365\135\137
\372\007\270\174\015\037\326\203\036\263\002\003\001\000\001\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\265
\003\367\166\073\141\202\152\022\252\030\123\353\003\041\224\277
\376\316\312\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\126\075\357\224\325\275\332\163\262
\130\276\256\220\255\230\047\227\376\001\261\260\122\000\270\115
\344\033\041\164\033\176\300\356\136\151\052\045\257\134\326\035
\332\322\171\311\363\227\051\340\206\207\336\004\131\017\361\131
\324\144\205\113\231\257\045\004\036\311\106\251\227\336\202\262
\033\160\237\234\366\257\161\061\335\173\005\245\054\323\271\312
\107\366\312\362\366\347\255\271\110\077\274\026\267\301\155\364
\352\011\257\354\363\265\347\005\236\246\036\212\123\121\326\223
\201\314\164\223\366\271\332\246\045\005\164\171\132\176\100\076
\202\113\046\021\060\156\341\077\101\307\107\000\065\325\365\323
\367\124\076\201\075\332\111\152\232\263\357\020\075\346\353\157
\321\310\042\107\313\314\317\001\061\222\331\030\343\042\276\011
\036\032\076\132\262\344\153\014\124\172\175\103\116\270\211\245
\173\327\242\075\226\206\314\362\046\064\055\152\222\235\232\032
\320\060\342\135\116\004\260\137\213\040\176\167\301\075\225\202
\321\106\232\073\074\170\270\157\241\320\015\144\242\170\036\051
\116\223\303\244\124\024\133
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "T-TeleSec GlobalRoot Class 3"
Issuer: CN=T-TeleSec GlobalRoot Class 3,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Serial Number: 1 (0x1)
Subject: CN=T-TeleSec GlobalRoot Class 3,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Not Valid Before: Wed Oct 01 10:29:56 2008
Not Valid After : Sat Oct 01 23:59:59 2033

Fingerprint (SHA-256):
FD:73:DA:D3:1C:64:4F:F1:B4:3B:EF:0C:CD:DA:96:71:0B:9C:D9:87:5E:CA:7E:31:70:7A:F3:E9:6D:52:2B:BD
Fingerprint (SHA1): 55:A6:72:3E:CB:F2:EC:CD:C3:23:74:70:19:9D:2A:BE:11:E3:81:D1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "T-TeleSec GlobalRoot Class 3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\125\246\162\076\313\362\354\315\303\043\164\160\031\235\052\276
\021\343\201\321
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\312\373\100\250\116\071\222\212\035\376\216\057\304\047\352\357
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST Root Class 3 CA 2 2009"
#
Issuer: CN=D-TRUST Root Class 3 CA 2 2009,O=D-Trust GmbH,C=DE
Serial Number: 623603 (0x983f3)
Subject: CN=D-TRUST Root Class 3 CA 2 2009,O=D-Trust GmbH,C=DE
Not Valid Before: Thu Nov 05 08:35:58 2009
Not Valid After : Mon Nov 05 08:35:58 2029
Fingerprint (SHA-256):
49:E7:A4:42:AC:F0:EA:62:87:05:00:54:B5:25:64:B6:50:E4:F4:9E:42:E3:48:D6:AA:38:E0:39:E9:57:B1:C1
Fingerprint (SHA1): 58:E8:AB:B0:36:15:33:FB:80:F7:9B:1B:6D:29:D3:FF:8D:5F:00:F0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA 2 2009"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003\014
\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003\014
\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\011\203\363
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\063\060\202\003\033\240\003\002\001\002\002\003\011
\203\363\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165
\163\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003
\014\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103
\154\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071
\060\036\027\015\060\071\061\061\060\065\060\070\063\065\065\070
\132\027\015\062\071\061\061\060\065\060\070\063\065\065\070\132
\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003\014
\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071\060
\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000
\323\262\112\317\172\107\357\165\233\043\372\072\057\326\120\105
\211\065\072\306\153\333\376\333\000\150\250\340\003\021\035\067
\120\010\237\115\112\150\224\065\263\123\321\224\143\247\040\126
\257\336\121\170\354\052\075\363\110\110\120\076\012\337\106\125
\213\047\155\303\020\115\015\221\122\103\330\207\340\135\116\066
\265\041\312\137\071\100\004\137\133\176\314\243\306\053\251\100
\036\331\066\204\326\110\363\222\036\064\106\040\044\301\244\121
\216\112\032\357\120\077\151\135\031\177\105\303\307\001\217\121
\311\043\350\162\256\264\274\126\011\177\022\313\034\261\257\051
\220\012\311\125\314\017\323\264\032\355\107\065\132\112\355\234

\163\004\041\320\252\275\014\023\265\000\312\046\154\304\153\014
\224\132\225\224\332\120\232\361\377\245\053\146\061\244\311\070
\240\337\035\037\270\011\056\363\247\350\147\122\253\225\037\340
\106\076\330\244\303\312\132\305\061\200\350\110\232\237\224\151
\376\031\335\330\163\174\201\312\226\336\216\355\263\062\005\145
\204\064\346\346\375\127\020\265\137\166\277\057\260\020\015\305
\002\003\001\000\001\243\202\001\032\060\202\001\026\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035
\006\003\125\035\016\004\026\004\024\375\332\024\304\237\060\336
\041\275\036\102\071\374\253\143\043\111\340\361\204\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\201\323
\006\003\125\035\037\004\201\313\060\201\310\060\201\200\240\176
\240\174\206\172\154\144\141\160\072\057\057\144\151\162\145\143
\164\157\162\171\056\144\055\164\162\165\163\164\056\156\145\164
\057\103\116\075\104\055\124\122\125\123\124\045\062\060\122\157
\157\164\045\062\060\103\154\141\163\163\045\062\060\063\045\062
\060\103\101\045\062\060\062\045\062\060\062\060\060\071\054\117
\075\104\055\124\162\165\163\164\045\062\060\107\155\142\110\054
\103\075\104\105\077\143\145\162\164\151\146\151\143\141\164\145
\162\145\166\157\143\141\164\151\157\156\154\151\163\164\060\103
\240\101\240\077\206\075\150\164\164\160\072\057\057\167\167\167
\056\144\055\164\162\165\163\164\056\156\145\164\057\143\162\154
\057\144\055\164\162\165\163\164\137\162\157\157\164\137\143\154
\141\163\163\137\063\137\143\141\137\062\137\062\060\060\071\056
\143\162\154\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\177\227\333\060\310\337\244\234\175
\041\172\200\160\316\024\022\151\210\024\225\140\104\001\254\262
\351\060\117\233\120\302\146\330\176\215\060\265\160\061\351\342
\151\307\363\160\333\040\025\206\320\015\360\276\254\001\165\204
\316\176\237\115\277\267\140\073\234\363\312\035\342\136\150\330
\243\235\227\345\100\140\322\066\041\376\320\264\270\027\332\164
\243\177\324\337\260\230\002\254\157\153\153\054\045\044\162\241
\145\356\045\132\345\346\062\347\362\337\253\111\372\363\220\151
\043\333\004\331\347\134\130\374\145\324\227\276\314\374\056\012
\314\045\052\065\004\370\140\221\025\165\075\101\377\043\037\031
\310\154\353\202\123\004\246\344\114\042\115\215\214\272\316\133
\163\354\144\124\120\155\321\234\125\373\151\303\066\303\214\274
\074\205\246\153\012\046\015\340\223\230\140\256\176\306\044\227
\212\141\137\221\216\146\222\011\207\066\315\213\233\055\076\366
\121\324\120\324\131\050\275\203\362\314\050\173\123\206\155\330
\046\210\160\327\352\221\315\076\271\312\300\220\156\132\306\136
\164\145\327\134\376\243\342
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST Root Class 3 CA 2 2009"

Issuer: CN=D-TRUST Root Class 3 CA 2 2009,O=D-Trust GmbH,C=DE
Serial Number: 623603 (0x983f3)
Subject: CN=D-TRUST Root Class 3 CA 2 2009,O=D-Trust GmbH,C=DE
Not Valid Before: Thu Nov 05 08:35:58 2009
Not Valid After : Mon Nov 05 08:35:58 2029
Fingerprint (SHA-256):
49:E7:A4:42:AC:F0:EA:62:87:05:00:54:B5:25:64:B6:50:E4:F4:9E:42:E3:48:D6:AA:38:E0:39:E9:57:B1:C1
Fingerprint (SHA1): 58:E8:AB:B0:36:15:33:FB:80:F7:9B:1B:6D:29:D3:FF:8D:5F:00:F0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA 2 2009"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\130\350\253\260\066\025\063\373\200\367\233\033\155\051\323\377
\215\137\000\360
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\315\340\045\151\215\107\254\234\211\065\220\367\375\121\075\057
END
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003\014
\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\011\203\363
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST Root Class 3 CA 2 EV 2009"
#
Issuer: CN=D-TRUST Root Class 3 CA 2 EV 2009,O=D-Trust GmbH,C=DE
Serial Number: 623604 (0x983f4)
Subject: CN=D-TRUST Root Class 3 CA 2 EV 2009,O=D-Trust GmbH,C=DE
Not Valid Before: Thu Nov 05 08:50:46 2009
Not Valid After : Mon Nov 05 08:50:46 2029
Fingerprint (SHA-256):
EE:C5:49:6B:98:8C:E9:86:25:B9:34:09:2E:EC:29:08:BE:D0:B0:F3:16:C2:D4:73:0C:84:EA:F1:F3:D3:48:81
Fingerprint (SHA1): 96:C9:1B:0B:95:B4:10:98:42:FA:D0:D8:22:79:FE:60:FA:B9:16:83
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA 2 EV 2009"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\052\060\050\006\003\125\004\003\014
\041\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\105\126\040\062\060
\060\071
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\052\060\050\006\003\125\004\003\014
\041\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\105\126\040\062\060
\060\071
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\011\203\364
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\103\060\202\003\053\240\003\002\001\002\002\003\011
\203\364\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\120\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165
\163\164\040\107\155\142\110\061\052\060\050\006\003\125\004\003
\014\041\104\055\124\122\125\123\124\040\122\157\157\164\040\103
\154\141\163\163\040\063\040\103\101\040\062\040\105\126\040\062
\060\060\071\060\036\027\015\060\071\061\061\060\065\060\070\065
\060\064\066\132\027\015\062\071\061\061\060\065\060\070\065\060
\064\066\132\060\120\061\013\060\011\006\003\125\004\006\023\002
\104\105\061\025\060\023\006\003\125\004\012\014\014\104\055\124
\162\165\163\164\040\107\155\142\110\061\052\060\050\006\003\125
\004\003\014\041\104\055\124\122\125\123\124\040\122\157\157\164
\040\103\154\141\163\163\040\063\040\103\101\040\062\040\105\126
\040\062\060\060\071\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\231\361\204\064\160\272\057\267\060\240
\216\275\174\004\317\276\142\274\231\375\202\227\322\172\012\147
\226\070\011\366\020\116\225\042\163\231\215\332\025\055\347\005
\374\031\163\042\267\216\230\000\274\074\075\254\241\154\373\326
\171\045\113\255\360\314\144\332\210\076\051\270\017\011\323\064
\335\063\365\142\321\341\315\031\351\356\030\117\114\130\256\342
\036\326\014\133\025\132\330\072\270\304\030\144\036\343\063\262

\265\211\167\116\014\277\331\224\153\023\227\157\022\243\376\231
\251\004\314\025\354\140\150\066\355\010\173\267\365\277\223\355
\146\061\203\214\306\161\064\207\116\027\352\257\213\221\215\034
\126\101\256\042\067\136\067\362\035\331\321\055\015\057\151\121
\247\276\146\246\212\072\052\275\307\032\261\341\024\360\276\072
\035\271\317\133\261\152\376\264\261\106\040\242\373\036\073\160
\357\223\230\175\214\163\226\362\305\357\205\160\255\051\046\374
\036\004\076\034\240\330\017\313\122\203\142\174\356\213\123\225
\220\251\127\242\352\141\005\330\371\115\304\047\372\156\255\355
\371\327\121\367\153\245\002\003\001\000\001\243\202\001\044\060
\202\001\040\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\323
\224\212\114\142\023\052\031\056\314\257\162\212\175\066\327\232
\034\334\147\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\201\335\006\003\125\035\037\004\201\325\060\201
\322\060\201\207\240\201\204\240\201\201\206\177\154\144\141\160
\072\057\057\144\151\162\145\143\164\157\162\171\056\144\055\164
\162\165\163\164\056\156\145\164\057\103\116\075\104\055\124\122
\125\123\124\045\062\060\122\157\157\164\045\062\060\103\154\141
\163\163\045\062\060\063\045\062\060\103\101\045\062\060\062\045
\062\060\105\126\045\062\060\062\060\060\071\054\117\075\104\055
\124\162\165\163\164\045\062\060\107\155\142\110\054\103\075\104
\105\077\143\145\162\164\151\146\151\143\141\164\145\162\145\166
\157\143\141\164\151\157\156\154\151\163\164\060\106\240\104\240
\102\206\100\150\164\164\160\072\057\057\167\167\167\056\144\055
\164\162\165\163\164\056\156\145\164\057\143\162\154\057\144\055
\164\162\165\163\164\137\162\157\157\164\137\143\154\141\163\163
\137\063\137\143\141\137\062\137\145\166\137\062\060\060\071\056
\143\162\154\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\064\355\173\132\074\244\224\210\357
\032\021\165\007\057\263\376\074\372\036\121\046\353\207\366\051
\336\340\361\324\306\044\011\351\301\317\125\033\264\060\331\316
\032\376\006\121\246\025\244\055\357\262\113\277\040\050\045\111
\321\246\066\167\064\350\144\337\122\261\021\307\163\172\315\071
\236\302\255\214\161\041\362\132\153\257\337\074\116\125\257\262
\204\145\024\211\271\167\313\052\061\276\317\243\155\317\157\110
\224\062\106\157\347\161\214\240\246\204\031\067\007\362\003\105
\011\053\206\165\174\337\137\151\127\000\333\156\330\246\162\042
\113\120\324\165\230\126\337\267\030\377\103\103\120\256\172\104
\173\360\171\121\327\103\075\247\323\201\323\360\311\117\271\332
\306\227\206\320\202\303\344\102\155\376\260\342\144\116\016\046
\347\100\064\046\265\010\211\327\010\143\143\070\047\165\036\063
\352\156\250\335\237\231\117\164\115\201\211\200\113\335\232\227
\051\134\057\276\201\101\271\214\377\352\175\140\006\236\315\327
\075\323\056\243\025\274\250\346\046\345\157\303\334\270\003\041
\352\237\026\361\054\124\265
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE

CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST Root Class 3 CA 2 EV 2009"
Issuer: CN=D-TRUST Root Class 3 CA 2 EV 2009,O=D-Trust GmbH,C=DE
Serial Number: 623604 (0x983f4)
Subject: CN=D-TRUST Root Class 3 CA 2 EV 2009,O=D-Trust GmbH,C=DE
Not Valid Before: Thu Nov 05 08:50:46 2009
Not Valid After : Mon Nov 05 08:50:46 2029
Fingerprint (SHA-256):
EE:C5:49:6B:98:8C:E9:86:25:B9:34:09:2E:EC:29:08:BE:D0:B0:F3:16:C2:D4:73:0C:84:EA:F1:F3:D3:48:81
Fingerprint (SHA1): 96:C9:1B:0B:95:B4:10:98:42:FA:D0:D8:22:79:FE:60:FA:B9:16:83
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA 2 EV 2009"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\226\311\033\013\225\264\020\230\102\372\320\330\042\171\376\140
\372\271\026\203
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\252\306\103\054\136\055\315\304\064\300\120\117\021\002\117\266
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\052\060\050\006\003\125\004\003\014
\041\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\105\126\040\062\060
\060\071
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\011\203\364
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "CA Disig Root R2"
#
Issuer: CN=CA Disig Root R2,O=Disig a.s.,L=Bratislava,C=SK
Serial Number:00:92:b8:88:db:b0:8a:c1:63
Subject: CN=CA Disig Root R2,O=Disig a.s.,L=Bratislava,C=SK
Not Valid Before: Thu Jul 19 09:15:30 2012
Not Valid After : Sat Jul 19 09:15:30 2042

Fingerprint (SHA-256):
E2:3D:4A:03:6D:7B:70:E9:F5:95:B1:42:20:79:D2:B9:1E:DF:BB:1F:B6:51:A0:63:3E:AA:8A:9D:C5:F8:07:03
Fingerprint (SHA1): B5:61:EB:EA:A4:DE:E4:25:4B:69:1A:98:A5:57:47:C2:34:C7:D9:71
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CA Disig Root R2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\031\060\027\006\003\125
\004\003\023\020\103\101\040\104\151\163\151\147\040\122\157\157
\164\040\122\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\031\060\027\006\003\125
\004\003\023\020\103\101\040\104\151\163\151\147\040\122\157\157
\164\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\222\270\210\333\260\212\301\143
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\151\060\202\003\121\240\003\002\001\002\002\011\000
\222\270\210\333\260\212\301\143\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\122\061\013\060\011\006\003\125
\004\006\023\002\123\113\061\023\060\021\006\003\125\004\007\023
\012\102\162\141\164\151\163\154\141\166\141\061\023\060\021\006
\003\125\004\012\023\012\104\151\163\151\147\040\141\056\163\056
\061\031\060\027\006\003\125\004\003\023\020\103\101\040\104\151
\163\151\147\040\122\157\157\164\040\122\062\060\036\027\015\061
\062\060\067\061\071\060\071\061\065\063\060\132\027\015\064\062
\060\067\061\071\060\071\061\065\063\060\132\060\122\061\013\060
\011\006\003\125\004\006\023\002\123\113\061\023\060\021\006\003
\125\004\007\023\012\102\162\141\164\151\163\154\141\166\141\061
\023\060\021\006\003\125\004\012\023\012\104\151\163\151\147\040
\141\056\163\056\061\031\060\027\006\003\125\004\003\023\020\103
\101\040\104\151\163\151\147\040\122\157\157\164\040\122\062\060
\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000
\242\243\304\000\011\326\205\135\055\155\024\366\302\303\163\236

\065\302\161\125\176\201\373\253\106\120\340\301\174\111\170\346
\253\171\130\074\332\377\174\034\237\330\227\002\170\076\153\101
\004\351\101\275\276\003\054\105\366\057\144\324\253\135\243\107
\075\144\233\351\150\232\306\314\033\077\272\276\262\213\064\002
\056\230\125\031\374\214\157\252\137\332\114\316\115\003\041\243
\330\322\064\223\126\226\313\114\014\000\026\074\137\032\315\310
\307\154\246\255\323\061\247\274\350\345\341\146\326\322\373\003
\264\101\145\311\020\256\016\005\143\306\200\152\151\060\375\322
\356\220\357\015\047\337\237\225\163\364\341\045\332\154\026\336
\101\070\064\352\213\374\321\350\004\024\141\055\101\176\254\307
\167\116\313\121\124\373\136\222\030\033\004\132\150\306\311\304
\372\267\023\240\230\267\021\053\267\326\127\314\174\236\027\321
\313\045\376\206\116\044\056\126\014\170\115\236\001\022\246\053
\247\001\145\156\174\142\035\204\204\337\352\300\153\265\245\052
\225\203\303\123\021\014\163\035\013\262\106\220\321\102\072\316
\100\156\225\255\377\306\224\255\156\227\204\216\175\157\236\212
\200\015\111\155\163\342\173\222\036\303\363\301\363\353\056\005
\157\331\033\317\067\166\004\310\264\132\344\027\247\313\335\166
\037\320\031\166\350\054\005\263\326\234\064\330\226\334\141\207
\221\005\344\104\010\063\301\332\271\010\145\324\256\262\066\015
\353\272\070\272\014\345\233\236\353\215\146\335\231\317\326\211
\101\366\004\222\212\051\051\155\153\072\034\347\165\175\002\161
\016\363\300\347\275\313\031\335\235\140\262\302\146\140\266\261
\004\356\311\346\206\271\232\146\100\250\347\021\355\201\105\003
\213\366\147\131\350\301\006\021\275\335\317\200\002\117\145\100
\170\134\107\120\310\233\346\037\201\173\344\104\250\133\205\232
\342\336\132\325\307\371\072\104\146\113\344\062\124\174\344\154
\234\263\016\075\027\242\262\064\022\326\176\262\250\111\273\321
\172\050\100\276\242\026\037\337\344\067\037\021\163\373\220\012
\145\103\242\015\174\370\006\001\125\063\175\260\015\270\364\365
\256\245\102\127\174\066\021\214\173\136\304\003\235\214\171\235
\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\035\006\003\125\035
\016\004\026\004\024\265\231\370\257\260\224\365\343\040\326\012
\255\316\116\126\244\056\156\102\355\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\002\001\000\046\006\136
\160\347\145\063\310\202\156\331\234\027\072\033\172\146\262\001
\366\170\073\151\136\057\352\377\116\371\050\303\230\052\141\114
\264\044\022\212\175\155\021\024\367\234\265\312\346\274\236\047
\216\114\031\310\251\275\172\300\327\066\016\155\205\162\156\250
\306\242\155\366\372\163\143\177\274\156\171\010\034\235\212\237
\032\212\123\246\330\273\331\065\125\261\021\305\251\003\263\126
\073\271\204\223\042\136\176\301\366\022\122\213\352\054\147\274
\376\066\114\365\270\317\321\263\111\222\073\323\051\016\231\033
\226\367\141\270\073\304\053\266\170\154\264\043\157\360\375\323
\262\136\165\037\231\225\250\254\366\332\341\305\061\173\373\321
\106\263\322\274\147\264\142\124\272\011\367\143\260\223\242\232

\371\351\122\056\213\140\022\253\374\365\140\126\357\020\134\213
\304\032\102\334\203\133\144\016\313\265\274\326\117\301\174\074
\156\215\023\155\373\173\353\060\320\334\115\257\305\325\266\245
\114\133\161\311\350\061\276\350\070\006\110\241\032\342\352\322
\336\022\071\130\032\377\200\016\202\165\346\267\311\007\154\016
\357\377\070\361\230\161\304\267\177\016\025\320\045\151\275\042
\235\053\355\005\366\106\107\254\355\300\360\324\073\342\354\356
\226\133\220\023\116\036\126\072\353\260\357\226\273\226\043\021
\272\362\103\206\164\144\225\310\050\165\337\035\065\272\322\067
\203\070\123\070\066\073\317\154\351\371\153\016\320\373\004\350
\117\167\327\145\001\170\206\014\172\076\041\142\361\177\143\161
\014\311\237\104\333\250\047\242\165\276\156\201\076\327\300\353
\033\230\017\160\134\064\262\212\314\300\205\030\353\156\172\263
\367\132\241\007\277\251\102\222\363\140\042\227\344\024\241\007
\233\116\166\300\216\175\375\244\045\307\107\355\377\037\163\254
\314\303\245\351\157\012\216\233\145\302\120\205\265\243\240\123
\022\314\125\207\141\363\201\256\020\106\141\275\104\041\270\302
\075\164\317\176\044\065\372\034\007\016\233\075\042\312\357\061
\057\214\254\022\275\357\100\050\374\051\147\237\262\023\117\146
\044\304\123\031\351\036\051\025\357\346\155\260\177\055\147\375
\363\154\033\165\106\243\345\112\027\351\244\327\013
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "CA Disig Root R2"
Issuer: CN=CA Disig Root R2,O=Disig a.s.,L=Bratislava,C=SK
Serial Number:00:92:b8:88:db:b0:8a:c1:63
Subject: CN=CA Disig Root R2,O=Disig a.s.,L=Bratislava,C=SK
Not Valid Before: Thu Jul 19 09:15:30 2012
Not Valid After : Sat Jul 19 09:15:30 2042
Fingerprint (SHA-256):
E2:3D:4A:03:6D:7B:70:E9:F5:95:B1:42:20:79:D2:B9:1E:DF:BB:1F:B6:51:A0:63:3E:AA:8A:9D:C5:F8:07:03
Fingerprint (SHA1): B5:61:EB:EA:A4:DE:E4:25:4B:69:1A:98:A5:57:47:C2:34:C7:D9:71
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CA Disig Root R2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\265\141\353\352\244\336\344\045\113\151\032\230\245\127\107\302
\064\307\331\161
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\046\001\373\330\047\247\027\232\105\124\070\032\103\001\073\003
END
CKA_ISSUER MULTILINE_OCTAL

\060\122\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\031\060\027\006\003\125
\004\003\023\020\103\101\040\104\151\163\151\147\040\122\157\157
\164\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\222\270\210\333\260\212\301\143
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ACCVRAIZ1"
#
Issuer: C=ES,O=ACCV,OU=PKIACCV,CN=ACCVRAIZ1
Serial Number:5e:c3:b7:a6:43:7f:a4:e0
Subject: C=ES,O=ACCV,OU=PKIACCV,CN=ACCVRAIZ1
Not Valid Before: Thu May 05 09:37:37 2011
Not Valid After : Tue Dec 31 09:37:37 2030
Fingerprint (SHA-256):
9A:6E:C0:12:E1:A7:DA:9D:BE:34:19:4D:47:8A:D7:C0:DB:18:22:FB:07:1D:F1:29:81:49:6E:D1:04:38:41:13
Fingerprint (SHA1): 93:05:7A:88:15:C6:4F:CE:88:2F:FA:91:16:52:28:78:BC:53:64:17
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ACCVRAIZ1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\102\061\022\060\020\006\003\125\004\003\014\011\101\103\103
\126\122\101\111\132\061\061\020\060\016\006\003\125\004\013\014
\007\120\113\111\101\103\103\126\061\015\060\013\006\003\125\004
\012\014\004\101\103\103\126\061\013\060\011\006\003\125\004\006
\023\002\105\123
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\102\061\022\060\020\006\003\125\004\003\014\011\101\103\103
\126\122\101\111\132\061\061\020\060\016\006\003\125\004\013\014
\007\120\113\111\101\103\103\126\061\015\060\013\006\003\125\004
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CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\010\136\303\267\246\103\177\244\340
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CKA_VALUE MULTILINE_OCTAL
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\015\001\001\005\005\000\060\102\061\022\060\020\006\003\125\004
\003\014\011\101\103\103\126\122\101\111\132\061\061\020\060\016
\006\003\125\004\013\014\007\120\113\111\101\103\103\126\061\015
\060\013\006\003\125\004\012\014\004\101\103\103\126\061\013\060
\011\006\003\125\004\006\023\002\105\123\060\036\027\015\061\061
\060\065\060\065\060\071\063\067\063\067\132\027\015\063\060\061
\062\063\061\060\071\063\067\063\067\132\060\102\061\022\060\020
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\103\126\061\015\060\013\006\003\125\004\012\014\004\101\103\103
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\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
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\251\253\277\141\112\227\257\057\227\146\232\164\137\320\331\226
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\037\265\124\335\025\174\151\065\021\157\273\310\014\216\152\030
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\115\200\315\374\323\157\311\370\332\266\016\202\322\105\205\250
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\040\017\060\050\124\225\177\340\356\316\012\146\235\321\100\055
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\172\141\143\143\166\061\056\143\162\164\060\037\006\010\053\006
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\143\163\160\056\141\143\143\166\056\145\163\060\035\006\003\125
\035\016\004\026\004\024\322\207\264\343\337\067\047\223\125\366
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\125\366\126\352\201\345\066\314\214\036\077\275\060\202\001\163
\006\003\125\035\040\004\202\001\152\060\202\001\146\060\202\001
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\020\000\101\000\165\000\164\000\157\000\162\000\151\000\144\000
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\151\146\151\143\141\144\157\163\057\162\141\151\172\141\143\143
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\112\227\115\265\333\220\340\005\056\016\306\171\320\362\227\151
\017\275\004\107\331\276\333\265\051\332\233\331\256\251\231\325
\323\074\060\223\365\215\241\250\374\006\215\104\364\312\026\225
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\111\016\326\063\045\326\204\120\102\154\040\022\035\052\325\276
\274\362\160\201\244\160\140\276\005\265\233\236\004\104\276\141
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\334\321\247\355\061\021\054\236\031\246\356\341\125\341\300\352
\317\015\204\344\027\267\242\174\245\336\125\045\006\356\314\300
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\315\172\203\001\162\356\207\346\137\035\256\265\205\306\046\337
\346\301\232\351\036\002\107\237\052\250\155\251\133\317\354\105
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\040\035\335\330\303\047\327\260\371\376\331\175\315\320\237\217
\013\024\130\121\237\057\213\303\070\055\336\350\217\326\215\207
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END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ACCVRAIZ1"
Issuer: C=ES,O=ACCV,OU=PKIACCV,CN=ACCVRAIZ1
Serial Number:5e:c3:b7:a6:43:7f:a4:e0
Subject: C=ES,O=ACCV,OU=PKIACCV,CN=ACCVRAIZ1
Not Valid Before: Thu May 05 09:37:37 2011
Not Valid After : Tue Dec 31 09:37:37 2030
Fingerprint (SHA-256):
9A:6E:C0:12:E1:A7:DA:9D:BE:34:19:4D:47:8A:D7:C0:DB:18:22:FB:07:1D:F1:29:81:49:6E:D1:04:38:41:13
Fingerprint (SHA1): 93:05:7A:88:15:C6:4F:CE:88:2F:FA:91:16:52:28:78:BC:53:64:17
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ACCVRAIZ1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\223\005\172\210\025\306\117\316\210\057\372\221\026\122\050\170
\274\123\144\027
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
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CKA_ISSUER MULTILINE_OCTAL
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\126\122\101\111\132\061\061\020\060\016\006\003\125\004\013\014
\007\120\113\111\101\103\103\126\061\015\060\013\006\003\125\004
\012\014\004\101\103\103\126\061\013\060\011\006\003\125\004\006
\023\002\105\123
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\136\303\267\246\103\177\244\340
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TWCA Global Root CA"
#
Issuer: CN=TWCA Global Root CA,OU=Root CA,O=TAIWAN-CA,C=TW
Serial Number: 3262 (0xcbe)
Subject: CN=TWCA Global Root CA,OU=Root CA,O=TAIWAN-CA,C=TW
Not Valid Before: Wed Jun 27 06:28:33 2012
Not Valid After : Tue Dec 31 15:59:59 2030
Fingerprint (SHA-256):
59:76:90:07:F7:68:5D:0F:CD:50:87:2F:9F:95:D5:75:5A:5B:2B:45:7D:81:F3:69:2B:61:0A:98:67:2F:0E:1B
Fingerprint (SHA1): 9C:BB:48:53:F6:A4:F6:D3:52:A4:E8:32:52:55:60:13:F5:AD:AF:65
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TWCA Global Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\023\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\034\060\032\006\003\125\004\003\023\023

\124\127\103\101\040\107\154\157\142\141\154\040\122\157\157\164
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END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
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\022\060\020\006\003\125\004\012\023\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\034\060\032\006\003\125\004\003\023\023
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CKA_SERIAL_NUMBER MULTILINE_OCTAL
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END
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\022\060\020\006\003\125\004\012\023\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\034\060\032\006\003\125\004\003\023\023
\124\127\103\101\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101\060\036\027\015\061\062\060\066\062\067\060\066\062
\070\063\063\132\027\015\063\060\061\062\063\061\061\065\065\071
\065\071\132\060\121\061\013\060\011\006\003\125\004\006\023\002
\124\127\061\022\060\020\006\003\125\004\012\023\011\124\101\111
\127\101\116\055\103\101\061\020\060\016\006\003\125\004\013\023
\007\122\157\157\164\040\103\101\061\034\060\032\006\003\125\004
\003\023\023\124\127\103\101\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\101\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\260\005\333\310\353\214\304\156\212
\041\357\216\115\234\161\012\037\122\160\355\155\202\234\227\305
\327\114\116\105\111\313\100\102\265\022\064\154\031\302\164\244
\061\137\205\002\227\354\103\063\012\123\322\234\214\216\267\270
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\060\034\052\240\230\246\025\275\356\375\031\066\360\342\221\103
\217\372\312\326\020\047\111\114\357\335\301\361\205\160\233\312
\352\250\132\103\374\155\206\157\163\351\067\105\251\360\066\307
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\310\253\042\331\163\017\245\364\132\002\211\077\117\236\042\202
\356\242\164\123\052\075\123\047\151\035\154\216\062\054\144\000
\046\143\141\066\116\243\106\267\077\175\263\055\254\155\220\242
\225\242\316\317\332\202\347\007\064\031\226\351\270\041\252\051
\176\246\070\276\216\051\112\041\146\171\037\263\303\265\011\147
\336\326\324\007\106\363\052\332\346\042\067\140\313\201\266\017
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\251\204\243\062\257\256\356\153\027\213\262\261\376\154\341\220
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\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
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\340\362\271\304\105\010\041\012\332\151\151\163\162\015\276\064
\376\224\213\255\303\036\065\327\242\203\357\345\070\307\245\205
\037\253\317\064\354\077\050\376\014\361\127\206\116\311\125\367
\034\324\330\245\175\006\172\157\325\337\020\337\201\116\041\145
\261\266\341\027\171\225\105\006\316\137\314\334\106\211\143\150
\104\215\223\364\144\160\240\075\235\050\005\303\071\160\270\142
\173\040\375\344\333\351\010\241\270\236\075\011\307\117\373\054
\370\223\166\101\336\122\340\341\127\322\235\003\274\167\236\376
\236\051\136\367\301\121\140\037\336\332\013\262\055\165\267\103
\110\223\347\366\171\306\204\135\200\131\140\224\374\170\230\217
\074\223\121\355\100\220\007\337\144\143\044\313\116\161\005\241
\327\224\032\210\062\361\042\164\042\256\245\246\330\022\151\114
\140\243\002\356\053\354\324\143\222\013\136\276\057\166\153\243
\266\046\274\217\003\330\012\362\114\144\106\275\071\142\345\226
\353\064\143\021\050\314\225\361\255\357\357\334\200\130\110\351
\113\270\352\145\254\351\374\200\265\265\310\105\371\254\301\237
\331\271\352\142\210\216\304\361\113\203\022\255\346\213\204\326
\236\302\353\203\030\237\152\273\033\044\140\063\160\314\354\367
\062\363\134\331\171\175\357\236\244\376\311\043\303\044\356\025
\222\261\075\221\117\046\206\275\146\163\044\023\352\244\256\143
\301\255\175\204\003\074\020\170\206\033\171\343\304\363\362\004
\225\040\256\043\202\304\263\072\000\142\277\346\066\044\341\127

\272\307\036\220\165\325\137\077\225\141\053\301\073\315\345\263
\150\141\320\106\046\251\041\122\151\055\353\056\307\353\167\316
\246\072\265\003\063\117\166\321\347\134\124\001\135\313\170\364
\311\014\277\317\022\216\027\055\043\150\224\347\253\376\251\262
\053\006\320\004\315
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TWCA Global Root CA"
Issuer: CN=TWCA Global Root CA,OU=Root CA,O=TAIWAN-CA,C=TW
Serial Number: 3262 (0xcbe)
Subject: CN=TWCA Global Root CA,OU=Root CA,O=TAIWAN-CA,C=TW
Not Valid Before: Wed Jun 27 06:28:33 2012
Not Valid After : Tue Dec 31 15:59:59 2030
Fingerprint (SHA-256):
59:76:90:07:F7:68:5D:0F:CD:50:87:2F:9F:95:D5:75:5A:5B:2B:45:7D:81:F3:69:2B:61:0A:98:67:2F:0E:1B
Fingerprint (SHA1): 9C:BB:48:53:F6:A4:F6:D3:52:A4:E8:32:52:55:60:13:F5:AD:AF:65
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TWCA Global Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\234\273\110\123\366\244\366\323\122\244\350\062\122\125\140\023
\365\255\257\145
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\371\003\176\317\346\236\074\163\172\052\220\007\151\377\053\226
END
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\023\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\034\060\032\006\003\125\004\003\023\023
\124\127\103\101\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\014\276
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#

Certificate "TeliaSonera Root CA v1"
#
Issuer: CN=TeliaSonera Root CA v1,O=TeliaSonera
Serial Number:00:95:be:16:a0:f7:2e:46:f1:7b:39:82:72:fa:8b:cd:96
Subject: CN=TeliaSonera Root CA v1,O=TeliaSonera
Not Valid Before: Thu Oct 18 12:00:50 2007
Not Valid After : Mon Oct 18 12:00:50 2032
Fingerprint (SHA-256):
DD:69:36:FE:21:F8:F0:77:C1:23:A1:A5:21:C1:22:24:F7:22:55:B7:3E:03:A7:26:06:93:E8:A2:4B:0F:A3:89
Fingerprint (SHA1): 43:13:BB:96:F1:D5:86:9B:C1:4E:6A:92:F6:CF:F6:34:69:87:82:37
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TeliaSonera Root CA v1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\067\061\024\060\022\006\003\125\004\012\014\013\124\145\154
\151\141\123\157\156\145\162\141\061\037\060\035\006\003\125\004
\003\014\026\124\145\154\151\141\123\157\156\145\162\141\040\122
\157\157\164\040\103\101\040\166\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\067\061\024\060\022\006\003\125\004\012\014\013\124\145\154
\151\141\123\157\156\145\162\141\061\037\060\035\006\003\125\004
\003\014\026\124\145\154\151\141\123\157\156\145\162\141\040\122
\157\157\164\040\103\101\040\166\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\225\276\026\240\367\056\106\361\173\071\202\162\372
\213\315\226
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\070\060\202\003\040\240\003\002\001\002\002\021\000
\225\276\026\240\367\056\106\361\173\071\202\162\372\213\315\226
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\067\061\024\060\022\006\003\125\004\012\014\013\124\145\154\151
\141\123\157\156\145\162\141\061\037\060\035\006\003\125\004\003
\014\026\124\145\154\151\141\123\157\156\145\162\141\040\122\157
\157\164\040\103\101\040\166\061\060\036\027\015\060\067\061\060
\061\070\061\062\060\060\065\060\132\027\015\063\062\061\060\061
\070\061\062\060\060\065\060\132\060\067\061\024\060\022\006\003
\125\004\012\014\013\124\145\154\151\141\123\157\156\145\162\141
\061\037\060\035\006\003\125\004\003\014\026\124\145\154\151\141
\123\157\156\145\162\141\040\122\157\157\164\040\103\101\040\166
\061\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002

\001\000\302\276\353\047\360\041\243\363\151\046\125\176\235\305
\125\026\221\134\375\357\041\277\123\200\172\055\322\221\214\143
\061\360\354\044\360\303\245\322\162\174\020\155\364\067\267\345
\346\174\171\352\214\265\202\213\256\110\266\254\000\334\145\165
\354\052\115\137\301\207\365\040\145\053\201\250\107\076\211\043
\225\060\026\220\177\350\127\007\110\347\031\256\277\105\147\261
\067\033\006\052\376\336\371\254\175\203\373\136\272\344\217\227
\147\276\113\216\215\144\007\127\070\125\151\064\066\075\023\110
\357\117\342\323\146\036\244\317\032\267\136\066\063\324\264\006
\275\030\001\375\167\204\120\000\105\365\214\135\350\043\274\176
\376\065\341\355\120\173\251\060\215\031\323\011\216\150\147\135
\277\074\227\030\123\273\051\142\305\312\136\162\301\307\226\324
\333\055\240\264\037\151\003\354\352\342\120\361\014\074\360\254
\363\123\055\360\034\365\355\154\071\071\163\200\026\310\122\260
\043\315\340\076\334\335\074\107\240\273\065\212\342\230\150\213
\276\345\277\162\356\322\372\245\355\022\355\374\230\030\251\046
\166\334\050\113\020\040\034\323\177\026\167\055\355\157\200\367
\111\273\123\005\273\135\150\307\324\310\165\026\077\211\132\213
\367\027\107\324\114\361\322\211\171\076\115\075\230\250\141\336
\072\036\322\370\136\003\340\301\311\034\214\323\215\115\323\225
\066\263\067\137\143\143\233\063\024\360\055\046\153\123\174\211
\214\062\302\156\354\075\041\000\071\311\241\150\342\120\203\056
\260\072\053\363\066\240\254\057\344\157\141\302\121\011\071\076
\213\123\271\273\147\332\334\123\271\166\131\066\235\103\345\040
\340\075\062\140\205\042\121\267\307\063\273\335\025\057\244\170
\246\007\173\201\106\066\004\206\335\171\065\307\225\054\073\260
\243\027\065\345\163\037\264\134\131\357\332\352\020\145\173\172
\320\177\237\263\264\052\067\073\160\213\233\133\271\053\267\354
\262\121\022\227\123\051\132\324\360\022\020\334\117\002\273\022
\222\057\142\324\077\151\103\174\015\326\374\130\165\001\210\235
\130\026\113\336\272\220\377\107\001\211\006\152\366\137\262\220
\152\263\002\246\002\210\277\263\107\176\052\331\325\372\150\170
\065\115\002\003\001\000\001\243\077\060\075\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\013\006\003
\125\035\017\004\004\003\002\001\006\060\035\006\003\125\035\016
\004\026\004\024\360\217\131\070\000\263\365\217\232\226\014\325
\353\372\173\252\027\350\023\022\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\002\001\000\276\344\134\142
\116\044\364\014\010\377\360\323\014\150\344\223\111\042\077\104
\047\157\273\155\336\203\146\316\250\314\015\374\365\232\006\345
\167\024\221\353\235\101\173\231\052\204\345\377\374\041\301\135
\360\344\037\127\267\165\251\241\137\002\046\377\327\307\367\116
\336\117\370\367\034\106\300\172\117\100\054\042\065\360\031\261
\320\153\147\054\260\250\340\300\100\067\065\366\204\134\134\343
\257\102\170\376\247\311\015\120\352\015\204\166\366\121\357\203
\123\306\172\377\016\126\111\056\217\172\326\014\346\047\124\343
\115\012\140\162\142\315\221\007\326\245\277\310\231\153\355\304
\031\346\253\114\021\070\305\157\061\342\156\111\310\077\166\200

\046\003\046\051\340\066\366\366\040\123\343\027\160\064\027\235
\143\150\036\153\354\303\115\206\270\023\060\057\135\106\015\107
\103\325\033\252\131\016\271\134\215\006\110\255\164\207\137\307
\374\061\124\101\023\342\307\041\016\236\340\036\015\341\300\173
\103\205\220\305\212\130\306\145\012\170\127\362\306\043\017\001
\331\040\113\336\017\373\222\205\165\052\134\163\215\155\173\045
\221\312\356\105\256\006\113\000\314\323\261\131\120\332\072\210
\073\051\103\106\136\227\053\124\316\123\157\215\112\347\226\372
\277\161\016\102\213\174\375\050\240\320\110\312\332\304\201\114
\273\242\163\223\046\310\353\014\326\046\210\266\300\044\317\273
\275\133\353\165\175\351\010\216\206\063\054\171\167\011\151\245
\211\374\263\160\220\207\166\217\323\042\273\102\316\275\163\013
\040\046\052\320\233\075\160\036\044\154\315\207\166\251\027\226
\267\317\015\222\373\216\030\251\230\111\321\236\376\140\104\162
\041\271\031\355\302\365\061\361\071\110\210\220\044\165\124\026
\255\316\364\370\151\024\144\071\373\243\270\272\160\100\307\047
\034\277\304\126\123\372\143\145\320\363\034\016\026\365\153\206
\130\115\030\324\344\015\216\245\235\133\221\334\166\044\120\077
\306\052\373\331\267\234\265\326\346\320\331\350\031\213\025\161
\110\255\267\352\330\131\210\324\220\277\026\263\331\351\254\131
\141\124\310\034\272\312\301\312\341\271\040\114\217\072\223\211
\245\240\314\277\323\366\165\244\165\226\155\126
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TeliaSonera Root CA v1"
Issuer: CN=TeliaSonera Root CA v1,O=TeliaSonera
Serial Number:00:95:be:16:a0:f7:2e:46:f1:7b:39:82:72:fa:8b:cd:96
Subject: CN=TeliaSonera Root CA v1,O=TeliaSonera
Not Valid Before: Thu Oct 18 12:00:50 2007
Not Valid After : Mon Oct 18 12:00:50 2032
Fingerprint (SHA-256):
DD:69:36:FE:21:F8:F0:77:C1:23:A1:A5:21:C1:22:24:F7:22:55:B7:3E:03:A7:26:06:93:E8:A2:4B:0F:A3:89
Fingerprint (SHA1): 43:13:BB:96:F1:D5:86:9B:C1:4E:6A:92:F6:CF:F6:34:69:87:82:37
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TeliaSonera Root CA v1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\103\023\273\226\361\325\206\233\301\116\152\222\366\317\366\064
\151\207\202\067
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\067\101\111\033\030\126\232\046\365\255\302\146\373\100\245\114
END

CKA_ISSUER MULTILINE_OCTAL
\060\067\061\024\060\022\006\003\125\004\012\014\013\124\145\154
\151\141\123\157\156\145\162\141\061\037\060\035\006\003\125\004
\003\014\026\124\145\154\151\141\123\157\156\145\162\141\040\122
\157\157\164\040\103\101\040\166\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\225\276\026\240\367\056\106\361\173\071\202\162\372
\213\315\226
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "E-Tugra Certification Authority"
#
Issuer: CN=E-Tugra Certification Authority,OU=E-Tugra Sertifikasyon Merkezi,O=E-Tu..ra EBG Bili..im Teknolojileri ve Hizmetleri A....,L=Ankara,C=TR
Serial Number:6a:68:3e:9c:51:9b:cb:53
Subject: CN=E-Tugra Certification Authority,OU=E-Tugra Sertifikasyon Merkezi,O=E-Tu..ra EBG Bili..im Teknolojileri ve Hizmetleri A....,L=Ankara,C=TR
Not Valid Before: Tue Mar 05 12:09:48 2013
Not Valid After : Fri Mar 03 12:09:48 2023
Fingerprint (SHA-256):
B0:BF:D5:2B:B0:D7:D9:BD:92:BF:5D:4D:C1:3D:A2:55:C0:2C:54:2F:37:83:65:EA:89:39:11:F5:5E:55:F2:3C
Fingerprint (SHA1): 51:C6:E7:08:49:06:6E:F3:92:D4:5C:A0:0D:6D:A3:62:8F:C3:52:39
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\262\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\014\006\101\156\153\141\162
\141\061\100\060\076\006\003\125\004\012\014\067\105\055\124\165
\304\237\162\141\040\105\102\107\040\102\151\154\151\305\237\151
\155\040\124\145\153\156\157\154\157\152\151\154\145\162\151\040
\166\145\040\110\151\172\155\145\164\154\145\162\151\040\101\056
\305\236\056\061\046\060\044\006\003\125\004\013\014\035\105\055
\124\165\147\162\141\040\123\145\162\164\151\146\151\153\141\163
\171\157\156\040\115\145\162\153\145\172\151\061\050\060\046\006
\003\125\004\003\014\037\105\055\124\165\147\162\141\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\262\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\014\006\101\156\153\141\162
\141\061\100\060\076\006\003\125\004\012\014\067\105\055\124\165
\304\237\162\141\040\105\102\107\040\102\151\154\151\305\237\151
\155\040\124\145\153\156\157\154\157\152\151\154\145\162\151\040
\166\145\040\110\151\172\155\145\164\154\145\162\151\040\101\056
\305\236\056\061\046\060\044\006\003\125\004\013\014\035\105\055
\124\165\147\162\141\040\123\145\162\164\151\146\151\153\141\163
\171\157\156\040\115\145\162\153\145\172\151\061\050\060\046\006
\003\125\004\003\014\037\105\055\124\165\147\162\141\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\152\150\076\234\121\233\313\123
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\113\060\202\004\063\240\003\002\001\002\002\010\152
\150\076\234\121\233\313\123\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\201\262\061\013\060\011\006\003\125
\004\006\023\002\124\122\061\017\060\015\006\003\125\004\007\014
\006\101\156\153\141\162\141\061\100\060\076\006\003\125\004\012
\014\067\105\055\124\165\304\237\162\141\040\105\102\107\040\102
\151\154\151\305\237\151\155\040\124\145\153\156\157\154\157\152
\151\154\145\162\151\040\166\145\040\110\151\172\155\145\164\154
\145\162\151\040\101\056\305\236\056\061\046\060\044\006\003\125
\004\013\014\035\105\055\124\165\147\162\141\040\123\145\162\164
\151\146\151\153\141\163\171\157\156\040\115\145\162\153\145\172
\151\061\050\060\046\006\003\125\004\003\014\037\105\055\124\165
\147\162\141\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\060\036\027\015\061
\063\060\063\060\065\061\062\060\071\064\070\132\027\015\062\063
\060\063\060\063\061\062\060\071\064\070\132\060\201\262\061\013
\060\011\006\003\125\004\006\023\002\124\122\061\017\060\015\006
\003\125\004\007\014\006\101\156\153\141\162\141\061\100\060\076
\006\003\125\004\012\014\067\105\055\124\165\304\237\162\141\040
\105\102\107\040\102\151\154\151\305\237\151\155\040\124\145\153
\156\157\154\157\152\151\154\145\162\151\040\166\145\040\110\151
\172\155\145\164\154\145\162\151\040\101\056\305\236\056\061\046
\060\044\006\003\125\004\013\014\035\105\055\124\165\147\162\141
\040\123\145\162\164\151\146\151\153\141\163\171\157\156\040\115
\145\162\153\145\172\151\061\050\060\046\006\003\125\004\003\014
\037\105\055\124\165\147\162\141\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
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\000\342\365\077\223\005\121\036\205\142\124\136\172\013\365\030
\007\203\256\176\257\174\367\324\212\153\245\143\103\071\271\113
\367\303\306\144\211\075\224\056\124\200\122\071\071\007\113\113
\335\205\007\166\207\314\277\057\225\114\314\175\247\075\274\107
\017\230\160\370\214\205\036\164\216\222\155\033\100\321\231\015
\273\165\156\310\251\153\232\300\204\061\257\312\103\313\353\053
\064\350\217\227\153\001\233\325\016\112\010\252\133\222\164\205
\103\323\200\256\241\210\133\256\263\352\136\313\026\232\167\104
\310\241\366\124\150\316\336\217\227\053\272\133\100\002\014\144
\027\300\265\223\315\341\361\023\146\316\014\171\357\321\221\050
\253\137\240\022\122\060\163\031\216\217\341\214\007\242\303\273
\112\360\352\037\025\250\356\045\314\244\106\370\033\042\357\263
\016\103\272\054\044\270\305\054\134\324\034\370\135\144\275\303
\223\136\050\247\077\047\361\216\036\323\052\120\005\243\125\331
\313\347\071\123\300\230\236\214\124\142\213\046\260\367\175\215
\174\344\306\236\146\102\125\202\107\347\262\130\215\146\367\007
\174\056\066\346\120\034\077\333\103\044\305\277\206\107\171\263
\171\034\367\132\364\023\354\154\370\077\342\131\037\225\356\102
\076\271\255\250\062\205\111\227\106\376\113\061\217\132\313\255
\164\107\037\351\221\267\337\050\004\042\240\324\017\135\342\171
\117\352\154\205\206\275\250\246\316\344\372\303\341\263\256\336
\074\121\356\313\023\174\001\177\204\016\135\121\224\236\023\014
\266\056\245\114\371\071\160\066\157\226\312\056\014\104\125\305
\312\372\135\002\243\337\326\144\214\132\263\001\012\251\265\012
\107\027\377\357\221\100\052\216\241\106\072\061\230\345\021\374
\314\273\111\126\212\374\271\320\141\232\157\145\154\346\303\313
\076\165\111\376\217\247\342\211\305\147\327\235\106\023\116\061
\166\073\044\263\236\021\145\206\253\177\357\035\324\370\274\347
\254\132\134\267\132\107\134\125\316\125\264\042\161\133\133\013
\360\317\334\240\141\144\352\251\327\150\012\143\247\340\015\077
\240\257\323\252\322\176\357\121\240\346\121\053\125\222\025\027
\123\313\267\146\016\146\114\370\371\165\114\220\347\022\160\307
\105\002\003\001\000\001\243\143\060\141\060\035\006\003\125\035
\016\004\026\004\024\056\343\333\262\111\320\234\124\171\134\372
\047\052\376\314\116\322\350\116\124\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125\035
\043\004\030\060\026\200\024\056\343\333\262\111\320\234\124\171
\134\372\047\052\376\314\116\322\350\116\124\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\005
\067\072\364\115\267\105\342\105\165\044\217\266\167\122\350\034
\330\020\223\145\363\362\131\006\244\076\036\051\354\135\321\320
\253\174\340\012\220\110\170\355\116\230\003\231\376\050\140\221
\035\060\035\270\143\174\250\346\065\265\372\323\141\166\346\326
\007\113\312\151\232\262\204\172\167\223\105\027\025\237\044\320
\230\023\022\377\273\240\056\375\116\114\207\370\316\134\252\230
\033\005\340\000\106\112\202\200\245\063\213\050\334\355\070\323
\337\345\076\351\376\373\131\335\141\204\117\322\124\226\023\141

\023\076\217\200\151\276\223\107\265\065\103\322\132\273\075\134
\357\263\102\107\315\073\125\023\006\260\011\333\375\143\366\072
\210\012\231\157\176\341\316\033\123\152\104\146\043\121\010\173
\274\133\122\242\375\006\067\070\100\141\217\112\226\270\220\067
\370\146\307\170\220\000\025\056\213\255\121\065\123\007\250\153
\150\256\371\116\074\007\046\315\010\005\160\314\071\077\166\275
\245\323\147\046\001\206\246\123\322\140\073\174\103\177\125\212
\274\225\032\301\050\071\114\037\103\322\221\364\162\131\212\271
\126\374\077\264\235\332\160\234\166\132\214\103\120\356\216\060
\162\115\337\377\111\367\306\251\147\331\155\254\002\021\342\072
\026\045\247\130\010\313\157\123\101\234\110\070\107\150\063\321
\327\307\217\324\164\041\324\303\005\220\172\377\316\226\210\261
\025\051\135\043\253\320\140\241\022\117\336\364\027\315\062\345
\311\277\310\103\255\375\056\216\361\257\342\364\230\372\022\037
\040\330\300\247\014\205\305\220\364\073\055\226\046\261\054\276
\114\253\353\261\322\212\311\333\170\023\017\036\011\235\155\217
\000\237\002\332\301\372\037\172\172\011\304\112\346\210\052\227
\237\211\213\375\067\137\137\072\316\070\131\206\113\257\161\013
\264\330\362\160\117\237\062\023\343\260\247\127\345\332\332\103
\313\204\064\362\050\304\352\155\364\052\357\301\153\166\332\373
\176\273\205\074\322\123\302\115\276\161\341\105\321\375\043\147
\015\023\165\373\317\145\147\042\235\256\260\011\321\011\377\035
\064\277\376\043\227\067\322\071\372\075\015\006\013\264\333\073
\243\253\157\134\035\266\176\350\263\202\064\355\006\134\044
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "E-Tugra Certification Authority"
Issuer: CN=E-Tugra Certification Authority,OU=E-Tugra Sertifikasyon Merkezi,O=E-Tu..ra EBG Bili..im Teknolojileri ve Hizmetleri A....,L=Ankara,C=TR
Serial Number:6a:68:3e:9c:51:9b:cb:53
Subject: CN=E-Tugra Certification Authority,OU=E-Tugra Sertifikasyon Merkezi,O=E-Tu..ra EBG Bili..im Teknolojileri ve Hizmetleri A....,L=Ankara,C=TR
Not Valid Before: Tue Mar 05 12:09:48 2013
Not Valid After : Fri Mar 03 12:09:48 2023
Fingerprint (SHA-256):
B0:BF:D5:2B:B0:D7:D9:BD:92:BF:5D:4D:C1:3D:A2:55:C0:2C:54:2F:37:83:65:EA:89:39:11:F5:5E:55:F2:3C
Fingerprint (SHA1): 51:C6:E7:08:49:06:6E:F3:92:D4:5C:A0:0D:6D:A3:62:8F:C3:52:39
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\121\306\347\010\111\006\156\363\222\324\134\240\015\155\243\142
\217\303\122\071

END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\270\241\003\143\260\275\041\161\160\212\157\023\072\273\171\111
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\262\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\014\006\101\156\153\141\162
\141\061\100\060\076\006\003\125\004\012\014\067\105\055\124\165
\304\237\162\141\040\105\102\107\040\102\151\154\151\305\237\151
\155\040\124\145\153\156\157\154\157\152\151\154\145\162\151\040
\166\145\040\110\151\172\155\145\164\154\145\162\151\040\101\056
\305\236\056\061\046\060\044\006\003\125\004\013\014\035\105\055
\124\165\147\162\141\040\123\145\162\164\151\146\151\153\141\163
\171\157\156\040\115\145\162\153\145\172\151\061\050\060\046\006
\003\125\004\003\014\037\105\055\124\165\147\162\141\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\152\150\076\234\121\233\313\123
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "T-TeleSec GlobalRoot Class 2"
#
Issuer: CN=T-TeleSec GlobalRoot Class 2,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Serial Number: 1 (0x1)
Subject: CN=T-TeleSec GlobalRoot Class 2,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Not Valid Before: Wed Oct 01 10:40:14 2008
Not Valid After : Sat Oct 01 23:59:59 2033
Fingerprint (SHA-256):
91:E2:F5:78:8D:58:10:EB:A7:BA:58:73:7D:E1:54:8A:8E:CA:CD:01:45:98:BC:0B:14:3E:04:1B:17:05:25:52
Fingerprint (SHA1): 59:0D:2D:7D:88:4F:40:2E:61:7E:A5:62:32:17:65:CF:17:D8:94:E9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "T-TeleSec GlobalRoot Class 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163

\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\303\060\202\002\253\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163\164
\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040\123
\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060\035
\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155\163
\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045\060
\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123\145
\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154\141
\163\163\040\062\060\036\027\015\060\070\061\060\060\061\061\060
\064\060\061\064\132\027\015\063\063\061\060\060\061\062\063\065
\071\065\071\132\060\201\202\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\053\060\051\006\003\125\004\012\014\042\124
\055\123\171\163\164\145\155\163\040\105\156\164\145\162\160\162
\151\163\145\040\123\145\162\166\151\143\145\163\040\107\155\142
\110\061\037\060\035\006\003\125\004\013\014\026\124\055\123\171
\163\164\145\155\163\040\124\162\165\163\164\040\103\145\156\164
\145\162\061\045\060\043\006\003\125\004\003\014\034\124\055\124
\145\154\145\123\145\143\040\107\154\157\142\141\154\122\157\157
\164\040\103\154\141\163\163\040\062\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\252\137\332\033\137\350
\163\221\345\332\134\364\242\346\107\345\363\150\125\140\005\035

\002\244\263\233\131\363\036\212\257\064\255\374\015\302\331\110
\031\356\151\217\311\040\374\041\252\007\031\355\260\134\254\145
\307\137\355\002\174\173\174\055\033\326\272\271\200\302\030\202
\026\204\372\146\260\010\306\124\043\201\344\315\271\111\077\366
\117\156\067\110\050\070\017\305\276\347\150\160\375\071\227\115
\322\307\230\221\120\252\304\104\263\043\175\071\107\351\122\142
\326\022\223\136\267\061\226\102\005\373\166\247\036\243\365\302
\374\351\172\305\154\251\161\117\352\313\170\274\140\257\307\336
\364\331\313\276\176\063\245\156\224\203\360\064\372\041\253\352
\216\162\240\077\244\336\060\133\357\206\115\152\225\133\103\104
\250\020\025\034\345\001\127\305\230\361\346\006\050\221\252\040
\305\267\123\046\121\103\262\013\021\225\130\341\300\017\166\331
\300\215\174\201\363\162\160\236\157\376\032\216\331\137\065\306
\262\157\064\174\276\110\117\342\132\071\327\330\235\170\236\237
\206\076\003\136\031\213\104\242\325\307\002\003\001\000\001\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\277
\131\040\066\000\171\240\240\042\153\214\325\362\141\322\270\054
\313\202\112\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\061\003\242\141\013\037\164\350\162
\066\306\155\371\115\236\372\042\250\341\201\126\317\315\273\237
\352\253\221\031\070\257\252\174\025\115\363\266\243\215\245\364
\216\366\104\251\247\350\041\225\255\076\000\142\026\210\360\002
\272\374\141\043\346\063\233\060\172\153\066\142\173\255\004\043
\204\130\145\342\333\053\212\347\045\123\067\142\123\137\274\332
\001\142\051\242\246\047\161\346\072\042\176\301\157\035\225\160
\040\112\007\064\337\352\377\025\200\345\272\327\172\330\133\165
\174\005\172\051\107\176\100\250\061\023\167\315\100\073\264\121
\107\172\056\021\343\107\021\336\235\146\320\213\325\124\146\372
\203\125\352\174\302\051\211\033\351\157\263\316\342\005\204\311
\057\076\170\205\142\156\311\137\301\170\143\164\130\300\110\030
\014\231\071\353\244\314\032\265\171\132\215\025\234\330\024\015
\366\172\007\127\307\042\203\005\055\074\233\045\046\075\030\263
\251\103\174\310\310\253\144\217\016\243\277\234\033\235\060\333
\332\320\031\056\252\074\361\373\063\200\166\344\315\255\031\117
\005\047\216\023\241\156\302
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "T-TeleSec GlobalRoot Class 2"
Issuer: CN=T-TeleSec GlobalRoot Class 2,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Serial Number: 1 (0x1)
Subject: CN=T-TeleSec GlobalRoot Class 2,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE

Not Valid Before: Wed Oct 01 10:40:14 2008
Not Valid After : Sat Oct 01 23:59:59 2033
Fingerprint (SHA-256):
91:E2:F5:78:8D:58:10:EB:A7:BA:58:73:7D:E1:54:8A:8E:CA:CD:01:45:98:BC:0B:14:3E:04:1B:17:05:25:52
Fingerprint (SHA1): 59:0D:2D:7D:88:4F:40:2E:61:7E:A5:62:32:17:65:CF:17:D8:94:E9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "T-TeleSec GlobalRoot Class 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\131\015\055\175\210\117\100\056\141\176\245\142\062\027\145\317
\027\330\224\351
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\053\233\236\344\173\154\037\000\162\032\314\301\167\171\337\152
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Atos TrustedRoot 2011"
#
Issuer: C=DE,O=Atos,CN=Atos TrustedRoot 2011
Serial Number:5c:33:cb:62:2c:5f:b3:32
Subject: C=DE,O=Atos,CN=Atos TrustedRoot 2011
Not Valid Before: Thu Jul 07 14:58:30 2011
Not Valid After : Tue Dec 31 23:59:59 2030
Fingerprint (SHA-256):
F3:56:BE:A2:44:B7:A9:1E:B3:5D:53:CA:9A:D7:86:4A:CE:01:8E:2D:35:D5:F8:F9:6D:DF:68:A6:F4:1A:A4:74
Fingerprint (SHA1): 2B:B1:F5:3E:55:0C:1D:C5:F1:D4:E6:B7:6A:46:4B:55:06:02:AC:21
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Atos TrustedRoot 2011"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\074\061\036\060\034\006\003\125\004\003\014\025\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\062\060
\061\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\074\061\036\060\034\006\003\125\004\003\014\025\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\062\060
\061\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\134\063\313\142\054\137\263\062
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\167\060\202\002\137\240\003\002\001\002\002\010\134
\063\313\142\054\137\263\062\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\074\061\036\060\034\006\003\125\004
\003\014\025\101\164\157\163\040\124\162\165\163\164\145\144\122
\157\157\164\040\062\060\061\061\061\015\060\013\006\003\125\004
\012\014\004\101\164\157\163\061\013\060\011\006\003\125\004\006
\023\002\104\105\060\036\027\015\061\061\060\067\060\067\061\064
\065\070\063\060\132\027\015\063\060\061\062\063\061\062\063\065
\071\065\071\132\060\074\061\036\060\034\006\003\125\004\003\014
\025\101\164\157\163\040\124\162\165\163\164\145\144\122\157\157
\164\040\062\060\061\061\061\015\060\013\006\003\125\004\012\014
\004\101\164\157\163\061\013\060\011\006\003\125\004\006\023\002
\104\105\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\225\205\073\227\157\052\073\056\073\317\246\363\051
\065\276\317\030\254\076\252\331\370\115\240\076\032\107\271\274
\232\337\362\376\314\076\107\350\172\226\302\044\216\065\364\251
\014\374\202\375\155\301\162\142\047\275\352\153\353\347\212\314
\124\076\220\120\317\200\324\225\373\350\265\202\324\024\305\266
\251\125\045\127\333\261\120\366\260\140\144\131\172\151\317\003
\267\157\015\276\312\076\157\164\162\352\252\060\052\163\142\276
\111\221\141\310\021\376\016\003\052\367\152\040\334\002\025\015
\136\025\152\374\343\202\301\265\305\235\144\011\154\243\131\230
\007\047\307\033\226\053\141\164\161\154\103\361\367\065\211\020
\340\236\354\125\241\067\042\242\207\004\005\054\107\175\264\034
\271\142\051\146\050\312\267\341\223\365\244\224\003\231\271\160

\205\265\346\110\352\215\120\374\331\336\314\157\007\016\335\013
\162\235\200\060\026\007\225\077\050\016\375\305\165\117\123\326
\164\232\264\044\056\216\002\221\317\166\305\233\036\125\164\234
\170\041\261\360\055\361\013\237\302\325\226\030\037\360\124\042
\172\214\007\002\003\001\000\001\243\175\060\173\060\035\006\003
\125\035\016\004\026\004\024\247\245\006\261\054\246\011\140\356
\321\227\351\160\256\274\073\031\154\333\041\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003
\125\035\043\004\030\060\026\200\024\247\245\006\261\054\246\011
\140\356\321\227\351\160\256\274\073\031\154\333\041\060\030\006
\003\125\035\040\004\021\060\017\060\015\006\013\053\006\001\004
\001\260\055\003\004\001\001\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\206\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\001\001\000\046\167\064\333\224
\110\206\052\101\235\054\076\006\220\140\304\214\254\013\124\270
\037\271\173\323\007\071\344\372\076\173\262\075\116\355\237\043
\275\227\363\153\134\357\356\375\100\246\337\241\223\241\012\206
\254\357\040\320\171\001\275\170\367\031\330\044\061\064\004\001
\246\272\025\232\303\047\334\330\117\017\314\030\143\377\231\017
\016\221\153\165\026\341\041\374\330\046\307\107\267\246\317\130
\162\161\176\272\341\115\225\107\073\311\257\155\241\264\301\354
\211\366\264\017\070\265\342\144\334\045\317\246\333\353\232\134
\231\241\305\010\336\375\346\332\325\326\132\105\014\304\267\302
\265\024\357\264\021\377\016\025\265\365\365\333\306\275\353\132
\247\360\126\042\251\074\145\124\306\025\250\275\206\236\315\203
\226\150\172\161\201\211\341\013\341\352\021\033\150\010\314\151
\236\354\236\101\236\104\062\046\172\342\207\012\161\075\353\344
\132\244\322\333\305\315\306\336\140\177\271\363\117\104\222\357
\052\267\030\076\247\031\331\013\175\261\067\101\102\260\272\140
\035\362\376\011\021\260\360\207\173\247\235
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Atos TrustedRoot 2011"
Issuer: C=DE,O=Atos,CN=Atos TrustedRoot 2011
Serial Number:5c:33:cb:62:2c:5f:b3:32
Subject: C=DE,O=Atos,CN=Atos TrustedRoot 2011
Not Valid Before: Thu Jul 07 14:58:30 2011
Not Valid After : Tue Dec 31 23:59:59 2030
Fingerprint (SHA-256):
F3:56:BE:A2:44:B7:A9:1E:B3:5D:53:CA:9A:D7:86:4A:CE:01:8E:2D:35:D5:F8:F9:6D:DF:68:A6:F4:1A:A4:74
Fingerprint (SHA1): 2B:B1:F5:3E:55:0C:1D:C5:F1:D4:E6:B7:6A:46:4B:55:06:02:AC:21
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "Atos TrustedRoot 2011"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\053\261\365\076\125\014\035\305\361\324\346\267\152\106\113\125
\006\002\254\041
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\256\271\304\062\113\254\177\135\146\314\167\224\273\052\167\126
END
CKA_ISSUER MULTILINE_OCTAL
\060\074\061\036\060\034\006\003\125\004\003\014\025\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\062\060
\061\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\134\063\313\142\054\137\263\062
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "QuoVadis Root CA 1 G3"
#
Issuer: CN=QuoVadis Root CA 1 G3,O=QuoVadis Limited,C=BM
Serial Number:78:58:5f:2e:ad:2c:19:4b:e3:37:07:35:34:13:28:b5:96:d4:65:93
Subject: CN=QuoVadis Root CA 1 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 17:27:44 2012
Not Valid After : Sun Jan 12 17:27:44 2042
Fingerprint (SHA-256):
8A:86:6F:D1:B2:76:B5:7E:57:8E:92:1C:65:82:8A:2B:ED:58:E9:F2:F2:88:05:41:34:B7:F1:F4:BF:C9:CC:74
Fingerprint (SHA1): 1B:8E:EA:57:96:29:1A:C9:39:EA:B8:0A:81:1A:73:73:C0:93:79:67
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 1 G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\061\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\061\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\170\130\137\056\255\054\031\113\343\067\007\065\064\023
\050\265\226\324\145\223
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\140\060\202\003\110\240\003\002\001\002\002\024\170
\130\137\056\255\054\031\113\343\067\007\065\064\023\050\265\226
\324\145\223\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\110\061\013\060\011\006\003\125\004\006\023\002\102
\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\036\060\034
\006\003\125\004\003\023\025\121\165\157\126\141\144\151\163\040
\122\157\157\164\040\103\101\040\061\040\107\063\060\036\027\015
\061\062\060\061\061\062\061\067\062\067\064\064\132\027\015\064
\062\060\061\061\062\061\067\062\067\064\064\132\060\110\061\013
\060\011\006\003\125\004\006\023\002\102\115\061\031\060\027\006
\003\125\004\012\023\020\121\165\157\126\141\144\151\163\040\114
\151\155\151\164\145\144\061\036\060\034\006\003\125\004\003\023
\025\121\165\157\126\141\144\151\163\040\122\157\157\164\040\103
\101\040\061\040\107\063\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\240\276\120\020\216\351\362\154\100
\264\004\234\205\271\061\312\334\055\344\021\251\004\074\033\125
\301\347\130\060\035\044\264\303\357\205\336\214\054\341\301\075
\337\202\346\117\255\107\207\154\354\133\111\301\112\325\273\217
\354\207\254\177\202\232\206\354\075\003\231\122\001\322\065\236
\254\332\360\123\311\146\074\324\254\002\001\332\044\323\073\250
\002\106\257\244\034\343\370\163\130\166\267\366\016\220\015\265
\360\317\314\372\371\306\114\345\303\206\060\012\215\027\176\065
\353\305\337\273\016\234\300\215\207\343\210\070\205\147\372\076
\307\253\340\023\234\005\030\230\317\223\365\261\222\264\374\043
\323\317\325\304\047\111\340\236\074\233\010\243\213\135\052\041
\340\374\071\252\123\332\175\176\317\032\011\123\274\135\005\004
\317\241\112\217\213\166\202\015\241\370\322\307\024\167\133\220
\066\007\201\233\076\006\372\122\136\143\305\246\000\376\245\351
\122\033\122\265\222\071\162\003\011\142\275\260\140\026\156\246
\335\045\302\003\146\335\363\004\321\100\342\116\213\206\364\157
\345\203\240\047\204\136\004\301\365\220\275\060\075\304\357\250
\151\274\070\233\244\244\226\321\142\332\151\300\001\226\256\313
\304\121\064\352\014\252\377\041\216\131\217\112\134\344\141\232
\247\322\351\052\170\215\121\075\072\025\356\242\131\216\251\134
\336\305\371\220\042\345\210\105\161\335\221\231\154\172\237\075

\075\230\174\136\366\276\026\150\240\136\256\013\043\374\132\017
\252\042\166\055\311\241\020\035\344\323\104\043\220\210\237\306
\052\346\327\365\232\263\130\036\057\060\211\010\033\124\242\265
\230\043\354\010\167\034\225\135\141\321\313\211\234\137\242\112
\221\232\357\041\252\111\026\010\250\275\141\050\061\311\164\255
\205\366\331\305\261\213\321\345\020\062\115\137\213\040\072\074
\111\037\063\205\131\015\333\313\011\165\103\151\163\373\153\161
\175\360\337\304\114\175\306\243\056\310\225\171\313\163\242\216
\116\115\044\373\136\344\004\276\162\033\246\047\055\111\132\231
\172\327\134\011\040\267\177\224\271\117\361\015\034\136\210\102
\033\021\267\347\221\333\236\154\364\152\337\214\006\230\003\255
\314\050\357\245\107\363\123\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\035\006\003\125\035\016\004\026\004\024\243\227\326\363
\136\242\020\341\253\105\237\074\027\144\074\356\001\160\234\314
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\030\372\133\165\374\076\172\307\137\167\307\312
\337\317\137\303\022\304\100\135\324\062\252\270\152\327\325\025
\025\106\230\043\245\346\220\133\030\231\114\343\255\102\243\202
\061\066\210\315\351\373\304\004\226\110\213\001\307\215\001\317
\133\063\006\226\106\146\164\035\117\355\301\266\271\264\015\141
\314\143\176\327\056\167\214\226\034\052\043\150\153\205\127\166
\160\063\023\376\341\117\246\043\167\030\372\032\214\350\275\145
\311\317\077\364\311\027\334\353\307\274\300\004\056\055\106\057
\151\146\303\033\217\376\354\076\323\312\224\277\166\012\045\015
\251\173\002\034\251\320\073\137\013\300\201\072\075\144\341\277
\247\055\116\275\115\304\330\051\306\042\030\320\305\254\162\002
\202\077\252\072\242\072\042\227\061\335\010\143\303\165\024\271
\140\050\055\133\150\340\026\251\146\202\043\121\365\353\123\330
\061\233\173\351\267\235\113\353\210\026\317\371\135\070\212\111
\060\217\355\361\353\031\364\167\032\061\030\115\147\124\154\057
\157\145\371\333\075\354\041\354\136\364\364\213\312\140\145\124
\321\161\144\364\371\246\243\201\063\066\063\161\360\244\170\137
\116\255\203\041\336\064\111\215\350\131\254\235\362\166\132\066
\362\023\364\257\340\011\307\141\052\154\367\340\235\256\273\206
\112\050\157\056\356\264\171\315\220\063\303\263\166\372\365\360
\154\235\001\220\372\236\220\366\234\162\317\107\332\303\037\344
\065\040\123\362\124\321\337\141\203\246\002\342\045\070\336\205
\062\055\136\163\220\122\135\102\304\316\075\113\341\371\031\204
\035\325\242\120\314\101\373\101\024\303\275\326\311\132\243\143
\146\002\200\275\005\072\073\107\234\354\000\046\114\365\210\121
\277\250\043\177\030\007\260\013\355\213\046\241\144\323\141\112
\353\134\237\336\263\257\147\003\263\037\335\155\135\151\150\151
\253\136\072\354\174\151\274\307\073\205\116\236\025\271\264\025
\117\303\225\172\130\327\311\154\351\154\271\363\051\143\136\264
\054\360\055\075\355\132\145\340\251\133\100\302\110\231\201\155
\236\037\006\052\074\022\264\213\017\233\242\044\360\246\215\326

\172\340\113\266\144\226\143\225\204\302\112\315\034\056\044\207
\063\140\345\303
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 1 G3"
Issuer: CN=QuoVadis Root CA 1 G3,O=QuoVadis Limited,C=BM
Serial Number:78:58:5f:2e:ad:2c:19:4b:e3:37:07:35:34:13:28:b5:96:d4:65:93
Subject: CN=QuoVadis Root CA 1 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 17:27:44 2012
Not Valid After : Sun Jan 12 17:27:44 2042
Fingerprint (SHA-256):
8A:86:6F:D1:B2:76:B5:7E:57:8E:92:1C:65:82:8A:2B:ED:58:E9:F2:F2:88:05:41:34:B7:F1:F4:BF:C9:CC:74
Fingerprint (SHA1): 1B:8E:EA:57:96:29:1A:C9:39:EA:B8:0A:81:1A:73:73:C0:93:79:67
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 1 G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\033\216\352\127\226\051\032\311\071\352\270\012\201\032\163\163
\300\223\171\147
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\244\274\133\077\376\067\232\372\144\360\342\372\005\075\013\253
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\061\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\170\130\137\056\255\054\031\113\343\067\007\065\064\023
\050\265\226\324\145\223
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "QuoVadis Root CA 2 G3"
#
Issuer: CN=QuoVadis Root CA 2 G3,O=QuoVadis Limited,C=BM

Serial Number:44:57:34:24:5b:81:89:9b:35:f2:ce:b8:2b:3b:5b:a7:26:f0:75:28
Subject: CN=QuoVadis Root CA 2 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 18:59:32 2012
Not Valid After : Sun Jan 12 18:59:32 2042
Fingerprint (SHA-256):
8F:E4:FB:0A:F9:3A:4D:0D:67:DB:0B:EB:B2:3E:37:C7:1B:F3:25:DC:BC:DD:24:0E:A0:4D:AF:58:B4:7E:18:40
Fingerprint (SHA1): 09:3C:61:F3:8B:8B:DC:7D:55:DF:75:38:02:05:00:E1:25:F5:C8:36
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 2 G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\104\127\064\044\133\201\211\233\065\362\316\270\053\073
\133\247\046\360\165\050
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\140\060\202\003\110\240\003\002\001\002\002\024\104
\127\064\044\133\201\211\233\065\362\316\270\053\073\133\247\046
\360\165\050\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\110\061\013\060\011\006\003\125\004\006\023\002\102
\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\036\060\034
\006\003\125\004\003\023\025\121\165\157\126\141\144\151\163\040
\122\157\157\164\040\103\101\040\062\040\107\063\060\036\027\015
\061\062\060\061\061\062\061\070\065\071\063\062\132\027\015\064
\062\060\061\061\062\061\070\065\071\063\062\132\060\110\061\013
\060\011\006\003\125\004\006\023\002\102\115\061\031\060\027\006
\003\125\004\012\023\020\121\165\157\126\141\144\151\163\040\114
\151\155\151\164\145\144\061\036\060\034\006\003\125\004\003\023
\025\121\165\157\126\141\144\151\163\040\122\157\157\164\040\103
\101\040\062\040\107\063\060\202\002\042\060\015\006\011\052\206

\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\241\256\045\262\001\030\334\127\210
\077\106\353\371\257\342\353\043\161\342\232\321\141\146\041\137
\252\257\047\121\345\156\033\026\324\055\175\120\260\123\167\275
\170\072\140\342\144\002\233\174\206\233\326\032\216\255\377\037
\025\177\325\225\036\022\313\346\024\204\004\301\337\066\263\026
\237\212\343\311\333\230\064\316\330\063\027\050\106\374\247\311
\360\322\264\325\115\011\162\111\371\362\207\343\251\332\175\241
\175\153\262\072\045\251\155\122\104\254\370\276\156\373\334\246
\163\221\220\141\246\003\024\040\362\347\207\243\210\255\255\240
\214\377\246\013\045\122\045\347\026\001\325\313\270\065\201\014
\243\073\360\341\341\374\132\135\316\200\161\155\370\111\253\076
\073\272\270\327\200\001\373\245\353\133\263\305\136\140\052\061
\240\257\067\350\040\072\237\250\062\054\014\314\011\035\323\236
\216\135\274\114\230\356\305\032\150\173\354\123\246\351\024\065
\243\337\315\200\237\014\110\373\034\364\361\277\112\270\372\325
\214\161\112\307\037\255\376\101\232\263\203\135\362\204\126\357
\245\127\103\316\051\255\214\253\125\277\304\373\133\001\335\043
\041\241\130\000\216\303\320\152\023\355\023\343\022\053\200\334
\147\346\225\262\315\036\042\156\052\370\101\324\362\312\024\007
\215\212\125\022\306\151\365\270\206\150\057\123\136\260\322\252
\041\301\230\346\060\343\147\125\307\233\156\254\031\250\125\246
\105\006\320\043\072\333\353\145\135\052\021\021\360\073\117\312
\155\364\064\304\161\344\377\000\132\366\134\256\043\140\205\163
\361\344\020\261\045\256\325\222\273\023\301\014\340\071\332\264
\071\127\265\253\065\252\162\041\073\203\065\347\061\337\172\041
\156\270\062\010\175\035\062\221\025\112\142\162\317\343\167\241
\274\325\021\033\166\001\147\010\340\101\013\303\353\025\156\370
\244\031\331\242\253\257\342\047\122\126\053\002\212\054\024\044
\371\277\102\002\277\046\310\306\217\340\156\070\175\123\055\345
\355\230\263\225\143\150\177\371\065\364\337\210\305\140\065\222
\300\174\151\034\141\225\026\320\353\336\013\257\076\004\020\105
\145\130\120\070\257\110\362\131\266\026\362\074\015\220\002\306
\160\056\001\255\074\025\327\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\035\006\003\125\035\016\004\026\004\024\355\347\157\166
\132\277\140\354\111\133\306\245\167\273\162\026\161\233\304\075
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\221\337\200\077\103\011\176\161\302\367\353\263
\210\217\341\121\262\274\075\165\371\050\135\310\274\231\233\173
\135\252\345\312\341\012\367\350\262\323\237\335\147\061\176\272
\001\252\307\152\101\073\220\324\010\134\262\140\152\220\360\310
\316\003\142\371\213\355\373\156\052\334\006\115\074\051\017\211
\026\212\130\114\110\017\350\204\141\352\074\162\246\167\344\102
\256\210\243\103\130\171\176\256\312\245\123\015\251\075\160\275
\040\031\141\244\154\070\374\103\062\341\301\107\377\370\354\361
\021\042\062\226\234\302\366\133\151\226\173\040\014\103\101\232

\133\366\131\031\210\336\125\210\067\121\013\170\134\012\036\243
\102\375\307\235\210\017\300\362\170\002\044\124\223\257\211\207
\210\311\112\200\035\352\320\156\076\141\056\066\273\065\016\047
\226\375\146\064\073\141\162\163\361\026\134\107\006\124\111\000
\172\130\022\260\012\357\205\375\261\270\063\165\152\223\034\022
\346\140\136\157\035\177\311\037\043\313\204\141\237\036\202\104
\371\137\255\142\125\044\232\122\230\355\121\347\241\176\227\072
\346\057\037\021\332\123\200\054\205\236\253\065\020\333\042\137
\152\305\136\227\123\362\062\002\011\060\243\130\360\015\001\325
\162\306\261\174\151\173\303\365\066\105\314\141\156\136\114\224
\305\136\256\350\016\136\213\277\367\315\340\355\241\016\033\063
\356\124\030\376\017\276\357\176\204\153\103\343\160\230\333\135
\165\262\015\131\007\205\025\043\071\326\361\337\251\046\017\326
\110\307\263\246\042\365\063\067\132\225\107\237\173\272\030\025
\157\377\326\024\144\203\111\322\012\147\041\333\017\065\143\140
\050\042\343\261\225\203\315\205\246\335\057\017\347\147\122\156
\273\057\205\174\365\112\163\347\305\076\300\275\041\022\005\077
\374\267\003\111\002\133\310\045\346\342\124\070\365\171\207\214
\035\123\262\116\205\173\006\070\307\054\370\370\260\162\215\045
\345\167\122\364\003\034\110\246\120\137\210\040\060\156\362\202
\103\253\075\227\204\347\123\373\041\301\117\017\042\232\206\270
\131\052\366\107\075\031\210\055\350\205\341\236\354\205\010\152
\261\154\064\311\035\354\110\053\073\170\355\146\304\216\171\151
\203\336\177\214
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 2 G3"
Issuer: CN=QuoVadis Root CA 2 G3,O=QuoVadis Limited,C=BM
Serial Number:44:57:34:24:5b:81:89:9b:35:f2:ce:b8:2b:3b:5b:a7:26:f0:75:28
Subject: CN=QuoVadis Root CA 2 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 18:59:32 2012
Not Valid After : Sun Jan 12 18:59:32 2042
Fingerprint (SHA-256):
8F:E4:FB:0A:F9:3A:4D:0D:67:DB:0B:EB:B2:3E:37:C7:1B:F3:25:DC:BC:DD:24:0E:A0:4D:AF:58:B4:7E:18:40
Fingerprint (SHA1): 09:3C:61:F3:8B:8B:DC:7D:55:DF:75:38:02:05:00:E1:25:F5:C8:36
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 2 G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\011\074\141\363\213\213\334\175\125\337\165\070\002\005\000\341
\045\365\310\066
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL

\257\014\206\156\277\100\055\177\013\076\022\120\272\022\075\006
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\104\127\064\044\133\201\211\233\065\362\316\270\053\073
\133\247\046\360\165\050
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "QuoVadis Root CA 3 G3"
#
Issuer: CN=QuoVadis Root CA 3 G3,O=QuoVadis Limited,C=BM
Serial Number:2e:f5:9b:02:28:a7:db:7a:ff:d5:a3:a9:ee:bd:03:a0:cf:12:6a:1d
Subject: CN=QuoVadis Root CA 3 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 20:26:32 2012
Not Valid After : Sun Jan 12 20:26:32 2042
Fingerprint (SHA-256):
88:EF:81:DE:20:2E:B0:18:45:2E:43:F8:64:72:5C:EA:5F:BD:1F:C2:D9:D2:05:73:07:09:C5:D8:B8:69:0F:46
Fingerprint (SHA1): 48:12:BD:92:3C:A8:C4:39:06:E7:30:6D:27:96:E6:A4:CF:22:2E:7D
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 3 G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157

\157\164\040\103\101\040\063\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\056\365\233\002\050\247\333\172\377\325\243\251\356\275
\003\240\317\022\152\035
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\140\060\202\003\110\240\003\002\001\002\002\024\056
\365\233\002\050\247\333\172\377\325\243\251\356\275\003\240\317
\022\152\035\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\110\061\013\060\011\006\003\125\004\006\023\002\102
\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\036\060\034
\006\003\125\004\003\023\025\121\165\157\126\141\144\151\163\040
\122\157\157\164\040\103\101\040\063\040\107\063\060\036\027\015
\061\062\060\061\061\062\062\060\062\066\063\062\132\027\015\064
\062\060\061\061\062\062\060\062\066\063\062\132\060\110\061\013
\060\011\006\003\125\004\006\023\002\102\115\061\031\060\027\006
\003\125\004\012\023\020\121\165\157\126\141\144\151\163\040\114
\151\155\151\164\145\144\061\036\060\034\006\003\125\004\003\023
\025\121\165\157\126\141\144\151\163\040\122\157\157\164\040\103
\101\040\063\040\107\063\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\263\313\016\020\147\216\352\024\227
\247\062\052\012\126\066\177\150\114\307\263\157\072\043\024\221
\377\031\177\245\312\254\356\263\166\235\172\351\213\033\253\153
\061\333\372\013\123\114\257\305\245\032\171\074\212\114\377\254
\337\045\336\116\331\202\062\013\104\336\312\333\214\254\243\156
\026\203\073\246\144\113\062\211\373\026\026\070\176\353\103\342
\323\164\112\302\142\012\163\012\335\111\263\127\322\260\012\205
\235\161\074\336\243\313\300\062\363\001\071\040\103\033\065\321
\123\263\261\356\305\223\151\202\076\026\265\050\106\241\336\352
\211\011\355\103\270\005\106\212\206\365\131\107\276\033\157\001
\041\020\271\375\251\322\050\312\020\071\011\312\023\066\317\234
\255\255\100\164\171\053\002\077\064\377\372\040\151\175\323\356
\141\365\272\263\347\060\320\067\043\206\162\141\105\051\110\131
\150\157\167\246\056\201\276\007\115\157\257\316\304\105\023\221
\024\160\006\217\037\237\370\207\151\261\016\357\303\211\031\353
\352\034\141\374\172\154\212\334\326\003\013\236\046\272\022\335
\324\124\071\253\046\243\063\352\165\201\332\055\315\017\117\344
\003\321\357\025\227\033\153\220\305\002\220\223\146\002\041\261
\107\336\213\232\112\200\271\125\217\265\242\057\300\326\063\147
\332\176\304\247\264\004\104\353\107\373\346\130\271\367\014\360
\173\053\261\300\160\051\303\100\142\055\073\110\151\334\043\074
\110\353\173\011\171\251\155\332\250\060\230\317\200\162\003\210
\246\133\106\256\162\171\174\010\003\041\145\256\267\341\034\245
\261\052\242\061\336\146\004\367\300\164\350\161\336\377\075\131
\314\226\046\022\213\205\225\127\032\253\153\165\013\104\075\021

\050\074\173\141\267\342\217\147\117\345\354\074\114\140\200\151
\127\070\036\001\133\215\125\350\307\337\300\314\167\043\064\111
\165\174\366\230\021\353\055\336\355\101\056\024\005\002\177\340
\376\040\353\065\347\021\254\042\316\127\075\336\311\060\155\020
\003\205\315\361\377\214\026\265\301\262\076\210\154\140\177\220
\117\225\367\366\055\255\001\071\007\004\372\165\200\175\277\111
\120\355\357\311\304\174\034\353\200\176\333\266\320\335\023\376
\311\323\234\327\262\227\251\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\035\006\003\125\035\016\004\026\004\024\306\027\320\274
\250\352\002\103\362\033\006\231\135\053\220\040\271\327\234\344
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\064\141\331\126\265\022\207\125\115\335\243\065
\061\106\273\244\007\162\274\137\141\142\350\245\373\013\067\261
\074\266\263\372\051\235\177\002\365\244\311\250\223\267\172\161
\050\151\217\163\341\122\220\332\325\276\072\345\267\166\152\126
\200\041\337\135\346\351\072\236\345\076\366\242\151\307\052\012
\260\030\107\334\040\160\175\122\243\076\131\174\301\272\311\310
\025\100\141\312\162\326\160\254\322\267\360\034\344\206\051\360
\316\357\150\143\320\265\040\212\025\141\232\176\206\230\264\311
\302\166\373\314\272\060\026\314\243\141\306\164\023\345\153\357
\243\025\352\003\376\023\213\144\344\323\301\322\350\204\373\111
\321\020\115\171\146\353\252\375\364\215\061\036\160\024\255\334
\336\147\023\114\201\025\141\274\267\331\221\167\161\031\201\140
\273\360\130\245\265\234\013\367\217\042\125\047\300\113\001\155
\073\231\015\324\035\233\143\147\057\320\356\015\312\146\274\224
\117\246\255\355\374\356\143\254\127\077\145\045\317\262\206\217
\320\010\377\270\166\024\156\336\345\047\354\253\170\265\123\271
\266\077\350\040\371\322\250\276\141\106\312\207\214\204\363\371
\361\240\150\233\042\036\201\046\233\020\004\221\161\300\006\037
\334\240\323\271\126\247\343\230\055\177\203\235\337\214\053\234
\062\216\062\224\360\001\074\042\052\237\103\302\056\303\230\071
\007\070\173\374\136\000\102\037\363\062\046\171\203\204\366\345
\360\301\121\022\300\013\036\004\043\014\124\245\114\057\111\305
\112\321\266\156\140\015\153\374\153\213\205\044\144\267\211\016
\253\045\107\133\074\317\176\111\275\307\351\012\306\332\367\176
\016\027\010\323\110\227\320\161\222\360\017\071\076\064\152\034
\175\330\362\042\256\273\151\364\063\264\246\110\125\321\017\016
\046\350\354\266\013\055\247\205\065\315\375\131\310\237\321\315
\076\132\051\064\271\075\204\316\261\145\324\131\221\221\126\165
\041\301\167\236\371\172\341\140\235\323\255\004\030\364\174\353
\136\223\217\123\112\042\051\370\110\053\076\115\206\254\133\177
\313\006\231\131\140\330\130\145\225\215\104\321\367\177\176\047
\177\175\256\200\365\007\114\266\076\234\161\124\231\004\113\375
\130\371\230\364
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE

CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 3 G3"
Issuer: CN=QuoVadis Root CA 3 G3,O=QuoVadis Limited,C=BM
Serial Number:2e:f5:9b:02:28:a7:db:7a:ff:d5:a3:a9:ee:bd:03:a0:cf:12:6a:1d
Subject: CN=QuoVadis Root CA 3 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 20:26:32 2012
Not Valid After : Sun Jan 12 20:26:32 2042
Fingerprint (SHA-256):
88:EF:81:DE:20:2E:B0:18:45:2E:43:F8:64:72:5C:EA:5F:BD:1F:C2:D9:D2:05:73:07:09:C5:D8:B8:69:0F:46
Fingerprint (SHA1): 48:12:BD:92:3C:A8:C4:39:06:E7:30:6D:27:96:E6:A4:CF:22:2E:7D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 3 G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\110\022\275\222\074\250\304\071\006\347\060\155\047\226\346\244
\317\042\056\175
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\337\175\271\255\124\157\150\241\337\211\127\003\227\103\260\327
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\056\365\233\002\050\247\333\172\377\325\243\251\356\275
\003\240\317\022\152\035
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Assured ID Root G2"
#
Issuer: CN=DigiCert Assured ID Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0b:93:1c:3a:d6:39:67:ea:67:23:bf:c3:af:9a:f4:4b
Subject: CN=DigiCert Assured ID Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038

Fingerprint (SHA-256):
7D:05:EB:B6:82:33:9F:8C:94:51:EE:09:4E:EB:FE:FA:79:53:A1:14:ED:B2:F4:49:49:45:2F:AB:7D:2F:C1:85
Fingerprint (SHA1): A1:4B:48:D9:43:EE:0A:0E:40:90:4F:3C:E0:A4:C0:91:93:51:5D:3F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\013\223\034\072\326\071\147\352\147\043\277\303\257\232
\364\113
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\226\060\202\002\176\240\003\002\001\002\002\020\013
\223\034\072\326\071\147\352\147\043\277\303\257\232\364\113\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\145
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\044\060\042\006\003\125\004\003\023\033\104\151\147\151\103\145
\162\164\040\101\163\163\165\162\145\144\040\111\104\040\122\157
\157\164\040\107\062\060\036\027\015\061\063\060\070\060\061\061
\062\060\060\060\060\132\027\015\063\070\060\061\061\065\061\062
\060\060\060\060\132\060\145\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\025\060\023\006\003\125\004\012\023\014\104
\151\147\151\103\145\162\164\040\111\156\143\061\031\060\027\006
\003\125\004\013\023\020\167\167\167\056\144\151\147\151\143\145

\162\164\056\143\157\155\061\044\060\042\006\003\125\004\003\023
\033\104\151\147\151\103\145\162\164\040\101\163\163\165\162\145
\144\040\111\104\040\122\157\157\164\040\107\062\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\331\347\050
\057\122\077\066\162\111\210\223\064\363\370\152\036\061\124\200
\237\255\124\101\265\107\337\226\250\324\257\200\055\271\012\317
\165\375\211\245\175\044\372\343\042\014\053\274\225\027\013\063
\277\031\115\101\006\220\000\275\014\115\020\376\007\265\347\034
\156\042\125\061\145\227\275\323\027\322\036\142\363\333\352\154
\120\214\077\204\014\226\317\267\313\003\340\312\155\241\024\114
\033\211\335\355\000\260\122\174\257\221\154\261\070\023\321\351
\022\010\300\000\260\034\053\021\332\167\160\066\233\256\316\171
\207\334\202\160\346\011\164\160\125\151\257\243\150\237\277\335
\266\171\263\362\235\160\051\125\364\253\377\225\141\363\311\100
\157\035\321\276\223\273\323\210\052\273\235\277\162\132\126\161
\073\077\324\363\321\012\376\050\357\243\356\331\231\257\003\323
\217\140\267\362\222\241\261\275\211\211\037\060\315\303\246\056
\142\063\256\026\002\167\104\132\347\201\012\074\247\104\056\171
\270\077\004\274\134\240\207\341\033\257\121\216\315\354\054\372
\370\376\155\360\072\174\252\213\344\147\225\061\215\002\003\001
\000\001\243\102\060\100\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\206\060\035\006\003\125\035\016\004\026
\004\024\316\303\112\271\231\125\362\270\333\140\277\251\176\275
\126\265\227\066\247\326\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\001\001\000\312\245\125\214\343\310
\101\156\151\047\247\165\021\357\074\206\066\157\322\235\306\170
\070\035\151\226\242\222\151\056\070\154\233\175\004\324\211\245
\261\061\067\212\311\041\314\253\154\315\213\034\232\326\277\110
\322\062\146\301\212\300\363\057\072\357\300\343\324\221\206\321
\120\343\003\333\163\167\157\112\071\123\355\336\046\307\265\175
\257\053\102\321\165\142\343\112\053\002\307\120\113\340\151\342
\226\154\016\104\146\020\104\217\255\005\353\370\171\254\246\033
\350\067\064\235\123\311\141\252\242\122\257\112\160\026\206\302
\072\310\261\023\160\066\330\317\356\364\012\064\325\133\114\375
\007\234\242\272\331\001\162\134\363\115\301\335\016\261\034\015
\304\143\276\255\364\024\373\211\354\242\101\016\114\314\310\127
\100\320\156\003\252\315\014\216\211\231\231\154\360\074\060\257
\070\337\157\274\243\276\051\040\047\253\164\377\023\042\170\336
\227\122\125\036\203\265\124\040\003\356\256\300\117\126\336\067
\314\303\177\252\004\047\273\323\167\270\142\333\027\174\234\050
\042\023\163\154\317\046\365\212\051\347
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Assured ID Root G2"
Issuer: CN=DigiCert Assured ID Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0b:93:1c:3a:d6:39:67:ea:67:23:bf:c3:af:9a:f4:4b
Subject: CN=DigiCert Assured ID Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
7D:05:EB:B6:82:33:9F:8C:94:51:EE:09:4E:EB:FE:FA:79:53:A1:14:ED:B2:F4:49:49:45:2F:AB:7D:2F:C1:85
Fingerprint (SHA1): A1:4B:48:D9:43:EE:0A:0E:40:90:4F:3C:E0:A4:C0:91:93:51:5D:3F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\241\113\110\331\103\356\012\016\100\220\117\074\340\244\300\221
\223\121\135\077
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\222\070\271\370\143\044\202\145\054\127\063\346\376\201\217\235
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\013\223\034\072\326\071\147\352\147\043\277\303\257\232
\364\113
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Assured ID Root G3"
#
Issuer: CN=DigiCert Assured ID Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0b:a1:5a:fa:1d:df:a0:b5:49:44:af:cd:24:a0:6c:ec
Subject: CN=DigiCert Assured ID Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):

7E:37:CB:8B:4C:47:09:0C:AB:36:55:1B:A6:F4:5D:B8:40:68:0F:BA:16:6A:95:2D:B1:00:71:7F:43:05:3F:C2
Fingerprint (SHA1): F5:17:A2:4F:9A:48:C6:C9:F8:A2:00:26:9F:DC:0F:48:2C:AB:30:89
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\013\241\132\372\035\337\240\265\111\104\257\315\044\240
\154\354
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\106\060\202\001\315\240\003\002\001\002\002\020\013
\241\132\372\035\337\240\265\111\104\257\315\044\240\154\354\060
\012\006\010\052\206\110\316\075\004\003\003\060\145\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\025\060\023\006\003
\125\004\012\023\014\104\151\147\151\103\145\162\164\040\111\156
\143\061\031\060\027\006\003\125\004\013\023\020\167\167\167\056
\144\151\147\151\143\145\162\164\056\143\157\155\061\044\060\042
\006\003\125\004\003\023\033\104\151\147\151\103\145\162\164\040
\101\163\163\165\162\145\144\040\111\104\040\122\157\157\164\040
\107\063\060\036\027\015\061\063\060\070\060\061\061\062\060\060
\060\060\132\027\015\063\070\060\061\061\065\061\062\060\060\060
\060\132\060\145\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\025\060\023\006\003\125\004\012\023\014\104\151\147\151
\103\145\162\164\040\111\156\143\061\031\060\027\006\003\125\004
\013\023\020\167\167\167\056\144\151\147\151\143\145\162\164\056
\143\157\155\061\044\060\042\006\003\125\004\003\023\033\104\151

\147\151\103\145\162\164\040\101\163\163\165\162\145\144\040\111
\104\040\122\157\157\164\040\107\063\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\031\347\274\254\104\145\355\315\270\077\130\373\215\261\127
\251\104\055\005\025\362\357\013\377\020\164\237\265\142\122\137
\146\176\037\345\334\033\105\171\013\314\306\123\012\235\215\135
\002\331\251\131\336\002\132\366\225\052\016\215\070\112\212\111
\306\274\306\003\070\007\137\125\332\176\011\156\342\177\136\320
\105\040\017\131\166\020\326\240\044\360\055\336\066\362\154\051
\071\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\035\006\003\125\035\016\004\026\004
\024\313\320\275\251\341\230\005\121\241\115\067\242\203\171\316
\215\035\052\344\204\060\012\006\010\052\206\110\316\075\004\003
\003\003\147\000\060\144\002\060\045\244\201\105\002\153\022\113
\165\164\117\310\043\343\160\362\165\162\336\174\211\360\317\221
\162\141\236\136\020\222\131\126\271\203\307\020\347\070\351\130
\046\066\175\325\344\064\206\071\002\060\174\066\123\360\060\345
\142\143\072\231\342\266\243\073\233\064\372\036\332\020\222\161
\136\221\023\247\335\244\156\222\314\062\326\365\041\146\307\057
\352\226\143\152\145\105\222\225\001\264
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Assured ID Root G3"
Issuer: CN=DigiCert Assured ID Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0b:a1:5a:fa:1d:df:a0:b5:49:44:af:cd:24:a0:6c:ec
Subject: CN=DigiCert Assured ID Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
7E:37:CB:8B:4C:47:09:0C:AB:36:55:1B:A6:F4:5D:B8:40:68:0F:BA:16:6A:95:2D:B1:00:71:7F:43:05:3F:C2
Fingerprint (SHA1): F5:17:A2:4F:9A:48:C6:C9:F8:A2:00:26:9F:DC:0F:48:2C:AB:30:89
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\365\027\242\117\232\110\306\311\370\242\000\046\237\334\017\110
\054\253\060\211
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\174\177\145\061\014\201\337\215\272\076\231\342\134\255\156\373
END
CKA_ISSUER MULTILINE_OCTAL

\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\013\241\132\372\035\337\240\265\111\104\257\315\044\240
\154\354
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Global Root G2"
#
Issuer: CN=DigiCert Global Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:03:3a:f1:e6:a7:11:a9:a0:bb:28:64:b1:1d:09:fa:e5
Subject: CN=DigiCert Global Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
CB:3C:CB:B7:60:31:E5:E0:13:8F:8D:D3:9A:23:F9:DE:47:FF:C3:5E:43:C1:14:4C:EA:27:D4:6A:5A:B1:CB:5F
Fingerprint (SHA1): DF:3C:24:F9:BF:D6:66:76:1B:26:80:73:FE:06:D1:CC:8D:4F:82:A4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023

\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\003\072\361\346\247\021\251\240\273\050\144\261\035\011
\372\345
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\216\060\202\002\166\240\003\002\001\002\002\020\003
\072\361\346\247\021\251\240\273\050\144\261\035\011\372\345\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\141
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\040\060\036\006\003\125\004\003\023\027\104\151\147\151\103\145
\162\164\040\107\154\157\142\141\154\040\122\157\157\164\040\107
\062\060\036\027\015\061\063\060\070\060\061\061\062\060\060\060
\060\132\027\015\063\070\060\061\061\065\061\062\060\060\060\060
\132\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103
\145\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013
\023\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143
\157\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147
\151\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157
\164\040\107\062\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\273\067\315\064\334\173\153\311\262\150\220
\255\112\165\377\106\272\041\012\010\215\365\031\124\311\373\210
\333\363\256\362\072\211\221\074\172\346\253\006\032\153\317\254
\055\350\136\011\044\104\272\142\232\176\326\243\250\176\340\124
\165\040\005\254\120\267\234\143\032\154\060\334\332\037\031\261
\327\036\336\375\327\340\313\224\203\067\256\354\037\103\116\335
\173\054\322\275\056\245\057\344\251\270\255\072\324\231\244\266
\045\351\233\153\000\140\222\140\377\117\041\111\030\367\147\220
\253\141\006\234\217\362\272\351\264\351\222\062\153\265\363\127
\350\135\033\315\214\035\253\225\004\225\111\363\065\055\226\343
\111\155\335\167\343\373\111\113\264\254\125\007\251\217\225\263
\264\043\273\114\155\105\360\366\251\262\225\060\264\375\114\125
\214\047\112\127\024\174\202\235\315\163\222\323\026\112\006\014
\214\120\321\217\036\011\276\027\241\346\041\312\375\203\345\020
\274\203\245\012\304\147\050\366\163\024\024\075\106\166\303\207
\024\211\041\064\115\257\017\105\014\246\111\241\272\273\234\305
\261\063\203\051\205\002\003\001\000\001\243\102\060\100\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060

\035\006\003\125\035\016\004\026\004\024\116\042\124\040\030\225
\346\343\156\346\017\372\372\271\022\355\006\027\217\071\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001
\001\000\140\147\050\224\157\016\110\143\353\061\335\352\147\030
\325\211\175\074\305\213\112\177\351\276\333\053\027\337\260\137
\163\167\052\062\023\071\201\147\102\204\043\362\105\147\065\354
\210\277\370\217\260\141\014\064\244\256\040\114\204\306\333\370
\065\341\166\331\337\246\102\273\307\104\010\206\177\066\164\044
\132\332\154\015\024\131\065\275\362\111\335\266\037\311\263\015
\107\052\075\231\057\273\134\273\265\324\040\341\231\137\123\106
\025\333\150\233\360\363\060\325\076\061\342\215\204\236\343\212
\332\332\226\076\065\023\245\137\360\371\160\120\160\107\101\021
\127\031\116\300\217\256\006\304\225\023\027\057\033\045\237\165
\362\261\216\231\241\157\023\261\101\161\376\210\052\310\117\020
\040\125\327\363\024\105\345\340\104\364\352\207\225\062\223\016
\376\123\106\372\054\235\377\213\042\271\113\331\011\105\244\336
\244\270\232\130\335\033\175\122\237\216\131\103\210\201\244\236
\046\325\157\255\335\015\306\067\175\355\003\222\033\345\167\137
\166\356\074\215\304\135\126\133\242\331\146\156\263\065\067\345
\062\266
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Global Root G2"
Issuer: CN=DigiCert Global Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:03:3a:f1:e6:a7:11:a9:a0:bb:28:64:b1:1d:09:fa:e5
Subject: CN=DigiCert Global Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
CB:3C:CB:B7:60:31:E5:E0:13:8F:8D:D3:9A:23:F9:DE:47:FF:C3:5E:43:C1:14:4C:EA:27:D4:6A:5A:B1:CB:5F
Fingerprint (SHA1): DF:3C:24:F9:BF:D6:66:76:1B:26:80:73:FE:06:D1:CC:8D:4F:82:A4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\337\074\044\371\277\326\146\166\033\046\200\163\376\006\321\314
\215\117\202\244
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\344\246\212\310\124\254\122\102\106\012\375\162\110\033\052\104
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061

\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\003\072\361\346\247\021\251\240\273\050\144\261\035\011
\372\345
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Global Root G3"
#
Issuer: CN=DigiCert Global Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:05:55:56:bc:f2:5e:a4:35:35:c3:a4:0f:d5:ab:45:72
Subject: CN=DigiCert Global Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
31:AD:66:48:F8:10:41:38:C7:38:F3:9E:A4:32:01:33:39:3E:3A:18:CC:02:29:6E:F9:7C:2A:C9:EF:67:31:D0
Fingerprint (SHA1): 7E:04:DE:89:6A:3E:66:6D:00:E6:87:D3:3F:FA:D9:3B:E8:3D:34:9E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157

\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\125\126\274\362\136\244\065\065\303\244\017\325\253
\105\162
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\077\060\202\001\305\240\003\002\001\002\002\020\005
\125\126\274\362\136\244\065\065\303\244\017\325\253\105\162\060
\012\006\010\052\206\110\316\075\004\003\003\060\141\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\025\060\023\006\003
\125\004\012\023\014\104\151\147\151\103\145\162\164\040\111\156
\143\061\031\060\027\006\003\125\004\013\023\020\167\167\167\056
\144\151\147\151\143\145\162\164\056\143\157\155\061\040\060\036
\006\003\125\004\003\023\027\104\151\147\151\103\145\162\164\040
\107\154\157\142\141\154\040\122\157\157\164\040\107\063\060\036
\027\015\061\063\060\070\060\061\061\062\060\060\060\060\132\027
\015\063\070\060\061\061\065\061\062\060\060\060\060\132\060\141
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\040\060\036\006\003\125\004\003\023\027\104\151\147\151\103\145
\162\164\040\107\154\157\142\141\154\040\122\157\157\164\040\107
\063\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\335\247\331\273\212\270\013
\373\013\177\041\322\360\276\276\163\363\063\135\032\274\064\352
\336\306\233\274\320\225\366\360\314\320\013\272\141\133\121\106
\176\236\055\237\356\216\143\014\027\354\007\160\365\317\204\056
\100\203\234\350\077\101\155\073\255\323\244\024\131\066\170\235
\003\103\356\020\023\154\162\336\256\210\247\241\153\265\103\316
\147\334\043\377\003\034\243\342\076\243\102\060\100\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\035
\006\003\125\035\016\004\026\004\024\263\333\110\244\371\241\305
\330\256\066\101\314\021\143\151\142\051\274\113\306\060\012\006
\010\052\206\110\316\075\004\003\003\003\150\000\060\145\002\061
\000\255\274\362\154\077\022\112\321\055\071\303\012\011\227\163
\364\210\066\214\210\047\273\346\210\215\120\205\247\143\371\236
\062\336\146\223\017\361\314\261\011\217\335\154\253\372\153\177
\240\002\060\071\146\133\302\144\215\270\236\120\334\250\325\111
\242\355\307\334\321\111\177\027\001\270\310\206\217\116\214\210
\053\250\232\251\212\305\321\000\275\370\124\342\232\345\133\174
\263\047\027
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE

CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Global Root G3"
Issuer: CN=DigiCert Global Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:05:55:56:bc:f2:5e:a4:35:35:c3:a4:0f:d5:ab:45:72
Subject: CN=DigiCert Global Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
31:AD:66:48:F8:10:41:38:C7:38:F3:9E:A4:32:01:33:39:3E:3A:18:CC:02:29:6E:F9:7C:2A:C9:EF:67:31:D0
Fingerprint (SHA1): 7E:04:DE:89:6A:3E:66:6D:00:E6:87:D3:3F:FA:D9:3B:E8:3D:34:9E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\176\004\336\211\152\076\146\155\000\346\207\323\077\372\331\073
\350\075\064\236
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\365\135\244\120\245\373\050\176\036\017\015\314\226\127\126\312
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\125\126\274\362\136\244\065\065\303\244\017\325\253
\105\162
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Trusted Root G4"
#
Issuer: CN=DigiCert Trusted Root G4,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:05:9b:1b:57:9e:8e:21:32:e2:39:07:bd:a7:77:75:5c
Subject: CN=DigiCert Trusted Root G4,OU=www.digicert.com,O=DigiCert Inc,C=US

Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
55:2F:7B:DC:F1:A7:AF:9E:6C:E6:72:01:7F:4F:12:AB:F7:72:40:C7:8E:76:1A:C2:03:D1:D9:D2:0A:C8:99:88
Fingerprint (SHA1): DD:FB:16:CD:49:31:C9:73:A2:03:7D:3F:C8:3A:4D:7D:77:5D:05:E4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Trusted Root G4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\041\060\037\006\003\125\004\003\023\030\104\151\147\151
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\164\040\107\064
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CKA_ISSUER MULTILINE_OCTAL
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\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\041\060\037\006\003\125\004\003\023\030\104\151\147\151
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CKA_SERIAL_NUMBER MULTILINE_OCTAL
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\165\134
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\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\142
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\041\060\037\006\003\125\004\003\023\030\104\151\147\151\103\145
\162\164\040\124\162\165\163\164\145\144\040\122\157\157\164\040
\107\064\060\036\027\015\061\063\060\070\060\061\061\062\060\060
\060\060\132\027\015\063\070\060\061\061\065\061\062\060\060\060
\060\132\060\142\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\025\060\023\006\003\125\004\012\023\014\104\151\147\151

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\143\157\155\061\041\060\037\006\003\125\004\003\023\030\104\151
\147\151\103\145\162\164\040\124\162\165\163\164\145\144\040\122
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\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
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\212\330\131\302\341\051\247\075\130\253\166\232\315\256\173\033
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\160\302\262\272\165\231\152\163\062\224\321\020\104\020\056\337
\202\363\007\204\346\164\073\155\161\342\055\014\033\356\040\325
\311\040\035\143\051\055\316\354\136\116\310\223\370\041\141\233
\064\353\005\306\136\354\133\032\274\353\311\317\315\254\064\100
\137\261\172\146\356\167\310\110\250\146\127\127\237\124\130\216
\014\053\267\117\247\060\331\126\356\312\173\135\343\255\311\117
\136\345\065\347\061\313\332\223\136\334\216\217\200\332\266\221
\230\100\220\171\303\170\307\266\261\304\265\152\030\070\003\020
\215\330\324\067\244\056\005\175\210\365\202\076\020\221\160\253
\125\202\101\062\327\333\004\163\052\156\221\001\174\041\114\324
\274\256\033\003\165\135\170\146\331\072\061\104\232\063\100\277
\010\327\132\111\244\302\346\251\240\147\335\244\047\274\241\117
\071\265\021\130\027\367\044\134\106\217\144\367\301\151\210\166
\230\166\075\131\135\102\166\207\211\227\151\172\110\360\340\242
\022\033\146\232\164\312\336\113\036\347\016\143\256\346\324\357
\222\222\072\236\075\334\000\344\105\045\211\266\232\104\031\053
\176\300\224\264\322\141\155\353\063\331\305\337\113\004\000\314
\175\034\225\303\217\367\041\262\262\021\267\273\177\362\325\214
\160\054\101\140\252\261\143\030\104\225\032\166\142\176\366\200
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\345\016\122\121\107\164\276\046\254\266\101\165\336\172\254\137
\215\077\311\274\323\101\021\022\133\345\020\120\353\061\305\312
\162\026\042\011\337\174\114\165\077\143\354\041\137\304\040\121
\153\157\261\253\206\213\117\302\326\105\137\235\040\374\241\036
\305\300\217\242\261\176\012\046\231\365\344\151\057\230\035\055
\365\331\251\262\035\345\033\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\206\060\035\006\003\125\035\016\004\026\004\024\354\327\343\202
\322\161\135\144\114\337\056\147\077\347\272\230\256\034\017\117
\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000\003
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\241\242\000\215\343\144\150\017\126\317\167\256\160\371\375\232
\112\231\271\311\170\134\014\014\137\344\346\024\051\126\013\066
\111\135\104\143\340\255\234\226\030\146\033\043\015\075\171\351

\155\153\326\124\370\322\074\301\103\100\256\035\120\365\122\374
\220\073\273\230\231\151\153\307\301\247\250\150\244\047\334\235
\371\047\256\060\205\271\366\147\115\072\076\217\131\071\042\123
\104\353\310\135\003\312\355\120\172\175\142\041\012\200\310\163
\146\321\240\005\140\137\350\245\264\247\257\250\367\155\065\234
\174\132\212\326\242\070\231\363\170\213\364\115\322\040\013\336
\004\356\214\233\107\201\162\015\300\024\062\357\060\131\056\256
\340\161\362\126\344\152\227\157\222\120\155\226\215\150\172\232
\262\066\024\172\006\362\044\271\011\021\120\327\010\261\270\211
\172\204\043\141\102\051\345\243\315\242\040\101\327\321\234\144
\331\352\046\241\213\024\327\114\031\262\120\101\161\075\077\115
\160\043\206\014\112\334\201\322\314\062\224\204\015\010\011\227
\034\117\300\356\153\040\164\060\322\340\071\064\020\205\041\025
\001\010\350\125\062\336\161\111\331\050\027\120\115\346\276\115
\321\165\254\320\312\373\101\270\103\245\252\323\303\005\104\117
\054\066\233\342\372\342\105\270\043\123\154\006\157\147\125\177
\106\265\114\077\156\050\132\171\046\322\244\250\142\227\322\036
\342\355\112\213\274\033\375\107\112\015\337\147\146\176\262\133
\101\320\073\344\364\073\364\004\143\351\357\302\124\000\121\240
\212\052\311\316\170\314\325\352\207\004\030\263\316\257\111\210
\257\363\222\231\266\263\346\141\017\322\205\000\347\120\032\344
\033\225\235\031\241\271\234\261\233\261\000\036\357\320\017\117
\102\154\311\012\274\356\103\372\072\161\245\310\115\046\245\065
\375\211\135\274\205\142\035\062\322\240\053\124\355\232\127\301
\333\372\020\317\031\267\213\112\033\217\001\266\047\225\123\350
\266\211\155\133\274\150\324\043\350\213\121\242\126\371\360\246
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END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Trusted Root G4"
Issuer: CN=DigiCert Trusted Root G4,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:05:9b:1b:57:9e:8e:21:32:e2:39:07:bd:a7:77:75:5c
Subject: CN=DigiCert Trusted Root G4,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
55:2F:7B:DC:F1:A7:AF:9E:6C:E6:72:01:7F:4F:12:AB:F7:72:40:C7:8E:76:1A:C2:03:D1:D9:D2:0A:C8:99:88
Fingerprint (SHA1): DD:FB:16:CD:49:31:C9:73:A2:03:7D:3F:C8:3A:4D:7D:77:5D:05:E4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Trusted Root G4"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\335\373\026\315\111\061\311\163\242\003\175\077\310\072\115\175
\167\135\005\344
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\170\362\374\252\140\037\057\264\353\311\067\272\123\056\165\111
END
CKA_ISSUER MULTILINE_OCTAL
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\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\041\060\037\006\003\125\004\003\023\030\104\151\147\151
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\164\040\107\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
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\165\134
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "COMODO RSA Certification Authority"
#
Issuer: CN=COMODO RSA Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:4c:aa:f9:ca:db:63:6f:e0:1f:f7:4e:d8:5b:03:86:9d
Subject: CN=COMODO RSA Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Tue Jan 19 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
52:F0:E1:C4:E5:8E:C6:29:29:1B:60:31:7F:07:46:71:B8:5D:7E:A8:0D:5B:07:27:34:63:53:4B:32:B4:02:34
Fingerprint (SHA1): AF:E5:D2:44:A8:D1:19:42:30:FF:47:9F:E2:F8:97:BB:CD:7A:8C:B4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO RSA Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060

\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\122\123\101
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END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
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\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\122\123\101
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
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END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
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\206\235
END
CKA_VALUE MULTILINE_OCTAL
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\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\201
\205\061\013\060\011\006\003\125\004\006\023\002\107\102\061\033
\060\031\006\003\125\004\010\023\022\107\162\145\141\164\145\162
\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016\006
\003\125\004\007\023\007\123\141\154\146\157\162\144\061\032\060
\030\006\003\125\004\012\023\021\103\117\115\117\104\117\040\103
\101\040\114\151\155\151\164\145\144\061\053\060\051\006\003\125
\004\003\023\042\103\117\115\117\104\117\040\122\123\101\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\060\036\027\015\061\060\060\061\061\071
\060\060\060\060\060\060\132\027\015\063\070\060\061\061\070\062
\063\065\071\065\071\132\060\201\205\061\013\060\011\006\003\125
\004\006\023\002\107\102\061\033\060\031\006\003\125\004\010\023
\022\107\162\145\141\164\145\162\040\115\141\156\143\150\145\163
\164\145\162\061\020\060\016\006\003\125\004\007\023\007\123\141
\154\146\157\162\144\061\032\060\030\006\003\125\004\012\023\021
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\104\117\040\122\123\101\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060\202
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\350\124\222\322\012\126\261\254\015\044\335\305\317\104\147\164
\231\053\067\243\175\043\160\000\161\274\123\337\304\372\052\022
\217\113\177\020\126\275\237\160\162\267\141\177\311\113\017\027
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\076\134\371\223\346\064\172\331\024\153\347\234\263\205\240\202
\172\166\257\161\220\327\354\375\015\372\234\154\372\337\260\202
\364\024\176\371\276\304\246\057\117\177\231\177\265\374\147\103
\162\275\014\000\326\211\353\153\054\323\355\217\230\034\024\253
\176\345\343\156\374\330\250\344\222\044\332\103\153\142\270\125
\375\352\301\274\154\266\213\363\016\215\232\344\233\154\151\231
\370\170\110\060\105\325\255\341\015\074\105\140\374\062\226\121
\047\274\147\303\312\056\266\153\352\106\307\307\040\240\261\037
\145\336\110\010\272\244\116\251\362\203\106\067\204\353\350\314
\201\110\103\147\116\162\052\233\134\275\114\033\050\212\134\042
\173\264\253\230\331\356\340\121\203\303\011\106\116\155\076\231
\372\225\027\332\174\063\127\101\074\215\121\355\013\266\134\257
\054\143\032\337\127\310\077\274\351\135\304\233\257\105\231\342
\243\132\044\264\272\251\126\075\317\157\252\377\111\130\276\360
\250\377\364\270\255\351\067\373\272\270\364\013\072\371\350\103
\102\036\211\330\204\313\023\361\331\273\341\211\140\270\214\050
\126\254\024\035\234\012\347\161\353\317\016\335\075\251\226\241
\110\275\074\367\257\265\015\042\114\300\021\201\354\126\073\366
\323\242\342\133\267\262\004\042\122\225\200\223\151\350\216\114
\145\361\221\003\055\160\164\002\352\213\147\025\051\151\122\002
\273\327\337\120\152\125\106\277\240\243\050\141\177\160\320\303
\242\252\054\041\252\107\316\050\234\006\105\166\277\202\030\047
\264\325\256\264\313\120\346\153\364\114\206\161\060\351\246\337
\026\206\340\330\377\100\335\373\320\102\210\177\243\063\072\056
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\162\274\127\112\322\113\235\273\020\374\260\114\101\345\355\035
\075\136\050\235\234\314\277\263\121\332\247\107\345\204\123\002
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\070\230\354\331\062\062\324\060\016\006\003\125\035\017\001\001
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\367\015\001\001\014\005\000\003\202\002\001\000\012\361\325\106
\204\267\256\121\273\154\262\115\101\024\000\223\114\234\313\345
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\162\261\275\031\104\154\141\065\242\232\264\026\022\151\132\214
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\213\172\305\376\005\246\341\300\326\310\376\236\256\217\053\272
\075\231\370\330\163\011\130\106\156\246\234\364\327\047\323\225
\332\067\203\162\034\323\163\340\242\107\231\003\070\135\325\111
\171\000\051\034\307\354\233\040\034\007\044\151\127\170\262\071
\374\072\204\240\265\234\174\215\277\056\223\142\047\267\071\332

\027\030\256\275\074\011\150\377\204\233\074\325\326\013\003\343
\127\236\024\367\321\353\117\310\275\207\043\267\266\111\103\171
\205\134\272\353\222\013\241\306\350\150\250\114\026\261\032\231
\012\350\123\054\222\273\241\011\030\165\014\145\250\173\313\043
\267\032\302\050\205\303\033\377\320\053\142\357\244\173\011\221
\230\147\214\024\001\315\150\006\152\143\041\165\003\200\210\212
\156\201\306\205\362\251\244\055\347\364\245\044\020\107\203\312
\315\364\215\171\130\261\006\233\347\032\052\331\235\001\327\224
\175\355\003\112\312\360\333\350\251\001\076\365\126\231\311\036
\216\111\075\273\345\011\271\340\117\111\222\075\026\202\100\314
\314\131\306\346\072\355\022\056\151\074\154\225\261\375\252\035
\173\177\206\276\036\016\062\106\373\373\023\217\165\177\114\213
\113\106\143\376\000\064\100\160\301\303\271\241\335\246\160\342
\004\263\101\274\351\200\221\352\144\234\172\341\042\003\251\234
\156\157\016\145\117\154\207\207\136\363\156\240\371\165\245\233
\100\350\123\262\047\235\112\271\300\167\041\215\377\207\362\336
\274\214\357\027\337\267\111\013\321\362\156\060\013\032\016\116
\166\355\021\374\365\351\126\262\175\277\307\155\012\223\214\245
\320\300\266\035\276\072\116\224\242\327\156\154\013\302\212\174
\372\040\363\304\344\345\315\015\250\313\221\222\261\174\205\354
\265\024\151\146\016\202\347\315\316\310\055\246\121\177\041\301
\065\123\205\006\112\135\237\255\273\033\137\164
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "COMODO RSA Certification Authority"
Issuer: CN=COMODO RSA Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:4c:aa:f9:ca:db:63:6f:e0:1f:f7:4e:d8:5b:03:86:9d
Subject: CN=COMODO RSA Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Tue Jan 19 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
52:F0:E1:C4:E5:8E:C6:29:29:1B:60:31:7F:07:46:71:B8:5D:7E:A8:0D:5B:07:27:34:63:53:4B:32:B4:02:34
Fingerprint (SHA1): AF:E5:D2:44:A8:D1:19:42:30:FF:47:9F:E2:F8:97:BB:CD:7A:8C:B4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO RSA Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\257\345\322\104\250\321\031\102\060\377\107\237\342\370\227\273
\315\172\214\264
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL

\033\061\260\161\100\066\314\024\066\221\255\304\076\375\354\030
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\122\123\101
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\114\252\371\312\333\143\157\340\037\367\116\330\133\003
\206\235
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "USERTrust RSA Certification Authority"
#
Issuer: CN=USERTrust RSA Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Serial Number:01:fd:6d:30:fc:a3:ca:51:a8:1b:bc:64:0e:35:03:2d
Subject: CN=USERTrust RSA Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Not Valid Before: Mon Feb 01 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
E7:93:C9:B0:2F:D8:AA:13:E2:1C:31:22:8A:CC:B0:81:19:64:3B:74:9C:89:89:64:B1:74:6D:46:C3:D4:CB:D2
Fingerprint (SHA1): 2B:8F:1B:57:33:0D:BB:A2:D0:7A:6C:51:F7:0E:E9:0D:DA:B9:AD:8E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "USERTrust RSA Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006

\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\122\123\101\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\122\123\101\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\001\375\155\060\374\243\312\121\250\033\274\144\016\065
\003\055
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\336\060\202\003\306\240\003\002\001\002\002\020\001
\375\155\060\374\243\312\121\250\033\274\144\016\065\003\055\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\201
\210\061\013\060\011\006\003\125\004\006\023\002\125\123\061\023
\060\021\006\003\125\004\010\023\012\116\145\167\040\112\145\162
\163\145\171\061\024\060\022\006\003\125\004\007\023\013\112\145
\162\163\145\171\040\103\151\164\171\061\036\060\034\006\003\125
\004\012\023\025\124\150\145\040\125\123\105\122\124\122\125\123
\124\040\116\145\164\167\157\162\153\061\056\060\054\006\003\125
\004\003\023\045\125\123\105\122\124\162\165\163\164\040\122\123
\101\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\060\036\027\015\061\060\060
\062\060\061\060\060\060\060\060\060\132\027\015\063\070\060\061
\061\070\062\063\065\071\065\071\132\060\201\210\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\023\060\021\006\003\125
\004\010\023\012\116\145\167\040\112\145\162\163\145\171\061\024
\060\022\006\003\125\004\007\023\013\112\145\162\163\145\171\040
\103\151\164\171\061\036\060\034\006\003\125\004\012\023\025\124
\150\145\040\125\123\105\122\124\122\125\123\124\040\116\145\164
\167\157\162\153\061\056\060\054\006\003\125\004\003\023\045\125
\123\105\122\124\162\165\163\164\040\122\123\101\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\200\022\145\027\066\016\303\333\010\263\320
\254\127\015\166\355\315\047\323\114\255\120\203\141\342\252\040
\115\011\055\144\011\334\316\211\237\314\075\251\354\366\317\301

\334\361\323\261\326\173\067\050\021\053\107\332\071\306\274\072
\031\264\137\246\275\175\235\243\143\102\266\166\362\251\073\053
\221\370\342\157\320\354\026\040\220\011\076\342\350\164\311\030
\264\221\324\142\144\333\177\243\006\361\210\030\152\220\042\074
\274\376\023\360\207\024\173\366\344\037\216\324\344\121\306\021
\147\106\010\121\313\206\024\124\077\274\063\376\176\154\234\377
\026\235\030\275\121\216\065\246\247\146\310\162\147\333\041\146
\261\324\233\170\003\300\120\072\350\314\360\334\274\236\114\376
\257\005\226\065\037\127\132\267\377\316\371\075\267\054\266\366
\124\335\310\347\022\072\115\256\114\212\267\134\232\264\267\040
\075\312\177\042\064\256\176\073\150\146\001\104\347\001\116\106
\123\233\063\140\367\224\276\123\067\220\163\103\363\062\303\123
\357\333\252\376\164\116\151\307\153\214\140\223\336\304\307\014
\337\341\062\256\314\223\073\121\170\225\147\213\356\075\126\376
\014\320\151\017\033\017\363\045\046\153\063\155\367\156\107\372
\163\103\345\176\016\245\146\261\051\174\062\204\143\125\211\304
\015\301\223\124\060\031\023\254\323\175\067\247\353\135\072\154
\065\134\333\101\327\022\332\251\111\013\337\330\200\212\011\223
\142\216\265\146\317\045\210\315\204\270\261\077\244\071\017\331
\002\236\353\022\114\225\174\363\153\005\251\136\026\203\314\270
\147\342\350\023\235\314\133\202\323\114\263\355\133\377\336\345
\163\254\043\073\055\000\277\065\125\164\011\111\330\111\130\032
\177\222\066\346\121\222\016\363\046\175\034\115\027\274\311\354
\103\046\320\277\101\137\100\251\104\104\364\231\347\127\207\236
\120\037\127\124\250\076\375\164\143\057\261\120\145\011\346\130
\102\056\103\032\114\264\360\045\107\131\372\004\036\223\324\046
\106\112\120\201\262\336\276\170\267\374\147\025\341\311\127\204
\036\017\143\326\351\142\272\326\137\125\056\352\134\306\050\010
\004\045\071\270\016\053\251\362\114\227\034\007\077\015\122\365
\355\357\057\202\017\002\003\001\000\001\243\102\060\100\060\035
\006\003\125\035\016\004\026\004\024\123\171\277\132\252\053\112
\317\124\200\341\330\233\300\235\362\262\003\146\313\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\015
\006\011\052\206\110\206\367\015\001\001\014\005\000\003\202\002
\001\000\134\324\174\015\317\367\001\175\101\231\145\014\163\305
\122\237\313\370\317\231\006\177\033\332\103\025\237\236\002\125
\127\226\024\361\122\074\047\207\224\050\355\037\072\001\067\242
\166\374\123\120\300\204\233\306\153\116\272\214\041\117\242\216
\125\142\221\363\151\025\330\274\210\343\304\252\013\375\357\250
\351\113\125\052\006\040\155\125\170\051\031\356\137\060\134\113
\044\021\125\377\044\232\156\136\052\053\356\013\115\237\177\367
\001\070\224\024\225\103\007\011\373\140\251\356\034\253\022\214
\240\232\136\247\230\152\131\155\213\077\010\373\310\321\105\257
\030\025\144\220\022\017\163\050\056\305\342\044\116\374\130\354
\360\364\105\376\042\263\353\057\216\322\331\105\141\005\301\227
\157\250\166\162\217\213\214\066\257\277\015\005\316\161\215\346
\246\157\037\154\246\161\142\305\330\320\203\162\014\361\147\021

\211\014\234\023\114\162\064\337\274\325\161\337\252\161\335\341
\271\154\214\074\022\135\145\332\275\127\022\266\103\153\377\345
\336\115\146\021\121\317\231\256\354\027\266\350\161\221\214\336
\111\376\335\065\161\242\025\047\224\034\317\141\343\046\273\157
\243\147\045\041\135\346\335\035\013\056\150\033\073\202\257\354
\203\147\205\324\230\121\164\261\271\231\200\211\377\177\170\031
\134\171\112\140\056\222\100\256\114\067\052\054\311\307\142\310
\016\135\367\066\133\312\340\045\045\001\264\335\032\007\234\167
\000\077\320\334\325\354\075\324\372\273\077\314\205\326\157\177
\251\055\337\271\002\367\365\227\232\265\065\332\303\147\260\207
\112\251\050\236\043\216\377\134\047\153\341\260\117\363\007\356
\000\056\324\131\207\313\122\101\225\352\364\107\327\356\144\101
\125\174\215\131\002\225\335\142\235\302\271\356\132\050\164\204
\245\233\267\220\307\014\007\337\365\211\066\164\062\326\050\301
\260\260\013\340\234\114\303\034\326\374\343\151\265\107\106\201
\057\242\202\253\323\143\104\160\304\215\377\055\063\272\255\217
\173\265\160\210\256\076\031\317\100\050\330\374\310\220\273\135
\231\042\365\122\346\130\305\037\210\061\103\356\210\035\327\306
\216\074\103\152\035\247\030\336\175\075\026\361\142\371\312\220
\250\375
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "USERTrust RSA Certification Authority"
Issuer: CN=USERTrust RSA Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Serial Number:01:fd:6d:30:fc:a3:ca:51:a8:1b:bc:64:0e:35:03:2d
Subject: CN=USERTrust RSA Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Not Valid Before: Mon Feb 01 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
E7:93:C9:B0:2F:D8:AA:13:E2:1C:31:22:8A:CC:B0:81:19:64:3B:74:9C:89:89:64:B1:74:6D:46:C3:D4:CB:D2
Fingerprint (SHA1): 2B:8F:1B:57:33:0D:BB:A2:D0:7A:6C:51:F7:0E:E9:0D:DA:B9:AD:8E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "USERTrust RSA Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\053\217\033\127\063\015\273\242\320\172\154\121\367\016\351\015
\332\271\255\216
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\033\376\151\321\221\267\031\063\243\162\250\017\341\125\345\265
END

CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\122\123\101\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\001\375\155\060\374\243\312\121\250\033\274\144\016\065
\003\055
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "USERTrust ECC Certification Authority"
#
Issuer: CN=USERTrust ECC Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Serial Number:5c:8b:99:c5:5a:94:c5:d2:71:56:de:cd:89:80:cc:26
Subject: CN=USERTrust ECC Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Not Valid Before: Mon Feb 01 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
4F:F4:60:D5:4B:9C:86:DA:BF:BC:FC:57:12:E0:40:0D:2B:ED:3F:BC:4D:4F:BD:AA:86:E0:6A:DC:D2:A9:AD:7A
Fingerprint (SHA1): D1:CB:CA:5D:B2:D5:2A:7F:69:3B:67:4D:E5:F0:5A:1D:0C:95:7D:F0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "USERTrust ECC Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\105\103\103\040\103\145\162\164\151\146\151\143\141\164\151\157

\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\105\103\103\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\134\213\231\305\132\224\305\322\161\126\336\315\211\200
\314\046
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\217\060\202\002\025\240\003\002\001\002\002\020\134
\213\231\305\132\224\305\322\161\126\336\315\211\200\314\046\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\210\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\023\060\021\006
\003\125\004\010\023\012\116\145\167\040\112\145\162\163\145\171
\061\024\060\022\006\003\125\004\007\023\013\112\145\162\163\145
\171\040\103\151\164\171\061\036\060\034\006\003\125\004\012\023
\025\124\150\145\040\125\123\105\122\124\122\125\123\124\040\116
\145\164\167\157\162\153\061\056\060\054\006\003\125\004\003\023
\045\125\123\105\122\124\162\165\163\164\040\105\103\103\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\060\036\027\015\061\060\060\062\060\061
\060\060\060\060\060\060\132\027\015\063\070\060\061\061\070\062
\063\065\071\065\071\132\060\201\210\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\023\060\021\006\003\125\004\010\023
\012\116\145\167\040\112\145\162\163\145\171\061\024\060\022\006
\003\125\004\007\023\013\112\145\162\163\145\171\040\103\151\164
\171\061\036\060\034\006\003\125\004\012\023\025\124\150\145\040
\125\123\105\122\124\122\125\123\124\040\116\145\164\167\157\162
\153\061\056\060\054\006\003\125\004\003\023\045\125\123\105\122
\124\162\165\163\164\040\105\103\103\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\032\254\124\132\251\371\150
\043\347\172\325\044\157\123\306\132\330\113\253\306\325\266\321
\346\163\161\256\335\234\326\014\141\375\333\240\211\003\270\005
\024\354\127\316\356\135\077\342\041\263\316\367\324\212\171\340
\243\203\176\055\227\320\141\304\361\231\334\045\221\143\253\177
\060\243\264\160\342\307\241\063\234\363\277\056\134\123\261\137

\263\175\062\177\212\064\343\171\171\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\072\341\011\206\324\317\031\302
\226\166\164\111\166\334\340\065\306\143\143\232\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\012\006
\010\052\206\110\316\075\004\003\003\003\150\000\060\145\002\060
\066\147\241\026\010\334\344\227\000\101\035\116\276\341\143\001
\317\073\252\102\021\144\240\235\224\071\002\021\171\134\173\035
\372\144\271\356\026\102\263\277\212\302\011\304\354\344\261\115
\002\061\000\351\052\141\107\214\122\112\113\116\030\160\366\326
\104\326\156\365\203\272\155\130\275\044\331\126\110\352\357\304
\242\106\201\210\152\072\106\321\251\233\115\311\141\332\321\135
\127\152\030
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "USERTrust ECC Certification Authority"
Issuer: CN=USERTrust ECC Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Serial Number:5c:8b:99:c5:5a:94:c5:d2:71:56:de:cd:89:80:cc:26
Subject: CN=USERTrust ECC Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Not Valid Before: Mon Feb 01 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
4F:F4:60:D5:4B:9C:86:DA:BF:BC:FC:57:12:E0:40:0D:2B:ED:3F:BC:4D:4F:BD:AA:86:E0:6A:DC:D2:A9:AD:7A
Fingerprint (SHA1): D1:CB:CA:5D:B2:D5:2A:7F:69:3B:67:4D:E5:F0:5A:1D:0C:95:7D:F0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "USERTrust ECC Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\321\313\312\135\262\325\052\177\151\073\147\115\345\360\132\035
\014\225\175\360
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\372\150\274\331\265\177\255\375\311\035\006\203\050\314\044\301
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006

\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\105\103\103\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\134\213\231\305\132\224\305\322\161\126\336\315\211\200
\314\046
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign ECC Root CA - R5"
#
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R5
Serial Number:60:59:49:e0:26:2e:bb:55:f9:0a:77:8a:71:f9:4a:d8:6c
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R5
Not Valid Before: Tue Nov 13 00:00:00 2012
Not Valid After : Tue Jan 19 03:14:07 2038
Fingerprint (SHA-256):
17:9F:BC:14:8A:3D:D0:0F:D2:4E:A1:34:58:CC:43:BF:A7:F5:9C:81:82:D7:83:A5:13:F6:EB:EC:10:0C:89:24
Fingerprint (SHA1): 1F:24:C6:30:CD:A4:18:EF:20:69:FF:AD:4F:DD:5F:46:3A:1B:69:AA
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign ECC Root CA - R5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\065\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\065\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\021\140\131\111\340\046\056\273\125\371\012\167\212\161\371
\112\330\154
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\036\060\202\001\244\240\003\002\001\002\002\021\140
\131\111\340\046\056\273\125\371\012\167\212\161\371\112\330\154
\060\012\006\010\052\206\110\316\075\004\003\003\060\120\061\044
\060\042\006\003\125\004\013\023\033\107\154\157\142\141\154\123
\151\147\156\040\105\103\103\040\122\157\157\164\040\103\101\040
\055\040\122\065\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156\060\036
\027\015\061\062\061\061\061\063\060\060\060\060\060\060\132\027
\015\063\070\060\061\061\071\060\063\061\064\060\067\132\060\120
\061\044\060\042\006\003\125\004\013\023\033\107\154\157\142\141
\154\123\151\147\156\040\105\103\103\040\122\157\157\164\040\103
\101\040\055\040\122\065\061\023\060\021\006\003\125\004\012\023
\012\107\154\157\142\141\154\123\151\147\156\061\023\060\021\006
\003\125\004\003\023\012\107\154\157\142\141\154\123\151\147\156
\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053
\201\004\000\042\003\142\000\004\107\105\016\226\373\175\135\277
\351\071\321\041\370\237\013\266\325\173\036\222\072\110\131\034
\360\142\061\055\300\172\050\376\032\247\134\263\266\314\227\347
\105\324\130\372\321\167\155\103\242\300\207\145\064\012\037\172
\335\353\074\063\241\305\235\115\244\157\101\225\070\177\311\036
\204\353\321\236\111\222\207\224\207\014\072\205\112\146\237\235
\131\223\115\227\141\006\206\112\243\102\060\100\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006
\003\125\035\016\004\026\004\024\075\346\051\110\233\352\007\312
\041\104\112\046\336\156\336\322\203\320\237\131\060\012\006\010
\052\206\110\316\075\004\003\003\003\150\000\060\145\002\061\000
\345\151\022\311\156\333\306\061\272\011\101\341\227\370\373\375
\232\342\175\022\311\355\174\144\323\313\005\045\213\126\331\240
\347\136\135\116\013\203\234\133\166\051\240\011\046\041\152\142
\002\060\161\322\265\217\134\352\073\341\170\011\205\250\165\222
\073\310\134\375\110\357\015\164\042\250\010\342\156\305\111\316
\307\014\274\247\141\151\361\367\073\341\052\313\371\053\363\146
\220\067
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign ECC Root CA - R5"
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R5
Serial Number:60:59:49:e0:26:2e:bb:55:f9:0a:77:8a:71:f9:4a:d8:6c
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R5

Not Valid Before: Tue Nov 13 00:00:00 2012
Not Valid After : Tue Jan 19 03:14:07 2038
Fingerprint (SHA-256):
17:9F:BC:14:8A:3D:D0:0F:D2:4E:A1:34:58:CC:43:BF:A7:F5:9C:81:82:D7:83:A5:13:F6:EB:EC:10:0C:89:24
Fingerprint (SHA1): 1F:24:C6:30:CD:A4:18:EF:20:69:FF:AD:4F:DD:5F:46:3A:1B:69:AA
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign ECC Root CA - R5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\037\044\306\060\315\244\030\357\040\151\377\255\117\335\137\106
\072\033\151\252
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\237\255\073\034\002\036\212\272\027\164\070\201\014\242\274\010
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\065\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\140\131\111\340\046\056\273\125\371\012\167\212\161\371
\112\330\154
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Staat der Nederlanden Root CA - G3"
#
Issuer: CN=Staat der Nederlanden Root CA - G3,O=Staat der Nederlanden,C=NL
Serial Number: 10003001 (0x98a239)
Subject: CN=Staat der Nederlanden Root CA - G3,O=Staat der Nederlanden,C=NL
Not Valid Before: Thu Nov 14 11:28:42 2013
Not Valid After : Mon Nov 13 23:00:00 2028
Fingerprint (SHA-256):
3C:4F:B0:B9:5A:B8:B3:00:32:F4:32:B8:6F:53:5F:E1:72:C1:85:D0:FD:39:86:58:37:CF:36:18:7F:A6:F4:28
Fingerprint (SHA1): D8:EB:6B:41:51:92:59:E0:F3:E7:85:00:C0:3D:B6:88:97:C9:EE:FC
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden Root CA - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\053\060\051\006\003\125\004\003\014\042\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\053\060\051\006\003\125\004\003\014\042\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\230\242\071
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\164\060\202\003\134\240\003\002\001\002\002\004\000
\230\242\071\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\132\061\013\060\011\006\003\125\004\006\023\002\116
\114\061\036\060\034\006\003\125\004\012\014\025\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\061\053\060\051\006\003\125\004\003\014\042\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\040\122\157\157\164\040\103\101\040\055\040\107\063\060\036
\027\015\061\063\061\061\061\064\061\061\062\070\064\062\132\027
\015\062\070\061\061\061\063\062\063\060\060\060\060\132\060\132
\061\013\060\011\006\003\125\004\006\023\002\116\114\061\036\060
\034\006\003\125\004\012\014\025\123\164\141\141\164\040\144\145
\162\040\116\145\144\145\162\154\141\156\144\145\156\061\053\060
\051\006\003\125\004\003\014\042\123\164\141\141\164\040\144\145
\162\040\116\145\144\145\162\154\141\156\144\145\156\040\122\157
\157\164\040\103\101\040\055\040\107\063\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\276\062\242\124\017
\160\373\054\134\131\353\154\304\244\121\350\205\052\263\314\112
\064\362\260\137\363\016\307\034\075\123\036\210\010\150\330\157
\075\255\302\236\314\202\147\007\047\207\150\161\072\237\165\226
\042\106\005\260\355\255\307\133\236\052\336\234\374\072\306\225
\247\365\027\147\030\347\057\111\010\014\134\317\346\314\064\355
\170\373\120\261\334\153\062\360\242\376\266\074\344\354\132\227

\307\077\036\160\010\060\240\334\305\263\155\157\320\202\162\021
\253\322\201\150\131\202\027\267\170\222\140\372\314\336\077\204
\353\215\070\063\220\012\162\043\372\065\314\046\161\061\321\162
\050\222\331\133\043\155\146\265\155\007\102\353\246\063\316\222
\333\300\366\154\143\170\315\312\116\075\265\345\122\233\361\276
\073\346\124\140\260\146\036\011\253\007\376\124\211\021\102\321
\367\044\272\140\170\032\230\367\311\021\375\026\301\065\032\124
\165\357\103\323\345\256\116\316\347\173\303\306\116\141\121\113
\253\232\105\113\241\037\101\275\110\123\025\161\144\013\206\263
\345\056\276\316\244\033\301\051\204\242\265\313\010\043\166\103
\042\044\037\027\004\324\156\234\306\374\177\053\146\032\354\212
\345\326\317\115\365\143\011\267\025\071\326\173\254\353\343\174
\351\116\374\165\102\310\355\130\225\014\006\102\242\234\367\344
\160\263\337\162\157\132\067\100\211\330\205\244\327\361\013\336
\103\031\324\112\130\054\214\212\071\236\277\204\207\361\026\073
\066\014\351\323\264\312\154\031\101\122\011\241\035\260\152\277
\202\357\160\121\041\062\334\005\166\214\313\367\144\344\003\120
\257\214\221\147\253\305\362\356\130\330\336\276\367\347\061\317
\154\311\073\161\301\325\210\265\145\274\300\350\027\027\007\022
\265\134\322\253\040\223\264\346\202\203\160\066\305\315\243\215
\255\213\354\243\301\103\207\346\103\342\064\276\225\213\065\355
\007\071\332\250\035\172\237\066\236\022\260\014\145\022\220\025
\140\331\046\100\104\343\126\140\245\020\324\152\074\375\101\334
\016\132\107\266\357\227\141\165\117\331\376\307\262\035\324\355
\135\111\263\251\152\313\146\204\023\325\134\240\334\337\156\167
\006\321\161\165\310\127\157\257\017\167\133\002\003\001\000\001
\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024
\124\255\372\307\222\127\256\312\065\234\056\022\373\344\272\135
\040\334\224\127\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\002\001\000\060\231\235\005\062\310\136\016
\073\230\001\072\212\244\347\007\367\172\370\347\232\337\120\103
\123\227\052\075\312\074\107\230\056\341\025\173\361\222\363\141
\332\220\045\026\145\300\237\124\135\016\003\073\133\167\002\234
\204\266\015\230\137\064\335\073\143\302\303\050\201\302\234\051
\056\051\342\310\303\001\362\063\352\052\252\314\011\010\367\145
\147\306\315\337\323\266\053\247\275\314\321\016\160\137\270\043
\321\313\221\116\012\364\310\172\345\331\143\066\301\324\337\374
\042\227\367\140\135\352\051\057\130\262\275\130\275\215\226\117
\020\165\277\110\173\075\121\207\241\074\164\042\302\374\007\177
\200\334\304\254\376\152\301\160\060\260\351\216\151\342\054\151
\201\224\011\272\335\376\115\300\203\214\224\130\300\106\040\257
\234\037\002\370\065\125\111\057\106\324\300\360\240\226\002\017
\063\305\161\363\236\043\175\224\267\375\072\323\011\203\006\041
\375\140\075\256\062\300\322\356\215\246\360\347\264\202\174\012
\314\160\311\171\200\370\376\114\367\065\204\031\212\061\373\012
\331\327\177\233\360\242\232\153\303\005\112\355\101\140\024\060

\321\252\021\102\156\323\043\002\004\013\306\145\335\335\122\167
\332\201\153\262\250\372\001\070\271\226\352\052\154\147\227\211
\224\236\274\341\124\325\344\152\170\357\112\275\053\232\075\100
\176\306\300\165\322\156\373\150\060\354\354\213\235\371\111\065
\232\032\054\331\263\225\071\325\036\222\367\246\271\145\057\345
\075\155\072\110\114\010\334\344\050\022\050\276\175\065\134\352
\340\026\176\023\033\152\327\076\327\236\374\055\165\262\301\024
\325\043\003\333\133\157\013\076\170\057\015\336\063\215\026\267
\110\347\203\232\201\017\173\301\103\115\125\004\027\070\112\121
\325\131\242\211\164\323\237\276\036\113\327\306\155\267\210\044
\157\140\221\244\202\205\133\126\101\274\320\104\253\152\023\276
\321\054\130\267\022\063\130\262\067\143\334\023\365\224\035\077
\100\121\365\117\365\072\355\310\305\353\302\036\035\026\225\172
\307\176\102\161\223\156\113\025\267\060\337\252\355\127\205\110
\254\035\152\335\071\151\344\341\171\170\276\316\005\277\241\014
\367\200\173\041\147\047\060\131
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Staat der Nederlanden Root CA - G3"
Issuer: CN=Staat der Nederlanden Root CA - G3,O=Staat der Nederlanden,C=NL
Serial Number: 10003001 (0x98a239)
Subject: CN=Staat der Nederlanden Root CA - G3,O=Staat der Nederlanden,C=NL
Not Valid Before: Thu Nov 14 11:28:42 2013
Not Valid After : Mon Nov 13 23:00:00 2028
Fingerprint (SHA-256):
3C:4F:B0:B9:5A:B8:B3:00:32:F4:32:B8:6F:53:5F:E1:72:C1:85:D0:FD:39:86:58:37:CF:36:18:7F:A6:F4:28
Fingerprint (SHA1): D8:EB:6B:41:51:92:59:E0:F3:E7:85:00:C0:3D:B6:88:97:C9:EE:FC
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden Root CA - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\330\353\153\101\121\222\131\340\363\347\205\000\300\075\266\210
\227\311\356\374
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\013\106\147\007\333\020\057\031\214\065\120\140\321\013\364\067
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\053\060\051\006\003\125\004\003\014\042\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040

\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\230\242\071
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Staat der Nederlanden EV Root CA"
#
Issuer: CN=Staat der Nederlanden EV Root CA,O=Staat der Nederlanden,C=NL
Serial Number: 10000013 (0x98968d)
Subject: CN=Staat der Nederlanden EV Root CA,O=Staat der Nederlanden,C=NL
Not Valid Before: Wed Dec 08 11:19:29 2010
Not Valid After : Thu Dec 08 11:10:28 2022
Fingerprint (SHA-256):
4D:24:91:41:4C:FE:95:67:46:EC:4C:EF:A6:CF:6F:72:E2:8A:13:29:43:2F:9D:8A:90:7A:C4:CB:5D:AD:C1:5A
Fingerprint (SHA1): 76:E2:7E:C1:4F:DB:82:C1:C0:A6:75:B5:05:BE:3D:29:B4:ED:DB:BB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden EV Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\051\060\047\006\003\125\004\003\014\040\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\105\126\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\051\060\047\006\003\125\004\003\014\040\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\105\126\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\230\226\215
END
CKA_VALUE MULTILINE_OCTAL

\060\202\005\160\060\202\003\130\240\003\002\001\002\002\004\000
\230\226\215\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\130\061\013\060\011\006\003\125\004\006\023\002\116
\114\061\036\060\034\006\003\125\004\012\014\025\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\061\051\060\047\006\003\125\004\003\014\040\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\040\105\126\040\122\157\157\164\040\103\101\060\036\027\015
\061\060\061\062\060\070\061\061\061\071\062\071\132\027\015\062
\062\061\062\060\070\061\061\061\060\062\070\132\060\130\061\013
\060\011\006\003\125\004\006\023\002\116\114\061\036\060\034\006
\003\125\004\012\014\025\123\164\141\141\164\040\144\145\162\040
\116\145\144\145\162\154\141\156\144\145\156\061\051\060\047\006
\003\125\004\003\014\040\123\164\141\141\164\040\144\145\162\040
\116\145\144\145\162\154\141\156\144\145\156\040\105\126\040\122
\157\157\164\040\103\101\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\343\307\176\211\371\044\113\072\322
\063\203\065\054\151\354\334\011\244\343\121\250\045\053\171\270
\010\075\340\221\272\204\205\306\205\244\312\346\311\056\123\244
\311\044\036\375\125\146\161\135\054\305\140\150\004\267\331\302
\122\046\070\210\244\326\073\100\246\302\315\077\315\230\223\263
\124\024\130\226\125\325\120\376\206\255\244\143\177\134\207\366
\216\346\047\222\147\027\222\002\003\054\334\326\146\164\355\335
\147\377\301\141\215\143\117\017\233\155\027\060\046\357\253\322
\037\020\240\371\305\177\026\151\201\003\107\355\036\150\215\162
\241\115\262\046\306\272\154\137\155\326\257\321\261\023\216\251
\255\363\136\151\165\046\030\076\101\053\041\177\356\213\135\007
\006\235\103\304\051\012\053\374\052\076\206\313\074\203\072\371
\311\015\332\305\231\342\274\170\101\063\166\341\277\057\135\345
\244\230\120\014\025\335\340\372\234\177\070\150\320\262\246\172
\247\321\061\275\176\212\130\047\103\263\272\063\221\323\247\230
\025\134\232\346\323\017\165\331\374\101\230\227\076\252\045\333
\217\222\056\260\173\014\137\361\143\251\067\371\233\165\151\114
\050\046\045\332\325\362\022\160\105\125\343\337\163\136\067\365
\041\154\220\216\065\132\311\323\043\353\323\300\276\170\254\102
\050\130\146\245\106\155\160\002\327\020\371\113\124\374\135\206
\112\207\317\177\312\105\254\021\132\265\040\121\215\057\210\107
\227\071\300\317\272\300\102\001\100\231\110\041\013\153\247\322
\375\226\325\321\276\106\235\111\340\013\246\240\042\116\070\320
\301\074\060\274\160\217\054\165\314\320\305\214\121\073\075\224
\010\144\046\141\175\271\303\145\217\024\234\041\320\252\375\027
\162\003\217\275\233\214\346\136\123\236\271\235\357\202\273\341
\274\342\162\101\133\041\224\323\105\067\224\321\337\011\071\135
\347\043\252\232\035\312\155\250\012\206\205\212\202\276\102\007
\326\362\070\202\163\332\207\133\345\074\323\236\076\247\073\236
\364\003\263\371\361\175\023\164\002\377\273\241\345\372\000\171
\034\246\146\101\210\134\140\127\246\056\011\304\272\375\232\317

\247\037\100\303\273\314\132\012\125\113\073\070\166\121\270\143
\213\204\224\026\346\126\363\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\035\006\003\125\035\016\004\026\004\024\376\253\000\220
\230\236\044\374\251\314\032\212\373\047\270\277\060\156\250\073
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\317\167\054\156\126\276\116\263\266\204\000\224
\253\107\311\015\322\166\307\206\237\035\007\323\266\264\273\010
\170\257\151\322\013\111\336\063\305\254\255\302\210\002\175\006
\267\065\002\301\140\311\277\304\350\224\336\324\323\251\023\045
\132\376\156\242\256\175\005\334\175\363\154\360\176\246\215\356
\331\327\316\130\027\350\251\051\256\163\110\207\347\233\312\156
\051\241\144\137\031\023\367\256\006\020\377\121\306\233\115\125
\045\117\223\231\020\001\123\165\361\023\316\307\246\101\101\322
\277\210\245\177\105\374\254\270\245\265\063\014\202\304\373\007
\366\152\345\045\204\137\006\312\301\206\071\021\333\130\315\167
\073\054\302\114\017\136\232\343\360\253\076\141\033\120\044\302
\300\364\361\031\360\021\051\266\245\030\002\233\327\143\114\160
\214\107\243\003\103\134\271\135\106\240\015\157\377\131\216\276
\335\237\162\303\133\053\337\214\133\316\345\014\106\154\222\262
\012\243\114\124\102\030\025\022\030\275\332\374\272\164\156\377
\301\266\240\144\330\251\137\125\256\237\134\152\166\226\330\163
\147\207\373\115\177\134\356\151\312\163\020\373\212\251\375\236
\275\066\070\111\111\207\364\016\024\360\351\207\270\077\247\117
\172\132\216\171\324\223\344\273\150\122\204\254\154\351\363\230
\160\125\162\062\371\064\253\053\111\265\315\040\142\344\072\172
\147\143\253\226\334\155\256\227\354\374\237\166\126\210\056\146
\317\133\266\311\244\260\327\005\272\341\047\057\223\273\046\052
\242\223\260\033\363\216\276\035\100\243\271\066\217\076\202\032
\032\136\210\352\120\370\131\342\203\106\051\013\343\104\134\341
\225\266\151\220\232\024\157\227\256\201\317\150\357\231\232\276
\265\347\341\177\370\372\023\107\026\114\314\155\010\100\347\213
\170\157\120\202\104\120\077\146\006\212\253\103\204\126\112\017
\040\055\206\016\365\322\333\322\172\212\113\315\245\350\116\361
\136\046\045\001\131\043\240\176\322\366\176\041\127\327\047\274
\025\127\114\244\106\301\340\203\036\014\114\115\037\117\006\031
\342\371\250\364\072\202\241\262\171\103\171\326\255\157\172\047
\220\003\244\352\044\207\077\331\275\331\351\362\137\120\111\034
\356\354\327\056
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Staat der Nederlanden EV Root CA"
Issuer: CN=Staat der Nederlanden EV Root CA,O=Staat der Nederlanden,C=NL
Serial Number: 10000013 (0x98968d)

Subject: CN=Staat der Nederlanden EV Root CA,O=Staat der Nederlanden,C=NL
Not Valid Before: Wed Dec 08 11:19:29 2010
Not Valid After : Thu Dec 08 11:10:28 2022
Fingerprint (SHA-256):
4D:24:91:41:4C:FE:95:67:46:EC:4C:EF:A6:CF:6F:72:E2:8A:13:29:43:2F:9D:8A:90:7A:C4:CB:5D:AD:C1:5A
Fingerprint (SHA1): 76:E2:7E:C1:4F:DB:82:C1:C0:A6:75:B5:05:BE:3D:29:B4:ED:DB:BB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden EV Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\166\342\176\301\117\333\202\301\300\246\165\265\005\276\075\051
\264\355\333\273
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\374\006\257\173\350\032\361\232\264\350\322\160\037\300\365\272
END
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\051\060\047\006\003\125\004\003\014\040\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\105\126\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\230\226\215
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "IdenTrust Commercial Root CA 1"
#
Issuer: CN=IdenTrust Commercial Root CA 1,O=IdenTrust,C=US
Serial Number:0a:01:42:80:00:00:01:45:23:c8:44:b5:00:00:00:02
Subject: CN=IdenTrust Commercial Root CA 1,O=IdenTrust,C=US
Not Valid Before: Thu Jan 16 18:12:23 2014
Not Valid After : Mon Jan 16 18:12:23 2034
Fingerprint (SHA-256):
5D:56:49:9B:E4:D2:E0:8B:CF:CA:D0:8A:3E:38:72:3D:50:50:3B:DE:70:69:48:E4:2F:55:60:30:19:E5:28:AE
Fingerprint (SHA1): DF:71:7E:AA:4A:D9:4E:C9:55:84:99:60:2D:48:DE:5F:BC:F0:3A:25
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IdenTrust Commercial Root CA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\047\060\045\006\003\125\004\003\023\036\111\144
\145\156\124\162\165\163\164\040\103\157\155\155\145\162\143\151
\141\154\040\122\157\157\164\040\103\101\040\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\047\060\045\006\003\125\004\003\023\036\111\144
\145\156\124\162\165\163\164\040\103\157\155\155\145\162\143\151
\141\154\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\012\001\102\200\000\000\001\105\043\310\104\265\000\000
\000\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\140\060\202\003\110\240\003\002\001\002\002\020\012
\001\102\200\000\000\001\105\043\310\104\265\000\000\000\002\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\112
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022\060
\020\006\003\125\004\012\023\011\111\144\145\156\124\162\165\163
\164\061\047\060\045\006\003\125\004\003\023\036\111\144\145\156
\124\162\165\163\164\040\103\157\155\155\145\162\143\151\141\154
\040\122\157\157\164\040\103\101\040\061\060\036\027\015\061\064
\060\061\061\066\061\070\061\062\062\063\132\027\015\063\064\060
\061\061\066\061\070\061\062\062\063\132\060\112\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\022\060\020\006\003\125
\004\012\023\011\111\144\145\156\124\162\165\163\164\061\047\060
\045\006\003\125\004\003\023\036\111\144\145\156\124\162\165\163
\164\040\103\157\155\155\145\162\143\151\141\154\040\122\157\157
\164\040\103\101\040\061\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\247\120\031\336\077\231\075\324\063
\106\361\157\121\141\202\262\251\117\217\147\211\135\204\331\123
\335\014\050\331\327\360\377\256\225\103\162\231\371\265\135\174
\212\301\102\341\061\120\164\321\201\015\174\315\233\041\253\103
\342\254\255\136\206\156\363\011\212\037\132\062\275\242\353\224
\371\350\134\012\354\377\230\322\257\161\263\264\123\237\116\207
\357\222\274\275\354\117\062\060\210\113\027\136\127\304\123\302
\366\002\227\215\331\142\053\277\044\037\142\215\337\303\270\051
\113\111\170\074\223\140\210\042\374\231\332\066\310\302\242\324

\054\124\000\147\065\156\163\277\002\130\360\244\335\345\260\242
\046\172\312\340\066\245\031\026\365\375\267\357\256\077\100\365
\155\132\004\375\316\064\312\044\334\164\043\033\135\063\023\022
\135\304\001\045\366\060\335\002\135\237\340\325\107\275\264\353
\033\241\273\111\111\330\237\133\002\363\212\344\044\220\344\142
\117\117\301\257\213\016\164\027\250\321\162\210\152\172\001\111
\314\264\106\171\306\027\261\332\230\036\007\131\372\165\041\205
\145\335\220\126\316\373\253\245\140\235\304\235\371\122\260\213
\275\207\371\217\053\043\012\043\166\073\367\063\341\311\000\363
\151\371\113\242\340\116\274\176\223\071\204\007\367\104\160\176
\376\007\132\345\261\254\321\030\314\362\065\345\111\111\010\312
\126\311\075\373\017\030\175\213\073\301\023\302\115\217\311\117
\016\067\351\037\241\016\152\337\142\056\313\065\006\121\171\054
\310\045\070\364\372\113\247\211\134\234\322\343\015\071\206\112
\164\174\325\131\207\302\077\116\014\134\122\364\075\367\122\202
\361\352\243\254\375\111\064\032\050\363\101\210\072\023\356\350
\336\377\231\035\137\272\313\350\036\362\271\120\140\300\061\323
\163\345\357\276\240\355\063\013\164\276\040\040\304\147\154\360
\010\003\172\125\200\177\106\116\226\247\364\036\076\341\366\330
\011\341\063\144\053\143\327\062\136\237\371\300\173\017\170\157
\227\274\223\232\371\234\022\220\170\172\200\207\025\327\162\164
\234\125\164\170\261\272\341\156\160\004\272\117\240\272\150\303
\173\377\061\360\163\075\075\224\052\261\013\101\016\240\376\115
\210\145\153\171\063\264\327\002\003\001\000\001\243\102\060\100
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\355\104\031\300
\323\360\006\213\356\244\173\276\102\347\046\124\310\216\066\166
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\015\256\220\062\366\246\113\174\104\166\031\141
\036\047\050\315\136\124\357\045\274\343\010\220\371\051\327\256
\150\010\341\224\000\130\357\056\056\176\123\122\214\266\134\007
\352\210\272\231\213\120\224\327\202\200\337\141\011\000\223\255
\015\024\346\316\301\362\067\224\170\260\137\234\263\242\163\270
\217\005\223\070\315\215\076\260\270\373\300\317\261\362\354\055
\055\033\314\354\252\232\263\252\140\202\033\055\073\303\204\075
\127\212\226\036\234\165\270\323\060\315\140\010\203\220\323\216
\124\361\115\146\300\135\164\003\100\243\356\205\176\302\037\167
\234\006\350\301\247\030\135\122\225\355\311\335\045\236\155\372
\251\355\243\072\064\320\131\173\332\355\120\363\065\277\355\353
\024\115\061\307\140\364\332\361\207\234\342\110\342\306\305\067
\373\006\020\372\165\131\146\061\107\051\332\166\232\034\351\202
\256\357\232\271\121\367\210\043\232\151\225\142\074\345\125\200
\066\327\124\002\377\361\271\135\316\324\043\157\330\105\204\112
\133\145\357\211\014\335\024\247\040\313\030\245\045\264\015\371
\001\360\242\322\364\000\310\164\216\241\052\110\216\145\333\023
\304\342\045\027\175\353\276\207\133\027\040\124\121\223\112\123
\003\013\354\135\312\063\355\142\375\105\307\057\133\334\130\240

\200\071\346\372\327\376\023\024\246\355\075\224\112\102\164\324
\303\167\131\163\315\217\106\276\125\070\357\372\350\221\062\352
\227\130\004\042\336\070\303\314\274\155\311\063\072\152\012\151
\077\240\310\352\162\217\214\143\206\043\275\155\074\226\236\225
\340\111\114\252\242\271\052\033\234\066\201\170\355\303\350\106
\342\046\131\104\165\036\331\165\211\121\315\020\204\235\141\140
\313\135\371\227\042\115\216\230\346\343\177\366\133\273\256\315
\312\112\201\153\136\013\363\121\341\164\053\351\176\047\247\331
\231\111\116\370\245\200\333\045\017\034\143\142\212\311\063\147
\153\074\020\203\306\255\336\250\315\026\216\215\360\007\067\161
\237\362\253\374\101\365\301\213\354\000\067\135\011\345\116\200
\357\372\261\134\070\006\245\033\112\341\334\070\055\074\334\253
\037\220\032\325\112\234\356\321\160\154\314\356\364\127\370\030
\272\204\156\207
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "IdenTrust Commercial Root CA 1"
Issuer: CN=IdenTrust Commercial Root CA 1,O=IdenTrust,C=US
Serial Number:0a:01:42:80:00:00:01:45:23:c8:44:b5:00:00:00:02
Subject: CN=IdenTrust Commercial Root CA 1,O=IdenTrust,C=US
Not Valid Before: Thu Jan 16 18:12:23 2014
Not Valid After : Mon Jan 16 18:12:23 2034
Fingerprint (SHA-256):
5D:56:49:9B:E4:D2:E0:8B:CF:CA:D0:8A:3E:38:72:3D:50:50:3B:DE:70:69:48:E4:2F:55:60:30:19:E5:28:AE
Fingerprint (SHA1): DF:71:7E:AA:4A:D9:4E:C9:55:84:99:60:2D:48:DE:5F:BC:F0:3A:25
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IdenTrust Commercial Root CA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\337\161\176\252\112\331\116\311\125\204\231\140\055\110\336\137
\274\360\072\045
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\263\076\167\163\165\356\240\323\343\176\111\143\111\131\273\307
END
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\047\060\045\006\003\125\004\003\023\036\111\144
\145\156\124\162\165\163\164\040\103\157\155\155\145\162\143\151
\141\154\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\020\012\001\102\200\000\000\001\105\043\310\104\265\000\000
\000\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "IdenTrust Public Sector Root CA 1"
#
Issuer: CN=IdenTrust Public Sector Root CA 1,O=IdenTrust,C=US
Serial Number:0a:01:42:80:00:00:01:45:23:cf:46:7c:00:00:00:02
Subject: CN=IdenTrust Public Sector Root CA 1,O=IdenTrust,C=US
Not Valid Before: Thu Jan 16 17:53:32 2014
Not Valid After : Mon Jan 16 17:53:32 2034
Fingerprint (SHA-256):
30:D0:89:5A:9A:44:8A:26:20:91:63:55:22:D1:F5:20:10:B5:86:7A:CA:E1:2C:78:EF:95:8F:D4:F4:38:9F:2F
Fingerprint (SHA1): BA:29:41:60:77:98:3F:F4:F3:EF:F2:31:05:3B:2E:EA:6D:4D:45:FD
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IdenTrust Public Sector Root CA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\052\060\050\006\003\125\004\003\023\041\111\144
\145\156\124\162\165\163\164\040\120\165\142\154\151\143\040\123
\145\143\164\157\162\040\122\157\157\164\040\103\101\040\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\052\060\050\006\003\125\004\003\023\041\111\144
\145\156\124\162\165\163\164\040\120\165\142\154\151\143\040\123
\145\143\164\157\162\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\012\001\102\200\000\000\001\105\043\317\106\174\000\000
\000\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\146\060\202\003\116\240\003\002\001\002\002\020\012
\001\102\200\000\000\001\105\043\317\106\174\000\000\000\002\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\115

\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022\060
\020\006\003\125\004\012\023\011\111\144\145\156\124\162\165\163
\164\061\052\060\050\006\003\125\004\003\023\041\111\144\145\156
\124\162\165\163\164\040\120\165\142\154\151\143\040\123\145\143
\164\157\162\040\122\157\157\164\040\103\101\040\061\060\036\027
\015\061\064\060\061\061\066\061\067\065\063\063\062\132\027\015
\063\064\060\061\061\066\061\067\065\063\063\062\132\060\115\061
\013\060\011\006\003\125\004\006\023\002\125\123\061\022\060\020
\006\003\125\004\012\023\011\111\144\145\156\124\162\165\163\164
\061\052\060\050\006\003\125\004\003\023\041\111\144\145\156\124
\162\165\163\164\040\120\165\142\154\151\143\040\123\145\143\164
\157\162\040\122\157\157\164\040\103\101\040\061\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\266\042\224
\374\244\110\257\350\107\153\012\373\047\166\344\362\077\212\073
\172\112\054\061\052\214\215\260\251\303\061\153\250\167\166\204
\046\266\254\201\102\015\010\353\125\130\273\172\370\274\145\175
\362\240\155\213\250\107\351\142\166\036\021\356\010\024\321\262
\104\026\364\352\320\372\036\057\136\333\313\163\101\256\274\000
\260\112\053\100\262\254\341\073\113\302\055\235\344\241\233\354
\032\072\036\360\010\263\320\344\044\065\007\237\234\264\311\122
\155\333\007\312\217\265\133\360\203\363\117\307\055\245\310\255
\313\225\040\244\061\050\127\130\132\344\215\033\232\253\236\015
\014\362\012\063\071\042\071\012\227\056\363\123\167\271\104\105
\375\204\313\066\040\201\131\055\232\157\155\110\110\141\312\114
\337\123\321\257\122\274\104\237\253\057\153\203\162\357\165\200
\332\006\063\033\135\310\332\143\306\115\315\254\146\061\315\321
\336\076\207\020\066\341\271\244\172\357\140\120\262\313\312\246
\126\340\067\257\253\064\023\071\045\350\071\146\344\230\172\252
\022\230\234\131\146\206\076\255\361\260\312\076\006\017\173\360
\021\113\067\240\104\155\173\313\250\214\161\364\325\265\221\066
\314\360\025\306\053\336\121\027\261\227\114\120\075\261\225\131
\174\005\175\055\041\325\000\277\001\147\242\136\173\246\134\362
\367\042\361\220\015\223\333\252\104\121\146\314\175\166\003\353
\152\250\052\070\031\227\166\015\153\212\141\371\274\366\356\166
\375\160\053\335\051\074\370\012\036\133\102\034\213\126\057\125
\033\034\241\056\265\307\026\346\370\252\074\222\216\151\266\001
\301\265\206\235\211\017\013\070\224\124\350\352\334\236\075\045
\274\123\046\355\325\253\071\252\305\100\114\124\253\262\264\331
\331\370\327\162\333\034\274\155\275\145\137\357\210\065\052\146
\057\356\366\263\145\360\063\215\174\230\101\151\106\017\103\034
\151\372\233\265\320\141\152\315\312\113\331\114\220\106\253\025
\131\241\107\124\051\056\203\050\137\034\302\242\253\162\027\000
\006\216\105\354\213\342\063\075\177\332\031\104\344\142\162\303
\337\042\306\362\126\324\335\137\225\162\355\155\137\367\110\003
\133\375\305\052\240\366\163\043\204\020\033\001\347\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377

\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\343\161\340\236\330\247\102\331\333\161\221\153\224\223
\353\303\243\321\024\243\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\002\001\000\107\372\335\012\260\021
\221\070\255\115\135\367\345\016\227\124\031\202\110\207\124\214
\252\144\231\330\132\376\210\001\305\130\245\231\261\043\124\043
\267\152\035\040\127\345\001\142\101\027\323\011\333\165\313\156
\124\220\165\376\032\237\201\012\302\335\327\367\011\320\133\162
\025\344\036\011\152\075\063\363\041\232\346\025\176\255\121\325
\015\020\355\175\102\300\217\356\300\232\010\325\101\326\134\016
\041\151\156\200\141\016\025\300\270\317\305\111\022\122\314\276
\072\314\324\056\070\005\336\065\375\037\157\270\200\150\230\075
\115\240\312\100\145\322\163\174\365\213\331\012\225\077\330\077
\043\155\032\321\052\044\031\331\205\263\027\357\170\156\251\130
\321\043\323\307\023\355\162\045\177\135\261\163\160\320\177\006
\227\011\204\051\200\141\035\372\136\377\163\254\240\343\211\270
\034\161\025\306\336\061\177\022\334\341\155\233\257\347\350\237
\165\170\114\253\106\073\232\316\277\005\030\135\115\025\074\026
\232\031\120\004\232\262\232\157\145\213\122\137\074\130\004\050
\045\300\146\141\061\176\271\340\165\271\032\250\201\326\162\027
\263\305\003\061\065\021\170\170\242\340\351\060\214\177\200\337
\130\337\074\272\047\226\342\200\064\155\343\230\323\144\047\254
\110\176\050\167\134\306\045\141\045\370\205\014\145\372\304\062
\057\245\230\005\344\370\013\147\026\026\306\202\270\062\031\371
\371\271\171\334\037\315\353\257\253\016\335\033\333\105\344\172
\347\002\342\225\135\374\151\360\123\151\141\225\165\171\013\136
\125\346\070\034\224\251\131\063\236\310\161\164\171\177\121\211
\266\310\152\270\060\310\152\070\303\156\236\341\067\026\352\005
\142\114\133\022\107\355\247\264\263\130\126\307\111\363\177\022
\150\011\061\161\360\155\370\116\107\373\326\205\356\305\130\100
\031\244\035\247\371\113\103\067\334\150\132\117\317\353\302\144
\164\336\264\025\331\364\124\124\032\057\034\327\227\161\124\220
\216\331\040\235\123\053\177\253\217\342\352\060\274\120\067\357
\361\107\265\175\174\054\004\354\150\235\264\111\104\020\364\162
\113\034\144\347\374\346\153\220\335\151\175\151\375\000\126\245
\267\254\266\255\267\312\076\001\357\234
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "IdenTrust Public Sector Root CA 1"
Issuer: CN=IdenTrust Public Sector Root CA 1,O=IdenTrust,C=US
Serial Number:0a:01:42:80:00:00:01:45:23:cf:46:7c:00:00:00:02
Subject: CN=IdenTrust Public Sector Root CA 1,O=IdenTrust,C=US
Not Valid Before: Thu Jan 16 17:53:32 2014
Not Valid After : Mon Jan 16 17:53:32 2034
Fingerprint (SHA-256):

30:D0:89:5A:9A:44:8A:26:20:91:63:55:22:D1:F5:20:10:B5:86:7A:CA:E1:2C:78:EF:95:8F:D4:F4:38:9F:2F
Fingerprint (SHA1): BA:29:41:60:77:98:3F:F4:F3:EF:F2:31:05:3B:2E:EA:6D:4D:45:FD
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IdenTrust Public Sector Root CA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\272\051\101\140\167\230\077\364\363\357\362\061\005\073\056\352
\155\115\105\375
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\067\006\245\260\374\211\235\272\364\153\214\032\144\315\325\272
END
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\052\060\050\006\003\125\004\003\023\041\111\144
\145\156\124\162\165\163\164\040\120\165\142\154\151\143\040\123
\145\143\164\157\162\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\012\001\102\200\000\000\001\105\043\317\106\174\000\000
\000\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust Root Certification Authority - G2"
#
Issuer: CN=Entrust Root Certification Authority - G2,OU="(c) 2009 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number: 1246989352 (0x4a538c28)
Subject: CN=Entrust Root Certification Authority - G2,OU="(c) 2009 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Tue Jul 07 17:25:54 2009
Not Valid After : Sat Dec 07 17:55:54 2030
Fingerprint (SHA-256):
43:DF:57:74:B0:3E:7F:EF:5F:E4:0D:93:1A:7B:ED:F1:BB:2E:6B:42:73:8C:4E:6D:38:41:10:3D:3A:A7:F3:39
Fingerprint (SHA1): 8C:F4:27:FD:79:0C:3A:D1:66:06:8D:E8:1E:57:EF:BB:93:22:72:D4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - G2"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\060\071\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\060\071\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\112\123\214\050
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\076\060\202\003\046\240\003\002\001\002\002\004\112
\123\214\050\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\201\276\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\026\060\024\006\003\125\004\012\023\015\105\156\164
\162\165\163\164\054\040\111\156\143\056\061\050\060\046\006\003
\125\004\013\023\037\123\145\145\040\167\167\167\056\145\156\164
\162\165\163\164\056\156\145\164\057\154\145\147\141\154\055\164
\145\162\155\163\061\071\060\067\006\003\125\004\013\023\060\050
\143\051\040\062\060\060\071\040\105\156\164\162\165\163\164\054
\040\111\156\143\056\040\055\040\146\157\162\040\141\165\164\150
\157\162\151\172\145\144\040\165\163\145\040\157\156\154\171\061
\062\060\060\006\003\125\004\003\023\051\105\156\164\162\165\163

\164\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\055
\040\107\062\060\036\027\015\060\071\060\067\060\067\061\067\062
\065\065\064\132\027\015\063\060\061\062\060\067\061\067\065\065
\065\064\132\060\201\276\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\026\060\024\006\003\125\004\012\023\015\105\156
\164\162\165\163\164\054\040\111\156\143\056\061\050\060\046\006
\003\125\004\013\023\037\123\145\145\040\167\167\167\056\145\156
\164\162\165\163\164\056\156\145\164\057\154\145\147\141\154\055
\164\145\162\155\163\061\071\060\067\006\003\125\004\013\023\060
\050\143\051\040\062\060\060\071\040\105\156\164\162\165\163\164
\054\040\111\156\143\056\040\055\040\146\157\162\040\141\165\164
\150\157\162\151\172\145\144\040\165\163\145\040\157\156\154\171
\061\062\060\060\006\003\125\004\003\023\051\105\156\164\162\165
\163\164\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040
\055\040\107\062\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\272\204\266\162\333\236\014\153\342\231\351
\060\001\247\166\352\062\270\225\101\032\311\332\141\116\130\162
\317\376\366\202\171\277\163\141\006\012\245\047\330\263\137\323
\105\116\034\162\326\116\062\362\162\212\017\367\203\031\320\152
\200\200\000\105\036\260\307\347\232\277\022\127\047\034\243\150
\057\012\207\275\152\153\016\136\145\363\034\167\325\324\205\215
\160\041\264\263\062\347\213\242\325\206\071\002\261\270\322\107
\316\344\311\111\304\073\247\336\373\124\175\127\276\360\350\156
\302\171\262\072\013\125\342\120\230\026\062\023\134\057\170\126
\301\302\224\263\362\132\344\047\232\237\044\327\306\354\320\233
\045\202\343\314\302\304\105\305\214\227\172\006\153\052\021\237
\251\012\156\110\073\157\333\324\021\031\102\367\217\007\277\365
\123\137\234\076\364\027\054\346\151\254\116\062\114\142\167\352
\267\350\345\273\064\274\031\213\256\234\121\347\267\176\265\123
\261\063\042\345\155\317\160\074\032\372\342\233\147\266\203\364
\215\245\257\142\114\115\340\130\254\144\064\022\003\370\266\215
\224\143\044\244\161\002\003\001\000\001\243\102\060\100\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\035\006\003\125\035\016\004\026\004\024\152\162\046\172\320\036
\357\175\347\073\151\121\324\154\215\237\220\022\146\253\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001
\001\000\171\237\035\226\306\266\171\077\042\215\207\323\207\003
\004\140\152\153\232\056\131\211\163\021\254\103\321\365\023\377
\215\071\053\300\362\275\117\160\214\251\057\352\027\304\013\124
\236\324\033\226\230\063\074\250\255\142\242\000\166\253\131\151
\156\006\035\176\304\271\104\215\230\257\022\324\141\333\012\031
\106\107\363\353\367\143\301\100\005\100\245\322\267\364\265\232
\066\277\251\210\166\210\004\125\004\053\234\207\177\032\067\074
\176\055\245\032\330\324\211\136\312\275\254\075\154\330\155\257

\325\363\166\017\315\073\210\070\042\235\154\223\232\304\075\277
\202\033\145\077\246\017\135\252\374\345\262\025\312\265\255\306
\274\075\320\204\350\352\006\162\260\115\071\062\170\277\076\021
\234\013\244\235\232\041\363\360\233\013\060\170\333\301\334\207
\103\376\274\143\232\312\305\302\034\311\307\215\377\073\022\130
\010\346\266\075\354\172\054\116\373\203\226\316\014\074\151\207
\124\163\244\163\302\223\377\121\020\254\025\124\001\330\374\005
\261\211\241\177\164\203\232\111\327\334\116\173\212\110\157\213
\105\366
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Entrust Root Certification Authority - G2"
Issuer: CN=Entrust Root Certification Authority - G2,OU="(c) 2009 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number: 1246989352 (0x4a538c28)
Subject: CN=Entrust Root Certification Authority - G2,OU="(c) 2009 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Tue Jul 07 17:25:54 2009
Not Valid After : Sat Dec 07 17:55:54 2030
Fingerprint (SHA-256):
43:DF:57:74:B0:3E:7F:EF:5F:E4:0D:93:1A:7B:ED:F1:BB:2E:6B:42:73:8C:4E:6D:38:41:10:3D:3A:A7:F3:39
Fingerprint (SHA1): 8C:F4:27:FD:79:0C:3A:D1:66:06:8D:E8:1E:57:EF:BB:93:22:72:D4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\214\364\047\375\171\014\072\321\146\006\215\350\036\127\357\273
\223\042\162\324
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\113\342\311\221\226\145\014\364\016\132\223\222\240\012\376\262
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\060\071\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040

\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\112\123\214\050
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust Root Certification Authority - EC1"
#
Issuer: CN=Entrust Root Certification Authority - EC1,OU="(c) 2012 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number:00:a6:8b:79:29:00:00:00:00:50:d0:91:f9
Subject: CN=Entrust Root Certification Authority - EC1,OU="(c) 2012 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Tue Dec 18 15:25:36 2012
Not Valid After : Fri Dec 18 15:55:36 2037
Fingerprint (SHA-256):
02:ED:0E:B2:8C:14:DA:45:16:5C:56:67:91:70:0D:64:51:D7:FB:56:F0:B2:AB:1D:3B:8E:B0:70:E5:6E:DF:F5
Fingerprint (SHA1): 20:D8:06:40:DF:9B:25:F5:12:25:3A:11:EA:F7:59:8A:EB:14:B5:47
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - EC1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\277\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\062\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\063\060
\061\006\003\125\004\003\023\052\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\105
\103\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\201\277\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\062\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\063\060
\061\006\003\125\004\003\023\052\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\105
\103\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\000\246\213\171\051\000\000\000\000\120\320\221\371
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\371\060\202\002\200\240\003\002\001\002\002\015\000
\246\213\171\051\000\000\000\000\120\320\221\371\060\012\006\010
\052\206\110\316\075\004\003\003\060\201\277\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\026\060\024\006\003\125\004
\012\023\015\105\156\164\162\165\163\164\054\040\111\156\143\056
\061\050\060\046\006\003\125\004\013\023\037\123\145\145\040\167
\167\167\056\145\156\164\162\165\163\164\056\156\145\164\057\154
\145\147\141\154\055\164\145\162\155\163\061\071\060\067\006\003
\125\004\013\023\060\050\143\051\040\062\060\061\062\040\105\156
\164\162\165\163\164\054\040\111\156\143\056\040\055\040\146\157
\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163\145
\040\157\156\154\171\061\063\060\061\006\003\125\004\003\023\052
\105\156\164\162\165\163\164\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\040\055\040\105\103\061\060\036\027\015\061\062
\061\062\061\070\061\065\062\065\063\066\132\027\015\063\067\061
\062\061\070\061\065\065\065\063\066\132\060\201\277\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\026\060\024\006\003
\125\004\012\023\015\105\156\164\162\165\163\164\054\040\111\156
\143\056\061\050\060\046\006\003\125\004\013\023\037\123\145\145
\040\167\167\167\056\145\156\164\162\165\163\164\056\156\145\164
\057\154\145\147\141\154\055\164\145\162\155\163\061\071\060\067
\006\003\125\004\013\023\060\050\143\051\040\062\060\061\062\040
\105\156\164\162\165\163\164\054\040\111\156\143\056\040\055\040
\146\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165
\163\145\040\157\156\154\171\061\063\060\061\006\003\125\004\003
\023\052\105\156\164\162\165\163\164\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\055\040\105\103\061\060\166\060\020
\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042

\003\142\000\004\204\023\311\320\272\155\101\173\342\154\320\353
\125\137\146\002\032\044\364\133\211\151\107\343\270\302\175\361
\362\002\305\237\240\366\133\325\213\006\031\206\117\123\020\155
\007\044\047\241\240\370\325\107\031\141\114\175\312\223\047\352
\164\014\357\157\226\011\376\143\354\160\135\066\255\147\167\256
\311\235\174\125\104\072\242\143\121\037\365\343\142\324\251\107
\007\076\314\040\243\102\060\100\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\267\143\347\032\335\215\351\010\246\125\203\244
\340\152\120\101\145\021\102\111\060\012\006\010\052\206\110\316
\075\004\003\003\003\147\000\060\144\002\060\141\171\330\345\102
\107\337\034\256\123\231\027\266\157\034\175\341\277\021\224\321
\003\210\165\344\215\211\244\212\167\106\336\155\141\357\002\365
\373\265\337\314\376\116\377\376\251\346\247\002\060\133\231\327
\205\067\006\265\173\010\375\353\047\213\112\224\371\341\372\247
\216\046\010\350\174\222\150\155\163\330\157\046\254\041\002\270
\231\267\046\101\133\045\140\256\320\110\032\356\006
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Entrust Root Certification Authority - EC1"
Issuer: CN=Entrust Root Certification Authority - EC1,OU="(c) 2012 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number:00:a6:8b:79:29:00:00:00:00:50:d0:91:f9
Subject: CN=Entrust Root Certification Authority - EC1,OU="(c) 2012 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Tue Dec 18 15:25:36 2012
Not Valid After : Fri Dec 18 15:55:36 2037
Fingerprint (SHA-256):
02:ED:0E:B2:8C:14:DA:45:16:5C:56:67:91:70:0D:64:51:D7:FB:56:F0:B2:AB:1D:3B:8E:B0:70:E5:6E:DF:F5
Fingerprint (SHA1): 20:D8:06:40:DF:9B:25:F5:12:25:3A:11:EA:F7:59:8A:EB:14:B5:47
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - EC1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\040\330\006\100\337\233\045\365\022\045\072\021\352\367\131\212
\353\024\265\107
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\266\176\035\360\130\305\111\154\044\073\075\355\230\030\355\274
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\277\061\013\060\011\006\003\125\004\006\023\002\125\123

\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\062\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\063\060
\061\006\003\125\004\003\023\052\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\105
\103\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\000\246\213\171\051\000\000\000\000\120\320\221\371
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "CFCA EV ROOT"
#
Issuer: CN=CFCA EV ROOT,O=China Financial Certification Authority,C=CN
Serial Number: 407555286 (0x184accd6)
Subject: CN=CFCA EV ROOT,O=China Financial Certification Authority,C=CN
Not Valid Before: Wed Aug 08 03:07:01 2012
Not Valid After : Mon Dec 31 03:07:01 2029
Fingerprint (SHA-256):
5C:C3:D7:8E:4E:1D:5E:45:54:7A:04:E6:87:3E:64:F9:0C:F9:53:6D:1C:CC:2E:F8:00:F3:55:C4:C5:FD:70:FD
Fingerprint (SHA1): E2:B8:29:4B:55:84:AB:6B:58:C2:90:46:6C:AC:3F:B8:39:8F:84:83
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CFCA EV ROOT"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\060\060\056\006\003\125\004\012\014\047\103\150\151\156\141\040
\106\151\156\141\156\143\151\141\154\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\061\025\060\023\006\003\125\004\003\014\014\103\106\103\101
\040\105\126\040\122\117\117\124
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\126\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\060\060\056\006\003\125\004\012\014\047\103\150\151\156\141\040
\106\151\156\141\156\143\151\141\154\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\061\025\060\023\006\003\125\004\003\014\014\103\106\103\101
\040\105\126\040\122\117\117\124
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\030\112\314\326
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\215\060\202\003\165\240\003\002\001\002\002\004\030
\112\314\326\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\126\061\013\060\011\006\003\125\004\006\023\002\103
\116\061\060\060\056\006\003\125\004\012\014\047\103\150\151\156
\141\040\106\151\156\141\156\143\151\141\154\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\061\025\060\023\006\003\125\004\003\014\014\103\106
\103\101\040\105\126\040\122\117\117\124\060\036\027\015\061\062
\060\070\060\070\060\063\060\067\060\061\132\027\015\062\071\061
\062\063\061\060\063\060\067\060\061\132\060\126\061\013\060\011
\006\003\125\004\006\023\002\103\116\061\060\060\056\006\003\125
\004\012\014\047\103\150\151\156\141\040\106\151\156\141\156\143
\151\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\025\060\023\006
\003\125\004\003\014\014\103\106\103\101\040\105\126\040\122\117
\117\124\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\327\135\153\315\020\077\037\005\131\325\005\115\067
\261\016\354\230\053\216\025\035\372\223\113\027\202\041\161\020
\122\327\121\144\160\026\302\125\151\115\216\025\155\237\277\014
\033\302\340\243\147\326\014\254\317\042\256\257\167\124\052\113
\114\212\123\122\172\303\356\056\336\263\161\045\301\351\135\075
\356\241\057\243\367\052\074\311\043\035\152\253\035\241\247\361
\363\354\240\325\104\317\025\317\162\057\035\143\227\350\231\371
\375\223\244\124\200\114\122\324\122\253\056\111\337\220\315\270
\137\276\077\336\241\312\115\040\324\045\350\204\051\123\267\261
\210\037\377\372\332\220\237\012\251\055\101\077\261\361\030\051
\356\026\131\054\064\111\032\250\006\327\250\210\322\003\162\172
\062\342\352\150\115\156\054\226\145\173\312\131\372\362\342\335
\356\060\054\373\314\106\254\304\143\353\157\177\066\053\064\163
\022\224\177\337\314\046\236\361\162\135\120\145\131\217\151\263
\207\136\062\157\303\030\212\265\225\217\260\172\067\336\132\105
\073\307\066\341\357\147\321\071\323\227\133\163\142\031\110\055
\207\034\006\373\164\230\040\111\163\360\005\322\033\261\240\243
\267\033\160\323\210\151\271\132\326\070\364\142\334\045\213\170
\277\370\350\176\270\134\311\225\117\137\247\055\271\040\153\317
\153\335\365\015\364\202\267\364\262\146\056\020\050\366\227\132

\173\226\026\217\001\031\055\154\156\177\071\130\006\144\203\001
\203\203\303\115\222\335\062\306\207\244\067\351\026\316\252\055
\150\257\012\201\145\072\160\301\233\255\115\155\124\312\052\055
\113\205\033\263\200\346\160\105\015\153\136\065\360\177\073\270
\234\344\004\160\211\022\045\223\332\012\231\042\140\152\143\140
\116\166\006\230\116\275\203\255\035\130\212\045\205\322\307\145
\036\055\216\306\337\266\306\341\177\212\004\041\025\051\164\360
\076\234\220\235\014\056\361\212\076\132\252\014\011\036\307\325
\074\243\355\227\303\036\064\372\070\371\010\016\343\300\135\053
\203\321\126\152\311\266\250\124\123\056\170\062\147\075\202\177
\164\320\373\341\266\005\140\271\160\333\216\013\371\023\130\157
\161\140\020\122\020\271\301\101\011\357\162\037\147\061\170\377
\226\005\215\002\003\001\000\001\243\143\060\141\060\037\006\003
\125\035\043\004\030\060\026\200\024\343\376\055\375\050\320\013
\265\272\266\242\304\277\006\252\005\214\223\373\057\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035
\006\003\125\035\016\004\026\004\024\343\376\055\375\050\320\013
\265\272\266\242\304\277\006\252\005\214\223\373\057\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001
\000\045\306\272\153\353\207\313\336\202\071\226\075\360\104\247
\153\204\163\003\336\235\053\117\272\040\177\274\170\262\317\227
\260\033\234\363\327\171\056\365\110\266\322\373\027\210\346\323
\172\077\355\123\023\320\342\057\152\171\313\000\043\050\346\036
\067\127\065\211\204\302\166\117\064\066\255\147\303\316\101\006
\210\305\367\356\330\032\270\326\013\177\120\377\223\252\027\113
\214\354\355\122\140\262\244\006\352\116\353\364\153\031\375\353
\365\032\340\045\052\232\334\307\101\066\367\310\164\005\204\071
\225\071\326\013\073\244\047\372\010\330\134\036\370\004\140\122
\021\050\050\003\377\357\123\146\000\245\112\064\026\146\174\375
\011\244\256\236\147\032\157\101\013\153\006\023\233\217\206\161
\005\264\057\215\211\146\063\051\166\124\232\021\370\047\372\262
\077\221\340\316\015\033\363\060\032\255\277\042\135\033\323\277
\045\005\115\341\222\032\177\231\237\074\104\223\312\324\100\111
\154\200\207\327\004\072\303\062\122\065\016\126\370\245\335\175
\304\213\015\021\037\123\313\036\262\027\266\150\167\132\340\324
\313\310\007\256\365\072\056\216\067\267\320\001\113\103\051\167
\214\071\227\217\202\132\370\121\345\211\240\030\347\150\177\135
\012\056\373\243\107\016\075\246\043\172\306\001\307\217\310\136
\277\155\200\126\276\212\044\272\063\352\237\341\062\021\236\361
\322\117\200\366\033\100\257\070\236\021\120\171\163\022\022\315
\346\154\235\054\210\162\074\060\201\006\221\042\352\131\255\332
\031\056\042\302\215\271\214\207\340\146\274\163\043\137\041\144
\143\200\110\365\240\074\030\075\224\310\110\101\035\100\272\136
\376\376\126\071\241\310\317\136\236\031\144\106\020\332\027\221
\267\005\200\254\213\231\222\175\347\242\330\007\013\066\047\347
\110\171\140\212\303\327\023\134\370\162\100\337\112\313\317\231
\000\012\000\013\021\225\332\126\105\003\210\012\237\147\320\325

\171\261\250\215\100\155\015\302\172\100\372\363\137\144\107\222
\313\123\271\273\131\316\117\375\320\025\123\001\330\337\353\331
\346\166\357\320\043\273\073\251\171\263\325\002\051\315\211\243
\226\017\112\065\347\116\102\300\165\315\007\317\346\054\353\173
\056
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "CFCA EV ROOT"
Issuer: CN=CFCA EV ROOT,O=China Financial Certification Authority,C=CN
Serial Number: 407555286 (0x184accd6)
Subject: CN=CFCA EV ROOT,O=China Financial Certification Authority,C=CN
Not Valid Before: Wed Aug 08 03:07:01 2012
Not Valid After : Mon Dec 31 03:07:01 2029
Fingerprint (SHA-256):
5C:C3:D7:8E:4E:1D:5E:45:54:7A:04:E6:87:3E:64:F9:0C:F9:53:6D:1C:CC:2E:F8:00:F3:55:C4:C5:FD:70:FD
Fingerprint (SHA1): E2:B8:29:4B:55:84:AB:6B:58:C2:90:46:6C:AC:3F:B8:39:8F:84:83
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CFCA EV ROOT"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\342\270\051\113\125\204\253\153\130\302\220\106\154\254\077\270
\071\217\204\203
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\164\341\266\355\046\172\172\104\060\063\224\253\173\047\201\060
END
CKA_ISSUER MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\060\060\056\006\003\125\004\012\014\047\103\150\151\156\141\040
\106\151\156\141\156\143\151\141\154\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\061\025\060\023\006\003\125\004\003\014\014\103\106\103\101
\040\105\126\040\122\117\117\124
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\030\112\314\326
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#

Certificate "OISTE WISeKey Global Root GB CA"
#
Issuer: CN=OISTE WISeKey Global Root GB CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Serial Number:76:b1:20:52:74:f0:85:87:46:b3:f8:23:1a:f6:c2:c0
Subject: CN=OISTE WISeKey Global Root GB CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Not Valid Before: Mon Dec 01 15:00:32 2014
Not Valid After : Thu Dec 01 15:10:31 2039
Fingerprint (SHA-256):
6B:9C:08:E8:6E:B0:F7:67:CF:AD:65:CD:98:B6:21:49:E5:49:4A:67:F5:84:5E:7B:D1:ED:01:9F:27:B8:6B:D6
Fingerprint (SHA1): 0F:F9:40:76:18:D3:D7:6A:4B:98:F0:A8:35:9E:0C:FD:27:AC:CC:ED
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GB CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\102\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\102\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\261\040\122\164\360\205\207\106\263\370\043\032\366
\302\300
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\265\060\202\002\235\240\003\002\001\002\002\020\166
\261\040\122\164\360\205\207\106\263\370\043\032\366\302\300\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\155
\061\013\060\011\006\003\125\004\006\023\002\103\110\061\020\060
\016\006\003\125\004\012\023\007\127\111\123\145\113\145\171\061
\042\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040
\106\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162
\163\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111

\123\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142
\141\154\040\122\157\157\164\040\107\102\040\103\101\060\036\027
\015\061\064\061\062\060\061\061\065\060\060\063\062\132\027\015
\063\071\061\062\060\061\061\065\061\060\063\061\132\060\155\061
\013\060\011\006\003\125\004\006\023\002\103\110\061\020\060\016
\006\003\125\004\012\023\007\127\111\123\145\113\145\171\061\042
\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040\106
\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162\163
\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111\123
\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142\141
\154\040\122\157\157\164\040\107\102\040\103\101\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\330\027\267
\034\112\044\052\326\227\261\312\342\036\373\175\070\357\230\365
\262\071\230\116\047\270\021\135\173\322\045\224\210\202\025\046
\152\033\061\273\250\133\041\041\053\330\017\116\237\132\361\261
\132\344\171\326\062\043\053\341\123\314\231\105\134\173\117\255
\274\277\207\112\013\113\227\132\250\366\110\354\175\173\015\315
\041\006\337\236\025\375\101\212\110\267\040\364\241\172\033\127
\324\135\120\377\272\147\330\043\231\037\310\077\343\336\377\157
\133\167\261\153\156\270\311\144\367\341\312\101\106\016\051\161
\320\271\043\374\311\201\137\116\367\157\337\277\204\255\163\144
\273\267\102\216\151\366\324\166\035\176\235\247\270\127\212\121
\147\162\327\324\250\270\225\124\100\163\003\366\352\364\353\376
\050\102\167\077\235\043\033\262\266\075\200\024\007\114\056\117
\367\325\012\026\015\275\146\103\067\176\043\103\171\303\100\206
\365\114\051\332\216\232\255\015\245\004\207\210\036\205\343\351
\123\325\233\310\213\003\143\170\353\340\031\112\156\273\057\153
\063\144\130\223\255\151\277\217\033\357\202\110\307\002\003\001
\000\001\243\121\060\117\060\013\006\003\125\035\017\004\004\003
\002\001\206\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\065
\017\310\066\143\136\342\243\354\371\073\146\025\316\121\122\343
\221\232\075\060\020\006\011\053\006\001\004\001\202\067\025\001
\004\003\002\001\000\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\003\202\001\001\000\100\114\373\207\262\231\201
\220\176\235\305\260\260\046\315\210\173\053\062\215\156\270\041
\161\130\227\175\256\067\024\257\076\347\367\232\342\175\366\161
\230\231\004\252\103\164\170\243\343\111\141\076\163\214\115\224
\340\371\161\304\266\026\016\123\170\037\326\242\207\057\002\071
\201\051\074\257\025\230\041\060\376\050\220\000\214\321\341\313
\372\136\310\375\370\020\106\073\242\170\102\221\027\164\125\012
\336\120\147\115\146\321\247\377\375\331\300\265\250\243\212\316
\146\365\017\103\315\247\053\127\173\143\106\152\252\056\122\330
\364\355\341\155\255\051\220\170\110\272\341\043\252\243\211\354
\265\253\226\300\264\113\242\035\227\236\172\362\156\100\161\337
\150\361\145\115\316\174\005\337\123\145\251\245\360\261\227\004
\160\025\106\003\230\324\322\277\124\264\240\130\175\122\157\332

\126\046\142\324\330\333\211\061\157\034\360\042\302\323\142\034
\065\315\114\151\025\124\032\220\230\336\353\036\137\312\167\307
\313\216\075\103\151\234\232\130\320\044\073\337\033\100\226\176
\065\255\201\307\116\161\272\210\023
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "OISTE WISeKey Global Root GB CA"
Issuer: CN=OISTE WISeKey Global Root GB CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Serial Number:76:b1:20:52:74:f0:85:87:46:b3:f8:23:1a:f6:c2:c0
Subject: CN=OISTE WISeKey Global Root GB CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Not Valid Before: Mon Dec 01 15:00:32 2014
Not Valid After : Thu Dec 01 15:10:31 2039
Fingerprint (SHA-256):
6B:9C:08:E8:6E:B0:F7:67:CF:AD:65:CD:98:B6:21:49:E5:49:4A:67:F5:84:5E:7B:D1:ED:01:9F:27:B8:6B:D6
Fingerprint (SHA1): 0F:F9:40:76:18:D3:D7:6A:4B:98:F0:A8:35:9E:0C:FD:27:AC:CC:ED
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GB CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\017\371\100\166\030\323\327\152\113\230\360\250\065\236\014\375
\047\254\314\355
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\244\353\271\141\050\056\267\057\230\260\065\046\220\231\121\035
END
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\102\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\261\040\122\164\360\205\207\106\263\370\043\032\366
\302\300
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SZAFIR ROOT CA2"
#
Issuer: CN=SZAFIR ROOT CA2,O=Krajowa Izba Rozliczeniowa S.A.,C=PL
Serial Number:3e:8a:5d:07:ec:55:d2:32:d5:b7:e3:b6:5f:01:eb:2d:dc:e4:d6:e4
Subject: CN=SZAFIR ROOT CA2,O=Krajowa Izba Rozliczeniowa S.A.,C=PL
Not Valid Before: Mon Oct 19 07:43:30 2015
Not Valid After : Fri Oct 19 07:43:30 2035
Fingerprint (SHA-256):
A1:33:9D:33:28:1A:0B:56:E5:57:D3:D3:2B:1C:E7:F9:36:7E:B0:94:BD:5F:A7:2A:7E:50:04:C8:DE:D7:CA:FE
Fingerprint (SHA1): E2:52:FA:95:3F:ED:DB:24:60:BD:6E:28:F3:9C:CC:CF:5E:B3:3F:DE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SZAFIR ROOT CA2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\050\060\046\006\003\125\004\012\014\037\113\162\141\152\157\167
\141\040\111\172\142\141\040\122\157\172\154\151\143\172\145\156
\151\157\167\141\040\123\056\101\056\061\030\060\026\006\003\125
\004\003\014\017\123\132\101\106\111\122\040\122\117\117\124\040
\103\101\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\050\060\046\006\003\125\004\012\014\037\113\162\141\152\157\167
\141\040\111\172\142\141\040\122\157\172\154\151\143\172\145\156
\151\157\167\141\040\123\056\101\056\061\030\060\026\006\003\125
\004\003\014\017\123\132\101\106\111\122\040\122\117\117\124\040
\103\101\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\076\212\135\007\354\125\322\062\325\267\343\266\137\001
\353\055\334\344\326\344
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\162\060\202\002\132\240\003\002\001\002\002\024\076
\212\135\007\354\125\322\062\325\267\343\266\137\001\353\055\334
\344\326\344\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\121\061\013\060\011\006\003\125\004\006\023\002\120
\114\061\050\060\046\006\003\125\004\012\014\037\113\162\141\152
\157\167\141\040\111\172\142\141\040\122\157\172\154\151\143\172
\145\156\151\157\167\141\040\123\056\101\056\061\030\060\026\006
\003\125\004\003\014\017\123\132\101\106\111\122\040\122\117\117
\124\040\103\101\062\060\036\027\015\061\065\061\060\061\071\060

\067\064\063\063\060\132\027\015\063\065\061\060\061\071\060\067
\064\063\063\060\132\060\121\061\013\060\011\006\003\125\004\006
\023\002\120\114\061\050\060\046\006\003\125\004\012\014\037\113
\162\141\152\157\167\141\040\111\172\142\141\040\122\157\172\154
\151\143\172\145\156\151\157\167\141\040\123\056\101\056\061\030
\060\026\006\003\125\004\003\014\017\123\132\101\106\111\122\040
\122\117\117\124\040\103\101\062\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\267\274\076\120\250\113\315
\100\265\316\141\347\226\312\264\241\332\014\042\260\372\265\173
\166\000\167\214\013\317\175\250\206\314\046\121\344\040\075\205
\014\326\130\343\347\364\052\030\235\332\321\256\046\356\353\123
\334\364\220\326\023\112\014\220\074\303\364\332\322\216\015\222
\072\334\261\261\377\070\336\303\272\055\137\200\271\002\275\112
\235\033\017\264\303\302\301\147\003\335\334\033\234\075\263\260
\336\000\036\250\064\107\273\232\353\376\013\024\275\066\204\332
\015\040\277\372\133\313\251\026\040\255\071\140\356\057\165\266
\347\227\234\371\076\375\176\115\157\115\057\357\210\015\152\372
\335\361\075\156\040\245\240\022\264\115\160\271\316\327\162\073
\211\223\247\200\204\034\047\111\162\111\265\377\073\225\236\301
\314\310\001\354\350\016\212\012\226\347\263\246\207\345\326\371
\005\053\015\227\100\160\074\272\254\165\132\234\325\115\235\002
\012\322\113\233\146\113\106\007\027\145\255\237\154\210\000\334
\042\211\340\341\144\324\147\274\061\171\141\074\273\312\101\315
\134\152\000\310\074\070\216\130\257\002\003\001\000\001\243\102
\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\035\006\003\125\035\016\004\026\004\024\056\026
\251\112\030\265\313\314\365\157\120\363\043\137\370\135\347\254
\360\310\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\003\202\001\001\000\265\163\370\003\334\131\133\035\166\351
\243\052\173\220\050\262\115\300\063\117\252\232\261\324\270\344
\047\377\251\226\231\316\106\340\155\174\114\242\070\244\006\160
\360\364\101\021\354\077\107\215\077\162\207\371\073\375\244\157
\053\123\000\340\377\071\271\152\007\016\353\035\034\366\242\162
\220\313\202\075\021\202\213\322\273\237\052\257\041\346\143\206
\235\171\031\357\367\273\014\065\220\303\212\355\117\017\365\314
\022\331\244\076\273\240\374\040\225\137\117\046\057\021\043\203
\116\165\007\017\277\233\321\264\035\351\020\004\376\312\140\217
\242\114\270\255\317\341\220\017\315\256\012\307\135\173\267\120
\322\324\141\372\325\025\333\327\237\207\121\124\353\245\343\353
\311\205\240\045\040\067\373\216\316\014\064\204\341\074\201\262
\167\116\103\245\210\137\206\147\241\075\346\264\134\141\266\076
\333\376\267\050\305\242\007\256\265\312\312\215\052\022\357\227
\355\302\060\244\311\052\172\373\363\115\043\033\231\063\064\240
\056\365\251\013\077\324\135\341\317\204\237\342\031\302\137\212
\326\040\036\343\163\267
END

CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SZAFIR ROOT CA2"
Issuer: CN=SZAFIR ROOT CA2,O=Krajowa Izba Rozliczeniowa S.A.,C=PL
Serial Number:3e:8a:5d:07:ec:55:d2:32:d5:b7:e3:b6:5f:01:eb:2d:dc:e4:d6:e4
Subject: CN=SZAFIR ROOT CA2,O=Krajowa Izba Rozliczeniowa S.A.,C=PL
Not Valid Before: Mon Oct 19 07:43:30 2015
Not Valid After : Fri Oct 19 07:43:30 2035
Fingerprint (SHA-256):
A1:33:9D:33:28:1A:0B:56:E5:57:D3:D3:2B:1C:E7:F9:36:7E:B0:94:BD:5F:A7:2A:7E:50:04:C8:DE:D7:CA:FE
Fingerprint (SHA1): E2:52:FA:95:3F:ED:DB:24:60:BD:6E:28:F3:9C:CC:CF:5E:B3:3F:DE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SZAFIR ROOT CA2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\342\122\372\225\077\355\333\044\140\275\156\050\363\234\314\317
\136\263\077\336
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\021\144\301\211\260\044\261\214\261\007\176\211\236\121\236\231
END
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\050\060\046\006\003\125\004\012\014\037\113\162\141\152\157\167
\141\040\111\172\142\141\040\122\157\172\154\151\143\172\145\156
\151\157\167\141\040\123\056\101\056\061\030\060\026\006\003\125
\004\003\014\017\123\132\101\106\111\122\040\122\117\117\124\040
\103\101\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\076\212\135\007\354\125\322\062\325\267\343\266\137\001
\353\055\334\344\326\344
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum Trusted Network CA 2"
#
Issuer: CN=Certum Trusted Network CA 2,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Serial Number:21:d6:d0:4a:4f:25:0f:c9:32:37:fc:aa:5e:12:8d:e9

Subject: CN=Certum Trusted Network CA 2,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Not Valid Before: Thu Oct 06 08:39:56 2011
Not Valid After : Sat Oct 06 08:39:56 2046
Fingerprint (SHA-256):
B6:76:F2:ED:DA:E8:77:5C:D3:6C:B0:F6:3C:D1:D4:60:39:61:F4:9E:62:65:BA:01:3A:2F:03:07:B6:D0:B8:04
Fingerprint (SHA1): D3:DD:48:3E:2B:BF:4C:05:E8:AF:10:F5:FA:76:26:CF:D3:DC:30:92
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Network CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\044\060
\042\006\003\125\004\003\023\033\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\044\060
\042\006\003\125\004\003\023\033\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\041\326\320\112\117\045\017\311\062\067\374\252\136\022
\215\351
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\322\060\202\003\272\240\003\002\001\002\002\020\041
\326\320\112\117\045\017\311\062\067\374\252\136\022\215\351\060
\015\006\011\052\206\110\206\367\015\001\001\015\005\000\060\201
\200\061\013\060\011\006\003\125\004\006\023\002\120\114\061\042
\060\040\006\003\125\004\012\023\031\125\156\151\172\145\164\157
\040\124\145\143\150\156\157\154\157\147\151\145\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162

\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\044\060\042\006
\003\125\004\003\023\033\103\145\162\164\165\155\040\124\162\165
\163\164\145\144\040\116\145\164\167\157\162\153\040\103\101\040
\062\060\042\030\017\062\060\061\061\061\060\060\066\060\070\063
\071\065\066\132\030\017\062\060\064\066\061\060\060\066\060\070
\063\071\065\066\132\060\201\200\061\013\060\011\006\003\125\004
\006\023\002\120\114\061\042\060\040\006\003\125\004\012\023\031
\125\156\151\172\145\164\157\040\124\145\143\150\156\157\154\157
\147\151\145\163\040\123\056\101\056\061\047\060\045\006\003\125
\004\013\023\036\103\145\162\164\165\155\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\061\044\060\042\006\003\125\004\003\023\033\103\145\162
\164\165\155\040\124\162\165\163\164\145\144\040\116\145\164\167
\157\162\153\040\103\101\040\062\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\275\371\170\370\346\325\200
\014\144\235\206\033\226\144\147\077\042\072\036\165\001\175\357
\373\134\147\214\311\314\134\153\251\221\346\271\102\345\040\113
\233\332\233\173\271\231\135\331\233\200\113\327\204\100\053\047
\323\350\272\060\273\076\011\032\247\111\225\357\053\100\044\302
\227\307\247\356\233\045\357\250\012\000\227\205\132\252\235\334
\051\311\342\065\007\353\160\115\112\326\301\263\126\270\241\101
\070\233\321\373\061\177\217\340\137\341\261\077\017\216\026\111
\140\327\006\215\030\371\252\046\020\253\052\323\320\321\147\215
\033\106\276\107\060\325\056\162\321\305\143\332\347\143\171\104
\176\113\143\044\211\206\056\064\077\051\114\122\213\052\247\300
\342\221\050\211\271\300\133\371\035\331\347\047\255\377\232\002
\227\301\306\120\222\233\002\054\275\251\271\064\131\012\277\204
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\105\127\344\220\202\102\273\102\326\360\141\340\301\243\075\146
\243\135\364\030\356\210\311\215\027\105\051\231\062\165\002\061
\356\051\046\310\153\002\346\265\142\105\177\067\025\132\043\150
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\263\036\320\006\132\335\366\223\317\127\165\231\365\372\206\032
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\173\327\101\221\005\334\135\151\343\225\015\103\271\374\203\226
\071\225\173\154\200\132\117\023\162\306\327\175\051\172\104\272
\122\244\052\325\101\106\011\040\376\042\240\266\133\060\215\274
\211\014\325\327\160\370\207\122\375\332\357\254\121\056\007\263
\116\376\320\011\332\160\357\230\372\126\346\155\333\265\127\113
\334\345\054\045\025\310\236\056\170\116\370\332\234\236\206\054
\312\127\363\032\345\310\222\213\032\202\226\172\303\274\120\022
\151\330\016\132\106\213\072\353\046\372\043\311\266\260\201\276
\102\000\244\370\326\376\060\056\307\322\106\366\345\216\165\375
\362\314\271\320\207\133\314\006\020\140\273\203\065\267\136\147
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\117\071\026\271\261\143\235\377\267\002\003\001\000\001\243\102
\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003
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\124\071\002\303\240\077\216\212\274\372\324\370\034\246\321\072
\016\375\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\015\006\011\052\206\110\206\367\015\001\001\015\005
\000\003\202\002\001\000\161\245\016\316\344\351\277\077\070\325
\211\132\304\002\141\373\114\305\024\027\055\213\117\123\153\020
\027\374\145\204\307\020\111\220\336\333\307\046\223\210\046\157
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\011\131\364\133\167\013\067\351\213\040\306\370\012\116\056\130
\034\353\063\320\317\206\140\311\332\373\200\057\236\114\140\204
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\051\361\043\050\162\131\266\253\302\214\146\046\034\167\054\046
\166\065\213\050\247\151\240\371\073\365\043\335\205\020\164\311
\220\003\126\221\347\257\272\107\324\022\227\021\042\343\242\111
\224\154\347\267\224\113\272\055\244\332\063\213\114\246\104\377
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\355\141\032\313\361\316\163\167\143\244\207\157\114\121\070\326
\344\137\307\237\266\201\052\344\205\110\171\130\136\073\370\333
\002\202\147\301\071\333\303\164\113\075\066\036\371\051\223\210
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\157\266\272\154\203\103\167\315\212\222\027\241\236\133\170\026
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\150\004\106\256\266\331\233\214\276\031\276\261\306\362\031\343
\134\002\312\054\330\157\112\007\331\311\065\332\100\165\362\304
\247\031\157\236\102\020\230\165\346\225\213\140\274\355\305\022
\327\212\316\325\230\134\126\226\003\305\356\167\006\065\377\317
\344\356\077\023\141\356\333\332\055\205\360\315\256\235\262\030
\011\105\303\222\241\162\027\374\107\266\240\013\054\361\304\336
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END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum Trusted Network CA 2"
Issuer: CN=Certum Trusted Network CA 2,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Serial Number:21:d6:d0:4a:4f:25:0f:c9:32:37:fc:aa:5e:12:8d:e9

Subject: CN=Certum Trusted Network CA 2,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Not Valid Before: Thu Oct 06 08:39:56 2011
Not Valid After : Sat Oct 06 08:39:56 2046
Fingerprint (SHA-256): B6:76:F2:ED:DA:E8:77:5C:D3:6C:B0:F6:3C:D1:D4:60:39:61:F4:9E:62:65:BA:01:3A:2F:03:07:B6:D0:B8:04
Fingerprint (SHA1): D3:DD:48:3E:2B:BF:4C:05:E8:AF:10:F5:FA:76:26:CF:D3:DC:30:92
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Network CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\323\335\110\076\053\277\114\005\350\257\020\365\372\166\046\317
\323\334\060\222
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\155\106\236\331\045\155\010\043\133\136\164\175\036\047\333\362
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\044\060
\042\006\003\125\004\003\023\033\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
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\215\351
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Hellenic Academic and Research Institutions RootCA 2015"
#
Issuer: CN=Hellenic Academic and Research Institutions RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Not Valid Before: Tue Jul 07 10:11:21 2015

Not Valid After : Sat Jun 30 10:11:21 2040
Fingerprint (SHA-256):
A0:40:92:9A:02:CE:53:B4:AC:F4:F2:FF:C6:98:1C:E4:49:6F:75:5E:6D:45:FE:0B:2A:69:2B:CD:52:52:3F:36
Fingerprint (SHA1): 01:0C:06:95:A6:98:19:14:FF:BF:5F:C6:B0:B6:95:EA:29:E9:12:A6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions RootCA 2015"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\246\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003
\023\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
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CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\246\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003
\023\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145
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\040\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157
\157\164\103\101\040\062\060\061\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
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\201\246\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156\163
\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154\145
\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144
\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164

\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165\164
\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003\023
\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145\155
\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150\040
\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157\157
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\060\067\061\060\061\061\062\061\132\027\015\064\060\060\066\063
\060\061\060\061\061\062\061\132\060\201\246\061\013\060\011\006
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\007\023\006\101\164\150\145\156\163\061\104\060\102\006\003\125
\004\012\023\073\110\145\154\154\145\156\151\143\040\101\143\141
\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141\162
\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163\040
\103\145\162\164\056\040\101\165\164\150\157\162\151\164\171\061
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\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\122\157\157\164\103\101\040\062\060\061
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\341\057\247\174\257\047\064\273\051\175\233\266\317\011\310\345
\323\012\374\210\145\145\164\012\334\163\034\134\315\100\261\034
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\242\065\335\024\364\037\377\262\167\325\207\057\252\156\175\044
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\131\145\071\130\172\222\231\162\075\234\204\136\210\041\270\325
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\172\110\101\375\105\031\006\255\047\231\116\301\160\107\335\265
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\007\017\352\153\334\037\056\006\162\354\206\210\022\344\055\333
\137\005\057\344\360\003\323\046\063\347\200\302\315\102\241\027
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\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
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\136\325\154\310\207\275\264\056\106\362\061\370\174\352\102\265
\223\026\125\334\241\014\022\240\332\141\176\017\130\130\163\144
\162\307\350\105\216\334\251\362\046\077\306\171\214\261\123\010
\063\201\260\126\023\276\346\121\134\330\233\012\117\113\234\126
\123\002\351\117\366\015\140\352\115\102\125\350\174\033\041\041
\323\033\072\314\167\362\270\220\361\150\307\371\132\376\372\055
\364\277\311\365\105\033\316\070\020\052\067\212\171\243\264\343
\011\154\205\206\223\377\211\226\047\170\201\217\147\343\106\164
\124\216\331\015\151\342\112\364\115\164\003\377\262\167\355\225
\147\227\344\261\305\253\277\152\043\350\324\224\342\104\050\142
\304\113\342\360\330\342\051\153\032\160\176\044\141\223\173\117
\003\062\045\015\105\044\053\226\264\106\152\277\112\013\367\232
\217\301\254\032\305\147\363\157\064\322\372\163\143\214\357\026
\260\250\244\106\052\370\353\022\354\162\264\357\370\053\176\214
\122\300\213\204\124\371\057\076\343\125\250\334\146\261\331\341
\137\330\263\214\131\064\131\244\253\117\154\273\037\030\333\165
\253\330\313\222\315\224\070\141\016\007\006\037\113\106\020\361
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\227\115\367\016\126\135\300\225\152\302\066\303\033\150\311\365
\052\334\107\232\276\262\316\305\045\350\372\003\271\332\371\026
\156\221\204\365\034\050\310\374\046\314\327\034\220\126\247\137
\157\072\004\274\315\170\211\013\216\017\057\243\252\117\242\033
\022\075\026\010\100\017\361\106\114\327\252\173\010\301\012\365
\155\047\336\002\217\312\303\265\053\312\351\353\310\041\123\070
\245\314\073\330\167\067\060\242\117\331\157\321\362\100\255\101
\172\027\305\326\112\065\211\267\101\325\174\206\177\125\115\203
\112\245\163\040\300\072\257\220\361\232\044\216\331\216\161\312
\173\270\206\332\262\217\231\076\035\023\015\022\021\356\324\253
\360\351\025\166\002\344\340\337\252\040\036\133\141\205\144\100
\251\220\227\015\255\123\322\132\035\207\152\000\227\145\142\264
\276\157\152\247\365\054\102\355\062\255\266\041\236\276\274
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Hellenic Academic and Research Institutions RootCA 2015"

Issuer: CN=Hellenic Academic and Research Institutions RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Not Valid Before: Tue Jul 07 10:11:21 2015
Not Valid After : Sat Jun 30 10:11:21 2040
Fingerprint (SHA-256):
A0:40:92:9A:02:CE:53:B4:AC:F4:F2:FF:C6:98:1C:E4:49:6F:75:5E:6D:45:FE:0B:2A:69:2B:CD:52:52:3F:36
Fingerprint (SHA1): 01:0C:06:95:A6:98:19:14:FF:BF:5F:C6:B0:B6:95:EA:29:E9:12:A6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions RootCA 2015"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\001\014\006\225\246\230\031\024\377\277\137\306\260\266\225\352
\051\351\022\246
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\312\377\342\333\003\331\313\113\351\017\255\204\375\173\030\316
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\246\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003
\023\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157
\157\164\103\101\040\062\060\061\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Hellenic Academic and Research Institutions ECC RootCA 2015"
#
Issuer: CN=Hellenic Academic and Research Institutions ECC RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR

Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions ECC RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Not Valid Before: Tue Jul 07 10:37:12 2015
Not Valid After : Sat Jun 30 10:37:12 2040
Fingerprint (SHA-256):
44:B5:45:AA:8A:25:E6:5A:73:CA:15:DC:27:FC:36:D2:4C:1C:B9:95:3A:06:65:39:B1:15:82:DC:48:7B:48:33
Fingerprint (SHA1): 9F:F1:71:8D:92:D5:9A:F3:7D:74:97:B4:BC:6F:84:68:0B:BA:B6:66
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions ECC RootCA 2015"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\252\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\104\060\102\006\003\125\004\003
\023\073\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\105\103
\103\040\122\157\157\164\103\101\040\062\060\061\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\252\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\104\060\102\006\003\125\004\003
\023\073\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\105\103
\103\040\122\157\157\164\103\101\040\062\060\061\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\303\060\202\002\112\240\003\002\001\002\002\001\000
\060\012\006\010\052\206\110\316\075\004\003\002\060\201\252\061
\013\060\011\006\003\125\004\006\023\002\107\122\061\017\060\015

\006\003\125\004\007\023\006\101\164\150\145\156\163\061\104\060
\102\006\003\125\004\012\023\073\110\145\154\154\145\156\151\143
\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122\145
\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164\151
\157\156\163\040\103\145\162\164\056\040\101\165\164\150\157\162
\151\164\171\061\104\060\102\006\003\125\004\003\023\073\110\145
\154\154\145\156\151\143\040\101\143\141\144\145\155\151\143\040
\141\156\144\040\122\145\163\145\141\162\143\150\040\111\156\163
\164\151\164\165\164\151\157\156\163\040\105\103\103\040\122\157
\157\164\103\101\040\062\060\061\065\060\036\027\015\061\065\060
\067\060\067\061\060\063\067\061\062\132\027\015\064\060\060\066
\063\060\061\060\063\067\061\062\132\060\201\252\061\013\060\011
\006\003\125\004\006\023\002\107\122\061\017\060\015\006\003\125
\004\007\023\006\101\164\150\145\156\163\061\104\060\102\006\003
\125\004\012\023\073\110\145\154\154\145\156\151\143\040\101\143
\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141
\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163
\040\103\145\162\164\056\040\101\165\164\150\157\162\151\164\171
\061\104\060\102\006\003\125\004\003\023\073\110\145\154\154\145
\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144
\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164
\165\164\151\157\156\163\040\105\103\103\040\122\157\157\164\103
\101\040\062\060\061\065\060\166\060\020\006\007\052\206\110\316
\075\002\001\006\005\053\201\004\000\042\003\142\000\004\222\240
\101\350\113\202\204\134\342\370\061\021\231\206\144\116\011\045
\057\235\101\057\012\256\065\117\164\225\262\121\144\153\215\153
\346\077\160\225\360\005\104\107\246\162\070\120\166\225\002\132
\216\256\050\236\371\055\116\231\357\054\110\157\114\045\051\350
\321\161\133\337\035\301\165\067\264\327\372\173\172\102\234\152
\012\126\132\174\151\013\252\200\011\044\154\176\301\106\243\102
\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\035\006\003\125\035\016\004\026\004\024\264\042
\013\202\231\044\001\016\234\273\344\016\375\277\373\227\040\223
\231\052\060\012\006\010\052\206\110\316\075\004\003\002\003\147
\000\060\144\002\060\147\316\026\142\070\242\254\142\105\247\251
\225\044\300\032\047\234\062\073\300\300\325\272\251\347\370\004
\103\123\205\356\122\041\336\235\365\045\203\076\236\130\113\057
\327\147\023\016\041\002\060\005\341\165\001\336\150\355\052\037
\115\114\011\010\015\354\113\255\144\027\050\347\165\316\105\145
\162\041\027\313\042\101\016\214\023\230\070\232\124\155\233\312
\342\174\352\002\130\042\221
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Hellenic Academic and Research Institutions ECC RootCA 2015"

Issuer: CN=Hellenic Academic and Research Institutions ECC RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions ECC RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Not Valid Before: Tue Jul 07 10:37:12 2015
Not Valid After : Sat Jun 30 10:37:12 2040
Fingerprint (SHA-256):
44:B5:45:AA:8A:25:E6:5A:73:CA:15:DC:27:FC:36:D2:4C:1C:B9:95:3A:06:65:39:B1:15:82:DC:48:7B:48:33
Fingerprint (SHA1): 9F:F1:71:8D:92:D5:9A:F3:7D:74:97:B4:BC:6F:84:68:0B:BA:B6:66
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions ECC RootCA 2015"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\237\361\161\215\222\325\232\363\175\164\227\264\274\157\204\150
\013\272\266\146
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\201\345\264\027\353\302\365\341\113\015\101\173\111\222\376\357
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\252\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\104\060\102\006\003\125\004\003
\023\073\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\105\103
\103\040\122\157\157\164\103\101\040\062\060\061\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ISRG Root X1"
#
Issuer: CN=ISRG Root X1,O=Internet Security Research Group,C=US
Serial Number:00:82:10:cf:b0:d2:40:e3:59:44:63:e0:bb:63:82:8b:00

Subject: CN=ISRG Root X1,O=Internet Security Research Group,C=US
Not Valid Before: Thu Jun 04 11:04:38 2015
Not Valid After : Mon Jun 04 11:04:38 2035
Fingerprint (SHA-256):
96:BC:EC:06:26:49:76:F3:74:60:77:9A:CF:28:C5:A7:CF:E8:A3:C0:AA:E1:1A:8F:FC:EE:05:C0:BD:DF:08:C6
Fingerprint (SHA1): CA:BD:2A:79:A1:07:6A:31:F2:1D:25:36:35:CB:03:9D:43:29:A5:E8
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ISRG Root X1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\202\020\317\260\322\100\343\131\104\143\340\273\143
\202\213\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\153\060\202\003\123\240\003\002\001\002\002\021\000
\202\020\317\260\322\100\343\131\104\143\340\273\143\202\213\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061\051
\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156\145
\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145\141
\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003\125
\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130\061
\060\036\027\015\061\065\060\066\060\064\061\061\060\064\063\070
\132\027\015\063\065\060\066\060\064\061\061\060\064\063\070\132
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003

\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\061\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\255\350\044\163\364\024\067\363\233\236\053\127\050\034
\207\276\334\267\337\070\220\214\156\074\346\127\240\170\367\165
\302\242\376\365\152\156\366\000\117\050\333\336\150\206\154\104
\223\266\261\143\375\024\022\153\277\037\322\352\061\233\041\176
\321\063\074\272\110\365\335\171\337\263\270\377\022\361\041\232
\113\301\212\206\161\151\112\146\146\154\217\176\074\160\277\255
\051\042\006\363\344\300\346\200\256\342\113\217\267\231\176\224
\003\237\323\107\227\174\231\110\043\123\350\070\256\117\012\157
\203\056\321\111\127\214\200\164\266\332\057\320\070\215\173\003
\160\041\033\165\362\060\074\372\217\256\335\332\143\253\353\026
\117\302\216\021\113\176\317\013\350\377\265\167\056\364\262\173
\112\340\114\022\045\014\160\215\003\051\240\341\123\044\354\023
\331\356\031\277\020\263\112\214\077\211\243\141\121\336\254\207
\007\224\364\143\161\354\056\342\157\133\230\201\341\211\134\064
\171\154\166\357\073\220\142\171\346\333\244\232\057\046\305\320
\020\341\016\336\331\020\216\026\373\267\367\250\367\307\345\002
\007\230\217\066\010\225\347\342\067\226\015\066\165\236\373\016
\162\261\035\233\274\003\371\111\005\330\201\335\005\264\052\326
\101\351\254\001\166\225\012\017\330\337\325\275\022\037\065\057
\050\027\154\322\230\301\250\011\144\167\156\107\067\272\316\254
\131\136\150\235\177\162\326\211\305\006\101\051\076\131\076\335
\046\365\044\311\021\247\132\243\114\100\037\106\241\231\265\247
\072\121\156\206\073\236\175\162\247\022\005\170\131\355\076\121
\170\025\013\003\217\215\320\057\005\262\076\173\112\034\113\163
\005\022\374\306\352\340\120\023\174\103\223\164\263\312\164\347
\216\037\001\010\320\060\324\133\161\066\264\007\272\301\060\060
\134\110\267\202\073\230\246\175\140\212\242\243\051\202\314\272
\275\203\004\033\242\203\003\101\241\326\005\361\033\302\266\360
\250\174\206\073\106\250\110\052\210\334\166\232\166\277\037\152
\245\075\031\217\353\070\363\144\336\310\053\015\012\050\377\367
\333\342\025\102\324\042\320\047\135\341\171\376\030\347\160\210
\255\116\346\331\213\072\306\335\047\121\156\377\274\144\365\063
\103\117\002\003\001\000\001\243\102\060\100\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\171\264\131\346\173\266\345\344\001
\163\200\010\210\310\032\130\366\351\233\156\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\125
\037\130\251\274\262\250\120\320\014\261\330\032\151\040\047\051
\010\254\141\165\134\212\156\370\202\345\151\057\325\366\126\113
\271\270\163\020\131\323\041\227\176\347\114\161\373\262\322\140
\255\071\250\013\352\027\041\126\205\361\120\016\131\353\316\340
\131\351\272\311\025\357\206\235\217\204\200\366\344\351\221\220
\334\027\233\142\033\105\360\146\225\322\174\157\302\352\073\357
\037\317\313\326\256\047\361\251\260\310\256\375\175\176\232\372

\042\004\353\377\331\177\352\221\053\042\261\027\016\217\362\212
\064\133\130\330\374\001\311\124\271\270\046\314\212\210\063\211
\114\055\204\074\202\337\356\226\127\005\272\054\273\367\304\267
\307\116\073\202\276\061\310\042\163\163\222\321\302\200\244\071
\071\020\063\043\202\114\074\237\206\262\125\230\035\276\051\206
\214\042\233\236\342\153\073\127\072\202\160\115\334\011\307\211
\313\012\007\115\154\350\135\216\311\357\316\253\307\273\265\053
\116\105\326\112\320\046\314\345\162\312\010\152\245\225\343\025
\241\367\244\355\311\054\137\245\373\377\254\050\002\056\276\327
\173\273\343\161\173\220\026\323\007\136\106\123\174\067\007\102
\214\323\304\226\234\325\231\265\052\340\225\032\200\110\256\114
\071\007\316\314\107\244\122\225\053\272\270\373\255\322\063\123
\175\345\035\115\155\325\241\261\307\102\157\346\100\047\065\134
\243\050\267\007\215\347\215\063\220\347\043\237\373\120\234\171
\154\106\325\264\025\263\226\156\176\233\014\226\072\270\122\055
\077\326\133\341\373\010\302\204\376\044\250\243\211\332\254\152
\341\030\052\261\250\103\141\133\323\037\334\073\215\166\362\055
\350\215\165\337\027\063\154\075\123\373\173\313\101\137\377\334
\242\320\141\070\341\226\270\254\135\213\067\327\165\325\063\300
\231\021\256\235\101\301\162\165\204\276\002\101\102\137\147\044
\110\224\321\233\047\276\007\077\271\270\117\201\164\121\341\172
\267\355\235\043\342\276\340\325\050\004\023\074\061\003\236\335
\172\154\217\306\007\030\306\177\336\107\216\077\050\236\004\006
\317\245\124\064\167\275\354\211\233\351\027\103\337\133\333\137
\376\216\036\127\242\315\100\235\176\142\042\332\336\030\047
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ISRG Root X1"
Issuer: CN=ISRG Root X1,O=Internet Security Research Group,C=US
Serial Number:00:82:10:cf:b0:d2:40:e3:59:44:63:e0:bb:63:82:8b:00
Subject: CN=ISRG Root X1,O=Internet Security Research Group,C=US
Not Valid Before: Thu Jun 04 11:04:38 2015
Not Valid After : Mon Jun 04 11:04:38 2035
Fingerprint (SHA-256):
96:BC:EC:06:26:49:76:F3:74:60:77:9A:CF:28:C5:A7:CF:E8:A3:C0:AA:E1:1A:8F:FC:EE:05:C0:BD:DF:08:C6
Fingerprint (SHA1): CA:BD:2A:79:A1:07:6A:31:F2:1D:25:36:35:CB:03:9D:43:29:A5:E8
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ISRG Root X1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\312\275\052\171\241\007\152\061\362\035\045\066\065\313\003\235
\103\051\245\350
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\014\322\371\340\332\027\163\351\355\206\115\245\343\160\347\116
END
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\202\020\317\260\322\100\343\131\104\143\340\273\143
\202\213\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AC RAIZ FNMT-RCM"
#
Issuer: OU=AC RAIZ FNMT-RCM,O=FNMT-RCM,C=ES
Serial Number:5d:93:8d:30:67:36:c8:06:1d:1a:c7:54:84:69:07
Subject: OU=AC RAIZ FNMT-RCM,O=FNMT-RCM,C=ES
Not Valid Before: Wed Oct 29 15:59:56 2008
Not Valid After : Tue Jan 01 00:00:00 2030
Fingerprint (SHA-256):
EB:C5:57:0C:29:01:8C:4D:67:B1:AA:12:7B:AF:12:F7:03:B4:61:1E:BC:17:B7:DA:B5:57:38:94:17:9B:93:FA
Fingerprint (SHA1): EC:50:35:07:B2:15:C4:95:62:19:E2:A8:9A:5B:42:99:2C:4C:2C:20
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ FNMT-RCM"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\031\060\027\006\003\125\004\013\014\020\101\103\040
\122\101\111\132\040\106\116\115\124\055\122\103\115
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\031\060\027\006\003\125\004\013\014\020\101\103\040

\122\101\111\132\040\106\116\115\124\055\122\103\115
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\135\223\215\060\147\066\310\006\035\032\307\124\204\151
\007
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\203\060\202\003\153\240\003\002\001\002\002\017\135
\223\215\060\147\066\310\006\035\032\307\124\204\151\007\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\060\073\061
\013\060\011\006\003\125\004\006\023\002\105\123\061\021\060\017
\006\003\125\004\012\014\010\106\116\115\124\055\122\103\115\061
\031\060\027\006\003\125\004\013\014\020\101\103\040\122\101\111
\132\040\106\116\115\124\055\122\103\115\060\036\027\015\060\070
\061\060\062\071\061\065\065\071\065\066\132\027\015\063\060\060
\061\060\061\060\060\060\060\060\060\132\060\073\061\013\060\011
\006\003\125\004\006\023\002\105\123\061\021\060\017\006\003\125
\004\012\014\010\106\116\115\124\055\122\103\115\061\031\060\027
\006\003\125\004\013\014\020\101\103\040\122\101\111\132\040\106
\116\115\124\055\122\103\115\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\272\161\200\172\114\206\156\177
\310\023\155\300\306\175\034\000\227\217\054\014\043\273\020\232
\100\251\032\267\207\210\370\233\126\152\373\346\173\216\213\222
\216\247\045\135\131\021\333\066\056\267\121\027\037\251\010\037
\004\027\044\130\252\067\112\030\337\345\071\324\127\375\327\301
\054\221\001\221\342\042\324\003\300\130\374\167\107\354\217\076
\164\103\272\254\064\215\115\070\166\147\216\260\310\157\060\063
\130\161\134\264\365\153\156\324\001\120\270\023\176\154\112\243
\111\321\040\031\356\274\300\051\030\145\247\336\376\357\335\012
\220\041\347\032\147\222\102\020\230\137\117\060\274\076\034\105
\264\020\327\150\100\024\300\100\372\347\167\027\172\346\013\217
\145\133\074\331\232\122\333\265\275\236\106\317\075\353\221\005
\002\300\226\262\166\114\115\020\226\073\222\372\234\177\017\231
\337\276\043\065\105\036\002\134\376\265\250\233\231\045\332\136
\363\042\303\071\365\344\052\056\323\306\037\304\154\252\305\034
\152\001\005\112\057\322\305\301\250\064\046\135\146\245\322\002
\041\371\030\267\006\365\116\231\157\250\253\114\121\350\317\120
\030\305\167\310\071\011\054\111\222\062\231\250\273\027\027\171
\260\132\305\346\243\304\131\145\107\065\203\136\251\350\065\013
\231\273\344\315\040\306\233\112\006\071\265\150\374\042\272\356
\125\214\053\116\352\363\261\343\374\266\231\232\325\102\372\161
\115\010\317\207\036\152\161\175\371\323\264\351\245\161\201\173
\302\116\107\226\245\366\166\205\243\050\217\351\200\156\201\123
\245\155\137\270\110\371\302\371\066\246\056\111\377\270\226\302
\214\007\263\233\210\130\374\353\033\034\336\055\160\342\227\222
\060\241\211\343\274\125\250\047\326\113\355\220\255\213\372\143
\045\131\055\250\065\335\312\227\063\274\345\315\307\235\321\354

\357\136\016\112\220\006\046\143\255\271\331\065\055\007\272\166
\145\054\254\127\217\175\364\007\224\327\201\002\226\135\243\007
\111\325\172\320\127\371\033\347\123\106\165\252\260\171\102\313
\150\161\010\351\140\275\071\151\316\364\257\303\126\100\307\255
\122\242\011\344\157\206\107\212\037\353\050\047\135\203\040\257
\004\311\154\126\232\213\106\365\002\003\001\000\001\243\201\203
\060\201\200\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\367
\175\305\375\304\350\232\033\167\144\247\365\035\240\314\277\207
\140\232\155\060\076\006\003\125\035\040\004\067\060\065\060\063
\006\004\125\035\040\000\060\053\060\051\006\010\053\006\001\005
\005\007\002\001\026\035\150\164\164\160\072\057\057\167\167\167
\056\143\145\162\164\056\146\156\155\164\056\145\163\057\144\160
\143\163\057\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\007\220\112\337\363\043\116\360\303
\234\121\145\233\234\042\242\212\014\205\363\163\051\153\115\376
\001\342\251\014\143\001\277\004\147\245\235\230\137\375\001\023
\372\354\232\142\351\206\376\266\142\322\156\114\224\373\300\165
\105\174\145\014\370\262\067\317\254\017\317\215\157\371\031\367
\217\354\036\362\160\236\360\312\270\357\267\377\166\067\166\133
\366\156\210\363\257\142\062\042\223\015\072\152\216\024\146\014
\055\123\164\127\145\036\325\262\335\043\201\073\245\146\043\047
\147\011\217\341\167\252\103\315\145\121\010\355\121\130\376\346
\071\371\313\107\204\244\025\361\166\273\244\356\244\073\304\137
\357\262\063\226\021\030\267\311\145\276\030\341\243\244\334\372
\030\371\323\274\023\233\071\172\064\272\323\101\373\372\062\212
\052\267\053\206\013\151\203\070\276\315\212\056\013\160\255\215
\046\222\356\036\365\001\053\012\331\326\227\233\156\340\250\031
\034\072\041\213\014\036\100\255\003\347\335\146\176\365\271\040
\015\003\350\226\371\202\105\324\071\340\240\000\135\327\230\346
\175\236\147\163\303\232\052\367\253\213\241\072\024\357\064\274
\122\016\211\230\232\004\100\204\035\176\105\151\223\127\316\353
\316\370\120\174\117\034\156\004\103\233\371\326\073\043\030\351
\352\216\321\115\106\215\361\073\344\152\312\272\373\043\267\233
\372\231\001\051\132\130\132\055\343\371\324\155\016\046\255\301
\156\064\274\062\370\014\005\372\145\243\333\073\067\203\042\351
\326\334\162\063\375\135\362\040\275\166\074\043\332\050\367\371
\033\353\131\144\325\334\137\162\176\040\374\315\211\265\220\147
\115\142\172\077\116\255\035\303\071\376\172\364\050\026\337\101
\366\110\200\005\327\017\121\171\254\020\253\324\354\003\146\346
\152\260\272\061\222\102\100\152\276\072\323\162\341\152\067\125
\274\254\035\225\267\151\141\362\103\221\164\346\240\323\012\044
\106\241\010\257\326\332\105\031\226\324\123\035\133\204\171\360
\300\367\107\357\213\217\305\006\256\235\114\142\235\377\106\004
\370\323\311\266\020\045\100\165\376\026\252\311\112\140\206\057
\272\357\060\167\344\124\342\270\204\231\130\200\252\023\213\121
\072\117\110\366\213\266\263

END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AC RAIZ FNMT-RCM"
Issuer: OU=AC RAIZ FNMT-RCM,O=FNMT-RCM,C=ES
Serial Number:5d:93:8d:30:67:36:c8:06:1d:1a:c7:54:84:69:07
Subject: OU=AC RAIZ FNMT-RCM,O=FNMT-RCM,C=ES
Not Valid Before: Wed Oct 29 15:59:56 2008
Not Valid After : Tue Jan 01 00:00:00 2030
Fingerprint (SHA-256):
EB:C5:57:0C:29:01:8C:4D:67:B1:AA:12:7B:AF:12:F7:03:B4:61:1E:BC:17:B7:DA:B5:57:38:94:17:9B:93:FA
Fingerprint (SHA1): EC:50:35:07:B2:15:C4:95:62:19:E2:A8:9A:5B:42:99:2C:4C:2C:20
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ FNMT-RCM"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\354\120\065\007\262\025\304\225\142\031\342\250\232\133\102\231
\054\114\054\040
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\342\011\004\264\323\275\321\240\024\375\032\322\107\304\127\035
END
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\031\060\027\006\003\125\004\013\014\020\101\103\040
\122\101\111\132\040\106\116\115\124\055\122\103\115
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\135\223\215\060\147\066\310\006\035\032\307\124\204\151
\007
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Amazon Root CA 1"
#
Issuer: CN=Amazon Root CA 1,O=Amazon,C=US
Serial Number:06:6c:9f:cf:99:bf:8c:0a:39:e2:f0:78:8a:43:e6:96:36:5b:ca
Subject: CN=Amazon Root CA 1,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015

Not Valid After : Sun Jan 17 00:00:00 2038
Fingerprint (SHA-256):
8E:CD:E6:88:4F:3D:87:B1:12:5B:A3:1A:C3:FC:B1:3D:70:16:DE:7F:57:CC:90:4F:E1:CB:97:C6:AE:98:19:6E
Fingerprint (SHA1): 8D:A7:F9:65:EC:5E:FC:37:91:0F:1C:6E:59:FD:C1:CC:6A:6E:DE:16
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\317\231\277\214\012\071\342\360\170\212\103
\346\226\066\133\312
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\101\060\202\002\051\240\003\002\001\002\002\023\006
\154\237\317\231\277\214\012\071\342\360\170\212\103\346\226\066
\133\312\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157
\156\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172
\157\156\040\122\157\157\164\040\103\101\040\061\060\036\027\015
\061\065\060\065\062\066\060\060\060\060\060\060\132\027\015\063
\070\060\061\061\067\060\060\060\060\060\060\132\060\071\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\017\060\015\006
\003\125\004\012\023\006\101\155\141\172\157\156\061\031\060\027
\006\003\125\004\003\023\020\101\155\141\172\157\156\040\122\157
\157\164\040\103\101\040\061\060\202\001\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060
\202\001\012\002\202\001\001\000\262\170\200\161\312\170\325\343
\161\257\107\200\120\164\175\156\330\327\210\166\364\231\150\367
\130\041\140\371\164\204\001\057\254\002\055\206\323\240\103\172
\116\262\244\320\066\272\001\276\215\333\110\310\007\027\066\114
\364\356\210\043\307\076\353\067\365\265\031\370\111\150\260\336
\327\271\166\070\035\141\236\244\376\202\066\245\345\112\126\344

\105\341\371\375\264\026\372\164\332\234\233\065\071\057\372\260
\040\120\006\154\172\320\200\262\246\371\257\354\107\031\217\120
\070\007\334\242\207\071\130\370\272\325\251\371\110\147\060\226
\356\224\170\136\157\211\243\121\300\060\206\146\241\105\146\272
\124\353\243\303\221\371\110\334\377\321\350\060\055\175\055\164
\160\065\327\210\044\367\236\304\131\156\273\163\207\027\362\062
\106\050\270\103\372\267\035\252\312\264\362\237\044\016\055\113
\367\161\134\136\151\377\352\225\002\313\070\212\256\120\070\157
\333\373\055\142\033\305\307\036\124\341\167\340\147\310\017\234
\207\043\326\077\100\040\177\040\200\304\200\114\076\073\044\046
\216\004\256\154\232\310\252\015\002\003\001\000\001\243\102\060
\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\206\060\035\006\003\125\035\016\004\026\004\024\204\030\314
\205\064\354\274\014\224\224\056\010\131\234\307\262\020\116\012
\010\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\003\202\001\001\000\230\362\067\132\101\220\241\032\305\166\121
\050\040\066\043\016\256\346\050\273\252\370\224\256\110\244\060
\177\033\374\044\215\113\264\310\241\227\366\266\361\172\160\310
\123\223\314\010\050\343\230\045\317\043\244\371\336\041\323\174
\205\011\255\116\232\165\072\302\013\152\211\170\166\104\107\030
\145\154\215\101\216\073\177\232\313\364\265\247\120\327\005\054
\067\350\003\113\255\351\141\240\002\156\365\362\360\305\262\355
\133\267\334\372\224\134\167\236\023\245\177\122\255\225\362\370
\223\073\336\213\134\133\312\132\122\133\140\257\024\367\113\357
\243\373\237\100\225\155\061\124\374\102\323\307\106\037\043\255
\331\017\110\160\232\331\165\170\161\321\162\103\064\165\156\127
\131\302\002\134\046\140\051\317\043\031\026\216\210\103\245\324
\344\313\010\373\043\021\103\350\103\051\162\142\241\251\135\136
\010\324\220\256\270\330\316\024\302\320\125\362\206\366\304\223
\103\167\146\141\300\271\350\101\327\227\170\140\003\156\112\162
\256\245\321\175\272\020\236\206\154\033\212\271\131\063\370\353
\304\220\276\361\271
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Amazon Root CA 1"
Issuer: CN=Amazon Root CA 1,O=Amazon,C=US
Serial Number:06:6c:9f:cf:99:bf:8c:0a:39:e2:f0:78:8a:43:e6:96:36:5b:ca
Subject: CN=Amazon Root CA 1,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sun Jan 17 00:00:00 2038
Fingerprint (SHA-256):
8E:CD:E6:88:4F:3D:87:B1:12:5B:A3:1A:C3:FC:B1:3D:70:16:DE:7F:57:CC:90:4F:E1:CB:97:C6:AE:98:19:6E
Fingerprint (SHA1): 8D:A7:F9:65:EC:5E:FC:37:91:0F:1C:6E:59:FD:C1:CC:6A:6E:DE:16
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST

```
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\215\247\371\145\354\136\374\067\221\017\034\156\131\375\301\314
\152\156\336\026
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\103\306\277\256\354\376\255\057\030\306\210\150\060\374\310\346
END
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\317\231\277\214\012\071\342\360\170\212\103
\346\226\066\133\312
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "Amazon Root CA 2"
#
# Issuer: CN=Amazon Root CA 2,O=Amazon,C=US
# Serial Number:06:6c:9f:d2:96:35:86:9f:0a:0f:e5:86:78:f8:5b:26:bb:8a:37
# Subject: CN=Amazon Root CA 2,O=Amazon,C=US
# Not Valid Before: Tue May 26 00:00:00 2015
# Not Valid After : Sat May 26 00:00:00 2040
# Fingerprint (SHA-256):
1B:A5:B2:AA:8C:65:40:1A:82:96:01:18:F8:0B:EC:4F:62:30:4D:83:CE:C4:71:3A:19:C3:9C:01:1E:A4:6D:B4
# Fingerprint (SHA1): 5A:8C:EF:45:D7:A6:98:59:76:7A:8C:8B:44:96:B5:78:CF:47:4B:1A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\062
```

END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\322\226\065\206\237\012\017\345\206\170\370
\133\046\273\212\067
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\101\060\202\003\051\240\003\002\001\002\002\023\006
\154\237\322\226\065\206\237\012\017\345\206\170\370\133\046\273
\212\067\060\015\006\011\052\206\110\206\367\015\001\001\014\005
\000\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157
\156\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172
\157\156\040\122\157\157\164\040\103\101\040\062\060\036\027\015
\061\065\060\065\062\066\060\060\060\060\060\060\132\027\015\064
\060\060\065\062\066\060\060\060\060\060\060\132\060\071\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\017\060\015\006
\003\125\004\012\023\006\101\155\141\172\157\156\061\031\060\027
\006\003\125\004\003\023\020\101\155\141\172\157\156\040\122\157
\157\164\040\103\101\040\062\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\255\226\237\055\234\112\114\112
\201\171\121\231\354\212\313\153\140\121\023\274\115\155\006\374
\260\010\215\335\031\020\152\307\046\014\065\330\300\157\040\204
\351\224\261\233\205\003\303\133\333\112\350\310\370\220\166\331
\133\117\343\114\350\006\066\115\314\232\254\075\014\220\053\222
\324\006\031\140\254\067\104\171\205\201\202\255\132\067\340\015
\314\235\246\114\122\166\352\103\235\267\004\321\120\366\125\340
\325\322\246\111\205\351\067\351\312\176\256\134\225\115\110\232
\077\256\040\132\155\210\225\331\064\270\122\032\103\220\260\277
\154\005\271\266\170\267\352\320\344\072\074\022\123\142\377\112
\362\173\276\065\005\251\022\064\343\363\144\164\142\054\075\000
\111\132\050\376\062\104\273\207\335\145\047\002\161\073\332\112
\367\037\332\315\367\041\125\220\117\017\354\256\202\341\237\153
\331\105\323\273\360\137\207\355\074\054\071\206\332\077\336\354
\162\125\353\171\243\255\333\335\174\260\272\034\316\374\336\117
\065\166\317\017\370\170\037\152\066\121\106\047\141\133\351\236
\317\360\242\125\175\174\045\212\157\057\264\305\317\204\056\053
\375\015\121\020\154\373\137\033\274\033\176\305\256\073\230\001
\061\222\377\013\127\364\232\262\271\127\351\253\357\015\166\321
\360\356\364\316\206\247\340\156\351\264\151\241\337\151\366\063
\306\151\056\227\023\236\245\207\260\127\020\201\067\311\123\263

\273\177\366\222\321\234\320\030\364\222\156\332\203\117\246\143
\231\114\245\373\136\357\041\144\172\040\137\154\144\205\025\313
\067\351\142\014\013\052\026\334\001\056\062\332\076\113\365\236
\072\366\027\100\224\357\236\221\010\206\372\276\143\250\132\063
\354\313\164\103\225\371\154\151\122\066\307\051\157\374\125\003
\134\037\373\237\275\107\353\347\111\107\225\013\116\211\042\011
\111\340\365\141\036\361\277\056\212\162\156\200\131\377\127\072
\371\165\062\243\116\137\354\355\050\142\331\115\163\362\314\201
\027\140\355\315\353\334\333\247\312\305\176\002\275\362\124\010
\124\375\264\055\011\054\027\124\112\230\321\124\341\121\147\010
\322\355\156\176\157\077\322\055\201\131\051\146\313\220\071\225
\021\036\164\047\376\335\353\257\002\003\001\000\001\243\102\060
\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\206\060\035\006\003\125\035\016\004\026\004\024\260\014\360
\114\060\364\005\130\002\110\375\063\345\122\257\113\204\343\146
\122\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000
\003\202\002\001\000\252\250\200\217\016\170\243\340\242\324\315
\346\365\230\172\073\352\000\003\260\227\016\223\274\132\250\366
\054\214\162\207\251\261\374\177\163\375\143\161\170\245\207\131
\317\060\341\015\020\262\023\132\155\202\365\152\346\200\237\240
\005\013\150\344\107\153\307\152\337\266\375\167\062\162\345\030
\372\011\364\240\223\054\135\322\214\165\205\166\145\220\014\003
\171\267\061\043\143\255\170\203\011\206\150\204\312\377\371\317
\046\232\222\171\347\315\113\305\347\141\247\027\313\363\251\022
\223\223\153\247\350\057\123\222\304\140\130\260\314\002\121\030
\133\205\215\142\131\143\266\255\264\336\232\373\046\367\000\047
\300\135\125\067\164\231\311\120\177\343\131\056\104\343\054\045
\356\354\114\062\167\264\237\032\351\113\135\040\305\332\375\034
\207\026\306\103\350\324\273\046\232\105\160\136\251\013\067\123
\342\106\173\047\375\340\106\362\211\267\314\102\266\313\050\046
\156\331\245\311\072\310\101\023\140\367\120\214\025\256\262\155
\032\025\032\127\170\346\222\052\331\145\220\202\077\154\002\257
\256\022\072\047\226\066\004\327\035\242\200\143\251\233\361\345
\272\264\174\024\260\116\311\261\037\164\137\070\366\121\352\233
\372\054\242\021\324\251\055\047\032\105\261\257\262\116\161\015
\300\130\106\326\151\006\313\123\313\263\376\153\101\315\101\176
\175\114\017\174\162\171\172\131\315\136\112\016\254\233\251\230
\163\171\174\264\364\314\271\270\007\014\262\164\134\270\307\157
\210\241\220\247\364\252\371\277\147\072\364\032\025\142\036\267
\237\276\075\261\051\257\147\241\022\362\130\020\031\123\003\060
\033\270\032\211\366\234\275\227\003\216\243\011\363\035\213\041
\361\264\337\344\034\321\237\145\002\006\352\134\326\023\263\204
\357\242\245\134\214\167\051\247\150\300\153\256\100\322\250\264
\352\315\360\215\113\070\234\031\232\033\050\124\270\211\220\357
\312\165\201\076\036\362\144\044\307\030\257\116\377\107\236\007
\366\065\145\244\323\012\126\377\365\027\144\154\357\250\042\045
\111\223\266\337\000\027\332\130\176\135\356\305\033\260\321\321

\137\041\020\307\371\363\272\002\012\047\007\305\361\326\307\323
\340\373\011\140\154
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Amazon Root CA 2"
Issuer: CN=Amazon Root CA 2,O=Amazon,C=US
Serial Number:06:6c:9f:d2:96:35:86:9f:0a:0f:e5:86:78:f8:5b:26:bb:8a:37
Subject: CN=Amazon Root CA 2,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
1B:A5:B2:AA:8C:65:40:1A:82:96:01:18:F8:0B:EC:4F:62:30:4D:83:CE:C4:71:3A:19:C3:9C:01:1E:A4:6D:B4
Fingerprint (SHA1): 5A:8C:EF:45:D7:A6:98:59:76:7A:8C:8B:44:96:B5:78:CF:47:4B:1A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\132\214\357\105\327\246\230\131\166\172\214\213\104\226\265\170
\317\107\113\032
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\310\345\215\316\250\102\342\172\300\052\134\174\236\046\277\146
END
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\322\226\065\206\237\012\017\345\206\170\370
\133\046\273\212\067
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Amazon Root CA 3"
#
Issuer: CN=Amazon Root CA 3,O=Amazon,C=US
Serial Number:06:6c:9f:d5:74:97:36:66:3f:3b:0b:9a:d9:e8:9e:76:03:f2:4a

Subject: CN=Amazon Root CA 3,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
18:CE:6C:FE:7B:F1:4E:60:B2:E3:47:B8:DF:E8:68:CB:31:D0:2E:BB:3A:DA:27:15:69:F5:03:43:B4:6D:B3:A4
Fingerprint (SHA1): 0D:44:DD:8C:3C:8C:1A:1A:58:75:64:81:E9:0F:2E:2A:FF:B3:D2:6E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\325\164\227\066\146\077\073\013\232\331\350
\236\166\003\362\112
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\266\060\202\001\133\240\003\002\001\002\002\023\006
\154\237\325\164\227\066\146\077\073\013\232\331\350\236\166\003
\362\112\060\012\006\010\052\206\110\316\075\004\003\002\060\071
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\017\060
\015\006\003\125\004\012\023\006\101\155\141\172\157\156\061\031
\060\027\006\003\125\004\003\023\020\101\155\141\172\157\156\040
\122\157\157\164\040\103\101\040\063\060\036\027\015\061\065\060
\065\062\066\060\060\060\060\060\060\132\027\015\064\060\060\065
\062\066\060\060\060\060\060\060\132\060\071\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\017\060\015\006\003\125\004
\012\023\006\101\155\141\172\157\156\061\031\060\027\006\003\125
\004\003\023\020\101\155\141\172\157\156\040\122\157\157\164\040
\103\101\040\063\060\131\060\023\006\007\052\206\110\316\075\002
\001\006\010\052\206\110\316\075\003\001\007\003\102\000\004\051
\227\247\306\101\177\300\015\233\350\001\033\126\306\362\122\245
\272\055\262\022\350\322\056\327\372\311\305\330\252\155\037\163
\201\073\073\230\153\071\174\063\245\305\116\206\216\200\027\150
\142\105\127\175\104\130\035\263\067\345\147\010\353\146\336\243

\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\035\006\003\125\035\016\004\026\004\024\253
\266\333\327\006\236\067\254\060\206\007\221\160\307\234\304\031
\261\170\300\060\012\006\010\052\206\110\316\075\004\003\002\003
\111\000\060\106\002\041\000\340\205\222\243\027\267\215\371\053
\006\245\223\254\032\230\150\141\162\372\341\241\320\373\034\170
\140\246\103\231\305\270\304\002\041\000\234\002\357\361\224\234
\263\226\371\353\306\052\370\266\054\376\072\220\024\026\327\214
\143\044\110\034\337\060\175\325\150\073
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Amazon Root CA 3"
Issuer: CN=Amazon Root CA 3,O=Amazon,C=US
Serial Number:06:6c:9f:d5:74:97:36:66:3f:3b:0b:9a:d9:e8:9e:76:03:f2:4a
Subject: CN=Amazon Root CA 3,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
18:CE:6C:FE:7B:F1:4E:60:B2:E3:47:B8:DF:E8:68:CB:31:D0:2E:BB:3A:DA:27:15:69:F5:03:43:B4:6D:B3:A4
Fingerprint (SHA1): 0D:44:DD:8C:3C:8C:1A:1A:58:75:64:81:E9:0F:2E:2A:FF:B3:D2:6E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\015\104\335\214\074\214\032\032\130\165\144\201\351\017\056\052
\377\263\322\156
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\240\324\357\013\367\265\330\111\225\052\354\365\304\374\201\207
END
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\325\164\227\066\146\077\073\013\232\331\350
\236\166\003\362\112
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Amazon Root CA 4"
#
Issuer: CN=Amazon Root CA 4,O=Amazon,C=US
Serial Number:06:6c:9f:d7:c1:bb:10:4c:29:43:e5:71:7b:7b:2c:c8:1a:c1:0e
Subject: CN=Amazon Root CA 4,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
E3:5D:28:41:9E:D0:20:25:CF:A6:90:38:CD:62:39:62:45:8D:A5:C6:95:FB:DE:A3:C2:2B:0B:FB:25:89:70:92
Fingerprint (SHA1): F6:10:84:07:D6:F8:BB:67:98:0C:C2:E2:44:C2:EB:AE:1C:EF:63:BE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\064
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\327\301\273\020\114\051\103\345\161\173\173
\054\310\032\301\016
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\362\060\202\001\170\240\003\002\001\002\002\023\006
\154\237\327\301\273\020\114\051\103\345\161\173\173\054\310\032
\301\016\060\012\006\010\052\206\110\316\075\004\003\003\060\071
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\017\060
\015\006\003\125\004\012\023\006\101\155\141\172\157\156\061\031
\060\027\006\003\125\004\003\023\020\101\155\141\172\157\156\040
\122\157\157\164\040\103\101\040\064\060\036\027\015\061\065\060
\065\062\066\060\060\060\060\060\060\132\027\015\064\060\060\065
\062\066\060\060\060\060\060\060\132\060\071\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\017\060\015\006\003\125\004

\012\023\006\101\155\141\172\157\156\061\031\060\027\006\003\125
\004\003\023\020\101\155\141\172\157\156\040\122\157\157\164\040
\103\101\040\064\060\166\060\020\006\007\052\206\110\316\075\002
\001\006\005\053\201\004\000\042\003\142\000\004\322\253\212\067
\117\243\123\015\376\301\212\173\113\250\173\106\113\143\260\142
\366\055\033\333\010\161\041\322\000\350\143\275\232\047\373\360
\071\156\135\352\075\245\311\201\252\243\133\040\230\105\135\026
\333\375\350\020\155\343\234\340\343\275\137\204\142\363\160\144
\063\240\313\044\057\160\272\210\241\052\240\165\370\201\256\142
\006\304\201\333\071\156\051\260\036\372\056\134\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\206\060\035\006\003\125\035\016\004\026\004\024\323\354\307\072
\145\156\314\341\332\166\232\126\373\234\363\206\155\127\345\201
\060\012\006\010\052\206\110\316\075\004\003\003\003\150\000\060
\145\002\060\072\213\041\361\275\176\021\255\320\357\130\226\057
\326\353\235\176\220\215\053\317\146\125\303\054\343\050\251\160
\012\107\016\360\067\131\022\377\055\231\224\050\116\052\117\065
\115\063\132\002\061\000\352\165\000\116\073\304\072\224\022\221
\311\130\106\235\041\023\162\247\210\234\212\344\114\112\333\226
\324\254\213\153\153\111\022\123\063\255\327\344\276\044\374\265
\012\166\324\245\274\020
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Amazon Root CA 4"
Issuer: CN=Amazon Root CA 4,O=Amazon,C=US
Serial Number:06:6c:9f:d7:c1:bb:10:4c:29:43:e5:71:7b:7b:2c:c8:1a:c1:0e
Subject: CN=Amazon Root CA 4,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
E3:5D:28:41:9E:D0:20:25:CF:A6:90:38:CD:62:39:62:45:8D:A5:C6:95:FB:DE:A3:C2:2B:0B:FB:25:89:70:92
Fingerprint (SHA1): F6:10:84:07:D6:F8:BB:67:98:0C:C2:E2:44:C2:EB:AE:1C:EF:63:BE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\366\020\204\007\326\370\273\147\230\014\302\342\104\302\353\256
\034\357\143\276
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\211\274\047\325\353\027\215\006\152\151\325\375\211\107\264\315
END

CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\327\301\273\020\114\051\103\345\161\173\173
\054\310\032\301\016
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Symantec Class 1 Public Primary Certification Authority - G6"
#
Issuer: CN=Symantec Class 1 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Serial Number:24:32:75:f2:1d:2f:d2:09:33:f7:b4:6a:ca:d0:f3:98
Subject: CN=Symantec Class 1 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Not Valid Before: Tue Oct 18 00:00:00 2011
Not Valid After : Tue Dec 01 23:59:59 2037
Fingerprint (SHA-256):
9D:19:0B:2E:31:45:66:68:5B:E8:A8:89:E2:7A:A8:C7:D7:AE:1D:8A:AD:DB:A3:C1:EC:F9:D2:48:63:CD:34:B9
Fingerprint (SHA1): 51:7F:61:1E:29:91:6B:53:82:FB:72:E7:44:D9:8D:C3:CC:53:6D:64
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Class 1 Public Primary Certification Authority - G6"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\061\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\061\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\044\062\165\362\035\057\322\011\063\367\264\152\312\320
\363\230
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\366\060\202\002\336\240\003\002\001\002\002\020\044
\062\165\362\035\057\322\011\063\367\264\152\312\320\363\230\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\201
\224\061\013\060\011\006\003\125\004\006\023\002\125\123\061\035
\060\033\006\003\125\004\012\023\024\123\171\155\141\156\164\145
\143\040\103\157\162\160\157\162\141\164\151\157\156\061\037\060
\035\006\003\125\004\013\023\026\123\171\155\141\156\164\145\143
\040\124\162\165\163\164\040\116\145\164\167\157\162\153\061\105
\060\103\006\003\125\004\003\023\074\123\171\155\141\156\164\145
\143\040\103\154\141\163\163\040\061\040\120\165\142\154\151\143
\040\120\162\151\155\141\162\171\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\066\060\036\027\015\061\061\061\060\061\070\060
\060\060\060\060\060\132\027\015\063\067\061\062\060\061\062\063
\065\071\065\071\132\060\201\224\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\035\060\033\006\003\125\004\012\023\024
\123\171\155\141\156\164\145\143\040\103\157\162\160\157\162\141
\164\151\157\156\061\037\060\035\006\003\125\004\013\023\026\123
\171\155\141\156\164\145\143\040\124\162\165\163\164\040\116\145
\164\167\157\162\153\061\105\060\103\006\003\125\004\003\023\074
\123\171\155\141\156\164\145\143\040\103\154\141\163\163\040\061
\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165
\164\150\157\162\151\164\171\040\055\040\107\066\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\307\071\327
\111\144\251\231\202\042\114\352\105\331\007\026\343\173\364\203
\350\231\163\372\153\261\066\340\232\167\240\100\302\201\215\001
\307\314\214\275\217\175\367\171\343\172\114\003\115\331\373\375
\207\070\050\054\335\232\213\124\010\333\147\373\033\214\376\050
\222\057\276\267\262\110\247\201\241\330\136\210\303\314\071\100
\101\132\321\334\345\332\020\237\057\332\001\115\375\056\106\174

\371\056\047\012\151\067\356\221\243\033\152\314\104\277\033\307
\303\324\021\262\120\140\227\011\275\056\042\365\101\204\146\237
\315\100\246\251\000\200\301\037\225\222\237\336\363\110\357\333
\035\167\141\374\177\337\356\226\244\162\320\266\076\377\170\047
\257\313\222\025\151\010\333\143\020\342\346\227\254\156\334\254
\366\242\316\036\107\231\271\211\267\022\346\241\324\315\131\021
\147\303\157\205\330\102\116\050\276\131\125\131\004\225\253\217
\067\200\277\015\360\374\037\072\144\061\130\201\170\327\342\065
\366\040\077\051\270\217\026\156\076\110\334\265\114\007\341\362
\032\352\176\012\171\326\250\275\353\135\206\053\115\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\063\101\350\310\071\022\025\223\110\362\226\062\056\132
\365\332\224\137\123\140\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\001\001\000\025\343\163\127\261\027
\266\137\111\151\104\246\366\136\172\147\254\322\336\165\111\253
\376\045\125\307\072\311\104\025\020\156\277\061\153\313\331\007
\223\177\034\205\143\000\343\062\022\340\314\313\373\071\154\217
\342\123\342\074\100\063\331\244\214\107\346\255\130\373\211\257
\343\336\206\051\126\064\054\105\270\022\372\104\211\156\055\024
\045\050\044\001\145\326\352\122\254\005\156\126\022\011\075\320
\164\364\327\275\006\312\250\072\215\126\102\372\215\162\076\164
\361\003\162\337\207\033\136\016\172\125\226\054\070\267\230\205
\315\115\063\104\311\224\217\132\061\060\067\113\243\072\022\263
\347\066\321\041\150\113\055\070\346\123\256\034\045\126\010\126
\003\147\204\235\306\303\316\044\142\307\114\066\317\260\006\104
\267\365\137\002\335\331\124\351\057\220\116\172\310\116\203\100
\014\232\227\074\067\277\277\354\366\360\264\205\167\050\301\013
\310\147\202\020\027\070\242\267\006\352\233\277\072\370\351\043
\007\277\164\340\230\070\025\125\170\356\162\000\134\031\243\364
\322\063\340\377\275\321\124\071\051\017
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
For Email Distrust After: Wed Aug 31 00:00:00 2022
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\062\060\070\063\061\060\060\060\060\060\060\132
END

Trust for "Symantec Class 1 Public Primary Certification Authority - G6"
Issuer: CN=Symantec Class 1 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Serial Number:24:32:75:f2:1d:2f:d2:09:33:f7:b4:6a:ca:d0:f3:98
Subject: CN=Symantec Class 1 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Not Valid Before: Tue Oct 18 00:00:00 2011
Not Valid After : Tue Dec 01 23:59:59 2037

Fingerprint (SHA-256):
9D:19:0B:2E:31:45:66:68:5B:E8:A8:89:E2:7A:A8:C7:D7:AE:1D:8A:AD:DB:A3:C1:EC:F9:D2:48:63:CD:34:B9
Fingerprint (SHA1): 51:7F:61:1E:29:91:6B:53:82:FB:72:E7:44:D9:8D:C3:CC:53:6D:64
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Class 1 Public Primary Certification Authority - G6"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\121\177\141\036\051\221\153\123\202\373\162\347\104\331\215\303
\314\123\155\144
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\057\250\264\332\366\144\113\036\202\371\106\075\124\032\174\260
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\061\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\044\062\165\362\035\057\322\011\063\367\264\152\312\320
\363\230
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Symantec Class 2 Public Primary Certification Authority - G6"
#
Issuer: CN=Symantec Class 2 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Serial Number:64:82:9e:fc:37:1e:74:5d:fc:97:ff:97:c8:b1:ff:41
Subject: CN=Symantec Class 2 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Not Valid Before: Tue Oct 18 00:00:00 2011
Not Valid After : Tue Dec 01 23:59:59 2037
Fingerprint (SHA-256):
CB:62:7D:18:B5:8A:D5:6D:DE:33:1A:30:45:6B:C6:5C:60:1A:4E:9B:18:DE:DC:EA:08:E7:DA:AA:07:81:5F:F0

Fingerprint (SHA1): 40:B3:31:A0:E9:BF:E8:55:BC:39:93:CA:70:4F:4E:C2:51:D4:1D:8F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Class 2 Public Primary Certification Authority - G6"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\062\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\062\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\144\202\236\374\067\036\164\135\374\227\377\227\310\261
\377\101
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\366\060\202\002\336\240\003\002\001\002\002\020\144
\202\236\374\067\036\164\135\374\227\377\227\310\261\377\101\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\201
\224\061\013\060\011\006\003\125\004\006\023\002\125\123\061\035
\060\033\006\003\125\004\012\023\024\123\171\155\141\156\164\145
\143\040\103\157\162\160\157\162\141\164\151\157\156\061\037\060
\035\006\003\125\004\013\023\026\123\171\155\141\156\164\145\143
\040\124\162\165\163\164\040\116\145\164\167\157\162\153\061\105
\060\103\006\003\125\004\003\023\074\123\171\155\141\156\164\145
\143\040\103\154\141\163\163\040\062\040\120\165\142\154\151\143
\040\120\162\151\155\141\162\171\040\103\145\162\164\151\146\151

\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\066\060\036\027\015\061\061\061\060\061\070\060
\060\060\060\060\060\132\027\015\063\067\061\062\060\061\062\063
\065\071\065\071\132\060\201\224\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\035\060\033\006\003\125\004\012\023\024
\123\171\155\141\156\164\145\143\040\103\157\162\160\157\162\141
\164\151\157\156\061\037\060\035\006\003\125\004\013\023\026\123
\171\155\141\156\164\145\143\040\124\162\165\163\164\040\116\145
\164\167\157\162\153\061\105\060\103\006\003\125\004\003\023\074
\123\171\155\141\156\164\145\143\040\103\154\141\163\163\040\062
\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165
\164\150\157\162\151\164\171\040\055\040\107\066\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\315\314\351
\005\310\143\205\313\077\100\143\027\275\030\372\065\346\004\147
\127\145\230\051\244\117\311\134\217\017\064\322\370\332\250\023
\142\252\270\036\120\147\170\260\026\114\240\071\251\025\172\256
\355\322\242\300\360\220\067\051\030\046\134\350\015\074\266\154
\111\077\301\340\334\331\113\266\024\031\013\246\323\226\341\326
\011\343\031\046\034\371\037\145\113\371\032\103\034\000\203\326
\320\252\111\242\324\333\346\142\070\272\120\024\103\155\371\061
\370\126\026\331\070\002\221\317\353\154\335\273\071\116\231\341
\060\147\105\361\324\360\215\303\337\376\362\070\007\041\175\000
\136\126\104\263\344\140\275\221\053\234\253\133\004\162\017\262
\050\331\162\253\005\040\102\045\251\133\003\152\040\020\314\061
\360\053\332\065\054\320\373\232\227\116\360\202\113\053\330\137
\066\243\013\055\257\143\015\035\045\177\241\156\134\142\241\215
\050\076\241\374\034\040\370\001\057\272\125\232\021\260\031\322
\310\120\171\153\016\152\005\327\252\004\066\262\243\362\341\137
\167\247\167\234\345\036\334\351\337\152\301\145\135\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\207\214\040\225\310\230\112\321\326\200\006\112\220\064
\104\337\034\115\277\260\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\001\001\000\201\216\262\245\146\226
\267\041\245\266\357\157\043\132\137\333\201\305\102\245\170\301
\151\375\364\074\327\371\134\153\160\162\032\374\132\227\115\000
\200\210\210\202\212\303\161\015\216\305\211\233\054\355\215\013
\322\162\124\365\175\324\134\103\127\351\363\256\245\002\021\366
\166\053\201\127\335\175\332\164\060\375\124\107\366\340\026\156
\246\264\012\110\346\347\165\007\017\051\031\071\316\171\364\266
\154\305\137\231\325\037\113\372\337\155\054\074\015\124\200\160
\360\210\013\200\317\306\150\242\270\035\160\331\166\214\374\356
\245\311\317\255\035\317\231\045\127\132\142\105\313\026\153\275
\111\315\245\243\214\151\171\045\256\270\114\154\213\100\146\113
\026\077\317\002\032\335\341\154\153\007\141\152\166\025\051\231

\177\033\335\210\200\301\277\265\217\163\305\246\226\043\204\246
\050\206\044\063\152\001\056\127\163\045\266\136\277\217\346\035
\141\250\100\051\147\035\207\233\035\177\233\237\231\315\061\326
\124\276\142\273\071\254\150\022\110\221\040\245\313\261\335\376
\157\374\132\344\202\125\131\257\061\251
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
For Email Distrust After: Wed Aug 31 00:00:00 2022
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\062\060\070\063\061\060\060\060\060\060\060\132
END

Trust for "Symantec Class 2 Public Primary Certification Authority - G6"
Issuer: CN=Symantec Class 2 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Serial Number:64:82:9e:fc:37:1e:74:5d:fc:97:ff:97:c8:b1:ff:41
Subject: CN=Symantec Class 2 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Not Valid Before: Tue Oct 18 00:00:00 2011
Not Valid After : Tue Dec 01 23:59:59 2037
Fingerprint (SHA-256):
CB:62:7D:18:B5:8A:D5:6D:DE:33:1A:30:45:6B:C6:5C:60:1A:4E:9B:18:DE:DC:EA:08:E7:DA:AA:07:81:5F:F0
Fingerprint (SHA1): 40:B3:31:A0:E9:BF:E8:55:BC:39:93:CA:70:4F:4E:C2:51:D4:1D:8F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Class 2 Public Primary Certification Authority - G6"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\100\263\061\240\351\277\350\125\274\071\223\312\160\117\116\302
\121\324\035\217
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\175\013\203\345\373\174\255\007\117\040\251\265\337\143\355\171
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\062\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\144\202\236\374\067\036\164\135\374\227\377\227\310\261
\377\101
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST Root CA 3 2013"
#
Issuer: CN=D-TRUST Root CA 3 2013,O=D-Trust GmbH,C=DE
Serial Number: 1039788 (0xfddac)
Subject: CN=D-TRUST Root CA 3 2013,O=D-Trust GmbH,C=DE
Not Valid Before: Fri Sep 20 08:25:51 2013
Not Valid After : Wed Sep 20 08:25:51 2028
Fingerprint (SHA-256):
A1:A8:6D:04:12:1E:B8:7F:02:7C:66:F5:33:03:C2:8E:57:39:F9:43:FC:84:B3:8A:D6:AF:00:90:35:DD:94:57
Fingerprint (SHA1): 6C:7C:CC:E7:D4:AE:51:5F:99:08:CD:3F:F6:E8:C3:78:DF:6F:EF:97
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root CA 3 2013"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\037\060\035\006\003\125\004\003\014
\026\104\055\124\122\125\123\124\040\122\157\157\164\040\103\101
\040\063\040\062\060\061\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\037\060\035\006\003\125\004\003\014
\026\104\055\124\122\125\123\124\040\122\157\157\164\040\103\101
\040\063\040\062\060\061\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\017\335\254
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\016\060\202\002\366\240\003\002\001\002\002\003\017
\335\254\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\105\061\013\060\011\006\003\125\004\006\023\002\104\105

\061\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165
\163\164\040\107\155\142\110\061\037\060\035\006\003\125\004\003
\014\026\104\055\124\122\125\123\124\040\122\157\157\164\040\103
\101\040\063\040\062\060\061\063\060\036\027\015\061\063\060\071
\062\060\060\070\062\065\065\061\132\027\015\062\070\060\071\062
\060\060\070\062\065\065\061\132\060\105\061\013\060\011\006\003
\125\004\006\023\002\104\105\061\025\060\023\006\003\125\004\012
\014\014\104\055\124\162\165\163\164\040\107\155\142\110\061\037
\060\035\006\003\125\004\003\014\026\104\055\124\122\125\123\124
\040\122\157\157\164\040\103\101\040\063\040\062\060\061\063\060
\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000
\304\173\102\222\202\037\354\355\124\230\216\022\300\312\011\337
\223\156\072\223\134\033\344\020\167\236\116\151\210\154\366\341
\151\362\366\233\242\141\261\275\007\040\164\230\145\361\214\046
\010\315\250\065\312\200\066\321\143\155\350\104\172\202\303\154
\136\336\273\350\066\322\304\150\066\214\237\062\275\204\042\340
\334\302\356\020\106\071\155\257\223\071\256\207\346\303\274\011
\311\054\153\147\133\331\233\166\165\114\013\340\273\305\327\274
\076\171\362\137\276\321\220\127\371\256\366\146\137\061\277\323
\155\217\247\272\112\363\043\145\273\267\357\243\045\327\012\352
\130\266\357\210\372\372\171\262\122\130\325\360\254\214\241\121
\164\051\225\252\121\073\220\062\003\237\034\162\164\220\336\075
\355\141\322\345\343\375\144\107\345\271\267\112\251\367\037\256
\226\206\004\254\057\343\244\201\167\267\132\026\377\330\017\077
\366\267\170\314\244\257\372\133\074\022\133\250\122\211\162\357
\210\363\325\104\201\206\225\043\237\173\335\274\331\064\357\174
\224\074\252\300\101\302\343\235\120\032\300\344\031\042\374\263
\002\003\001\000\001\243\202\001\005\060\202\001\001\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035
\006\003\125\035\016\004\026\004\024\077\220\310\175\307\025\157
\363\044\217\251\303\057\113\242\017\041\262\057\347\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\201\276
\006\003\125\035\037\004\201\266\060\201\263\060\164\240\162\240
\160\206\156\154\144\141\160\072\057\057\144\151\162\145\143\164
\157\162\171\056\144\055\164\162\165\163\164\056\156\145\164\057
\103\116\075\104\055\124\122\125\123\124\045\062\060\122\157\157
\164\045\062\060\103\101\045\062\060\063\045\062\060\062\060\061
\063\054\117\075\104\055\124\162\165\163\164\045\062\060\107\155
\142\110\054\103\075\104\105\077\143\145\162\164\151\146\151\143
\141\164\145\162\145\166\157\143\141\164\151\157\156\154\151\163
\164\060\073\240\071\240\067\206\065\150\164\164\160\072\057\057
\143\162\154\056\144\055\164\162\165\163\164\056\156\145\164\057
\143\162\154\057\144\055\164\162\165\163\164\137\162\157\157\164
\137\143\141\137\063\137\062\060\061\063\056\143\162\154\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001
\001\000\016\131\016\130\344\164\110\043\104\317\064\041\265\234
\024\032\255\232\113\267\263\210\155\134\251\027\160\360\052\237

\215\173\371\173\205\372\307\071\350\020\010\260\065\053\137\317
\002\322\323\234\310\013\036\356\005\124\256\067\223\004\011\175
\154\217\302\164\274\370\034\224\276\061\001\100\055\363\044\040
\267\204\125\054\134\310\365\164\112\020\031\213\243\307\355\065
\326\011\110\323\016\300\272\071\250\260\106\002\260\333\306\210
\131\302\276\374\173\261\053\317\176\142\207\125\226\314\001\157
\233\147\041\225\065\213\370\020\374\161\033\267\113\067\151\246
\073\326\354\213\356\301\260\363\045\311\217\222\175\241\352\303
\312\104\277\046\245\164\222\234\343\164\353\235\164\331\313\115
\207\330\374\264\151\154\213\240\103\007\140\170\227\351\331\223
\174\302\106\274\233\067\122\243\355\212\074\023\251\173\123\113
\111\232\021\005\054\013\156\126\254\037\056\202\154\340\151\147
\265\016\155\055\331\344\300\025\361\077\372\030\162\341\025\155
\047\133\055\060\050\053\237\110\232\144\053\231\357\362\165\111
\137\134
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST Root CA 3 2013"
Issuer: CN=D-TRUST Root CA 3 2013,O=D-Trust GmbH,C=DE
Serial Number: 1039788 (0xfddac)
Subject: CN=D-TRUST Root CA 3 2013,O=D-Trust GmbH,C=DE
Not Valid Before: Fri Sep 20 08:25:51 2013
Not Valid After : Wed Sep 20 08:25:51 2028
Fingerprint (SHA-256):
A1:A8:6D:04:12:1E:B8:7F:02:7C:66:F5:33:03:C2:8E:57:39:F9:43:FC:84:B3:8A:D6:AF:00:90:35:DD:94:57
Fingerprint (SHA1): 6C:7C:CC:E7:D4:AE:51:5F:99:08:CD:3F:F6:E8:C3:78:DF:6F:EF:97
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root CA 3 2013"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\154\174\314\347\324\256\121\137\231\010\315\077\366\350\303\170
\337\157\357\227
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\267\042\146\230\176\326\003\340\301\161\346\165\315\126\105\277
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\037\060\035\006\003\125\004\003\014
\026\104\055\124\122\125\123\124\040\122\157\157\164\040\103\101
\040\063\040\062\060\061\063
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\017\335\254
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1"
#
Issuer: CN=TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1,OU=Kamu Sertifikasyon Merkezi - Kamu SM,O=Turkiye Bilimsel ve Teknolojik Arastirma Kurumu - TUBITAK,L=Gebze - Kocaeli,C=TR
Serial Number: 1 (0x1)
Subject: CN=TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1,OU=Kamu Sertifikasyon Merkezi - Kamu SM,O=Turkiye Bilimsel ve Teknolojik Arastirma Kurumu - TUBITAK,L=Gebze - Kocaeli,C=TR
Not Valid Before: Mon Nov 25 08:25:55 2013
Not Valid After : Sun Oct 25 08:25:55 2043
Fingerprint (SHA-256):
46:ED:C3:68:90:46:D5:3A:45:3F:B3:10:4A:B8:0D:CA:EC:65:8B:26:60:EA:16:29:DD:7E:86:79:90:64:87:16
Fingerprint (SHA1): 31:43:64:9B:EC:CE:27:EC:ED:3A:3F:0B:8F:0D:E4:E8:91:DD:EE:CA
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\322\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\030\060\026\006\003\125\004\007\023\017\107\145\142\172\145
\040\055\040\113\157\143\141\145\154\151\061\102\060\100\006\003
\125\004\012\023\071\124\165\162\153\151\171\145\040\102\151\154
\151\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157
\152\151\153\040\101\162\141\163\164\151\162\155\141\040\113\165
\162\165\155\165\040\055\040\124\125\102\111\124\101\113\061\055
\060\053\006\003\125\004\013\023\044\113\141\155\165\040\123\145
\162\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153
\145\172\151\040\055\040\113\141\155\165\040\123\115\061\066\060
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\040\055\040\113\157\143\141\145\154\151\061\102\060\100\006\003

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\151\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157
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\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157\152
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\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153\145
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\141\155\165\040\123\115\040\123\123\114\040\113\157\153\040\123
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\165\155\040\061\060\036\027\015\061\063\061\061\062\065\060\070
\062\065\065\065\132\027\015\064\063\061\060\062\065\060\070\062
\065\065\065\132\060\201\322\061\013\060\011\006\003\125\004\006
\023\002\124\122\061\030\060\026\006\003\125\004\007\023\017\107
\145\142\172\145\040\055\040\113\157\143\141\145\154\151\061\102
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\156\157\154\157\152\151\153\040\101\162\141\163\164\151\162\155
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\001\035\072\017\342\144\070\267\214\274\350\210\371\213\044\253
\056\243\365\067\344\100\216\030\045\171\203\165\037\073\377\154
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\067\174\034\302\376\265\003\354\127\316\274\264\265\305\355\000
\017\123\067\052\115\364\117\014\203\373\206\317\313\376\214\116
\275\207\371\247\213\041\127\234\172\337\003\147\211\054\235\227
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\211\042\063\057\346\205\012\275\245\250\033\066\336\323\334\054
\155\073\307\023\275\131\043\054\346\345\244\367\330\013\355\352
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\163\126\144\200\204\172\223\344\011\271\020\315\237\052\047\341
\000\167\276\110\310\065\250\201\237\344\270\054\311\177\016\260
\322\113\067\135\352\271\325\013\136\064\275\364\163\051\303\355
\046\025\234\176\010\123\212\130\215\320\113\050\337\301\263\337
\040\363\371\343\343\072\337\314\234\224\330\116\117\303\153\027
\267\367\162\350\255\146\063\265\045\123\253\340\370\114\251\235
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\227\074\003\032\272\103\306\226\271\105\162\070\263\247\241\226
\075\221\173\176\300\041\123\114\207\355\362\013\124\225\121\223
\325\042\245\015\212\361\223\016\076\124\016\260\330\311\116\334
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\323\261\061\103\374\244\216\027\361\155\043\253\224\146\370\255
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CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1"
Issuer: CN=TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1,OU=Kamu Sertifikasyon Merkezi - Kamu SM,O=Turkiye Bilimsel ve Teknolojik Arastirma Kurumu - TUBITAK,L=Gebze - Kocaeli,C=TR
Serial Number: 1 (0x1)

Subject: CN=TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1,OU=Kamu Sertifikasyon Merkezi - Kamu SM,O=Turkiye Bilimsel ve Teknolojik Arastirma Kurumu - TUBITAK,L=Gebze - Kocaeli,C=TR
Not Valid Before: Mon Nov 25 08:25:55 2013
Not Valid After : Sun Oct 25 08:25:55 2043
Fingerprint (SHA-256):
46:ED:C3:68:90:46:D5:3A:45:3F:B3:10:4A:B8:0D:CA:EC:65:8B:26:60:EA:16:29:DD:7E:86:79:90:64:87:16
Fingerprint (SHA1): 31:43:64:9B:EC:CE:27:EC:ED:3A:3F:0B:8F:0D:E4:E8:91:DD:EE:CA
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\061\103\144\233\354\316\047\354\355\072\077\013\217\015\344\350
\221\335\356\312
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
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\125\004\012\023\071\124\165\162\153\151\171\145\040\102\151\154
\151\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157
\152\151\153\040\101\162\141\163\164\151\162\155\141\040\113\165
\162\165\155\165\040\055\040\124\125\102\111\124\101\113\061\055
\060\053\006\003\125\004\013\023\044\113\141\155\165\040\123\145
\162\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153
\145\172\151\040\055\040\113\141\155\165\040\123\115\061\066\060
\064\006\003\125\004\003\023\055\124\125\102\111\124\101\113\040
\113\141\155\165\040\123\115\040\123\123\114\040\113\157\153\040
\123\145\162\164\151\146\151\153\141\163\151\040\055\040\123\165
\162\165\155\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GDCA TrustAUTH R5 ROOT"
#
Issuer: CN=GDCA TrustAUTH R5 ROOT,O="GUANG DONG CERTIFICATE AUTHORITY CO.,LTD.",C=CN

Serial Number:7d:09:97:fe:f0:47:ea:7a
Subject: CN=GDCA TrustAUTH R5 ROOT,O="GUANG DONG CERTIFICATE AUTHORITY CO.,LTD.",C=CN
Not Valid Before: Wed Nov 26 05:13:15 2014
Not Valid After : Mon Dec 31 15:59:59 2040
Fingerprint (SHA-256):
BF:FF:8F:D0:44:33:48:7D:6A:8A:A6:0C:1A:29:76:7A:9F:C2:BB:B0:5E:42:0F:71:3A:13:B9:92:89:1D:38:93
Fingerprint (SHA1): 0F:36:38:5B:81:1A:25:C3:9B:31:4E:83:CA:E9:34:66:70:CC:74:B4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GDCA TrustAUTH R5 ROOT"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\062\060\060\006\003\125\004\012\014\051\107\125\101\116\107\040
\104\117\116\107\040\103\105\122\124\111\106\111\103\101\124\105
\040\101\125\124\110\117\122\111\124\131\040\103\117\056\054\114
\124\104\056\061\037\060\035\006\003\125\004\003\014\026\107\104
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\040\101\125\124\110\117\122\111\124\131\040\103\117\056\054\114
\124\104\056\061\037\060\035\006\003\125\004\003\014\026\107\104
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\015\001\001\013\005\000\060\142\061\013\060\011\006\003\125\004
\006\023\002\103\116\061\062\060\060\006\003\125\004\012\014\051
\107\125\101\116\107\040\104\117\116\107\040\103\105\122\124\111
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\040\103\117\056\054\114\124\104\056\061\037\060\035\006\003\125
\004\003\014\026\107\104\103\101\040\124\162\165\163\164\101\125
\124\110\040\122\065\040\122\117\117\124\060\036\027\015\061\064
\061\061\062\066\060\065\061\063\061\065\132\027\015\064\060\061
\062\063\061\061\065\065\071\065\071\132\060\142\061\013\060\011

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\105\122\124\111\106\111\103\101\124\105\040\101\125\124\110\117
\122\111\124\131\040\103\117\056\054\114\124\104\056\061\037\060
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\256\177\367\206\075\162\172\353\245\373\131\116\247\353\225\214
\042\071\171\341\055\010\217\314\274\221\270\101\367\024\301\043
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\276\152\033\046\120\362\066\046\006\220\305\160\001\144\155\166
\146\341\221\333\156\007\300\141\200\056\262\056\057\214\160\247
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\072\101\165\027\314\053\226\167\052\222\041\036\331\225\166\040
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\201\212\030\127\071\205\164\032\102\307\351\133\023\137\217\371
\010\351\222\164\215\365\107\322\253\073\326\373\170\146\116\066
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\235\177\362\220\036\326\132\337\267\106\374\346\206\372\313\340
\040\166\172\272\246\313\365\174\336\142\245\261\213\356\336\202
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\135\036\004\317\067\337\036\250\146\261\214\346\040\152\357\374
\110\116\164\230\102\257\051\157\056\152\307\373\175\321\146\061
\042\314\206\000\176\146\203\014\102\364\275\064\222\303\032\352
\117\312\176\162\115\013\160\214\246\110\273\246\241\024\366\373
\130\104\231\024\256\252\013\223\151\240\051\045\112\245\313\053
\335\212\146\007\026\170\025\127\161\033\354\365\107\204\363\236
\061\067\172\325\177\044\255\344\274\375\375\314\156\203\350\014
\250\267\101\154\007\335\275\074\206\227\057\322
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GDCA TrustAUTH R5 ROOT"
Issuer: CN=GDCA TrustAUTH R5 ROOT,O="GUANG DONG CERTIFICATE AUTHORITY CO.,LTD.",C=CN
Serial Number:7d:09:97:fe:f0:47:ea:7a
Subject: CN=GDCA TrustAUTH R5 ROOT,O="GUANG DONG CERTIFICATE AUTHORITY CO.,LTD.",C=CN
Not Valid Before: Wed Nov 26 05:13:15 2014
Not Valid After : Mon Dec 31 15:59:59 2040
Fingerprint (SHA-256):
BF:FF:8F:D0:44:33:48:7D:6A:8A:A6:0C:1A:29:76:7A:9F:C2:BB:B0:5E:42:0F:71:3A:13:B9:92:89:1D:38:93
Fingerprint (SHA1): 0F:36:38:5B:81:1A:25:C3:9B:31:4E:83:CA:E9:34:66:70:CC:74:B4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GDCA TrustAUTH R5 ROOT"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\017\066\070\133\201\032\045\303\233\061\116\203\312\351\064\146
\160\314\164\264
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\143\314\331\075\064\065\134\157\123\243\342\010\160\110\037\264
END
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\062\060\060\006\003\125\004\012\014\051\107\125\101\116\107\040
\104\117\116\107\040\103\105\122\124\111\106\111\103\101\124\105
\040\101\125\124\110\117\122\111\124\131\040\103\117\056\054\114
\124\104\056\061\037\060\035\006\003\125\004\003\014\026\107\104
\103\101\040\124\162\165\163\164\101\125\124\110\040\122\065\040
\122\117\117\124
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\175\011\227\376\360\107\352\172
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TrustCor RootCert CA-1"
#
Issuer: CN=TrustCor RootCert CA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Serial Number:00:da:9b:ec:71:f3:03:b0:19
Subject: CN=TrustCor RootCert CA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Not Valid Before: Thu Feb 04 12:32:16 2016
Not Valid After : Mon Dec 31 17:23:16 2029
Fingerprint (SHA-256):
D4:0E:9C:86:CD:8F:E4:68:C1:77:69:59:F4:9E:A7:74:FA:54:86:84:B6:C4:06:F3:90:92:61:F4:DC:E2:57:5C
Fingerprint (SHA1): FF:BD:CD:E7:82:C8:43:5E:3C:6F:26:86:5C:CA:A8:3A:45:5B:C3:0A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustCor RootCert CA-1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\244\061\013\060\011\006\003\125\004\006\023\002\120\101

\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\037\060\035\006\003\125\004\003\014
\026\124\162\165\163\164\103\157\162\040\122\157\157\164\103\145
\162\164\040\103\101\055\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\244\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\037\060\035\006\003\125\004\003\014
\026\124\162\165\163\164\103\157\162\040\122\157\157\164\103\145
\162\164\040\103\101\055\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\332\233\354\161\363\003\260\031
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\060\060\202\003\030\240\003\002\001\002\002\011\000
\332\233\354\161\363\003\260\031\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\201\244\061\013\060\011\006\003
\125\004\006\023\002\120\101\061\017\060\015\006\003\125\004\010
\014\006\120\141\156\141\155\141\061\024\060\022\006\003\125\004
\007\014\013\120\141\156\141\155\141\040\103\151\164\171\061\044
\060\042\006\003\125\004\012\014\033\124\162\165\163\164\103\157
\162\040\123\171\163\164\145\155\163\040\123\056\040\144\145\040
\122\056\114\056\061\047\060\045\006\003\125\004\013\014\036\124
\162\165\163\164\103\157\162\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\061\037\060
\035\006\003\125\004\003\014\026\124\162\165\163\164\103\157\162
\040\122\157\157\164\103\145\162\164\040\103\101\055\061\060\036
\027\015\061\066\060\062\060\064\061\062\063\062\061\066\132\027
\015\062\071\061\062\063\061\061\067\062\063\061\066\132\060\201
\244\061\013\060\011\006\003\125\004\006\023\002\120\101\061\017
\060\015\006\003\125\004\010\014\006\120\141\156\141\155\141\061
\024\060\022\006\003\125\004\007\014\013\120\141\156\141\155\141
\040\103\151\164\171\061\044\060\042\006\003\125\004\012\014\033

\124\162\165\163\164\103\157\162\040\123\171\163\164\145\155\163
\040\123\056\040\144\145\040\122\056\114\056\061\047\060\045\006
\003\125\004\013\014\036\124\162\165\163\164\103\157\162\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171\061\037\060\035\006\003\125\004\003\014\026\124
\162\165\163\164\103\157\162\040\122\157\157\164\103\145\162\164
\040\103\101\055\061\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\277\216\267\225\342\302\046\022\153\063
\031\307\100\130\012\253\131\252\215\000\243\374\200\307\120\173
\216\324\040\046\272\062\022\330\043\124\111\045\020\042\230\235
\106\322\301\311\236\116\033\056\054\016\070\363\032\045\150\034
\246\132\005\346\036\213\110\277\230\226\164\076\151\312\351\265
\170\245\006\274\325\000\136\011\012\362\047\172\122\374\055\325
\261\352\264\211\141\044\363\032\023\333\251\317\122\355\014\044
\272\271\236\354\176\000\164\372\223\255\154\051\222\256\121\264
\273\323\127\277\263\363\250\215\234\364\044\113\052\326\231\236
\364\236\376\300\176\102\072\347\013\225\123\332\267\150\016\220
\114\373\160\077\217\112\054\224\363\046\335\143\151\251\224\330
\020\116\305\107\010\220\231\033\027\115\271\154\156\357\140\225
\021\216\041\200\265\275\240\163\330\320\262\167\304\105\352\132
\046\373\146\166\166\370\006\037\141\155\017\125\305\203\267\020
\126\162\006\007\245\363\261\032\003\005\144\016\235\132\212\326
\206\160\033\044\336\376\050\212\053\320\152\260\374\172\242\334
\262\171\016\213\145\017\002\003\001\000\001\243\143\060\141\060
\035\006\003\125\035\016\004\026\004\024\356\153\111\074\172\077
\015\343\261\011\267\212\310\253\031\237\163\063\120\347\060\037
\006\003\125\035\043\004\030\060\026\200\024\356\153\111\074\172
\077\015\343\261\011\267\212\310\253\031\237\163\063\120\347\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\001\001\000\045\030\324\221\217\023\356\217\036\035\021\123
\332\055\104\051\031\240\036\153\061\236\115\016\236\255\075\134
\101\157\225\053\044\241\171\230\072\070\066\373\273\146\236\110
\377\220\220\357\075\324\270\233\264\207\165\077\040\233\316\162
\317\241\125\301\115\144\242\031\006\241\007\063\014\013\051\345
\361\352\253\243\354\265\012\164\220\307\175\162\362\327\134\237
\221\357\221\213\267\334\355\146\242\317\216\146\073\274\237\072
\002\340\047\335\026\230\300\225\324\012\244\344\201\232\165\224
\065\234\220\137\210\067\006\255\131\225\012\260\321\147\323\031
\312\211\347\062\132\066\034\076\202\250\132\223\276\306\320\144
\221\266\317\331\266\030\317\333\176\322\145\243\246\304\216\027
\061\301\373\176\166\333\323\205\343\130\262\167\172\166\073\154
\057\120\034\347\333\366\147\171\037\365\202\225\232\007\247\024
\257\217\334\050\041\147\011\322\326\115\132\034\031\034\216\167
\134\303\224\044\075\062\153\113\176\324\170\224\203\276\067\115
\316\137\307\036\116\074\340\211\063\225\013\017\245\062\326\074

\132\171\054\031
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TrustCor RootCert CA-1"
Issuer: CN=TrustCor RootCert CA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Serial Number:00:da:9b:ec:71:f3:03:b0:19
Subject: CN=TrustCor RootCert CA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Not Valid Before: Thu Feb 04 12:32:16 2016
Not Valid After : Mon Dec 31 17:23:16 2029
Fingerprint (SHA-256):
D4:0E:9C:86:CD:8F:E4:68:C1:77:69:59:F4:9E:A7:74:FA:54:86:84:B6:C4:06:F3:90:92:61:F4:DC:E2:57:5C
Fingerprint (SHA1): FF:BD:CD:E7:82:C8:43:5E:3C:6F:26:86:5C:CA:A8:3A:45:5B:C3:0A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustCor RootCert CA-1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\377\275\315\347\202\310\103\136\074\157\046\206\134\312\250\072
\105\133\303\012
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\156\205\361\334\032\000\323\042\325\262\262\254\153\067\005\105
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\244\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\037\060\035\006\003\125\004\003\014
\026\124\162\165\163\164\103\157\162\040\122\157\157\164\103\145
\162\164\040\103\101\055\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\332\233\354\161\363\003\260\031
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TrustCor RootCert CA-2"
#
Issuer: CN=TrustCor RootCert CA-2,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Serial Number:25:a1:df:ca:33:cb:59:02
Subject: CN=TrustCor RootCert CA-2,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Not Valid Before: Thu Feb 04 12:32:23 2016
Not Valid After : Sun Dec 31 17:26:39 2034
Fingerprint (SHA-256):
07:53:E9:40:37:8C:1B:D5:E3:83:6E:39:5D:AE:A5:CB:83:9E:50:46:F1:BD:0E:AE:19:51:CF:10:FE:C7:C9:65
Fingerprint (SHA1): B8:BE:6D:CB:56:F1:55:B9:63:D4:12:CA:4E:06:34:C7:94:B2:1C:C0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustCor RootCert CA-2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\244\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\037\060\035\006\003\125\004\003\014
\026\124\162\165\163\164\103\157\162\040\122\157\157\164\103\145
\162\164\040\103\101\055\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\244\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\037\060\035\006\003\125\004\003\014
\026\124\162\165\163\164\103\157\162\040\122\157\157\164\103\145
\162\164\040\103\101\055\062
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\045\241\337\312\063\313\131\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\057\060\202\004\027\240\003\002\001\002\002\010\045
\241\337\312\063\313\131\002\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\201\244\061\013\060\011\006\003\125
\004\006\023\002\120\101\061\017\060\015\006\003\125\004\010\014
\006\120\141\156\141\155\141\061\024\060\022\006\003\125\004\007
\014\013\120\141\156\141\155\141\040\103\151\164\171\061\044\060
\042\006\003\125\004\012\014\033\124\162\165\163\164\103\157\162
\040\123\171\163\164\145\155\163\040\123\056\040\144\145\040\122
\056\114\056\061\047\060\045\006\003\125\004\013\014\036\124\162
\165\163\164\103\157\162\040\103\145\162\164\151\146\151\143\141
\164\145\040\101\165\164\150\157\162\151\164\171\061\037\060\035
\006\003\125\004\003\014\026\124\162\165\163\164\103\157\162\040
\122\157\157\164\103\145\162\164\040\103\101\055\062\060\036\027
\015\061\066\060\062\060\064\061\062\063\062\062\063\132\027\015
\063\064\061\062\063\061\061\067\062\066\063\071\132\060\201\244
\061\013\060\011\006\003\125\004\006\023\002\120\101\061\017\060
\015\006\003\125\004\010\014\006\120\141\156\141\155\141\061\024
\060\022\006\003\125\004\007\014\013\120\141\156\141\155\141\040
\103\151\164\171\061\044\060\042\006\003\125\004\012\014\033\124
\162\165\163\164\103\157\162\040\123\171\163\164\145\155\163\040
\123\056\040\144\145\040\122\056\114\056\061\047\060\045\006\003
\125\004\013\014\036\124\162\165\163\164\103\157\162\040\103\145
\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162
\151\164\171\061\037\060\035\006\003\125\004\003\014\026\124\162
\165\163\164\103\157\162\040\122\157\157\164\103\145\162\164\040
\103\101\055\062\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\247\040\156\302\052\242\142\044\225\220\166
\310\070\176\200\322\253\301\233\145\005\224\364\301\012\020\325
\002\254\355\237\223\307\207\310\260\047\053\102\014\075\012\076
\101\132\236\165\335\215\312\340\233\354\150\062\244\151\222\150
\214\013\201\016\126\240\076\032\335\054\045\024\202\057\227\323
\144\106\364\124\251\334\072\124\055\061\053\231\202\362\331\052
\327\357\161\000\270\061\244\276\172\044\007\303\102\040\362\212
\324\222\004\033\145\126\114\154\324\373\266\141\132\107\043\264
\330\151\264\267\072\320\164\074\014\165\241\214\116\166\241\351
\333\052\245\073\372\316\260\377\176\152\050\375\047\034\310\261
\351\051\361\127\156\144\264\320\301\025\155\016\276\056\016\106
\310\136\364\121\376\357\016\143\072\073\161\272\317\157\131\312
\014\343\233\135\111\270\114\342\127\261\230\212\102\127\234\166
\357\357\275\321\150\250\322\364\011\273\167\065\276\045\202\010
\304\026\054\104\040\126\251\104\021\167\357\135\264\035\252\136
\153\076\213\062\366\007\057\127\004\222\312\365\376\235\302\351
\350\263\216\114\113\002\061\331\344\074\110\202\047\367\030\202

\166\110\072\161\261\023\241\071\325\056\305\064\302\035\142\205
\337\003\376\115\364\257\075\337\134\133\215\372\160\341\245\176
\047\307\206\056\152\217\022\306\204\136\103\121\120\234\031\233
\170\346\374\366\355\107\176\173\075\146\357\023\023\210\137\074
\241\143\373\371\254\207\065\237\363\202\236\244\077\012\234\061
\151\213\231\244\210\112\216\156\146\115\357\026\304\017\171\050
\041\140\015\205\026\175\327\124\070\361\222\126\375\265\063\114
\203\334\327\020\237\113\375\306\370\102\275\272\174\163\002\340
\377\175\315\133\341\324\254\141\173\127\325\112\173\133\324\205
\130\047\135\277\370\053\140\254\240\046\256\024\041\047\306\167
\232\063\200\074\136\106\077\367\303\261\243\206\063\306\350\136
\015\271\065\054\252\106\301\205\002\165\200\240\353\044\373\025
\252\344\147\177\156\167\077\364\004\212\057\174\173\343\027\141
\360\335\011\251\040\310\276\011\244\320\176\104\303\262\060\112
\070\252\251\354\030\232\007\202\053\333\270\234\030\255\332\340
\106\027\254\317\135\002\003\001\000\001\243\143\060\141\060\035
\006\003\125\035\016\004\026\004\024\331\376\041\100\156\224\236
\274\233\075\234\175\230\040\031\345\214\060\142\262\060\037\006
\003\125\035\043\004\030\060\026\200\024\331\376\041\100\156\224
\236\274\233\075\234\175\230\040\031\345\214\060\142\262\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\002\001\000\236\105\236\014\073\266\357\341\072\310\174\321\000
\075\317\342\352\006\265\262\072\273\006\113\150\172\320\043\227
\164\247\054\360\010\330\171\132\327\132\204\212\330\022\232\033
\331\175\134\115\160\305\245\371\253\345\243\211\211\335\001\372
\354\335\371\351\222\227\333\260\106\102\363\323\142\252\225\376
\061\147\024\151\130\220\012\252\013\356\067\043\307\120\121\264
\365\176\236\343\173\367\344\314\102\062\055\111\014\313\377\111
\014\233\036\064\375\156\156\226\212\171\003\266\157\333\011\313
\375\137\145\024\067\341\070\365\363\141\026\130\344\265\155\015
\013\004\033\077\120\055\177\263\307\172\032\026\200\140\370\212
\037\351\033\052\306\371\272\001\032\151\277\322\130\307\124\127
\010\217\341\071\140\167\113\254\131\204\032\210\361\335\313\117
\170\327\347\341\063\055\374\356\101\372\040\260\276\313\367\070
\224\300\341\320\205\017\273\355\054\163\253\355\376\222\166\032
\144\177\133\015\063\011\007\063\173\006\077\021\244\134\160\074
\205\300\317\343\220\250\203\167\372\333\346\305\214\150\147\020
\147\245\122\055\360\304\231\217\177\277\321\153\342\265\107\326
\331\320\205\231\115\224\233\017\113\215\356\000\132\107\035\021
\003\254\101\030\257\207\267\157\014\072\217\312\317\334\003\301
\242\011\310\345\375\200\136\310\140\102\001\033\032\123\132\273
\067\246\267\274\272\204\351\036\154\032\324\144\332\324\103\376
\223\213\113\362\054\171\026\020\324\223\013\210\217\241\330\206
\024\106\221\107\233\050\044\357\127\122\116\134\102\234\252\367
\111\354\047\350\100\036\263\246\211\042\162\234\365\015\063\264
\130\243\060\073\335\324\152\124\223\276\032\115\363\223\224\367

\374\204\013\077\204\040\134\064\003\104\305\332\255\274\012\301
\002\317\036\345\224\331\363\216\133\330\114\360\235\354\141\027
\273\024\062\124\014\002\051\223\036\222\206\366\177\357\347\222
\005\016\131\335\231\010\056\056\372\234\000\122\323\305\146\051
\344\247\227\104\244\016\050\201\023\065\305\366\157\144\346\101
\304\325\057\314\064\105\045\317\101\000\226\075\112\056\302\226
\230\117\116\112\234\227\267\333\037\222\062\310\377\017\121\156
\326\354\011
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TrustCor RootCert CA-2"
Issuer: CN=TrustCor RootCert CA-2,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Serial Number:25:a1:df:ca:33:cb:59:02
Subject: CN=TrustCor RootCert CA-2,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Not Valid Before: Thu Feb 04 12:32:23 2016
Not Valid After : Sun Dec 31 17:26:39 2034
Fingerprint (SHA-256):
07:53:E9:40:37:8C:1B:D5:E3:83:6E:39:5D:AE:A5:CB:83:9E:50:46:F1:BD:0E:AE:19:51:CF:10:FE:C7:C9:65
Fingerprint (SHA1): B8:BE:6D:CB:56:F1:55:B9:63:D4:12:CA:4E:06:34:C7:94:B2:1C:C0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustCor RootCert CA-2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\270\276\155\313\126\361\125\271\143\324\022\312\116\006\064\307
\224\262\034\300
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\242\341\370\030\013\272\105\325\307\101\052\273\067\122\105\144
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\244\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\037\060\035\006\003\125\004\003\014
\026\124\162\165\163\164\103\157\162\040\122\157\157\164\103\145
\162\164\040\103\101\055\062

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\045\241\337\312\063\313\131\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TrustCor ECA-1"
#
Issuer: CN=TrustCor ECA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Serial Number:00:84:82:2c:5f:1c:62:d0:40
Subject: CN=TrustCor ECA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Not Valid Before: Thu Feb 04 12:32:33 2016
Not Valid After : Mon Dec 31 17:28:07 2029
Fingerprint (SHA-256):
5A:88:5D:B1:9C:01:D9:12:C5:75:93:88:93:8C:AF:BB:DF:03:1A:B2:D4:8E:91:EE:15:58:9B:42:97:1D:03:9C
Fingerprint (SHA1): 58:D1:DF:95:95:67:6B:63:C0:F0:5B:1C:17:4D:8B:84:0B:C8:78:BD
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustCor ECA-1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\234\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\027\060\025\006\003\125\004\003\014
\016\124\162\165\163\164\103\157\162\040\105\103\101\055\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\234\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060

\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\027\060\025\006\003\125\004\003\014
\016\124\162\165\163\164\103\157\162\040\105\103\101\055\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\204\202\054\137\034\142\320\100
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\040\060\202\003\010\240\003\002\001\002\002\011\000
\204\202\054\137\034\142\320\100\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\201\234\061\013\060\011\006\003
\125\004\006\023\002\120\101\061\017\060\015\006\003\125\004\010
\014\006\120\141\156\141\155\141\061\024\060\022\006\003\125\004
\007\014\013\120\141\156\141\155\141\040\103\151\164\171\061\044
\060\042\006\003\125\004\012\014\033\124\162\165\163\164\103\157
\162\040\123\171\163\164\145\155\163\040\123\056\040\144\145\040
\122\056\114\056\061\047\060\045\006\003\125\004\013\014\036\124
\162\165\163\164\103\157\162\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\061\027\060
\025\006\003\125\004\003\014\016\124\162\165\163\164\103\157\162
\040\105\103\101\055\061\060\036\027\015\061\066\060\062\060\064
\061\062\063\062\063\063\132\027\015\062\071\061\062\063\061\061
\067\062\070\060\067\132\060\201\234\061\013\060\011\006\003\125
\004\006\023\002\120\101\061\017\060\015\006\003\125\004\010\014
\006\120\141\156\141\155\141\061\024\060\022\006\003\125\004\007
\014\013\120\141\156\141\155\141\040\103\151\164\171\061\044\060
\042\006\003\125\004\012\014\033\124\162\165\163\164\103\157\162
\040\123\171\163\164\145\155\163\040\123\056\040\144\145\040\122
\056\114\056\061\047\060\045\006\003\125\004\013\014\036\124\162
\165\163\164\103\157\162\040\103\145\162\164\151\146\151\143\141
\164\145\040\101\165\164\150\157\162\151\164\171\061\027\060\025
\006\003\125\004\003\014\016\124\162\165\163\164\103\157\162\040
\105\103\101\055\061\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\317\217\340\021\265\237\250\166\166\333
\337\017\124\357\163\143\051\202\255\107\306\243\153\355\376\137
\063\370\103\121\351\032\063\221\061\027\240\164\304\324\247\001
\346\262\222\076\152\235\355\016\371\164\230\100\323\077\003\200
\006\202\100\350\261\342\247\121\247\035\203\046\153\253\336\372
\027\221\053\330\306\254\036\261\236\031\001\325\227\246\352\015
\267\304\125\037\047\174\322\010\325\166\037\051\025\207\100\071
\335\070\105\021\165\320\232\247\064\340\277\315\310\122\035\271
\107\176\015\270\273\306\014\366\163\127\026\132\176\103\221\037
\125\072\306\155\104\004\252\234\251\234\247\114\211\027\203\256
\243\004\136\122\200\213\036\022\045\021\031\327\014\175\175\061
\104\101\352\333\257\260\034\357\201\320\054\305\232\041\233\075
\355\102\073\120\046\362\354\316\161\141\006\142\041\124\116\177

\301\235\076\177\040\214\200\313\052\330\227\142\310\203\063\221
\175\260\242\132\017\127\350\073\314\362\045\262\324\174\057\354
\115\306\241\072\025\172\347\266\135\065\365\366\110\112\066\105
\146\324\272\230\130\301\002\003\001\000\001\243\143\060\141\060
\035\006\003\125\035\016\004\026\004\024\104\236\110\365\314\155
\110\324\240\113\177\376\131\044\057\203\227\231\232\206\060\037
\006\003\125\035\043\004\030\060\026\200\024\104\236\110\365\314
\155\110\324\240\113\177\376\131\044\057\203\227\231\232\206\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\001\001\000\005\076\065\134\025\160\233\311\307\163\141\157
\162\053\324\302\217\362\103\135\002\316\304\224\271\224\021\203
\147\135\342\147\154\165\166\277\273\014\252\066\306\255\107\223
\143\334\036\176\326\336\056\376\351\031\062\070\003\177\024\366
\000\163\054\131\261\041\006\341\373\254\030\225\014\243\377\231
\226\367\053\047\233\325\044\314\035\335\301\072\340\230\104\260
\304\344\076\167\261\163\251\144\054\366\034\001\174\077\135\105
\205\300\205\347\045\217\225\334\027\363\074\237\032\156\260\312
\343\035\052\351\114\143\372\044\141\142\326\332\176\266\034\154
\365\002\035\324\052\335\125\220\353\052\021\107\074\056\136\164
\262\202\042\245\175\123\037\105\354\047\221\175\347\042\026\350
\300\150\066\330\306\361\117\200\104\062\371\341\321\321\035\252
\336\250\253\234\004\257\255\040\016\144\230\115\245\153\300\110
\130\226\151\115\334\007\214\121\223\242\337\237\017\075\213\140
\264\202\215\252\010\116\142\105\340\371\013\322\340\340\074\133
\336\134\161\047\045\302\346\003\201\213\020\123\343\307\125\242
\264\237\327\346
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TrustCor ECA-1"
Issuer: CN=TrustCor ECA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Serial Number:00:84:82:2c:5f:1c:62:d0:40
Subject: CN=TrustCor ECA-1,OU=TrustCor Certificate Authority,O=TrustCor Systems S. de R.L.,L=Panama City,ST=Panama,C=PA
Not Valid Before: Thu Feb 04 12:32:33 2016
Not Valid After : Mon Dec 31 17:28:07 2029
Fingerprint (SHA-256):
5A:88:5D:B1:9C:01:D9:12:C5:75:93:88:93:8C:AF:BB:DF:03:1A:B2:D4:8E:91:EE:15:58:9B:42:97:1D:03:9C
Fingerprint (SHA1): 58:D1:DF:95:95:67:6B:63:C0:F0:5B:1C:17:4D:8B:84:0B:C8:78:BD
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "TrustCor ECA-1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\130\321\337\225\225\147\153\143\300\360\133\034\027\115\213\204
\013\310\170\275
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\047\222\043\035\012\365\100\174\351\346\153\235\330\365\347\154
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\234\061\013\060\011\006\003\125\004\006\023\002\120\101
\061\017\060\015\006\003\125\004\010\014\006\120\141\156\141\155
\141\061\024\060\022\006\003\125\004\007\014\013\120\141\156\141
\155\141\040\103\151\164\171\061\044\060\042\006\003\125\004\012
\014\033\124\162\165\163\164\103\157\162\040\123\171\163\164\145
\155\163\040\123\056\040\144\145\040\122\056\114\056\061\047\060
\045\006\003\125\004\013\014\036\124\162\165\163\164\103\157\162
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\061\027\060\025\006\003\125\004\003\014
\016\124\162\165\163\164\103\157\162\040\105\103\101\055\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\204\202\054\137\034\142\320\100
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com Root Certification Authority RSA"
#
Issuer: CN=SSL.com Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:7b:2c:9b:d3:16:80:32:99
Subject: CN=SSL.com Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 17:39:39 2016
Not Valid After : Tue Feb 12 17:39:39 2041
Fingerprint (SHA-256):
85:66:6A:56:2E:E0:BE:5C:E9:25:C1:D8:89:0A:6F:76:A8:7E:C1:6D:4D:7D:5F:29:EA:74:19:CF:20:12:3B:69
Fingerprint (SHA1): B7:AB:33:08:D1:EA:44:77:BA:14:80:12:5A:6F:BD:A9:36:49:0C:BB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Root Certification Authority RSA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061

\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\122\123\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\122\123\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\173\054\233\323\026\200\062\231
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\335\060\202\003\305\240\003\002\001\002\002\010\173
\054\233\323\026\200\062\231\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\174\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\016\060\014\006\003\125\004\010\014\005
\124\145\170\141\163\061\020\060\016\006\003\125\004\007\014\007
\110\157\165\163\164\157\156\061\030\060\026\006\003\125\004\012
\014\017\123\123\114\040\103\157\162\160\157\162\141\164\151\157
\156\061\061\060\057\006\003\125\004\003\014\050\123\123\114\056
\143\157\155\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\122\123\101\060\036\027\015\061\066\060\062\061\062\061\067
\063\071\063\071\132\027\015\064\061\060\062\061\062\061\067\063
\071\063\071\132\060\174\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\016\060\014\006\003\125\004\010\014\005\124\145
\170\141\163\061\020\060\016\006\003\125\004\007\014\007\110\157
\165\163\164\157\156\061\030\060\026\006\003\125\004\012\014\017
\123\123\114\040\103\157\162\160\157\162\141\164\151\157\156\061
\061\060\057\006\003\125\004\003\014\050\123\123\114\056\143\157
\155\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122
\123\101\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\371\017\335\243\053\175\313\320\052\376\354\147\205
\246\347\056\033\272\167\341\343\365\257\244\354\372\112\135\221
\304\127\107\153\030\167\153\166\362\375\223\344\075\017\302\026
\236\013\146\303\126\224\236\027\203\205\316\126\357\362\026\375

\000\142\365\042\011\124\350\145\027\116\101\271\340\117\106\227
\252\033\310\270\156\142\136\151\261\137\333\052\002\176\374\154
\312\363\101\330\355\320\350\374\077\141\110\355\260\003\024\035
\020\016\113\031\340\273\116\354\206\145\377\066\363\136\147\002
\013\235\206\125\141\375\172\070\355\376\342\031\000\267\157\241
\120\142\165\164\074\240\372\310\045\222\264\156\172\042\307\370
\036\241\343\262\335\221\061\253\053\035\004\377\245\112\004\067
\351\205\244\063\053\375\342\326\125\064\174\031\244\112\150\307
\262\250\323\267\312\241\223\210\353\301\227\274\214\371\035\331
\042\204\044\164\307\004\075\152\251\051\223\314\353\270\133\341
\376\137\045\252\064\130\310\301\043\124\235\033\230\021\303\070
\234\176\075\206\154\245\017\100\206\174\002\364\134\002\117\050
\313\256\161\237\017\072\310\063\376\021\045\065\352\374\272\305
\140\075\331\174\030\325\262\251\323\165\170\003\162\042\312\072
\303\037\357\054\345\056\251\372\236\054\266\121\106\375\257\003
\326\352\140\150\352\205\026\066\153\205\351\036\300\263\335\304
\044\334\200\052\201\101\155\224\076\310\340\311\201\101\000\236
\136\277\177\305\010\230\242\030\054\102\100\263\371\157\070\047
\113\116\200\364\075\201\107\340\210\174\352\034\316\265\165\134
\121\056\034\053\177\032\162\050\347\000\265\321\164\306\327\344
\237\255\007\223\266\123\065\065\374\067\344\303\366\135\026\276
\041\163\336\222\012\370\240\143\152\274\226\222\152\076\370\274
\145\125\233\336\365\015\211\046\004\374\045\032\246\045\151\313
\302\155\312\174\342\131\137\227\254\353\357\056\310\274\327\033
\131\074\053\314\362\031\310\223\153\047\143\031\317\374\351\046
\370\312\161\233\177\223\376\064\147\204\116\231\353\374\263\170
\011\063\160\272\146\246\166\355\033\163\353\032\245\015\304\042
\023\040\224\126\012\116\054\154\116\261\375\317\234\011\272\242
\063\355\207\002\003\001\000\001\243\143\060\141\060\035\006\003
\125\035\016\004\026\004\024\335\004\011\007\242\365\172\175\122
\123\022\222\225\356\070\200\045\015\246\131\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003
\125\035\043\004\030\060\026\200\024\335\004\011\007\242\365\172
\175\122\123\022\222\225\356\070\200\045\015\246\131\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\206\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001
\000\040\030\021\224\051\373\046\235\034\036\036\160\141\361\225
\162\223\161\044\255\150\223\130\216\062\257\033\263\160\003\374
\045\053\164\205\220\075\170\152\364\271\213\245\227\073\265\030
\221\273\036\247\371\100\133\221\371\125\231\257\036\021\320\134
\035\247\146\343\261\224\007\014\062\071\246\352\033\260\171\330
\035\234\160\104\343\212\335\304\371\225\037\212\070\103\077\001
\205\245\107\247\075\106\262\274\345\042\150\367\173\234\330\054
\076\012\041\310\055\063\254\277\305\201\231\061\164\301\165\161
\305\276\261\360\043\105\364\235\153\374\031\143\235\243\274\004
\306\030\013\045\273\123\211\017\263\200\120\336\105\356\104\177
\253\224\170\144\230\323\366\050\335\207\330\160\145\164\373\016
\271\023\353\247\017\141\251\062\226\314\336\273\355\143\114\030

\273\251\100\367\240\124\156\040\210\161\165\030\352\172\264\064
\162\340\043\047\167\134\266\220\352\206\045\100\253\357\063\017
\313\237\202\276\242\040\373\366\265\055\032\346\302\205\261\164
\017\373\310\145\002\244\122\001\107\335\111\042\301\277\330\353
\153\254\176\336\354\143\063\025\267\043\010\217\306\017\215\101
\132\335\216\305\271\217\345\105\077\170\333\272\322\033\100\261
\376\161\115\077\340\201\242\272\136\264\354\025\340\223\335\010
\037\176\341\125\231\013\041\336\223\236\012\373\346\243\111\275
\066\060\376\347\167\262\240\165\227\265\055\201\210\027\145\040
\367\332\220\000\237\311\122\314\062\312\065\174\365\075\017\330
\053\327\365\046\154\311\006\064\226\026\352\160\131\032\062\171
\171\013\266\210\177\017\122\110\075\277\154\330\242\104\056\321
\116\267\162\130\323\211\023\225\376\104\253\370\327\213\033\156
\234\274\054\240\133\325\152\000\257\137\067\341\325\372\020\013
\230\234\206\347\046\217\316\360\354\156\212\127\013\200\343\116
\262\300\240\143\141\220\272\125\150\067\164\152\266\222\333\237
\241\206\042\266\145\047\016\354\266\237\102\140\344\147\302\265
\332\101\013\304\323\213\141\033\274\372\037\221\053\327\104\007
\136\272\051\254\331\305\351\357\123\110\132\353\200\361\050\130
\041\315\260\006\125\373\047\077\123\220\160\251\004\036\127\047
\271
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com Root Certification Authority RSA"
Issuer: CN=SSL.com Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:7b:2c:9b:d3:16:80:32:99
Subject: CN=SSL.com Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 17:39:39 2016
Not Valid After : Tue Feb 12 17:39:39 2041
Fingerprint (SHA-256):
85:66:6A:56:2E:E0:BE:5C:E9:25:C1:D8:89:0A:6F:76:A8:7E:C1:6D:4D:7D:5F:29:EA:74:19:CF:20:12:3B:69
Fingerprint (SHA1): B7:AB:33:08:D1:EA:44:77:BA:14:80:12:5A:6F:BD:A9:36:49:0C:BB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Root Certification Authority RSA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\267\253\063\010\321\352\104\167\272\024\200\022\132\157\275\251
\066\111\014\273
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\206\151\022\300\160\361\354\254\254\302\325\274\245\133\241\051
END
CKA_ISSUER MULTILINE_OCTAL

\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\122\123\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\173\054\233\323\026\200\062\231
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com Root Certification Authority ECC"
#
Issuer: CN=SSL.com Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:75:e6:df:cb:c1:68:5b:a8
Subject: CN=SSL.com Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 18:14:03 2016
Not Valid After : Tue Feb 12 18:14:03 2041
Fingerprint (SHA-256):
34:17:BB:06:CC:60:07:DA:1B:96:1C:92:0B:8A:B4:CE:3F:AD:82:0E:4A:A3:0B:9A:CB:C4:A7:4E:BD:CE:BC:65
Fingerprint (SHA1): C3:19:7C:39:24:E6:54:AF:1B:C4:AB:20:95:7A:E2:C3:0E:13:02:6A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Root Certification Authority ECC"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\105\103\103
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061

\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\105\103\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\165\346\337\313\301\150\133\250
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\215\060\202\002\024\240\003\002\001\002\002\010\165
\346\337\313\301\150\133\250\060\012\006\010\052\206\110\316\075
\004\003\002\060\174\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\016\060\014\006\003\125\004\010\014\005\124\145\170
\141\163\061\020\060\016\006\003\125\004\007\014\007\110\157\165
\163\164\157\156\061\030\060\026\006\003\125\004\012\014\017\123
\123\114\040\103\157\162\160\157\162\141\164\151\157\156\061\061
\060\057\006\003\125\004\003\014\050\123\123\114\056\143\157\155
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\105\103
\103\060\036\027\015\061\066\060\062\061\062\061\070\061\064\060
\063\132\027\015\064\061\060\062\061\062\061\070\061\064\060\063
\132\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163
\061\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164
\157\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114
\040\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057
\006\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\040\105\103\103\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\105\156\251\120\304\246\043\066\236
\137\050\215\027\313\226\042\144\077\334\172\216\035\314\010\263
\242\161\044\272\216\111\271\004\033\107\226\130\253\055\225\310
\355\236\010\065\310\047\353\211\214\123\130\353\142\212\376\360
\133\017\153\061\122\143\101\073\211\315\354\354\266\215\031\323
\064\007\334\273\306\006\177\302\105\225\354\313\177\250\043\340
\011\351\201\372\363\107\323\243\143\060\141\060\035\006\003\125
\035\016\004\026\004\024\202\321\205\163\060\347\065\004\323\216
\002\222\373\345\244\321\304\041\350\315\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125
\035\043\004\030\060\026\200\024\202\321\205\163\060\347\065\004
\323\216\002\222\373\345\244\321\304\041\350\315\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\206\060\012\006\010
\052\206\110\316\075\004\003\002\003\147\000\060\144\002\060\157
\347\353\131\021\244\140\317\141\260\226\173\355\005\371\057\023
\221\334\355\345\374\120\153\021\106\106\263\034\041\000\142\273

\276\303\347\350\315\007\231\371\015\013\135\162\076\304\252\002
\060\037\274\272\013\342\060\044\373\174\155\200\125\012\231\076
\200\015\063\345\146\243\263\243\273\245\325\213\217\011\054\246
\135\176\342\360\007\010\150\155\322\174\151\156\137\337\345\152
\145
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com Root Certification Authority ECC"
Issuer: CN=SSL.com Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:75:e6:df:cb:c1:68:5b:a8
Subject: CN=SSL.com Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 18:14:03 2016
Not Valid After : Tue Feb 12 18:14:03 2041
Fingerprint (SHA-256):
34:17:BB:06:CC:60:07:DA:1B:96:1C:92:0B:8A:B4:CE:3F:AD:82:0E:4A:A3:0B:9A:CB:C4:A7:4E:BD:CE:BC:65
Fingerprint (SHA1): C3:19:7C:39:24:E6:54:AF:1B:C4:AB:20:95:7A:E2:C3:0E:13:02:6A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Root Certification Authority ECC"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\303\031\174\071\044\346\124\257\033\304\253\040\225\172\342\303
\016\023\002\152
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\056\332\344\071\177\234\217\067\321\160\237\046\027\121\072\216
END
CKA_ISSUER MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\105\103\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\165\346\337\313\301\150\133\250
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com EV Root Certification Authority RSA R2"
#
Issuer: CN=SSL.com EV Root Certification Authority RSA R2,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:56:b6:29:cd:34:bc:78:f6
Subject: CN=SSL.com EV Root Certification Authority RSA R2,O=SSL
Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Wed May 31 18:14:37 2017
Not Valid After : Fri May 30 18:14:37 2042
Fingerprint (SHA-256):
2E:7B:F1:6C:C2:24:85:A7:BB:E2:AA:86:96:75:07:61:B0:AE:39:BE:3B:2F:E9:D0:CC:6D:4E:F7:34:91:42:5C
Fingerprint (SHA1): 74:3A:F0:52:9B:D0:32:A0:F4:4A:83:CD:D4:BA:A9:7B:7C:2E:C4:9A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority RSA R2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163
\061\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164
\157\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114
\040\103\157\162\160\157\162\141\164\151\157\156\061\067\060\065
\006\003\125\004\003\014\056\123\123\114\056\143\157\155\040\105
\126\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122
\123\101\040\122\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163
\061\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164
\157\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114
\040\103\157\162\160\157\162\141\164\151\157\156\061\067\060\065
\006\003\125\004\003\014\056\123\123\114\056\143\157\155\040\105
\126\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122
\123\101\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\126\266\051\315\064\274\170\366
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\353\060\202\003\323\240\003\002\001\002\002\010\126
\266\051\315\064\274\170\366\060\015\006\011\052\206\110\206\367

\015\001\001\013\005\000\060\201\202\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\016\060\014\006\003\125\004\010\014
\005\124\145\170\141\163\061\020\060\016\006\003\125\004\007\014
\007\110\157\165\163\164\157\156\061\030\060\026\006\003\125\004
\012\014\017\123\123\114\040\103\157\162\160\157\162\141\164\151
\157\156\061\067\060\065\006\003\125\004\003\014\056\123\123\114
\056\143\157\155\040\105\126\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\040\122\123\101\040\122\062\060\036\027\015\061
\067\060\065\063\061\061\070\061\064\063\067\132\027\015\064\062
\060\065\063\060\061\070\061\064\063\067\132\060\201\202\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\016\060\014\006
\003\125\004\010\014\005\124\145\170\141\163\061\020\060\016\006
\003\125\004\007\014\007\110\157\165\163\164\157\156\061\030\060
\026\006\003\125\004\012\014\017\123\123\114\040\103\157\162\160
\157\162\141\164\151\157\156\061\067\060\065\006\003\125\004\003
\014\056\123\123\114\056\143\157\155\040\105\126\040\122\157\157
\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\040\122\123\101\040\122\062
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\217\066\145\100\341\326\115\300\327\264\351\106\332\153\352
\063\107\315\114\371\175\175\276\275\055\075\360\333\170\341\206
\245\331\272\011\127\150\355\127\076\240\320\010\101\203\347\050
\101\044\037\343\162\025\320\001\032\373\136\160\043\262\313\237
\071\343\317\305\116\306\222\155\046\306\173\273\263\332\047\235
\012\206\351\201\067\005\376\360\161\161\354\303\034\351\143\242
\027\024\235\357\033\147\323\205\125\002\002\326\111\311\314\132
\341\261\367\157\062\237\311\324\073\210\101\250\234\275\313\253
\333\155\173\011\037\242\114\162\220\332\053\010\374\317\074\124
\316\147\017\250\317\135\226\031\013\304\343\162\353\255\321\175
\035\047\357\222\353\020\277\133\353\073\257\317\200\335\301\322
\226\004\133\172\176\244\251\074\070\166\244\142\216\240\071\136
\352\167\317\135\000\131\217\146\054\076\007\242\243\005\046\021
\151\227\352\205\267\017\226\013\113\310\100\341\120\272\056\212
\313\367\017\232\042\347\177\232\067\023\315\362\115\023\153\041
\321\300\314\042\362\241\106\366\104\151\234\312\141\065\007\000
\157\326\141\010\021\352\272\270\366\351\263\140\345\115\271\354
\237\024\146\311\127\130\333\315\207\151\370\212\206\022\003\107
\277\146\023\166\254\167\175\064\044\205\203\315\327\252\234\220
\032\237\041\054\177\170\267\144\270\330\350\246\364\170\263\125
\313\204\322\062\304\170\256\243\217\141\335\316\010\123\255\354
\210\374\025\344\232\015\346\237\032\167\316\114\217\270\024\025
\075\142\234\206\070\006\000\146\022\344\131\166\132\123\300\002
\230\242\020\053\150\104\173\216\171\316\063\112\166\252\133\201
\026\033\265\212\330\320\000\173\136\142\264\011\326\206\143\016
\246\005\225\111\272\050\213\210\223\262\064\034\330\244\125\156
\267\034\320\336\231\125\073\043\364\042\340\371\051\146\046\354

\040\120\167\333\112\013\217\276\345\002\140\160\101\136\324\256
\120\071\042\024\046\313\262\073\163\164\125\107\007\171\201\071
\250\060\023\104\345\004\212\256\226\023\045\102\017\271\123\304
\233\374\315\344\034\336\074\372\253\326\006\112\037\147\246\230
\060\034\335\054\333\334\030\225\127\146\306\377\134\213\126\365
\167\002\003\001\000\001\243\143\060\141\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125
\035\043\004\030\060\026\200\024\371\140\273\324\343\325\064\366
\270\365\006\200\045\247\163\333\106\151\250\236\060\035\006\003
\125\035\016\004\026\004\024\371\140\273\324\343\325\064\366\270
\365\006\200\045\247\163\333\106\151\250\236\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\126
\263\216\313\012\235\111\216\277\244\304\221\273\146\027\005\121
\230\165\373\345\120\054\172\236\361\024\372\253\323\212\076\377
\221\051\217\143\213\330\264\251\124\001\015\276\223\206\057\371
\112\155\307\136\365\127\371\312\125\034\022\276\107\017\066\305
\337\152\267\333\165\302\107\045\177\271\361\143\370\150\055\125
\004\321\362\215\260\244\317\274\074\136\037\170\347\245\240\040
\160\260\004\305\267\367\162\247\336\042\015\275\063\045\106\214
\144\222\046\343\076\056\143\226\332\233\214\075\370\030\011\327
\003\314\175\206\202\340\312\004\007\121\120\327\377\222\325\014
\357\332\206\237\231\327\353\267\257\150\342\071\046\224\272\150
\267\277\203\323\352\172\147\075\142\147\256\045\345\162\350\342
\344\354\256\022\366\113\053\074\237\351\260\100\363\070\124\263
\375\267\150\310\332\306\217\121\074\262\373\221\334\034\347\233
\235\341\267\015\162\217\342\244\304\251\170\371\353\024\254\306
\103\005\302\145\071\050\030\002\303\202\262\235\005\276\145\355
\226\137\145\164\074\373\011\065\056\173\234\023\375\033\017\135
\307\155\201\072\126\017\314\073\341\257\002\057\042\254\106\312
\106\074\240\034\114\326\104\264\136\056\134\025\146\011\341\046
\051\376\306\122\141\272\261\163\377\303\014\234\345\154\152\224
\077\024\312\100\026\225\204\363\131\251\254\137\114\141\223\155
\321\073\314\242\225\014\042\246\147\147\104\056\271\331\322\212
\101\263\146\013\132\373\175\043\245\362\032\260\377\336\233\203
\224\056\321\077\337\222\267\221\257\005\073\145\307\240\154\261
\315\142\022\303\220\033\343\045\316\064\274\157\167\166\261\020
\303\367\005\032\300\326\257\164\142\110\027\167\222\151\220\141
\034\336\225\200\164\124\217\030\034\303\363\003\320\277\244\103
\165\206\123\030\172\012\056\011\034\066\237\221\375\202\212\042
\113\321\016\120\045\335\313\003\014\027\311\203\000\010\116\065
\115\212\213\355\360\002\224\146\054\104\177\313\225\047\226\027
\255\011\060\254\266\161\027\156\213\027\366\034\011\324\055\073
\230\245\161\323\124\023\331\140\363\365\113\146\117\372\361\356
\040\022\215\264\254\127\261\105\143\241\254\166\251\302\373
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE

CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com EV Root Certification Authority RSA R2"
Issuer: CN=SSL.com EV Root Certification Authority RSA R2,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:56:b6:29:cd:34:bc:78:f6
Subject: CN=SSL.com EV Root Certification Authority RSA R2,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Wed May 31 18:14:37 2017
Not Valid After : Fri May 30 18:14:37 2042
Fingerprint (SHA-256):
2E:7B:F1:6C:C2:24:85:A7:BB:E2:AA:86:96:75:07:61:B0:AE:39:BE:3B:2F:E9:D0:CC:6D:4E:F7:34:91:42:5C
Fingerprint (SHA1): 74:3A:F0:52:9B:D0:32:A0:F4:4A:83:CD:D4:BA:A9:7B:7C:2E:C4:9A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority RSA R2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\164\072\360\122\233\320\062\240\364\112\203\315\324\272\251\173
\174\056\304\232
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\341\036\061\130\032\256\124\123\002\366\027\152\021\173\115\225
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163
\061\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164
\157\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114
\040\103\157\162\160\157\162\141\164\151\157\156\061\067\060\065
\006\003\125\004\003\014\056\123\123\114\056\143\157\155\040\105
\126\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122
\123\101\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\126\266\051\315\064\274\170\366
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com EV Root Certification Authority ECC"
#
Issuer: CN=SSL.com EV Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:2c:29:9c:5b:16:ed:05:95

Subject: CN=SSL.com EV Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 18:15:23 2016
Not Valid After : Tue Feb 12 18:15:23 2041
Fingerprint (SHA-256):
22:A2:C1:F7:BD:ED:70:4C:C1:E7:01:B5:F4:08:C3:10:88:0F:E9:56:B5:DE:2A:4A:44:F9:9C:87:3A:25:A7:C8
Fingerprint (SHA1): 4C:DD:51:A3:D1:F5:20:32:14:B0:C6:C5:32:23:03:91:C7:46:42:6D
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority ECC"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\064\060\062\006
\003\125\004\003\014\053\123\123\114\056\143\157\155\040\105\126
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\105\103
\103
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\064\060\062\006
\003\125\004\003\014\053\123\123\114\056\143\157\155\040\105\126
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\105\103
\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\054\051\234\133\026\355\005\225
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\224\060\202\002\032\240\003\002\001\002\002\010\054
\051\234\133\026\355\005\225\060\012\006\010\052\206\110\316\075
\004\003\002\060\177\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\016\060\014\006\003\125\004\010\014\005\124\145\170
\141\163\061\020\060\016\006\003\125\004\007\014\007\110\157\165
\163\164\157\156\061\030\060\026\006\003\125\004\012\014\017\123
\123\114\040\103\157\162\160\157\162\141\164\151\157\156\061\064
\060\062\006\003\125\004\003\014\053\123\123\114\056\143\157\155
\040\105\126\040\122\157\157\164\040\103\145\162\164\151\146\151

\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\105\103\103\060\036\027\015\061\066\060\062\061\062\061\070
\061\065\062\063\132\027\015\064\061\060\062\061\062\061\070\061
\065\062\063\132\060\177\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\016\060\014\006\003\125\004\010\014\005\124\145
\170\141\163\061\020\060\016\006\003\125\004\007\014\007\110\157
\165\163\164\157\156\061\030\060\026\006\003\125\004\012\014\017
\123\123\114\040\103\157\162\160\157\162\141\164\151\157\156\061
\064\060\062\006\003\125\004\003\014\053\123\123\114\056\143\157
\155\040\105\126\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\040\105\103\103\060\166\060\020\006\007\052\206\110\316\075
\002\001\006\005\053\201\004\000\042\003\142\000\004\252\022\107
\220\230\033\373\357\303\100\007\203\040\116\361\060\202\242\006
\321\362\222\206\141\362\366\041\150\312\000\304\307\352\103\000
\124\206\334\375\037\337\000\270\101\142\134\334\160\026\062\336
\037\231\324\314\305\007\310\010\037\141\026\007\121\075\175\134
\007\123\343\065\070\214\337\315\237\331\056\015\112\266\031\056
\132\160\132\006\355\276\360\241\260\312\320\011\051\243\143\060
\141\060\035\006\003\125\035\016\004\026\004\024\133\312\136\345
\336\322\201\252\315\250\055\144\121\266\331\162\233\227\346\117
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\037\006\003\125\035\043\004\030\060\026\200\024\133\312
\136\345\336\322\201\252\315\250\055\144\121\266\331\162\233\227
\346\117\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\206\060\012\006\010\052\206\110\316\075\004\003\002\003\150
\000\060\145\002\061\000\212\346\100\211\067\353\351\325\023\331
\312\324\153\044\363\260\075\207\106\130\032\354\261\337\157\373
\126\272\160\153\307\070\314\350\261\214\117\017\367\361\147\166
\016\203\320\036\121\217\002\060\075\366\043\050\046\114\306\140
\207\223\046\233\262\065\036\272\326\367\074\321\034\316\372\045
\074\246\032\201\025\133\363\022\017\154\356\145\212\311\207\250
\371\007\340\142\232\214\134\112
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com EV Root Certification Authority ECC"
Issuer: CN=SSL.com EV Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:2c:29:9c:5b:16:ed:05:95
Subject: CN=SSL.com EV Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 18:15:23 2016
Not Valid After : Tue Feb 12 18:15:23 2041
Fingerprint (SHA-256):
22:A2:C1:F7:BD:ED:70:4C:C1:E7:01:B5:F4:08:C3:10:88:0F:E9:56:B5:DE:2A:4A:44:F9:9C:87:3A:25:A7:C8
Fingerprint (SHA1): 4C:DD:51:A3:D1:F5:20:32:14:B0:C6:C5:32:23:03:91:C7:46:42:6D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority ECC"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\114\335\121\243\321\365\040\062\024\260\306\305\062\043\003\221
\307\106\102\155
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\131\123\042\145\203\102\001\124\300\316\102\271\132\174\362\220
END
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\064\060\062\006
\003\125\004\003\014\053\123\123\114\056\143\157\155\040\105\126
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\105\103
\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\054\051\234\133\026\355\005\225
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Root CA - R6"
#
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R6
Serial Number:45:e6:bb:03:83:33:c3:85:65:48:e6:ff:45:51
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R6
Not Valid Before: Wed Dec 10 00:00:00 2014
Not Valid After : Sun Dec 10 00:00:00 2034
Fingerprint (SHA-256):
2C:AB:EA:FE:37:D0:6C:A2:2A:BA:73:91:C0:03:3D:25:98:29:52:C4:53:64:73:49:76:3A:3A:B5:AD:6C:CF:69
Fingerprint (SHA1): 80:94:64:0E:B5:A7:A1:CA:11:9C:1F:DD:D5:9F:81:02:63:A7:FB:D1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA - R6"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\066\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\066\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\016\105\346\273\003\203\063\303\205\145\110\346\377\105\121
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\203\060\202\003\153\240\003\002\001\002\002\016\105
\346\273\003\203\063\303\205\145\110\346\377\105\121\060\015\006
\011\052\206\110\206\367\015\001\001\014\005\000\060\114\061\040
\060\036\006\003\125\004\013\023\027\107\154\157\142\141\154\123
\151\147\156\040\122\157\157\164\040\103\101\040\055\040\122\066
\061\023\060\021\006\003\125\004\012\023\012\107\154\157\142\141
\154\123\151\147\156\061\023\060\021\006\003\125\004\003\023\012
\107\154\157\142\141\154\123\151\147\156\060\036\027\015\061\064
\061\062\061\060\060\060\060\060\060\060\132\027\015\063\064\061
\062\061\060\060\060\060\060\060\060\132\060\114\061\040\060\036
\006\003\125\004\013\023\027\107\154\157\142\141\154\123\151\147
\156\040\122\157\157\164\040\103\101\040\055\040\122\066\061\023
\060\021\006\003\125\004\012\023\012\107\154\157\142\141\154\123
\151\147\156\061\023\060\021\006\003\125\004\003\023\012\107\154
\157\142\141\154\123\151\147\156\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\225\007\350\163\312\146\371
\354\024\312\173\074\367\015\010\361\264\105\013\054\202\264\110
\306\353\133\074\256\203\270\101\222\063\024\244\157\177\351\052
\314\306\260\210\153\305\266\211\321\306\262\377\024\316\121\024
\041\354\112\335\033\132\306\326\207\356\115\072\025\006\355\144
\146\013\222\200\312\104\336\163\224\116\363\247\211\177\117\170
\143\010\310\022\120\155\102\146\057\115\271\171\050\115\122\032
\212\032\200\267\031\201\016\176\304\212\274\144\114\041\034\103
\150\327\075\074\212\305\262\146\325\220\232\267\061\006\305\276
\342\155\062\006\246\036\371\271\353\252\243\270\277\276\202\143
\120\320\360\030\211\337\344\017\171\365\352\242\037\052\322\160
\056\173\347\274\223\273\155\123\342\110\174\214\020\007\070\377
\146\262\167\141\176\340\352\214\074\252\264\244\366\363\225\112
\022\007\155\375\214\262\211\317\320\240\141\167\310\130\164\260

\324\043\072\367\135\072\312\242\333\235\011\336\135\104\055\220
\361\201\315\127\222\372\176\274\120\004\143\064\337\153\223\030
\276\153\066\262\071\344\254\044\066\267\360\357\266\034\023\127
\223\266\336\262\370\342\205\267\163\242\270\065\252\105\362\340
\235\066\241\157\124\212\361\162\126\156\056\210\305\121\102\104
\025\224\356\243\305\070\226\233\116\116\132\013\107\363\006\066
\111\167\060\274\161\067\345\246\354\041\010\165\374\346\141\026
\077\167\325\331\221\227\204\012\154\324\002\115\164\300\024\355
\375\071\373\203\362\136\024\241\004\260\013\351\376\356\217\341
\156\013\262\010\263\141\146\011\152\261\006\072\145\226\131\300
\360\065\375\311\332\050\215\032\021\207\160\201\012\250\232\165
\035\236\072\206\005\000\236\333\200\326\045\371\334\005\236\047
\131\114\166\071\133\352\371\245\241\330\203\017\321\377\337\060
\021\371\205\317\063\110\365\312\155\144\024\054\172\130\117\323
\113\010\111\305\225\144\032\143\016\171\075\365\263\214\312\130
\255\234\102\105\171\156\016\207\031\134\124\261\145\266\277\214
\233\334\023\351\015\157\270\056\334\147\156\311\213\021\265\204
\024\212\000\031\160\203\171\221\227\221\324\032\047\277\067\036
\062\007\330\024\143\074\050\114\257\002\003\001\000\001\243\143
\060\141\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\035\006\003\125\035\016\004\026\004\024\256\154
\005\243\223\023\342\242\347\342\327\034\326\307\360\177\310\147
\123\240\060\037\006\003\125\035\043\004\030\060\026\200\024\256
\154\005\243\223\023\342\242\347\342\327\034\326\307\360\177\310
\147\123\240\060\015\006\011\052\206\110\206\367\015\001\001\014
\005\000\003\202\002\001\000\203\045\355\350\321\375\225\122\315
\236\300\004\240\221\151\346\134\320\204\336\334\255\242\117\350
\107\170\326\145\230\251\133\250\074\207\174\002\212\321\156\267
\026\163\346\137\300\124\230\325\164\276\301\315\342\021\221\255
\043\030\075\335\341\162\104\226\264\225\136\300\173\216\231\170
\026\103\023\126\127\263\242\263\073\265\167\334\100\162\254\243
\353\233\065\076\261\010\041\241\347\304\103\067\171\062\276\265
\347\234\054\114\274\103\051\231\216\060\323\254\041\340\343\035
\372\330\007\063\166\124\000\042\052\271\115\040\056\160\150\332
\345\123\374\203\134\323\235\362\377\104\014\104\146\362\322\343
\275\106\000\032\155\002\272\045\135\215\241\061\121\335\124\106
\034\115\333\231\226\357\032\034\004\134\246\025\357\170\340\171
\376\135\333\076\252\114\125\375\232\025\251\157\341\246\373\337
\160\060\351\303\356\102\106\355\302\223\005\211\372\175\143\173
\077\320\161\201\174\000\350\230\256\016\170\064\303\045\373\257
\012\237\040\153\335\073\023\217\022\214\342\101\032\110\172\163
\240\167\151\307\266\134\177\202\310\036\376\130\033\050\053\250
\154\255\136\155\300\005\322\173\267\353\200\376\045\067\376\002
\233\150\254\102\135\303\356\365\314\334\360\120\165\322\066\151
\234\346\173\004\337\156\006\151\266\336\012\011\110\131\207\353
\173\024\140\172\144\252\151\103\357\221\307\114\354\030\335\154
\357\123\055\214\231\341\136\362\162\076\317\124\310\275\147\354

\244\017\114\105\377\323\271\060\043\007\114\217\020\277\206\226
\331\231\132\264\231\127\034\244\314\273\025\211\123\272\054\005
\017\344\304\236\031\261\030\064\325\114\235\272\355\367\037\257
\044\225\004\170\250\003\273\356\201\345\332\137\174\213\112\241
\220\164\045\247\263\076\113\310\054\126\275\307\310\357\070\342
\134\222\360\171\367\234\204\272\164\055\141\001\040\176\176\321
\362\117\007\131\137\213\055\103\122\353\106\014\224\341\365\146
\107\171\167\325\124\133\037\255\044\067\313\105\132\116\240\104
\110\310\330\260\231\305\025\204\011\366\326\111\111\300\145\270
\346\032\161\156\240\250\361\202\350\105\076\154\326\002\327\012
\147\203\005\132\311\244\020
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root CA - R6"
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R6
Serial Number:45:e6:bb:03:83:33:c3:85:65:48:e6:ff:45:51
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R6
Not Valid Before: Wed Dec 10 00:00:00 2014
Not Valid After : Sun Dec 10 00:00:00 2034
Fingerprint (SHA-256):
2C:AB:EA:FE:37:D0:6C:A2:2A:BA:73:91:C0:03:3D:25:98:29:52:C4:53:64:73:49:76:3A:3A:B5:AD:6C:CF:69
Fingerprint (SHA1): 80:94:64:0E:B5:A7:A1:CA:11:9C:1F:DD:D5:9F:81:02:63:A7:FB:D1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA - R6"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\200\224\144\016\265\247\241\312\021\234\037\335\325\237\201\002
\143\247\373\321
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\117\335\007\344\324\042\144\071\036\014\067\102\352\321\306\256
END
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\066\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\016\105\346\273\003\203\063\303\205\145\110\346\377\105\121
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "OISTE WISeKey Global Root GC CA"
#
Issuer: CN=OISTE WISeKey Global Root GC CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Serial Number:21:2a:56:0c:ae:da:0c:ab:40:45:bf:2b:a2:2d:3a:ea
Subject: CN=OISTE WISeKey Global Root GC CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Not Valid Before: Tue May 09 09:48:34 2017
Not Valid After : Fri May 09 09:58:33 2042
Fingerprint (SHA-256):
85:60:F9:1C:36:24:DA:BA:95:70:B5:FE:A0:DB:E3:6F:F1:1A:83:23:BE:94:86:85:4F:B3:F3:4A:55:71:19:8D
Fingerprint (SHA1): E0:11:84:5E:34:DE:BE:88:81:B9:9C:F6:16:26:D1:96:1F:C3:B9:31
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GC CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\103\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\103\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\041\052\126\014\256\332\014\253\100\105\277\053\242\055
\072\352
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\151\060\202\001\357\240\003\002\001\002\002\020\041
\052\126\014\256\332\014\253\100\105\277\053\242\055\072\352\060
\012\006\010\052\206\110\316\075\004\003\003\060\155\061\013\060

\011\006\003\125\004\006\023\002\103\110\061\020\060\016\006\003
\125\004\012\023\007\127\111\123\145\113\145\171\061\042\060\040
\006\003\125\004\013\023\031\117\111\123\124\105\040\106\157\165
\156\144\141\164\151\157\156\040\105\156\144\157\162\163\145\144
\061\050\060\046\006\003\125\004\003\023\037\117\111\123\124\105
\040\127\111\123\145\113\145\171\040\107\154\157\142\141\154\040
\122\157\157\164\040\107\103\040\103\101\060\036\027\015\061\067
\060\065\060\071\060\071\064\070\063\064\132\027\015\064\062\060
\065\060\071\060\071\065\070\063\063\132\060\155\061\013\060\011
\006\003\125\004\006\023\002\103\110\061\020\060\016\006\003\125
\004\012\023\007\127\111\123\145\113\145\171\061\042\060\040\006
\003\125\004\013\023\031\117\111\123\124\105\040\106\157\165\156
\144\141\164\151\157\156\040\105\156\144\157\162\163\145\144\061
\050\060\046\006\003\125\004\003\023\037\117\111\123\124\105\040
\127\111\123\145\113\145\171\040\107\154\157\142\141\154\040\122
\157\157\164\040\107\103\040\103\101\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\114\351\120\300\306\017\162\030\274\330\361\272\263\211\342
\171\112\243\026\247\153\124\044\333\121\377\352\364\011\044\303
\013\042\237\313\152\047\202\201\015\322\300\257\061\344\164\202
\156\312\045\331\214\165\235\361\333\320\232\242\113\041\176\026
\247\143\220\322\071\324\261\207\170\137\030\226\017\120\033\065
\067\017\152\306\334\331\023\115\244\216\220\067\346\275\133\061
\221\243\124\060\122\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\110\207\024\254\343\303\236\220\140\072\327\312\211\356\323
\255\214\264\120\146\060\020\006\011\053\006\001\004\001\202\067
\025\001\004\003\002\001\000\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\060\046\307\151\133\334\325
\347\262\347\310\014\214\214\303\335\171\214\033\143\325\311\122
\224\116\115\202\112\163\036\262\200\204\251\045\300\114\132\155
\111\051\140\170\023\342\176\110\353\144\002\061\000\333\064\040
\062\010\377\232\111\002\266\210\336\024\257\135\154\231\161\215
\032\077\213\327\340\242\066\206\034\007\202\072\166\123\375\302
\242\355\357\173\260\200\117\130\017\113\123\071\275
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "OISTE WISeKey Global Root GC CA"
Issuer: CN=OISTE WISeKey Global Root GC CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Serial Number:21:2a:56:0c:ae:da:0c:ab:40:45:bf:2b:a2:2d:3a:ea
Subject: CN=OISTE WISeKey Global Root GC CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Not Valid Before: Tue May 09 09:48:34 2017
Not Valid After : Fri May 09 09:58:33 2042
Fingerprint (SHA-256):

85:60:F9:1C:36:24:DA:BA:95:70:B5:FE:A0:DB:E3:6F:F1:1A:83:23:BE:94:86:85:4F:B3:F3:4A:55:71:19:8D
Fingerprint (SHA1): E0:11:84:5E:34:DE:BE:88:81:B9:9C:F6:16:26:D1:96:1F:C3:B9:31
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GC CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\340\021\204\136\064\336\276\210\201\271\234\366\026\046\321\226
\037\303\271\061
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\251\326\271\055\057\223\144\370\245\151\312\221\351\150\007\043
END
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\103\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\041\052\126\014\256\332\014\253\100\105\277\053\242\055
\072\352
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "UCA Global G2 Root"
#
Issuer: CN=UCA Global G2 Root,O=UniTrust,C=CN
Serial Number:5d:df:b1:da:5a:a3:ed:5d:be:5a:65:20:65:03:90:ef
Subject: CN=UCA Global G2 Root,O=UniTrust,C=CN
Not Valid Before: Fri Mar 11 00:00:00 2016
Not Valid After : Mon Dec 31 00:00:00 2040
Fingerprint (SHA-256):
9B:EA:11:C9:76:FE:01:47:64:C1:BE:56:A6:F9:14:B5:A5:60:31:7A:BD:99:88:39:33:82:E5:16:1A:A0:49:3C
Fingerprint (SHA1): 28:F9:78:16:19:7A:FF:18:25:18:AA:44:FE:C1:A0:CE:5C:B6:4C:8A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Global G2 Root"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\033\060\031\006\003\125\004\003\014\022\125\103\101
\040\107\154\157\142\141\154\040\107\062\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\033\060\031\006\003\125\004\003\014\022\125\103\101
\040\107\154\157\142\141\154\040\107\062\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\135\337\261\332\132\243\355\135\276\132\145\040\145\003
\220\357
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\106\060\202\003\056\240\003\002\001\002\002\020\135
\337\261\332\132\243\355\135\276\132\145\040\145\003\220\357\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\075
\061\013\060\011\006\003\125\004\006\023\002\103\116\061\021\060
\017\006\003\125\004\012\014\010\125\156\151\124\162\165\163\164
\061\033\060\031\006\003\125\004\003\014\022\125\103\101\040\107
\154\157\142\141\154\040\107\062\040\122\157\157\164\060\036\027
\015\061\066\060\063\061\061\060\060\060\060\060\060\132\027\015
\064\060\061\062\063\061\060\060\060\060\060\060\132\060\075\061
\013\060\011\006\003\125\004\006\023\002\103\116\061\021\060\017
\006\003\125\004\012\014\010\125\156\151\124\162\165\163\164\061
\033\060\031\006\003\125\004\003\014\022\125\103\101\040\107\154
\157\142\141\154\040\107\062\040\122\157\157\164\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\305\346\053
\157\174\357\046\005\047\243\201\044\332\157\313\001\371\231\232
\251\062\302\042\207\141\101\221\073\313\303\150\033\006\305\114
\251\053\301\147\027\042\035\053\355\371\051\211\223\242\170\275
\222\153\240\243\015\242\176\312\223\263\246\321\214\065\325\165
\371\027\366\317\105\305\345\172\354\167\223\240\217\043\256\016
\032\003\177\276\324\320\355\056\173\253\106\043\133\377\054\346
\124\172\224\300\052\025\360\311\215\260\172\073\044\341\327\150
\342\061\074\006\063\106\266\124\021\246\245\057\042\124\052\130
\015\001\002\361\372\025\121\147\154\300\372\327\266\033\177\321
\126\210\057\032\072\215\073\273\202\021\340\107\000\320\122\207
\253\373\206\176\017\044\153\100\235\064\147\274\215\307\055\206
\157\171\076\216\251\074\027\113\177\260\231\343\260\161\140\334
\013\365\144\303\316\103\274\155\161\271\322\336\047\133\212\350
\330\306\256\341\131\175\317\050\055\065\270\225\126\032\361\262

\130\113\267\022\067\310\174\263\355\113\200\341\215\372\062\043
\266\157\267\110\225\010\261\104\116\205\214\072\002\124\040\057
\337\277\127\117\073\072\220\041\327\301\046\065\124\040\354\307
\077\107\354\357\132\277\113\172\301\255\073\027\120\134\142\330
\017\113\112\334\053\372\156\274\163\222\315\354\307\120\350\101
\226\327\251\176\155\330\351\035\217\212\265\271\130\222\272\112
\222\053\014\126\375\200\353\010\360\136\051\156\033\034\014\257
\217\223\211\255\333\275\243\236\041\312\211\031\354\337\265\303
\032\353\026\376\170\066\114\326\156\320\076\027\034\220\027\153
\046\272\373\172\057\277\021\034\030\016\055\163\003\217\240\345
\065\240\132\342\114\165\035\161\341\071\070\123\170\100\314\203
\223\327\012\236\235\133\217\212\344\345\340\110\344\110\262\107
\315\116\052\165\052\173\362\042\366\311\276\011\221\226\127\172
\210\210\254\356\160\254\371\334\051\343\014\034\073\022\116\104
\326\247\116\260\046\310\363\331\032\227\221\150\352\357\215\106
\006\322\126\105\130\232\074\014\017\203\270\005\045\303\071\317
\073\244\064\211\267\171\022\057\107\305\347\251\227\151\374\246
\167\147\265\337\173\361\172\145\025\344\141\126\145\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\201\304\214\314\365\344\060\377\245\014\010\137\214\025
\147\041\164\001\337\337\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\002\001\000\023\145\042\365\216\053
\255\104\344\313\377\271\150\346\303\200\110\075\004\173\372\043
\057\172\355\066\332\262\316\155\366\346\236\345\137\130\217\313
\067\062\241\310\145\266\256\070\075\065\033\076\274\073\266\004
\320\274\371\111\365\233\367\205\305\066\266\313\274\370\310\071
\325\344\137\007\275\025\124\227\164\312\312\355\117\272\272\144
\166\237\201\270\204\105\111\114\215\157\242\353\261\314\321\303
\224\332\104\302\346\342\352\030\350\242\037\047\005\272\327\345
\326\251\315\335\357\166\230\215\000\016\315\033\372\003\267\216
\200\130\016\047\077\122\373\224\242\312\136\145\311\326\204\332
\271\065\161\363\046\300\117\167\346\201\047\322\167\073\232\024
\157\171\364\366\320\341\323\224\272\320\127\121\275\047\005\015
\301\375\310\022\060\356\157\215\021\053\010\235\324\324\277\200
\105\024\232\210\104\332\060\352\264\247\343\356\357\133\202\325
\076\326\255\170\222\333\134\074\363\330\255\372\270\153\177\304
\066\050\266\002\025\212\124\054\234\260\027\163\216\320\067\243
\024\074\230\225\000\014\051\005\133\236\111\111\261\137\307\343
\313\317\047\145\216\065\027\267\127\310\060\331\101\133\271\024
\266\350\302\017\224\061\247\224\230\314\152\353\265\341\047\365
\020\250\001\350\216\022\142\350\210\314\265\177\106\227\300\233
\020\146\070\032\066\106\137\042\150\075\337\311\306\023\047\253
\123\006\254\242\074\206\006\145\157\261\176\261\051\104\232\243
\272\111\151\050\151\217\327\345\137\255\004\206\144\157\032\240
\014\305\010\142\316\200\243\320\363\354\150\336\276\063\307\027
\133\177\200\304\114\114\261\246\204\212\303\073\270\011\315\024

\201\272\030\343\124\127\066\376\333\057\174\107\241\072\063\310
\371\130\073\104\117\261\312\002\211\004\226\050\150\305\113\270
\046\211\273\326\063\057\120\325\376\232\211\272\030\062\222\124
\306\133\340\235\371\136\345\015\042\233\366\332\342\310\041\262
\142\041\252\206\100\262\056\144\323\137\310\343\176\021\147\105
\037\005\376\343\242\357\263\250\263\363\175\217\370\014\037\042
\037\055\160\264\270\001\064\166\060\000\345\043\170\247\126\327
\120\037\212\373\006\365\302\031\360\320
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "UCA Global G2 Root"
Issuer: CN=UCA Global G2 Root,O=UniTrust,C=CN
Serial Number:5d:df:b1:da:5a:a3:ed:5d:be:5a:65:20:65:03:90:ef
Subject: CN=UCA Global G2 Root,O=UniTrust,C=CN
Not Valid Before: Fri Mar 11 00:00:00 2016
Not Valid After : Mon Dec 31 00:00:00 2040
Fingerprint (SHA-256):
9B:EA:11:C9:76:FE:01:47:64:C1:BE:56:A6:F9:14:B5:A5:60:31:7A:BD:99:88:39:33:82:E5:16:1A:A0:49:3C
Fingerprint (SHA1): 28:F9:78:16:19:7A:FF:18:25:18:AA:44:FE:C1:A0:CE:5C:B6:4C:8A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Global G2 Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\050\371\170\026\031\172\377\030\045\030\252\104\376\301\240\316
\134\266\114\212
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\200\376\360\304\112\360\134\142\062\237\034\272\170\251\120\370
END
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\033\060\031\006\003\125\004\003\014\022\125\103\101
\040\107\154\157\142\141\154\040\107\062\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\135\337\261\332\132\243\355\135\276\132\145\040\145\003
\220\357
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "UCA Extended Validation Root"
#
Issuer: CN=UCA Extended Validation Root,O=UniTrust,C=CN
Serial Number:4f:d2:2b:8f:f5:64:c8:33:9e:4f:34:58:66:23:70:60
Subject: CN=UCA Extended Validation Root,O=UniTrust,C=CN
Not Valid Before: Fri Mar 13 00:00:00 2015
Not Valid After : Fri Dec 31 00:00:00 2038
Fingerprint (SHA-256):
D4:3A:F9:B3:54:73:75:5C:96:84:FC:06:D7:D8:CB:70:EE:5C:28:E7:73:FB:29:4E:B4:1E:E7:17:22:92:4D:24
Fingerprint (SHA1): A3:A1:B0:6F:24:61:23:4A:E3:36:A5:C2:37:FC:A6:FF:DD:F0:D7:3A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Extended Validation Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\045\060\043\006\003\125\004\003\014\034\125\103\101
\040\105\170\164\145\156\144\145\144\040\126\141\154\151\144\141
\164\151\157\156\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\045\060\043\006\003\125\004\003\014\034\125\103\101
\040\105\170\164\145\156\144\145\144\040\126\141\154\151\144\141
\164\151\157\156\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\117\322\053\217\365\144\310\063\236\117\064\130\146\043
\160\140
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\132\060\202\003\102\240\003\002\001\002\002\020\117
\322\053\217\365\144\310\063\236\117\064\130\146\043\160\140\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\107
\061\013\060\011\006\003\125\004\006\023\002\103\116\061\021\060
\017\006\003\125\004\012\014\010\125\156\151\124\162\165\163\164
\061\045\060\043\006\003\125\004\003\014\034\125\103\101\040\105
\170\164\145\156\144\145\144\040\126\141\154\151\144\141\164\151
\157\156\040\122\157\157\164\060\036\027\015\061\065\060\063\061
\063\060\060\060\060\060\060\132\027\015\063\070\061\062\063\061
\060\060\060\060\060\060\132\060\107\061\013\060\011\006\003\125

\004\006\023\002\103\116\061\021\060\017\006\003\125\004\012\014
\010\125\156\151\124\162\165\163\164\061\045\060\043\006\003\125
\004\003\014\034\125\103\101\040\105\170\164\145\156\144\145\144
\040\126\141\154\151\144\141\164\151\157\156\040\122\157\157\164
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\251\011\007\050\023\002\260\231\340\144\252\036\103\026\172
\163\261\221\240\165\076\250\372\343\070\000\172\354\211\152\040
\017\213\305\260\233\063\003\132\206\306\130\206\325\301\205\273
\117\306\234\100\115\312\276\356\151\226\270\255\201\060\232\174
\222\005\353\005\053\232\110\320\270\166\076\226\310\040\273\322
\260\361\217\330\254\105\106\377\252\147\140\264\167\176\152\037
\074\032\122\172\004\075\007\074\205\015\204\320\037\166\012\367
\152\024\337\162\343\064\174\127\116\126\001\076\171\361\252\051
\073\154\372\370\217\155\115\310\065\337\256\353\334\044\356\171
\105\247\205\266\005\210\336\210\135\045\174\227\144\147\011\331
\277\132\025\005\206\363\011\036\354\130\062\063\021\363\167\144
\260\166\037\344\020\065\027\033\362\016\261\154\244\052\243\163
\374\011\037\036\062\031\123\021\347\331\263\054\056\166\056\241
\243\336\176\152\210\011\350\362\007\212\370\262\315\020\347\342
\163\100\223\273\010\321\077\341\374\013\224\263\045\357\174\246
\327\321\257\237\377\226\232\365\221\173\230\013\167\324\176\350
\007\322\142\265\225\071\343\363\361\155\017\016\145\204\212\143
\124\305\200\266\340\236\113\175\107\046\247\001\010\135\321\210
\236\327\303\062\104\372\202\112\012\150\124\177\070\123\003\314
\244\000\063\144\121\131\013\243\202\221\172\136\354\026\302\363
\052\346\142\332\052\333\131\142\020\045\112\052\201\013\107\007
\103\006\160\207\322\372\223\021\051\172\110\115\353\224\307\160
\115\257\147\325\121\261\200\040\001\001\264\172\010\246\220\177
\116\340\357\007\101\207\257\152\245\136\213\373\317\120\262\232
\124\257\303\211\272\130\055\365\060\230\261\066\162\071\176\111
\004\375\051\247\114\171\344\005\127\333\224\271\026\123\215\106
\263\035\225\141\127\126\177\257\360\026\133\141\130\157\066\120
\021\013\330\254\053\225\026\032\016\037\010\315\066\064\145\020
\142\146\325\200\137\024\040\137\055\014\240\170\012\150\326\054
\327\351\157\053\322\112\005\223\374\236\157\153\147\377\210\361
\116\245\151\112\122\067\005\352\306\026\215\322\304\231\321\202
\053\073\272\065\165\367\121\121\130\363\310\007\335\344\264\003
\177\002\003\001\000\001\243\102\060\100\060\035\006\003\125\035
\016\004\026\004\024\331\164\072\344\060\075\015\367\022\334\176
\132\005\237\036\064\232\367\341\024\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\066\215
\227\314\102\025\144\051\067\233\046\054\326\373\256\025\151\054
\153\032\032\367\137\266\371\007\114\131\352\363\311\310\271\256
\314\272\056\172\334\300\365\260\055\300\073\257\237\160\005\021
\152\237\045\117\001\051\160\343\345\014\341\352\132\174\334\111

\273\301\036\052\201\365\026\113\162\221\310\242\061\271\252\332
\374\235\037\363\135\100\002\023\374\116\034\006\312\263\024\220
\124\027\031\022\032\361\037\327\014\151\132\366\161\170\364\224
\175\221\013\216\354\220\124\216\274\157\241\114\253\374\164\144
\375\161\232\370\101\007\241\315\221\344\074\232\340\233\062\071
\163\253\052\325\151\310\170\221\046\061\175\342\307\060\361\374
\024\170\167\022\016\023\364\335\026\224\277\113\147\173\160\123
\205\312\260\273\363\070\115\054\220\071\300\015\302\135\153\351
\342\345\325\210\215\326\054\277\253\033\276\265\050\207\022\027
\164\156\374\175\374\217\320\207\046\260\033\373\271\154\253\342
\236\075\025\301\073\056\147\002\130\221\237\357\370\102\037\054
\267\150\365\165\255\317\265\366\377\021\175\302\360\044\245\255
\323\372\240\074\251\372\135\334\245\240\357\104\244\276\326\350
\345\344\023\226\027\173\006\076\062\355\307\267\102\274\166\243
\330\145\070\053\070\065\121\041\016\016\157\056\064\023\100\341
\053\147\014\155\112\101\060\030\043\132\062\125\231\311\027\340
\074\336\366\354\171\255\053\130\031\242\255\054\042\032\225\216
\276\226\220\135\102\127\304\371\024\003\065\053\034\055\121\127
\010\247\072\336\077\344\310\264\003\163\302\301\046\200\273\013
\102\037\255\015\257\046\162\332\314\276\263\243\203\130\015\202
\305\037\106\121\343\234\030\314\215\233\215\354\111\353\165\120
\325\214\050\131\312\164\064\332\214\013\041\253\036\352\033\345
\307\375\025\076\300\027\252\373\043\156\046\106\313\372\371\261
\162\153\151\317\042\204\013\142\017\254\331\031\000\224\242\166
\074\324\055\232\355\004\236\055\006\142\020\067\122\034\205\162
\033\047\345\314\306\061\354\067\354\143\131\233\013\035\166\314
\176\062\232\210\225\010\066\122\273\336\166\137\166\111\111\255
\177\275\145\040\262\311\301\053\166\030\166\237\126\261
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "UCA Extended Validation Root"
Issuer: CN=UCA Extended Validation Root,O=UniTrust,C=CN
Serial Number:4f:d2:2b:8f:f5:64:c8:33:9e:4f:34:58:66:23:70:60
Subject: CN=UCA Extended Validation Root,O=UniTrust,C=CN
Not Valid Before: Fri Mar 13 00:00:00 2015
Not Valid After : Fri Dec 31 00:00:00 2038
Fingerprint (SHA-256):
D4:3A:F9:B3:54:73:75:5C:96:84:FC:06:D7:D8:CB:70:EE:5C:28:E7:73:FB:29:4E:B4:1E:E7:17:22:92:4D:24
Fingerprint (SHA1): A3:A1:B0:6F:24:61:23:4A:E3:36:A5:C2:37:FC:A6:FF:DD:F0:D7:3A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Extended Validation Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\243\241\260\157\044\141\043\112\343\066\245\302\067\374\246\377
\335\360\327\072
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\241\363\137\103\306\064\233\332\277\214\176\005\123\255\226\342
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\045\060\043\006\003\125\004\003\014\034\125\103\101
\040\105\170\164\145\156\144\145\144\040\126\141\154\151\144\141
\164\151\157\156\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\117\322\053\217\365\144\310\063\236\117\064\130\146\043
\160\140
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certigna Root CA"
#
Issuer: CN=Certigna Root CA,OU=0002 48146308100036,O=Dhimyotis,C=FR
Serial Number:00:ca:e9:1b:89:f1:55:03:0d:a3:e6:41:6d:c4:e3:a6:e1
Subject: CN=Certigna Root CA,OU=0002 48146308100036,O=Dhimyotis,C=FR
Not Valid Before: Tue Oct 01 08:32:27 2013
Not Valid After : Sat Oct 01 08:32:27 2033
Fingerprint (SHA-256):
D4:8D:3D:23:EE:DB:50:A4:59:E5:51:97:60:1C:27:77:4B:9D:7B:18:C9:4D:5A:05:95:11:A1:02:50:B9:31:68
Fingerprint (SHA1): 2D:0D:52:14:FF:9E:AD:99:24:01:74:20:47:6E:6C:85:27:27:F5:43
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certigna Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\034\060\032\006\003\125\004\013\014\023\060\060
\060\062\040\064\070\061\064\066\063\060\070\061\060\060\060\063
\066\061\031\060\027\006\003\125\004\003\014\020\103\145\162\164
\151\147\156\141\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"

CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\034\060\032\006\003\125\004\013\014\023\060\060
\060\062\040\064\070\061\064\066\063\060\070\061\060\060\060\063
\066\061\031\060\027\006\003\125\004\003\014\020\103\145\162\164
\151\147\156\141\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\312\351\033\211\361\125\003\015\243\346\101\155\304
\343\246\341
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\133\060\202\004\103\240\003\002\001\002\002\021\000
\312\351\033\211\361\125\003\015\243\346\101\155\304\343\246\341
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\132\061\013\060\011\006\003\125\004\006\023\002\106\122\061\022
\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157\164
\151\163\061\034\060\032\006\003\125\004\013\014\023\060\060\060
\062\040\064\070\061\064\066\063\060\070\061\060\060\060\063\066
\061\031\060\027\006\003\125\004\003\014\020\103\145\162\164\151
\147\156\141\040\122\157\157\164\040\103\101\060\036\027\015\061
\063\061\060\060\061\060\070\063\062\062\067\132\027\015\063\063
\061\060\060\061\060\070\063\062\062\067\132\060\132\061\013\060
\011\006\003\125\004\006\023\002\106\122\061\022\060\020\006\003
\125\004\012\014\011\104\150\151\155\171\157\164\151\163\061\034
\060\032\006\003\125\004\013\014\023\060\060\060\062\040\064\070
\061\064\066\063\060\070\061\060\060\060\063\066\061\031\060\027
\006\003\125\004\003\014\020\103\145\162\164\151\147\156\141\040
\122\157\157\164\040\103\101\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\315\030\071\145\032\131\261\352
\144\026\016\214\224\044\225\174\203\323\305\071\046\334\014\357
\026\127\215\327\330\254\243\102\177\202\312\355\315\133\333\016
\267\055\355\105\010\027\262\331\263\313\326\027\122\162\050\333
\216\116\236\212\266\013\371\236\204\232\115\166\336\042\051\134
\322\263\322\006\076\060\071\251\164\243\222\126\034\241\157\114
\012\040\155\237\043\172\264\306\332\054\344\035\054\334\263\050
\320\023\362\114\116\002\111\241\124\100\236\346\345\005\240\055
\204\310\377\230\154\320\353\212\032\204\010\036\267\150\043\356
\043\325\160\316\155\121\151\020\356\241\172\302\321\042\061\302
\202\205\322\362\125\166\120\174\045\172\311\204\134\013\254\335
\102\116\053\347\202\242\044\211\313\220\262\320\356\043\272\146
\114\273\142\244\371\123\132\144\173\174\230\372\243\110\236\017
\225\256\247\030\364\152\354\056\003\105\257\360\164\370\052\315
\172\135\321\276\104\046\062\051\361\361\365\154\314\176\002\041
\013\237\157\244\077\276\235\123\342\317\175\251\054\174\130\032
\227\341\075\067\067\030\146\050\322\100\305\121\212\214\303\055

\316\123\210\044\130\144\060\026\305\252\340\326\012\246\100\337
\170\366\365\004\174\151\023\204\274\321\321\247\006\317\001\367
\150\300\250\127\273\072\141\255\004\214\223\343\255\374\360\333
\104\155\131\334\111\131\256\254\232\231\066\060\101\173\166\063
\042\207\243\302\222\206\156\371\160\356\256\207\207\225\033\304
\172\275\061\363\324\322\345\231\377\276\110\354\165\365\170\026
\035\246\160\301\177\074\033\241\222\373\317\310\074\326\305\223
\012\217\365\125\072\166\225\316\131\230\212\011\225\167\062\232
\203\272\054\004\072\227\275\324\057\276\327\154\233\242\312\175
\155\046\311\125\325\317\303\171\122\010\011\231\007\044\055\144
\045\153\246\041\151\233\152\335\164\115\153\227\172\101\275\253
\027\371\220\027\110\217\066\371\055\325\305\333\356\252\205\105
\101\372\315\072\105\261\150\346\066\114\233\220\127\354\043\271
\207\010\302\304\011\361\227\206\052\050\115\342\164\300\332\304
\214\333\337\342\241\027\131\316\044\131\164\061\332\177\375\060
\155\331\334\341\152\341\374\137\002\003\001\000\001\243\202\001
\032\060\202\001\026\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004
\024\030\207\126\340\156\167\356\044\065\074\116\163\232\037\326
\341\342\171\176\053\060\037\006\003\125\035\043\004\030\060\026
\200\024\030\207\126\340\156\167\356\044\065\074\116\163\232\037
\326\341\342\171\176\053\060\104\006\003\125\035\040\004\075\060
\073\060\071\006\004\125\035\040\000\060\061\060\057\006\010\053
\006\001\005\005\007\002\001\026\043\150\164\164\160\163\072\057
\057\167\167\167\056\143\145\162\164\151\147\156\141\056\146
\162\057\141\165\164\157\162\151\164\145\163\057\060\155\006\003
\125\035\037\004\146\060\144\060\057\240\055\240\053\206\051\150
\164\164\160\072\057\057\143\162\154\056\143\145\162\164\151\147
\156\141\056\146\162\057\143\145\162\164\151\147\156\141\162\157
\157\164\143\141\056\143\162\154\060\061\240\057\240\055\206\053
\150\164\164\160\072\057\057\143\162\154\056\144\150\151\155\171
\157\164\151\163\056\143\157\155\057\143\145\162\164\151\147\156
\141\162\157\157\164\143\141\056\143\162\154\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\224
\270\236\117\360\343\225\010\042\347\315\150\101\367\034\125\325
\174\000\342\055\072\211\135\150\070\057\121\042\013\112\215\313
\351\273\135\076\273\134\075\261\050\376\344\123\125\023\317\241
\220\033\002\035\137\146\106\011\063\050\341\015\044\227\160\323
\020\037\352\144\127\226\273\135\332\347\304\214\117\114\144\106
\035\134\207\343\131\336\102\321\233\250\176\246\211\335\217\034
\311\060\202\355\073\234\315\300\351\031\340\152\330\002\165\067
\253\367\064\050\050\221\362\004\012\117\065\343\140\046\001\372
\320\021\214\371\021\152\356\257\075\303\120\323\217\137\063\171
\074\206\250\163\105\220\214\040\266\162\163\027\043\276\007\145
\345\170\222\015\272\001\300\353\214\034\146\277\254\206\167\001
\224\015\234\346\351\071\215\037\246\121\214\231\014\071\167\341
\264\233\372\034\147\127\157\152\152\216\251\053\114\127\171\172

\127\042\317\315\137\143\106\215\134\131\072\206\370\062\107\142
\243\147\015\030\221\334\373\246\153\365\110\141\163\043\131\216
\002\247\274\104\352\364\111\235\361\124\130\371\140\257\332\030
\244\057\050\105\334\172\240\210\206\135\363\073\347\377\051\065
\200\374\144\103\224\346\343\034\157\276\255\016\052\143\231\053
\311\176\205\366\161\350\006\003\225\376\336\217\110\034\132\324
\222\350\053\356\347\061\333\272\004\152\207\230\347\305\137\357
\175\247\042\367\001\330\115\371\211\320\016\232\005\131\244\236
\230\331\157\053\312\160\276\144\302\125\243\364\351\257\303\222
\051\334\210\026\044\231\074\215\046\230\266\133\267\314\316\267
\067\007\375\046\331\230\205\044\377\131\043\003\232\355\235\235
\250\344\136\070\316\327\122\015\157\322\077\155\261\005\153\111
\316\212\221\106\163\364\366\057\360\250\163\167\016\145\254\241
\215\146\122\151\176\113\150\014\307\036\067\047\203\245\214\307
\002\344\024\315\111\001\260\163\263\375\306\220\072\157\322\154
\355\073\356\354\221\276\242\103\135\213\000\112\146\045\104\160
\336\100\017\370\174\025\367\242\316\074\327\136\023\214\201\027
\030\027\321\275\361\167\020\072\324\145\071\301\047\254\127\054
\045\124\377\242\332\117\212\141\071\136\256\075\112\214\275
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certigna Root CA"
Issuer: CN=Certigna Root CA,OU=0002 48146308100036,O=Dhimyotis,C=FR
Serial Number:00:ca:e9:1b:89:f1:55:03:0d:a3:e6:41:6d:c4:e3:a6:e1
Subject: CN=Certigna Root CA,OU=0002 48146308100036,O=Dhimyotis,C=FR
Not Valid Before: Tue Oct 01 08:32:27 2013
Not Valid After : Sat Oct 01 08:32:27 2033
Fingerprint (SHA-256):
D4:8D:3D:23:EE:DB:50:A4:59:E5:51:97:60:1C:27:77:4B:9D:7B:18:C9:4D:5A:05:95:11:A1:02:50:B9:31:68
Fingerprint (SHA1): 2D:0D:52:14:FF:9E:AD:99:24:01:74:20:47:6E:6C:85:27:27:F5:43
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certigna Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\055\015\122\024\377\236\255\231\044\001\164\040\107\156\154\205
\047\047\365\103
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\016\134\060\142\047\353\133\274\327\256\142\272\351\325\337\167
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157

\164\151\163\061\034\060\032\006\003\125\004\013\014\023\060\060
\060\062\040\064\070\061\064\066\063\060\070\061\060\060\060\063
\066\061\031\060\027\006\003\125\004\003\014\020\103\145\162\164
\151\147\156\141\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\312\351\033\211\361\125\003\015\243\346\101\155\304
\343\246\341
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "emSign Root CA - G1"
#
Issuer: CN=emSign Root CA - G1,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:31:f5:e4:62:0c:6c:58:ed:d6:d8
Subject: CN=emSign Root CA - G1,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
40:F6:AF:03:46:A9:9A:A1:CD:1D:55:5A:4E:9C:CE:62:C7:F9:63:46:03:EE:40:66:15:83:3D:C8:C8:D0:03:67
Fingerprint (SHA1): 8A:C7:AD:8F:73:AC:4E:C1:B5:75:4D:A5:40:F4:FC:CF:7C:B5:8E:8C
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - G1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\107\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157

\164\040\103\101\040\055\040\107\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\061\365\344\142\014\154\130\355\326\330
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\224\060\202\002\174\240\003\002\001\002\002\012\061
\365\344\142\014\154\130\355\326\330\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\060\147\061\013\060\011\006\003
\125\004\006\023\002\111\116\061\023\060\021\006\003\125\004\013
\023\012\145\155\123\151\147\156\040\120\113\111\061\045\060\043
\006\003\125\004\012\023\034\145\115\165\144\150\162\141\040\124
\145\143\150\156\157\154\157\147\151\145\163\040\114\151\155\151
\164\145\144\061\034\060\032\006\003\125\004\003\023\023\145\155
\123\151\147\156\040\122\157\157\164\040\103\101\040\055\040\107
\061\060\036\027\015\061\070\060\062\061\070\061\070\063\060\060
\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060\060
\132\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116
\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147
\156\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034
\145\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157
\147\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032
\006\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157
\157\164\040\103\101\040\055\040\107\061\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\223\113\273\351\146
\212\356\235\133\325\064\223\320\033\036\303\347\236\270\144\063
\177\143\170\150\264\315\056\161\165\327\233\040\306\115\051\274
\266\150\140\212\367\041\232\126\065\132\363\166\275\330\315\232
\377\223\126\113\245\131\006\241\223\064\051\335\026\064\165\116
\362\201\264\307\226\116\255\031\025\122\112\376\074\160\165\160
\315\257\053\253\025\232\063\074\252\263\213\252\315\103\375\365
\352\160\377\355\317\021\073\224\316\116\062\026\323\043\100\052
\167\263\257\074\001\054\154\355\231\054\213\331\116\151\230\262
\367\217\101\260\062\170\141\326\015\137\303\372\242\100\222\035
\134\027\346\160\076\065\347\242\267\302\142\342\253\244\070\114
\265\071\065\157\352\003\151\372\072\124\150\205\155\326\362\057
\103\125\036\221\015\016\330\325\152\244\226\321\023\074\054\170
\120\350\072\222\322\027\126\345\065\032\100\034\076\215\054\355
\071\337\102\340\203\101\164\337\243\315\302\206\140\110\150\343
\151\013\124\000\213\344\166\151\041\015\171\116\064\010\136\024
\302\314\261\267\255\327\174\160\212\307\205\002\003\001\000\001
\243\102\060\100\060\035\006\003\125\035\016\004\026\004\024\373
\357\015\206\236\260\343\335\251\271\361\041\027\177\076\374\360
\167\053\032\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\001\001\000\131\377\362\214\365\207\175\161

\075\243\237\033\133\321\332\370\323\234\153\066\275\233\251\141
\353\336\026\054\164\075\236\346\165\332\327\272\247\274\102\027
\347\075\221\353\345\175\335\076\234\361\317\222\254\154\110\314
\302\042\077\151\073\305\266\025\057\243\065\306\150\052\034\127
\257\071\357\215\320\065\303\030\014\173\000\126\034\315\213\031
\164\336\276\017\022\340\320\252\241\077\002\064\261\160\316\235
\030\326\010\003\011\106\356\140\340\176\266\304\111\004\121\175
\160\140\274\252\262\377\171\162\172\246\035\075\137\052\370\312
\342\375\071\267\107\271\353\176\337\004\043\257\372\234\006\007
\351\373\143\223\200\100\265\306\154\012\061\050\316\014\237\317
\263\043\065\200\101\215\154\304\067\173\201\057\200\241\100\102
\205\351\331\070\215\350\241\123\315\001\277\151\350\132\006\362
\105\013\220\372\256\341\277\235\362\256\127\074\245\256\262\126
\364\213\145\100\351\375\061\201\054\364\071\011\330\356\153\247
\264\246\035\025\245\230\367\001\201\330\205\175\363\121\134\161
\210\336\272\314\037\200\176\112
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "emSign Root CA - G1"
Issuer: CN=emSign Root CA - G1,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:31:f5:e4:62:0c:6c:58:ed:d6:d8
Subject: CN=emSign Root CA - G1,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
40:F6:AF:03:46:A9:9A:A1:CD:1D:55:5A:4E:9C:CE:62:C7:F9:63:46:03:EE:40:66:15:83:3D:C8:C8:D0:03:67
Fingerprint (SHA1): 8A:C7:AD:8F:73:AC:4E:C1:B5:75:4D:A5:40:F4:FC:CF:7C:B5:8E:8C
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - G1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\212\307\255\217\163\254\116\301\265\165\115\245\100\364\374\317
\174\265\216\214
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\234\102\204\127\335\313\013\247\056\225\255\266\363\332\274\254
END
CKA_ISSUER MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032\006

\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\107\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\061\365\344\142\014\154\130\355\326\330
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "emSign ECC Root CA - G3"
#
Issuer: CN=emSign ECC Root CA - G3,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:3c:f6:07:a9:68:70:0e:da:8b:84
Subject: CN=emSign ECC Root CA - G3,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
86:A1:EC:BA:08:9C:4A:8D:3B:BE:27:34:C6:12:BA:34:1D:81:3E:04:3C:F9:E8:A8:62:CD:5C:57:A3:6B:BE:6B
Fingerprint (SHA1): 30:43:FA:4F:F2:57:DC:A0:C3:80:EE:2E:58:EA:78:B2:3F:E6:BB:C1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign ECC Root CA - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\040\060\036\006
\003\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103
\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\040\060\036\006
\003\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103
\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\012\074\366\007\251\150\160\016\332\213\204
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\116\060\202\001\323\240\003\002\001\002\002\012\074
\366\007\251\150\160\016\332\213\204\060\012\006\010\052\206\110
\316\075\004\003\003\060\153\061\013\060\011\006\003\125\004\006
\023\002\111\116\061\023\060\021\006\003\125\004\013\023\012\145
\155\123\151\147\156\040\120\113\111\061\045\060\043\006\003\125
\004\012\023\034\145\115\165\144\150\162\141\040\124\145\143\150
\156\157\154\157\147\151\145\163\040\114\151\155\151\164\145\144
\061\040\060\036\006\003\125\004\003\023\027\145\155\123\151\147
\156\040\105\103\103\040\122\157\157\164\040\103\101\040\055\040
\107\063\060\036\027\015\061\070\060\062\061\070\061\070\063\060
\060\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060
\060\132\060\153\061\013\060\011\006\003\125\004\006\023\002\111
\116\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151
\147\156\040\120\113\111\061\045\060\043\006\003\125\004\012\023
\034\145\115\165\144\150\162\141\040\124\145\143\150\156\157\154
\157\147\151\145\163\040\114\151\155\151\164\145\144\061\040\060
\036\006\003\125\004\003\023\027\145\155\123\151\147\156\040\105
\103\103\040\122\157\157\164\040\103\101\040\055\040\107\063\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\043\245\014\270\055\022\365\050\363
\261\262\335\342\002\022\200\236\071\137\111\115\237\311\045\064
\131\164\354\273\006\034\347\300\162\257\350\256\057\341\101\124
\207\024\250\112\262\350\174\202\346\133\152\265\334\263\165\316
\213\006\320\206\043\277\106\325\216\017\077\004\364\327\034\222
\176\366\245\143\302\365\137\216\056\117\241\030\031\002\053\062
\012\202\144\175\026\223\321\243\102\060\100\060\035\006\003\125
\035\016\004\026\004\024\174\135\002\204\023\324\314\212\233\201
\316\027\034\056\051\036\234\110\143\102\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\012\006\010\052
\206\110\316\075\004\003\003\003\151\000\060\146\002\061\000\276
\363\141\317\002\020\035\144\225\007\270\030\156\210\205\005\057
\203\010\027\220\312\037\212\114\350\015\033\172\261\255\325\201
\011\107\357\073\254\010\004\174\134\231\261\355\107\007\322\002
\061\000\235\272\125\374\251\112\350\355\355\346\166\001\102\173
\310\370\140\331\215\121\213\125\073\373\214\173\353\145\011\303
\370\226\315\107\250\202\362\026\125\167\044\176\022\020\225\004
\054\243
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "emSign ECC Root CA - G3"
Issuer: CN=emSign ECC Root CA - G3,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN

Serial Number:3c:f6:07:a9:68:70:0e:da:8b:84
Subject: CN=emSign ECC Root CA - G3,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
86:A1:EC:BA:08:9C:4A:8D:3B:BE:27:34:C6:12:BA:34:1D:81:3E:04:3C:F9:E8:A8:62:CD:5C:57:A3:6B:BE:6B
Fingerprint (SHA1): 30:43:FA:4F:F2:57:DC:A0:C3:80:EE:2E:58:EA:78:B2:3F:E6:BB:C1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign ECC Root CA - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\060\103\372\117\362\127\334\240\303\200\356\056\130\352\170\262
\077\346\273\301
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\316\013\162\321\237\210\216\320\120\003\350\343\270\213\147\100
END
CKA_ISSUER MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\040\060\036\006
\003\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103
\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\074\366\007\251\150\160\016\332\213\204
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "emSign Root CA - C1"
#
Issuer: CN=emSign Root CA - C1,O=eMudhra Inc,OU=emSign PKI,C=US
Serial Number:00:ae:cf:00:ba:c4:cf:32:f8:43:b2
Subject: CN=emSign Root CA - C1,O=eMudhra Inc,OU=emSign PKI,C=US
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
12:56:09:AA:30:1D:A0:A2:49:B9:7A:82:39:CB:6A:34:21:6F:44:DC:AC:9F:39:54:B1:42:92:F2:E8:C8:60:8F
Fingerprint (SHA1): E7:2E:F1:DF:FC:B2:09:28:CF:5D:D4:D5:67:37:B1:51:CB:86:4F:01
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - C1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164
\040\103\101\040\055\040\103\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164
\040\103\101\040\055\040\103\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\000\256\317\000\272\304\317\062\370\103\262
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\163\060\202\002\133\240\003\002\001\002\002\013\000
\256\317\000\272\304\317\062\370\103\262\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\060\126\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\023\060\021\006\003\125\004
\013\023\012\145\155\123\151\147\156\040\120\113\111\061\024\060
\022\006\003\125\004\012\023\013\145\115\165\144\150\162\141\040
\111\156\143\061\034\060\032\006\003\125\004\003\023\023\145\155
\123\151\147\156\040\122\157\157\164\040\103\101\040\055\040\103
\061\060\036\027\015\061\070\060\062\061\070\061\070\063\060\060
\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060\060
\132\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147
\156\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013
\145\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\103\061\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\317\353\251\271\361\231
\005\314\330\050\041\112\363\163\064\121\204\126\020\365\240\117
\054\022\343\372\023\232\047\320\317\371\171\032\164\137\035\171
\071\374\133\370\160\216\340\222\122\367\344\045\371\124\203\331
\035\323\310\132\205\077\136\307\266\007\356\076\300\316\232\257

\254\126\102\052\071\045\160\326\277\265\173\066\255\254\366\163
\334\315\327\035\212\203\245\373\053\220\025\067\153\034\046\107
\334\073\051\126\223\152\263\301\152\072\235\075\365\301\227\070
\130\005\213\034\021\343\344\264\270\135\205\035\203\376\170\137
\013\105\150\030\110\245\106\163\064\073\376\017\310\166\273\307
\030\363\005\321\206\363\205\355\347\271\331\062\255\125\210\316
\246\266\221\260\117\254\176\025\043\226\366\077\360\040\064\026
\336\012\306\304\004\105\171\177\247\375\276\322\251\245\257\234
\305\043\052\367\074\041\154\275\257\217\116\305\072\262\363\064
\022\374\337\200\032\111\244\324\251\225\367\236\211\136\242\211
\254\224\313\250\150\233\257\212\145\047\315\211\356\335\214\265
\153\051\160\103\240\151\013\344\271\017\002\003\001\000\001\243
\102\060\100\060\035\006\003\125\035\016\004\026\004\024\376\241
\340\160\036\052\003\071\122\132\102\276\134\221\205\172\030\252
\115\265\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\302\112\126\372\025\041\173\050\242
\351\345\035\373\370\055\304\071\226\101\114\073\047\054\304\154
\030\025\200\306\254\257\107\131\057\046\013\343\066\260\357\073
\376\103\227\111\062\231\022\025\133\337\021\051\377\253\123\370
\273\301\170\017\254\234\123\257\127\275\150\214\075\151\063\360
\243\240\043\143\073\144\147\042\104\255\325\161\313\126\052\170
\222\243\117\022\061\066\066\342\336\376\000\304\243\140\017\047
\255\240\260\212\265\066\172\122\241\275\047\364\040\047\142\350
\115\224\044\023\344\012\004\351\074\253\056\310\103\011\112\306
\141\004\345\111\064\176\323\304\310\365\017\300\252\351\272\124
\136\363\143\053\117\117\120\324\376\271\173\231\214\075\300\056
\274\002\053\323\304\100\344\212\007\061\036\233\316\046\231\023
\373\021\352\232\042\014\021\031\307\136\033\201\120\060\310\226
\022\156\347\313\101\177\221\073\242\107\267\124\200\033\334\000
\314\232\220\352\303\303\120\006\142\014\060\300\025\110\247\250
\131\174\341\256\042\242\342\012\172\017\372\142\253\122\114\341
\361\337\312\276\203\015\102
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "emSign Root CA - C1"
Issuer: CN=emSign Root CA - C1,O=eMudhra Inc,OU=emSign PKI,C=US
Serial Number:00:ae:cf:00:ba:c4:cf:32:f8:43:b2
Subject: CN=emSign Root CA - C1,O=eMudhra Inc,OU=emSign PKI,C=US
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
12:56:09:AA:30:1D:A0:A2:49:B9:7A:82:39:CB:6A:34:21:6F:44:DC:AC:9F:39:54:B1:42:92:F2:E8:C8:60:8F
Fingerprint (SHA1): E7:2E:F1:DF:FC:B2:09:28:CF:5D:D4:D5:67:37:B1:51:CB:86:4F:01

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - C1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\347\056\361\337\374\262\011\050\317\135\324\325\147\067\261\121
\313\206\117\001
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\330\343\135\001\041\372\170\132\260\337\272\322\356\052\137\150
END
CKA_ISSUER MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164
\040\103\101\040\055\040\103\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\000\256\317\000\272\304\317\062\370\103\262
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "emSign ECC Root CA - C3"
#
Issuer: CN=emSign ECC Root CA - C3,O=eMudhra Inc,OU=emSign PKI,C=US
Serial Number:7b:71:b6:82:56:b8:12:7c:9c:a8
Subject: CN=emSign ECC Root CA - C3,O=eMudhra Inc,OU=emSign PKI,C=US
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
BC:4D:80:9B:15:18:9D:78:DB:3E:1D:8C:F4:F9:72:6A:79:5D:A1:64:3C:A5:F1:35:8E:1D:DB:0E:DC:0D:7E:B3
Fingerprint (SHA1): B6:AF:43:C2:9B:81:53:7D:F6:EF:6B:C3:1F:1F:60:15:0C:EE:48:66
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign ECC Root CA - C3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156

\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\040\060\036\006\003
\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103\040
\122\157\157\164\040\103\101\040\055\040\103\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\040\060\036\006\003
\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103\040
\122\157\157\164\040\103\101\040\055\040\103\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\173\161\266\202\126\270\022\174\234\250
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\053\060\202\001\261\240\003\002\001\002\002\012\173
\161\266\202\126\270\022\174\234\250\060\012\006\010\052\206\110
\316\075\004\003\003\060\132\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\023\060\021\006\003\125\004\013\023\012\145
\155\123\151\147\156\040\120\113\111\061\024\060\022\006\003\125
\004\012\023\013\145\115\165\144\150\162\141\040\111\156\143\061
\040\060\036\006\003\125\004\003\023\027\145\155\123\151\147\156
\040\105\103\103\040\122\157\157\164\040\103\101\040\055\040\103
\063\060\036\027\015\061\070\060\062\061\070\061\070\063\060\060
\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060\060
\132\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147
\156\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013
\145\115\165\144\150\162\141\040\111\156\143\061\040\060\036\006
\003\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103
\040\122\157\157\164\040\103\101\040\055\040\103\063\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\375\245\141\256\173\046\020\035\351\267\042
\060\256\006\364\201\263\261\102\161\225\071\274\323\122\343\257
\257\371\362\227\065\222\066\106\016\207\225\215\271\071\132\351
\273\337\320\376\310\007\101\074\273\125\157\203\243\152\373\142
\260\201\211\002\160\175\110\305\112\343\351\042\124\042\115\223
\273\102\014\257\167\234\043\246\175\327\141\021\316\145\307\370
\177\376\365\362\251\243\102\060\100\060\035\006\003\125\035\016
\004\026\004\024\373\132\110\320\200\040\100\362\250\351\000\007
\151\031\167\247\346\303\364\317\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\012\006\010\052\206\110
\316\075\004\003\003\003\150\000\060\145\002\061\000\264\330\057
\002\211\375\266\114\142\272\103\116\023\204\162\265\256\335\034

\336\326\265\334\126\217\130\100\132\055\336\040\114\042\203\312
\223\250\176\356\022\100\307\326\207\117\370\337\205\002\060\034
\024\144\344\174\226\203\021\234\260\321\132\141\113\246\017\111
\323\000\374\241\374\344\245\377\177\255\327\060\320\307\167\177
\276\201\007\125\060\120\040\024\365\127\070\012\250\061\121
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "emSign ECC Root CA - C3"
Issuer: CN=emSign ECC Root CA - C3,O=eMudhra Inc,OU=emSign PKI,C=US
Serial Number:7b:71:b6:82:56:b8:12:7c:9c:a8
Subject: CN=emSign ECC Root CA - C3,O=eMudhra Inc,OU=emSign PKI,C=US
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
BC:4D:80:9B:15:18:9D:78:DB:3E:1D:8C:F4:F9:72:6A:79:5D:A1:64:3C:A5:F1:35:8E:1D:DB:0E:DC:0D:7E:B3
Fingerprint (SHA1): B6:AF:43:C2:9B:81:53:7D:F6:EF:6B:C3:1F:1F:60:15:0C:EE:48:66
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign ECC Root CA - C3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\266\257\103\302\233\201\123\175\366\357\153\303\037\037\140\025
\014\356\110\146
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\076\123\263\243\201\356\327\020\370\323\260\035\027\222\365\325
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\040\060\036\006\003
\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103\040
\122\157\157\164\040\103\101\040\055\040\103\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\173\161\266\202\126\270\022\174\234\250
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#

Certificate "Hongkong Post Root CA 3"
#
Issuer: CN=Hongkong Post Root CA 3,O=Hongkong Post,L=Hong Kong,ST=Hong Kong,C=HK
Serial Number:08:16:5f:8a:4c:a5:ec:00:c9:93:40:df:c4:c6:ae:23:b8:1c:5a:a4
Subject: CN=Hongkong Post Root CA 3,O=Hongkong Post,L=Hong Kong,ST=Hong Kong,C=HK
Not Valid Before: Sat Jun 03 02:29:46 2017
Not Valid After : Tue Jun 03 02:29:46 2042
Fingerprint (SHA-256):
5A:2F:C0:3F:0C:83:B0:90:BB:FA:40:60:4B:09:88:44:6C:76:36:18:3D:F9:84:6E:17:10:1A:44:7F:B8:EF:D6
Fingerprint (SHA1): 58:A2:D0:EC:20:52:81:5B:C1:F3:F8:64:02:24:4E:C2:8E:02:4B:02
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hongkong Post Root CA 3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\022\060\020\006\003\125\004\010\023\011\110\157\156\147\040\113
\157\156\147\061\022\060\020\006\003\125\004\007\023\011\110\157
\156\147\040\113\157\156\147\061\026\060\024\006\003\125\004\012
\023\015\110\157\156\147\153\157\156\147\040\120\157\163\164\061
\040\060\036\006\003\125\004\003\023\027\110\157\156\147\153\157
\156\147\040\120\157\163\164\040\122\157\157\164\040\103\101\040
\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\022\060\020\006\003\125\004\010\023\011\110\157\156\147\040\113
\157\156\147\061\022\060\020\006\003\125\004\007\023\011\110\157
\156\147\040\113\157\156\147\061\026\060\024\006\003\125\004\012
\023\015\110\157\156\147\153\157\156\147\040\120\157\163\164\061
\040\060\036\006\003\125\004\003\023\027\110\157\156\147\153\157
\156\147\040\120\157\163\164\040\122\157\157\164\040\103\101\040
\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\010\026\137\212\114\245\354\000\311\223\100\337\304\306
\256\043\270\034\132\244
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\317\060\202\003\267\240\003\002\001\002\002\024\010
\026\137\212\114\245\354\000\311\223\100\337\304\306\256\043\270
\034\132\244\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\157\061\013\060\011\006\003\125\004\006\023\002\110
\113\061\022\060\020\006\003\125\004\010\023\011\110\157\156\147
\040\113\157\156\147\061\022\060\020\006\003\125\004\007\023\011

\110\157\156\147\040\113\157\156\147\061\026\060\024\006\003\125
\004\012\023\015\110\157\156\147\153\157\156\147\040\120\157\163
\164\061\040\060\036\006\003\125\004\003\023\027\110\157\156\147
\153\157\156\147\040\120\157\163\164\040\122\157\157\164\040\103
\101\040\063\060\036\027\015\061\067\060\066\060\063\060\062\062
\071\064\066\132\027\015\064\062\060\066\060\063\060\062\062\071
\064\066\132\060\157\061\013\060\011\006\003\125\004\006\023\002
\110\113\061\022\060\020\006\003\125\004\010\023\011\110\157\156
\147\040\113\157\156\147\061\022\060\020\006\003\125\004\007\023
\011\110\157\156\147\040\113\157\156\147\061\026\060\024\006\003
\125\004\012\023\015\110\157\156\147\153\157\156\147\040\120\157
\163\164\061\040\060\036\006\003\125\004\003\023\027\110\157\156
\147\153\157\156\147\040\120\157\163\164\040\122\157\157\164\040
\103\101\040\063\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\263\210\327\352\316\017\040\116\276\346\326
\003\155\356\131\374\302\127\337\051\150\241\203\016\076\150\307
\150\130\234\034\140\113\211\103\014\271\324\025\262\356\301\116
\165\351\265\247\357\345\351\065\231\344\314\034\347\113\137\215
\063\060\040\063\123\331\246\273\325\076\023\216\351\037\207\111
\255\120\055\120\312\030\276\001\130\242\023\160\226\273\211\210
\126\200\134\370\275\054\074\341\114\127\210\273\323\271\225\357
\313\307\366\332\061\164\050\246\346\124\211\365\101\061\312\345
\046\032\315\202\340\160\332\073\051\273\325\003\365\231\272\125
\365\144\321\140\016\263\211\111\270\212\057\005\322\204\105\050
\174\217\150\120\022\170\374\013\265\123\313\302\230\034\204\243
\236\260\276\043\244\332\334\310\053\036\332\156\105\036\211\230
\332\371\000\056\006\351\014\073\160\325\120\045\210\231\313\315
\163\140\367\325\377\065\147\305\241\274\136\253\315\112\270\105
\353\310\150\036\015\015\024\106\022\343\322\144\142\212\102\230
\274\264\306\010\010\370\375\250\114\144\234\166\001\275\057\251
\154\063\017\330\077\050\270\074\151\001\102\206\176\151\301\311
\006\312\345\172\106\145\351\302\326\120\101\056\077\267\344\355
\154\327\277\046\001\021\242\026\051\112\153\064\006\220\354\023
\322\266\373\152\166\322\074\355\360\326\055\335\341\025\354\243
\233\057\054\311\076\053\344\151\073\377\162\045\261\066\206\133
\307\177\153\213\125\033\112\305\040\141\075\256\313\120\341\010
\072\276\260\217\143\101\123\060\010\131\074\230\035\167\272\143
\221\172\312\020\120\140\277\360\327\274\225\207\217\227\305\376
\227\152\001\224\243\174\133\205\035\052\071\072\320\124\241\321
\071\161\235\375\041\371\265\173\360\342\340\002\217\156\226\044
\045\054\240\036\054\250\304\211\247\357\355\231\006\057\266\012
\114\117\333\242\314\067\032\257\107\205\055\212\137\304\064\064
\114\000\375\030\223\147\023\321\067\346\110\264\213\006\305\127
\173\031\206\012\171\313\000\311\122\257\102\377\067\217\341\243
\036\172\075\120\253\143\006\347\025\265\077\266\105\067\224\067
\261\176\362\110\303\177\305\165\376\227\215\105\217\032\247\032
\162\050\032\100\017\002\003\001\000\001\243\143\060\141\060\017

\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\037\006\003\125\035\043\004\030\060\026\200\024\027\235\315\036
\213\326\071\053\160\323\134\324\240\270\037\260\000\374\305\141
\060\035\006\003\125\035\016\004\026\004\024\027\235\315\036\213
\326\071\053\160\323\134\324\240\270\037\260\000\374\305\141\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\002\001\000\126\325\173\156\346\042\001\322\102\233\030\325\016
\327\146\043\134\343\376\240\307\222\322\351\224\255\113\242\306
\354\022\174\164\325\110\322\131\024\231\300\353\271\321\353\364
\110\060\133\255\247\127\163\231\251\323\345\267\321\056\131\044
\130\334\150\056\056\142\330\152\344\160\013\055\040\120\040\244
\062\225\321\000\230\273\323\375\367\062\362\111\256\306\172\340
\107\276\156\316\313\243\162\072\055\151\135\313\310\350\105\071
\324\372\102\301\021\114\167\135\222\373\152\377\130\104\345\353
\201\236\257\240\231\255\276\251\001\146\313\070\035\074\337\103
\037\364\115\156\264\272\027\106\374\175\375\207\201\171\152\015
\063\017\372\057\370\024\271\200\263\135\115\252\227\341\371\344
\030\305\370\325\070\214\046\074\375\362\050\342\356\132\111\210
\054\337\171\075\216\236\220\074\275\101\112\072\335\133\366\232
\264\316\077\045\060\177\062\175\242\003\224\320\334\172\241\122
\336\156\223\215\030\046\375\125\254\275\217\233\322\317\257\347
\206\054\313\037\011\157\243\157\251\204\324\163\277\115\241\164
\033\116\043\140\362\314\016\252\177\244\234\114\045\250\262\146
\073\070\377\331\224\060\366\162\204\276\150\125\020\017\306\163
\054\026\151\223\007\376\261\105\355\273\242\125\152\260\332\265
\112\002\045\047\205\327\267\267\206\104\026\211\154\200\053\076
\227\251\234\325\176\125\114\306\336\105\020\034\352\351\073\237
\003\123\356\356\172\001\002\026\170\324\350\302\276\106\166\210
\023\077\042\273\110\022\035\122\000\264\002\176\041\032\036\234
\045\364\363\075\136\036\322\034\371\263\055\266\367\067\134\306
\313\041\116\260\367\231\107\030\205\301\053\272\125\256\006\352
\320\007\262\334\253\320\202\226\165\316\322\120\376\231\347\317
\057\237\347\166\321\141\052\373\041\273\061\320\252\237\107\244
\262\042\312\026\072\120\127\304\133\103\147\305\145\142\003\111
\001\353\103\331\330\370\236\255\317\261\143\016\105\364\240\132
\054\233\055\305\246\300\255\250\107\364\047\114\070\015\056\033
\111\073\122\364\350\210\203\053\124\050\324\362\065\122\264\062
\203\142\151\144\014\221\234\237\227\352\164\026\375\037\021\006
\232\233\364
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Hongkong Post Root CA 3"
Issuer: CN=Hongkong Post Root CA 3,O=Hongkong Post,L=Hong Kong,ST=Hong Kong,C=HK
Serial Number:08:16:5f:8a:4c:a5:ec:00:c9:93:40:df:c4:c6:ae:23:b8:1c:5a:a4

Subject: CN=Hongkong Post Root CA 3,O=Hongkong Post,L=Hong Kong,ST=Hong Kong,C=HK
Not Valid Before: Sat Jun 03 02:29:46 2017
Not Valid After : Tue Jun 03 02:29:46 2042
Fingerprint (SHA-256):
5A:2F:C0:3F:0C:83:B0:90:BB:FA:40:60:4B:09:88:44:6C:76:36:18:3D:F9:84:6E:17:10:1A:44:7F:B8:EF:D6
Fingerprint (SHA1): 58:A2:D0:EC:20:52:81:5B:C1:F3:F8:64:02:24:4E:C2:8E:02:4B:02
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hongkong Post Root CA 3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\130\242\320\354\040\122\201\133\301\363\370\144\002\044\116\302
\216\002\113\002
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\021\374\237\275\163\060\002\212\375\077\363\130\271\313\040\360
END
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\022\060\020\006\003\125\004\010\023\011\110\157\156\147\040\113
\157\156\147\061\022\060\020\006\003\125\004\007\023\011\110\157
\156\147\040\113\157\156\147\061\026\060\024\006\003\125\004\012
\023\015\110\157\156\147\153\157\156\147\040\120\157\163\164\061
\040\060\036\006\003\125\004\003\023\027\110\157\156\147\153\157
\156\147\040\120\157\163\164\040\122\157\157\164\040\103\101\040
\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\010\026\137\212\114\245\354\000\311\223\100\337\304\306
\256\043\270\034\132\244
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust Root Certification Authority - G4"
#
Issuer: CN=Entrust Root Certification Authority - G4,OU="(c) 2015 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number:00:d9:b5:43:7f:af:a9:39:0f:00:00:00:00:55:65:ad:58
Subject: CN=Entrust Root Certification Authority - G4,OU="(c) 2015 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Wed May 27 11:11:16 2015
Not Valid After : Sun Dec 27 11:41:16 2037
Fingerprint (SHA-256):

DB:35:17:D1:F6:73:2A:2D:5A:B9:7C:53:3E:C7:07:79:EE:32:70:A6:2F:B4:AC:42:38:37:24:60:E6:F0:1E:88
Fingerprint (SHA1): 14:88:4E:86:26:37:B0:26:AF:59:62:5C:40:77:EC:35:29:BA:96:01
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - G4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\064
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\331\265\103\177\257\251\071\017\000\000\000\000\125
\145\255\130
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\113\060\202\004\063\240\003\002\001\002\002\021\000
\331\265\103\177\257\251\071\017\000\000\000\000\125\145\255\130
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123\061

\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165\163
\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004\013
\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165\163
\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162\155
\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051\040
\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111\156
\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162\151
\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060\060
\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107\064
\060\036\027\015\061\065\060\065\062\067\061\061\061\061\061\066
\132\027\015\063\067\061\062\062\067\061\061\064\061\061\066\132
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\064\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\261\354\054\102\356\342\321\060\377\245\222\107\342\055
\303\272\144\227\155\312\367\015\265\131\301\263\313\250\150\031
\330\257\204\155\060\160\135\176\363\056\322\123\231\341\376\037
\136\331\110\257\135\023\215\333\377\143\063\115\323\000\002\274
\304\370\321\006\010\224\171\130\212\025\336\051\263\375\375\304
\117\350\252\342\240\073\171\315\277\153\103\062\335\331\164\020
\271\367\364\150\324\273\320\207\325\252\113\212\052\157\052\004
\265\262\246\307\240\172\346\110\253\322\321\131\314\326\176\043
\346\227\154\360\102\345\334\121\113\025\101\355\111\112\311\336
\020\227\326\166\301\357\245\265\066\024\227\065\330\170\042\065
\122\357\103\275\333\047\333\141\126\202\064\334\313\210\140\014
\013\132\345\054\001\306\124\257\327\252\301\020\173\322\005\132
\270\100\236\206\247\303\220\206\002\126\122\011\172\234\322\047
\202\123\112\145\122\152\365\074\347\250\362\234\257\213\275\323
\016\324\324\136\156\207\236\152\075\105\035\321\135\033\364\351
\012\254\140\231\373\211\264\377\230\054\317\174\035\351\002\252
\004\232\036\270\334\210\156\045\263\154\146\367\074\220\363\127
\301\263\057\365\155\362\373\312\241\370\051\235\106\213\263\152
\366\346\147\007\276\054\147\012\052\037\132\262\076\127\304\323
\041\041\143\145\122\221\033\261\231\216\171\176\346\353\215\000
\331\132\252\352\163\350\244\202\002\107\226\376\133\216\124\141

\243\353\057\113\060\260\213\043\165\162\174\041\074\310\366\361
\164\324\034\173\243\005\125\356\273\115\073\062\276\232\167\146
\236\254\151\220\042\007\037\141\072\226\276\345\232\117\314\005
\074\050\131\323\301\014\124\250\131\141\275\310\162\114\350\334
\237\207\177\275\234\110\066\136\225\243\016\271\070\044\125\374
\165\146\353\002\343\010\064\051\112\306\343\053\057\063\240\332
\243\206\245\022\227\375\200\053\332\024\102\343\222\275\076\362
\135\136\147\164\056\034\210\107\051\064\137\342\062\250\234\045
\067\214\272\230\000\227\213\111\226\036\375\045\212\254\334\332
\330\135\164\156\146\260\377\104\337\241\030\306\276\110\057\067
\224\170\370\225\112\077\177\023\136\135\131\375\164\206\103\143
\163\111\002\003\001\000\001\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\237\070\304\126\043\303\071\350\240
\161\154\350\124\114\344\350\072\261\277\147\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\022
\345\102\246\173\213\017\014\344\106\245\266\140\100\207\214\045
\176\255\270\150\056\133\306\100\166\074\003\370\311\131\364\363
\253\142\316\020\215\264\132\144\214\150\300\260\162\103\064\322
\033\013\366\054\123\322\312\220\113\206\146\374\252\203\042\364
\213\032\157\046\110\254\166\167\010\277\305\230\134\364\046\211
\236\173\303\271\144\062\001\177\323\303\335\130\155\354\261\253
\204\125\164\167\204\004\047\122\153\206\114\316\335\271\145\377
\326\306\136\237\232\020\231\113\165\152\376\152\351\227\040\344
\344\166\172\306\320\044\252\220\315\040\220\272\107\144\373\177
\007\263\123\170\265\012\142\362\163\103\316\101\053\201\152\056
\205\026\224\123\324\153\137\162\042\253\121\055\102\325\000\234
\231\277\336\273\224\073\127\375\232\365\206\313\126\073\133\210
\001\345\174\050\113\003\371\111\203\174\262\177\174\343\355\216
\241\177\140\123\216\125\235\120\064\022\017\267\227\173\154\207
\112\104\347\365\155\354\200\067\360\130\031\156\112\150\166\360
\037\222\344\352\265\222\323\141\121\020\013\255\247\331\137\307
\137\334\037\243\134\214\241\176\233\267\236\323\126\157\146\136
\007\226\040\355\013\164\373\146\116\213\021\025\351\201\111\176
\157\260\324\120\177\042\327\137\145\002\015\246\364\205\036\330
\256\006\113\112\247\322\061\146\302\370\316\345\010\246\244\002
\226\104\150\127\304\325\063\317\031\057\024\304\224\034\173\244
\331\360\237\016\261\200\342\321\236\021\144\251\210\021\072\166
\202\345\142\302\200\330\244\203\355\223\357\174\057\220\260\062
\114\226\025\150\110\122\324\231\010\300\044\350\034\343\263\245
\041\016\222\300\220\037\317\040\137\312\073\070\307\267\155\072
\363\346\104\270\016\061\153\210\216\160\353\234\027\122\250\101
\224\056\207\266\347\246\022\305\165\337\133\300\012\156\173\244
\344\136\206\371\066\224\337\167\303\351\015\300\071\361\171\273
\106\216\253\103\131\047\267\040\273\043\351\126\100\041\354\061
\075\145\252\103\362\075\337\160\104\341\272\115\046\020\073\230
\237\363\310\216\033\070\126\041\152\121\223\323\221\312\106\332

\211\267\075\123\203\054\010\037\213\217\123\335\377\254\037
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE

Trust for "Entrust Root Certification Authority - G4"
Issuer: CN=Entrust Root Certification Authority - G4,OU="(c) 2015 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number:00:d9:b5:43:7f:af:a9:39:0f:00:00:00:00:55:65:ad:58
Subject: CN=Entrust Root Certification Authority - G4,OU="(c) 2015 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Wed May 27 11:11:16 2015
Not Valid After : Sun Dec 27 11:41:16 2037
Fingerprint (SHA-256):
DB:35:17:D1:F6:73:2A:2D:5A:B9:7C:53:3E:C7:07:79:EE:32:70:A6:2F:B4:AC:42:38:37:24:60:E6:F0:1E:88
Fingerprint (SHA1): 14:88:4E:86:26:37:B0:26:AF:59:62:5C:40:77:EC:35:29:BA:96:01
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - G4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\024\210\116\206\046\067\260\046\257\131\142\134\100\167\354\065
\051\272\226\001
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\211\123\361\203\043\267\174\216\005\361\214\161\070\116\037\210
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\331\265\103\177\257\251\071\017\000\000\000\000\125
\145\255\130
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Microsoft ECC Root Certificate Authority 2017"
#
Issuer: CN=Microsoft ECC Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Serial Number:66:f2:3d:af:87:de:8b:b1:4a:ea:0c:57:31:01:c2:ec
Subject: CN=Microsoft ECC Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Not Valid Before: Wed Dec 18 23:06:45 2019
Not Valid After : Fri Jul 18 23:16:04 2042
Fingerprint (SHA-256):
35:8D:F3:9D:76:4A:F9:E1:B7:66:E9:C9:72:DF:35:2E:E1:5C:FA:C2:27:AF:6A:D1:D7:0E:8E:4A:6E:DC:BA:02
Fingerprint (SHA1): 99:9A:64:C3:7F:F4:7D:9F:AB:95:F1:47:69:89:14:60:EE:C4:C3:C5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft ECC Root Certificate Authority 2017"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\105\103\103\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\105\103\103\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\146\362\075\257\207\336\213\261\112\352\014\127\061\001
\302\354
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\131\060\202\001\337\240\003\002\001\002\002\020\146
\362\075\257\207\336\213\261\112\352\014\127\061\001\302\354\060
\012\006\010\052\206\110\316\075\004\003\003\060\145\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\036\060\034\006\003

\125\004\012\023\025\115\151\143\162\157\163\157\146\164\040\103
\157\162\160\157\162\141\164\151\157\156\061\066\060\064\006\003
\125\004\003\023\055\115\151\143\162\157\163\157\146\164\040\105
\103\103\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\062\060
\061\067\060\036\027\015\061\071\061\062\061\070\062\063\060\066
\064\065\132\027\015\064\062\060\067\061\070\062\063\061\066\060
\064\132\060\145\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\036\060\034\006\003\125\004\012\023\025\115\151\143\162
\157\163\157\146\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\066\060\064\006\003\125\004\003\023\055\115\151\143\162
\157\163\157\146\164\040\105\103\103\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171\040\062\060\061\067\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\324\274\075\002\102\165\101\023\043\315\200\004\206\002\121
\057\152\250\201\142\013\145\314\366\312\235\036\157\112\146\121
\242\003\331\235\221\372\266\026\261\214\156\336\174\315\333\171
\246\057\316\273\316\161\057\345\245\253\050\354\143\004\146\231
\370\372\362\223\020\005\341\201\050\102\343\306\150\364\346\033
\204\140\112\211\257\355\171\017\073\316\361\366\104\365\001\170
\300\243\124\060\122\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\310\313\231\162\160\122\014\370\346\276\262\004\127\051\052
\317\102\020\355\065\060\020\006\011\053\006\001\004\001\202\067
\025\001\004\003\002\001\000\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\060\130\362\115\352\014\371
\137\136\356\140\051\313\072\362\333\326\062\204\031\077\174\325
\057\302\261\314\223\256\120\273\011\062\306\306\355\176\311\066
\224\022\344\150\205\006\242\033\320\057\002\061\000\231\351\026
\264\016\372\126\110\324\244\060\026\221\170\333\124\214\145\001
\212\347\120\146\302\061\267\071\272\270\032\042\007\116\374\153
\124\026\040\377\053\265\347\114\014\115\246\117\163
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Microsoft ECC Root Certificate Authority 2017"
Issuer: CN=Microsoft ECC Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Serial Number:66:f2:3d:af:87:de:8b:b1:4a:ea:0c:57:31:01:c2:ec
Subject: CN=Microsoft ECC Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Not Valid Before: Wed Dec 18 23:06:45 2019
Not Valid After : Fri Jul 18 23:16:04 2042
Fingerprint (SHA-256):
35:8D:F3:9D:76:4A:F9:E1:B7:66:E9:C9:72:DF:35:2E:E1:5C:FA:C2:27:AF:6A:D1:D7:0E:8E:4A:6E:DC:BA:02
Fingerprint (SHA1): 99:9A:64:C3:7F:F4:7D:9F:AB:95:F1:47:69:89:14:60:EE:C4:C3:C5

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft ECC Root Certificate Authority 2017"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\231\232\144\303\177\364\175\237\253\225\361\107\151\211\024\140
\356\304\303\305
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\335\241\003\346\112\223\020\321\277\360\031\102\313\376\355\147
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\105\103\103\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\146\362\075\257\207\336\213\261\112\352\014\127\061\001
\302\354
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Microsoft RSA Root Certificate Authority 2017"
#
Issuer: CN=Microsoft RSA Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Serial Number:1e:d3:97:09:5f:d8:b4:b3:47:70:1e:aa:be:7f:45:b3
Subject: CN=Microsoft RSA Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Not Valid Before: Wed Dec 18 22:51:22 2019
Not Valid After : Fri Jul 18 23:00:23 2042
Fingerprint (SHA-256):
C7:41:F7:0F:4B:2A:8D:88:BF:2E:71:C1:41:22:EF:53:EF:10:EB:A0:CF:A5:E6:4C:FA:20:F4:18:85:30:73:E0
Fingerprint (SHA1): 73:A5:E6:4A:3B:FF:83:16:FF:0E:DC:CC:61:8A:90:6E:4E:AE:4D:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft RSA Root Certificate Authority 2017"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\122\123\101\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\122\123\101\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\036\323\227\011\137\330\264\263\107\160\036\252\276\177
\105\263
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\250\060\202\003\220\240\003\002\001\002\002\020\036
\323\227\011\137\330\264\263\107\160\036\252\276\177\105\263\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\145
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\036\060
\034\006\003\125\004\012\023\025\115\151\143\162\157\163\157\146
\164\040\103\157\162\160\157\162\141\164\151\157\156\061\066\060
\064\006\003\125\004\003\023\055\115\151\143\162\157\163\157\146
\164\040\122\123\101\040\122\157\157\164\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
\040\062\060\061\067\060\036\027\015\061\071\061\062\061\070\062
\062\065\061\062\062\132\027\015\064\062\060\067\061\070\062\063
\060\060\062\063\132\060\145\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\036\060\034\006\003\125\004\012\023\025\115
\151\143\162\157\163\157\146\164\040\103\157\162\160\157\162\141
\164\151\157\156\061\066\060\064\006\003\125\004\003\023\055\115
\151\143\162\157\163\157\146\164\040\122\123\101\040\122\157\157
\164\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165
\164\150\157\162\151\164\171\040\062\060\061\067\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\312\133\276
\224\063\214\051\225\221\026\012\225\275\107\142\301\211\363\231
\066\337\106\220\311\245\355\170\152\157\107\221\150\370\047\147
\120\063\035\241\246\373\340\345\103\243\204\002\127\001\135\234
\110\100\202\123\020\274\277\307\073\150\220\266\202\055\345\364
\145\320\314\155\031\314\225\371\173\254\112\224\255\016\336\113

\103\035\207\007\222\023\220\200\203\144\065\071\004\374\345\351
\154\263\266\037\120\224\070\145\120\134\027\106\271\266\205\265
\034\265\027\350\326\105\235\330\262\046\260\312\304\160\112\256
\140\244\335\263\331\354\374\073\325\127\162\274\077\310\311\262
\336\113\153\370\043\154\003\300\005\275\225\307\315\163\073\146
\200\144\343\032\254\056\371\107\005\362\006\266\233\163\365\170
\063\133\307\241\373\047\052\241\264\232\221\214\221\323\072\202
\076\166\100\264\315\122\141\121\160\050\077\305\305\132\362\311
\214\111\273\024\133\115\310\377\147\115\114\022\226\255\365\376
\170\250\227\207\327\375\136\040\200\334\241\113\042\373\324\211
\255\272\316\107\227\107\125\173\217\105\310\147\050\204\225\034
\150\060\357\357\111\340\065\173\144\347\230\260\224\332\115\205
\073\076\125\304\050\257\127\363\236\023\333\106\047\237\036\242
\136\104\203\244\245\312\325\023\263\113\077\304\343\302\346\206
\141\244\122\060\271\172\040\117\157\017\070\123\313\063\014\023
\053\217\326\232\275\052\310\055\261\034\175\113\121\312\107\321
\110\047\162\135\207\353\325\105\346\110\145\235\257\122\220\272
\133\242\030\145\127\022\237\150\271\324\025\153\224\304\151\042
\230\364\063\340\355\371\121\216\101\120\311\064\117\166\220\254
\374\070\301\330\341\173\271\343\343\224\341\106\151\313\016\012
\120\153\023\272\254\017\067\132\267\022\265\220\201\036\126\256
\127\042\206\331\311\322\321\327\121\343\253\073\306\125\375\036
\016\323\164\012\321\332\252\352\151\270\227\050\217\110\304\007
\370\122\103\072\364\312\125\065\054\260\246\152\300\234\371\362
\201\341\022\152\300\105\331\147\263\316\377\043\242\211\012\124
\324\024\271\052\250\327\354\371\253\315\045\130\062\171\217\220
\133\230\071\304\010\006\301\254\177\016\075\000\245\002\003\001
\000\001\243\124\060\122\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\011\313\131\177\206\262\160\217\032\303\071\343\300\331
\351\277\273\115\262\043\060\020\006\011\053\006\001\004\001\202
\067\025\001\004\003\002\001\000\060\015\006\011\052\206\110\206
\367\015\001\001\014\005\000\003\202\002\001\000\254\257\076\135
\302\021\226\211\216\243\347\222\326\227\025\270\023\242\246\102
\056\002\315\026\005\131\047\312\040\350\272\270\350\032\354\115
\250\227\126\256\145\103\261\217\000\233\122\315\125\315\123\071
\155\142\114\213\015\133\174\056\104\277\203\020\217\363\123\202
\200\303\117\072\307\156\021\077\346\343\026\221\204\373\155\204
\177\064\164\255\211\247\316\271\327\327\237\204\144\222\276\225
\241\255\011\123\063\335\356\012\352\112\121\216\157\125\253\272
\265\224\106\256\214\177\330\242\120\045\145\140\200\106\333\063
\004\256\154\265\230\164\124\045\334\223\344\370\343\125\025\075
\270\155\303\012\244\022\301\151\205\156\337\144\361\123\231\341
\112\165\040\235\225\017\344\326\334\003\361\131\030\350\107\211
\262\127\132\224\266\251\330\027\053\027\111\345\166\313\301\126
\231\072\067\261\377\151\054\221\221\223\341\337\114\243\067\166
\115\241\237\370\155\036\035\323\372\354\373\364\105\035\023\155

\317\367\131\345\042\047\162\053\206\363\127\273\060\355\044\115
\334\175\126\273\243\263\370\064\171\211\301\340\362\002\141\367
\246\374\017\273\034\027\013\256\101\331\174\275\047\243\375\056
\072\321\223\224\261\163\035\044\213\257\133\040\211\255\267\147
\146\171\365\072\306\246\226\063\376\123\222\310\106\261\021\221
\306\231\177\217\311\326\146\061\040\101\020\207\055\014\326\301
\257\064\230\312\144\203\373\023\127\321\301\360\074\172\214\245
\301\375\225\041\240\161\301\223\147\161\022\352\217\210\012\151
\031\144\231\043\126\373\254\052\056\160\276\146\304\014\204\357
\345\213\363\223\001\370\152\220\223\147\113\262\150\243\265\142
\217\351\077\214\172\073\136\017\347\214\270\306\174\357\067\375
\164\342\310\117\063\162\341\224\071\155\275\022\257\276\014\116
\160\174\033\157\215\263\062\223\163\104\026\155\350\364\367\340
\225\200\217\226\135\070\244\364\253\336\012\060\207\223\330\115
\000\161\142\105\047\113\072\102\204\133\177\145\267\147\064\122
\055\234\026\153\252\250\330\173\243\102\114\161\307\014\312\076
\203\344\246\357\267\001\060\136\121\243\171\365\160\151\246\101
\104\017\206\260\054\221\306\075\352\256\017\204
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Microsoft RSA Root Certificate Authority 2017"
Issuer: CN=Microsoft RSA Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Serial Number:1e:d3:97:09:5f:d8:b4:b3:47:70:1e:aa:be:7f:45:b3
Subject: CN=Microsoft RSA Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Not Valid Before: Wed Dec 18 22:51:22 2019
Not Valid After : Fri Jul 18 23:00:23 2042
Fingerprint (SHA-256):
C7:41:F7:0F:4B:2A:8D:88:BF:2E:71:C1:41:22:EF:53:EF:10:EB:A0:CF:A5:E6:4C:FA:20:F4:18:85:30:73:E0
Fingerprint (SHA1): 73:A5:E6:4A:3B:FF:83:16:FF:0E:DC:CC:61:8A:90:6E:4E:AE:4D:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft RSA Root Certificate Authority 2017"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\163\245\346\112\073\377\203\026\377\016\334\314\141\212\220\156
\116\256\115\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\020\377\000\377\317\311\370\307\172\300\356\065\216\311\017\107
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061

\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\122\123\101\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\036\323\227\011\137\330\264\263\107\160\036\252\276\177
\105\263
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "e-Szigno Root CA 2017"
#
Issuer: CN=e-Szigno Root CA 2017,OID.2.5.4.97=VATHU-23584497,O=Microsec Ltd.,L=Budapest,C=HU
Serial Number:01:54:48:ef:21:fd:97:59:0d:f5:04:0a
Subject: CN=e-Szigno Root CA 2017,OID.2.5.4.97=VATHU-23584497,O=Microsec Ltd.,L=Budapest,C=HU
Not Valid Before: Tue Aug 22 12:07:06 2017
Not Valid After : Fri Aug 22 12:07:06 2042
Fingerprint (SHA-256):
BE:B0:0B:30:83:9B:9B:C3:2C:32:E4:44:79:05:95:06:41:F2:64:21:B1:5E:D0:89:19:8B:51:8A:E2:EA:1B:99
Fingerprint (SHA1): 89:D4:83:03:4F:9E:9A:48:80:5F:72:37:D4:A9:A6:EF:CB:7C:1F:D1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "e-Szigno Root CA 2017"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160\145
\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151\143
\162\157\163\145\143\040\114\164\144\056\061\027\060\025\006\003
\125\004\141\014\016\126\101\124\110\125\055\062\063\065\070\064
\064\071\067\061\036\060\034\006\003\125\004\003\014\025\145\055
\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040\062
\060\061\067
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160\145
\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151\143
\162\157\163\145\143\040\114\164\144\056\061\027\060\025\006\003
\125\004\141\014\016\126\101\124\110\125\055\062\063\065\070\064

\064\071\067\061\036\060\034\006\003\125\004\003\014\025\145\055
\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040\062
\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\001\124\110\357\041\375\227\131\015\365\004\012
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\100\060\202\001\345\240\003\002\001\002\002\014\001
\124\110\357\041\375\227\131\015\365\004\012\060\012\006\010\052
\206\110\316\075\004\003\002\060\161\061\013\060\011\006\003\125
\004\006\023\002\110\125\061\021\060\017\006\003\125\004\007\014
\010\102\165\144\141\160\145\163\164\061\026\060\024\006\003\125
\004\012\014\015\115\151\143\162\157\163\145\143\040\114\164\144
\056\061\027\060\025\006\003\125\004\141\014\016\126\101\124\110
\125\055\062\063\065\070\064\064\071\067\061\036\060\034\006\003
\125\004\003\014\025\145\055\123\172\151\147\156\157\040\122\157
\157\164\040\103\101\040\062\060\061\067\060\036\027\015\061\067
\060\070\062\062\061\062\060\067\060\066\132\027\015\064\062\060
\070\062\062\061\062\060\067\060\066\132\060\161\061\013\060\011
\006\003\125\004\006\023\002\110\125\061\021\060\017\006\003\125
\004\007\014\010\102\165\144\141\160\145\163\164\061\026\060\024
\006\003\125\004\012\014\015\115\151\143\162\157\163\145\143\040
\114\164\144\056\061\027\060\025\006\003\125\004\141\014\016\126
\101\124\110\125\055\062\063\065\070\064\064\071\067\061\036\060
\034\006\003\125\004\003\014\025\145\055\123\172\151\147\156\157
\040\122\157\157\164\040\103\101\040\062\060\061\067\060\131\060
\023\006\007\052\206\110\316\075\002\001\006\010\052\206\110\316
\075\003\001\007\003\102\000\004\226\334\075\212\330\260\173\157
\306\047\276\104\220\261\263\126\025\173\216\103\044\175\032\204
\131\356\143\150\262\306\136\207\320\025\110\036\250\220\255\275
\123\242\332\336\072\220\246\140\137\150\062\265\206\101\337\207
\133\054\173\305\376\174\172\332\243\143\060\141\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006
\003\125\035\016\004\026\004\024\207\021\025\010\321\252\301\170
\014\261\257\316\306\311\220\357\277\060\004\300\060\037\006\003
\125\035\043\004\030\060\026\200\024\207\021\025\010\321\252\301
\170\014\261\257\316\306\311\220\357\277\060\004\300\060\012\006
\010\052\206\110\316\075\004\003\002\003\111\000\060\106\002\041
\000\265\127\335\327\212\125\013\066\341\206\104\372\324\331\150
\215\270\334\043\212\212\015\324\057\175\352\163\354\277\115\154
\250\002\041\000\313\245\264\022\372\347\265\350\317\176\223\374
\363\065\217\157\116\132\174\264\274\116\262\374\162\252\133\131
\371\347\334\061
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE

CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "e-Szigno Root CA 2017"
Issuer: CN=e-Szigno Root CA 2017,OID.2.5.4.97=VATHU-23584497,O=Microsec Ltd.,L=Budapest,C=HU
Serial Number:01:54:48:ef:21:fd:97:59:0d:f5:04:0a
Subject: CN=e-Szigno Root CA 2017,OID.2.5.4.97=VATHU-23584497,O=Microsec Ltd.,L=Budapest,C=HU
Not Valid Before: Tue Aug 22 12:07:06 2017
Not Valid After : Fri Aug 22 12:07:06 2042
Fingerprint (SHA-256):
BE:B0:0B:30:83:9B:9B:C3:2C:32:E4:44:79:05:95:06:41:F2:64:21:B1:5E:D0:89:19:8B:51:8A:E2:EA:1B:99
Fingerprint (SHA1): 89:D4:83:03:4F:9E:9A:48:80:5F:72:37:D4:A9:A6:EF:CB:7C:1F:D1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "e-Szigno Root CA 2017"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\211\324\203\003\117\236\232\110\200\137\162\067\324\251\246\357
\313\174\037\321
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\336\037\366\236\204\256\247\264\041\316\036\130\175\321\204\230
END
CKA_ISSUER MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160\145
\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151\143
\162\157\163\145\143\040\114\164\144\056\061\027\060\025\006\003
\125\004\141\014\016\126\101\124\110\125\055\062\063\065\070\064
\064\071\067\061\036\060\034\006\003\125\004\003\014\025\145\055
\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040\062
\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\001\124\110\357\041\375\227\131\015\365\004\012
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "certSIGN Root CA G2"
#
Issuer: OU=certSIGN ROOT CA G2,O=CERTSIGN SA,C=RO
Serial Number:11:00:34:b6:4e:c6:36:2d:36
Subject: OU=certSIGN ROOT CA G2,O=CERTSIGN SA,C=RO
Not Valid Before: Mon Feb 06 09:27:35 2017

Not Valid After : Thu Feb 06 09:27:35 2042
Fingerprint (SHA-256):
65:7C:FE:2F:A7:3F:AA:38:46:25:71:F3:32:A2:36:3A:46:FC:E7:02:09:51:71:07:02:CD:FB:B6:EE:DA:33:05
Fingerprint (SHA1): 26:F9:93:B4:ED:3D:28:27:B0:B9:4B:A7:E9:15:1D:A3:8D:92:E5:32
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "certSIGN Root CA G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\024\060\022\006\003\125\004\012\023\013\103\105\122\124\123\111
\107\116\040\123\101\061\034\060\032\006\003\125\004\013\023\023
\143\145\162\164\123\111\107\116\040\122\117\117\124\040\103\101
\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\024\060\022\006\003\125\004\012\023\013\103\105\122\124\123\111
\107\116\040\123\101\061\034\060\032\006\003\125\004\013\023\023
\143\145\162\164\123\111\107\116\040\122\117\117\124\040\103\101
\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\021\000\064\266\116\306\066\055\066
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\107\060\202\003\057\240\003\002\001\002\002\011\021
\000\064\266\116\306\066\055\066\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\101\061\013\060\011\006\003\125
\004\006\023\002\122\117\061\024\060\022\006\003\125\004\012\023
\013\103\105\122\124\123\111\107\116\040\123\101\061\034\060\032
\006\003\125\004\013\023\023\143\145\162\164\123\111\107\116\040
\122\117\117\124\040\103\101\040\107\062\060\036\027\015\061\067
\060\062\060\066\060\071\062\067\063\065\132\027\015\064\062\060
\062\060\066\060\071\062\067\063\065\132\060\101\061\013\060\011
\006\003\125\004\006\023\002\122\117\061\024\060\022\006\003\125
\004\012\023\013\103\105\122\124\123\111\107\116\040\123\101\061
\034\060\032\006\003\125\004\013\023\023\143\145\162\164\123\111
\107\116\040\122\117\117\124\040\103\101\040\107\062\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\300\305
\165\031\221\175\104\164\164\207\376\016\073\226\334\330\001\026
\314\356\143\221\347\013\157\316\073\012\151\032\174\302\343\257
\202\216\206\327\136\217\127\353\323\041\131\375\071\067\102\060
\276\120\352\266\017\251\210\330\056\055\151\041\347\321\067\030

\116\175\221\325\026\137\153\133\000\302\071\103\015\066\205\122
\271\123\145\017\035\102\345\217\317\005\323\356\334\014\032\331
\270\213\170\042\147\344\151\260\150\305\074\344\154\132\106\347
\315\307\372\357\304\354\113\275\152\244\254\375\314\050\121\357
\222\264\051\253\253\065\232\114\344\304\010\306\046\314\370\151
\237\344\234\360\051\323\134\371\306\026\045\236\043\303\040\301
\075\017\077\070\100\260\376\202\104\070\252\132\032\212\153\143
\130\070\264\025\323\266\021\151\173\036\124\356\214\032\042\254
\162\227\077\043\131\233\311\042\204\301\007\117\314\177\342\127
\312\022\160\273\246\145\363\151\165\143\275\225\373\033\227\315
\344\250\257\366\321\116\250\331\212\161\044\315\066\075\274\226
\304\361\154\251\256\345\317\015\156\050\015\260\016\265\312\121
\173\170\024\303\040\057\177\373\024\125\341\021\231\375\325\012
\241\236\002\343\142\137\353\065\113\054\270\162\350\076\075\117
\254\054\273\056\206\342\243\166\217\345\223\052\317\245\253\310
\134\215\113\006\377\022\106\254\170\313\024\007\065\340\251\337
\213\351\257\025\117\026\211\133\275\366\215\306\131\256\210\205
\016\301\211\353\037\147\305\105\216\377\155\067\066\053\170\146
\203\221\121\053\075\377\121\167\166\142\241\354\147\076\076\201
\203\340\126\251\120\037\037\172\231\253\143\277\204\027\167\361
\015\073\337\367\234\141\263\065\230\212\072\262\354\074\032\067
\077\176\217\222\317\331\022\024\144\332\020\002\025\101\377\117
\304\353\034\243\311\372\231\367\106\351\341\030\331\261\270\062
\055\313\024\014\120\330\203\145\203\356\271\134\317\313\005\132
\114\372\031\227\153\326\135\023\323\302\134\124\274\062\163\240
\170\365\361\155\036\313\237\245\246\237\042\334\321\121\236\202
\171\144\140\051\023\076\243\375\117\162\152\253\342\324\345\270
\044\125\054\104\113\212\210\104\234\312\204\323\052\073\002\003
\001\000\001\243\102\060\100\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\035\006\003\125\035\016\004
\026\004\024\202\041\055\146\306\327\240\340\025\353\316\114\011
\167\304\140\236\124\156\003\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\002\001\000\140\336\032\270\347
\362\140\202\325\003\063\201\313\006\212\361\042\111\351\350\352
\221\177\306\063\136\150\031\003\206\073\103\001\317\007\160\344
\010\036\145\205\221\346\021\042\267\365\002\043\216\256\271\036
\175\037\176\154\346\275\045\325\225\032\362\005\246\257\205\002
\157\256\370\326\061\377\045\311\112\310\307\212\251\331\237\113
\111\233\021\127\231\222\103\021\336\266\063\244\314\327\215\144
\175\324\315\074\050\054\264\232\226\352\115\365\304\104\304\045
\252\040\200\330\051\125\367\340\101\374\006\046\377\271\066\365
\103\024\003\146\170\341\021\261\332\040\137\106\000\170\000\041
\245\036\000\050\141\170\157\250\001\001\217\235\064\232\377\364
\070\220\373\270\321\263\162\006\311\161\346\201\305\171\355\013
\246\171\362\023\013\234\367\135\016\173\044\223\264\110\333\206
\137\336\120\206\170\347\100\346\061\250\220\166\160\141\257\234
\067\054\021\265\202\267\252\256\044\064\133\162\014\151\015\315

\131\237\366\161\257\234\013\321\012\070\371\006\042\203\123\045
\014\374\121\304\346\276\342\071\225\013\044\255\257\321\225\344
\226\327\164\144\153\161\116\002\074\252\205\363\040\243\103\071
\166\133\154\120\376\232\234\024\036\145\024\212\025\275\243\202
\105\132\111\126\152\322\234\261\143\062\345\141\340\123\042\016
\247\012\111\352\313\176\037\250\342\142\200\366\020\105\122\230
\006\030\336\245\315\057\177\252\324\351\076\010\162\354\043\003
\002\074\246\252\330\274\147\164\075\024\027\373\124\113\027\343
\323\171\075\155\153\111\311\050\016\056\164\120\277\014\331\106
\072\020\206\311\247\077\351\240\354\177\353\245\167\130\151\161
\346\203\012\067\362\206\111\152\276\171\010\220\366\002\026\144
\076\345\332\114\176\014\064\311\371\137\266\263\050\121\247\247
\053\252\111\372\215\145\051\116\343\153\023\247\224\243\055\121
\155\170\014\104\313\337\336\010\157\316\243\144\253\323\225\204
\324\271\122\124\162\173\226\045\314\274\151\343\110\156\015\320
\307\235\047\232\252\370\023\222\335\036\337\143\237\065\251\026
\066\354\214\270\203\364\075\211\217\315\264\027\136\327\263\027
\101\020\135\047\163\140\205\127\111\042\007
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "certSIGN Root CA G2"
Issuer: OU=certSIGN ROOT CA G2,O=CERTSIGN SA,C=RO
Serial Number:11:00:34:b6:4e:c6:36:2d:36
Subject: OU=certSIGN ROOT CA G2,O=CERTSIGN SA,C=RO
Not Valid Before: Mon Feb 06 09:27:35 2017
Not Valid After : Thu Feb 06 09:27:35 2042
Fingerprint (SHA-256):
65:7C:FE:2F:A7:3F:AA:38:46:25:71:F3:32:A2:36:3A:46:FC:E7:02:09:51:71:07:02:CD:FB:B6:EE:DA:33:05
Fingerprint (SHA1): 26:F9:93:B4:ED:3D:28:27:B0:B9:4B:A7:E9:15:1D:A3:8D:92:E5:32
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "certSIGN Root CA G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\046\371\223\264\355\075\050\047\260\271\113\247\351\025\035\243
\215\222\345\062
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\214\361\165\212\306\031\317\224\267\367\145\040\207\303\227\307
END
CKA_ISSUER MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\024\060\022\006\003\125\004\012\023\013\103\105\122\124\123\111
\107\116\040\123\101\061\034\060\032\006\003\125\004\013\023\023

\143\145\162\164\123\111\107\116\040\122\117\117\124\040\103\101
\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\021\000\064\266\116\306\066\055\066
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Trustwave Global Certification Authority"
#
Issuer: CN=Trustwave Global Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:05:f7:0e:86:da:49:f3:46:35:2e:ba:b2
Subject: CN=Trustwave Global Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:34:12 2017
Not Valid After : Sat Aug 23 19:34:12 2042
Fingerprint (SHA-256):
97:55:20:15:F5:DD:FC:3C:87:88:C0:06:94:45:55:40:88:94:45:00:84:F1:00:86:70:86:BC:1A:2B:B5:8D:C8
Fingerprint (SHA1): 2F:8F:36:4F:E1:58:97:44:21:59:87:A5:2A:9A:D0:69:95:26:7F:B5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\014\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\014\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\014\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\061\060\057\006\003\125\004
\003\014\050\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\014\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\014\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\014\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156

\147\163\054\040\111\156\143\056\061\061\060\057\006\003\125\004
\003\014\050\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
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\002\014\005\367\016\206\332\111\363\106\065\056\272\262
END
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\206\110\206\367\015\001\001\013\005\000\060\201\210\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\021\060\017\006\003
\125\004\010\014\010\111\154\154\151\156\157\151\163\061\020\060
\016\006\003\125\004\007\014\007\103\150\151\143\141\147\157\061
\041\060\037\006\003\125\004\012\014\030\124\162\165\163\164\167
\141\166\145\040\110\157\154\144\151\156\147\163\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\003\014\050\124\162\165
\163\164\167\141\166\145\040\107\154\157\142\141\154\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\060\036\027\015\061\067\060\070\062\063\061
\071\063\064\061\062\132\027\015\064\062\060\070\062\063\061\071
\063\064\061\062\132\060\201\210\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\021\060\017\006\003\125\004\010\014\010
\111\154\154\151\156\157\151\163\061\020\060\016\006\003\125\004
\007\014\007\103\150\151\143\141\147\157\061\041\060\037\006\003
\125\004\012\014\030\124\162\165\163\164\167\141\166\145\040\110
\157\154\144\151\156\147\163\054\040\111\156\143\056\061\061\060
\057\006\003\125\004\003\014\050\124\162\165\163\164\167\141\166
\145\040\107\154\157\142\141\154\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\271\135\121\050\113\074\067\222\321\202\316\275\035\275\315
\335\270\253\317\012\076\341\135\345\334\252\011\271\127\002\076
\346\143\141\337\362\017\202\143\256\243\367\254\163\321\174\347
\263\013\257\010\000\011\131\177\315\051\052\210\223\207\027\030
\200\355\210\262\264\266\020\037\055\326\137\125\242\023\135\321
\306\353\006\126\211\210\376\254\062\235\375\134\303\005\307\156
\356\206\211\272\210\003\235\162\041\206\220\256\217\003\245\334
\237\210\050\313\243\222\111\017\354\320\017\342\155\104\117\200
\152\262\324\347\240\012\123\001\272\216\227\221\166\156\274\374
\325\153\066\346\100\210\326\173\057\137\005\350\054\155\021\363
\347\262\276\222\104\114\322\227\244\376\322\162\201\103\007\234
\351\021\076\365\213\032\131\175\037\150\130\335\004\000\054\226
\363\103\263\176\230\031\164\331\234\163\331\030\276\101\307\064
\171\331\364\142\302\103\271\263\047\260\042\313\371\075\122\307
\060\107\263\311\076\270\152\342\347\350\201\160\136\102\213\117

\046\245\376\072\302\040\156\273\370\026\216\315\014\251\264\033
\154\166\020\341\130\171\106\076\124\316\200\250\127\011\067\051
\033\231\023\217\014\310\326\054\034\373\005\350\010\225\075\145
\106\334\356\315\151\342\115\217\207\050\116\064\013\076\317\024
\331\273\335\266\120\232\255\167\324\031\326\332\032\210\310\116
\033\047\165\330\262\010\361\256\203\060\271\021\016\315\207\360
\204\215\025\162\174\241\357\314\362\210\141\272\364\151\273\014
\214\013\165\127\004\270\116\052\024\056\075\017\034\036\062\246
\142\066\356\146\342\042\270\005\100\143\020\042\363\063\035\164
\162\212\054\365\071\051\240\323\347\033\200\204\055\305\075\343
\115\261\375\032\157\272\145\007\073\130\354\102\105\046\373\330
\332\045\162\304\366\000\261\042\171\275\343\174\131\142\112\234
\005\157\075\316\346\326\107\143\231\306\044\157\162\022\310\254
\177\220\264\013\221\160\350\267\346\026\020\161\027\316\336\006
\117\110\101\175\065\112\243\211\362\311\113\173\101\021\155\147
\267\010\230\114\345\021\031\256\102\200\334\373\220\005\324\370
\120\312\276\344\255\307\302\224\327\026\235\346\027\217\257\066
\373\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\231\340\031\147\015\142\333\166\263\332
\075\270\133\350\375\102\322\061\016\207\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\230\163
\160\342\260\323\355\071\354\114\140\331\251\022\206\027\036\226
\320\350\124\050\073\144\055\041\246\370\235\126\023\152\110\075
\117\307\076\051\333\155\130\203\124\075\207\175\043\005\324\344
\034\334\350\070\145\206\305\165\247\132\333\065\005\275\167\336
\273\051\067\100\005\007\303\224\122\237\312\144\335\361\033\053
\334\106\012\020\002\061\375\112\150\015\007\144\220\346\036\365
\052\241\250\273\074\135\371\243\010\013\021\014\361\077\055\020
\224\157\376\342\064\207\203\326\317\345\033\065\155\322\003\341
\260\015\250\240\252\106\047\202\066\247\025\266\010\246\102\124
\127\266\231\132\342\013\171\220\327\127\022\121\065\031\210\101
\150\045\324\067\027\204\025\373\001\162\334\225\336\122\046\040
\230\046\342\166\365\047\157\372\000\073\112\141\331\015\313\121
\223\052\375\026\006\226\247\043\232\043\110\376\121\275\266\304
\260\261\124\316\336\154\101\255\026\147\176\333\375\070\315\271
\070\116\262\301\140\313\235\027\337\130\236\172\142\262\046\217
\164\225\233\344\133\035\322\017\335\230\034\233\131\271\043\323
\061\240\246\377\070\335\317\040\117\351\130\126\072\147\303\321
\366\231\231\235\272\066\266\200\057\210\107\117\206\277\104\072
\200\344\067\034\246\272\352\227\230\021\320\204\142\107\144\036
\252\356\100\277\064\261\234\217\116\341\362\222\117\037\216\363
\236\227\336\363\246\171\152\211\161\117\113\047\027\110\376\354
\364\120\017\117\111\175\314\105\343\275\172\100\305\101\334\141
\126\047\006\151\345\162\101\201\323\266\001\211\240\057\072\162
\171\376\072\060\277\101\354\307\142\076\221\113\307\331\061\166
\102\371\367\074\143\354\046\214\163\014\175\032\035\352\250\174

\207\250\302\047\174\341\063\101\017\317\317\374\000\240\042\200
\236\112\247\157\000\260\101\105\267\042\312\150\110\305\102\242
\256\335\035\362\340\156\116\005\130\261\300\220\026\052\244\075
\020\100\276\217\142\143\203\251\234\202\175\055\002\351\203\060
\174\313\047\311\375\036\146\000\260\056\323\041\057\216\063\026
\154\230\355\020\250\007\326\314\223\317\333\321\151\034\344\312
\311\340\266\234\351\316\161\161\336\154\077\026\244\171
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Trustwave Global Certification Authority"
Issuer: CN=Trustwave Global Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:05:f7:0e:86:da:49:f3:46:35:2e:ba:b2
Subject: CN=Trustwave Global Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:34:12 2017
Not Valid After : Sat Aug 23 19:34:12 2042
Fingerprint (SHA-256):
97:55:20:15:F5:DD:FC:3C:87:88:C0:06:94:45:55:40:88:94:45:00:84:F1:00:86:70:86:BC:1A:2B:B5:8D:C8
Fingerprint (SHA1): 2F:8F:36:4F:E1:58:97:44:21:59:87:A5:2A:9A:D0:69:95:26:7F:B5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\057\217\066\117\341\130\227\104\041\131\207\245\052\232\320\151
\225\046\177\265
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\370\034\030\055\057\272\137\155\241\154\274\307\253\221\307\016
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\014\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\014\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\014\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\061\060\057\006\003\125\004
\003\014\050\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\005\367\016\206\332\111\363\106\065\056\272\262

END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Trustwave Global ECC P256 Certification Authority"
#
Issuer: CN=Trustwave Global ECC P256 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:0d:6a:5f:08:3f:28:5c:3e:51:95:df:5d
Subject: CN=Trustwave Global ECC P256 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:35:10 2017
Not Valid After : Sat Aug 23 19:35:10 2042
Fingerprint (SHA-256):
94:5B:BC:82:5E:A5:54:F4:89:D1:FD:51:A7:3D:DF:2E:A6:24:AC:70:19:A0:52:05:22:5C:22:A7:8C:CF:A8:B4
Fingerprint (SHA1): B4:90:82:DD:45:0C:BE:8B:5B:B1:66:D3:E2:A4:08:26:CD:ED:42:CF
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global ECC P256 Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
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\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\062\065\066\040\103\145\162
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\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
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\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\062\065\066\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157

\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
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END
CKA_VALUE MULTILINE_OCTAL
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\206\110\316\075\004\003\002\060\201\221\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\021\060\017\006\003\125\004\010
\023\010\111\154\154\151\156\157\151\163\061\020\060\016\006\003
\125\004\007\023\007\103\150\151\143\141\147\157\061\041\060\037
\006\003\125\004\012\023\030\124\162\165\163\164\167\141\166\145
\040\110\157\154\144\151\156\147\163\054\040\111\156\143\056\061
\072\060\070\006\003\125\004\003\023\061\124\162\165\163\164\167
\141\166\145\040\107\154\157\142\141\154\040\105\103\103\040\120
\062\065\066\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\060\036\027\015\061
\067\060\070\062\063\061\071\063\065\061\060\132\027\015\064\062
\060\070\062\063\061\071\063\065\061\060\132\060\201\221\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\021\060\017\006
\003\125\004\010\023\010\111\154\154\151\156\157\151\163\061\020
\060\016\006\003\125\004\007\023\007\103\150\151\143\141\147\157
\061\041\060\037\006\003\125\004\012\023\030\124\162\165\163\164
\167\141\166\145\040\110\157\154\144\151\156\147\163\054\040\111
\156\143\056\061\072\060\070\006\003\125\004\003\023\061\124\162
\165\163\164\167\141\166\145\040\107\154\157\142\141\154\040\105
\103\103\040\120\062\065\066\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060
\131\060\023\006\007\052\206\110\316\075\002\001\006\010\052\206
\110\316\075\003\001\007\003\102\000\004\176\373\154\346\043\343
\163\062\010\312\140\346\123\234\272\164\215\030\260\170\220\122
\200\335\070\300\112\035\321\250\314\223\244\227\006\070\312\015
\025\142\306\216\001\052\145\235\252\337\064\221\056\201\301\344
\063\222\061\304\375\011\072\246\077\255\243\103\060\101\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\017\006\003\125\035\017\001\001\377\004\005\003\003\007\006\000
\060\035\006\003\125\035\016\004\026\004\024\243\101\006\254\220
\155\321\112\353\165\245\112\020\231\263\261\241\213\112\367\060
\012\006\010\052\206\110\316\075\004\003\002\003\107\000\060\104
\002\040\007\346\124\332\016\240\132\262\256\021\237\207\305\266
\377\151\336\045\276\370\240\267\010\363\104\316\052\337\010\041
\014\067\002\040\055\046\003\240\005\275\153\321\366\134\370\145
\314\206\155\263\234\064\110\143\204\011\305\215\167\032\342\314
\234\341\164\173
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE

CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Trustwave Global ECC P256 Certification Authority"
Issuer: CN=Trustwave Global ECC P256 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:0d:6a:5f:08:3f:28:5c:3e:51:95:df:5d
Subject: CN=Trustwave Global ECC P256 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:35:10 2017
Not Valid After : Sat Aug 23 19:35:10 2042
Fingerprint (SHA-256):
94:5B:BC:82:5E:A5:54:F4:89:D1:FD:51:A7:3D:DF:2E:A6:24:AC:70:19:A0:52:05:22:5C:22:A7:8C:CF:A8:B4
Fingerprint (SHA1): B4:90:82:DD:45:0C:BE:8B:5B:B1:66:D3:E2:A4:08:26:CD:ED:42:CF
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global ECC P256 Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\264\220\202\335\105\014\276\213\133\261\146\323\342\244\010\046
\315\355\102\317
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\133\104\343\215\135\066\206\046\350\015\005\322\131\247\203\124
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\062\065\066\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\015\152\137\010\077\050\134\076\121\225\337\135
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Trustwave Global ECC P384 Certification Authority"
#

Issuer: CN=Trustwave Global ECC P384 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:08:bd:85:97:6c:99:27:a4:80:68:47:3b
Subject: CN=Trustwave Global ECC P384 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:36:43 2017
Not Valid After : Sat Aug 23 19:36:43 2042
Fingerprint (SHA-256):
55:90:38:59:C8:C0:C3:EB:B8:75:9E:CE:4E:25:57:22:5F:F5:75:8B:BD:38:EB:D4:82:76:60:1E:1B:D5:80:97
Fingerprint (SHA1): E7:F3:A3:C8:CF:6F:C3:04:2E:6D:0E:67:32:C5:9E:68:95:0D:5E:D2
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global ECC P384 Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\063\070\064\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\063\070\064\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\010\275\205\227\154\231\047\244\200\150\107\073
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\235\060\202\002\044\240\003\002\001\002\002\014\010
\275\205\227\154\231\047\244\200\150\107\073\060\012\006\010\052
\206\110\316\075\004\003\003\060\201\221\061\013\060\011\006\003

\125\004\006\023\002\125\123\061\021\060\017\006\003\125\004\010
\023\010\111\154\154\151\156\157\151\163\061\020\060\016\006\003
\125\004\007\023\007\103\150\151\143\141\147\157\061\041\060\037
\006\003\125\004\012\023\030\124\162\165\163\164\167\141\166\145
\040\110\157\154\144\151\156\147\163\054\040\111\156\143\056\061
\072\060\070\006\003\125\004\003\023\061\124\162\165\163\164\167
\141\166\145\040\107\154\157\142\141\154\040\105\103\103\040\120
\063\070\064\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\060\036\027\015\061
\067\060\070\062\063\061\071\063\066\064\063\132\027\015\064\062
\060\070\062\063\061\071\063\066\064\063\132\060\201\221\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\021\060\017\006
\003\125\004\010\023\010\111\154\154\151\156\157\151\163\061\020
\060\016\006\003\125\004\007\023\007\103\150\151\143\141\147\157
\061\041\060\037\006\003\125\004\012\023\030\124\162\165\163\164
\167\141\166\145\040\110\157\154\144\151\156\147\163\054\040\111
\156\143\056\061\072\060\070\006\003\125\004\003\023\061\124\162
\165\163\164\167\141\166\145\040\107\154\157\142\141\154\040\105
\103\103\040\120\063\070\064\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\153\332\015\165\065\010\061\107\005
\256\105\231\125\361\021\023\056\112\370\020\061\043\243\176\203
\323\177\050\010\072\046\032\072\317\227\202\037\200\267\047\011
\217\321\216\060\304\012\233\016\254\130\004\253\367\066\175\224
\043\244\233\012\212\213\253\353\375\071\045\146\361\136\376\214
\256\215\101\171\235\011\140\316\050\251\323\212\155\363\326\105
\324\362\230\204\070\145\240\243\103\060\101\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\017\006\003
\125\035\017\001\001\377\004\005\003\003\007\006\000\060\035\006
\003\125\035\016\004\026\004\024\125\251\204\211\322\301\062\275
\030\313\154\246\007\116\310\347\235\276\202\220\060\012\006\010
\052\206\110\316\075\004\003\003\003\147\000\060\144\002\060\067
\001\222\227\105\022\176\240\363\076\255\031\072\162\335\364\120
\223\003\022\276\104\322\117\101\244\214\234\235\037\243\366\302
\222\347\110\024\376\116\233\245\221\127\256\306\067\162\273\002
\060\147\045\012\261\014\136\356\251\143\222\157\345\220\013\376
\146\042\312\107\375\212\061\367\203\376\172\277\020\276\030\053
\036\217\366\051\036\224\131\357\216\041\067\313\121\230\245\156
\113
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Trustwave Global ECC P384 Certification Authority"
Issuer: CN=Trustwave Global ECC P384 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US

Serial Number:08:bd:85:97:6c:99:27:a4:80:68:47:3b
Subject: CN=Trustwave Global ECC P384 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:36:43 2017
Not Valid After : Sat Aug 23 19:36:43 2042
Fingerprint (SHA-256):
55:90:38:59:C8:C0:C3:EB:B8:75:9E:CE:4E:25:57:22:5F:F5:75:8B:BD:38:EB:D4:82:76:60:1E:1B:D5:80:97
Fingerprint (SHA1): E7:F3:A3:C8:CF:6F:C3:04:2E:6D:0E:67:32:C5:9E:68:95:0D:5E:D2
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global ECC P384 Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\347\363\243\310\317\157\303\004\056\155\016\147\062\305\236\150
\225\015\136\322
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\352\317\140\304\073\271\025\051\100\241\227\355\170\047\223\326
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\063\070\064\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\010\275\205\227\154\231\047\244\200\150\107\073
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "NAVER Global Root Certification Authority"
#
Issuer: CN=NAVER Global Root Certification Authority,O=NAVER BUSINESS PLATFORM Corp.,C=KR
Serial Number:01:94:30:1e:a2:0b:dd:f5:c5:33:2a:b1:43:44:71:f8:d6:50:4d:0d
Subject: CN=NAVER Global Root Certification Authority,O=NAVER BUSINESS PLATFORM Corp.,C=KR
Not Valid Before: Fri Aug 18 08:58:42 2017
Not Valid After : Tue Aug 18 23:59:59 2037

\# Fingerprint (SHA-256):
88:F4:38:DC:F8:FF:D1:FA:8F:42:91:15:FF:E5:F8:2A:E1:E0:6E:0C:70:C3:75:FA:AD:71:7B:34:A4:9E:72:65
\# Fingerprint (SHA1): 8F:6B:F2:A9:27:4A:DA:14:A0:C4:F4:8E:61:27:F9:C0:1E:78:5D:D1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NAVER Global Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\151\061\013\060\011\006\003\125\004\006\023\002\113\122\061
\046\060\044\006\003\125\004\012\014\035\116\101\126\105\122\040
\102\125\123\111\116\105\123\123\040\120\114\101\124\106\117\122
\115\040\103\157\162\160\056\061\062\060\060\006\003\125\004\003
\014\051\116\101\126\105\122\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\151\061\013\060\011\006\003\125\004\006\023\002\113\122\061
\046\060\044\006\003\125\004\012\014\035\116\101\126\105\122\040
\102\125\123\111\116\105\123\123\040\120\114\101\124\106\117\122
\115\040\103\157\162\160\056\061\062\060\060\006\003\125\004\003
\014\051\116\101\126\105\122\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\001\224\060\036\242\013\335\365\305\063\052\261\103\104
\161\370\326\120\115\015
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\242\060\202\003\212\240\003\002\001\002\002\024\001
\224\060\036\242\013\335\365\305\063\052\261\103\104\161\370\326
\120\115\015\060\015\006\011\052\206\110\206\367\015\001\001\014
\005\000\060\151\061\013\060\011\006\003\125\004\006\023\002\113
\122\061\046\060\044\006\003\125\004\012\014\035\116\101\126\105
\122\040\102\125\123\111\116\105\123\123\040\120\114\101\124\106
\117\122\115\040\103\157\162\160\056\061\062\060\060\006\003\125
\004\003\014\051\116\101\126\105\122\040\107\154\157\142\141\154
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\060\036\027
\015\061\067\060\070\061\070\060\070\065\070\064\062\132\027\015
\063\067\060\070\061\070\062\063\065\071\065\071\132\060\151\061
\013\060\011\006\003\125\004\006\023\002\113\122\061\046\060\044
\006\003\125\004\012\014\035\116\101\126\105\122\040\102\125\123
\111\116\105\123\123\040\120\114\101\124\106\117\122\115\040\103

\157\162\160\056\061\062\060\060\006\003\125\004\003\014\051\116
\101\126\105\122\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\266\324\361\223\134\265\100
\211\012\253\015\220\133\120\143\256\220\224\164\027\105\162\326
\173\145\132\051\113\247\126\240\113\270\057\102\165\351\331\173
\044\132\061\145\253\027\027\321\063\072\331\021\334\100\066\207
\337\307\152\351\046\136\131\212\167\343\350\110\234\061\026\372
\076\221\261\312\311\243\342\237\316\041\123\243\002\066\060\313
\122\002\345\332\062\135\303\305\346\371\356\021\307\213\311\104
\036\204\223\030\112\264\237\345\022\144\151\320\046\205\142\001
\266\311\002\035\276\203\121\273\134\332\370\255\025\152\231\367
\222\124\367\064\133\351\277\352\051\201\022\324\123\221\226\263
\221\132\335\376\220\163\050\373\060\106\265\312\010\007\307\161
\162\311\146\323\064\227\366\214\364\030\112\341\320\075\132\105
\266\151\247\051\373\043\316\210\330\022\234\000\110\250\246\017
\263\073\222\215\161\016\164\305\213\310\114\371\364\233\216\270
\074\151\355\157\073\120\057\130\355\304\260\320\034\033\152\014
\342\274\104\252\330\315\024\135\224\170\141\277\016\156\332\052
\274\057\014\013\161\246\263\026\077\234\346\371\314\237\123\065
\342\003\240\240\030\277\273\361\276\364\326\214\207\015\102\367
\006\271\361\155\355\004\224\250\376\266\323\006\306\100\141\337
\235\235\363\124\166\316\123\072\001\246\222\101\354\004\243\217
\015\242\325\011\312\326\313\232\361\357\103\135\300\253\245\101
\317\134\123\160\160\311\210\246\055\324\153\141\163\120\046\206
\141\016\137\033\302\053\342\214\325\273\235\301\003\102\272\224
\332\137\251\260\312\314\115\012\357\107\151\003\057\042\373\361
\050\316\277\135\120\145\250\220\155\263\164\260\010\307\254\250
\321\353\076\234\374\135\032\203\056\053\313\265\363\104\235\072
\247\027\141\226\242\161\323\160\226\025\115\267\114\163\356\031
\134\305\133\076\101\376\254\165\140\073\033\143\316\000\335\332
\010\220\142\264\345\055\356\110\247\153\027\231\124\276\207\112
\343\251\136\004\114\353\020\155\124\326\357\361\350\362\142\026
\313\200\153\355\075\355\365\037\060\245\256\113\311\023\355\212
\001\001\311\270\121\130\300\146\072\261\146\113\304\325\061\002
\142\351\164\204\014\333\115\106\055\002\003\001\000\001\243\102
\060\100\060\035\006\003\125\035\016\004\026\004\024\322\237\210
\337\241\315\054\275\354\365\073\001\001\223\063\047\262\353\140
\113\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\015\006\011\052\206\110\206\367\015\001\001\014\005
\000\003\202\002\001\000\062\312\200\263\235\075\124\006\335\322
\322\056\360\244\001\041\013\147\110\312\155\216\340\310\252\015
\252\215\041\127\217\306\076\172\312\333\121\324\122\263\324\226
\204\245\130\140\177\345\013\216\037\365\334\012\025\201\345\073
\266\267\042\057\011\234\023\026\261\154\014\065\010\155\253\143

\162\355\334\276\354\307\127\346\060\040\161\326\327\020\301\023
\125\001\214\052\103\344\101\361\317\072\172\123\222\316\242\003
\005\015\070\337\002\273\020\056\331\073\322\233\172\300\241\246
\370\265\061\346\364\165\311\271\123\231\165\107\042\132\024\025
\307\170\033\266\235\351\014\370\033\166\361\205\204\336\241\332
\022\357\244\342\020\227\172\170\336\014\121\227\250\041\100\213
\206\275\015\360\136\116\113\066\273\073\040\037\212\102\126\341
\013\032\277\173\320\042\103\054\104\214\373\345\052\264\154\034
\034\272\224\340\023\176\041\346\232\302\313\305\102\144\264\036
\224\173\010\045\310\161\314\207\105\127\205\323\237\051\142\042
\203\121\227\000\030\227\167\152\230\222\311\174\140\154\337\154
\175\112\344\160\114\302\236\270\035\367\320\064\307\017\314\373
\247\377\003\276\255\160\220\332\013\335\310\155\227\137\232\177
\011\062\101\375\315\242\314\132\155\114\362\252\111\376\146\370
\351\330\065\353\016\050\036\356\110\057\072\320\171\011\070\174
\246\042\202\223\225\320\003\276\276\002\240\005\335\040\042\343
\157\035\210\064\140\306\346\012\271\011\165\013\360\007\350\151
\226\065\307\373\043\201\216\070\071\270\105\053\103\170\242\321
\054\024\377\015\050\162\162\225\233\136\011\333\211\104\230\252
\241\111\273\161\122\362\277\366\377\047\241\066\257\270\266\167
\210\335\072\244\155\233\064\220\334\024\135\060\277\267\353\027
\344\207\267\161\320\241\327\167\025\324\102\327\362\363\061\231
\135\233\335\026\155\077\352\006\043\370\106\242\042\355\223\366
\335\232\346\052\207\261\230\124\361\042\367\153\105\343\342\216
\166\035\232\215\304\006\215\066\267\024\363\235\124\151\267\216
\074\325\244\155\223\201\267\255\366\275\144\173\302\311\150\071
\240\222\234\315\064\206\221\220\372\144\121\235\376\376\353\245
\365\165\336\211\367\162
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "NAVER Global Root Certification Authority"
Issuer: CN=NAVER Global Root Certification Authority,O=NAVER BUSINESS PLATFORM Corp.,C=KR
Serial Number:01:94:30:1e:a2:0b:dd:f5:c5:33:2a:b1:43:44:71:f8:d6:50:4d:0d
Subject: CN=NAVER Global Root Certification Authority,O=NAVER BUSINESS PLATFORM Corp.,C=KR
Not Valid Before: Fri Aug 18 08:58:42 2017
Not Valid After : Tue Aug 18 23:59:59 2037
Fingerprint (SHA-256):
88:F4:38:DC:F8:FF:D1:FA:8F:42:91:15:FF:E5:F8:2A:E1:E0:6E:0C:70:C3:75:FA:AD:71:7B:34:A4:9E:72:65
Fingerprint (SHA1): 8F:6B:F2:A9:27:4A:DA:14:A0:C4:F4:8E:61:27:F9:C0:1E:78:5D:D1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NAVER Global Root Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\217\153\362\251\047\112\332\024\240\304\364\216\141\047\371\300
\036\170\135\321
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\310\176\101\366\045\073\365\011\263\027\350\106\075\277\320\233
END
CKA_ISSUER MULTILINE_OCTAL
\060\151\061\013\060\011\006\003\125\004\006\023\002\113\122\061
\046\060\044\006\003\125\004\012\014\035\116\101\126\105\122\040
\102\125\123\111\116\105\123\123\040\120\114\101\124\106\117\122
\115\040\103\157\162\160\056\061\062\060\060\006\003\125\004\003
\014\051\116\101\126\105\122\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\001\224\060\036\242\013\335\365\305\063\052\261\103\104
\161\370\326\120\115\015
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AC RAIZ FNMT-RCM SERVIDORES SEGUROS"
#
Issuer: CN=AC RAIZ FNMT-RCM SERVIDORES SEGUROS,OID.2.5.4.97=VATES-Q2826004J,OU=Ceres,O=FNMT-RCM,C=ES
Serial Number:62:f6:32:6c:e5:c4:e3:68:5c:1b:62:dd:9c:2e:9d:95
Subject: CN=AC RAIZ FNMT-RCM SERVIDORES SEGUROS,OID.2.5.4.97=VATES-Q2826004J,OU=Ceres,O=FNMT-RCM,C=ES
Not Valid Before: Thu Dec 20 09:37:33 2018
Not Valid After : Sun Dec 20 09:37:33 2043
Fingerprint (SHA-256):
55:41:53:B1:3D:2C:F9:DD:B7:53:BF:BE:1A:4E:0A:E0:8D:0A:A4:18:70:58:FE:60:A2:B8:62:B2:E4:B8:7B:CB
Fingerprint (SHA1): 62:FF:D9:9E:C0:65:0D:03:CE:75:93:D2:ED:3F:2D:32:C9:E3:E5:4A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ FNMT-RCM SERVIDORES SEGUROS"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\170\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\016\060\014\006\003\125\004\013\014\005\103\145\162
\145\163\061\030\060\026\006\003\125\004\141\014\017\126\101\124

\105\123\055\121\062\070\062\066\060\060\064\112\061\054\060\052
\006\003\125\004\003\014\043\101\103\040\122\101\111\132\040\106
\116\115\124\055\122\103\115\040\123\105\122\126\111\104\117\122
\105\123\040\123\105\107\125\122\117\123
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\170\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\016\060\014\006\003\125\004\013\014\005\103\145\162
\145\163\061\030\060\026\006\003\125\004\141\014\017\126\101\124
\105\123\055\121\062\070\062\066\060\060\064\112\061\054\060\052
\006\003\125\004\003\014\043\101\103\040\122\101\111\132\040\106
\116\115\124\055\122\103\115\040\123\105\122\126\111\104\117\122
\105\123\040\123\105\107\125\122\117\123
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\142\366\062\154\345\304\343\150\134\033\142\335\234\056
\235\225
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\156\060\202\001\363\240\003\002\001\002\002\020\142
\366\062\154\345\304\343\150\134\033\142\335\234\056\235\225\060
\012\006\010\052\206\110\316\075\004\003\003\060\170\061\013\060
\011\006\003\125\004\006\023\002\105\123\061\021\060\017\006\003
\125\004\012\014\010\106\116\115\124\055\122\103\115\061\016\060
\014\006\003\125\004\013\014\005\103\145\162\145\163\061\030\060
\026\006\003\125\004\141\014\017\126\101\124\105\123\055\121\062
\070\062\066\060\060\064\112\061\054\060\052\006\003\125\004\003
\014\043\101\103\040\122\101\111\132\040\106\116\115\124\055\122
\103\115\040\123\105\122\126\111\104\117\122\105\123\040\123\105
\107\125\122\117\123\060\036\027\015\061\070\061\062\062\060\060
\071\063\067\063\063\132\027\015\064\063\061\062\062\060\060\071
\063\067\063\063\132\060\170\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\021\060\017\006\003\125\004\012\014\010\106
\116\115\124\055\122\103\115\061\016\060\014\006\003\125\004\013
\014\005\103\145\162\145\163\061\030\060\026\006\003\125\004\141
\014\017\126\101\124\105\123\055\121\062\070\062\066\060\060\064
\112\061\054\060\052\006\003\125\004\003\014\043\101\103\040\122
\101\111\132\040\106\116\115\124\055\122\103\115\040\123\105\122
\126\111\104\117\122\105\123\040\123\105\107\125\122\117\123\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\366\272\127\123\310\312\253\337\066
\112\122\041\344\227\322\203\147\236\360\145\121\320\136\207\307
\107\261\131\362\127\107\233\000\002\223\104\027\151\333\102\307
\261\262\072\030\016\264\135\214\263\146\135\241\064\371\066\054
\111\333\363\106\374\263\104\151\104\023\146\375\327\305\375\257
\066\115\316\003\115\007\161\317\257\152\005\322\242\103\132\012

\122\157\001\003\116\216\213\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\001\271\057\357\277\021\206\140\362
\117\320\101\156\253\163\037\347\322\156\111\060\012\006\010\052
\206\110\316\075\004\003\003\003\151\000\060\146\002\061\000\256
\112\343\053\100\303\164\021\362\225\255\026\043\336\116\014\032
\346\135\245\044\136\153\104\173\374\070\342\117\313\234\105\027
\021\114\024\047\046\125\071\165\112\003\314\023\220\237\222\002
\061\000\372\112\154\140\210\163\363\356\270\230\142\251\316\053
\302\331\212\246\160\061\035\257\260\224\114\353\117\306\343\321
\363\142\247\074\377\223\056\007\134\111\001\147\151\022\002\162
\277\347
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AC RAIZ FNMT-RCM SERVIDORES SEGUROS"
Issuer: CN=AC RAIZ FNMT-RCM SERVIDORES SEGUROS,OID.2.5.4.97=VATES-Q2826004J,OU=Ceres,O=FNMT-RCM,C=ES
Serial Number:62:f6:32:6c:e5:c4:e3:68:5c:1b:62:dd:9c:2e:9d:95
Subject: CN=AC RAIZ FNMT-RCM SERVIDORES SEGUROS,OID.2.5.4.97=VATES-Q2826004J,OU=Ceres,O=FNMT-RCM,C=ES
Not Valid Before: Thu Dec 20 09:37:33 2018
Not Valid After : Sun Dec 20 09:37:33 2043
Fingerprint (SHA-256):
55:41:53:B1:3D:2C:F9:DD:B7:53:BF:BE:1A:4E:0A:E0:8D:0A:A4:18:70:58:FE:60:A2:B8:62:B2:E4:B8:7B:CB
Fingerprint (SHA1): 62:FF:D9:9E:C0:65:0D:03:CE:75:93:D2:ED:3F:2D:32:C9:E3:E5:4A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ FNMT-RCM SERVIDORES SEGUROS"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\142\377\331\236\300\145\015\003\316\165\223\322\355\077\055\062
\311\343\345\112
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\031\066\234\122\003\057\322\321\273\043\314\335\036\022\125\273
END
CKA_ISSUER MULTILINE_OCTAL
\060\170\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\016\060\014\006\003\125\004\013\014\005\103\145\162
\145\163\061\030\060\026\006\003\125\004\141\014\017\126\101\124
\105\123\055\121\062\070\062\066\060\060\064\112\061\054\060\052
\006\003\125\004\003\014\043\101\103\040\122\101\111\132\040\106

\116\115\124\055\122\103\115\040\123\105\122\126\111\104\117\122
\105\123\040\123\105\107\125\122\117\123
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\142\366\062\154\345\304\343\150\134\033\142\335\234\056
\235\225
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Secure Mail Root R45"
#
Issuer: CN=GlobalSign Secure Mail Root R45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:a8:4c:50:ab:9f:8d:32:b5:1d:03:8f:57:dc
Subject: CN=GlobalSign Secure Mail Root R45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After : Sat Mar 18 00:00:00 2045
Fingerprint (SHA-256):
31:9A:F0:A7:72:9E:6F:89:26:9C:13:1E:A6:A3:A1:6F:CD:86:38:9F:DC:AB:3C:47:A4:A6:75:C1:61:A3:F9:74
Fingerprint (SHA1): 76:18:D1:F3:80:24:3D:52:40:C6:11:6A:AD:57:77:09:7D:81:30:A0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Secure Mail Root R45"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\122\064\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\122\064\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\123\376\250\114\120\253\237\215\062\265\035\003\217

\127\334
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\160\060\202\003\130\240\003\002\001\002\002\020\166
\123\376\250\114\120\253\237\215\062\265\035\003\217\127\334\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\122
\061\013\060\011\006\003\125\004\006\023\002\102\105\061\031\060
\027\006\003\125\004\012\023\020\107\154\157\142\141\154\123\151
\147\156\040\156\166\055\163\141\061\050\060\046\006\003\125\004
\003\023\037\107\154\157\142\141\154\123\151\147\156\040\123\145
\143\165\162\145\040\115\141\151\154\040\122\157\157\164\040\122
\064\065\060\036\027\015\062\060\060\063\061\070\060\060\060\060
\060\060\132\027\015\064\065\060\063\061\070\060\060\060\060\060
\060\132\060\122\061\013\060\011\006\003\125\004\006\023\002\102
\105\061\031\060\027\006\003\125\004\012\023\020\107\154\157\142
\141\154\123\151\147\156\040\156\166\055\163\141\061\050\060\046
\006\003\125\004\003\023\037\107\154\157\142\141\154\123\151\147
\156\040\123\145\143\165\162\145\040\115\141\151\154\040\122\157
\157\164\040\122\064\065\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\334\171\314\155\006\371\155\273\340
\126\004\154\177\340\165\314\055\005\111\350\113\334\124\354\133
\167\225\162\277\177\142\235\205\251\212\044\120\137\123\345\333
\164\157\244\051\133\023\052\011\255\232\305\057\302\367\166\073
\241\105\106\252\103\346\044\376\053\260\157\062\160\031\106\132
\171\046\057\374\075\175\137\144\313\127\314\141\141\250\331\225
\156\343\225\240\156\177\107\022\030\326\357\003\311\373\212\372
\232\275\202\025\251\125\167\113\021\117\131\340\153\303\161\363
\014\330\124\325\201\150\076\023\271\025\056\207\212\074\104\047
\066\142\044\156\370\054\005\162\060\141\275\102\221\043\304\235
\045\247\331\124\232\024\243\061\255\200\171\014\247\143\154\230
\243\254\127\107\063\037\145\226\341\320\322\065\332\371\161\367
\241\246\045\265\101\135\337\076\140\330\321\366\237\245\362\270
\314\023\252\217\371\262\156\341\203\055\223\335\076\205\032\335
\350\261\134\046\001\313\111\205\374\374\322\324\177\205\142\206
\164\371\313\354\065\042\242\014\060\217\073\253\171\353\126\362
\372\102\363\355\371\037\105\211\100\051\255\352\222\164\352\122
\375\126\264\053\332\242\355\165\302\156\253\316\122\220\113\366
\336\360\111\217\232\110\324\210\031\155\105\346\314\214\271\335
\144\140\140\002\100\370\271\317\274\130\353\075\205\271\306\012
\323\234\007\146\217\307\030\071\043\106\341\074\036\243\057\120
\141\222\013\075\053\154\361\243\107\070\127\221\253\015\217\306
\235\115\004\322\046\122\134\345\245\375\052\055\026\052\001\151
\347\251\175\341\066\267\261\052\305\331\261\215\275\271\213\316
\314\213\241\076\013\110\315\120\225\064\304\330\010\131\330\153
\046\364\276\365\324\042\027\000\127\311\256\233\004\060\063\237
\013\373\337\126\242\311\156\124\166\332\261\227\142\047\131\017
\021\212\042\033\144\226\077\250\361\267\044\112\215\074\123\174

\155\203\166\075\262\046\110\163\365\104\026\001\055\011\052\216
\026\226\120\320\163\006\135\273\042\110\202\114\012\106\132\077
\200\377\134\362\362\232\254\054\010\340\326\352\360\022\070\201
\117\246\020\355\106\253\314\026\234\013\317\144\246\231\002\205
\104\147\106\255\375\115\347\002\003\001\000\001\243\102\060\100
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\240\223\025\050
\156\356\217\010\262\065\306\236\142\171\164\247\261\016\053\173
\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000\003
\202\002\001\000\105\012\370\321\134\254\142\201\320\004\327\266
\377\127\121\211\013\014\313\336\044\145\067\373\253\236\355\146
\364\352\014\031\151\211\270\031\261\060\126\264\331\366\367\276
\306\256\227\313\105\366\021\214\072\060\144\114\301\237\131\300
\106\102\010\006\107\144\027\170\340\225\007\006\326\214\242\254
\251\331\077\323\173\126\117\374\304\207\050\337\266\053\026\043
\300\237\037\133\343\326\104\136\042\117\043\004\214\065\026\265
\171\007\206\134\057\227\342\366\010\144\246\334\333\250\212\343
\244\173\167\015\321\051\223\050\040\264\123\243\113\116\137\336
\301\366\165\043\374\037\074\170\117\160\061\170\057\242\065\124
\161\004\254\310\304\155\303\366\221\261\376\315\356\104\156\201
\366\100\305\076\052\001\277\253\114\261\003\077\015\021\344\017
\322\044\343\042\210\233\237\137\107\075\121\111\340\011\067\176
\027\041\061\166\267\147\161\110\050\113\045\327\020\350\237\141
\131\026\305\076\062\116\037\014\316\243\314\017\344\307\021\007
\042\057\070\010\335\133\227\353\102\154\131\232\232\356\172\320
\235\337\305\333\011\103\056\012\252\031\075\153\350\152\060\172
\127\346\277\263\152\071\251\217\343\361\117\145\150\266\275\237
\050\217\241\026\132\011\120\072\062\056\035\057\104\021\102\246
\000\346\061\230\377\055\241\017\346\244\140\126\317\171\327\262
\116\327\260\372\156\014\127\043\307\316\037\245\261\114\155\031
\111\236\016\177\160\217\161\077\130\050\237\165\335\141\340\072
\267\071\266\356\227\324\065\121\373\213\111\140\310\074\146\256
\227\356\215\046\131\127\273\170\360\172\120\060\011\260\140\252
\237\116\334\311\076\036\072\334\142\223\063\260\072\124\164\157
\054\061\105\321\153\021\062\152\150\166\366\075\366\152\023\136
\044\230\347\352\035\232\317\170\202\007\140\367\115\020\323\201
\232\105\215\236\257\233\334\200\307\103\262\225\150\244\303\016
\350\012\107\025\277\124\063\334\001\347\325\246\036\163\330\172
\262\277\057\255\343\125\060\236\337\016\101\274\340\021\365\241
\014\250\042\341\343\000\243\116\160\174\222\343\004\321\172\102
\212\165\220\131\343\233\321\114\242\144\275\163\171\233\157\362
\263\301\366\074
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Secure Mail Root R45"
Issuer: CN=GlobalSign Secure Mail Root R45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:a8:4c:50:ab:9f:8d:32:b5:1d:03:8f:57:dc
Subject: CN=GlobalSign Secure Mail Root R45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After : Sat Mar 18 00:00:00 2045
Fingerprint (SHA-256):
31:9A:F0:A7:72:9E:6F:89:26:9C:13:1E:A6:A3:A1:6F:CD:86:38:9F:DC:AB:3C:47:A4:A6:75:C1:61:A3:F9:74
Fingerprint (SHA1): 76:18:D1:F3:80:24:3D:52:40:C6:11:6A:AD:57:77:09:7D:81:30:A0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Secure Mail Root R45"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\166\030\321\363\200\044\075\122\100\306\021\152\255\127\167\011
\175\201\060\240
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\223\304\173\263\016\124\107\034\103\054\213\276\160\205\142\051
END
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\122\064\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\123\376\250\114\120\253\237\215\062\265\035\003\217
\127\334
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Secure Mail Root E45"
#
Issuer: CN=GlobalSign Secure Mail Root E45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:aa:27:1d:95:46:5d:d6:f1:9e:e5:b8:90:0a
Subject: CN=GlobalSign Secure Mail Root E45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After : Sat Mar 18 00:00:00 2045
Fingerprint (SHA-256):
5C:BF:6F:B8:1F:D4:17:EA:41:28:CD:6F:81:72:A3:C9:40:20:94:F7:4A:B2:ED:3A:06:B4:40:5D:04:F3:0B:19

Fingerprint (SHA1): 18:2E:1F:32:4F:89:DF:BE:FE:88:89:F0:93:C2:C4:A0:2B:67:75:21
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Secure Mail Root E45"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\105\064\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\105\064\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\123\376\252\047\035\225\106\135\326\361\236\345\270
\220\012
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\041\060\202\001\247\240\003\002\001\002\002\020\166
\123\376\252\047\035\225\106\135\326\361\236\345\270\220\012\060
\012\006\010\052\206\110\316\075\004\003\003\060\122\061\013\060
\011\006\003\125\004\006\023\002\102\105\061\031\060\027\006\003
\125\004\012\023\020\107\154\157\142\141\154\123\151\147\156\040
\156\166\055\163\141\061\050\060\046\006\003\125\004\003\023\037
\107\154\157\142\141\154\123\151\147\156\040\123\145\143\165\162
\145\040\115\141\151\154\040\122\157\157\164\040\105\064\065\060
\036\027\015\062\060\060\063\061\070\060\060\060\060\060\060\132
\027\015\064\065\060\063\061\070\060\060\060\060\060\060\132\060
\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061\031
\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154\123
\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003\125
\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040\123
\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164\040
\105\064\065\060\166\060\020\006\007\052\206\110\316\075\002\001
\006\005\053\201\004\000\042\003\142\000\004\371\171\213\201\107
\067\211\226\077\105\111\120\177\032\046\013\223\062\176\056\300
\300\247\010\232\303\156\217\233\076\013\042\354\067\123\267\157

\212\260\274\047\067\113\155\251\106\073\331\037\377\245\241\104
\273\055\163\277\236\101\007\134\123\233\121\010\072\132\273\157
\070\307\026\221\170\302\112\023\151\035\202\337\132\057\000\210
\226\242\056\034\164\371\235\176\146\067\212\243\102\060\100\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\337\023\136\213\137
\302\100\002\375\126\267\224\114\266\036\325\246\261\024\226\060
\012\006\010\052\206\110\316\075\004\003\003\003\150\000\060\145
\002\060\023\260\276\327\161\040\076\344\253\234\316\066\022\175
\137\114\037\052\265\151\105\063\137\323\055\132\262\344\210\307
\336\012\066\102\062\171\235\246\153\272\341\371\104\052\173\212
\303\022\002\061\000\240\146\034\116\207\235\207\311\355\231\114
\033\012\356\055\140\303\067\307\035\315\265\162\260\331\306\357
\274\362\377\077\360\122\335\010\347\252\144\171\303\344\151\127
\221\057\244\313\174
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Secure Mail Root E45"
Issuer: CN=GlobalSign Secure Mail Root E45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:aa:27:1d:95:46:5d:d6:f1:9e:e5:b8:90:0a
Subject: CN=GlobalSign Secure Mail Root E45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After : Sat Mar 18 00:00:00 2045
Fingerprint (SHA-256):
5C:BF:6F:B8:1F:D4:17:EA:41:28:CD:6F:81:72:A3:C9:40:20:94:F7:4A:B2:ED:3A:06:B4:40:5D:04:F3:0B:19
Fingerprint (SHA1): 18:2E:1F:32:4F:89:DF:BE:FE:88:89:F0:93:C2:C4:A0:2B:67:75:21
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Secure Mail Root E45"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\030\056\037\062\117\211\337\276\376\210\211\360\223\302\304\240
\053\147\165\041
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\374\306\056\237\364\122\055\052\250\244\272\373\147\062\377
END
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164

\040\105\064\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\123\376\252\047\035\225\106\135\326\361\236\345\270
\220\012
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Root R46"
#
Issuer: CN=GlobalSign Root R46,O=GlobalSign nv-sa,C=BE
Serial Number:11:d2:bb:b9:d7:23:18:9e:40:5f:0a:9d:2d:d0:df:25:67:d1
Subject: CN=GlobalSign Root R46,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 20 00:00:00 2019
Not Valid After : Tue Mar 20 00:00:00 2046
Fingerprint (SHA-256):
4F:A3:12:6D:8D:3A:11:D1:C4:85:5A:4F:80:7C:BA:D6:CF:91:9D:3A:5A:88:B0:3B:EA:2C:63:72:D9:3C:40:C9
Fingerprint (SHA1): 53:A2:B0:4B:CA:6B:D6:45:E6:39:8A:8E:C4:0D:D2:BF:77:C3:A2:90
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root R46"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\122\064\066
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\122\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\322\273\271\327\043\030\236\100\137\012\235\055\320
\337\045\147\321
END
CKA_VALUE MULTILINE_OCTAL

\060\202\005\132\060\202\003\102\240\003\002\001\002\002\022\021
\322\273\271\327\043\030\236\100\137\012\235\055\320\337\045\147
\321\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\122\064\066\060\036\027\015\061\071\060\063
\062\060\060\060\060\060\060\060\132\027\015\064\066\060\063\062
\060\060\060\060\060\060\060\132\060\106\061\013\060\011\006\003
\125\004\006\023\002\102\105\061\031\060\027\006\003\125\004\012
\023\020\107\154\157\142\141\154\123\151\147\156\040\156\166\055
\163\141\061\034\060\032\006\003\125\004\003\023\023\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\122\064\066
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\254\254\164\062\350\263\145\345\272\355\103\046\035\246\211
\015\105\272\051\210\262\244\035\143\335\323\301\054\011\127\211
\071\241\125\351\147\064\167\014\156\344\125\035\122\045\322\023
\153\136\341\035\251\267\175\211\062\137\015\236\237\054\172\143
\140\100\037\246\260\266\170\217\231\124\226\010\130\256\344\006
\274\142\005\002\026\277\257\250\043\003\266\224\017\274\156\154
\302\313\325\246\273\014\351\366\301\002\373\041\336\146\335\027
\253\164\102\357\360\164\057\045\364\352\153\125\133\220\333\235
\337\136\207\012\100\373\255\031\153\373\367\312\140\210\336\332
\301\217\326\256\325\177\324\074\203\356\327\026\114\203\105\063
\153\047\320\206\320\034\055\153\363\253\175\361\205\251\365\050
\322\255\357\363\204\113\034\207\374\023\243\072\162\242\132\021
\053\326\047\161\047\355\201\055\155\146\201\222\207\264\033\130
\172\314\077\012\372\106\117\115\170\134\370\053\110\343\004\204
\313\135\366\264\152\263\145\374\102\236\121\046\043\040\313\075
\024\371\201\355\145\026\000\117\032\144\227\146\010\317\214\173
\343\053\300\235\371\024\362\033\361\126\152\026\277\054\205\205
\315\170\070\232\353\102\152\002\064\030\203\027\116\224\126\370
\266\202\265\363\226\335\075\363\276\177\040\167\076\173\031\043
\153\054\324\162\163\103\127\175\340\370\327\151\117\027\066\004
\371\300\220\140\067\105\336\346\014\330\164\215\256\234\242\155
\164\135\102\276\006\365\331\144\156\002\020\254\211\260\114\073
\007\115\100\176\044\305\212\230\202\171\216\244\247\202\040\215
\043\372\047\161\311\337\306\101\164\240\115\366\221\026\334\106
\214\137\051\143\061\131\161\014\330\157\302\266\062\175\373\346
\135\123\246\176\025\374\273\165\174\135\354\370\366\027\034\354
\307\153\031\313\363\173\360\053\007\245\331\154\171\124\166\154
\235\034\246\156\016\351\171\014\250\043\152\243\337\033\060\061
\237\261\124\173\376\152\313\146\252\334\145\320\242\236\112\232
\007\041\153\201\217\333\304\131\372\336\042\300\004\234\343\252
\133\066\223\350\075\275\172\241\235\013\166\261\013\307\235\375
\317\230\250\006\302\370\052\243\241\203\240\267\045\162\245\002

\343\002\003\001\000\001\243\102\060\100\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\003\134\253\163\201\207\250\314\260\246
\325\224\342\066\226\111\377\005\231\054\060\015\006\011\052\206
\110\206\367\015\001\001\014\005\000\003\202\002\001\000\174\170
\354\366\002\054\273\133\176\222\053\135\071\334\276\330\035\242
\102\063\115\371\357\244\052\073\104\151\036\254\331\105\243\116
\074\247\330\044\121\262\124\034\223\116\304\357\173\223\205\140
\046\352\011\110\340\365\273\307\351\150\322\273\152\061\161\314
\171\256\021\250\360\231\375\345\037\274\057\250\314\127\353\166
\304\041\246\107\123\125\115\150\277\005\244\356\327\046\253\142
\332\103\067\113\342\306\265\345\262\203\031\072\307\323\333\115
\236\010\172\363\356\317\076\142\373\254\350\140\314\321\307\241
\134\203\105\304\105\314\363\027\153\024\311\004\002\076\322\044
\246\171\351\036\316\242\347\301\131\025\237\035\342\113\232\076
\237\166\010\055\153\330\272\127\024\332\203\352\376\214\125\351
\320\116\251\314\167\061\261\104\021\172\134\261\076\323\024\105
\025\030\142\044\023\322\313\115\316\134\203\301\066\362\020\265
\016\210\155\270\341\126\237\211\336\226\146\071\107\144\054\156
\115\256\142\173\277\140\164\031\270\126\254\222\254\026\062\355
\255\150\125\376\230\272\323\064\336\364\311\141\303\016\206\366
\113\204\140\356\015\173\265\062\130\171\221\125\054\201\103\263
\164\037\172\252\045\236\035\327\241\213\271\315\102\056\004\244
\146\203\115\211\065\266\154\250\066\112\171\041\170\042\320\102
\274\321\100\061\220\241\276\004\317\312\147\355\365\360\200\323
\140\311\203\052\042\005\320\007\073\122\277\014\236\252\053\371
\273\346\037\217\045\272\205\215\027\036\002\376\135\120\004\127
\317\376\055\274\357\134\300\032\253\266\237\044\306\337\163\150
\110\220\054\024\364\077\122\032\344\322\313\024\303\141\151\317
\342\371\030\305\272\063\237\024\243\004\135\271\161\367\265\224
\330\366\063\301\132\301\064\213\174\233\335\223\072\347\023\242
\160\141\237\257\217\353\330\305\165\370\063\146\324\164\147\072
\067\167\234\347\335\244\017\166\103\146\212\103\362\237\373\014
\102\170\143\321\342\017\157\173\324\241\075\164\227\205\267\110
\071\101\326\040\374\320\072\263\372\350\157\304\212\272\161\067
\276\213\227\261\170\061\117\263\347\266\003\023\316\124\235\256
\045\131\314\177\065\137\010\367\100\105\061\170\052\172
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root R46"
Issuer: CN=GlobalSign Root R46,O=GlobalSign nv-sa,C=BE
Serial Number:11:d2:bb:b9:d7:23:18:9e:40:5f:0a:9d:2d:d0:df:25:67:d1
Subject: CN=GlobalSign Root R46,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 20 00:00:00 2019

Not Valid After : Tue Mar 20 00:00:00 2046
Fingerprint (SHA-256):
4F:A3:12:6D:8D:3A:11:D1:C4:85:5A:4F:80:7C:BA:D6:CF:91:9D:3A:5A:88:B0:3B:EA:2C:63:72:D9:3C:40:C9
Fingerprint (SHA1): 53:A2:B0:4B:CA:6B:D6:45:E6:39:8A:8E:C4:0D:D2:BF:77:C3:A2:90
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root R46"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\123\242\260\113\312\153\326\105\346\071\212\216\304\015\322\277
\167\303\242\220
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\304\024\060\344\372\146\103\224\052\152\033\044\137\031\320\357
END
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\122\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\322\273\271\327\043\030\236\100\137\012\235\055\320
\337\045\147\321
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Root E46"
#
Issuer: CN=GlobalSign Root E46,O=GlobalSign nv-sa,C=BE
Serial Number:11:d2:bb:ba:33:6e:d4:bc:e6:24:68:c5:0d:84:1d:98:e8:43
Subject: CN=GlobalSign Root E46,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 20 00:00:00 2019
Not Valid After : Tue Mar 20 00:00:00 2046
Fingerprint (SHA-256):
CB:B9:C4:4D:84:B8:04:3E:10:50:EA:31:A6:9F:51:49:55:D7:BF:D2:E2:C6:B4:93:01:01:9A:D6:1D:9F:50:58
Fingerprint (SHA1): 39:B4:6C:D5:FE:80:06:EB:E2:2F:4A:BB:08:33:A0:AF:DB:B9:DD:84
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root E46"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\105\064\066
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\105\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\322\273\272\063\156\324\274\346\044\150\305\015\204
\035\230\350\103
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\013\060\202\001\221\240\003\002\001\002\002\022\021
\322\273\272\063\156\324\274\346\044\150\305\015\204\035\230\350
\103\060\012\006\010\052\206\110\316\075\004\003\003\060\106\061
\013\060\011\006\003\125\004\006\023\002\102\105\061\031\060\027
\006\003\125\004\012\023\020\107\154\157\142\141\154\123\151\147
\156\040\156\166\055\163\141\061\034\060\032\006\003\125\004\003
\023\023\107\154\157\142\141\154\123\151\147\156\040\122\157\157
\164\040\105\064\066\060\036\027\015\061\071\060\063\062\060\060
\060\060\060\060\060\132\027\015\064\066\060\063\062\060\060\060
\060\060\060\060\132\060\106\061\013\060\011\006\003\125\004\006
\023\002\102\105\061\031\060\027\006\003\125\004\012\023\020\107
\154\157\142\141\154\123\151\147\156\040\156\166\055\163\141\061
\034\060\032\006\003\125\004\003\023\023\107\154\157\142\141\154
\123\151\147\156\040\122\157\157\164\040\105\064\066\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\234\016\261\317\267\350\236\122\167\165\064
\372\245\106\247\255\062\031\062\264\007\251\047\312\224\273\014
\322\012\020\307\332\211\260\227\014\160\023\011\001\216\330\352
\107\352\276\262\200\053\315\374\050\015\333\254\274\244\206\067
\355\160\010\000\165\352\223\013\173\056\122\234\043\150\043\006
\103\354\222\057\123\204\333\373\107\024\007\350\137\224\147\135
\311\172\201\074\040\243\102\060\100\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\061\012\220\217\266\306\235\322\104\113\200
\265\242\346\037\261\022\117\033\225\060\012\006\010\052\206\110
\316\075\004\003\003\003\150\000\060\145\002\061\000\337\124\220

\355\233\357\213\224\002\223\027\202\231\276\263\236\054\366\013
\221\214\237\112\024\261\366\144\274\273\150\121\023\014\003\367
\025\213\204\140\271\213\377\122\216\347\214\274\034\002\060\074
\371\021\324\214\116\300\301\141\302\025\114\252\253\035\013\061
\137\073\034\342\000\227\104\061\346\376\163\226\057\332\226\323
\376\010\007\263\064\211\274\005\237\367\036\206\356\213\160
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root E46"
Issuer: CN=GlobalSign Root E46,O=GlobalSign nv-sa,C=BE
Serial Number:11:d2:bb:ba:33:6e:d4:bc:e6:24:68:c5:0d:84:1d:98:e8:43
Subject: CN=GlobalSign Root E46,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 20 00:00:00 2019
Not Valid After : Tue Mar 20 00:00:00 2046
Fingerprint (SHA-256):
CB:B9:C4:4D:84:B8:04:3E:10:50:EA:31:A6:9F:51:49:55:D7:BF:D2:E2:C6:B4:93:01:01:9A:D6:1D:9F:50:58
Fingerprint (SHA1): 39:B4:6C:D5:FE:80:06:EB:E2:2F:4A:BB:08:33:A0:AF:DB:B9:DD:84
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root E46"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\071\264\154\325\376\200\006\353\342\057\112\273\010\063\240\257
\333\271\335\204
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\265\270\146\355\336\010\203\343\311\342\001\064\006\254\121\157
END
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\105\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\322\273\272\063\156\324\274\346\044\150\305\015\204
\035\230\350\103
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

```
#
# Certificate "GLOBALTRUST 2020"
#
# Issuer: CN=GLOBALTRUST 2020,O=e-commerce monitoring GmbH,C=AT
# Serial Number:5a:4b:bd:5a:fb:4f:8a:5b:fa:65:e5
# Subject: CN=GLOBALTRUST 2020,O=e-commerce monitoring GmbH,C=AT
# Not Valid Before: Mon Feb 10 00:00:00 2020
# Not Valid After : Sun Jun 10 00:00:00 2040
# Fingerprint (SHA-256):
9A:29:6A:51:82:D1:D4:51:A2:E3:7F:43:9B:74:DA:AF:A2:67:52:33:29:F9:0F:9A:0D:20:07:C3:34:E2:3C:9A
# Fingerprint (SHA1): D0:67:C1:13:51:01:0C:AA:D0:C7:6A:65:37:31:16:26:4F:53:71:A2
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GLOBALTRUST 2020"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\043\060\041\006\003\125\004\012\023\032\145\055\143\157\155\155
\145\162\143\145\040\155\157\156\151\164\157\162\151\156\147\040
\107\155\142\110\061\031\060\027\006\003\125\004\003\023\020\107
\114\117\102\101\114\124\122\125\123\124\040\062\060\062\060
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\043\060\041\006\003\125\004\012\023\032\145\055\143\157\155\155
\145\162\143\145\040\155\157\156\151\164\157\162\151\156\147\040
\107\155\142\110\061\031\060\027\006\003\125\004\003\023\020\107
\114\117\102\101\114\124\122\125\123\124\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\132\113\275\132\373\117\212\133\372\145\345
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\202\060\202\003\152\240\003\002\001\002\002\013\132
\113\275\132\373\117\212\133\372\145\345\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\060\115\061\013\060\011\006
\003\125\004\006\023\002\101\124\061\043\060\041\006\003\125\004
\012\023\032\145\055\143\157\155\155\145\162\143\145\040\155\157
\156\151\164\157\162\151\156\147\040\107\155\142\110\061\031\060
\027\006\003\125\004\003\023\020\107\114\117\102\101\114\124\122
\125\123\124\040\062\060\062\060\060\036\027\015\062\060\060\062
\061\060\060\060\060\060\060\060\132\027\015\064\060\060\066\061
\060\060\060\060\060\060\060\132\060\115\061\013\060\011\006\003
\125\004\006\023\002\101\124\061\043\060\041\006\003\125\004\012
\023\032\145\055\143\157\155\155\145\162\143\145\040\155\157\156
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\151\164\157\162\151\156\147\040\107\155\142\110\061\031\060\027
\006\003\125\004\003\023\020\107\114\117\102\101\114\124\122\125
\123\124\040\062\060\062\060\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\256\056\126\255\033\034\357\366
\225\217\240\167\033\053\323\143\217\204\115\105\242\017\237\133
\105\253\131\173\121\064\371\354\213\212\170\305\335\153\257\275
\304\337\223\105\036\277\221\070\013\256\016\026\347\101\163\370
\333\273\321\270\121\340\313\203\073\163\070\156\167\212\017\131
\143\046\315\247\052\316\124\373\270\342\300\174\107\316\140\174
\077\262\163\362\300\031\266\212\222\207\065\015\220\050\242\344
\025\004\143\076\272\257\356\174\136\314\246\213\120\262\070\367
\101\143\312\316\377\151\217\150\016\225\066\345\314\271\214\011
\312\113\335\061\220\226\310\314\037\375\126\226\064\333\216\034
\352\054\276\205\056\143\335\252\251\225\323\375\051\225\023\360
\310\230\223\331\055\026\107\220\021\203\242\072\042\242\050\127
\242\353\376\300\214\050\240\246\175\347\052\102\073\202\200\143
\245\143\037\031\314\174\262\146\250\302\323\155\067\157\342\176
\006\121\331\105\204\037\022\316\044\122\144\205\013\110\200\116
\207\261\042\042\060\252\353\256\276\340\002\340\100\350\260\102
\200\003\121\252\264\176\252\104\327\103\141\363\242\153\026\211
\111\244\243\244\053\212\002\304\170\364\150\212\301\344\172\066
\261\157\033\226\033\167\111\215\324\311\006\162\217\317\123\343
\334\027\205\040\112\334\230\047\323\221\046\053\107\036\151\007
\257\336\242\344\344\324\153\013\263\136\174\324\044\200\107\051
\151\073\156\350\254\375\100\353\330\355\161\161\053\362\350\130
\035\353\101\227\042\305\037\324\071\320\047\217\207\343\030\364
\340\251\106\015\365\164\072\202\056\320\156\054\221\243\061\134
\073\106\352\173\004\020\126\136\200\035\365\245\145\350\202\374
\342\007\214\142\105\365\040\336\106\160\206\241\274\223\323\036
\164\246\154\260\054\367\003\014\210\014\313\324\162\123\206\274
\140\106\363\230\152\302\361\277\103\371\160\040\167\312\067\101
\171\125\122\143\215\133\022\237\305\150\304\210\235\254\362\060
\253\267\243\061\227\147\255\217\027\017\154\307\163\355\044\224
\153\310\203\232\320\232\067\111\004\253\261\026\310\154\111\111
\055\253\241\320\214\222\362\101\112\171\041\045\333\143\327\266
\234\247\176\102\151\373\072\143\002\003\001\000\001\243\143\060
\141\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\035\006\003\125\035\016\004\026\004\024\334\056\037
\321\141\067\171\344\253\325\325\263\022\161\150\075\152\150\234
\042\060\037\006\003\125\035\043\004\030\060\026\200\024\334\056
\037\321\141\067\171\344\253\325\325\263\022\161\150\075\152\150
\234\042\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\003\202\002\001\000\221\360\102\002\150\100\356\303\150\300
\124\057\337\354\142\303\303\236\212\240\061\050\252\203\216\244
\126\226\022\020\206\126\272\227\162\322\124\060\174\255\031\325
\035\150\157\373\024\102\330\215\016\363\265\321\245\343\002\102

\136\334\350\106\130\007\065\002\060\340\274\164\112\301\103\052
\377\333\032\320\260\257\154\303\375\313\263\365\177\155\003\056
\131\126\235\055\055\065\214\262\326\103\027\054\222\012\313\135
\350\214\017\113\160\103\320\202\377\250\314\277\244\224\300\276
\207\275\212\343\223\173\306\217\233\026\235\047\145\274\172\305
\102\202\154\134\007\320\251\301\210\140\104\351\230\205\026\137
\370\217\312\001\020\316\045\303\371\140\033\240\305\227\303\323
\054\210\061\242\275\060\354\320\320\300\022\361\301\071\343\345
\365\370\326\112\335\064\315\373\157\301\117\343\000\213\126\342
\222\367\050\262\102\167\162\043\147\307\077\021\025\262\304\003
\005\276\273\021\173\012\277\250\156\347\377\130\103\317\233\147
\240\200\007\266\035\312\255\155\352\101\021\176\055\164\223\373
\302\274\276\121\104\305\357\150\045\047\200\343\310\240\324\022
\354\331\245\067\035\067\174\264\221\312\332\324\261\226\201\357
\150\134\166\020\111\257\176\245\067\200\261\034\122\275\063\201
\114\217\371\335\145\331\024\315\212\045\130\364\342\305\203\245
\011\220\324\154\024\143\265\100\337\353\300\374\304\130\176\015
\024\026\207\124\047\156\126\344\160\204\270\154\062\022\176\202
\061\103\276\327\335\174\241\255\256\326\253\040\022\357\012\303
\020\214\111\226\065\334\013\165\136\261\117\325\117\064\016\021
\040\007\165\103\105\351\243\021\332\254\243\231\302\266\171\047
\342\271\357\310\342\366\065\051\172\164\372\305\177\202\005\142
\246\012\352\150\262\171\107\006\156\362\127\250\025\063\306\367
\170\112\075\102\173\153\176\376\367\106\352\321\353\216\357\210
\150\133\350\301\331\161\176\375\144\357\377\147\107\210\130\045
\057\076\206\007\275\373\250\345\202\250\254\245\323\151\103\315
\061\210\111\204\123\222\300\261\071\033\071\203\001\060\304\362
\251\372\320\003\275\162\067\140\126\037\066\174\275\071\221\365
\155\015\277\173\327\222
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GLOBALTRUST 2020"
Issuer: CN=GLOBALTRUST 2020,O=e-commerce monitoring GmbH,C=AT
Serial Number:5a:4b:bd:5a:fb:4f:8a:5b:fa:65:e5
Subject: CN=GLOBALTRUST 2020,O=e-commerce monitoring GmbH,C=AT
Not Valid Before: Mon Feb 10 00:00:00 2020
Not Valid After : Sun Jun 10 00:00:00 2040
Fingerprint (SHA-256):
9A:29:6A:51:82:D1:D4:51:A2:E3:7F:43:9B:74:DA:AF:A2:67:52:33:29:F9:0F:9A:0D:20:07:C3:34:E2:3C:9A
Fingerprint (SHA1): D0:67:C1:13:51:01:0C:AA:D0:C7:6A:65:37:31:16:26:4F:53:71:A2
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GLOBALTRUST 2020"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\320\147\301\023\121\001\014\252\320\307\152\145\067\061\026\046
\117\123\161\242
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\212\307\157\313\155\343\314\242\361\174\203\372\016\170\327\350
END
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\043\060\041\006\003\125\004\012\023\032\145\055\143\157\155\155
\145\162\143\145\040\155\157\156\151\164\157\162\151\156\147\040
\107\155\142\110\061\031\060\027\006\003\125\004\003\023\020\107
\114\117\102\101\114\124\122\125\123\124\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\132\113\275\132\373\117\212\133\372\145\345
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ANF Secure Server Root CA"
#
Issuer: CN=ANF Secure Server Root CA,OU=ANF CA Raiz,O=ANF Autoridad de Certificacion,C=ES,serialNumber=G63287510
Serial Number:0d:d3:e3:bc:6c:f9:6b:b1
Subject: CN=ANF Secure Server Root CA,OU=ANF CA Raiz,O=ANF Autoridad de Certificacion,C=ES,serialNumber=G63287510
Not Valid Before: Wed Sep 04 10:00:38 2019
Not Valid After : Tue Aug 30 10:00:38 2039
Fingerprint (SHA-256):
FB:8F:EC:75:91:69:B9:10:6B:1E:51:16:44:C6:18:C5:13:04:37:3F:6C:06:43:08:8D:8B:EF:FD:1B:99:75:99
Fingerprint (SHA1): 5B:6E:68:D0:CC:15:B6:A0:5F:1E:C1:5F:AE:02:FC:6B:2F:5D:6F:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANF Secure Server Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\204\061\022\060\020\006\003\125\004\005\023\011\107\066
\063\062\070\067\065\061\060\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\047\060\045\006\003\125\004\012\023\036\101
\116\106\040\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\061\024\060
\022\006\003\125\004\013\023\013\101\116\106\040\103\101\040\122

\141\151\172\061\042\060\040\006\003\125\004\003\023\031\101\116
\106\040\123\145\143\165\162\145\040\123\145\162\166\145\162\040
\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\204\061\022\060\020\006\003\125\004\005\023\011\107\066
\063\062\070\067\065\061\060\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\047\060\045\006\003\125\004\012\023\036\101
\116\106\040\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\061\024\060
\022\006\003\125\004\013\023\013\101\116\106\040\103\101\040\122
\141\151\172\061\042\060\040\006\003\125\004\003\023\031\101\116
\106\040\123\145\143\165\162\145\040\123\145\162\166\145\162\040
\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\015\323\343\274\154\371\153\261
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\357\060\202\003\327\240\003\002\001\002\002\010\015
\323\343\274\154\371\153\261\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\201\204\061\022\060\020\006\003\125
\004\005\023\011\107\066\063\062\070\067\065\061\060\061\013\060
\011\006\003\125\004\006\023\002\105\123\061\047\060\045\006\003
\125\004\012\023\036\101\116\106\040\101\165\164\157\162\151\144
\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141\143
\151\157\156\061\024\060\022\006\003\125\004\013\023\013\101\116
\106\040\103\101\040\122\141\151\172\061\042\060\040\006\003\125
\004\003\023\031\101\116\106\040\123\145\143\165\162\145\040\123
\145\162\166\145\162\040\122\157\157\164\040\103\101\060\036\027
\015\061\071\060\071\060\064\061\060\060\060\063\070\132\027\015
\063\071\060\070\063\060\061\060\060\060\063\070\132\060\201\204
\061\022\060\020\006\003\125\004\005\023\011\107\066\063\062\070
\067\065\061\060\061\013\060\011\006\003\125\004\006\023\002\105
\123\061\047\060\045\006\003\125\004\012\023\036\101\116\106\040
\101\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\061\024\060\022\006\003
\125\004\013\023\013\101\116\106\040\103\101\040\122\141\151\172
\061\042\060\040\006\003\125\004\003\023\031\101\116\106\040\123
\145\143\165\162\145\040\123\145\162\166\145\162\040\122\157\157
\164\040\103\101\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\333\353\153\053\346\144\124\225\202\220\243
\162\244\031\001\235\234\013\201\137\163\111\272\247\254\363\004
\116\173\226\013\354\021\340\133\246\034\316\033\322\015\203\034
\053\270\236\035\176\105\062\140\017\007\351\167\130\176\237\152
\310\141\116\266\046\301\114\215\377\114\357\064\262\037\145\330

\271\170\365\255\251\161\271\357\117\130\035\245\336\164\040\227
\241\355\150\114\336\222\027\113\274\253\377\145\232\236\373\107
\331\127\162\363\011\241\256\166\104\023\156\234\055\104\071\274
\371\307\073\244\130\075\101\275\264\302\111\243\310\015\322\227
\057\007\145\122\000\247\156\310\257\150\354\364\024\226\266\127
\037\126\303\071\237\053\155\344\363\076\366\065\144\332\014\034
\241\204\113\057\113\113\342\054\044\235\155\223\100\353\265\043
\216\062\312\157\105\323\250\211\173\036\317\036\372\133\103\213
\315\315\250\017\152\312\014\136\271\236\107\217\360\331\266\012
\013\130\145\027\063\271\043\344\167\031\175\313\112\056\222\173
\117\057\020\167\261\215\057\150\234\142\314\340\120\370\354\221
\247\124\114\127\011\325\166\143\305\350\145\036\356\155\152\317
\011\235\372\174\117\255\140\010\375\126\231\017\025\054\173\251
\200\253\214\141\217\112\007\166\102\336\075\364\335\262\044\063
\133\270\265\243\104\311\254\177\167\074\035\043\354\202\251\246
\342\310\006\114\002\376\254\134\231\231\013\057\020\212\246\364
\177\325\207\164\015\131\111\105\366\360\161\134\071\051\326\277
\112\043\213\365\137\001\143\322\207\163\050\265\113\012\365\370
\253\202\054\176\163\045\062\035\013\143\012\027\201\000\377\266
\166\136\347\264\261\100\312\041\273\325\200\121\345\110\122\147
\054\322\141\211\007\015\017\316\102\167\300\104\163\234\104\120
\240\333\020\012\055\225\034\201\257\344\034\345\024\036\361\066
\101\001\002\057\175\163\247\336\102\314\114\351\211\015\126\367
\237\221\324\003\306\154\311\217\333\330\034\340\100\230\135\146
\231\230\200\156\055\377\001\305\316\313\106\037\254\002\306\103
\346\256\242\204\074\305\116\036\075\155\311\024\114\343\056\101
\273\312\071\277\066\074\052\031\252\101\207\116\245\316\113\062
\171\335\220\111\177\002\003\001\000\001\243\143\060\141\060\037
\006\003\125\035\043\004\030\060\026\200\024\234\137\320\154\143
\243\137\223\312\223\230\010\255\214\207\245\054\134\301\067\060
\035\006\003\125\035\016\004\026\004\024\234\137\320\154\143\243
\137\223\312\223\230\010\255\214\207\245\054\134\301\067\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\002\001\000\116\036\271\212\306\240\230\077\156\303\151\300\152
\134\111\122\254\313\053\135\170\070\301\325\124\204\237\223\360
\207\031\075\054\146\211\353\015\102\374\314\360\165\205\077\213
\364\200\135\171\345\027\147\275\065\202\342\362\074\216\175\133
\066\313\132\200\000\051\362\316\053\054\361\217\252\155\005\223
\154\162\307\126\353\337\120\043\050\345\105\020\075\350\147\243
\257\016\125\017\220\011\142\357\113\131\242\366\123\361\300\065
\344\057\301\044\275\171\057\116\040\042\073\375\032\040\260\244
\016\054\160\355\164\077\270\023\225\006\121\310\350\207\046\312
\244\133\152\026\041\222\335\163\140\236\020\030\336\074\201\352
\350\030\303\174\211\362\213\120\076\275\021\342\025\003\250\066
\175\063\001\154\110\025\327\210\220\231\004\305\314\346\007\364
\274\364\220\355\023\342\352\213\303\217\243\063\017\301\051\114

\023\116\332\025\126\161\163\162\202\120\366\232\063\174\242\261
\250\032\064\164\145\134\316\321\353\253\123\340\032\200\330\352
\072\111\344\046\060\233\345\034\212\250\251\025\062\206\231\222
\012\020\043\126\022\340\366\316\114\342\273\276\333\215\222\163
\001\146\057\142\076\262\162\047\105\066\355\115\126\343\227\231
\377\072\065\076\245\124\112\122\131\113\140\333\356\376\170\021
\177\112\334\024\171\140\266\153\144\003\333\025\203\341\242\276
\366\043\227\120\360\011\063\066\247\161\226\045\363\271\102\175
\333\070\077\054\130\254\350\102\341\016\330\323\073\114\056\202
\351\203\056\153\061\331\335\107\206\117\155\227\221\056\117\342
\050\161\065\026\321\362\163\376\045\053\007\107\044\143\047\310
\370\366\331\153\374\022\061\126\010\300\123\102\257\234\320\063
\176\374\006\360\061\104\003\024\361\130\352\362\152\015\251\021
\262\203\276\305\032\277\007\352\131\334\243\210\065\357\234\166
\062\074\115\006\042\316\025\345\335\236\330\217\332\336\322\304
\071\345\027\201\317\070\107\353\177\210\155\131\033\337\237\102
\024\256\176\317\250\260\146\145\332\067\257\237\252\075\352\050
\266\336\325\061\130\026\202\133\352\273\031\165\002\163\032\312
\110\032\041\223\220\012\216\223\204\247\175\073\043\030\222\211
\240\215\254
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ANF Secure Server Root CA"
Issuer: CN=ANF Secure Server Root CA,OU=ANF CA Raiz,O=ANF Autoridad de Certificacion,C=ES,serialNumber=G63287510
Serial Number:0d:d3:e3:bc:6c:f9:6b:b1
Subject: CN=ANF Secure Server Root CA,OU=ANF CA Raiz,O=ANF Autoridad de Certificacion,C=ES,serialNumber=G63287510
Not Valid Before: Wed Sep 04 10:00:38 2019
Not Valid After : Tue Aug 30 10:00:38 2039
Fingerprint (SHA-256):
FB:8F:EC:75:91:69:B9:10:6B:1E:51:16:44:C6:18:C5:13:04:37:3F:6C:06:43:08:8D:8B:EF:FD:1B:99:75:99
Fingerprint (SHA1): 5B:6E:68:D0:CC:15:B6:A0:5F:1E:C1:5F:AE:02:FC:6B:2F:5D:6F:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANF Secure Server Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\133\156\150\320\314\025\266\240\137\036\301\137\256\002\374\153
\057\135\157\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\046\246\104\132\331\257\116\057\262\035\266\145\260\116\350\226
END

CKA_ISSUER MULTILINE_OCTAL
\060\201\204\061\022\060\020\006\003\125\004\005\023\011\107\066
\063\062\070\067\065\061\060\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\047\060\045\006\003\125\004\012\023\036\101
\116\106\040\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\061\024\060
\022\006\003\125\004\013\023\013\101\116\106\040\103\101\040\122
\141\151\172\061\042\060\040\006\003\125\004\003\023\031\101\116
\106\040\123\145\143\165\162\145\040\123\145\162\166\145\162\040
\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\015\323\343\274\154\371\153\261
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum EC-384 CA"
#
Issuer: CN=Certum EC-384 CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Serial Number:78:8f:27:5c:81:12:52:20:a5:04:d0:2d:dd:ba:73:f4
Subject: CN=Certum EC-384 CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Not Valid Before: Mon Mar 26 07:24:54 2018
Not Valid After : Thu Mar 26 07:24:54 2043
Fingerprint (SHA-256):
6B:32:80:85:62:53:18:AA:50:D1:73:C9:8D:8B:DA:09:D5:7E:27:41:3D:11:4C:F7:87:A0:F5:D0:6C:03:0C:F6
Fingerprint (SHA1): F3:3E:78:3C:AC:DF:F4:A2:CC:AC:67:55:69:56:D7:E5:16:3C:E1:ED
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum EC-384 CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\031\060\027\006
\003\125\004\003\023\020\103\145\162\164\165\155\040\105\103\055
\063\070\064\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\164\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\031\060\027\006
\003\125\004\003\023\020\103\145\162\164\165\155\040\105\103\055
\063\070\064\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\170\217\047\134\201\022\122\040\245\004\320\055\335\272
\163\364
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\145\060\202\001\353\240\003\002\001\002\002\020\170
\217\047\134\201\022\122\040\245\004\320\055\335\272\163\364\060
\012\006\010\052\206\110\316\075\004\003\003\060\164\061\013\060
\011\006\003\125\004\006\023\002\120\114\061\041\060\037\006\003
\125\004\012\023\030\101\163\163\145\143\157\040\104\141\164\141
\040\123\171\163\164\145\155\163\040\123\056\101\056\061\047\060
\045\006\003\125\004\013\023\036\103\145\162\164\165\155\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\061\031\060\027\006\003\125\004\003\023
\020\103\145\162\164\165\155\040\105\103\055\063\070\064\040\103
\101\060\036\027\015\061\070\060\063\062\066\060\067\062\064\065
\064\132\027\015\064\063\060\063\062\066\060\067\062\064\065\064
\132\060\164\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143
\157\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123
\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145
\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\031\060\027
\006\003\125\004\003\023\020\103\145\162\164\165\155\040\105\103
\055\063\070\064\040\103\101\060\166\060\020\006\007\052\206\110
\316\075\002\001\006\005\053\201\004\000\042\003\142\000\004\304
\050\216\253\030\133\152\276\156\144\067\143\344\315\354\253\072
\367\314\241\270\016\202\111\327\206\051\237\241\224\362\343\140
\170\230\201\170\006\115\362\354\232\016\127\140\203\237\264\346
\027\057\032\263\135\002\133\211\043\074\302\021\005\052\247\210
\023\030\363\120\204\327\275\064\054\047\211\125\377\316\114\347
\337\246\037\050\304\360\124\303\271\174\267\123\255\353\302\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\215
\006\146\164\044\166\072\363\211\367\274\326\275\107\175\057\274
\020\137\113\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\012\006\010\052\206\110\316\075\004\003\003\003
\150\000\060\145\002\060\003\125\055\246\346\030\304\174\357\311
\120\156\301\047\017\234\207\257\156\325\033\010\030\275\222\051

\301\357\224\221\170\322\072\034\125\211\142\345\033\011\036\272
\144\153\361\166\264\324\002\061\000\264\102\204\231\377\253\347
\236\373\221\227\047\135\334\260\133\060\161\316\136\070\032\152
\331\045\347\352\367\141\222\126\370\352\332\066\302\207\145\226
\056\162\045\057\177\337\303\023\311
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum EC-384 CA"
Issuer: CN=Certum EC-384 CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Serial Number:78:8f:27:5c:81:12:52:20:a5:04:d0:2d:dd:ba:73:f4
Subject: CN=Certum EC-384 CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Not Valid Before: Mon Mar 26 07:24:54 2018
Not Valid After : Thu Mar 26 07:24:54 2043
Fingerprint (SHA-256):
6B:32:80:85:62:53:18:AA:50:D1:73:C9:8D:8B:DA:09:D5:7E:27:41:3D:11:4C:F7:87:A0:F5:D0:6C:03:0C:F6
Fingerprint (SHA1): F3:3E:78:3C:AC:DF:F4:A2:CC:AC:67:55:69:56:D7:E5:16:3C:E1:ED
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum EC-384 CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\363\076\170\074\254\337\364\242\314\254\147\125\151\126\327\345
\026\074\341\355
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\266\145\263\226\140\227\022\241\354\116\341\075\243\306\311\361
END
CKA_ISSUER MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\031\060\027\006
\003\125\004\003\023\020\103\145\162\164\165\155\040\105\103\055
\063\070\064\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\170\217\047\134\201\022\122\040\245\004\320\055\335\272
\163\364
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum Trusted Root CA"
#
Issuer: CN=Certum Trusted Root CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Serial Number:1e:bf:59:50:b8:c9:80:37:4c:06:f7:eb:55:4f:b5:ed
Subject: CN=Certum Trusted Root CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Not Valid Before: Fri Mar 16 12:10:13 2018
Not Valid After : Mon Mar 16 12:10:13 2043
Fingerprint (SHA-256):
FE:76:96:57:38:55:77:3E:37:A9:5E:7A:D4:D9:CC:96:C3:01:57:C1:5D:31:76:5B:A9:B1:57:04:E1:AE:78:FD
Fingerprint (SHA1): C8:83:44:C0:18:AE:9F:CC:F1:87:B7:8F:22:D1:C5:D7:45:84:BA:E5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\172\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\037\060\035\006
\003\125\004\003\023\026\103\145\162\164\165\155\040\124\162\165
\163\164\145\144\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\172\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\037\060\035\006
\003\125\004\003\023\026\103\145\162\164\165\155\040\124\162\165
\163\164\145\144\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\036\277\131\120\270\311\200\067\114\006\367\353\125\117
\265\355
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\300\060\202\003\250\240\003\002\001\002\002\020\036
\277\131\120\270\311\200\067\114\006\367\353\125\117\265\355\060
\015\006\011\052\206\110\206\367\015\001\001\015\005\000\060\172

\061\013\060\011\006\003\125\004\006\023\002\120\114\061\041\060
\037\006\003\125\004\012\023\030\101\163\163\145\143\157\040\104
\141\164\141\040\123\171\163\164\145\155\163\040\123\056\101\056
\061\047\060\045\006\003\125\004\013\023\036\103\145\162\164\165
\155\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\061\037\060\035\006\003\125
\004\003\023\026\103\145\162\164\165\155\040\124\162\165\163\164
\145\144\040\122\157\157\164\040\103\101\060\036\027\015\061\070
\060\063\061\066\061\062\061\060\061\063\132\027\015\064\063\060
\063\061\066\061\062\061\060\061\063\132\060\172\061\013\060\011
\006\003\125\004\006\023\002\120\114\061\041\060\037\006\003\125
\004\012\023\030\101\163\163\145\143\157\040\104\141\164\141\040
\123\171\163\164\145\155\163\040\123\056\101\056\061\047\060\045
\006\003\125\004\013\023\036\103\145\162\164\165\155\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\061\037\060\035\006\003\125\004\003\023\026
\103\145\162\164\165\155\040\124\162\165\163\164\145\144\040\122
\157\157\164\040\103\101\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\321\055\216\273\267\066\352\155\067
\221\237\116\223\247\005\344\051\003\045\316\034\202\367\174\231
\237\101\006\315\355\243\272\300\333\011\054\301\174\337\051\176
\113\145\057\223\247\324\001\153\003\050\030\243\330\235\005\301
\052\330\105\361\221\336\337\073\320\200\002\214\317\070\017\352
\247\134\170\021\244\301\310\205\134\045\323\323\262\347\045\317
\021\124\227\253\065\300\036\166\034\357\000\123\237\071\334\024
\245\054\042\045\263\162\162\374\215\263\345\076\010\036\024\052
\067\013\210\074\312\260\364\310\302\241\256\274\301\276\051\147
\125\342\374\255\131\134\376\275\127\054\260\220\215\302\355\067
\266\174\231\210\265\325\003\232\075\025\015\075\072\250\250\105
\360\225\116\045\131\035\315\230\151\273\323\314\062\311\215\357
\201\376\255\175\211\273\272\140\023\312\145\225\147\240\363\031
\366\003\126\324\152\323\047\342\241\255\203\360\112\022\042\167
\034\005\163\342\031\161\102\300\354\165\106\232\220\130\340\152
\216\053\245\106\060\004\216\031\262\027\343\276\251\272\177\126
\361\044\003\327\262\041\050\166\016\066\060\114\171\325\101\232
\232\250\270\065\272\014\072\362\104\033\040\210\367\305\045\327
\075\306\343\076\103\335\207\376\304\352\365\123\076\114\145\377
\073\112\313\170\132\153\027\137\015\307\303\117\116\232\052\242
\355\127\115\042\342\106\232\077\017\221\064\044\175\125\343\214
\225\067\323\032\360\011\053\054\322\311\215\264\015\000\253\147
\051\050\330\001\365\031\004\266\035\276\166\376\162\134\304\205
\312\322\200\101\337\005\250\243\325\204\220\117\013\363\340\077
\233\031\322\067\211\077\362\173\122\034\214\366\341\367\074\007
\227\214\016\242\131\201\014\262\220\075\323\343\131\106\355\017
\251\247\336\200\153\132\252\007\266\031\313\274\127\363\227\041
\172\014\261\053\164\076\353\332\247\147\055\114\304\230\236\066
\011\166\146\146\374\032\077\352\110\124\034\276\060\275\200\120

\277\174\265\316\000\366\014\141\331\347\044\003\340\343\001\201
\016\275\330\205\064\210\275\262\066\250\173\134\010\345\104\200
\214\157\370\057\325\041\312\035\034\320\373\304\265\207\321\072
\116\307\166\265\065\110\265\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\214\373\034\165
\274\002\323\237\116\056\110\331\371\140\124\252\304\263\117\372
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\015\006\011\052\206\110\206\367\015\001\001\015\005\000\003
\202\002\001\000\110\242\325\000\013\056\320\077\274\034\325\265
\124\111\036\132\153\364\344\362\340\100\067\340\314\024\173\271
\311\372\065\265\165\027\223\152\005\151\205\234\315\117\031\170
\133\031\201\363\143\076\303\316\133\217\365\057\136\001\166\023
\077\054\000\271\315\226\122\071\111\155\004\116\305\351\017\206
\015\341\372\263\137\202\022\361\072\316\146\006\044\064\053\350
\314\312\347\151\334\207\235\302\064\327\171\321\323\167\270\252
\131\130\376\235\046\372\070\206\076\235\212\207\144\127\345\027
\072\342\371\215\271\343\063\170\301\220\330\270\335\267\203\121
\344\304\314\043\325\006\174\346\121\323\315\064\061\300\366\106
\273\013\255\374\075\020\005\052\073\112\221\045\356\214\324\204
\207\200\052\274\011\214\252\072\023\137\350\064\171\120\301\020
\031\371\323\050\036\324\321\121\060\051\263\256\220\147\326\037
\012\143\261\305\251\306\102\061\143\027\224\357\151\313\057\372
\214\024\175\304\103\030\211\331\360\062\100\346\200\342\106\137
\345\343\301\000\131\250\371\350\040\274\211\054\016\107\064\013
\352\127\302\123\066\374\247\324\257\061\315\376\002\345\165\372
\271\047\011\371\363\365\073\312\175\237\251\042\313\210\311\252
\321\107\075\066\167\250\131\144\153\047\317\357\047\301\343\044
\265\206\367\256\176\062\115\260\171\150\321\071\350\220\130\303
\203\274\017\054\326\227\353\316\014\341\040\307\332\267\076\303
\077\277\057\334\064\244\373\053\041\315\147\217\113\364\343\352
\324\077\347\117\272\271\245\223\105\034\146\037\041\372\144\136
\157\340\166\224\062\313\165\365\156\345\366\217\307\270\244\314
\250\226\175\144\373\044\132\112\003\154\153\070\306\350\003\103
\232\367\127\271\263\051\151\223\070\364\003\362\273\373\202\153
\007\040\321\122\037\232\144\002\173\230\146\333\134\115\132\017
\320\204\225\240\074\024\103\006\312\312\333\270\101\066\332\152
\104\147\207\257\257\343\105\021\025\151\010\262\276\026\071\227
\044\157\022\105\321\147\135\011\250\311\025\332\372\322\246\137
\023\141\037\277\205\254\264\255\255\005\224\010\203\036\165\027
\323\161\073\223\120\043\131\240\355\074\221\124\235\166\000\305
\303\270\070\333
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum Trusted Root CA"

Issuer: CN=Certum Trusted Root CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Serial Number:1e:bf:59:50:b8:c9:80:37:4c:06:f7:eb:55:4f:b5:ed
Subject: CN=Certum Trusted Root CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Not Valid Before: Fri Mar 16 12:10:13 2018
Not Valid After : Mon Mar 16 12:10:13 2043
Fingerprint (SHA-256):
FE:76:96:57:38:55:77:3E:37:A9:5E:7A:D4:D9:CC:96:C3:01:57:C1:5D:31:76:5B:A9:B1:57:04:E1:AE:78:FD
Fingerprint (SHA1): C8:83:44:C0:18:AE:9F:CC:F1:87:B7:8F:22:D1:C5:D7:45:84:BA:E5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\310\203\104\300\030\256\237\314\361\207\267\217\042\321\305\327
\105\204\272\345
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\121\341\302\347\376\114\204\257\131\016\057\364\124\157\352\051
END
CKA_ISSUER MULTILINE_OCTAL
\060\172\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\037\060\035\006
\003\125\004\003\023\026\103\145\162\164\165\155\040\124\162\165
\163\164\145\144\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\036\277\131\120\270\311\200\067\114\006\367\353\125\117
\265\355
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TunTrust Root CA"
#
Issuer: CN=TunTrust Root CA,O=Agence Nationale de Certification Electronique,C=TN
Serial Number:13:02:d5:e2:40:4c:92:46:86:16:67:5d:b4:bb:bb:b2:6b:3e:fc:13
Subject: CN=TunTrust Root CA,O=Agence Nationale de Certification Electronique,C=TN
Not Valid Before: Fri Apr 26 08:57:56 2019
Not Valid After : Tue Apr 26 08:57:56 2044
Fingerprint (SHA-256):

2E:44:10:2A:B5:8C:B8:54:19:45:1C:8E:19:D9:AC:F3:66:2C:AF:BC:61:4B:6A:53:96:0A:30:F7:D0:E2:EB:41
Fingerprint (SHA1): CF:E9:70:84:0F:E0:73:0F:9D:F6:0C:7F:2C:4B:EE:20:46:34:9C:BB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TunTrust Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\124\116\061
\067\060\065\006\003\125\004\012\014\056\101\147\145\156\143\145
\040\116\141\164\151\157\156\141\154\145\040\144\145\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\105\154\145\143
\164\162\157\156\151\161\165\145\061\031\060\027\006\003\125\004
\003\014\020\124\165\156\124\162\165\163\164\040\122\157\157\164
\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\124\116\061
\067\060\065\006\003\125\004\012\014\056\101\147\145\156\143\145
\040\116\141\164\151\157\156\141\154\145\040\144\145\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\105\154\145\143
\164\162\157\156\151\161\165\145\061\031\060\027\006\003\125\004
\003\014\020\124\165\156\124\162\165\163\164\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\023\002\325\342\100\114\222\106\206\026\147\135\264\273
\273\262\153\076\374\023
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\263\060\202\003\233\240\003\002\001\002\002\024\023
\002\325\342\100\114\222\106\206\026\147\135\264\273\273\262\153
\076\374\023\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\141\061\013\060\011\006\003\125\004\006\023\002\124
\116\061\067\060\065\006\003\125\004\012\014\056\101\147\145\156
\143\145\040\116\141\164\151\157\156\141\154\145\040\144\145\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\105\154
\145\143\164\162\157\156\151\161\165\145\061\031\060\027\006\003
\125\004\003\014\020\124\165\156\124\162\165\163\164\040\122\157
\157\164\040\103\101\060\036\027\015\061\071\060\064\062\066\060
\070\065\067\065\066\132\027\015\064\064\060\064\062\066\060\070
\065\067\065\066\132\060\141\061\013\060\011\006\003\125\004\006
\023\002\124\116\061\067\060\065\006\003\125\004\012\014\056\101
\147\145\156\143\145\040\116\141\164\151\157\156\141\154\145\040
\144\145\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\105\154\145\143\164\162\157\156\151\161\165\145\061\031\060

\027\006\003\125\004\003\014\020\124\165\156\124\162\165\163\164
\040\122\157\157\164\040\103\101\060\202\002\042\060\015\006\011
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\335\014\040\072\325\210\056\005\113\101\365\203\202\176\367\131
\237\236\236\143\350\163\332\366\006\251\117\037\264\371\013\037
\071\214\232\040\320\176\006\324\354\064\331\206\274\165\133\207
\210\360\322\331\324\243\012\262\154\033\353\111\054\076\254\135
\330\224\003\240\354\064\345\060\304\065\175\373\046\115\033\156
\060\124\330\365\200\105\234\071\255\234\311\045\004\115\232\220
\076\116\100\156\212\153\315\051\147\306\314\055\340\164\350\005
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\352\235\035\205\162\354\021\273\065\350\037\047\277\301\241\307
\273\110\026\335\126\327\314\116\240\341\271\254\333\325\203\031
\032\205\321\224\227\327\312\243\145\013\363\070\371\002\256\335
\366\147\317\311\077\365\212\054\107\032\231\157\005\015\375\320
\035\202\061\374\051\314\000\130\227\221\114\200\000\034\063\205
\226\057\313\101\302\213\020\204\303\011\044\211\037\265\017\331
\331\167\107\030\222\224\140\134\307\231\003\074\376\367\225\247
\175\120\241\200\302\251\203\255\130\226\125\041\333\206\131\324
\257\306\274\335\201\156\007\333\140\142\376\354\020\156\332\150
\001\364\203\033\251\076\242\133\043\327\144\306\337\334\242\175
\330\113\272\202\322\121\370\146\277\006\106\344\171\052\046\066
\171\217\037\116\231\035\262\217\014\016\034\377\311\135\300\375
\220\020\246\261\067\363\315\072\044\156\264\205\220\277\200\271
\014\214\325\233\326\310\361\126\077\032\200\211\172\251\342\033
\062\121\054\076\362\337\173\366\135\172\051\031\216\345\310\275
\066\161\213\135\114\302\035\077\255\130\242\317\075\160\115\246
\120\230\045\334\043\371\270\130\101\010\161\277\117\270\204\240
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\232\002\106\055\344\203\302\200\271\317\113\076\350\177\074\001
\354\217\136\315\177\322\050\102\001\225\212\342\227\075\020\041
\175\366\235\034\305\064\241\354\054\016\012\122\054\022\125\160
\044\075\313\302\024\065\103\135\047\116\276\300\275\252\174\226
\347\374\236\141\255\104\323\000\227\002\003\001\000\001\243\143
\060\141\060\035\006\003\125\035\016\004\026\004\024\006\232\233
\037\123\175\361\365\244\310\323\206\076\241\163\131\264\367\104
\041\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\037\006\003\125\035\043\004\030\060\026\200\024\006
\232\233\037\123\175\361\365\244\310\323\206\076\241\163\131\264
\367\104\041\060\016\006\003\125\035\017\001\001\377\004\004\003
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\306\040\366\006\107\260\206\223\045\323\215\271\310\000\077\227
\365\122\047\210\161\311\164\375\353\312\144\333\133\357\036\135
\272\277\321\353\356\134\151\272\026\310\363\271\217\323\066\056
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\026\313\125\022\344\306\175\273\304\354\370\265\034\116\076\147
\277\305\137\033\155\155\107\050\252\004\130\141\326\166\277\042
\177\320\007\152\247\144\123\360\227\215\235\200\077\273\301\007
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\173\143\021\103\321\152\032\141\152\171\155\220\117\051\216\107
\005\301\022\151\151\326\306\066\061\341\374\372\200\272\134\117
\304\353\267\062\254\370\165\141\027\327\020\031\271\361\322\011
\357\172\102\235\133\132\013\324\306\225\116\052\316\377\007\327
\117\176\030\006\210\361\031\265\331\230\273\256\161\304\034\347
\164\131\130\357\014\211\317\213\037\165\223\032\004\024\222\110
\120\251\353\127\051\000\026\343\066\034\310\370\277\360\063\325
\101\017\304\314\074\335\351\063\103\001\221\020\053\036\321\271
\135\315\062\031\213\217\214\040\167\327\042\304\102\334\204\026
\233\045\155\350\264\125\161\177\260\174\263\323\161\111\271\317
\122\244\004\077\334\075\240\273\257\063\236\012\060\140\216\333
\235\135\224\250\275\140\347\142\200\166\201\203\014\214\314\060
\106\111\342\014\322\250\257\353\141\161\357\347\042\142\251\367
\134\144\154\237\026\214\147\066\047\105\365\011\173\277\366\020
\012\361\260\215\124\103\214\004\272\243\077\357\342\065\307\371
\164\340\157\064\101\320\277\163\145\127\040\371\233\147\172\146
\150\044\116\200\145\275\020\231\006\131\362\145\257\270\306\107
\273\375\220\170\213\101\163\056\257\125\037\334\073\222\162\156
\204\323\320\141\114\015\314\166\127\342\055\205\042\025\066\015
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\167\332\203\104\213\236\125\050\300\213\130\323\220\076\116\033
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END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TunTrust Root CA"
Issuer: CN=TunTrust Root CA,O=Agence Nationale de Certification Electronique,C=TN
Serial Number:13:02:d5:e2:40:4c:92:46:86:16:67:5d:b4:bb:bb:b2:6b:3e:fc:13
Subject: CN=TunTrust Root CA,O=Agence Nationale de Certification Electronique,C=TN
Not Valid Before: Fri Apr 26 08:57:56 2019
Not Valid After : Tue Apr 26 08:57:56 2044
Fingerprint (SHA-256):
2E:44:10:2A:B5:8C:B8:54:19:45:1C:8E:19:D9:AC:F3:66:2C:AF:BC:61:4B:6A:53:96:0A:30:F7:D0:E2:EB:41
Fingerprint (SHA1): CF:E9:70:84:0F:E0:73:0F:9D:F6:0C:7F:2C:4B:EE:20:46:34:9C:BB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TunTrust Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\317\351\160\204\017\340\163\017\235\366\014\177\054\113\356\040
\106\064\234\273
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\205\023\271\220\133\066\134\266\136\270\132\370\340\061\127\264
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\124\116\061
\067\060\065\006\003\125\004\012\014\056\101\147\145\156\143\145
\040\116\141\164\151\157\156\141\154\145\040\144\145\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\105\154\145\143
\164\162\157\156\151\161\165\145\061\031\060\027\006\003\125\004
\003\014\020\124\165\156\124\162\165\163\164\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
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\273\262\153\076\374\023
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HARICA TLS RSA Root CA 2021"
#
Issuer: CN=HARICA TLS RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:39:ca:93:1c:ef:43:f3:c6:8e:93:c7:f4:64:89:38:7e
Subject: CN=HARICA TLS RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:55:38 2021
Not Valid After : Mon Feb 13 10:55:37 2045
Fingerprint (SHA-256):
D9:5D:0E:8E:DA:79:52:5B:F9:BE:B1:1B:14:D2:10:0D:32:94:98:5F:0C:62:D9:FA:BD:9C:D9:99:EC:CB:7B:1D
Fingerprint (SHA1): 02:2D:05:82:FA:88:CE:14:0C:06:79:DE:7F:14:10:E9:45:D7:A5:6D
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA TLS RSA Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\122\123

\101\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\122\123
\101\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
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\070\176
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\244\060\202\003\214\240\003\002\001\002\002\020\071
\312\223\034\357\103\363\306\216\223\307\364\144\211\070\176\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\154
\061\013\060\011\006\003\125\004\006\023\002\107\122\061\067\060
\065\006\003\125\004\012\014\056\110\145\154\154\145\156\151\143
\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122\145
\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164\151
\157\156\163\040\103\101\061\044\060\042\006\003\125\004\003\014
\033\110\101\122\111\103\101\040\124\114\123\040\122\123\101\040
\122\157\157\164\040\103\101\040\062\060\062\061\060\036\027\015
\062\061\060\062\061\071\061\060\065\065\063\070\132\027\015\064
\065\060\062\061\063\061\060\065\065\063\067\132\060\154\061\013
\060\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006
\003\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101
\143\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145
\141\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156
\163\040\103\101\061\044\060\042\006\003\125\004\003\014\033\110
\101\122\111\103\101\040\124\114\123\040\122\123\101\040\122\157
\157\164\040\103\101\040\062\060\062\061\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\213\302\347\257\145
\233\005\147\226\311\015\044\271\320\016\144\374\316\342\044\030
\054\204\177\167\121\313\004\021\066\270\136\355\151\161\247\236
\344\045\011\227\147\301\107\302\317\221\026\066\142\075\070\004
\341\121\202\377\254\322\264\151\335\056\354\021\243\105\356\153
\153\073\114\277\214\215\244\036\235\021\271\351\070\371\172\016
\014\230\342\043\035\321\116\143\324\347\270\101\104\373\153\257
\153\332\037\323\305\221\210\133\244\211\222\321\201\346\214\071
\130\240\326\151\103\251\255\230\122\130\156\333\012\373\153\317
\150\372\343\244\136\072\105\163\230\007\352\137\002\162\336\014
\245\263\237\256\251\035\267\035\263\374\212\131\347\156\162\145

\255\365\060\224\043\007\363\202\026\113\065\230\234\123\273\057
\312\344\132\331\307\215\035\374\230\231\373\054\244\202\153\360
\052\037\216\013\137\161\134\134\256\102\173\051\211\201\313\003
\243\231\312\210\236\013\100\011\101\063\333\346\130\172\375\256
\231\160\300\132\017\326\023\206\161\057\166\151\374\220\335\333
\055\156\321\362\233\365\032\153\236\157\025\214\172\360\113\050
\240\042\070\200\044\154\066\244\073\362\060\221\363\170\023\317
\301\077\065\253\361\035\021\043\265\103\042\236\001\222\267\030
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\320\272\263\120\106\356\202\254\235\061\370\373\043\342\003\000
\110\160\243\011\046\171\025\123\140\363\070\134\255\070\352\201
\000\143\024\271\063\136\335\013\333\240\105\007\032\063\011\370
\115\264\247\002\246\151\364\302\131\005\210\145\205\126\256\113
\313\340\336\074\175\055\032\310\351\373\037\243\141\112\326\052
\023\255\167\114\032\030\233\221\017\130\330\006\124\305\227\370
\252\077\040\212\246\205\246\167\366\246\374\034\342\356\156\224
\063\052\203\120\204\012\345\117\206\370\120\105\170\000\201\353
\133\150\343\046\215\314\173\134\121\364\024\054\100\276\032\140
\035\172\162\141\035\037\143\055\210\252\316\242\105\220\010\374
\153\276\263\120\052\132\375\250\110\030\106\326\220\100\222\220
\012\204\136\150\061\370\353\355\015\323\035\306\175\231\030\125
\126\047\145\056\215\105\305\044\354\316\343\002\003\001\000\001
\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\012\110\043\246\140\244\222\012\063\352\223\133\305\127\352\045
\115\275\022\356\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\015\006\011\052\206\110\206\367\015\001\001
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\146\173\014\325\214\213\211\235\327\355\116\007\357\234\320\024
\137\136\120\275\150\226\220\244\024\021\252\150\155\011\065\071
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\007\036\107\155\362\316\034\120\046\343\236\075\100\123\077\367
\177\226\166\020\305\106\245\320\040\113\120\364\065\073\030\364
\125\152\101\033\107\006\150\074\273\011\010\142\331\137\125\102
\252\254\123\205\254\225\126\066\126\253\344\005\214\305\250\332
\037\243\151\275\123\017\304\377\334\312\343\176\362\114\210\206
\107\106\032\363\000\365\200\221\242\334\103\102\224\233\040\360
\321\315\262\353\054\123\302\123\170\112\117\004\224\101\232\217
\047\062\301\345\111\031\277\361\362\302\213\250\012\071\061\050
\264\175\142\066\054\115\354\037\063\266\176\167\155\176\120\360
\237\016\327\021\217\317\030\305\343\047\376\046\357\005\235\317
\317\067\305\320\173\332\073\260\026\204\014\072\223\326\276\027
\333\017\076\016\031\170\011\307\251\002\162\042\113\367\067\166
\272\165\304\205\003\132\143\325\261\165\005\302\271\275\224\255
\214\025\231\247\223\175\366\305\363\252\164\317\004\205\224\230
\000\364\342\371\312\044\145\277\340\142\257\310\305\372\262\311
\236\126\110\332\171\375\226\166\025\276\243\216\126\304\263\064
\374\276\107\364\301\264\250\374\325\060\210\150\356\313\256\311

\143\304\166\276\254\070\030\341\136\134\317\256\072\042\121\353
\321\213\263\363\053\063\007\124\207\372\264\262\023\173\272\123
\004\142\001\235\361\300\117\356\341\072\324\213\040\020\372\002
\127\346\357\301\013\267\220\106\234\031\051\214\334\157\240\112
\151\151\224\267\044\145\240\377\254\077\316\001\373\041\056\375
\150\370\233\362\245\317\061\070\134\025\252\346\227\000\301\337
\132\245\247\071\252\351\204\177\074\121\250\072\331\224\133\214
\277\117\010\161\345\333\250\134\324\322\246\376\000\243\306\026
\307\017\350\200\316\034\050\144\164\031\010\323\102\343\316\000
\135\177\261\334\023\260\341\005\313\321\040\252\206\164\236\071
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END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HARICA TLS RSA Root CA 2021"
Issuer: CN=HARICA TLS RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:39:ca:93:1c:ef:43:f3:c6:8e:93:c7:f4:64:89:38:7e
Subject: CN=HARICA TLS RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:55:38 2021
Not Valid After : Mon Feb 13 10:55:37 2045
Fingerprint (SHA-256):
D9:5D:0E:8E:DA:79:52:5B:F9:BE:B1:1B:14:D2:10:0D:32:94:98:5F:0C:62:D9:FA:BD:9C:D9:99:EC:CB:7B:1D
Fingerprint (SHA1): 02:2D:05:82:FA:88:CE:14:0C:06:79:DE:7F:14:10:E9:45:D7:A5:6D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA TLS RSA Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\002\055\005\202\372\210\316\024\014\006\171\336\177\024\020\351
\105\327\245\155
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\145\107\233\130\206\335\054\360\374\242\204\037\036\226\304\221
END
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\122\123
\101\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\020\071\312\223\034\357\103\363\306\216\223\307\364\144\211
\070\176
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HARICA TLS ECC Root CA 2021"
#
Issuer: CN=HARICA TLS ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:67:74:9d:8d:77:d8:3b:6a:db:22:f4:ff:59:e2:bf:ce
Subject: CN=HARICA TLS ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 11:01:10 2021
Not Valid After : Mon Feb 13 11:01:09 2045
Fingerprint (SHA-256):
3F:99:CC:47:4A:CF:CE:4D:FE:D5:87:94:66:5E:47:8D:15:47:73:9F:2E:78:0F:1B:B4:CA:9B:13:30:97:D4:01
Fingerprint (SHA1): BC:B0:C1:9D:E9:98:92:70:19:38:57:E9:8D:A7:B4:5D:6E:EE:01:48
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA TLS ECC Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\105\103
\103\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\105\103
\103\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\147\164\235\215\167\330\073\152\333\042\364\377\131\342
\277\316
END

CKA_VALUE MULTILINE_OCTAL
\060\202\002\124\060\202\001\333\240\003\002\001\002\002\020\147
\164\235\215\167\330\073\152\333\042\364\377\131\342\277\316\060
\012\006\010\052\206\110\316\075\004\003\003\060\154\061\013\060
\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006\003
\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101\143
\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141
\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163
\040\103\101\061\044\060\042\006\003\125\004\003\014\033\110\101
\122\111\103\101\040\124\114\123\040\105\103\103\040\122\157\157
\164\040\103\101\040\062\060\062\061\060\036\027\015\062\061\060
\062\061\071\061\061\060\061\061\060\132\027\015\064\065\060\062
\061\063\061\061\060\061\060\071\132\060\154\061\013\060\011\006
\003\125\004\006\023\002\107\122\061\067\060\065\006\003\125\004
\012\014\056\110\145\154\154\145\156\151\143\040\101\143\141\144
\145\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143
\150\040\111\156\163\164\151\164\165\164\151\157\156\163\040\103
\101\061\044\060\042\006\003\125\004\003\014\033\110\101\122\111
\103\101\040\124\114\123\040\105\103\103\040\122\157\157\164\040
\103\101\040\062\060\062\061\060\166\060\020\006\007\052\206\110
\316\075\002\001\006\005\053\201\004\000\042\003\142\000\004\070
\010\376\261\240\226\322\172\254\257\111\072\320\300\340\303\073
\050\252\361\162\155\145\000\107\210\204\374\232\046\153\252\113
\272\154\004\012\210\136\027\362\125\207\374\060\260\064\342\064
\130\127\032\204\123\351\060\331\251\362\226\164\303\121\037\130
\111\061\314\230\116\140\021\207\165\323\162\224\220\117\233\020
\045\052\250\170\055\276\220\101\130\220\025\162\247\241\267\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\311
\033\123\201\022\376\004\325\026\321\252\274\232\157\267\240\225
\031\156\312\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\206\060\012\006\010\052\206\110\316\075\004\003\003\003
\147\000\060\144\002\060\021\336\256\370\334\116\210\260\251\360
\042\255\302\121\100\357\140\161\055\356\217\002\304\135\003\160
\111\244\222\352\305\024\210\160\246\323\015\260\252\312\054\100
\234\373\351\202\156\232\002\060\053\107\232\007\306\321\302\201
\174\312\013\226\030\101\033\243\364\060\011\236\265\043\050\015
\237\024\266\074\123\242\114\006\151\175\372\154\221\306\052\111
\105\346\354\267\023\341\072\154
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HARICA TLS ECC Root CA 2021"
Issuer: CN=HARICA TLS ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:67:74:9d:8d:77:d8:3b:6a:db:22:f4:ff:59:e2:bf:ce
Subject: CN=HARICA TLS ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR

Not Valid Before: Fri Feb 19 11:01:10 2021
Not Valid After : Mon Feb 13 11:01:09 2045
Fingerprint (SHA-256):
3F:99:CC:47:4A:CF:CE:4D:FE:D5:87:94:66:5E:47:8D:15:47:73:9F:2E:78:0F:1B:B4:CA:9B:13:30:97:D4:01
Fingerprint (SHA1): BC:B0:C1:9D:E9:98:92:70:19:38:57:E9:8D:A7:B4:5D:6E:EE:01:48
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA TLS ECC Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\274\260\301\235\351\230\222\160\031\070\127\351\215\247\264\135
\156\356\001\110
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\256\367\114\345\146\065\321\267\233\214\042\223\164\323\113\260
END
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\105\103
\103\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\147\164\235\215\167\330\073\152\333\042\364\377\131\342
\277\316
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HARICA Client RSA Root CA 2021"
#
Issuer: CN=HARICA Client RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:55:52:f8:1e:db:1b:24:2c:9e:bb:96:18:cd:02:28:3e
Subject: CN=HARICA Client RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:58:46 2021
Not Valid After : Mon Feb 13 10:58:45 2045
Fingerprint (SHA-256):
1B:E7:AB:E3:06:86:B1:63:48:AF:D1:C6:1B:68:66:A0:EA:7F:48:21:E6:7D:5E:8A:F9:37:CF:80:11:BC:75:0D
Fingerprint (SHA1): 46:C6:90:0A:77:3A:B6:BC:F4:65:AD:AC:FC:E3:F7:07:00:6E:DE:6E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Client RSA Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\125\122\370\036\333\033\044\054\236\273\226\030\315\002
\050\076
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\252\060\202\003\222\240\003\002\001\002\002\020\125
\122\370\036\333\033\044\054\236\273\226\030\315\002\050\076\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\157
\061\013\060\011\006\003\125\004\006\023\002\107\122\061\067\060
\065\006\003\125\004\012\014\056\110\145\154\154\145\156\151\143
\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122\145
\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164\151
\157\156\163\040\103\101\061\047\060\045\006\003\125\004\003\014
\036\110\101\122\111\103\101\040\103\154\151\145\156\164\040\122
\123\101\040\122\157\157\164\040\103\101\040\062\060\062\061\060
\036\027\015\062\061\060\062\061\071\061\060\065\070\064\066\132
\027\015\064\065\060\062\061\063\061\060\065\070\064\065\132\060
\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061\067
\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156\151
\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122
\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164
\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004\003
\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164\040

\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062\061
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\201\333\127\102\220\054\164\065\364\370\270\164\031\115\253
\011\132\167\105\201\163\142\260\065\237\370\320\267\063\000\207
\023\266\226\253\016\124\022\060\007\274\233\267\110\327\321\031
\203\256\216\330\251\361\251\000\204\260\214\136\236\350\014\217
\124\151\277\366\324\010\117\046\160\376\030\101\143\032\263\062
\213\100\370\007\253\127\061\360\306\026\166\147\232\264\335\057
\362\321\153\305\320\222\204\221\161\156\017\056\143\351\037\123
\244\335\122\023\314\011\203\051\201\014\305\123\165\104\261\016
\147\123\030\320\303\037\210\113\237\224\044\264\051\274\273\350
\116\375\157\322\025\035\111\334\215\160\362\021\032\040\121\125
\021\272\210\157\304\367\120\171\326\252\061\342\204\075\136\062
\310\167\052\120\161\345\013\057\351\266\352\357\253\012\063\071
\016\375\217\245\147\103\202\216\230\151\011\011\033\100\315\070
\147\107\352\311\354\227\161\022\336\044\365\162\074\321\367\103
\114\046\367\220\262\211\351\105\113\125\075\061\005\172\101\342
\225\272\103\300\027\305\266\205\075\031\215\144\160\363\133\254
\315\237\323\051\165\207\113\225\147\152\246\370\321\335\274\220
\206\211\103\051\251\067\133\365\135\260\046\132\123\102\166\220
\053\317\236\126\154\053\124\317\134\232\145\337\133\213\110\140
\070\174\373\305\013\317\166\004\143\002\063\052\175\365\203\147
\347\372\306\103\375\053\017\324\046\057\167\244\062\301\044\352
\144\235\277\263\070\161\061\104\362\107\270\242\146\101\241\373
\233\173\274\307\106\152\165\277\132\242\214\350\152\104\301\270
\226\265\300\062\010\055\173\164\065\163\262\312\306\376\257\021
\162\030\366\347\310\302\317\245\052\352\173\326\131\350\174\240
\262\152\100\011\151\016\245\226\333\321\000\271\361\210\156\066
\360\210\262\235\361\122\362\303\174\277\060\211\074\012\151\371
\042\244\145\341\233\340\164\306\261\205\227\226\054\256\224\217
\120\246\071\022\037\276\107\362\201\170\323\165\066\236\175\132
\040\227\342\122\256\231\237\306\174\233\146\363\376\330\317\356
\275\227\006\035\055\205\334\076\066\123\226\173\040\272\350\310
\341\255\226\142\076\021\174\263\000\204\236\247\114\161\253\112
\067\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\240\326\007\075\136\044\367\173\240\104
\056\044\122\015\031\252\053\004\221\247\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\015\107
\371\011\146\061\122\354\171\356\302\250\362\150\076\355\226\105
\313\072\246\230\143\077\352\053\115\116\003\320\034\202\341\313
\323\345\326\253\133\147\050\274\235\376\014\231\012\200\125\247
\316\033\043\141\015\260\127\360\376\340\312\276\346\220\333\203
\054\276\203\216\364\171\266\376\320\015\102\247\130\037\151\352
\201\365\005\245\376\106\150\353\154\170\311\340\352\347\346\336
\061\305\322\325\054\202\143\050\235\135\250\032\176\210\346\347

\053\361\054\325\320\005\236\334\055\275\067\146\324\004\242\247
\255\277\072\302\250\073\255\377\215\235\063\340\271\232\204\241
\207\037\166\364\202\164\327\016\371\060\110\076\133\210\076\252
\134\153\326\057\014\350\216\163\302\030\221\203\071\266\146\132
\320\037\140\047\135\115\343\366\072\015\146\120\234\170\173\253
\363\023\020\256\017\057\253\350\144\263\030\040\235\106\065\144
\045\163\352\233\020\134\130\065\211\261\106\110\247\364\254\324
\035\236\133\314\251\245\032\023\117\044\120\252\331\033\155\261
\100\373\235\335\130\164\304\302\157\024\162\354\333\065\237\270
\124\165\105\303\246\310\032\050\065\072\256\145\362\251\230\316
\257\133\311\070\214\061\073\177\314\334\226\375\342\133\326\320
\131\364\166\272\013\313\117\203\020\307\100\320\035\140\351\052
\345\110\130\167\014\105\151\276\031\161\004\044\342\343\044\037
\112\310\301\076\231\365\226\230\070\110\045\241\025\260\033\327
\342\204\030\133\366\161\065\232\150\173\100\314\030\134\014\044
\235\324\225\365\231\252\106\352\256\254\277\364\024\031\044\350
\214\354\343\365\274\006\150\212\052\014\005\137\012\227\165\247
\334\176\300\375\327\172\030\337\060\321\070\113\037\260\230\160
\277\314\174\163\360\156\304\061\245\244\227\035\254\277\316\154
\041\112\276\047\043\147\363\006\126\201\012\221\216\266\341\003
\005\063\054\332\064\010\115\116\120\043\255\037\245\305\324\172
\376\352\011\354\247\050\140\213\106\174\265\352\233\335\117\371
\347\153\025\306\210\317\103\333\345\047\334\004\126\156\157\106
\025\361\126\055\350\134\014\163\303\043\201\070\040\313\311\014
\151\317\054\253\073\204\140\063\031\122\375\151\024\063
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HARICA Client RSA Root CA 2021"
Issuer: CN=HARICA Client RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:55:52:f8:1e:db:1b:24:2c:9e:bb:96:18:cd:02:28:3e
Subject: CN=HARICA Client RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:58:46 2021
Not Valid After : Mon Feb 13 10:58:45 2045
Fingerprint (SHA-256):
1B:E7:AB:E3:06:86:B1:63:48:AF:D1:C6:1B:68:66:A0:EA:7F:48:21:E6:7D:5E:8A:F9:37:CF:80:11:BC:75:0D
Fingerprint (SHA1): 46:C6:90:0A:77:3A:B6:BC:F4:65:AD:AC:FC:E3:F7:07:00:6E:DE:6E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Client RSA Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\106\306\220\012\167\072\266\274\364\145\255\254\374\343\367\007
\000\156\336\156
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\157\355\134\327\210\314\070\251\334\351\335\331\135\333\330\355
END
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\125\122\370\036\333\033\044\054\236\273\226\030\315\002
\050\076
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HARICA Client ECC Root CA 2021"
#
Issuer: CN=HARICA Client ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:31:68:d9:d8:e1:62:57:1e:d2:19:44:88:e6:10:7d:f0
Subject: CN=HARICA Client ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 11:03:34 2021
Not Valid After : Mon Feb 13 11:03:33 2045
Fingerprint (SHA-256):
8D:D4:B5:37:3C:B0:DE:36:76:9C:12:33:92:80:D8:27:46:B3:AA:6C:D4:26:E7:97:A3:1B:AB:E4:27:9C:F0:0B
Fingerprint (SHA1): BE:64:D3:DA:14:4B:D2:6B:CD:AF:8F:DB:A6:A6:72:F8:DE:26:F9:00
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Client ECC Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062
\061

END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\061\150\331\330\341\142\127\036\322\031\104\210\346\020
\175\360
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\132\060\202\001\341\240\003\002\001\002\002\020\061
\150\331\330\341\142\127\036\322\031\104\210\346\020\175\360\060
\012\006\010\052\206\110\316\075\004\003\003\060\157\061\013\060
\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006\003
\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101\143
\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141
\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163
\040\103\101\061\047\060\045\006\003\125\004\003\014\036\110\101
\122\111\103\101\040\103\154\151\145\156\164\040\105\103\103\040
\122\157\157\164\040\103\101\040\062\060\062\061\060\036\027\015
\062\061\060\062\061\071\061\061\060\063\063\064\132\027\015\064
\065\060\062\061\063\061\061\060\063\063\063\132\060\157\061\013
\060\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006
\003\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101
\143\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145
\141\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156
\163\040\103\101\061\047\060\045\006\003\125\004\003\014\036\110
\101\122\111\103\101\040\103\154\151\145\156\164\040\105\103\103
\040\122\157\157\164\040\103\101\040\062\060\062\061\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\007\030\255\225\226\224\320\134\017\202\367
\052\100\372\002\311\311\075\066\246\243\004\152\301\155\225\001
\210\140\022\124\154\134\242\053\156\023\072\210\225\014\034\046
\206\066\112\211\031\267\030\336\073\350\250\120\037\312\337\133
\277\111\200\025\333\343\060\341\035\132\307\052\212\001\007\376
\155\054\064\357\050\050\227\274\301\371\127\206\225\213\065\317
\236\132\321\150\225\243\102\060\100\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\122\010\322\276\062\201\045\375\365\032\227
\354\116\137\032\273\123\315\220\255\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\206\060\012\006\010\052\206\110

\316\075\004\003\003\003\147\000\060\144\002\060\114\061\105\106
\117\250\346\276\303\167\262\032\030\113\055\210\173\130\346\253
\224\153\104\003\260\027\377\337\202\163\104\121\054\375\223\035
\006\173\024\322\211\354\100\014\357\041\001\056\002\060\057\311
\056\132\154\054\035\331\225\340\236\260\271\134\122\174\366\370
\070\312\056\361\324\035\362\242\111\242\225\370\301\130\136\117
\376\163\012\357\061\260\253\043\130\023\214\213\336\073
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HARICA Client ECC Root CA 2021"
Issuer: CN=HARICA Client ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:31:68:d9:d8:e1:62:57:1e:d2:19:44:88:e6:10:7d:f0
Subject: CN=HARICA Client ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 11:03:34 2021
Not Valid After : Mon Feb 13 11:03:33 2045
Fingerprint (SHA-256):
8D:D4:B5:37:3C:B0:DE:36:76:9C:12:33:92:80:D8:27:46:B3:AA:6C:D4:26:E7:97:A3:1B:AB:E4:27:9C:F0:0B
Fingerprint (SHA1): BE:64:D3:DA:14:4B:D2:6B:CD:AF:8F:DB:A6:A6:72:F8:DE:26:F9:00
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Client ECC Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\276\144\323\332\024\113\322\153\315\257\217\333\246\246\162\370
\336\046\371\000
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\255\270\120\246\251\202\172\154\075\032\252\244\322\143\244\104
END
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\061\150\331\330\341\142\127\036\322\031\104\210\346\020
\175\360
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Autoridad de Certificacion Firmaprofesional CIF A62634068"
#
Issuer: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Serial Number:1b:70:e9:d2:ff:ae:6c:71
Subject: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Not Valid Before: Tue Sep 23 15:22:07 2014
Not Valid After : Mon May 05 15:22:07 2036
Fingerprint (SHA-256):
57:DE:05:83:EF:D2:B2:6E:03:61:DA:99:DA:9D:F4:64:8D:EF:7E:E8:44:1C:3B:72:8A:FA:9B:CD:E0:F9:B2:6A
Fingerprint (SHA1): 0B:BE:C2:27:22:49:CB:39:AA:DB:35:5C:53:E3:8C:AE:78:FF:B6:FE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion Firmaprofesional CIF A62634068"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\033\160\351\322\377\256\154\161
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\024\060\202\003\374\240\003\002\001\002\002\010\033
\160\351\322\377\256\154\161\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\121\061\013\060\011\006\003\125\004
\006\023\002\105\123\061\102\060\100\006\003\125\004\003\014\071
\101\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\040\106\151\162\155\141

\160\162\157\146\145\163\151\157\156\141\154\040\103\111\106\040
\101\066\062\066\063\064\060\066\070\060\036\027\015\061\064\060
\071\062\063\061\065\062\062\060\067\132\027\015\063\066\060\065
\060\065\061\065\062\062\060\067\132\060\121\061\013\060\011\006
\003\125\004\006\023\002\105\123\061\102\060\100\006\003\125\004
\003\014\071\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\040\106\151
\162\155\141\160\162\157\146\145\163\151\157\156\141\154\040\103
\111\106\040\101\066\062\066\063\064\060\066\070\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\312\226\153
\216\352\370\373\361\242\065\340\177\114\332\340\303\122\327\175
\266\020\310\002\136\263\103\052\304\117\152\262\312\034\135\050
\232\170\021\032\151\131\127\257\265\040\102\344\213\017\346\337
\133\246\003\222\057\365\021\344\142\327\062\161\070\331\004\014
\161\253\075\121\176\017\007\337\143\005\134\351\277\224\157\301
\051\202\300\264\332\121\260\301\074\273\255\067\112\134\312\361
\113\066\016\044\253\277\303\204\167\375\250\120\364\261\347\306
\057\322\055\131\215\172\012\116\226\151\122\002\252\066\230\354
\374\372\024\203\014\067\037\311\222\067\177\327\201\055\345\304
\271\340\076\064\376\147\364\076\146\321\323\364\100\317\136\142
\064\017\160\006\076\040\030\132\316\367\162\033\045\154\223\164
\024\223\243\163\261\016\252\207\020\043\131\137\040\005\031\107
\355\150\216\222\022\312\135\374\326\053\262\222\074\040\317\341
\137\257\040\276\240\166\177\166\345\354\032\206\141\063\076\347
\173\264\077\240\017\216\242\271\152\157\271\207\046\157\101\154
\210\246\120\375\152\143\013\365\223\026\033\031\217\262\355\233
\233\311\220\365\001\014\337\031\075\017\076\070\043\311\057\217
\014\321\002\376\033\125\326\116\320\215\074\257\117\244\363\376
\257\052\323\005\235\171\010\241\313\127\061\264\234\310\220\262
\147\364\030\026\223\072\374\107\330\321\170\226\061\037\272\053
\014\137\135\231\255\143\211\132\044\040\166\330\337\375\253\116
\246\042\252\235\136\346\047\212\175\150\051\243\347\212\270\332
\021\273\027\055\231\235\023\044\106\367\305\342\330\237\216\177
\307\217\164\155\132\262\350\162\365\254\356\044\020\255\057\024
\332\377\055\232\106\161\107\276\102\337\273\001\333\364\177\323
\050\217\061\131\133\323\311\002\246\264\122\312\156\227\373\103
\305\010\046\157\212\364\273\375\237\050\252\015\325\105\363\023
\072\035\330\300\170\217\101\147\074\036\224\144\256\173\013\305
\350\331\001\210\071\032\227\206\144\101\325\073\207\014\156\372
\017\306\275\110\024\277\071\115\324\236\101\266\217\226\035\143
\226\223\331\225\006\170\061\150\236\067\006\073\200\211\105\141
\071\043\307\033\104\243\025\345\034\370\222\060\273\002\003\001
\000\001\243\201\357\060\201\354\060\035\006\003\125\035\016\004
\026\004\024\145\315\353\253\065\036\000\076\176\325\164\300\034
\264\163\107\016\032\144\057\060\022\006\003\125\035\023\001\001
\377\004\010\060\006\001\001\377\002\001\001\060\201\246\006\003
\125\035\040\004\201\236\060\201\233\060\201\230\006\004\125\035

\040\000\060\201\217\060\057\006\010\053\006\001\005\005\007\002
\001\026\043\150\164\164\160\072\057\057\167\167\167\056\146\151
\162\155\141\160\162\157\146\145\163\151\157\156\141\154\056\143
\157\155\057\143\160\163\060\134\006\010\053\006\001\005\005\007
\002\002\060\120\036\116\000\120\000\141\000\163\000\145\000\157
\000\040\000\144\000\145\000\040\000\154\000\141\000\040\000\102
\000\157\000\156\000\141\000\156\000\157\000\166\000\141\000\040
\000\064\000\067\000\040\000\102\000\141\000\162\000\143\000\145
\000\154\000\157\000\156\000\141\000\040\000\060\000\070\000\060
\000\061\000\067\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\002\001\000\164\207\050\002\053\167\037\146
\211\144\355\217\164\056\106\034\273\250\370\370\013\035\203\266
\072\247\350\105\212\007\267\340\076\040\313\341\010\333\023\010
\370\050\241\065\262\200\263\013\121\300\323\126\232\215\063\105
\111\257\111\360\340\075\007\172\105\023\132\377\310\227\330\323
\030\054\175\226\370\335\242\145\103\160\223\220\025\272\220\337
\350\031\260\333\054\212\140\017\267\157\224\007\036\035\246\311
\205\366\275\064\370\100\170\142\020\160\072\276\175\113\071\201
\251\020\324\226\101\273\370\137\034\013\035\010\362\261\260\211
\172\362\367\240\340\304\217\213\170\265\073\130\245\043\216\117
\125\376\066\073\340\014\267\312\052\060\101\040\264\200\315\256
\374\166\146\163\250\256\156\341\174\332\003\350\224\040\346\042
\243\320\037\220\135\040\123\024\046\127\332\124\227\337\026\104
\020\001\036\210\146\217\162\070\223\335\040\267\064\276\327\361
\356\143\216\107\171\050\006\374\363\131\105\045\140\042\063\033
\243\137\250\272\052\332\032\075\315\100\352\214\356\005\025\225
\325\245\054\040\057\247\230\050\356\105\374\361\270\210\000\054
\217\102\332\121\325\234\345\023\150\161\105\103\213\236\013\041
\074\113\134\005\334\032\237\230\216\332\275\042\236\162\315\255
\012\313\314\243\147\233\050\164\304\233\327\032\074\004\130\246
\202\235\255\307\173\157\377\200\226\351\370\215\152\275\030\220
\035\377\111\032\220\122\067\223\057\074\002\135\202\166\013\121
\347\026\307\127\370\070\371\247\315\233\042\124\357\143\260\025
\155\123\145\003\112\136\112\240\262\247\216\111\000\131\070\325
\307\364\200\144\365\156\225\120\270\021\176\025\160\070\112\260
\177\320\304\062\160\300\031\377\311\070\055\024\054\146\364\102
\104\346\125\166\033\200\025\127\377\300\247\247\252\071\252\330
\323\160\320\056\272\353\224\152\372\137\064\206\347\142\265\375
\212\360\060\205\224\311\257\044\002\057\157\326\335\147\376\343
\260\125\117\004\230\117\244\101\126\342\223\320\152\350\326\363
\373\145\340\316\165\304\061\131\014\356\202\310\014\140\063\112
\031\272\204\147\047\017\274\102\135\275\044\124\015\354\035\160
\006\137\244\274\372\040\174\125
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Autoridad de Certificacion Firmaprofesional CIF A62634068"
Issuer: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Serial Number:1b:70:e9:d2:ff:ae:6c:71
Subject: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Not Valid Before: Tue Sep 23 15:22:07 2014
Not Valid After : Mon May 05 15:22:07 2036
Fingerprint (SHA-256):
57:DE:05:83:EF:D2:B2:6E:03:61:DA:99:DA:9D:F4:64:8D:EF:7E:E8:44:1C:3B:72:8A:FA:9B:CD:E0:F9:B2:6A
Fingerprint (SHA1): 0B:BE:C2:27:22:49:CB:39:AA:DB:35:5C:53:E3:8C:AE:78:FF:B6:FE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion Firmaprofesional CIF A62634068"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\013\276\302\047\042\111\313\071\252\333\065\134\123\343\214\256
\170\377\266\376
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\116\156\233\124\114\312\267\372\110\344\220\261\025\113\034\243
END
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\033\160\351\322\377\256\154\161
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "vTrus ECC Root CA"
#
Issuer: CN=vTrus ECC Root CA,O="iTrusChina Co.,Ltd.",C=CN
Serial Number:6e:6a:bc:59:aa:53:be:98:39:67:a2:d2:6b:a4:3b:e6:6d:1c:d6:da
Subject: CN=vTrus ECC Root CA,O="iTrusChina Co.,Ltd.",C=CN
Not Valid Before: Tue Jul 31 07:26:44 2018
Not Valid After : Fri Jul 31 07:26:44 2043
Fingerprint (SHA-256):
30:FB:BA:2C:32:23:8E:2A:98:54:7A:F9:79:31:E5:50:42:8B:9B:3F:1C:8E:EB:66:33:DC:FA:86:C5:B2:7D:D3

Fingerprint (SHA1): F6:9C:DB:B0:FC:F6:02:13:B6:52:32:A6:A3:91:3F:16:70:DA:C3:E1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "vTrus ECC Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\032\060
\030\006\003\125\004\003\023\021\166\124\162\165\163\040\105\103
\103\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\032\060
\030\006\003\125\004\003\023\021\166\124\162\165\163\040\105\103
\103\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\156\152\274\131\252\123\276\230\071\147\242\322\153\244
\073\346\155\034\326\332
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\017\060\202\001\225\240\003\002\001\002\002\024\156
\152\274\131\252\123\276\230\071\147\242\322\153\244\073\346\155
\034\326\332\060\012\006\010\052\206\110\316\075\004\003\003\060
\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061\034
\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103\150
\151\156\141\040\103\157\056\054\114\164\144\056\061\032\060\030
\006\003\125\004\003\023\021\166\124\162\165\163\040\105\103\103
\040\122\157\157\164\040\103\101\060\036\027\015\061\070\060\067
\063\061\060\067\062\066\064\064\132\027\015\064\063\060\067\063
\061\060\067\062\066\064\064\132\060\107\061\013\060\011\006\003
\125\004\006\023\002\103\116\061\034\060\032\006\003\125\004\012
\023\023\151\124\162\165\163\103\150\151\156\141\040\103\157\056
\054\114\164\144\056\061\032\060\030\006\003\125\004\003\023\021
\166\124\162\165\163\040\105\103\103\040\122\157\157\164\040\103
\101\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\145\120\112\256\214\171\226
\112\252\034\010\303\243\242\315\376\131\126\101\167\375\046\224
\102\273\035\315\010\333\163\262\133\165\363\317\234\116\202\364
\277\370\141\046\205\154\326\205\133\162\160\322\375\333\142\264
\337\123\213\275\261\104\130\142\102\011\307\372\177\133\020\347
\376\100\375\300\330\303\053\062\347\160\246\267\246\040\125\035

\173\200\135\113\217\147\114\361\020\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\230\071\315\276\330\262\214\367
\262\253\341\255\044\257\173\174\241\333\037\317\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\012\006
\010\052\206\110\316\075\004\003\003\003\150\000\060\145\002\060
\127\235\335\126\361\307\343\351\270\111\120\153\233\151\303\157
\354\303\175\045\344\127\225\023\100\233\122\323\073\363\100\031
\274\046\307\055\006\236\265\173\066\237\365\045\324\143\153\000
\002\061\000\351\323\306\236\126\232\052\314\241\332\077\310\146
\053\323\130\234\040\205\372\253\221\212\160\160\021\070\140\144
\013\142\011\221\130\000\371\115\373\064\150\332\011\255\041\006
\030\224\316
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "vTrus ECC Root CA"
Issuer: CN=vTrus ECC Root CA,O="iTrusChina Co.,Ltd.",C=CN
Serial Number:6e:6a:bc:59:aa:53:be:98:39:67:a2:d2:6b:a4:3b:e6:6d:1c:d6:da
Subject: CN=vTrus ECC Root CA,O="iTrusChina Co.,Ltd.",C=CN
Not Valid Before: Tue Jul 31 07:26:44 2018
Not Valid After : Fri Jul 31 07:26:44 2043
Fingerprint (SHA-256):
30:FB:BA:2C:32:23:8E:2A:98:54:7A:F9:79:31:E5:50:42:8B:9B:3F:1C:8E:EB:66:33:DC:FA:86:C5:B2:7D:D3
Fingerprint (SHA1): F6:9C:DB:B0:FC:F6:02:13:B6:52:32:A6:A3:91:3F:16:70:DA:C3:E1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "vTrus ECC Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\366\234\333\260\374\366\002\023\266\122\062\246\243\221\077\026
\160\332\303\341
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\336\113\301\365\122\214\233\103\341\076\217\125\124\027\215\205
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\032\060
\030\006\003\125\004\003\023\021\166\124\162\165\163\040\105\103
\103\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\156\152\274\131\252\123\276\230\071\147\242\322\153\244

\073\346\155\034\326\332
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "vTrus Root CA"
#
Issuer: CN=vTrus Root CA,O="iTrusChina Co.,Ltd.",C=CN
Serial Number:43:e3:71:13:d8:b3:59:14:5d:b7:ce:8c:fd:35:fd:6f:bc:05:8d:45
Subject: CN=vTrus Root CA,O="iTrusChina Co.,Ltd.",C=CN
Not Valid Before: Tue Jul 31 07:24:05 2018
Not Valid After : Fri Jul 31 07:24:05 2043
Fingerprint (SHA-256):
8A:71:DE:65:59:33:6F:42:6C:26:E5:38:80:D0:0D:88:A1:8D:A4:C6:A9:1F:0D:CB:61:94:E2:06:C5:C9:63:87
Fingerprint (SHA1): 84:1A:69:FB:F5:CD:1A:25:34:13:3D:E3:F8:FC:B8:99:D0:C9:14:B7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "vTrus Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\026\060
\024\006\003\125\004\003\023\015\166\124\162\165\163\040\122\157
\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\026\060
\024\006\003\125\004\003\023\015\166\124\162\165\163\040\122\157
\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\103\343\161\023\330\263\131\024\135\267\316\214\375\065
\375\157\274\005\215\105
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\126\060\202\003\076\240\003\002\001\002\002\024\103
\343\161\023\330\263\131\024\135\267\316\214\375\065\375\157\274
\005\215\105\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\103\061\013\060\011\006\003\125\004\006\023\002\103

\116\061\034\060\032\006\003\125\004\012\023\023\151\124\162\165
\163\103\150\151\156\141\040\103\157\056\054\114\164\144\056\061
\026\060\024\006\003\125\004\003\023\015\166\124\162\165\163\040
\122\157\157\164\040\103\101\060\036\027\015\061\070\060\067\063
\061\060\067\062\064\060\065\132\027\015\064\063\060\067\063\061
\060\067\062\064\060\065\132\060\103\061\013\060\011\006\003\125
\004\006\023\002\103\116\061\034\060\032\006\003\125\004\012\023
\023\151\124\162\165\163\103\150\151\156\141\040\103\157\056\054
\114\164\144\056\061\026\060\024\006\003\125\004\003\023\015\166
\124\162\165\163\040\122\157\157\164\040\103\101\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\275\125\174
\141\323\270\035\004\142\005\240\256\154\267\160\264\101\352\113
\003\136\020\077\220\132\034\213\073\260\146\213\154\110\246\034
\042\272\325\100\222\356\063\262\043\131\311\216\274\130\332\213
\236\320\031\362\057\131\306\214\143\132\272\237\243\013\260\263
\232\134\272\021\270\022\351\014\273\317\156\154\200\207\051\024
\003\054\215\044\232\310\144\203\265\152\254\023\054\063\361\237
\334\054\141\074\032\077\160\125\233\255\000\122\177\317\004\271
\376\066\372\234\300\026\256\142\376\226\114\103\176\125\024\276
\032\263\322\155\302\257\166\146\225\153\052\260\224\167\205\136
\004\017\142\035\143\165\367\153\347\313\133\232\160\354\076\147
\005\360\376\007\010\200\317\050\333\005\306\024\047\057\206\175
\360\047\336\377\346\176\063\110\347\013\036\130\321\047\053\123
\016\127\112\145\327\373\242\200\140\374\114\274\065\123\001\152
\227\162\202\257\361\035\160\350\234\365\357\136\302\154\307\107
\176\132\224\205\046\115\073\272\353\114\350\260\011\302\145\302
\235\235\011\233\116\265\227\005\254\365\006\240\367\066\005\176
\364\220\262\153\304\264\371\144\352\351\032\012\310\015\250\355
\047\311\324\347\263\271\253\202\042\220\047\075\052\350\174\220
\357\274\117\375\342\012\044\247\336\145\044\244\135\352\300\166
\060\323\167\120\370\015\004\233\224\066\001\163\312\006\130\246
\323\073\334\372\004\106\023\125\212\311\104\107\270\121\071\032
\056\350\064\342\171\313\131\112\012\177\274\246\357\037\003\147
\152\131\053\045\142\223\331\123\031\146\074\047\142\051\206\115
\244\153\356\377\324\116\272\325\264\342\216\110\132\000\031\011
\361\005\331\316\221\261\367\353\351\071\117\366\157\004\103\232
\125\365\076\005\024\275\277\263\131\264\330\216\063\204\243\220
\122\252\263\002\225\140\371\014\114\150\371\356\325\027\015\370
\161\127\265\045\344\051\356\145\135\257\321\356\074\027\013\132
\103\305\245\206\352\044\236\342\005\007\334\064\102\022\221\326
\071\164\256\114\101\202\333\362\246\110\321\263\233\363\063\252
\363\246\300\305\116\365\364\235\166\143\346\002\306\042\113\301
\225\077\120\144\054\124\345\266\360\074\051\317\127\002\003\001
\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026\004
\024\124\142\160\143\361\165\204\103\130\216\321\026\040\261\306
\254\032\274\366\211\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377

\004\004\003\002\001\006\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\002\001\000\051\272\222\111\247\255
\360\361\160\303\344\227\360\237\251\045\325\153\236\064\376\346
\032\144\366\072\153\122\262\020\170\032\237\114\332\212\332\354
\034\067\122\340\102\113\373\154\166\312\044\013\071\022\025\235
\237\021\055\374\171\144\334\340\340\365\335\340\127\311\245\262
\166\160\120\244\376\267\012\160\325\240\064\361\165\327\115\111
\272\021\321\263\330\354\202\377\353\016\304\277\144\055\175\143
\156\027\170\354\135\174\210\310\353\216\127\166\331\131\004\372
\274\122\037\105\254\360\172\200\354\354\157\166\256\221\333\020
\216\004\334\222\337\240\366\346\256\111\323\301\154\022\033\314
\051\252\371\010\245\342\067\024\312\261\270\146\357\032\202\344
\360\370\361\247\026\151\267\333\251\141\074\237\365\061\313\344
\000\106\302\057\164\261\261\327\201\356\250\046\225\274\210\257
\114\065\007\052\002\312\170\024\155\107\053\100\126\351\313\052
\140\241\147\003\240\316\214\274\260\162\147\304\061\316\333\064
\345\045\003\140\045\173\161\230\344\300\033\053\137\164\102\322
\113\305\131\010\007\207\276\305\303\177\347\226\331\341\334\050
\227\326\217\005\343\365\233\116\312\035\120\107\005\123\260\312
\071\347\205\240\211\301\005\073\001\067\323\077\111\342\167\353
\043\310\210\146\073\075\071\166\041\106\361\354\137\043\270\353
\242\146\165\164\301\100\367\330\150\232\223\342\055\251\056\275
\034\243\036\310\164\306\244\055\172\040\253\073\270\260\106\375
\157\335\137\122\125\165\142\360\227\240\174\327\070\375\045\337
\315\240\233\020\317\213\270\070\136\136\305\264\246\002\066\241
\036\137\034\317\342\226\235\051\252\375\230\256\122\341\363\101
\122\373\251\056\162\226\237\047\343\252\163\175\370\032\043\146
\173\073\253\145\260\062\001\113\025\076\075\242\117\014\053\065
\242\306\331\147\022\065\060\315\166\056\026\263\231\236\115\117
\116\055\073\064\103\341\232\016\015\244\146\227\272\322\034\112
\114\054\052\213\213\201\117\161\032\251\335\134\173\173\010\305
\000\015\067\100\343\174\173\124\137\057\205\137\166\366\367\247
\260\034\127\126\301\162\350\255\242\257\215\063\111\272\037\212
\334\346\164\174\140\206\157\207\227\173
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "vTrus Root CA"
Issuer: CN=vTrus Root CA,O="iTrusChina Co.,Ltd.",C=CN
Serial Number:43:e3:71:13:d8:b3:59:14:5d:b7:ce:8c:fd:35:fd:6f:bc:05:8d:45
Subject: CN=vTrus Root CA,O="iTrusChina Co.,Ltd.",C=CN
Not Valid Before: Tue Jul 31 07:24:05 2018
Not Valid After : Fri Jul 31 07:24:05 2043
Fingerprint (SHA-256):
8A:71:DE:65:59:33:6F:42:6C:26:E5:38:80:D0:0D:88:A1:8D:A4:C6:A9:1F:0D:CB:61:94:E2:06:C5:C9:63:87
Fingerprint (SHA1): 84:1A:69:FB:F5:CD:1A:25:34:13:3D:E3:F8:FC:B8:99:D0:C9:14:B7

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "vTrus Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\204\032\151\373\365\315\032\045\064\023\075\343\370\374\270\231
\320\311\024\267
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\270\311\067\337\372\153\061\204\144\305\352\021\152\033\165\374
END
CKA_ISSUER MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\026\060
\024\006\003\125\004\003\023\015\166\124\162\165\163\040\122\157
\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\103\343\161\023\330\263\131\024\135\267\316\214\375\065
\375\157\274\005\215\105
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ISRG Root X2"
#
Issuer: CN=ISRG Root X2,O=Internet Security Research Group,C=US
Serial Number:41:d2:9d:d1:72:ea:ee:a7:80:c1:2c:6c:e9:2f:87:52
Subject: CN=ISRG Root X2,O=Internet Security Research Group,C=US
Not Valid Before: Fri Sep 04 00:00:00 2020
Not Valid After : Mon Sep 17 16:00:00 2040
Fingerprint (SHA-256):
69:72:9B:8E:15:A8:6E:FC:17:7A:57:AF:B7:17:1D:FC:64:AD:D2:8C:2F:CA:8C:F1:50:7E:34:45:3C:CB:14:70
Fingerprint (SHA1): BD:B1:B9:3C:D5:97:8D:45:C6:26:14:55:F8:DB:95:C7:5A:D1:53:AF
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ISRG Root X2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156

\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\101\322\235\321\162\352\356\247\200\301\054\154\351\057
\207\122
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\033\060\202\001\241\240\003\002\001\002\002\020\101
\322\235\321\162\352\356\247\200\301\054\154\351\057\207\122\060
\012\006\010\052\206\110\316\075\004\003\003\060\117\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\051\060\047\006\003
\125\004\012\023\040\111\156\164\145\162\156\145\164\040\123\145
\143\165\162\151\164\171\040\122\145\163\145\141\162\143\150\040
\107\162\157\165\160\061\025\060\023\006\003\125\004\003\023\014
\111\123\122\107\040\122\157\157\164\040\130\062\060\036\027\015
\062\060\060\071\060\064\060\060\060\060\060\060\132\027\015\064
\060\060\071\061\067\061\066\060\060\060\060\132\060\117\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\051\060\047\006
\003\125\004\012\023\040\111\156\164\145\162\156\145\164\040\123
\145\143\165\162\151\164\171\040\122\145\163\145\141\162\143\150
\040\107\162\157\165\160\061\025\060\023\006\003\125\004\003\023
\014\111\123\122\107\040\122\157\157\164\040\130\062\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\315\233\325\237\200\203\012\354\011\112\363
\026\112\076\134\317\167\254\336\147\005\015\035\007\266\334\026
\373\132\213\024\333\342\161\140\304\272\105\225\021\211\216\352
\006\337\367\052\026\034\244\271\305\305\062\340\003\340\036\202
\030\070\213\327\105\330\012\152\156\346\000\167\373\002\121\175
\042\330\012\156\232\133\167\337\360\372\101\354\071\334\165\312
\150\007\014\037\352\243\102\060\100\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\174\102\226\256\336\113\110\073\372\222\370
\236\214\317\155\213\251\162\067\225\060\012\006\010\052\206\110
\316\075\004\003\003\003\150\000\060\145\002\060\173\171\116\106
\120\204\302\104\207\106\033\105\160\377\130\231\336\364\375\244

\322\125\246\040\055\164\326\064\274\101\243\120\137\001\047\126
\264\276\047\165\006\257\022\056\165\230\215\374\002\061\000\213
\365\167\154\324\310\145\252\340\013\054\356\024\235\047\067\244
\371\123\245\121\344\051\203\327\370\220\061\133\102\237\012\365
\376\256\000\150\347\214\111\017\266\157\133\133\025\362\347
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ISRG Root X2"
Issuer: CN=ISRG Root X2,O=Internet Security Research Group,C=US
Serial Number:41:d2:9d:d1:72:ea:ee:a7:80:c1:2c:6c:e9:2f:87:52
Subject: CN=ISRG Root X2,O=Internet Security Research Group,C=US
Not Valid Before: Fri Sep 04 00:00:00 2020
Not Valid After : Mon Sep 17 16:00:00 2040
Fingerprint (SHA-256):
69:72:9B:8E:15:A8:6E:FC:17:7A:57:AF:B7:17:1D:FC:64:AD:D2:8C:2F:CA:8C:F1:50:7E:34:45:3C:CB:14:70
Fingerprint (SHA1): BD:B1:B9:3C:D5:97:8D:45:C6:26:14:55:F8:DB:95:C7:5A:D1:53:AF
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ISRG Root X2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\275\261\271\074\325\227\215\105\306\046\024\125\370\333\225\307
\132\321\123\257
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\323\236\304\036\043\074\246\337\317\243\176\155\340\024\346\345
END
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\101\322\235\321\162\352\356\247\200\301\054\154\351\057
\207\122
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HiPKI Root CA - G1"
#
Issuer: CN=HiPKI Root CA - G1,O="Chunghwa Telecom Co., Ltd.",C=TW
Serial Number:2d:dd:ac:ce:62:97:94:a1:43:e8:b0:cd:76:6a:5e:60
Subject: CN=HiPKI Root CA - G1,O="Chunghwa Telecom Co., Ltd.",C=TW
Not Valid Before: Fri Feb 22 09:46:04 2019
Not Valid After : Thu Dec 31 15:59:59 2037
Fingerprint (SHA-256):
F0:15:CE:3C:C2:39:BF:EF:06:4B:E9:F1:D2:C4:17:E1:A0:26:4A:0A:94:BE:1F:0C:8D:12:18:64:EB:69:49:CC
Fingerprint (SHA1): 6A:92:E4:A8:EE:1B:EC:96:45:37:E3:29:57:49:CD:96:E3:E5:D2:60
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HiPKI Root CA - G1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\033\060\031\006\003\125\004\003\014\022\110
\151\120\113\111\040\122\157\157\164\040\103\101\040\055\040\107
\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\033\060\031\006\003\125\004\003\014\022\110
\151\120\113\111\040\122\157\157\164\040\103\101\040\055\040\107
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\055\335\254\316\142\227\224\241\103\350\260\315\166\152
\136\140
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\152\060\202\003\122\240\003\002\001\002\002\020\055
\335\254\316\142\227\224\241\103\350\260\315\166\152\136\140\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\117
\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043\060
\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167\141
\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114\164
\144\056\061\033\060\031\006\003\125\004\003\014\022\110\151\120
\113\111\040\122\157\157\164\040\103\101\040\055\040\107\061\060
\036\027\015\061\071\060\062\062\062\060\071\064\066\060\064\132

\027\015\063\067\061\062\063\061\061\065\065\071\065\071\132\060
\117\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043
\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167
\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114
\164\144\056\061\033\060\031\006\003\125\004\003\014\022\110\151
\120\113\111\040\122\157\157\164\040\103\101\040\055\040\107\061
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\364\036\177\122\163\062\014\163\344\275\023\164\243\324\060
\250\320\256\113\330\266\337\165\107\146\364\174\347\071\004\036
\152\160\040\322\132\107\162\147\125\364\245\350\235\325\036\041
\241\360\147\272\314\041\150\276\104\123\277\215\371\342\334\057
\125\310\067\077\037\244\300\234\263\344\167\134\240\106\376\167
\372\032\240\070\352\355\232\162\336\053\275\224\127\072\272\354
\171\347\137\175\102\144\071\172\046\066\367\044\360\325\057\272
\225\230\021\146\255\227\065\326\165\001\200\340\257\364\204\141
\214\015\036\137\174\207\226\136\101\257\353\207\352\370\135\361
\056\210\005\076\114\042\273\332\037\052\335\122\106\144\071\363
\102\316\331\236\014\263\260\167\227\144\234\300\364\243\056\037
\225\007\260\027\337\060\333\000\030\226\114\241\201\113\335\004
\155\123\243\075\374\007\254\324\305\067\202\353\344\225\010\031
\050\202\322\102\072\243\330\123\354\171\211\140\110\140\310\162
\222\120\334\003\217\203\077\262\102\127\132\333\152\351\021\227
\335\205\050\274\060\114\253\343\302\261\105\104\107\037\340\212
\026\007\226\322\041\017\123\300\355\251\176\324\116\354\233\011
\354\257\102\254\060\326\277\321\020\105\340\246\026\262\245\305
\323\117\163\224\063\161\002\241\152\243\326\063\227\117\041\143
\036\133\217\331\301\136\105\161\167\017\201\135\137\041\232\255
\203\314\372\136\326\215\043\137\033\075\101\257\040\165\146\132
\112\366\237\373\253\030\367\161\300\266\035\061\354\073\040\353
\313\342\270\365\256\222\262\367\341\204\113\362\242\362\223\232
\042\236\323\024\157\066\124\275\037\136\131\025\271\163\250\301
\174\157\173\142\351\026\154\107\132\145\363\016\021\233\106\331
\375\155\334\326\234\300\264\175\245\260\335\077\126\157\241\371
\366\344\022\110\375\006\177\022\127\266\251\043\117\133\003\303
\340\161\052\043\267\367\260\261\073\274\230\275\326\230\250\014
\153\366\216\022\147\246\362\262\130\344\002\011\023\074\251\273
\020\264\322\060\105\361\354\367\000\021\337\145\370\334\053\103
\125\277\026\227\304\017\325\054\141\204\252\162\206\376\346\072
\176\302\077\175\356\374\057\024\076\346\205\335\120\157\267\111
\355\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\362\167\027\372\136\250\376\366\075\161
\325\150\272\311\106\014\070\330\257\260\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\120\121
\360\165\334\160\004\343\377\252\165\324\161\242\313\236\217\250
\251\323\257\165\307\124\317\072\034\004\231\042\254\304\021\342

\357\063\112\246\043\035\016\015\107\330\067\307\157\257\064\177
\117\201\153\065\117\351\162\245\061\342\170\347\367\116\224\030
\133\100\175\317\153\041\124\206\346\225\172\373\306\312\352\234
\110\116\127\011\135\057\254\364\245\264\227\063\130\325\254\171
\251\314\137\371\205\372\122\305\215\370\221\024\353\072\015\027
\320\122\302\173\343\302\163\216\106\170\006\070\054\350\134\332
\146\304\364\244\360\126\031\063\051\132\145\222\005\107\106\112
\253\204\303\036\047\241\037\021\222\231\047\165\223\017\274\066
\073\227\127\217\046\133\014\273\234\017\324\156\060\007\324\334
\137\066\150\146\071\203\226\047\046\212\310\304\071\376\232\041
\157\325\162\206\351\177\142\345\227\116\320\044\320\100\260\320
\165\010\216\275\150\356\010\327\156\174\020\160\106\033\174\340
\210\262\236\162\206\231\001\343\277\237\111\031\264\045\276\126
\145\256\027\143\345\036\337\350\377\107\245\277\341\046\005\204
\344\260\300\257\347\010\231\250\014\136\046\200\105\324\370\150
\057\226\217\256\342\112\034\234\026\014\023\157\070\207\366\273
\310\064\137\222\003\121\171\160\246\337\313\365\231\115\171\315
\116\274\127\237\103\116\153\056\053\030\370\152\163\214\272\305
\065\357\071\152\101\036\317\161\250\242\262\206\007\133\072\311
\341\357\077\145\004\200\107\062\104\160\225\116\061\147\152\164
\133\020\105\165\352\260\237\320\346\065\376\116\237\213\314\053
\222\105\133\156\045\140\205\106\315\321\252\260\166\146\223\167
\226\276\203\276\070\266\044\116\046\013\314\355\172\126\032\340
\351\132\306\144\255\114\172\000\110\104\057\271\100\273\023\076
\276\025\170\235\205\201\112\052\127\336\325\031\103\332\333\312
\133\107\206\203\013\077\266\015\166\170\163\171\042\136\261\200
\037\317\276\321\077\126\020\230\053\225\207\241\037\235\144\024
\140\071\054\263\000\125\056\344\365\263\016\127\304\221\101\000
\234\077\350\245\337\352\366\377\310\360\255\155\122\250\027\253
\233\141\374\022\121\065\344\045\375\257\252\152\206\071
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HiPKI Root CA - G1"
Issuer: CN=HiPKI Root CA - G1,O="Chunghwa Telecom Co., Ltd.",C=TW
Serial Number:2d:dd:ac:ce:62:97:94:a1:43:e8:b0:cd:76:6a:5e:60
Subject: CN=HiPKI Root CA - G1,O="Chunghwa Telecom Co., Ltd.",C=TW
Not Valid Before: Fri Feb 22 09:46:04 2019
Not Valid After : Thu Dec 31 15:59:59 2037
Fingerprint (SHA-256):
F0:15:CE:3C:C2:39:BF:EF:06:4B:E9:F1:D2:C4:17:E1:A0:26:4A:0A:94:BE:1F:0C:8D:12:18:64:EB:69:49:CC
Fingerprint (SHA1): 6A:92:E4:A8:EE:1B:EC:96:45:37:E3:29:57:49:CD:96:E3:E5:D2:60
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "HiPKI Root CA - G1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\152\222\344\250\356\033\354\226\105\067\343\051\127\111\315\226
\343\345\322\140
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\151\105\337\026\145\113\350\150\232\217\166\137\377\200\236\323
END
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\033\060\031\006\003\125\004\003\014\022\110
\151\120\113\111\040\122\157\157\164\040\103\101\040\055\040\107
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\055\335\254\316\142\227\224\241\103\350\260\315\166\152
\136\140
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign ECC Root CA - R4"
#
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R4
Serial Number:02:03:e5:7e:f5:3f:93:fd:a5:09:21:b2:a6
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R4
Not Valid Before: Tue Nov 13 00:00:00 2012
Not Valid After : Tue Jan 19 03:14:07 2038
Fingerprint (SHA-256):
B0:85:D7:0B:96:4F:19:1A:73:E4:AF:0D:54:AE:7A:0E:07:AA:FD:AF:9B:71:DD:08:62:13:8A:B7:32:5A:24:A2
Fingerprint (SHA1): 6B:A0:B0:98:E1:71:EF:5A:AD:FE:48:15:80:77:10:F4:BD:6F:0B:28
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign ECC Root CA - R4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\064\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151

\147\156
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\064\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\176\365\077\223\375\245\011\041\262\246
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\334\060\202\001\203\240\003\002\001\002\002\015\002
\003\345\176\365\077\223\375\245\011\041\262\246\060\012\006\010
\052\206\110\316\075\004\003\002\060\120\061\044\060\042\006\003
\125\004\013\023\033\107\154\157\142\141\154\123\151\147\156\040
\105\103\103\040\122\157\157\164\040\103\101\040\055\040\122\064
\061\023\060\021\006\003\125\004\012\023\012\107\154\157\142\141
\154\123\151\147\156\061\023\060\021\006\003\125\004\003\023\012
\107\154\157\142\141\154\123\151\147\156\060\036\027\015\061\062
\061\061\061\063\060\060\060\060\060\060\132\027\015\063\070\060
\061\061\071\060\063\061\064\060\067\132\060\120\061\044\060\042
\006\003\125\004\013\023\033\107\154\157\142\141\154\123\151\147
\156\040\105\103\103\040\122\157\157\164\040\103\101\040\055\040
\122\064\061\023\060\021\006\003\125\004\012\023\012\107\154\157
\142\141\154\123\151\147\156\061\023\060\021\006\003\125\004\003
\023\012\107\154\157\142\141\154\123\151\147\156\060\131\060\023
\006\007\052\206\110\316\075\002\001\006\010\052\206\110\316\075
\003\001\007\003\102\000\004\270\306\171\323\217\154\045\016\237
\056\071\031\034\003\244\256\232\345\071\007\011\026\312\143\261
\271\206\370\212\127\301\127\316\102\372\163\241\367\145\102\377
\036\301\000\262\156\163\016\377\307\041\345\030\244\252\331\161
\077\250\324\271\316\214\035\243\102\060\100\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\206\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\124\260\173\255\105\270\342\100\177
\373\012\156\373\276\063\311\074\243\204\325\060\012\006\010\052
\206\110\316\075\004\003\002\003\107\000\060\104\002\040\042\117
\164\162\271\140\257\361\346\234\240\026\005\120\137\303\136\073
\156\141\164\357\276\001\304\276\030\110\131\141\202\062\002\040
\046\235\124\143\100\336\067\140\120\317\310\330\355\235\202\256
\067\230\274\243\217\114\114\251\064\053\154\357\373\225\233\046
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE

CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign ECC Root CA - R4"
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R4
Serial Number:02:03:e5:7e:f5:3f:93:fd:a5:09:21:b2:a6
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R4
Not Valid Before: Tue Nov 13 00:00:00 2012
Not Valid After : Tue Jan 19 03:14:07 2038
Fingerprint (SHA-256):
B0:85:D7:0B:96:4F:19:1A:73:E4:AF:0D:54:AE:7A:0E:07:AA:FD:AF:9B:71:DD:08:62:13:8A:B7:32:5A:24:A2
Fingerprint (SHA1): 6B:A0:B0:98:E1:71:EF:5A:AD:FE:48:15:80:77:10:F4:BD:6F:0B:28
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign ECC Root CA - R4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\153\240\260\230\341\161\357\132\255\376\110\025\200\167\020\364
\275\157\013\050
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\046\051\370\155\341\210\277\242\145\177\252\304\315\017\177\374
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\064\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\176\365\077\223\375\245\011\041\262\246
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GTS Root R1"
#
Issuer: CN=GTS Root R1,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:93:6f:31:b0:13:49:88:6b:a2:17
Subject: CN=GTS Root R1,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):

D9:47:43:2A:BD:E7:B7:FA:90:FC:2E:6B:59:10:1B:12:80:E0:E1:C7:E4:E4:0F:A3:C6:88:7F:FF:57:A7:F4:CF
Fingerprint (SHA1): E5:8C:1C:C4:91:3B:38:63:4B:E9:10:6E:E3:AD:8E:6B:9D:D9:81:4A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\223\157\061\260\023\111\210\153\242\027
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\127\060\202\003\077\240\003\002\001\002\002\015\002
\003\345\223\157\061\260\023\111\210\153\242\027\060\015\006\011
\052\206\110\206\367\015\001\001\014\005\000\060\107\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\042\060\040\006\003
\125\004\012\023\031\107\157\157\147\154\145\040\124\162\165\163
\164\040\123\145\162\166\151\143\145\163\040\114\114\103\061\024
\060\022\006\003\125\004\003\023\013\107\124\123\040\122\157\157
\164\040\122\061\060\036\027\015\061\066\060\066\062\062\060\060
\060\060\060\060\132\027\015\063\066\060\066\062\062\060\060\060
\060\060\060\132\060\107\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\042\060\040\006\003\125\004\012\023\031\107\157
\157\147\154\145\040\124\162\165\163\164\040\123\145\162\166\151
\143\145\163\040\114\114\103\061\024\060\022\006\003\125\004\003
\023\013\107\124\123\040\122\157\157\164\040\122\061\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\266\021
\002\213\036\343\241\167\233\073\334\277\224\076\267\225\247\100
\074\241\375\202\371\175\062\006\202\161\366\366\214\177\373\350
\333\274\152\056\227\227\243\214\113\371\053\366\261\371\316\204
\035\261\371\305\227\336\357\271\362\243\351\274\022\211\136\247
\252\122\253\370\043\047\313\244\261\234\143\333\327\231\176\360

\012\136\353\150\246\364\306\132\107\015\115\020\063\343\116\261
\023\243\310\030\154\113\354\374\011\220\337\235\144\051\045\043
\007\241\264\322\075\056\140\340\317\322\011\207\273\315\110\360
\115\302\302\172\210\212\273\272\317\131\031\326\257\217\260\007
\260\236\061\361\202\301\300\337\056\246\155\154\031\016\265\330
\176\046\032\105\003\075\260\171\244\224\050\255\017\177\046\345
\250\010\376\226\350\074\150\224\123\356\203\072\210\053\025\226
\011\262\340\172\214\056\165\326\234\353\247\126\144\217\226\117
\150\256\075\227\302\204\217\300\274\100\300\013\134\275\366\207
\263\065\154\254\030\120\177\204\340\114\315\222\323\040\351\063
\274\122\231\257\062\265\051\263\045\052\264\110\371\162\341\312
\144\367\346\202\020\215\350\235\302\212\210\372\070\146\212\374
\143\371\001\371\170\375\173\134\167\372\166\207\372\354\337\261
\016\171\225\127\264\275\046\357\326\001\321\353\026\012\273\216
\013\265\305\305\212\125\253\323\254\352\221\113\051\314\031\244
\062\045\116\052\361\145\104\320\002\316\252\316\111\264\352\237
\174\203\260\100\173\347\103\253\247\154\243\217\175\211\201\372
\114\245\377\325\216\303\316\113\340\265\330\263\216\105\317\166
\300\355\100\053\375\123\017\260\247\325\073\015\261\212\242\003
\336\061\255\314\167\352\157\173\076\326\337\221\042\022\346\276
\372\330\062\374\020\143\024\121\162\336\135\326\026\223\275\051
\150\063\357\072\146\354\007\212\046\337\023\327\127\145\170\047
\336\136\111\024\000\242\000\177\232\250\041\266\251\261\225\260
\245\271\015\026\021\332\307\154\110\074\100\340\176\015\132\315
\126\074\321\227\005\271\313\113\355\071\113\234\304\077\322\125
\023\156\044\260\326\161\372\364\301\272\314\355\033\365\376\201
\101\330\000\230\075\072\310\256\172\230\067\030\005\225\002\003
\001\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
\026\004\024\344\257\053\046\161\032\053\110\047\205\057\122\146
\054\357\360\211\023\161\076\060\015\006\011\052\206\110\206\367
\015\001\001\014\005\000\003\202\002\001\000\237\252\102\046\333
\013\233\276\377\036\226\222\056\076\242\145\112\152\230\272\042
\313\175\301\072\330\202\012\006\306\366\245\336\300\116\207\146
\171\241\371\246\130\234\252\371\265\346\140\347\340\350\261\036
\102\101\063\013\067\075\316\211\160\025\312\265\044\250\317\153
\265\322\100\041\230\317\042\064\317\073\305\042\204\340\305\016
\212\174\135\210\344\065\044\316\233\076\032\124\036\156\333\262
\207\247\374\363\372\201\125\024\142\012\131\251\042\005\061\076
\202\326\356\333\127\064\274\063\225\323\027\033\350\047\242\213
\173\116\046\032\172\132\144\266\321\254\067\361\375\240\363\070
\354\162\360\021\165\235\313\064\122\215\346\166\153\027\306\337
\206\253\047\216\111\053\165\146\201\020\041\246\352\076\364\256
\045\377\174\025\336\316\214\045\077\312\142\160\012\367\057\011
\146\007\310\077\034\374\360\333\105\060\337\142\210\301\265\017
\235\303\237\112\336\131\131\107\305\207\042\066\346\202\247\355
\012\271\342\007\240\215\173\172\112\074\161\322\342\003\241\037

\062\007\335\033\344\102\316\014\000\105\141\200\265\013\040\131
\051\170\275\371\125\313\143\305\074\114\364\266\377\333\152\137
\061\153\231\236\054\301\153\120\244\327\346\030\024\275\205\077
\147\253\106\237\240\377\102\247\072\177\134\313\135\260\160\035
\053\064\365\324\166\011\014\353\170\114\131\005\363\063\102\303
\141\025\020\033\167\115\316\042\214\324\205\362\105\175\267\123
\352\357\100\132\224\012\134\040\137\116\100\135\142\042\166\337
\377\316\141\275\214\043\170\322\067\002\340\216\336\321\021\067
\211\366\277\355\111\007\142\256\222\354\100\032\257\024\011\331
\320\116\262\242\367\276\356\356\330\377\334\032\055\336\270\066
\161\342\374\171\267\224\045\321\110\163\133\241\065\347\263\231
\147\165\301\031\072\053\107\116\323\102\216\375\061\310\026\146
\332\322\014\074\333\263\216\311\241\015\200\017\173\026\167\024
\277\377\333\011\224\262\223\274\040\130\025\351\333\161\103\363
\336\020\303\000\334\250\052\225\266\302\326\077\220\153\166\333
\154\376\214\274\362\160\065\014\334\231\031\065\334\327\310\106
\143\325\066\161\256\127\373\267\202\155\334
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GTS Root R1"
Issuer: CN=GTS Root R1,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:93:6f:31:b0:13:49:88:6b:a2:17
Subject: CN=GTS Root R1,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
D9:47:43:2A:BD:E7:B7:FA:90:FC:2E:6B:59:10:1B:12:80:E0:E1:C7:E4:E4:0F:A3:C6:88:7F:FF:57:A7:F4:CF
Fingerprint (SHA1): E5:8C:1C:C4:91:3B:38:63:4B:E9:10:6E:E3:AD:8E:6B:9D:D9:81:4A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\345\214\034\304\221\073\070\143\113\351\020\156\343\255\216\153
\235\331\201\112
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\005\376\320\277\161\250\243\166\143\332\001\340\330\122\334\100
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124

\123\040\122\157\157\164\040\122\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\223\157\061\260\023\111\210\153\242\027
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GTS Root R2"
#
Issuer: CN=GTS Root R2,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:ae:c5:8d:04:25:1a:ab:11:25:aa
Subject: CN=GTS Root R2,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
8D:25:CD:97:22:9D:BF:70:35:6B:DA:4E:B3:CC:73:40:31:E2:4C:F0:0F:AF:CF:D3:2D:C7:6E:B5:84:1C:7E:A8
Fingerprint (SHA1): 9A:44:49:76:32:DB:DE:FA:D0:BC:FB:5A:7B:17:BD:9E:56:09:24:94
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\256\305\215\004\045\032\253\021\045\252
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\127\060\202\003\077\240\003\002\001\002\002\015\002
\003\345\256\305\215\004\045\032\253\021\045\252\060\015\006\011

\052\206\110\206\367\015\001\001\014\005\000\060\107\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\042\060\040\006\003
\125\004\012\023\031\107\157\157\147\154\145\040\124\162\165\163
\164\040\123\145\162\166\151\143\145\163\040\114\114\103\061\024
\060\022\006\003\125\004\003\023\013\107\124\123\040\122\157\157
\164\040\122\062\060\036\027\015\061\066\060\066\062\062\060\060
\060\060\060\060\132\027\015\063\066\060\066\062\062\060\060\060
\060\060\060\132\060\107\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\042\060\040\006\003\125\004\012\023\031\107\157
\157\147\154\145\040\124\162\165\163\164\040\123\145\162\166\151
\143\145\163\040\114\114\103\061\024\060\022\006\003\125\004\003
\023\013\107\124\123\040\122\157\157\164\040\122\062\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\316\336
\375\246\373\354\354\024\064\074\007\006\132\154\131\367\031\065
\335\367\301\235\125\252\323\315\073\244\223\162\357\012\372\155
\235\366\360\205\200\133\241\110\122\237\071\305\267\356\050\254
\357\313\166\150\024\271\337\255\001\154\231\037\304\042\035\237
\376\162\167\340\054\133\257\344\004\277\117\162\240\032\064\230
\350\071\150\354\225\045\173\166\241\346\151\271\205\031\275\211
\214\376\255\355\066\352\163\274\377\203\342\313\175\301\322\316
\112\263\215\005\236\213\111\223\337\301\133\320\156\136\360\056
\060\056\202\374\372\274\264\027\012\110\345\210\233\305\233\153
\336\260\312\264\003\360\332\364\220\270\145\144\367\134\114\255
\350\176\146\136\231\327\270\302\076\310\320\023\235\255\356\344
\105\173\211\125\367\212\037\142\122\204\022\263\302\100\227\343
\212\037\107\221\246\164\132\322\370\261\143\050\020\270\263\011
\270\126\167\100\242\046\230\171\306\376\337\045\356\076\345\240
\177\324\141\017\121\113\074\077\214\332\341\160\164\330\302\150
\241\371\301\014\351\241\342\177\273\125\074\166\006\356\152\116
\314\222\210\060\115\232\275\117\013\110\232\204\265\230\243\325
\373\163\301\127\141\335\050\126\165\023\256\207\216\347\014\121
\011\020\165\210\114\274\215\371\173\074\324\042\110\037\052\334
\353\153\273\104\261\313\063\161\062\106\257\255\112\361\214\350
\164\072\254\347\032\042\163\200\322\060\367\045\102\307\042\073
\073\022\255\226\056\306\303\166\007\252\040\267\065\111\127\351
\222\111\350\166\026\162\061\147\053\226\176\212\243\307\224\126
\042\277\152\113\176\001\041\262\043\062\337\344\232\104\155\131
\133\135\365\000\240\034\233\306\170\227\215\220\377\233\310\252
\264\257\021\121\071\136\331\373\147\255\325\133\021\235\062\232
\033\275\325\272\133\245\311\313\045\151\123\125\047\134\340\312
\066\313\210\141\373\036\267\320\313\356\026\373\323\246\114\336
\222\245\324\342\337\365\006\124\336\056\235\113\264\223\060\252
\201\316\335\032\334\121\163\015\117\160\351\345\266\026\041\031
\171\262\346\211\013\165\144\312\325\253\274\011\301\030\241\377
\324\124\241\205\074\375\024\044\003\262\207\323\244\267\002\003
\001\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001

\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
\026\004\024\273\377\312\216\043\237\117\231\312\333\342\150\246
\245\025\047\027\036\331\016\060\015\006\011\052\206\110\206\367
\015\001\001\014\005\000\003\202\002\001\000\037\312\316\335\307
\276\241\237\331\047\114\013\334\027\230\021\152\210\336\075\346
\161\126\162\262\236\032\116\234\325\053\230\044\135\233\153\173
\260\063\202\011\275\337\045\106\352\230\236\266\033\376\203\074
\322\142\141\301\004\355\316\340\305\311\310\023\023\125\347\250
\143\255\214\173\001\376\167\060\341\316\150\233\005\370\022\356
\171\061\240\101\105\065\050\012\161\244\044\117\214\334\074\202
\007\137\146\334\175\020\376\014\141\263\005\225\356\341\256\201
\017\250\370\307\217\115\250\043\002\046\153\035\203\122\125\316
\265\057\000\312\200\100\340\341\164\254\140\365\207\200\235\256
\066\144\221\135\260\150\030\352\212\141\311\167\250\227\304\311
\307\245\374\125\113\363\360\177\271\145\075\047\150\320\314\153
\372\123\235\341\221\032\311\135\032\226\155\062\207\355\003\040
\310\002\316\132\276\331\352\375\262\115\304\057\033\337\137\172
\365\370\213\306\356\061\072\045\121\125\147\215\144\062\173\351
\236\303\202\272\052\055\351\036\264\340\110\006\242\374\147\257
\037\042\002\163\373\040\012\257\235\124\113\241\315\377\140\107
\260\077\135\357\033\126\275\227\041\226\055\012\321\136\235\070
\002\107\154\271\364\366\043\045\270\240\152\232\053\167\010\372
\304\261\050\220\046\130\010\074\342\176\252\327\075\157\272\061
\210\012\005\353\047\265\241\111\356\240\105\124\173\346\047\145
\231\040\041\250\243\274\373\030\226\273\122\157\014\355\203\121
\114\351\131\342\040\140\305\302\145\222\202\214\363\020\037\016
\212\227\276\167\202\155\077\217\035\135\274\111\047\275\314\117
\017\341\316\166\206\004\043\305\300\214\022\133\375\333\204\240
\044\361\110\377\144\174\320\276\134\026\321\357\231\255\300\037
\373\313\256\274\070\042\006\046\144\332\332\227\016\077\050\025
\104\250\117\000\312\360\232\314\317\164\152\264\076\074\353\225
\354\265\323\132\330\201\231\351\103\030\067\353\263\273\321\130
\142\101\363\146\322\217\252\170\225\124\040\303\132\056\164\053
\325\321\276\030\151\300\254\325\244\317\071\272\121\204\003\145
\351\142\300\142\376\330\115\125\226\342\320\021\372\110\064\021
\354\236\355\005\035\344\310\326\035\206\313
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GTS Root R2"
Issuer: CN=GTS Root R2,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:ae:c5:8d:04:25:1a:ab:11:25:aa
Subject: CN=GTS Root R2,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):

8D:25:CD:97:22:9D:BF:70:35:6B:DA:4E:B3:CC:73:40:31:E2:4C:F0:0F:AF:CF:D3:2D:C7:6E:B5:84:1C:7E:A8
Fingerprint (SHA1): 9A:44:49:76:32:DB:DE:FA:D0:BC:FB:5A:7B:17:BD:9E:56:09:24:94
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\232\104\111\166\062\333\336\372\320\274\373\132\173\027\275\236
\126\011\044\224
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\036\071\300\123\346\036\051\202\013\312\122\125\066\135\127\334
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\256\305\215\004\045\032\253\021\045\252
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GTS Root R3"
#
Issuer: CN=GTS Root R3,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:b8:82:eb:20:f8:25:27:6d:3d:66
Subject: CN=GTS Root R3,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
34:D8:A7:3E:E2:08:D9:BC:DB:0D:95:65:20:93:4B:4E:40:E6:94:82:59:6E:8B:6F:73:C8:42:6B:01:0A:6F:48
Fingerprint (SHA1): ED:E5:71:80:2B:C8:92:B9:5B:83:3C:D2:32:68:3F:09:CD:A0:1E:46
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061

\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\270\202\353\040\370\045\047\155\075\146
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\011\060\202\001\216\240\003\002\001\002\002\015\002
\003\345\270\202\353\040\370\045\047\155\075\146\060\012\006\010
\052\206\110\316\075\004\003\003\060\107\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\042\060\040\006\003\125\004\012
\023\031\107\157\157\147\154\145\040\124\162\165\163\164\040\123
\145\162\166\151\143\145\163\040\114\114\103\061\024\060\022\006
\003\125\004\003\023\013\107\124\123\040\122\157\157\164\040\122
\063\060\036\027\015\061\066\060\066\062\062\060\060\060\060\060
\060\132\027\015\063\066\060\066\062\062\060\060\060\060\060\060
\132\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154
\145\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163
\040\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107
\124\123\040\122\157\157\164\040\122\063\060\166\060\020\006\007
\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142
\000\004\037\117\063\207\063\051\212\241\204\336\313\307\041\130
\101\211\352\126\235\053\113\205\306\035\114\047\274\177\046\121
\162\157\342\237\326\243\312\314\105\024\106\213\255\357\176\206
\214\354\261\176\057\377\251\161\235\030\204\105\004\101\125\156
\053\352\046\177\273\220\001\343\113\031\272\344\124\226\105\011
\261\325\154\221\104\255\204\023\216\232\214\015\200\014\062\366
\340\047\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\301\361\046\272\240\055\256\205\201\317\323\361\052\022
\275\270\012\147\375\274\060\012\006\010\052\206\110\316\075\004
\003\003\003\151\000\060\146\002\061\000\366\341\040\225\024\173
\124\243\220\026\021\277\204\310\352\157\153\027\236\036\106\230
\040\233\237\323\015\331\254\323\057\315\174\370\133\056\125\273
\277\335\222\367\244\014\334\061\341\242\002\061\000\374\227\146
\146\345\103\026\023\203\335\307\337\057\276\024\070\355\001\316

\261\027\032\021\165\351\275\003\217\046\176\204\345\311\140\246
\225\327\124\131\267\347\021\054\211\324\271\356\027
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GTS Root R3"
Issuer: CN=GTS Root R3,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:b8:82:eb:20:f8:25:27:6d:3d:66
Subject: CN=GTS Root R3,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
34:D8:A7:3E:E2:08:D9:BC:DB:0D:95:65:20:93:4B:4E:40:E6:94:82:59:6E:8B:6F:73:C8:42:6B:01:0A:6F:48
Fingerprint (SHA1): ED:E5:71:80:2B:C8:92:B9:5B:83:3C:D2:32:68:3F:09:CD:A0:1E:46
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\355\345\161\200\053\310\222\271\133\203\074\322\062\150\077\011
\315\240\036\106
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\076\347\235\130\002\224\106\121\224\345\340\042\112\213\347\163
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\270\202\353\040\370\045\047\155\075\146
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GTS Root R4"
#
Issuer: CN=GTS Root R4,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:c0:68:ef:63:1a:9c:72:90:50:52

Subject: CN=GTS Root R4,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
34:9D:FA:40:58:C5:E2:63:12:3B:39:8A:E7:95:57:3C:4E:13:13:C8:3F:E6:8F:93:55:6C:D5:E8:03:1B:3C:7D
Fingerprint (SHA1): 77:D3:03:67:B5:E0:0C:15:F6:0C:38:61:DF:7C:E1:3B:92:46:4D:47
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\064
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\300\150\357\143\032\234\162\220\120\122
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\011\060\202\001\216\240\003\002\001\002\002\015\002
\003\345\300\150\357\143\032\234\162\220\120\122\060\012\006\010
\052\206\110\316\075\004\003\003\060\107\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\042\060\040\006\003\125\004\012
\023\031\107\157\157\147\154\145\040\124\162\165\163\164\040\123
\145\162\166\151\143\145\163\040\114\114\103\061\024\060\022\006
\003\125\004\003\023\013\107\124\123\040\122\157\157\164\040\122
\064\060\036\027\015\061\066\060\066\062\062\060\060\060\060\060
\060\132\027\015\063\066\060\066\062\062\060\060\060\060\060\060
\132\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154
\145\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163
\040\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107
\124\123\040\122\157\157\164\040\122\064\060\166\060\020\006\007
\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142
\000\004\363\164\163\247\150\213\140\256\103\270\065\305\201\060
\173\113\111\235\373\301\141\316\346\336\106\275\153\325\141\030

\065\256\100\335\163\367\211\221\060\132\353\074\356\205\174\242
\100\166\073\251\306\270\107\330\052\347\222\221\152\163\351\261
\162\071\237\051\237\242\230\323\137\136\130\206\145\017\241\204
\145\006\321\334\213\311\307\163\310\214\152\057\345\304\253\321
\035\212\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\200\114\326\353\164\377\111\066\243\325\330\374\265\076
\305\152\360\224\035\214\060\012\006\010\052\206\110\316\075\004
\003\003\003\151\000\060\146\002\061\000\350\100\377\203\336\003
\364\237\256\035\172\247\056\271\257\117\366\203\035\016\055\205
\001\035\321\331\152\354\017\302\257\307\136\126\136\134\325\034
\130\042\050\013\367\060\266\057\261\174\002\061\000\360\141\074
\247\364\240\202\343\041\325\204\035\163\206\234\055\257\312\064
\233\361\237\271\043\066\342\274\140\003\235\200\263\232\126\310
\341\342\273\024\171\312\315\041\324\224\265\111\103
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GTS Root R4"
Issuer: CN=GTS Root R4,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:c0:68:ef:63:1a:9c:72:90:50:52
Subject: CN=GTS Root R4,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
34:9D:FA:40:58:C5:E2:63:12:3B:39:8A:E7:95:57:3C:4E:13:13:C8:3F:E6:8F:93:55:6C:D5:E8:03:1B:3C:7D
Fingerprint (SHA1): 77:D3:03:67:B5:E0:0C:15:F6:0C:38:61:DF:7C:E1:3B:92:46:4D:47
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\167\323\003\147\265\340\014\025\366\014\070\141\337\174\341\073
\222\106\115\107
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\103\226\203\167\031\115\166\263\235\145\122\344\035\042\245\350
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\064

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\300\150\357\143\032\234\162\220\120\122
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Telia Root CA v2"
#
Issuer: CN=Telia Root CA v2,O=Telia Finland Oyj,C=FI
Serial Number:01:67:5f:27:d6:fe:7a:e3:e4:ac:be:09:5b:05:9e
Subject: CN=Telia Root CA v2,O=Telia Finland Oyj,C=FI
Not Valid Before: Thu Nov 29 11:55:54 2018
Not Valid After : Sun Nov 29 11:55:54 2043
Fingerprint (SHA-256):
24:2B:69:74:2F:CB:1E:5B:2A:BF:98:89:8B:94:57:21:87:54:4E:5B:4D:99:11:78:65:73:62:1F:6A:74:B8:2C
Fingerprint (SHA1): B9:99:CD:D1:73:50:8A:C4:47:05:08:9C:8C:88:FB:BE:A0:2B:40:CD
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telia Root CA v2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\106\111\061
\032\060\030\006\003\125\004\012\014\021\124\145\154\151\141\040
\106\151\156\154\141\156\144\040\117\171\152\061\031\060\027\006
\003\125\004\003\014\020\124\145\154\151\141\040\122\157\157\164
\040\103\101\040\166\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\106\111\061
\032\060\030\006\003\125\004\012\014\021\124\145\154\151\141\040
\106\151\156\154\141\156\144\040\117\171\152\061\031\060\027\006
\003\125\004\003\014\020\124\145\154\151\141\040\122\157\157\164
\040\103\101\040\166\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\001\147\137\047\326\376\172\343\344\254\276\011\133\005
\236
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\164\060\202\003\134\240\003\002\001\002\002\017\001
\147\137\047\326\376\172\343\344\254\276\011\133\005\236\060\015

\006\011\052\206\110\206\367\015\001\001\013\005\000\060\104\061
\013\060\011\006\003\125\004\006\023\002\106\111\061\032\060\030
\006\003\125\004\012\014\021\124\145\154\151\141\040\106\151\156
\154\141\156\144\040\117\171\152\061\031\060\027\006\003\125\004
\003\014\020\124\145\154\151\141\040\122\157\157\164\040\103\101
\040\166\062\060\036\027\015\061\070\061\061\062\071\061\061\065
\065\065\064\132\027\015\064\063\061\061\062\071\061\061\065\065
\065\064\132\060\104\061\013\060\011\006\003\125\004\006\023\002
\106\111\061\032\060\030\006\003\125\004\012\014\021\124\145\154
\151\141\040\106\151\156\154\141\156\144\040\117\171\152\061\031
\060\027\006\003\125\004\003\014\020\124\145\154\151\141\040\122
\157\157\164\040\103\101\040\166\062\060\202\002\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017
\000\060\202\002\012\002\202\002\001\000\262\320\077\007\274\342
\173\320\153\231\370\342\167\151\347\316\235\244\003\274\202\155
\241\376\201\145\037\114\047\254\216\000\272\026\173\353\060\152
\000\300\263\164\150\176\262\257\307\325\142\263\172\077\120\312
\214\066\104\044\143\322\066\351\014\205\366\103\166\325\114\241
\140\162\147\342\050\063\245\313\061\270\072\042\043\064\270\175
\275\126\042\100\235\352\364\173\003\255\150\374\262\201\117\230
\320\164\352\215\345\175\315\143\303\243\366\336\222\302\130\031
\340\226\273\305\304\251\075\245\164\226\376\257\371\211\252\275
\225\027\124\330\170\104\361\014\167\025\222\340\230\102\247\244
\326\252\040\222\315\301\240\263\226\262\072\204\102\215\175\325
\225\344\326\333\351\142\304\130\263\171\305\214\323\065\063\203
\237\165\241\122\047\141\070\361\131\075\216\120\340\275\171\074
\347\154\226\376\136\331\002\145\264\216\134\320\021\064\337\135
\277\122\247\201\000\303\177\231\105\231\025\325\027\310\012\123
\354\143\363\231\175\314\151\022\206\302\027\360\001\236\277\204
\274\321\122\313\033\222\146\316\244\123\345\241\277\304\333\011
\326\346\211\126\053\310\343\174\336\343\377\211\345\065\156\050
\350\154\013\043\121\251\045\005\353\110\370\335\261\312\372\154
\010\121\357\267\030\154\104\312\046\341\163\306\211\006\201\345
\212\254\260\342\051\306\271\044\263\153\104\021\364\245\103\302
\114\103\345\160\066\214\266\063\127\172\225\056\202\240\364\134
\020\263\141\203\366\002\005\206\056\174\055\154\334\003\106\156
\065\223\325\172\225\057\336\040\330\133\176\224\220\004\152\272
\131\075\004\005\165\235\067\242\016\056\075\353\301\244\122\203
\376\320\153\324\146\216\334\306\351\022\116\035\052\127\252\020
\274\174\136\202\175\246\246\311\362\055\271\365\027\047\255\321
\016\211\124\053\225\372\300\255\035\230\024\170\063\102\206\012
\251\163\265\373\164\015\267\033\060\031\304\132\016\034\047\267
\332\030\320\377\212\310\005\272\361\252\034\242\067\267\346\110
\244\106\054\224\352\250\166\142\107\213\020\123\007\110\127\154
\342\222\115\266\256\005\313\334\301\112\136\217\254\075\031\116
\302\355\140\165\053\333\301\312\102\325\002\003\001\000\001\243
\143\060\141\060\037\006\003\125\035\043\004\030\060\026\200\024
\162\254\344\063\171\252\105\207\366\375\254\035\236\326\307\057

\206\330\044\071\060\035\006\003\125\035\016\004\026\004\024\162
\254\344\063\171\252\105\207\366\375\254\035\236\326\307\057\206
\330\044\071\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\002\001\000\240\073\131\247\011\224\076\066
\204\322\176\057\071\245\226\227\372\021\255\374\147\363\161\011
\362\262\211\204\147\104\257\271\357\355\226\354\234\144\333\062
\060\157\147\232\254\176\137\262\253\001\066\176\201\372\344\204
\136\322\254\066\340\153\142\305\175\113\016\202\155\322\166\142
\321\376\227\370\237\060\174\030\371\264\122\167\202\035\166\333
\323\035\251\360\301\232\000\275\155\165\330\175\347\372\307\070
\243\234\160\350\106\171\003\257\056\164\333\165\370\156\123\014
\003\310\231\032\211\065\031\074\323\311\124\174\250\360\054\346
\156\007\171\157\152\341\346\352\221\202\151\012\035\303\176\131
\242\236\153\106\025\230\133\323\257\106\035\142\310\316\200\122
\111\021\077\311\004\022\303\023\174\077\073\212\226\333\074\240
\036\012\264\213\124\262\044\147\015\357\202\313\276\074\175\321
\342\177\256\026\326\126\130\271\332\040\261\203\025\241\357\212
\115\062\157\101\057\023\122\202\224\327\032\301\170\242\121\335
\053\160\155\267\032\371\367\260\340\147\227\126\333\174\141\123
\011\003\050\002\100\307\263\330\375\234\160\152\306\050\303\205
\351\342\355\032\223\240\336\113\230\242\204\076\005\167\001\226
\075\373\264\040\017\234\162\002\172\022\057\325\243\272\121\170
\257\052\053\104\145\116\265\375\012\350\301\315\171\207\141\053
\336\200\127\105\277\147\361\233\221\136\245\244\354\131\110\020
\015\070\307\260\372\303\104\155\004\365\170\120\034\222\226\133
\332\365\270\056\272\133\317\345\360\152\235\113\057\130\163\055
\117\055\304\034\076\364\263\077\253\025\016\073\031\101\212\244
\301\127\022\146\161\114\372\123\343\127\353\142\225\011\236\124
\335\321\302\074\127\074\275\070\255\230\144\267\270\003\232\123
\126\140\135\263\330\102\033\134\113\022\212\034\353\353\175\306
\172\151\307\047\177\244\370\213\362\344\224\146\207\113\351\224
\007\011\022\171\212\262\353\164\004\334\316\364\104\131\340\026
\312\305\054\130\327\074\173\317\142\206\152\120\175\065\066\146
\247\373\067\347\050\307\330\320\255\245\151\224\217\350\301\337
\044\370\033\007\061\207\201\330\135\366\350\050\330\112\122\200
\254\023\356\120\024\036\230\307
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Telia Root CA v2"
Issuer: CN=Telia Root CA v2,O=Telia Finland Oyj,C=FI
Serial Number:01:67:5f:27:d6:fe:7a:e3:e4:ac:be:09:5b:05:9e
Subject: CN=Telia Root CA v2,O=Telia Finland Oyj,C=FI
Not Valid Before: Thu Nov 29 11:55:54 2018

Not Valid After : Sun Nov 29 11:55:54 2043
Fingerprint (SHA-256):
24:2B:69:74:2F:CB:1E:5B:2A:BF:98:89:8B:94:57:21:87:54:4E:5B:4D:99:11:78:65:73:62:1F:6A:74:B8:2C
Fingerprint (SHA1): B9:99:CD:D1:73:50:8A:C4:47:05:08:9C:8C:88:FB:BE:A0:2B:40:CD
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telia Root CA v2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\271\231\315\321\163\120\212\304\107\005\010\234\214\210\373\276
\240\053\100\315
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\016\217\254\252\202\337\205\261\364\334\020\034\374\231\331\110
END
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\106\111\061
\032\060\030\006\003\125\004\012\014\021\124\145\154\151\141\040
\106\151\156\154\141\156\144\040\117\171\152\061\031\060\027\006
\003\125\004\003\014\020\124\145\154\151\141\040\122\157\157\164
\040\103\101\040\166\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\001\147\137\047\326\376\172\343\344\254\276\011\133\005
\236
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST BR Root CA 1 2020"
#
Issuer: CN=D-TRUST BR Root CA 1 2020,O=D-Trust GmbH,C=DE
Serial Number:7c:c9:8f:2b:84:d7:df:ea:0f:c9:65:9a:d3:4b:4d:96
Subject: CN=D-TRUST BR Root CA 1 2020,O=D-Trust GmbH,C=DE
Not Valid Before: Tue Feb 11 09:45:00 2020
Not Valid After : Sun Feb 11 09:44:59 2035
Fingerprint (SHA-256):
E5:9A:AA:81:60:09:C2:2B:FF:5B:25:BA:D3:7D:F3:06:F0:49:79:7C:1F:81:D8:5A:B0:89:E6:57:BD:8F:00:44
Fingerprint (SHA1): 1F:5B:98:F0:E3:B5:F7:74:3C:ED:E6:B0:36:7D:32:CD:F4:09:41:67
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST BR Root CA 1 2020"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\102\122\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\102\122\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\174\311\217\053\204\327\337\352\017\311\145\232\323\113
\115\226
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\333\060\202\002\140\240\003\002\001\002\002\020\174
\311\217\053\204\327\337\352\017\311\145\232\323\113\115\226\060
\012\006\010\052\206\110\316\075\004\003\003\060\110\061\013\060
\011\006\003\125\004\006\023\002\104\105\061\025\060\023\006\003
\125\004\012\023\014\104\055\124\162\165\163\164\040\107\155\142
\110\061\042\060\040\006\003\125\004\003\023\031\104\055\124\122
\125\123\124\040\102\122\040\122\157\157\164\040\103\101\040\061
\040\062\060\062\060\060\036\027\015\062\060\060\062\061\061\060
\071\064\065\060\060\132\027\015\063\065\060\062\061\061\060\071
\064\064\065\071\132\060\110\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\025\060\023\006\003\125\004\012\023\014\104
\055\124\162\165\163\164\040\107\155\142\110\061\042\060\040\006
\003\125\004\003\023\031\104\055\124\122\125\123\124\040\102\122
\040\122\157\157\164\040\103\101\040\061\040\062\060\062\060\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\306\313\307\050\321\373\204\365\232
\357\102\024\040\341\103\153\156\165\255\374\053\003\204\324\166
\223\045\327\131\073\101\145\153\036\346\064\052\273\164\366\022
\316\350\155\347\253\344\074\116\077\104\010\213\315\026\161\313
\277\222\231\364\244\327\074\120\124\122\220\205\203\170\224\147
\147\243\034\011\031\075\165\064\205\336\355\140\175\307\014\264
\101\122\271\156\345\356\102\243\202\001\015\060\202\001\011\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\163\221\020\253\377
\125\263\132\174\011\045\325\262\272\010\240\153\253\037\155\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\201\306\006\003\125\035\037\004\201\276\060\201\273\060\076\240

\074\240\072\206\070\150\164\164\160\072\057\057\143\162\154\056
\144\055\164\162\165\163\164\056\156\145\164\057\143\162\154\057
\144\055\164\162\165\163\164\137\142\162\137\162\157\157\164\137
\143\141\137\061\137\062\060\062\060\056\143\162\154\060\171\240
\167\240\165\206\163\154\144\141\160\072\057\057\144\151\162\145
\143\164\157\162\171\056\144\055\164\162\165\163\164\056\156\145
\164\057\103\116\075\104\055\124\122\125\123\124\045\062\060\102
\122\045\062\060\122\157\157\164\045\062\060\103\101\045\062\060
\061\045\062\060\062\060\062\060\054\117\075\104\055\124\162\165
\163\164\045\062\060\107\155\142\110\054\103\075\104\105\077\143
\145\162\164\151\146\151\143\141\164\145\162\145\166\157\143\141
\164\151\157\156\154\151\163\164\060\012\006\010\052\206\110\316
\075\004\003\003\003\151\000\060\146\002\061\000\224\220\055\023
\372\341\143\370\141\143\350\255\205\170\124\221\234\270\223\070
\076\032\101\332\100\026\123\102\010\312\057\216\361\076\201\126
\300\252\330\355\030\304\260\256\364\076\372\046\002\061\000\363
\050\342\306\333\053\231\373\267\121\270\044\243\244\224\172\032
\077\346\066\342\003\127\063\212\060\313\202\307\326\024\021\325
\165\143\133\024\225\234\037\001\317\330\325\162\247\017\073
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST BR Root CA 1 2020"
Issuer: CN=D-TRUST BR Root CA 1 2020,O=D-Trust GmbH,C=DE
Serial Number:7c:c9:8f:2b:84:d7:df:ea:0f:c9:65:9a:d3:4b:4d:96
Subject: CN=D-TRUST BR Root CA 1 2020,O=D-Trust GmbH,C=DE
Not Valid Before: Tue Feb 11 09:45:00 2020
Not Valid After : Sun Feb 11 09:44:59 2035
Fingerprint (SHA-256):
E5:9A:AA:81:60:09:C2:2B:FF:5B:25:BA:D3:7D:F3:06:F0:49:79:7C:1F:81:D8:5A:B0:89:E6:57:BD:8F:00:44
Fingerprint (SHA1): 1F:5B:98:F0:E3:B5:F7:74:3C:ED:E6:B0:36:7D:32:CD:F4:09:41:67
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST BR Root CA 1 2020"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\037\133\230\360\343\265\367\164\074\355\346\260\066\175\062\315
\364\011\101\147
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\265\252\113\325\355\367\343\125\056\217\162\012\363\165\270\355
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163

\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\102\122\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\174\311\217\053\204\327\337\352\017\311\145\232\323\113
\115\226
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST EV Root CA 1 2020"
#
Issuer: CN=D-TRUST EV Root CA 1 2020,O=D-Trust GmbH,C=DE
Serial Number:5f:02:41:d7:7a:87:7c:4c:03:a3:ac:96:8d:fb:ff:d0
Subject: CN=D-TRUST EV Root CA 1 2020,O=D-Trust GmbH,C=DE
Not Valid Before: Tue Feb 11 10:00:00 2020
Not Valid After : Sun Feb 11 09:59:59 2035
Fingerprint (SHA-256):
08:17:0D:1A:A3:64:53:90:1A:2F:95:92:45:E3:47:DB:0C:8D:37:AB:AA:BC:56:B8:1A:A1:00:DC:95:89:70:DB
Fingerprint (SHA1): 61:DB:8C:21:59:69:03:90:D8:7C:9C:12:86:54:CF:9D:3D:F4:DD:07
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST EV Root CA 1 2020"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\105\126\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\105\126\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\137\002\101\327\172\207\174\114\003\243\254\226\215\373
\377\320

END

CKA_VALUE MULTILINE_OCTAL

\060\202\002\333\060\202\002\140\240\003\002\001\002\002\020\137
\002\101\327\172\207\174\114\003\243\254\226\215\373\377\320\060
\012\006\010\052\206\110\316\075\004\003\003\060\110\061\013\060
\011\006\003\125\004\006\023\002\104\105\061\025\060\023\006\003
\125\004\012\023\014\104\055\124\162\165\163\164\040\107\155\142
\110\061\042\060\040\006\003\125\004\003\023\031\104\055\124\122
\125\123\124\040\105\126\040\122\157\157\164\040\103\101\040\061
\040\062\060\062\060\060\036\027\015\062\060\060\062\061\061\061
\060\060\060\060\060\132\027\015\063\065\060\062\061\061\060\071
\065\071\065\071\132\060\110\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\025\060\023\006\003\125\004\012\023\014\104
\055\124\162\165\163\164\040\107\155\142\110\061\042\060\040\006
\003\125\004\003\023\031\104\055\124\122\125\123\124\040\105\126
\040\122\157\157\164\040\103\101\040\061\040\062\060\062\060\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\361\013\335\206\103\040\031\337\227
\205\350\042\112\233\317\235\230\277\264\005\046\311\313\343\246
\322\217\305\236\170\173\061\211\251\211\255\047\074\145\020\202
\374\337\303\235\116\360\063\043\304\322\062\365\034\260\337\063
\027\135\305\360\261\212\371\357\271\267\024\312\051\112\302\017
\251\177\165\145\111\052\060\147\364\144\367\326\032\167\332\303
\302\227\141\102\173\111\255\243\202\001\015\060\202\001\011\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\177\020\001\026\067
\072\244\050\344\120\370\244\367\354\153\062\266\376\351\213\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\201\306\006\003\125\035\037\004\201\276\060\201\273\060\076\240
\074\240\072\206\070\150\164\164\160\072\057\057\143\162\154\056
\144\055\164\162\165\163\164\056\156\145\164\057\143\162\154\057
\144\055\164\162\165\163\164\137\145\166\137\162\157\157\164\137
\143\141\137\061\137\062\060\062\060\056\143\162\154\060\171\240
\167\240\165\206\163\154\144\141\160\072\057\057\144\151\162\145
\143\164\157\162\171\056\144\055\164\162\165\163\164\056\156\145
\164\057\103\116\075\104\055\124\122\125\123\124\045\062\060\105
\126\045\062\060\122\157\157\164\045\062\060\103\101\045\062\060
\061\045\062\060\062\060\062\060\054\117\075\104\055\124\162\165
\163\164\045\062\060\107\155\142\110\054\103\075\104\105\077\143
\145\162\164\151\146\151\143\141\164\145\162\145\166\157\143\141
\164\151\157\156\154\151\163\164\060\012\006\010\052\206\110\316
\075\004\003\003\003\151\000\060\146\002\061\000\312\074\306\052
\165\302\136\165\142\071\066\000\140\132\213\301\223\231\314\331
\333\101\073\073\207\231\027\073\325\314\117\312\042\367\240\200
\313\371\264\261\033\126\365\162\322\374\031\321\002\061\000\221
\367\060\223\077\020\106\053\161\244\320\073\104\233\300\051\002
\005\262\101\167\121\363\171\132\236\216\024\240\116\102\322\133
\201\363\064\152\003\347\042\070\120\133\355\031\117\103\026

END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST EV Root CA 1 2020"
Issuer: CN=D-TRUST EV Root CA 1 2020,O=D-Trust GmbH,C=DE
Serial Number:5f:02:41:d7:7a:87:7c:4c:03:a3:ac:96:8d:fb:ff:d0
Subject: CN=D-TRUST EV Root CA 1 2020,O=D-Trust GmbH,C=DE
Not Valid Before: Tue Feb 11 10:00:00 2020
Not Valid After : Sun Feb 11 09:59:59 2035
Fingerprint (SHA-256):
08:17:0D:1A:A3:64:53:90:1A:2F:95:92:45:E3:47:DB:0C:8D:37:AB:AA:BC:56:B8:1A:A1:00:DC:95:89:70:DB
Fingerprint (SHA1): 61:DB:8C:21:59:69:03:90:D8:7C:9C:12:86:54:CF:9D:3D:F4:DD:07
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST EV Root CA 1 2020"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\141\333\214\041\131\151\003\220\330\174\234\022\206\124\317\235
\075\364\335\007
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\214\055\235\160\237\110\231\021\006\021\373\351\313\060\300\156
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\105\126\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\137\002\101\327\172\207\174\114\003\243\254\226\215\373
\377\320
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert TLS ECC P384 Root G5"
#
Issuer: CN=DigiCert TLS ECC P384 Root G5,O="DigiCert, Inc.",C=US
Serial Number:09:e0:93:65:ac:f7:d9:c8:b9:3e:1c:0b:04:2a:2e:f3
Subject: CN=DigiCert TLS ECC P384 Root G5,O="DigiCert, Inc.",C=US

Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
01:8E:13:F0:77:25:32:CF:80:9B:D1:B1:72:81:86:72:83:FC:48:C6:E1:3B:E9:C6:98:12:85:4A:49:0C:1B:05
Fingerprint (SHA1): 17:F3:DE:5E:9F:0F:19:E9:8E:F6:1F:32:26:6E:20:C4:07:AE:30:EE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert TLS ECC P384 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\046\060\044\006\003\125\004
\003\023\035\104\151\147\151\103\145\162\164\040\124\114\123\040
\105\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\046\060\044\006\003\125\004
\003\023\035\104\151\147\151\103\145\162\164\040\124\114\123\040
\105\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\011\340\223\145\254\367\331\310\271\076\034\013\004\052
\056\363
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\031\060\202\001\237\240\003\002\001\002\002\020\011
\340\223\145\254\367\331\310\271\076\034\013\004\052\056\363\060
\012\006\010\052\206\110\316\075\004\003\003\060\116\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\104\151\147\151\103\145\162\164\054\040\111
\156\143\056\061\046\060\044\006\003\125\004\003\023\035\104\151
\147\151\103\145\162\164\040\124\114\123\040\105\103\103\040\120
\063\070\064\040\122\157\157\164\040\107\065\060\036\027\015\062
\061\060\061\061\065\060\060\060\060\060\060\132\027\015\064\066
\060\061\061\064\062\063\065\071\065\071\132\060\116\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\104\151\147\151\103\145\162\164\054\040\111
\156\143\056\061\046\060\044\006\003\125\004\003\023\035\104\151
\147\151\103\145\162\164\040\124\114\123\040\105\103\103\040\120
\063\070\064\040\122\157\157\164\040\107\065\060\166\060\020\006
\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003
\142\000\004\301\104\241\317\021\227\120\232\336\043\202\065\007

\315\320\313\030\235\322\361\177\167\065\117\073\335\224\162\122
\355\302\073\370\354\372\173\153\130\040\354\231\256\311\374\150
\263\165\271\333\011\354\310\023\365\116\306\012\035\146\060\114
\273\037\107\012\074\141\020\102\051\174\245\010\016\340\042\351
\323\065\150\316\233\143\237\204\265\231\115\130\240\216\365\124
\347\225\311\243\102\060\100\060\035\006\003\125\035\016\004\026
\004\024\301\121\105\120\131\253\076\347\054\132\372\040\042\022
\007\200\210\174\021\152\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\061\000\211\152\215\107\347
\354\374\156\125\003\331\147\154\046\116\203\306\375\311\373\053
\023\274\267\172\214\264\145\322\151\151\143\023\143\073\046\120
\056\001\241\171\006\221\235\110\277\302\276\002\060\107\303\025
\173\261\240\221\231\111\223\250\074\174\350\106\006\213\054\362
\061\000\224\235\142\310\211\275\031\204\024\351\245\373\001\270
\015\166\103\214\056\123\313\174\337\014\027\226\120
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert TLS ECC P384 Root G5"
Issuer: CN=DigiCert TLS ECC P384 Root G5,O="DigiCert, Inc.",C=US
Serial Number:09:e0:93:65:ac:f7:d9:c8:b9:3e:1c:0b:04:2a:2e:f3
Subject: CN=DigiCert TLS ECC P384 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
01:8E:13:F0:77:25:32:CF:80:9B:D1:B1:72:81:86:72:83:FC:48:C6:E1:3B:E9:C6:98:12:85:4A:49:0C:1B:05
Fingerprint (SHA1): 17:F3:DE:5E:9F:0F:19:E9:8E:F6:1F:32:26:6E:20:C4:07:AE:30:EE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert TLS ECC P384 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\027\363\336\136\237\017\031\351\216\366\037\062\046\156\040\304
\007\256\060\356
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\323\161\004\152\103\034\333\246\131\341\250\243\252\305\161\355
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\046\060\044\006\003\125\004
\003\023\035\104\151\147\151\103\145\162\164\040\124\114\123\040

\105\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\011\340\223\145\254\367\331\310\271\076\034\013\004\052
\056\363
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert TLS RSA4096 Root G5"
#
Issuer: CN=DigiCert TLS RSA4096 Root G5,O="DigiCert, Inc.",C=US
Serial Number:08:f9:b4:78:a8:fa:7e:da:6a:33:37:89:de:7c:cf:8a
Subject: CN=DigiCert TLS RSA4096 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
37:1A:00:DC:05:33:B3:72:1A:7E:EB:40:E8:41:9E:70:79:9D:2B:0A:0F:2C:1D:80:69:31:65:F7:CE:C4:AD:75
Fingerprint (SHA1): A7:88:49:DC:5D:7C:75:8C:8C:DE:39:98:56:B3:AA:D0:B2:A5:71:35
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert TLS RSA4096 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\045\060\043\006\003\125\004
\003\023\034\104\151\147\151\103\145\162\164\040\124\114\123\040
\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\045\060\043\006\003\125\004
\003\023\034\104\151\147\151\103\145\162\164\040\124\114\123\040
\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\010\371\264\170\250\372\176\332\152\063\067\211\336\174
\317\212
END
CKA_VALUE MULTILINE_OCTAL

\060\202\005\146\060\202\003\116\240\003\002\001\002\002\020\010
\371\264\170\250\372\176\332\152\063\067\211\336\174\317\212\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\115
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060
\025\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164
\054\040\111\156\143\056\061\045\060\043\006\003\125\004\003\023
\034\104\151\147\151\103\145\162\164\040\124\114\123\040\122\123
\101\064\060\071\066\040\122\157\157\164\040\107\065\060\036\027
\015\062\061\060\061\061\065\060\060\060\060\060\060\132\027\015
\064\066\060\061\061\064\062\063\065\071\065\071\132\060\115\061
\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060\025
\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164\054
\040\111\156\143\056\061\045\060\043\006\003\125\004\003\023\034
\104\151\147\151\103\145\162\164\040\124\114\123\040\122\123\101
\064\060\071\066\040\122\157\157\164\040\107\065\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\263\320\364
\311\171\021\235\375\374\146\201\347\314\325\344\274\354\201\076
\152\065\216\056\267\347\336\257\371\007\115\317\060\235\352\011
\013\231\275\154\127\332\030\112\270\170\254\072\071\250\246\110
\254\056\162\345\275\353\361\032\315\347\244\003\251\077\021\264
\330\057\211\026\373\224\001\075\273\057\370\023\005\241\170\034
\216\050\340\105\340\203\364\131\033\225\263\256\176\003\105\345
\276\302\102\376\356\362\074\266\205\023\230\062\235\026\250\051
\302\013\034\070\334\237\061\167\134\277\047\243\374\047\254\267
\053\275\164\233\027\055\362\201\332\135\260\341\043\027\076\210
\112\022\043\320\352\317\235\336\003\027\261\102\112\240\026\114
\244\155\223\351\077\072\356\072\174\235\130\235\364\116\217\374
\073\043\310\155\270\342\005\332\314\353\354\303\061\364\327\247
\051\124\200\317\104\133\114\157\060\236\363\314\335\037\224\103
\235\115\177\160\160\015\324\072\321\067\360\154\235\233\300\024
\223\130\357\315\101\070\165\274\023\003\225\174\177\343\134\351
\325\015\325\342\174\020\142\252\153\360\075\166\363\077\243\350
\260\301\375\357\252\127\115\254\206\247\030\264\051\301\054\016
\277\144\276\051\214\330\002\055\315\134\057\362\177\357\025\364
\014\025\254\012\260\361\323\015\117\152\115\167\227\001\240\361
\146\267\267\316\357\316\354\354\245\165\312\254\343\341\143\367
\270\241\004\310\274\173\077\135\055\026\042\126\355\110\111\376
\247\057\171\060\045\233\272\153\055\077\235\073\304\027\347\035
\056\373\362\317\246\374\343\024\054\226\230\041\214\264\221\351
\031\140\203\362\060\053\006\163\120\325\230\073\006\351\307\212
\014\140\214\050\370\122\233\156\341\366\115\273\006\044\233\327
\053\046\077\375\052\057\161\365\326\044\276\177\061\236\017\155
\350\217\117\115\243\077\377\065\352\337\111\136\101\217\206\371
\361\167\171\113\033\264\243\136\057\373\106\002\320\146\023\136
\136\205\117\316\330\160\210\173\316\001\265\226\227\327\315\175
\375\202\370\302\044\301\312\001\071\117\215\242\301\024\100\037
\234\146\325\014\011\106\326\362\320\321\110\166\126\072\103\313

\266\012\021\071\272\214\023\154\006\265\236\317\353\002\003\001
\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026\004
\024\121\063\034\355\066\100\257\027\323\045\315\151\150\362\257
\116\043\076\263\101\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\015\006\011\052\206\110\206\367\015
\001\001\014\005\000\003\202\002\001\000\140\246\257\133\137\127
\332\211\333\113\120\251\304\043\065\041\377\320\141\060\204\221
\267\077\020\317\045\216\311\277\106\064\331\301\041\046\034\160
\031\162\036\243\311\207\376\251\103\144\226\072\310\123\004\012
\266\101\273\304\107\000\331\237\030\030\073\262\016\363\064\352
\044\367\335\257\040\140\256\222\050\137\066\347\135\344\336\307
\074\333\120\071\255\273\075\050\115\226\174\166\306\133\364\301
\333\024\245\253\031\142\007\030\100\137\227\221\334\234\307\253
\265\121\015\346\151\123\125\314\071\175\332\305\021\125\162\305
\073\213\211\370\064\055\244\027\345\027\346\231\175\060\210\041
\067\315\060\027\075\270\362\274\250\165\240\103\334\076\211\113
\220\256\155\003\340\034\243\240\226\011\273\175\243\267\052\020
\104\113\106\007\064\143\355\061\271\004\356\243\233\232\256\346
\061\170\364\352\044\141\073\253\130\144\377\273\207\047\142\045
\201\337\334\241\057\366\355\247\377\172\217\121\056\060\370\244
\001\322\205\071\137\001\231\226\157\132\133\160\031\106\376\206
\140\076\255\200\020\011\335\071\045\057\130\177\273\322\164\360
\367\106\037\106\071\112\330\123\320\363\056\073\161\245\324\157
\374\363\147\344\007\217\335\046\031\341\215\133\372\243\223\021
\233\351\310\072\303\125\150\232\222\341\122\166\070\350\341\272
\275\373\117\325\357\263\347\110\203\061\360\202\041\343\266\276
\247\253\157\357\237\337\114\317\001\270\142\152\043\075\347\011
\115\200\033\173\060\244\303\335\007\177\064\276\244\046\262\366
\101\350\011\035\343\040\230\252\067\117\377\367\361\342\051\160
\061\107\077\164\320\024\026\372\041\212\002\325\212\011\224\167
\056\362\131\050\213\174\120\222\012\146\170\070\203\165\304\265
\132\250\021\306\345\301\235\146\125\317\123\304\257\327\165\205
\251\102\023\126\354\041\167\201\223\132\014\352\226\331\111\312
\241\010\362\227\073\155\233\004\030\044\104\216\174\001\362\334
\045\330\136\206\232\261\071\333\365\221\062\152\321\246\160\212
\242\367\336\244\105\205\046\250\036\214\135\051\133\310\113\330
\232\152\003\136\160\362\205\117\154\113\150\057\312\124\366\214
\332\062\376\303\153\203\077\070\306\176
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert TLS RSA4096 Root G5"
Issuer: CN=DigiCert TLS RSA4096 Root G5,O="DigiCert, Inc.",C=US
Serial Number:08:f9:b4:78:a8:fa:7e:da:6a:33:37:89:de:7c:cf:8a
Subject: CN=DigiCert TLS RSA4096 Root G5,O="DigiCert, Inc.",C=US

Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
37:1A:00:DC:05:33:B3:72:1A:7E:EB:40:E8:41:9E:70:79:9D:2B:0A:0F:2C:1D:80:69:31:65:F7:CE:C4:AD:75
Fingerprint (SHA1): A7:88:49:DC:5D:7C:75:8C:8C:DE:39:98:56:B3:AA:D0:B2:A5:71:35
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert TLS RSA4096 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\247\210\111\334\135\174\165\214\214\336\071\230\126\263\252\320
\262\245\161\065
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\254\376\367\064\226\251\362\263\264\022\113\344\047\101\157\341
END
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\045\060\043\006\003\125\004
\003\023\034\104\151\147\151\103\145\162\164\040\124\114\123\040
\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\010\371\264\170\250\372\176\332\152\063\067\211\336\174
\317\212
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert SMIME ECC P384 Root G5"
#
Issuer: CN=DigiCert SMIME ECC P384 Root G5,O="DigiCert, Inc.",C=US
Serial Number:05:3f:6e:a0:06:01:72:7d:ed:3f:c3:a3:b6:a3:d6:ef
Subject: CN=DigiCert SMIME ECC P384 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
E8:E8:17:65:36:A6:0C:C2:C4:E1:01:87:C3:BE:FC:A2:0E:F2:63:49:70:18:F5:66:D5:BE:A0:F9:4D:0C:11:1B
Fingerprint (SHA1): 1C:B8:A7:08:C9:0D:20:79:01:A0:B2:36:7F:F0:95:65:E4:53:24:FE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "DigiCert SMIME ECC P384 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\003\023\037\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\105\103\103\040\120\063\070\064\040\122\157\157\164\040
\107\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\003\023\037\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\105\103\103\040\120\063\070\064\040\122\157\157\164\040
\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\077\156\240\006\001\162\175\355\077\303\243\266\243
\326\357
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\034\060\202\001\243\240\003\002\001\002\002\020\005
\077\156\240\006\001\162\175\355\077\303\243\266\243\326\357\060
\012\006\010\052\206\110\316\075\004\003\003\060\120\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\104\151\147\151\103\145\162\164\054\040\111
\156\143\056\061\050\060\046\006\003\125\004\003\023\037\104\151
\147\151\103\145\162\164\040\123\115\111\115\105\040\105\103\103
\040\120\063\070\064\040\122\157\157\164\040\107\065\060\036\027
\015\062\061\060\061\061\065\060\060\060\060\060\060\132\027\015
\064\066\060\061\061\064\062\063\065\071\065\071\132\060\120\061
\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060\025
\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164\054
\040\111\156\143\056\061\050\060\046\006\003\125\004\003\023\037
\104\151\147\151\103\145\162\164\040\123\115\111\115\105\040\105
\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\026\235\125\345\266\324\373\373\147
\153\032\324\241\252\322\167\225\076\210\345\007\237\266\160\146
\040\050\244\210\354\160\065\257\263\062\377\067\023\112\236\274
\001\003\336\204\301\270\306\346\145\107\211\362\023\125\277\315
\245\036\010\140\177\255\177\350\141\222\051\317\011\107\136\013
\034\300\037\244\277\362\133\274\230\357\231\114\314\160\153\266
\272\320\050\035\277\276\004\243\102\060\100\060\035\006\003\125
\035\016\004\026\004\024\163\172\153\226\333\102\007\213\122\146

\302\144\062\027\376\340\147\220\056\255\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\012\006\010\052
\206\110\316\075\004\003\003\003\147\000\060\144\002\060\067\104
\365\062\200\343\161\353\364\155\317\174\314\221\232\303\156\161
\330\322\043\135\222\115\202\102\155\134\141\225\366\221\365\247
\010\366\152\227\351\234\224\055\230\160\375\063\266\011\002\060
\007\074\057\271\130\202\136\017\243\142\250\223\147\360\040\303
\151\277\003\054\073\120\247\073\257\101\070\311\122\110\221\326
\016\373\274\140\060\174\144\077\022\036\105\177\121\076\364\246
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert SMIME ECC P384 Root G5"
Issuer: CN=DigiCert SMIME ECC P384 Root G5,O="DigiCert, Inc.",C=US
Serial Number:05:3f:6e:a0:06:01:72:7d:ed:3f:c3:a3:b6:a3:d6:ef
Subject: CN=DigiCert SMIME ECC P384 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
E8:E8:17:65:36:A6:0C:C2:C4:E1:01:87:C3:BE:FC:A2:0E:F2:63:49:70:18:F5:66:D5:BE:A0:F9:4D:0C:11:1B
Fingerprint (SHA1): 1C:B8:A7:08:C9:0D:20:79:01:A0:B2:36:7F:F0:95:65:E4:53:24:FE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert SMIME ECC P384 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\034\270\247\010\311\015\040\171\001\240\262\066\177\360\225\145
\344\123\044\376
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\246\376\364\122\066\104\330\356\015\267\003\013\357\164\263\003
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\003\023\037\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\105\103\103\040\120\063\070\064\040\122\157\157\164\040
\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\077\156\240\006\001\162\175\355\077\303\243\266\243
\326\357
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert SMIME RSA4096 Root G5"
#
Issuer: CN=DigiCert SMIME RSA4096 Root G5,O="DigiCert, Inc.",C=US
Serial Number:05:f6:ba:04:23:83:46:cb:7d:5c:e6:b9:5b:ba:1c:55
Subject: CN=DigiCert SMIME RSA4096 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
90:37:0D:3E:FA:88:BF:58:C3:01:05:BA:25:10:4A:35:84:60:A7:FA:52:DF:C2:01:1D:F2:33:A0:F4:17:91:2A
Fingerprint (SHA1): 5B:C5:AD:E2:9A:A7:54:DA:84:89:53:A5:FE:D7:5B:46:86:D0:57:08
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert SMIME RSA4096 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\047\060\045\006\003\125\004
\003\023\036\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\122\123\101\064\060\071\066\040\122\157\157\164\040\107
\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\047\060\045\006\003\125\004
\003\023\036\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\122\123\101\064\060\071\066\040\122\157\157\164\040\107
\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
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\034\125
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CKA_VALUE MULTILINE_OCTAL
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\366\272\004\043\203\106\313\175\134\346\271\133\272\034\125\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\117
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060

\025\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164
\054\040\111\156\143\056\061\047\060\045\006\003\125\004\003\023
\036\104\151\147\151\103\145\162\164\040\123\115\111\115\105\040
\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065\060
\036\027\015\062\061\060\061\061\065\060\060\060\060\060\060\132
\027\015\064\066\060\061\061\064\062\063\065\071\065\071\132\060
\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027
\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145\162
\164\054\040\111\156\143\056\061\047\060\045\006\003\125\004\003
\023\036\104\151\147\151\103\145\162\164\040\123\115\111\115\105
\040\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\340\152\133\331\370\371\175\354\265\173\357\137\335\134\064
\330\332\135\321\313\145\165\253\041\174\133\000\324\202\157\105
\205\101\212\251\022\002\162\062\360\024\365\003\165\273\143\227
\111\017\100\231\013\032\036\126\247\322\320\341\253\335\345\004
\033\343\037\024\022\002\210\365\240\200\011\366\047\232\120\360
\272\343\242\340\254\152\024\221\265\153\070\020\172\242\061\341
\221\033\267\271\360\053\133\310\167\011\166\267\121\304\066\012
\231\123\124\104\045\267\011\065\206\027\005\126\223\075\101\267
\002\327\142\037\212\222\021\207\352\021\155\352\010\021\334\261
\170\110\111\222\366\264\121\200\170\043\330\376\341\126\032\072
\220\023\126\064\211\325\342\225\213\137\336\262\314\373\077\070
\267\205\367\352\236\277\056\241\056\057\115\175\152\021\056\066
\240\377\021\010\004\225\125\340\033\073\147\223\251\224\125\352
\062\355\006\072\177\302\177\343\255\023\047\321\064\101\263\060
\303\277\264\210\370\003\202\244\337\076\253\170\167\240\131\223
\161\347\335\353\000\004\173\314\110\071\050\340\036\243\025\151
\310\066\262\241\013\227\337\125\326\357\221\234\244\366\026\367
\121\012\356\003\043\221\334\004\377\340\335\070\366\042\003\000
\302\007\161\032\022\311\327\106\052\224\033\315\326\273\033\356
\277\276\115\120\130\260\013\315\060\166\051\365\317\345\266\152
\057\166\260\260\151\152\320\155\145\030\065\176\223\274\162\027
\301\125\102\315\057\302\045\273\364\375\035\241\144\042\124\135
\342\236\162\101\204\156\161\226\352\105\007\266\136\172\112\206
\235\163\144\167\070\003\322\017\123\245\125\040\304\115\377\150
\157\125\251\352\335\161\344\117\331\205\243\174\116\051\002\236
\013\011\362\032\123\314\000\246\335\321\064\366\015\301\060\261
\234\002\144\254\065\355\245\260\051\261\322\225\063\017\322\040
\063\275\354\043\113\362\031\371\332\230\144\344\054\061\037\056
\341\215\034\004\225\050\115\214\130\315\113\345\163\202\206\214
\354\250\326\171\134\373\144\273\334\014\114\050\366\027\257\342
\150\326\026\206\230\333\374\001\334\061\272\370\234\016\371\050
\106\112\341\375\226\006\105\171\021\150\027\145\134\213\046\207
\133\002\003\001\000\001\243\102\060\100\060\035\006\003\125\035
\016\004\026\004\024\321\243\324\127\035\117\125\333\165\114\134
\102\236\143\026\316\264\306\073\037\060\016\006\003\125\035\017

\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\015\006\011\052\206
\110\206\367\015\001\001\014\005\000\003\202\002\001\000\007\247
\012\336\123\273\232\353\160\277\262\066\220\315\344\247\270\361
\014\344\135\132\035\170\145\374\311\270\036\043\021\127\174\151
\065\155\001\377\123\120\277\007\016\272\307\001\077\130\052\224
\165\003\253\034\013\043\334\033\212\036\067\075\035\130\217\163
\331\263\052\157\337\020\240\133\014\247\312\260\177\271\044\242
\001\065\062\345\136\106\101\353\330\177\163\347\102\351\244\121
\046\167\201\012\250\353\017\012\120\235\176\212\040\147\374\013
\216\072\021\323\305\214\140\030\331\113\261\374\324\361\264\111
\116\256\207\341\321\373\166\241\137\363\006\317\227\226\014\351
\236\165\201\134\123\015\042\374\066\346\111\156\164\333\000\205
\215\174\042\240\216\373\020\114\324\142\023\133\357\113\162\046
\213\374\116\212\217\376\227\020\123\305\170\213\102\144\033\137
\340\211\375\273\011\177\120\340\124\205\046\021\152\035\145\371
\111\051\334\174\066\337\373\075\367\322\254\356\062\215\156\246
\175\071\234\105\304\312\015\365\073\264\171\123\245\057\126\307
\121\305\212\114\144\135\220\103\043\216\153\114\027\170\314\350
\277\365\073\344\250\110\317\255\233\014\337\062\112\323\331\022
\216\043\170\015\055\257\237\257\236\074\011\302\227\000\355\072
\151\034\161\077\071\337\323\217\304\146\365\357\066\224\017\363
\335\222\266\226\137\220\246\335\163\252\246\040\224\224\045\152
\011\014\162\344\023\043\140\114\243\312\027\056\173\147\000\333
\320\315\352\172\037\071\046\127\211\060\167\313\116\345\225\105
\117\137\373\066\134\075\371\040\265\072\020\045\117\223\062\132
\356\301\226\350\351\126\004\260\111\141\115\354\170\250\235\030
\301\377\330\352\057\126\357\225\053\173\004\136\147\343\125\100
\355\071\004\371\013\171\365\152\214\134\017\211\232\220\307\315
\213\336\333\046\065\241\156\315\263\102\362\242\017\073\014\216
\223\377\024\317\374\367\223\367\344\101\010\156\031\122\021\017
\123\031\163\170\014\317\330\205\201\370\255\125\310\260\236\106
\143\257\234\122\356\134\277\360\300\133\067\036\011\040\322\076
\043\306\241\025\112\016\066\176\060\305\171\152\274\042\210\331
\014\122\100\037\335\116\017\147\046\026\322\255\027\034
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert SMIME RSA4096 Root G5"
Issuer: CN=DigiCert SMIME RSA4096 Root G5,O="DigiCert, Inc.",C=US
Serial Number:05:f6:ba:04:23:83:46:cb:7d:5c:e6:b9:5b:ba:1c:55
Subject: CN=DigiCert SMIME RSA4096 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
90:37:0D:3E:FA:88:BF:58:C3:01:05:BA:25:10:4A:35:84:60:A7:FA:52:DF:C2:01:1D:F2:33:A0:F4:17:91:2A

Fingerprint (SHA1): 5B:C5:AD:E2:9A:A7:54:DA:84:89:53:A5:FE:D7:5B:46:86:D0:57:08
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert SMIME RSA4096 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\133\305\255\342\232\247\124\332\204\211\123\245\376\327\133\106
\206\320\127\010
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\321\173\340\265\077\065\162\237\175\276\013\245\244\035\251\156
END
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\047\060\045\006\003\125\004
\003\023\036\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\122\123\101\064\060\071\066\040\122\157\157\164\040\107
\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\366\272\004\043\203\106\313\175\134\346\271\133\272
\034\125
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certainly Root R1"
#
Issuer: CN=Certainly Root R1,O=Certainly,C=US
Serial Number:00:8e:0f:f9:4b:90:71:68:65:33:54:f4:d4:44:39:b7:e0
Subject: CN=Certainly Root R1,O=Certainly,C=US
Not Valid Before: Thu Apr 01 00:00:00 2021
Not Valid After : Sun Apr 01 00:00:00 2046
Fingerprint (SHA-256):
77:B8:2C:D8:64:4C:43:05:F7:AC:C5:CB:15:6B:45:67:50:04:03:3D:51:C6:0C:62:02:A8:E0:C3:34:67:D3:A0
Fingerprint (SHA1): A0:50:EE:0F:28:71:F4:27:B2:12:6D:6F:50:96:25:BA:CC:86:42:AF
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certainly Root R1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\122\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\122\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
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\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022
\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151\156
\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145\162
\164\141\151\156\154\171\040\122\157\157\164\040\122\061\060\036
\027\015\062\061\060\064\060\061\060\060\060\060\060\060\132\027
\015\064\066\060\064\060\061\060\060\060\060\060\060\132\060\075
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022\060
\020\006\003\125\004\012\023\011\103\145\162\164\141\151\156\154
\171\061\032\060\030\006\003\125\004\003\023\021\103\145\162\164
\141\151\156\154\171\040\122\157\157\164\040\122\061\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\320\066
\324\037\352\335\253\344\321\266\346\373\042\300\335\023\015\152
\173\042\023\034\227\074\150\143\146\062\234\003\265\215\244\201
\203\332\170\060\021\317\334\262\053\276\222\277\216\344\304\023
\276\244\150\114\332\002\150\026\164\276\262\335\004\344\153\052
\335\067\037\140\054\333\365\367\241\174\225\267\014\160\206\056
\361\072\357\122\367\314\323\233\371\213\276\016\337\061\267\235
\150\134\222\246\365\345\363\012\064\265\377\173\242\344\207\241
\306\257\027\000\357\003\221\355\251\034\116\161\075\322\213\154
\211\364\170\206\346\152\111\240\316\265\322\260\253\233\366\364
\324\056\343\162\371\066\306\353\025\267\045\214\072\374\045\015
\263\042\163\041\164\310\112\226\141\222\365\057\013\030\245\364
\255\342\356\101\275\001\171\372\226\214\215\027\002\060\264\371
\257\170\032\214\264\066\020\020\007\005\160\320\364\061\220\212
\121\305\206\046\171\262\021\210\136\305\360\012\124\315\111\246
\277\002\234\322\104\247\355\343\170\357\106\136\155\161\321\171
\160\034\106\137\121\351\311\067\334\137\176\151\173\101\337\064

\105\340\073\204\364\241\212\012\066\236\067\314\142\122\341\211
\015\050\371\172\043\261\015\075\075\232\375\235\201\357\054\220
\300\173\104\116\273\111\340\016\112\126\222\274\313\265\335\171
\027\211\221\336\141\211\164\222\250\343\062\205\276\116\205\244
\113\131\313\053\305\170\216\161\124\320\002\067\231\214\345\111
\352\340\124\162\244\021\006\057\013\214\301\133\276\265\241\260
\123\156\234\270\140\221\037\131\153\371\055\364\224\012\227\265
\354\305\166\003\124\033\145\122\272\114\222\126\121\065\240\100
\330\051\333\256\122\166\073\055\060\100\233\212\320\102\126\264
\267\210\001\244\207\073\123\226\315\243\026\217\363\146\252\027
\261\307\140\340\301\103\005\014\356\233\133\140\157\006\134\207
\133\047\371\100\021\236\234\063\301\267\345\065\127\005\177\047
\316\027\040\214\034\374\361\373\332\061\051\111\355\365\013\204
\247\117\301\366\116\302\050\234\372\356\340\257\007\373\063\021
\172\041\117\013\041\020\266\100\072\253\042\072\004\234\213\233
\204\206\162\232\322\247\245\304\264\165\221\251\053\043\002\003
\001\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
\026\004\024\340\252\077\045\215\237\104\134\301\072\350\056\256
\167\114\204\076\147\014\364\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\002\001\000\271\127\257\270\022
\332\127\203\217\150\013\063\035\003\123\125\364\225\160\344\053
\075\260\071\353\372\211\142\375\367\326\030\004\057\041\064\335
\361\150\360\325\226\132\336\302\200\243\301\215\306\152\367\131
\167\256\025\144\317\133\171\005\167\146\352\214\323\153\015\335
\361\131\054\301\063\245\060\200\025\105\007\105\032\061\042\266
\222\000\253\231\115\072\217\167\257\251\042\312\057\143\312\025
\326\307\306\360\075\154\374\034\015\230\020\141\236\021\242\042
\327\012\362\221\172\153\071\016\057\060\303\066\111\237\340\351
\017\002\104\120\067\224\125\175\352\237\366\073\272\224\245\114
\351\274\076\121\264\350\312\222\066\124\155\134\045\050\332\335
\255\024\375\323\356\342\042\005\353\320\362\267\150\022\327\132
\212\101\032\306\222\245\132\073\143\105\117\277\341\072\167\042
\057\134\277\106\371\132\003\205\023\102\137\312\336\123\327\142
\265\246\065\004\302\107\377\231\375\204\337\134\316\351\136\200
\050\101\362\175\347\036\220\330\117\166\076\202\074\015\374\245
\003\372\173\032\331\105\036\140\332\304\216\371\374\053\311\173
\225\305\052\377\252\211\337\202\061\017\162\377\014\047\327\012
\036\126\000\120\036\014\220\301\226\265\330\024\205\273\247\015
\026\301\370\007\044\033\272\205\241\032\005\011\200\272\225\143
\311\072\354\045\237\177\235\272\244\107\025\233\104\160\361\152
\113\326\070\136\103\363\030\176\120\156\351\132\050\346\145\346
\167\033\072\375\035\276\003\046\243\333\324\341\273\176\226\047
\053\035\356\244\373\332\045\124\023\003\336\071\306\303\037\115
\220\354\217\033\112\322\034\355\205\225\070\120\171\106\326\301
\220\120\061\251\134\232\156\035\365\063\126\213\247\231\322\362
\310\054\063\223\222\060\307\116\214\145\063\020\144\027\375\044

\027\226\321\215\302\072\152\053\353\023\213\104\362\041\363\112
\032\267\167\137\327\355\210\244\162\345\071\037\225\235\276\147
\301\160\021\075\273\364\370\111\267\343\046\227\072\237\322\137
\174\373\300\231\174\071\051\340\173\035\277\015\247\217\322\051
\064\156\044\025\313\336\220\136\277\032\304\146\352\302\346\272
\071\137\212\231\251\101\131\007\260\054\257
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certainly Root R1"
Issuer: CN=Certainly Root R1,O=Certainly,C=US
Serial Number:00:8e:0f:f9:4b:90:71:68:65:33:54:f4:d4:44:39:b7:e0
Subject: CN=Certainly Root R1,O=Certainly,C=US
Not Valid Before: Thu Apr 01 00:00:00 2021
Not Valid After : Sun Apr 01 00:00:00 2046
Fingerprint (SHA-256):
77:B8:2C:D8:64:4C:43:05:F7:AC:C5:CB:15:6B:45:67:50:04:03:3D:51:C6:0C:62:02:A8:E0:C3:34:67:D3:A0
Fingerprint (SHA1): A0:50:EE:0F:28:71:F4:27:B2:12:6D:6F:50:96:25:BA:CC:86:42:AF
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certainly Root R1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\240\120\356\017\050\161\364\047\262\022\155\157\120\226\045\272
\314\206\102\257
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\007\160\324\076\202\207\240\372\063\066\023\364\372\063\347\022
END
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\122\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\216\017\371\113\220\161\150\145\063\124\364\324\104
\071\267\340
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#

Certificate "Certainly Root E1"
#
Issuer: CN=Certainly Root E1,O=Certainly,C=US
Serial Number:06:25:33:b1:47:03:33:27:5c:f9:8d:9a:b9:bf:cc:f8
Subject: CN=Certainly Root E1,O=Certainly,C=US
Not Valid Before: Thu Apr 01 00:00:00 2021
Not Valid After : Sun Apr 01 00:00:00 2046
Fingerprint (SHA-256):
B4:58:5F:22:E4:AC:75:6A:4E:86:12:A1:36:1C:5D:9D:03:1A:93:FD:84:FE:BB:77:8F:A3:06:8B:0F:C4:2D:C2
Fingerprint (SHA1): F9:E1:6D:DC:01:89:CF:D5:82:45:63:3E:C5:37:7D:C2:EB:93:6F:2B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certainly Root E1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\105\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\105\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\006\045\063\261\107\003\063\047\134\371\215\232\271\277
\314\370
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\367\060\202\001\175\240\003\002\001\002\002\020\006
\045\063\261\107\003\063\047\134\371\215\232\271\277\314\370\060
\012\006\010\052\206\110\316\075\004\003\003\060\075\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\022\060\020\006\003
\125\004\012\023\011\103\145\162\164\141\151\156\154\171\061\032
\060\030\006\003\125\004\003\023\021\103\145\162\164\141\151\156
\154\171\040\122\157\157\164\040\105\061\060\036\027\015\062\061
\060\064\060\061\060\060\060\060\060\060\132\027\015\064\066\060
\064\060\061\060\060\060\060\060\060\132\060\075\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\022\060\020\006\003\125
\004\012\023\011\103\145\162\164\141\151\156\154\171\061\032\060
\030\006\003\125\004\003\023\021\103\145\162\164\141\151\156\154
\171\040\122\157\157\164\040\105\061\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000

\004\336\157\370\177\034\337\355\371\107\207\206\261\244\300\212
\370\202\227\200\352\217\310\112\136\052\175\210\150\247\001\142
\024\221\044\172\134\236\243\027\175\212\206\041\064\030\120\033
\020\336\320\067\113\046\307\031\140\200\351\064\275\140\031\066
\100\326\051\207\011\074\221\172\366\274\023\043\335\131\116\004
\136\317\310\002\034\030\123\301\061\330\332\040\351\104\215\344
\166\243\102\060\100\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\363\050\030\313\144\165\356\051\052\353\355\256\043\130\070
\205\353\310\042\007\060\012\006\010\052\206\110\316\075\004\003
\003\003\150\000\060\145\002\061\000\261\216\132\040\303\262\031
\142\115\336\260\117\337\156\322\160\212\361\237\176\152\214\346
\272\336\203\151\312\151\263\251\005\265\226\222\027\207\302\322
\352\320\173\316\330\101\133\174\256\002\060\106\336\352\313\135
\232\354\062\302\145\026\260\114\060\134\060\363\332\116\163\206
\006\330\316\211\004\110\067\067\370\335\063\121\235\160\257\173
\125\330\001\056\175\005\144\016\206\270\221
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certainly Root E1"
Issuer: CN=Certainly Root E1,O=Certainly,C=US
Serial Number:06:25:33:b1:47:03:33:27:5c:f9:8d:9a:b9:bf:cc:f8
Subject: CN=Certainly Root E1,O=Certainly,C=US
Not Valid Before: Thu Apr 01 00:00:00 2021
Not Valid After : Sun Apr 01 00:00:00 2046
Fingerprint (SHA-256):
B4:58:5F:22:E4:AC:75:6A:4E:86:12:A1:36:1C:5D:9D:03:1A:93:FD:84:FE:BB:77:8F:A3:06:8B:0F:C4:2D:C2
Fingerprint (SHA1): F9:E1:6D:DC:01:89:CF:D5:82:45:63:3E:C5:37:7D:C2:EB:93:6F:2B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certainly Root E1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\371\341\155\334\001\211\317\325\202\105\143\076\305\067\175\302
\353\223\157\053
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\012\236\312\315\076\122\120\306\066\363\113\243\355\247\123\351
END
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145

\162\164\141\151\156\154\171\040\122\157\157\164\040\105\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\006\045\063\261\107\003\063\047\134\371\215\232\271\277
\314\370
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "E-Tugra Global Root CA RSA v3"
#
Issuer: CN=E-Tugra Global Root CA RSA v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Serial Number:0d:4d:c5:cd:16:22:95:96:08:7e:b8:0b:7f:15:06:34:fb:79:10:34
Subject: CN=E-Tugra Global Root CA RSA v3,OU=E-Tugra Trust Center,O=E-Tugra EBG
A.S.,L=Ankara,C=TR
Not Valid Before: Wed Mar 18 09:07:17 2020
Not Valid After : Sun Mar 12 09:07:17 2045
Fingerprint (SHA-256):
EF:66:B0:B1:0A:3C:DB:9F:2E:36:48:C7:6B:D2:AF:18:EA:D2:BF:E6:F1:17:65:5E:28:C4:06:0D:A1:A3:F4:C2
Fingerprint (SHA1): E9:A8:5D:22:14:52:1C:5B:AA:0A:B4:BE:24:6A:23:8A:C9:BA:E2:A9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Global Root CA RSA v3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\122\123\101
\040\166\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006

\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\122\123\101
\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\015\115\305\315\026\042\225\226\010\176\270\013\177\025
\006\064\373\171\020\064
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\363\060\202\003\333\240\003\002\001\002\002\024\015
\115\305\315\026\042\225\226\010\176\270\013\177\025\006\064\373
\171\020\064\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\201\200\061\013\060\011\006\003\125\004\006\023\002
\124\122\061\017\060\015\006\003\125\004\007\023\006\101\156\153
\141\162\141\061\031\060\027\006\003\125\004\012\023\020\105\055
\124\165\147\162\141\040\105\102\107\040\101\056\123\056\061\035
\060\033\006\003\125\004\013\023\024\105\055\124\165\147\162\141
\040\124\162\165\163\164\040\103\145\156\164\145\162\061\046\060
\044\006\003\125\004\003\023\035\105\055\124\165\147\162\141\040
\107\154\157\142\141\154\040\122\157\157\164\040\103\101\040\122
\123\101\040\166\063\060\036\027\015\062\060\060\063\061\070\060
\071\060\067\061\067\132\027\015\064\065\060\063\061\062\060\071
\060\067\061\067\132\060\201\200\061\013\060\011\006\003\125\004
\006\023\002\124\122\061\017\060\015\006\003\125\004\007\023\006
\101\156\153\141\162\141\061\031\060\027\006\003\125\004\012\023
\020\105\055\124\165\147\162\141\040\105\102\107\040\101\056\123
\056\061\035\060\033\006\003\125\004\013\023\024\105\055\124\165
\147\162\141\040\124\162\165\163\164\040\103\145\156\164\145\162
\061\046\060\044\006\003\125\004\003\023\035\105\055\124\165\147
\162\141\040\107\154\157\142\141\154\040\122\157\157\164\040\103
\101\040\122\123\101\040\166\063\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\242\146\360\211\267\162\173
\356\011\311\143\322\323\103\335\136\303\246\204\070\112\361\215
\201\273\024\275\107\350\100\027\363\075\303\170\105\162\246\056
\220\336\232\072\324\040\161\312\274\237\035\113\227\012\307\061
\272\076\327\376\045\251\052\216\066\364\321\057\307\267\251\135
\063\334\060\160\370\100\154\113\262\246\061\141\321\064\074\075
\061\172\307\257\304\247\247\204\341\227\244\350\113\366\027\174
\356\074\007\355\342\212\127\334\266\373\370\103\045\120\352\047
\201\250\206\274\217\122\112\226\072\140\032\226\273\375\163\364
\205\375\203\375\177\204\155\064\154\177\152\267\113\001\003\277
\255\151\267\327\062\331\365\127\152\351\206\202\076\245\146\061
\263\026\075\302\363\046\140\062\323\122\036\260\154\244\067\076
\364\365\257\353\341\337\200\006\317\052\101\347\146\011\341\113
\227\347\167\275\041\155\051\266\147\303\055\176\355\326\171\145
\321\317\072\266\321\261\136\126\141\120\172\132\316\116\120\061
\200\003\230\107\347\344\030\174\104\132\306\244\263\073\306\306

\303\072\360\154\303\213\310\244\221\005\363\365\331\266\252\006
\241\267\253\344\261\352\041\024\134\203\244\374\377\266\120\323
\214\022\046\231\166\160\351\300\017\246\164\374\273\320\033\170
\316\162\222\342\050\234\274\346\351\011\330\072\323\211\346\276
\056\167\337\001\012\157\226\366\345\215\074\115\122\166\032\126
\341\163\176\027\254\075\255\154\243\122\022\030\160\346\200\116
\063\362\176\046\062\254\005\215\070\244\346\166\074\237\020\151
\016\155\235\322\301\171\040\153\133\317\063\215\321\224\166\065
\347\135\125\307\267\254\050\253\106\314\347\073\041\265\012\012
\344\112\131\334\201\065\113\104\225\022\012\147\245\241\377\133
\000\007\322\300\314\371\077\374\237\063\362\000\370\214\154\207
\235\006\055\361\357\343\346\006\372\305\146\023\133\374\120\007
\236\161\206\262\332\157\164\060\317\223\123\350\334\042\326\336
\040\037\141\215\243\056\243\170\062\220\154\334\254\062\265\005
\344\365\074\063\015\326\340\207\167\027\114\235\260\330\011\250
\015\127\367\104\205\360\310\004\276\134\135\132\343\027\216\124
\143\151\177\111\164\144\005\214\243\002\003\001\000\001\243\143
\060\141\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\037\006\003\125\035\043\004\030\060\026\200\024
\262\264\256\346\055\367\046\325\252\165\055\166\113\300\033\123
\041\320\110\357\060\035\006\003\125\035\016\004\026\004\024\262
\264\256\346\055\367\046\325\252\165\055\166\113\300\033\123\041
\320\110\357\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\211\250\162\177\214\353\316\056\030
\304\020\200\055\020\014\377\373\024\315\004\340\024\074\116\232
\373\237\051\277\042\236\127\271\202\163\022\143\046\265\314\220
\351\322\052\051\356\234\055\314\054\231\276\105\047\344\261\161
\355\344\070\225\061\101\362\175\172\143\170\337\312\066\026\057
\202\210\237\274\021\107\117\166\115\310\055\216\353\337\055\174
\116\073\332\256\366\343\332\135\024\246\256\350\205\104\235\006
\156\216\373\357\172\112\152\055\053\050\030\376\277\220\054\165
\026\237\017\352\226\175\005\356\233\023\245\104\154\370\003\320
\335\043\341\375\003\022\022\010\364\030\064\263\340\067\013\167
\021\001\110\277\141\264\265\370\031\331\313\115\352\243\214\357
\375\360\006\265\155\222\364\112\141\120\204\355\354\111\323\344
\276\150\346\056\343\061\013\124\013\032\222\326\202\330\266\242
\145\074\146\004\371\125\332\154\373\333\265\024\146\115\224\203
\073\315\036\246\053\262\376\167\100\206\253\347\337\012\311\375
\366\335\207\126\030\330\260\054\125\140\226\372\010\176\122\220
\365\113\246\056\207\174\313\040\333\006\076\240\135\003\167\175
\242\074\023\033\051\242\023\125\240\075\024\042\257\157\270\320
\232\033\162\335\005\001\215\206\140\277\244\147\356\265\245\015
\321\177\346\032\053\142\146\303\007\272\347\240\110\034\070\303
\351\105\373\247\177\374\355\002\150\032\312\167\022\167\246\000
\125\050\024\354\326\307\022\242\033\145\102\351\221\350\313\076
\207\211\124\135\331\257\235\227\234\151\347\012\377\017\132\170
\213\143\052\114\175\107\224\077\336\113\351\123\320\060\361\305

\366\236\111\337\073\240\221\243\243\376\315\130\314\352\337\257
\157\050\073\240\151\233\217\354\254\256\053\124\235\233\004\261
\107\040\257\226\022\076\143\224\035\004\347\056\273\206\307\014
\232\210\277\166\107\357\367\260\013\227\146\322\104\317\140\122
\007\341\325\054\112\072\047\141\167\312\327\217\347\207\016\060
\377\014\273\004\342\141\303\242\310\227\141\216\264\060\152\074
\155\302\007\137\112\163\057\077\371\026\212\001\146\357\272\221
\312\122\127\173\256\324\346\017\335\013\172\177\213\236\046\040
\317\073\357\201\161\203\131
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "E-Tugra Global Root CA RSA v3"
Issuer: CN=E-Tugra Global Root CA RSA v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Serial Number:0d:4d:c5:cd:16:22:95:96:08:7e:b8:0b:7f:15:06:34:fb:79:10:34
Subject: CN=E-Tugra Global Root CA RSA v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Not Valid Before: Wed Mar 18 09:07:17 2020
Not Valid After : Sun Mar 12 09:07:17 2045
Fingerprint (SHA-256): EF:66:B0:B1:0A:3C:DB:9F:2E:36:48:C7:6B:D2:AF:18:EA:D2:BF:E6:F1:17:65:5E:28:C4:06:0D:A1:A3:F4:C2
Fingerprint (SHA1): E9:A8:5D:22:14:52:1C:5B:AA:0A:B4:BE:24:6A:23:8A:C9:BA:E2:A9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Global Root CA RSA v3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\351\250\135\042\024\122\034\133\252\012\264\276\044\152\043\212
\311\272\342\251
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\042\276\020\366\302\370\003\210\163\137\063\051\107\050\107\244
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\122\123\101
\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\024\015\115\305\315\026\042\225\226\010\176\270\013\177\025
\006\064\373\171\020\064
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "E-Tugra Global Root CA ECC v3"
#
Issuer: CN=E-Tugra Global Root CA ECC v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Serial Number:26:46:19:77:31:e1:4f:6f:28:36:de:39:51:86:e6:d4:97:88:22:c1
Subject: CN=E-Tugra Global Root CA ECC v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Not Valid Before: Wed Mar 18 09:46:58 2020
Not Valid After : Sun Mar 12 09:46:58 2045
Fingerprint (SHA-256): 87:3F:46:85:FA:7F:56:36:25:25:2E:6D:36:BC:D7:F1:6F:C2:49:51:F2:64:E4:7E:1B:95:4F:49:08:CD:CA:13
Fingerprint (SHA1): 8A:2F:AF:57:53:B1:B0:E6:A1:04:EC:5B:6A:69:71:6D:F6:1C:E2:84
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Global Root CA ECC v3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\105\103\103
\040\166\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\105\103\103
\040\166\063

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\046\106\031\167\061\341\117\157\050\066\336\071\121\206
\346\324\227\210\042\301
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\245\060\202\002\052\240\003\002\001\002\002\024\046
\106\031\167\061\341\117\157\050\066\336\071\121\206\346\324\227
\210\042\301\060\012\006\010\052\206\110\316\075\004\003\003\060
\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122\061
\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162\141
\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165\147
\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033\006
\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124\162
\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006\003
\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154\157
\142\141\154\040\122\157\157\164\040\103\101\040\105\103\103\040
\166\063\060\036\027\015\062\060\060\063\061\070\060\071\064\066
\065\070\132\027\015\064\065\060\063\061\062\060\071\064\066\065
\070\132\060\201\200\061\013\060\011\006\003\125\004\006\023\002
\124\122\061\017\060\015\006\003\125\004\007\023\006\101\156\153
\141\162\141\061\031\060\027\006\003\125\004\012\023\020\105\055
\124\165\147\162\141\040\105\102\107\040\101\056\123\056\061\035
\060\033\006\003\125\004\013\023\024\105\055\124\165\147\162\141
\040\124\162\165\163\164\040\103\145\156\164\145\162\061\046\060
\044\006\003\125\004\003\023\035\105\055\124\165\147\162\141\040
\107\154\157\142\141\154\040\122\157\157\164\040\103\101\040\105
\103\103\040\166\063\060\166\060\020\006\007\052\206\110\316\075
\002\001\006\005\053\201\004\000\042\003\142\000\004\216\230\051
\277\307\020\036\047\333\253\003\314\050\054\330\136\110\031\020
\051\314\313\131\201\314\214\270\222\027\211\203\052\222\366\303
\244\035\114\142\325\237\326\240\106\334\034\274\166\301\343\107
\320\133\023\332\347\245\263\146\110\347\041\232\112\117\206\012
\175\154\352\115\062\200\012\262\172\011\233\151\113\230\201\342
\056\354\002\160\226\037\375\365\106\316\312\334\202\243\143\060
\141\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\037\006\003\125\035\043\004\030\060\026\200\024\377
\202\061\162\076\371\304\146\154\255\070\236\321\260\121\210\245
\220\314\365\060\035\006\003\125\035\016\004\026\004\024\377\202
\061\162\076\371\304\146\154\255\070\236\321\260\121\210\245\220
\314\365\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\012\006\010\052\206\110\316\075\004\003\003\003\151
\000\060\146\002\061\000\346\005\130\151\141\345\055\312\015\313
\361\031\010\275\326\375\121\222\032\176\143\124\004\220\221\232
\065\221\071\231\372\007\251\146\223\272\310\150\324\212\077\372
\355\156\026\002\047\267\002\061\000\335\132\027\053\166\035\145
\102\226\246\254\135\212\171\126\330\212\033\337\232\336\137\307
\120\217\261\133\161\014\046\337\152\100\000\354\063\221\041\161

\276\150\344\043\244\331\255\241\067
END
CKA_NSS_MOZILLA_CA_POLICY CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "E-Tugra Global Root CA ECC v3"
Issuer: CN=E-Tugra Global Root CA ECC v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Serial Number:26:46:19:77:31:e1:4f:6f:28:36:de:39:51:86:e6:d4:97:88:22:c1
Subject: CN=E-Tugra Global Root CA ECC v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Not Valid Before: Wed Mar 18 09:46:58 2020
Not Valid After : Sun Mar 12 09:46:58 2045
Fingerprint (SHA-256): 87:3F:46:85:FA:7F:56:36:25:25:2E:6D:36:BC:D7:F1:6F:C2:49:51:F2:64:E4:7E:1B:95:4F:49:08:CD:CA:13
Fingerprint (SHA1): 8A:2F:AF:57:53:B1:B0:E6:A1:04:EC:5B:6A:69:71:6D:F6:1C:E2:84
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Global Root CA ECC v3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\212\057\257\127\123\261\260\346\241\004\354\133\152\151\161\155
\366\034\342\204
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\106\274\201\273\361\265\036\367\113\226\274\024\342\347\047\144
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\105\103\103
\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\046\106\031\167\061\341\117\157\050\066\336\071\121\206
\346\324\227\210\042\301
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Found in path(s):
* /opt/cola/permits/1376394069_1659497040.3993607/0/ca-certificates-20220614-tar-bz2/ca-certificates-20220614/certdata.txt
No license file was found, but licenses were detected in source scan.

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Found in path(s):
* /opt/cola/permits/1376394069_1659497040.3993607/0/ca-certificates-20220614-tar-bz2/ca-certificates-20220614/mk-ca-bundle.pl

1.801 strongswan 5.9.5-r2

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Version 2, June 1991

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cmd/krb5/kadmin/server/ipropd_svc.c
cmd/krb5/kproplog/kproplog.c
cmd/krb5/slave/kpropd_rpc.c
lib/gss_mechs/mech_krb5/et/kdb5_err.c
lib/gss_mechs/mech_spnego/mech/gssapiP_spnego.h
lib/gss_mechs/mech_spnego/mech/spnego_mech.c

lib/krb5/kadm5/kadm_host_srv_names.c
lib/krb5/kdb/kdb_convert.c
lib/krb5/kdb/kdb_hdr.h
lib/krb5/kdb/kdb_log.c
lib/krb5/kdb/kdb_log.h
lib/libgss/g_accept_sec_context.c
lib/libgss/g_acquire_cred.c
lib/libgss/g_canon_name.c
lib/libgss/g_compare_name.c
lib/libgss/g_context_time.c
lib/libgss/g_delete_sec_context.c
lib/libgss/g_dsp_name.c
lib/libgss/g_dsp_status.c
lib/libgss/g_dup_name.c
lib/libgss/g_exp_sec_context.c
lib/libgss/g_export_name.c
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lib/libgss/g_utils.c
lib/libgss/g_verify.c
lib/libgss/gssd_pname_to_uid.c
uts/common/gssapi/include/gssapi_err_generic.h
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lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
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lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
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1.808 zlib 1.2.11

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1.809 otel-sdk 1.0.1

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```
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```
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*/
```

For lib/py/compat/win32/stdint.h

Codegen template in t_html_generator.h

For t_cl_generator.cc

1.810 html5lib 1.1

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1.814 read 1.0.7

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1.815 etcd-client-pkg 3.5.5

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1.816 iproute 5.17.0-r0

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1.817 e2fsprogs 1.46.5-r0

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```
#
# This is a Makefile stub which handles the creation of BSD shared
# libraries.
#
# In order to use this stub, the following makefile variables must be defined.
#
# BSDLIB_VERSION = 1.0
# BSDLIB_IMAGE = libce
# BSDLIB_MYDIR = et
# BSDLIB_INSTALL_DIR = $(SHLIBDIR)
#

all:: image

real-subdirs:: Makefile
 @echo " MKDIR pic"
 @mkdir -p pic

BSD_LIB = $(BSDLIB_IMAGE).so.$(BSDLIB_VERSION)
BSDLIB_PIC_FLAG = -fpic

image:  $(BSD_LIB)

$(BSD_LIB): $(OBJS)
 (cd pic; ld -Bshareable -o $(BSD_LIB) $(LDFLAGS_SHLIB) $(OBJS))
 $(MV) pic/$(BSD_LIB) .
 $(RM) -f ../$(BSD_LIB)
 (cd ..; $(LN) $(LINK_BUILD_FLAGS) \
  `echo $(my_dir) | sed -e 's;lib/;;'`/$(BSD_LIB) $(BSD_LIB))

install-shlibs install:: $(BSD_LIB)
 @echo " INSTALL_PROGRAM $(BSDLIB_INSTALL_DIR)/$(BSD_LIB)"
 @$(INSTALL_PROGRAM) $(BSD_LIB) \
  $(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)
 @-$(LDCONFIG)

install-strip: install

install-shlibs-strip:: install-shlibs

uninstall-shlibs uninstall::
 $(RM) -f $(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)
```

```
clean::
 $(RM) -rf pic
 $(RM) -f $(BSD_LIB)
 $(RM) -f ../$(BSD_LIB)
```

This package was added to the e2fsprogs debian source package by
Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

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Index: tdbsa/tdb.c
===
--- tdbsa.orig/tdb.c
+++ tdbsa/tdb.c
@@ -4,11 +4,11 @@ Rev: 23371
Last Changed Date: 2007-06-06 20:14:06 -0400 (Wed, 06 Jun 2007)
*/
 /*
-   Unix SMB/CIFS implementation.
+   trivial database library - standalone version

-   trivial database library - private includes
-
-   Copyright (C) Andrew Tridgell   2005
+   Copyright (C) Andrew Tridgell   1999-2005
+   Copyright (C) Jeremy Allison   2000-2006
+   Copyright (C) Paul `Rusty' Russell   2000

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     ** library. This does NOT imply that all of Samba is released
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system utilities (e2fsck, mke2fs, etc.). The EXT2 utilities were
written by Theodore Ts'o <tytso@mit.edu> and Remy Card <card@masi.ibp.fr>.

Sources were obtained from http://sourceforge.net/projects/e2fsprogs

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Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

It is part of the main e2fsprogs distribution, which can be found at:

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1.819 blas 0.3.20-r0

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  * [2013-03-04] Optimize AVX and FMA4 DGEMM on AMD Bulldozer
  * [2013-04-27] Optimize AVX and FMA4 TRSM on AMD Bulldozer
  * [2013-06-09] Optimize AVX and FMA4 SGEMM on AMD Bulldozer
  * [2013-06-11] Optimize AVX and FMA4 ZGEMM on AMD Bulldozer
  * [2013-06-12] Optimize AVX and FMA4 CGEMM on AMD Bulldozer
  * [2013-06-16] Optimize dgemv_n kernel on AMD Bulldozer
  * [2013-06-20] Optimize ddot, daxpy kernel on AMD Bulldozer
  * [2013-06-21] Optimize dcopy kernel on AMD Bulldozer
  * Porting and Optimization on ARM Cortex-A9
  * Optimization on AMD Piledriver
  * Optimization on Intel Haswell

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  * Build LAPACKE: C interface to LAPACK
  * Improve the windows build.

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* [2011-06-11] Make USE_OPENMP=0 disable openmp.

* Stefan Karpinski <stefan@karpinski.org>
 * [2011-12-28] Fix a bug about SystemStubs on Mac OS X.

* Alexander Eberspcher <https://github.com/aeberspaecher>
 * [2012-05-02] Add note on patch for segfaults on Linux kernel 2.6.32.

* Mike Nolta <mike@nolta.net>
 * [2012-05-19] Fix building bug on FreeBSD and NetBSD.

* Sylvestre Ledru <https://github.com/sylvestre>
 * [2012-07-01] Improve the detection of sparc. Fix building bug under
   Hurd and kfreebsd.

* Jameson Nash <https://github.com/vtjnash>
 * [2012-08-20] Provide support for passing CFLAGS, FFLAGS, PFLAGS, FPFLAGS to
   make on the command line.

* Alexander Nasonov <alnsn@yandex.ru>
 * [2012-11-10] Fix NetBSD build.

* Sbastien Villemot <sebastien@debian.org>
 * [2012-11-14] Fix compilation with TARGET=GENERIC. Patch applied to Debian package.
 * [2013-08-28] Avoid failure on qemu guests declaring an Athlon CPU without 3dnow!

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 * [2013-05-17] Fix typo in the document. Re-order the architecture list in getarch.c.

* Kenneth Hoste <kenneth.hoste@gmail.com>
 * [2013-05-22] Adjust Makefile about downloading LAPACK source files.

* Lei WANG <https://github.com/wlbksy>
 * [2013-05-22] Fix a bug about wget.

* Dan Luu <http://www.linkedin.com/in/danluu>
 * [2013-06-30] Add Intel Haswell support (using sandybridge optimizations).

* grisuthedragon <https://github.com/grisuthedragon>
 * [2013-07-11] create openblas_get_parallel to retrieve information which parallelization
   model is used by OpenBLAS.

* Elliot Saba <staticfloat@gmail.com>
 * [2013-07-22] Add in return value for `interface/trtri.c`

* Sbastien Fabbro <bicatali@gentoo.org>
 * [2013-07-24] Modify makefile to respect user's LDFLAGS
 * [2013-07-24] Add stack markings for GNU as arch-independent for assembler files

* Viral B. Shah <viral@mayin.org>
 * [2013-08-21] Patch LAPACK XLASD4.f as discussed in JuliaLang/julia#2340

* Lars Buitinck <https://github.com/larsmans>
 * [2013-08-28] get rid of the generated cblas_noconst.h file
 * [2013-08-28] Missing threshold in gemm.c
 * [2013-08-28] fix default prefix handling in makefiles

* yieldthought <https://github.com/yieldthought>
 * [2013-10-08] Remove -Wl,--retain-symbols-file from dynamic link line to fix tool support

* Keno Fischer <https://github.com/loladiro>
 * [2013-10-23] Use FC instead of CC to link the dynamic library on OS X

* Christopher Meng <cickumqt@gmail.com>
 * [2013-12-09] Add DESTDIR support for easier building on RPM based distros.
   Use install command instead of cp to install files with permissions control.

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 * [2013-12-10] Added support for NO_SHARED in make install.

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 * [2013-12-13] Fixed LAPACKE building bug on Windows

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 * [2014-08-03] Fixed link error on Linux/musl

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 * [2014-10-10] trmm and sgemm kernels (optimized for APM's X-Gene 1).
   ARMv8 support.

* Jerome Robert <jeromerobert@gmx.com>
 * [2015-01-01] Speed-up small `ger` and `gemv` using stack allocation (bug #478)
 * [2015-12-23] `stack_check` in `gemv.c` (bug #722)
 * [2015-12-28] Allow to force the number of parallel make job
 * [2015-12-28] Fix detection of AMD E2-3200 detection
 * [2015-12-31] Let `make MAX_STACK_ALLOC=0` do what expected
 * [2016-01-19] Disable multi-threading in `ger` and `swap` for small matrices (bug #731)
 * [2016-01-24] Use `GEMM_MULTITHREAD_THRESHOLD` as a number of ops (bug #742)
 * [2016-01-26] Let `openblas_get_num_threads` return the number of active threads (bug #760)
 * [2016-01-30] Speed-up small `zger`, `zgemv`, `ztrmv` using stack allocation (bug #727)

* Dan Kortschak
 * [2015-01-07] Added test for drotmg bug #484.

* Ton van den Heuvel <https://github.com/ton>
 * [2015-03-18] Fix race condition during shutdown causing a crash in gotoblas_set_affinity().

* Martin Koehler <https://github.com/grisuthedragon/>
 * [2015-09-07] Improved imatcopy

* Ashwin Sekhar T K <https://github.com/ashwinyes/>
 * [2015-11-09] Assembly kernels for Cortex-A57 (ARMv8)
 * [2015-11-20] lapack-test fixes for Cortex-A57
 * [2016-03-14] Additional functional Assembly Kernels for Cortex-A57
 * [2016-03-14] Optimize Dgemm 4x4 for Cortex-A57

* theoractice <https://github.com/theoractice/>
 * [2016-03-20] Fix compiler error in VisualStudio with CMake
 * [2016-03-22] Fix access violation on Windows while static linking

* Paul Mustire <https://github.com/buffer51/>
 * [2016-02-04] Fix Android build on ARMV7
 * [2016-04-26] Android build with LAPACK for ARMV7 & ARMV8

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 * [2016-05-03] DGEMM optimization for MIPS P5600 and I6400 using MSA

* Kaustubh Raste <https://github.com/ksraste/>
 * [2016-05-09] DTRSM optimization for MIPS P5600 and I6400 using MSA
 * [2016-05-20] STRSM optimization for MIPS P5600 and I6400 using MSA

* Abdelrauf <https://github.com/quickwritereader>
 * [2017-01-01] dgemm and dtrmm kernels for IBM z13
 * [2017-02-26] ztrmm kernel for IBM z13
 * [2017-03-13] strmm and ctrmm kernel for IBM z13
 * [2017-09-01] initial Blas Level-1,2 (double precision) for IBM z13
 * [2018-03-07] added missing Blas Level 1-2 (double precision) simd codes
 * [2019-02-01] added missing Blas Level-1,2 (single precision) simd codes
 * [2019-03-14] power9 dgemm/dtrmm kernel
 * [2019-04-29] power9 sgemm/strmm kernel

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 * [2019-07-29] optimize AVX2 DGEMM
 * [2019-10-20] AVX512 DGEMM kernel (4x8)
 * [2019-11-06] optimize AVX512 SGEMM
 * [2019-11-12] AVX512 CGEMM & ZGEMM kernels
 * [2019-12-23] optimize AVX2 CGEMM and ZGEMM
 * [2019-12-30] AVX2 CGEMM3M & ZGEMM3M kernels
 * [2020-01-07] optimize AVX2 SGEMM and STRMM

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 * [2020-04-15] Half-precision GEMM for bfloat16

* Marius Hillenbrand <https://github.com/mhillenibm>

* [2020-05-12] Revise dynamic architecture detection for IBM z
* [2020-05-12] Add new sgemm and strmm kernel for IBM z14
* [2020-09-07] Fix builds with clang on IBM z, including dynamic architecture support

* Danfeng Zhang <https://github.com/craft-zhang>
 * [2020-05-20] Improve performance of SGEMM and STRMM on Arm Cortex-A53

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 * [2020-10] Add RISC-V Vector (0.7.1) support. Optimize BLAS kernels for Xuantie C910

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 * [2021-07-10] fix compilation with musl libc

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 * [2021-10-27] Add vector-length-agnostic DGEMM kernels for Arm SVE
 * [2021-11-20] Vector-length-agnostic Arm SVE copy routines for DGEMM, DTRMM, DSYMM
 * [2021-11-12] SVE kernels for SGEMM, STRMM and corresponding SVE copy functions
 * [2022-01-06] SVE kernels for CGEMM, ZGEMM, CTRMM, ZTRMM and corresponding SVE copy functions
 * [2022-01-18] SVE kernels and copy functions for TRSM

* Ilya Kurdyukov <https://github.com/ilyakurdyukov>
 * [2021-02-21] Add basic support for the Elbrus E2000 architecture

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1.827 json-parse 1.3.1

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1.828 tenacity 8.0.1

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1.831 pep517 0.12.0

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1.834 vertx-bridge-common 4.3.2

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1.835 libyaml 0.2.5

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1.836 vertx-http-proxy 4.3.2

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1.837 performance-now 2.1.0

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1.839 stack-trace 0.0.10

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1.840 coreos-semver 0.3.0

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1.841 pyasn1 0.4.8

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Home-page: https://github.com/etingof/pyasn1
Author: Ilya Etingof
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License: BSD
Description: Pure-Python implementation of ASN.1 types and DER/BER/CER codecs (X.208)
Platform: any
Classifier: Development Status :: 5 - Production/Stable
Classifier: Environment :: Console
Classifier: Intended Audience :: Developers
Classifier: Intended Audience :: Education
Classifier: Intended Audience :: Information Technology
Classifier: Intended Audience :: System Administrators
Classifier: Intended Audience :: Telecommunications Industry
Classifier: License :: OSI Approved :: BSD License
Classifier: Natural Language :: English
Classifier: Operating System :: OS Independent
Classifier: Programming Language :: Python :: 2

Classifier: Programming Language :: Python :: 2.4
Classifier: Programming Language :: Python :: 2.5
Classifier: Programming Language :: Python :: 2.6
Classifier: Programming Language :: Python :: 2.7
Classifier: Programming Language :: Python :: 3
Classifier: Programming Language :: Python :: 3.2
Classifier: Programming Language :: Python :: 3.3
Classifier: Programming Language :: Python :: 3.4
Classifier: Programming Language :: Python :: 3.5
Classifier: Programming Language :: Python :: 3.6
Classifier: Programming Language :: Python :: 3.7
Classifier: Topic :: Communications
Classifier: Topic :: Software Development :: Libraries :: Python Modules

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License
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.. include:: ../../LICENSE.rst

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ASN.1 library for Python

```
[![PyPI](https://img.shields.io/pypi/v/pyasn1.svg?maxAge=2592000)](https://pypi.org/project/pyasn1)
[![Python Versions](https://img.shields.io/pypi/pyversions/pyasn1.svg)](https://pypi.org/project/pyasn1/)
[![Build status](https://travis-ci.org/etingof/pyasn1.svg?branch=master)](https://secure.travis-ci.org/etingof/pyasn1)
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Status](https://img.shields.io/codecov/c/github/etingof/pyasn1.svg)](https://codecov.io/github/etingof/pyasn1)
[![GitHub license](https://img.shields.io/badge/license-BSD-
blue.svg)](https://raw.githubusercontent.com/etingof/pyasn1/master/LICENSE.txt)
```

This is a free and open source implementation of ASN.1 types and codecs
as a Python package. It has been first written to support particular
protocol (SNMP) but then generalized to be suitable for a wide range
of protocols based on
[ASN.1 specification](https://www.itu.int/rec/dologin_pub.asp?lang=e&id=T-REC-X.208-198811-W!!PDF-E&type=items).

Features
----

* Generic implementation of ASN.1 types (X.208)
* Standards compliant BER/CER/DER codecs
* Dumps/loads ASN.1 structures from Python types
* 100% Python, works with Python 2.4 up to Python 3.7
* MT-safe
* Contributed ASN.1 compiler [Asn1ate](https://github.com/kimgr/asn1ate)

Why using pyasn1

ASN.1 solves the data serialisation problem. This solution was
designed long ago by the wise Ancients. Back then, they did not
have the luxury of wasting bits. That is why ASN.1 is designed
to serialise data structures of unbounded complexity into
something compact and efficient when it comes to processing
the data.

That probably explains why many network protocols and file formats
still rely on the 30+ years old technology. Including a number of
high-profile Internet protocols and file formats.

Quite a number of books cover the topic of ASN.1.
[Communication between heterogeneous systems](http://www.oss.com/asn1/dubuisson.html)
by Olivier Dubuisson is one of those high quality books freely
available on the Internet.

The pyasn1 package is designed to help Python programmers tackling
network protocols and file formats at the comfort of their Python
prompt. The tool struggles to capture all aspects of a rather
complicated ASN.1 system and to represent it on the Python terms.

How to use pyasn1

With pyasn1 you can build Python objects from ASN.1 data structures.
For example, the following ASN.1 data structure:

```bash
Record ::= SEQUENCE {
 id        INTEGER,
 room  [0] INTEGER OPTIONAL,
 house [1] INTEGER DEFAULT 0
}
```

Could be expressed in pyasn1 like this:

```python
class Record(Sequence):
    componentType = NamedTypes(
        NamedType('id', Integer()),
        OptionalNamedType(
            'room', Integer().subtype(
                implicitTag=Tag(tagClassContext, tagFormatSimple, 0)
            )
        ),
        DefaultedNamedType(
            'house', Integer(0).subtype(
                implicitTag=Tag(tagClassContext, tagFormatSimple, 1)
            )
        )
    )
```

It is in the spirit of ASN.1 to take abstract data description

and turn it into a programming language specific form.
Once you have your ASN.1 data structure expressed in Python, you
can use it along the lines of similar Python type (e.g. ASN.1
`SET` is similar to Python `dict`, `SET OF` to `list`):

```python
>>> record = Record()
>>> record['id'] = 123
>>> record['room'] = 321
>>> str(record)
Record:
id=123
room=321
>>>
```

Part of the power of ASN.1 comes from its serialisation features. You
can serialise your data structure and send it over the network.

```python
>>> from pyasn1.codec.der.encoder import encode
>>> substrate = encode(record)
>>> hexdump(substrate)
00000: 30 07 02 01 7B 80 02 01 41
```

Conversely, you can turn serialised ASN.1 content, as received from
network or read from a file, into a Python object which you can
introspect, modify, encode and send back.

```python
>>> from pyasn1.codec.der.decoder import decode
>>> received_record, rest_of_substrate = decode(substrate, asn1Spec=Record())
>>>
>>> for field in received_record:
>>>    print('{} is {}'.format(field, received_record[field]))
id is 123
room is 321
house is 0
>>>
>>> record == received_record
True
>>> received_record.update(room=123)
>>> substrate = encode(received_record)
>>> hexdump(substrate)
00000: 30 06 02 01 7B 80 01 7B
```

The pyasn1 classes struggle to emulate their Python prototypes (e.g. int,
list, dict etc.). But ASN.1 types exhibit more complicated behaviour.
To make life easier for a Pythonista, they can turn their pyasn1
classes into Python built-ins:

```python
>>> from pyasn1.codec.native.encoder import encode
>>> encode(record)
{'id': 123, 'room': 321, 'house': 0}
```

Or vice-versa -- you can initialize an ASN.1 structure from a tree of
Python objects:

```python
>>> from pyasn1.codec.native.decoder import decode
>>> record = decode({'id': 123, 'room': 321, 'house': 0}, asn1Spec=Record())
>>> str(record)
Record:
id=123
room=321
>>>
```

With ASN.1 design, serialisation codecs are decoupled from data objects,
so you could turn every single ASN.1 object into many different
serialised forms. As of this moment, pyasn1 supports BER, DER, CER and
Python built-ins codecs. The extremely compact PER encoding is expected
to be introduced in the upcoming pyasn1 release.

More information on pyasn1 APIs can be found in the
[documentation](http://snmplabs.com/pyasn1/),
compiled ASN.1 modules for different protocols and file formats
could be found in the pyasn1-modules
[repo](https://github.com/etingof/pyasn1-modules).

How to get pyasn1

The pyasn1 package is distributed under terms and conditions of 2-clause
BSD [license](http://snmplabs.com/pyasn1/license.html). Source code is freely
available as a GitHub [repo](https://github.com/etingof/pyasn1).

You could `pip install pyasn1` or download it from [PyPI](https://pypi.org/project/pyasn1).

If something does not work as expected,
[open an issue](https://github.com/etingof/pyasn1/issues) at GitHub or
post your question [on Stack Overflow](https://stackoverflow.com/questions/ask)

or try browsing pyasn1
[mailing list archives](https://sourceforge.net/p/pyasn1/mailman/pyasn1-users/).

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License: http://snmplabs.com/pyasn1/license.html

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* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/test_debug.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/compat/dateandtime.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/codec/ber/test_encoder.py
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* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/type/test_constraint.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/compat/integer.py
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* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/__main__.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/type/namedval.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/type/constraint.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/type/tagmap.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/base.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/codec/ber/decoder.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/type/test_namedval.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/type/test_opentype.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/type/base.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/debug.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/codec/__main__.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/type/__main__.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/compat/test_integer.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/type/error.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/codec/cer/__main__.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/type/test_char.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/setup.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/codec/der/decoder.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/type/test_tag.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/codec/der/__main__.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/compat/test_binary.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/type/namedtype.py

* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/type/useful.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/type/test_useful.py
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* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/compat/string.py
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* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/type/univ.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/codec/cer/decoder.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/compat/test_octets.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/codec/ber/eoo.py
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* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/pyasn1/compat/octets.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/type/test_namedtype.py
* /opt/cola/permits/1110812511_1607462013.57/0/pyasn1-0-4-8-tar-gz/pyasn1-0.4.8/tests/codec/native/test_encoder.py

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ASN.1 library for Python
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.. toctree::
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Abstract Syntax Notation One (`ASN.1 <http://en.wikipedia.org/wiki/Abstract_Syntax_Notation_1x>`_) is a technology for exchanging structured data in a universally understood, hardware agnostic way. Many industrial, security and telephony applications heavily rely on ASN.1.

The `pyasn1 <https://pypi.org/project/pyasn1/>`_ library implements

ASN.1 support in pure-Python.

What is ASN.1

ASN.1 is a large, arguably over-engineered and extremely old data modelling and serialisation tool. It is probably among the first serialisation protocols in the history of computer science and technology.

ASN.1 started its life over 30 years ago as a serialisation mechanism for the first electronic mail (known as X.400). Later on if was split off the e-mail application and become a stand-alone tech still being actively supported by its designers and widely used in industry and technology.

Since then ASN.1 is sort of haunted by its relations with the OSI model -- the first, unsuccessful, version of the Internet. You can read many interesting `discussions <https://news.ycombinator.com/item?id=8871453>`_ on that topic.

In the following years, generations of software engineers tackled the serialisation problem many times. We can see that in Google's `ProtoBuffers <https://developers.google.com/protocol-buffers/>`_
or `FlatBuffers <https://google.github.io/flatbuffers/>`_, for example.
Interestingly, many new takes on binary protocol design do not depart far from ASN.1 from technical perspective. It's more of a matter of striking a balance between processing overhead, wire format overhead and human readability.

Looking at what ASN.1 has to offer, it has three loosely coupled parts:

* Data types: the standard introduces a collection of basic data types
 (integers, bits, strings, arrays and records) that can be used for describing
 arbitrarily complex, nested data structures.

* Serialisation protocols: the above data structures could be converted into a
 series of octets for storage or transmission over the wire as well as
 recovered back into their structured form. The system is fully agnostic
 to hardware architectures differences.

* Schema language: ASN.1 data structures could be described in terms
 of a schema language for ASN.1 compiler to turn it into platform-specific
 implementation.

ASN.1 applications

Being an old and generally successful standard, ASN.1 is widely adopted for many uses. To give you an example, these technologies use ASN.1 for their data exchange needs:

* Signaling standards for the public switched telephone network (SS7 family)
* Network management standards (SNMP, CMIP)
* Directory standards (X.500 family, LDAP)
* Public Key Infrastructure standards (X.509, etc.)
* PBX control (CSTA)
* IP-based Videoconferencing (H.323 family)
* Biometrics (BIP, CBEFF, ACBio)
* Intelligent transportation (SAE J2735)
* Cellular telephony (GSM, GPRS/EDGE, UMTS, LTE)

ASN.1 gotchas

Apparently, ASN.1 is hard to implement properly. Quality open-source
ASN.1 tools are rare, but ad-hoc implementations are numerous. Judging from the
`statistics <http://cve.mitre.org/cgi-bin/cvekey.cgi?keyword=ASN.1>`_ on discovered
security vulnerabilities, many people have implemented ASN.1 parsers
and oftentimes fell victim to its edge cases.

On the bright side, ASN.1 has been around for a long time, it is well understood
and security reviewed.

Documentation

.. toctree::
  :maxdepth: 2

  /pyasn1/contents

Use case

.. toctree::
  :maxdepth: 2

  /example-use-case

Download & Install

.. toctree::
  :maxdepth: 2

  /download

Changes

All changes and release history is maintained in changelog. There you
could also download the latest unreleased pyasn1 tarball containing
the latest fixes and improvements.

.. toctree::
  :maxdepth: 1

  /changelog

License

The PyASN1 software is distributed under 2-clause BSD License.

.. toctree::
  :maxdepth: 2

  /license

Getting help

Please, file your `issues <https://github.com/etingof/pyasn1/issues>`_
and `PRs <https://github.com/etingof/pyasn1/pulls>`_ at GitHub.
Alternatively, you could ask for help at
`Stack Overflow <http://stackoverflow.com/questions/tagged/pyasn1>`_
or search
`pyasn1-users <https://lists.sourceforge.net/lists/listinfo/pyasn1-users>`_
mailing list archive.

Books on ASN.1

The pyasn1 implementation is largely based on reading up the following awesome
books:

* `ASN.1 - Communication between heterogeneous systems <http://www.oss.com/asn1/dubuisson.html>`_ by
Olivier Dubuisson
* `ASN.1 Complete <http://www.oss.com/asn1/resources/books-whitepapers-pubs/larmouth-asn1-book.pdf>`_ by
Prof John Larmouth

Here you can get the official standards which is hard to read:

* `ITU standards <http://www.itu.int/ITU-T/studygroups/com17/languages/X.680-X.693-0207w.zip>`_

On the other end of the readability spectrum, here is a quick and sweet write up:

* `A Layman's Guide to a Subset of ASN.1, BER, and DER <ftp://ftp.rsasecurity.com/pub/pkcs/ascii/layman.asc>`_
by Burton S. Kaliski

If you are working with ASN.1, we'd highly recommend reading a proper
book on the subject.

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1.842 libtiff 4.4.0

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1.843 material-icons 1.11.11

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1.844 glob-parent 5.1.2

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1.845 commons-lang3 3.12.0

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1.846 triple-beam 1.3.0

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1.847 blackfriday 2.0.1

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1.848 idna 14.0.0

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1.849 aiohttp 3.7.4

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* value of the length field in the message. It is particularly useful when you
* decode a binary message which has an integer header field that represents the
* length of the message body or the whole message.
* <p>
* {@link LengthFieldBasedFrameDecoder} has many configuration parameters so
* that it can decode any message with a length field, which is often seen in
* proprietary client-server protocols. Here are some example that will give
* you the basic idea on which option does what.
*
* <h3>2 bytes length field at offset 0, do not strip header</h3>
*
* The value of the length field in this example is <tt>12 (0x0C)</tt> which
* represents the length of "HELLO, WORLD". By default, the decoder assumes
* that the length field represents the number of the bytes that follows the
* length field. Therefore, it can be decoded with the simplistic parameter
* combination.
* <pre>
* lengthFieldOffset   = 0
* lengthFieldLength   = 2
* lengthAdjustment   = 0
* initialBytesToStrip = 0 (= do not strip header)
*
* BEFORE DECODE (14 bytes)   AFTER DECODE (14 bytes)
* +--------+----------------+   +--------+----------------+
* | Length | Actual Content |----->| Length | Actual Content |
* | 0x000C | "HELLO, WORLD" | | 0x000C | "HELLO, WORLD" |
* +--------+----------------+   +--------+----------------+
* </pre>
*
* <h3>2 bytes length field at offset 0, strip header</h3>
*
* Because we can get the length of the content by calling
* {@link ByteBuf#readableBytes()}, you might want to strip the length
* field by specifying <tt>initialBytesToStrip</tt>. In this example, we
* specified <tt>2</tt>, that is same with the length of the length field, to
* strip the first two bytes.
* <pre>
* lengthFieldOffset   = 0
* lengthFieldLength   = 2
* lengthAdjustment   = 0

```
* <b>initialBytesToStrip</b> = <b>2</b> (= the length of the Length field)
*
* BEFORE DECODE (14 bytes)         AFTER DECODE (12 bytes)
* +--------+----------------+      +----------------+
* | Length | Actual Content |----->| Actual Content |
* | 0x000C | "HELLO, WORLD" |      | "HELLO, WORLD" |
* +--------+----------------+      +----------------+
* </pre>
*
* <h3>2 bytes length field at offset 0, do not strip header, the length field
*     represents the length of the whole message</h3>
*
* In most cases, the length field represents the length of the message body
* only, as shown in the previous examples.  However, in some protocols, the
* length field represents the length of the whole message, including the
* message header.  In such a case, we specify a non-zero
* <tt>lengthAdjustment</tt>.  Because the length value in this example message
* is always greater than the body length by <tt>2</tt>, we specify <tt>-2</tt>
* as <tt>lengthAdjustment</tt> for compensation.
* <pre>
* lengthFieldOffset   =  0
* lengthFieldLength   =  2
* <b>lengthAdjustment</b>    = <b>-2</b> (= the length of the Length field)
* initialBytesToStrip =  0
*
* BEFORE DECODE (14 bytes)         AFTER DECODE (14 bytes)
* +--------+----------------+      +--------+----------------+
* | Length | Actual Content |----->| Length | Actual Content |
* | 0x000E | "HELLO, WORLD" |      | 0x000E | "HELLO, WORLD" |
* +--------+----------------+      +--------+----------------+
* </pre>
*
* <h3>3 bytes length field at the end of 5 bytes header, do not strip header</h3>
*
* The following message is a simple variation of the first example.  An extra
* header value is prepended to the message.  <tt>lengthAdjustment</tt> is zero
* again because the decoder always takes the length of the prepended data into
* account during frame length calculation.
* <pre>
* <b>lengthFieldOffset</b>   = <b>2</b> (= the length of Header 1)
* <b>lengthFieldLength</b>   = <b>3</b>
* lengthAdjustment    = 0
* initialBytesToStrip = 0
*
* BEFORE DECODE (17 bytes)                      AFTER DECODE (17 bytes)
* +----------+----------+----------------+      +----------+----------+----------------+
* | Header 1 |  Length  | Actual Content |----->| Header 1 |  Length  | Actual Content |
* |  0xCAFE  | 0x00000C | "HELLO, WORLD" |      |  0xCAFE  | 0x00000C | "HELLO, WORLD" |
```

```
* +----------+----------+----------------+      +----------+----------+----------------+
* </pre>
*
* <h3>3 bytes length field at the beginning of 5 bytes header, do not strip header</h3>
*
* This is an advanced example that shows the case where there is an extra
* header between the length field and the message body.  You have to specify a
* positive <tt>lengthAdjustment</tt> so that the decoder counts the extra
* header into the frame length calculation.
* <pre>
* lengthFieldOffset   = 0
* lengthFieldLength   = 3
* <b>lengthAdjustment</b>    = <b>2</b> (= the length of Header 1)
* initialBytesToStrip = 0
*
* BEFORE DECODE (17 bytes)                      AFTER DECODE (17 bytes)
* +----------+----------+----------------+      +----------+----------+----------------+
* |  Length  | Header 1 | Actual Content |----->|  Length  | Header 1 | Actual Content |
* | 0x00000C |  0xCAFE  | "HELLO, WORLD" |      | 0x00000C |  0xCAFE  | "HELLO, WORLD" |
* +----------+----------+----------------+      +----------+----------+----------------+
* </pre>
*
* <h3>2 bytes length field at offset 1 in the middle of 4 bytes header,
*     strip the first header field and the length field</h3>
*
* This is a combination of all the examples above.  There are the prepended
* header before the length field and the extra header after the length field.
* The prepended header affects the <tt>lengthFieldOffset</tt> and the extra
* header affects the <tt>lengthAdjustment</tt>.  We also specified a non-zero
* <tt>initialBytesToStrip</tt> to strip the length field and the prepended
* header from the frame.  If you don't want to strip the prepended header, you
* could specify <tt>0</tt> for <tt>initialBytesToSkip</tt>.
* <pre>
* lengthFieldOffset   = 1 (= the length of HDR1)
* lengthFieldLength   = 2
* <b>lengthAdjustment</b>    = <b>1</b> (= the length of HDR2)
* <b>initialBytesToStrip</b> = <b>3</b> (= the length of HDR1 + LEN)
*
* BEFORE DECODE (16 bytes)                       AFTER DECODE (13 bytes)
* +------+--------+------+----------------+      +------+----------------+
* | HDR1 | Length | HDR2 | Actual Content |----->| HDR2 | Actual Content |
* | 0xCA | 0x000C | 0xFE | "HELLO, WORLD" |      | 0xFE | "HELLO, WORLD" |
* +------+--------+------+----------------+      +------+----------------+
* </pre>
*
* <h3>2 bytes length field at offset 1 in the middle of 4 bytes header,
*     strip the first header field and the length field, the length field
*     represents the length of the whole message</h3>
```

*
* Let's give another twist to the previous example. The only difference from
* the previous example is that the length field represents the length of the
* whole message instead of the message body, just like the third example.
* We have to count the length of HDR1 and Length into <tt>lengthAdjustment</tt>.
* Please note that we don't need to take the length of HDR2 into account
* because the length field already includes the whole header length.
* <pre>
* lengthFieldOffset   = 1
* lengthFieldLength   = 2
* lengthAdjustment   = -3 (= the length of HDR1 + LEN, negative)
* initialBytesToStrip = 3
*
* BEFORE DECODE (16 bytes)   AFTER DECODE (13 bytes)
* +------+--------+------+----------------+   +------+----------------+
* | HDR1 | Length | HDR2 | Actual Content |----->| HDR2 | Actual Content |
* | 0xCA | 0x0010 | 0xFE | "HELLO, WORLD" | | 0xFE | "HELLO, WORLD" |
* +------+--------+------+----------------+   +------+----------------+
* </pre>
* @see LengthFieldPrepender
*/

Found in path(s):
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/LengthFieldBasedFrameDecoder.java
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* under the License.
*/
/*
* Written by Robert Harder and released to the public domain, as explained at
* https://creativecommons.org/licenses/publicdomain
*/
/**
* Utility class for {@link ByteBuf} that encodes and decodes to and from

* Base64 notation.
* <p>
* The encoding and decoding algorithm in this class has been derived from
* Robert Harder's Public Domain
* Base64 Encoder/Decoder.
*/

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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/base64/Base64.java
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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2BlockDecompressor.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2Constants.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2HuffmanAllocator.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Lz4Constants.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/LzfDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/json/package-info.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Lz4FrameDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2HuffmanStageDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Crc32.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-

jar/io/netty/handler/codec/AsciiHeadersEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Lz4FrameEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2BitReader.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/MessageAggregationException.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/FastLzFrameDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2Decoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/SnappyFramedEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2BitWriter.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/FastLzFrameEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2DivSufSort.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2MoveToFrontTable.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2MTFAndRLE2StageEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2Rand.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/DecoderResultProvider.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/LzmaFrameEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/FastLz.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/json/JsonObjectDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/SnappyFramedDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2Encoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/LzfEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2BlockCompressor.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Bzip2HuffmanStageEncoder.java
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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/META-INF/maven/io.netty/netty-codec/pom.xml
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* https://creativecommons.org/licenses/publicdomain
*/
/**
* Enumeration of supported Base64 dialects.
* <p>
* The internal lookup tables in this class has been derived from
* Robert Harder's Public Domain
* Base64 Encoder/Decoder.
*/

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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/base64/Base64Dialect.java

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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/JZlibDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/DelimiterBasedFrameDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/UnsupportedMessageTypeException.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/base64/Base64Encoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/Delimiters.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/marshalling/DefaultUnmarshallerProvider.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/marshalling/DefaultMarshallerProvider.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/serialization/ObjectDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/string/package-info.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/DecompressionException.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/base64/package-info.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/protobuf/package-info.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/ZlibEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-

jar/io/netty/handler/codec/DecoderResult.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/serialization/ClassResolver.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/marshalling/MarshallingEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/SnappyFrameDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/MessageToMessageCodec.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/marshalling/MarshallingDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/marshalling/ThreadLocalUnmarshallerProvider.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/serialization/CompactObjectInputStream.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/string/StringEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/CompressionException.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/ByteToMessageCodec.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/marshalling/ContextBoundUnmarshallerProvider.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/base64/Base64Decoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/SnappyFrameEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/DecoderException.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/marshalling/ThreadLocalMarshallerProvider.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/marshalling/CompatibleMarshallingEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/serialization/WeakReferenceMap.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/EncoderException.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/MessageToByteEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/marshalling/MarshallerProvider.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/MessageToMessageEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/marshalling/ChannelBufferByteOutput.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/CodecException.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-

jar/io/netty/handler/codec/LineBasedFrameDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/package-info.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/MessageToMessageDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/bytes/ByteArrayEncoder.java
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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/marshalling/CompatibleMarshallingDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Snappy.java
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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/bytes/ByteArrayDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/CorruptedFrameException.java
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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/serialization/ObjectEncoderOutputStream.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-

jar/io/netty/handler/codec/ByteToMessageDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/serialization/ClassResolvers.java
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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/marshalling/ChannelBufferByteInput.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/JdkZlibEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/PrematureChannelClosureException.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/bytes/package-info.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/ZlibUtil.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/FixedLengthFrameDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/ZlibDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/serialization/CachingClassResolver.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/serialization/CompactObjectOutputStream.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/xml/package-info.java
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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/HeadersUtils.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/ProtocolDetectionState.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/ProtocolDetectionResult.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/protobuf/ProtobufEncoderNano.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/protobuf/ProtobufVarint32LengthFieldPrepender.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/protobuf/ProtobufEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/UnsupportedValueConverter.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/protobuf/ProtobufVarint32FrameDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/protobuf/ProtobufDecoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/protobuf/ProtobufDecoderNano.java
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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/DeflateOptions.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/GzipOptions.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-

jar/io/netty/handler/codec/compression/Zstd.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/ZstdConstants.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/Brotli.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/BrotliEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/CompressionOptions.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/StandardCompressionOptions.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/ZstdEncoder.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/BrotliOptions.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/compression/ZstdOptions.java
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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/DefaultHeadersImpl.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/CharSequenceValueConverter.java
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* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/DefaultHeaders.java
* /opt/cola/permits/1350827689_1656063912.744552/0/netty-codec-4-1-78-final-sources-1-jar/io/netty/handler/codec/EmptyHeaders.java
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```
NR START   END SECTORS SIZE NAME UUID
1    32  7679    7648 3.7M      8f8378c0-01
2  7680 16383    8704 4.3M      8f8378c0-02
5  7936 12799    4864 2.4M
6 12544 16127    3584 1.8M
```

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core/src/java/org/apache/lucene/util/compress/LZ4.java is a Java implementation of the LZ4 (https://github.com/lz4/lz4/tree/dev/lib) compression format for Lucene's DataInput/DataOutput abstractions.

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 https://snowballstem.org/

The KStem stemmer in
 analysis/common/src/org/apache/lucene/analysis/en
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analysis/common/src/resources/org/apache/lucene/analysis/hi/stopwords.txt,
analysis/common/src/resources/org/apache/lucene/analysis/bn/stopwords.txt
See http://members.unine.ch/jacques.savoy/clef/index.html.

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analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchMinimalStemmer.java
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analysis/common/src/java/org/apache/lucene/analysis/pt/PortugueseLightStemmer.java
analysis/common/src/java/org/apache/lucene/analysis/ru/RussianLightStemmer.java
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1.865 wtforms 3.0.0

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Name: WTForms
Version: 3.0.0
Summary: Form validation and rendering for Python web development.
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Classifier: Programming Language :: Python
Classifier: Topic :: Internet :: WWW/HTTP :: Dynamic Content
Requires-Python: >=3.6
Description-Content-Type: text/x-rst
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WTForms
=======

WTForms is a flexible forms validation and rendering library for Python
web development. It can work with whatever web framework and template

engine you choose. It supports data validation, CSRF protection, internationalization (I18N), and more. There are various community libraries that provide closer integration with popular frameworks.

Installation

Install and update using pip:

.. code-block:: text

```
pip install -U WTForms
```

Third-Party Library Integrations

WTForms is designed to work with any web framework and template engine. There are a number of community-provided libraries that make integrating with frameworks even better.

- `Flask-WTF`_ integrates with the Flask framework. It can automatically load data from the request, uses Flask-Babel to translate based on user-selected locale, provides full-application CSRF, and more.
- `WTForms-Alchemy`_ provides rich support for generating forms from SQLAlchemy models, including an expanded set of fields and validators.
- `WTForms-SQLAlchemy`_ provides ORM-backed fields and form generation from SQLAlchemy models.
- `WTForms-AppEngine`_ provides ORM-backed fields and form generation from AppEnding db/ndb schema
- `WTForms-Django`_ provides ORM-backed fields and form generation from Django models, as well as integration with Django's I18N support.
- `Starlette-WTF`_ integrates with Starlette and the FastAPI framework, based on the features of Flask-WTF.

.. _Flask-WTF: https://flask-wtf.readthedocs.io/
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.. _WTForms-SQLAlchemy: https://github.com/wtforms/wtforms-sqlalchemy
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Links

- Documentation: https://wtforms.readthedocs.io/
- Releases: https://pypi.org/project/WTForms/
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url = https://wtforms.readthedocs.io/
project_urls =
 Documentation = https://wtforms.readthedocs.io/
 Code = https://github.com/wtforms/wtforms
 Issue Tracker = https://github.com/wtforms/wtforms/issues
license = BSD-3-Clause
license_files = LICENSE.rst
maintainer = WTForms
maintainer_email = davidism@gmail.com
description = Form validation and rendering for Python web development.
long_description = file: README.rst
long_description_content_type = text/x-rst
classifiers =
 Development Status :: 5 - Production/Stable
 Environment :: Web Environment
 Intended Audience :: Developers
 License :: OSI Approved :: BSD License
 Operating System :: OS Independent
 Programming Language :: Python
 Topic :: Internet :: WWW/HTTP :: Dynamic Content

[options]
packages = find:
package_dir = = src
include_package_data = true
python_requires = >= 3.6
setup_requires = Babel >= 2.6.0
install_requires = MarkupSafe

[options.packages.find]
where = src
```

```
[options.extras_require]
email = email_validator

[extract_messages]
copyright_holder = WTForms Team
input_paths = src/wtforms
output_file = src/wtforms/locale/wtforms.pot

[init_catalog]
input_file = src/wtforms/locale/wtforms.pot
output_dir = src/wtforms/locale/
domain = wtforms

[update_catalog]
input_file = src/wtforms/locale/wtforms.pot
output_dir = src/wtforms/locale/
domain = wtforms
update-header-comment = true
no-fuzzy-matching = true
ignore-obsolete = true

[compile_catalog]
directory = src/wtforms/locale/
domain = wtforms
statistics = true

[tool:pytest]
testpaths = tests
filterwarnings =
 error

[coverage:run]
branch = true
source =
 wtforms

[coverage:paths]
source =
 src
 .tox/*/site-packages

[coverage:report]
exclude_lines =
 pragma: no cover
 except ImportError:

[flake8]
```

select = B, E, F, W, B9, ISC
ignore =
 E203
 E501
 E722
 W503
max-line-length = 80
per-file-ignores =
 **/__init__.py: F401, F403

[egg_info]
tag_build =
tag_date = 0

Found in path(s):
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/setup.cfg
No license file was found, but licenses were detected in source scan.

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Found in path(s):
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/sv/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/zh_TW/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/it/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/ca/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/ar/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/fa/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/tr/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/zh/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/ko/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/fr/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/et/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/de_CH/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/wtforms.pot
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-

3.0.0/src/wtforms/locale/bg/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/nb/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/de/LC_MESSAGES/wtforms.po
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* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/he/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/es/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/ja/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/ru/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/pt/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/cs_CZ/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/en/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/el/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/fi/LC_MESSAGES/wtforms.po
* /opt/cola/permits/1225152645_1636365662.86/0/wtforms-3-0-0-tar-gz/WTForms-3.0.0/src/wtforms/locale/pl/LC_MESSAGES/wtforms.po

1.866 gdbm 1.23-r0

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Version 3, 29 June 2007

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1.867 postgresql-jdbc 42.2.18

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1.868 dataclasses-json 0.5.7

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1.869 protobuf-c 1.4.1-r0

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1.870 mkdirp-infer-owner 2.0.0

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1.871 jbcrypt 0.4.3

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```
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
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 <artifactId>jBCrypt</artifactId>
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 <packaging>bundle</packaging>
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   <url>http://www.mindrot.org/files/jBCrypt/LICENSE</url>
  </license>
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 <developers>
  <developer>
   <name>Damien Miller</name>
   <email>djm@mindrot.org</email>
  </developer>
 </developers>
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  <developerConnection>scm:git:git@github.com:svenkubiak/jBCrypt.git</developerConnection>
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  <tag>0.4.3</tag>
 </scm>
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    <artifactId>maven-compiler-plugin</artifactId>
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   </plugin>
   <plugin>
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    <extensions>true</extensions>
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   <plugin>
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    <artifactId>maven-source-plugin</artifactId>
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      <id>attach-sources</id>
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     </execution>
    </executions>
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  <autoVersionSubmodules>true</autoVersionSubmodules>
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 </dependencies>
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   <url>https://oss.sonatype.org/content/repositories/snapshots</url>
  </snapshotRepository>
  <repository>
   <id>ossrh</id>
   <url>https://oss.sonatype.org/service/local/staging/deploy/maven2/</url>
  </repository>
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   <id>release-sign-artifacts</id>
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    </property>
   </activation>
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      <artifactId>maven-gpg-plugin</artifactId>
      <version>1.6</version>
      <executions>
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        <id>sign-artifacts</id>
        <phase>verify</phase>
        <goals>
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      </executions>
     </plugin>
    </plugins>
   </build>
  </profile>
 </profiles>
</project>
```

Found in path(s):
* /opt/cola/permits/1449238975_1666539762.762045/0/jbcrypt-0-4-3-sources-jar/META-INF/maven/de.svenkubiak/jBCrypt/pom.xml
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* /opt/cola/permits/1449238975_1666539762.762045/0/jbcrypt-0-4-3-sources-jar/org/mindrot/jbcrypt/BCrypt.java

1.872 openssl 1.1.1q

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The End

1.873 yarn 1.22.19

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yarn lockfile v1

is-plain-obj@^1.1.0:
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 resolved "https://registry.yarnpkg.com/is-plain-obj/-/is-plain-obj-1.1.0.tgz#71a50c8429dfca773c92a390a4a03b39fcd51d3e"

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// Jest Snapshot v1, https://goo.gl/fbAQLP

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"{\\"type\\":\\"warning\\",\\"data\\":\\"package.json: No license field\\"}
{\\"type\\":\\"warning\\",\\"data\\":\\"No license field\\"}
{\\"type\\":\\"tree\\",\\"data\\":{\\"type\\":\\"licenses\\",\\"trees\\":[{\\"name\\":\\"MIT\\",\\"children\\":[{\\"name\\":\\"is-plain-obj@1.1.0\\",\\"children\\":[{\\"name\\":\\"URL: https://github.com/sindresorhus/is-plain-obj.git\\"},{\\"name\\":\\"VendorUrl: sindresorhus.com\\"},{\\"name\\":\\"VendorName: Sindre Sorhus\\"}]}]}]}}
"
`;

exports[`generate-disclaimer should show license texts of dependencies 1`] = `
"{\\"type\\":\\"warning\\",\\"data\\":\\"package.json: No license field\\"}
{\\"type\\":\\"warning\\",\\"data\\":\\"No license field\\"}
{\\"type\\":\\"warning\\",\\"data\\":\\"package.json: No license field\\"}
"
`;

exports[`generate-disclaimer should show license texts of dependencies 2`] = `
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Date: Wed, 12 Apr 2017 18:11:29 GMT
Content-Type: application/octet-stream
Content-Length: 5169
Connection: keep-alive
Set-Cookie: __cfduid=d486b95f573144a6f389235c7c49b35801492020688; expires=Thu, 12-Apr-18 18:11:28 GMT; path=/; domain=.yarnpkg.com; HttpOnly
Last-Modified: Sun, 23 Aug 2015 23:36:10 GMT
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Expires: Fri, 11 Nov 2016 11:23:05 GMT
Access-Control-Allow-Origin: *
Access-Control-Allow-Methods: GET

Cache-Control: max-age=21600
Accept-Ranges: bytes
Via: 1.1 varnish
Age: 17863
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X-Cache: HIT
X-Cache-Hits: 8
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CF-RAY: 34e825f99be806be-LHR

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bR,i JE`cq'b{{Lc;e:DS;DLuPn ^ib:p-Osva}1:^=LXm\AyxQ^QgJl$j#BF>DSwZ
dt/QTdoYHS*W(
NUdn)\?39ETE;mqRZoNNC<O]R-b)9leT&Y4ovG'Q+`%oM;U5f:RR:S) c]z9!2ioPH$eh,f=3X jcX(50SaRcNL-jvf%T0a\{z1kMFmvqW&[
RgoI,nBlXm:
N 4&I,@TLXP"SHi8Tmz$xP|C;y0EL*vB{2vTHQ" 8R_1 *+*MygXD1!
_69 R/60"JdjYnJXlT628DP-'TFJC %?Zh P@@a@.cXY
bKI{sf9J8?yQZ7kX=j!Kz[ErJ3IRCv0s39DdD|Yhv[U.Z3}zy\^8_sVr-b3D3Pg\Z}#9I{M-
rcX,DwWKoG\J\62Q;ruEPo<^K{X6[^=o'D6f~Yt"
)
Cr)7MXZ@}NTFl!)QUr'P4t*eJ 6!Id`7sXBKO;vY&`ah`'TCAh3la8P3F9Uv**#<*RF C/nETDAW<c&5hF/?IIr[-
#(d(*<xI$}1|+144{+/" 5NuCX $XQ!z@X;SS%
uq~o<DIP ZbgOS7)$X6raofarEbuDBCUndw-.n,B8$m
|EUJ;1#.+X/AeIUd`"e381w@}Ee2:J}($LMk[Q+|AqA}Z,2S
%d#V1#sSuPi[b\PRwO6vic
".0;27y(P)\|PfLku6Y(87hPw*<lx/PT/$
&9HI:
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4{j@Yc Svvv-8 C._66 Mm5SPSr#i

IK4zqnk{DNZc&&b<_Mx=x}v}}vy3M3z&._^h}+nqHZDs]vmr<_>_~3z1oA8o.G{{&^]C]_^MF6Cf4nK`hW&`1l
EP4Jpp5yzu1 v,G3k9)N) rK02T35O`3AoLg2qS=e$>Te6:x7Wr[;Kz(lDK1mV|
ea&9BP;gk3<<lU$\L*ln|g%[Y202-;*[V3w
[vR['ab51##my$_/vx\tou\xD/v'fqmQy1Sp)kl
Zf|_V$i)vt0@ R|MFl35Tu-onef
wuL&#)Mom7*aHCi#2U!`ig6k#
@XTS0##h~=G=.zd
s?0v<.'4"O*Vq~!_*5Sn(+&!zG|.C1/}Sw]8iXISU^jFd]SAS x >%;^`{,>J?BN##PW&a.
z)[{Ii%t(PAoY\}joeSLt~o0yXk
3C|> g;k
NOG2l{|~szL?t7%*(1WVE%EB4+o;~@ec*O?<DjRi pbfsQ#"}2}f}o*|Hit}>_J

HTTP/1.1 200 OK
Server: nginx/1.10.1
Content-Type: application/octet-stream
Last-Modified: Tue, 26 Jul 2016 10:46:17 GMT
ETag: "57973f79-df6"
Expires: Thu, 09 Mar 2017 13:58:40 GMT
Access-Control-Allow-Origin: *
Access-Control-Allow-Methods: GET
Cache-Control: max-age=21600
Content-Length: 3574
Accept-Ranges: bytes
Date: Wed, 12 Apr 2017 18:11:07 GMT
Via: 1.1 varnish

Age: 8906
Connection: keep-alive
X-Served-By: cache-ams4432-AMS
X-Cache: HIT
X-Cache-Hits: 19
X-Timer: S1492020667.134560,VS0,VE0

Zms6g
s4QwGSE2\;
$Bbd2 \ ^nRqozS$>=?-Z}<==;>=;{Y?630)&B' O{-qE{8#!:`4IeBS/nA4 QJ
a$1iv5{\/u/btS9A_4_w+ygobxabg4\iOY*F%\@xGKBKGso9a@U3%8]US&)J6C4~a:2AA)N4E9hjG
he!F]XT#K@{YJ"`Ty)D&#mkZPrKr*Fy%#rmHFV#4,(Q6c
&&/|*5rvKv1TCO_bDra^sZ.wdQny^dtRKX7PaChE;-)qZKTRC\Ehbh8"
b3>Oh:lAggC`v~:>?yCEUj2S\1U'jo^(Faw/39; /J>Syzxj=za~-E;E
UTh}_=l?yo!ayE (J)N3^\[E7JCVF9HJ^f4AM;IOP {fh+
!)6<Bn
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pGt[5A$"
w!h#PwMi]srl[]ToE }ELai"WkO:nD7@_sKN)]$:x{Nj7_timPr25]t~?=3[S(el3'tA 1qvl!C

qkMU]uAnC&FaPqog)6@S2 08 h
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s%M3XVzK7vD275Lp
=3Hg)}C#L|c4}ep/lBUkjv5F3>r=[s4ns=C %r&H_!sZxFmX#D0vf2@g
%9qtW@e^s:ruof!sGk-uZ
<4_zGc0B*oX9m>/!^^.&
,13[Lpd&7?nt's0A`=.PWQ "k\2`b*7mHE6FH8jK1F%fV yx>v-
?}2~;;z;#|y5Tq9PAMZI(bglbx9.].{R;k$}$__BLGg#I_
\efTA
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cJQ0?d \9g}h,aZ*{%M1r
^N3;/#ghPCnMjF<
>QGA.^*99'Tr=mh
8#=@f8@6d8|l1cGPQWCEStP!!xs$wUB"?4b6{{tMM\DG<u8yF$Xn
bj{DrI"*xJiSk4ZLE2yIUzSb6
xu"1Df ADl779>MRuee5HjRg*JTVW>I,
TB0#a$fRe.1/ZB`2U'S}R6B2JIk*tds/)j~9Tl'9W5XR5hPC$epJuaa$#<UteX/4W17gxI:)5YQ@Lg4|kn&e_#{WmI54
nPZk-GHF$MBki4H%
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aflyHRElQ\:n(yD.="*cXJ"vFs Q81VspAQ$zM #`}ro^I);kMiw4=ZD'!_y[J
}&tB$|lCE[Bu05heB:"F 7e_'~[] }|/~' c,#[$
6JCKS+J
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Z@v:*03V7"~8X6@.vI%mrRY|3JB7C(Yh"mD#o[bnEA6or5^T+(W#PEE{h-
($X]4{z^i5;[[f1:JwJ*$sDt, ^ChN9OI,B8ZAfm\5HX;HCL-<m7[

w-?iyx<<jz24
HTTP/1.1 200 OK
Date: Wed, 12 Apr 2017 18:10:55 GMT
Content-Type: application/vnd.npm.install-v1+json
Content-Length: 610
Connection: keep-alive
Set-Cookie: __cfduid=ddc37bc882e380e3c017d6989f3ce96021492020655; expires=Thu, 12-Apr-18 18:10:55 GMT; path=/; domain=.yarnpkg.com; HttpOnly
Last-Modified: Sun, 23 Aug 2015 23:36:10 GMT
ETag: W/"55da58ea-b87"
Content-Encoding: gzip
Cache-Control: max-age=300
Accept-Ranges: bytes
Via: 1.1 varnish
Age: 0
X-Served-By: cache-lcy1136-LCY
X-Cache: MISS
X-Cache-Hits: 0
X-Timer: S1492020655.232892,VS0,VE18
Vary: Accept-Encoding
Server: cloudflare-nginx
CF-RAY: 34e825270d856a01-LHR

R0gH+sYI`pW2g:4dhh}cokJX(DzLW\S,NT_4d*rqGYh!;>*{E\/KI+9_1yT%=IB<|FmlU6M4$&Lo:1/D+K*pMZ-qY{sT=;
?2bwyE"f+q#vD'itB/1A=9zGjGM(#oVkOl-J5wqrtM`_AK*BU](5J(2@h)R`(41
X?Jw13c?#/'qL}|g2H`\NK$*m
yND$Y 6-5:JNrbmQ-'\m7Q7
iJZz)EZ

Format: http://www.debian.org/doc/packaging-manuals/copyright-format/1.0/
Upstream-Name: Yarn
Upstream-Contact: Yarn Developers <yarn@dan.cx>
Source: http://yarnpkg.com/

Files: *
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HTTP/1.1 200 OK
Server: nginx/1.10.1
Content-Type: application/octet-stream
Last-Modified: Sun, 23 Aug 2015 23:36:10 GMT
ETag: "55da58ea-1431"
Expires: Sat, 18 Mar 2017 09:24:05 GMT
Access-Control-Allow-Origin: *
Access-Control-Allow-Methods: GET
Cache-Control: max-age=21600
Content-Length: 5169
Accept-Ranges: bytes

Date: Wed, 12 Apr 2017 18:10:57 GMT
Via: 1.1 varnish
Age: 8807
Connection: keep-alive
X-Served-By: cache-ams4424-AMS
X-Cache: HIT
X-Cache-Hits: 13
X-Timer: S1492020657.425357,VS0,VE0

[sF+T{%BQ:EKJeC`HNgl_^u[FbG`%rW&>/NO=Q/]'g_>>}tzGwkuUHXfD{\'bV::VgUfF&^:h7VR\,46y%Lr`.pKlwUq?
]YJ.moo(yrx~lT,`QUrwEcp3Su*!!`Fs^tn845xXU*P?UPFzT[YEB~og
"eO'g?r~2v::8q,Ee^li#vp_*RuR2?.q;G?QE/Z'Gq=(U0y6pDp
zQWid!lmloKcTQ;QMm6S'R_Z"Qd!%+zU
ROL{<b|tQ< cg7'O",UYLI5PeUd0,2o\CZ<h"SH7>cw|G;zxemLF
Z[;B4S%7CH*sZ `Wbo d4_tmoM6Nae.48_|kb8qC1P}2
'P{>7/Jk@(kAHlDgxQtp?BYmUT"}=`]RW+n19${wegb<$n!K#Hf#OH+'
2%345E}FuV
'cB
i=Ig W>zaxfJaT+B$|n2Gs~T
YP$_7c
?3d_Sq=.JVOEEiq?dVb#NNZlOPa^]|1Qt3~1gb|3g&xuN<b<DP\4~aDT2*OgP>R'%*i4H|XBE7<H
1yCM6/J3UN",Pnb2HN46\.dI{^H(wUss?L,R\`Dw2v?E)(VYyq\b7DD~x P YLSVV@t#YZh.T-Qjq&3[H-
"nX/3<vYZuWOc{YQB["e{[/#>2jTe`8PVk:Rwy'zF{P\`L{vDs]
rlg-bx<cm:(f
utbXoie7b?"^j*2\BO c6{*#BW C*6qW)x/d*arfhwRsm%+
.CQL~r&q4zA3nxsLcCKX[DKQnVyvr iL#YN%j|R}z_
bR,i JE`cq'b{{Lc;e:DS;DLuPn ^ib:p-Osva}1:^=LXm\AyxQ^QgJl$j#BF>DSwZ
dt/QTdoYHS*W(
NUdn)\?39ETE;mqRZoNNC<O]R-b)9leT&Y4ovG'Q+`%oM;U5f:RR:S) c]z9!2ioPH$eh,f=3X jcX(50SaRcNL-jvf%T0a\{z1kMFmvqW&[
RgoI,nBlXm:
N 4&I,@TLXP"SHi8Tmz$xP|C;y0EL*vB{2vTHQ" 8R_1 *+*MygXD1!
_69 R/60"JdjYnJXlT628DP-'TFJC %?Zh P@@a@.cXY
bKI{sf9J8?yQZ7kX=j!Kz[ErJ3IRCv0s39DdD|Yhv[U.Z3}zy\^8_sVr-b3D3Pg\Z}#9I{M-
rcX,DwWKoG\J\62Q;ruEPo<^K{X6[^=o'D6f~Yt"
)
Cr)7MXZ@}NTFl!)QUr'P4t*eJ 6!Id`7sXBKO;vY&`ah`'TCAh3la8P3F9Uv**#<*RF C/nETDAW<c&5hF/?IIr[-#(d(*<xI$}1|+144{+/" 5NuCX $XQ!z@X;SS%
uq~o<DIP ZbgOS7)$X6raofarEbuDBCUndw-.n,B8$m
|EUJ;1#.+X/AeIUd`"e381w@}Ee2:J}($LMk[Q+|AqA}Z,2S
%d#V1#sSuPi[b\PRwO6vic
".0;27y(P)\|PfLku6Y(87hPw*<lx/PT/$
&9HI:
%Ks[j %I
4{j@Yc Svvv-8 C._66 Mm5SPSr#i
IK4zqnk{DNZc&&b<_Mx=x}v}}vy3M3z&._^h}+nqHZDs]vmr<_>_~3z1oA8o.G{{&^]C]_^MF6Cf4nK`hW&`1lEP4Jpp5yzu1 v,G3k9)N) rK02T35O`3AoLg2qS=e$>Te6:x7Wr[;Kz(lDK1mV|

ea&9BP;gk3<<lU$\L*ln|g%[Y202-;*[V3w
[vR['ab51##my$_/vx\tou\xD/v'fqmQy1Sp)kl
Zf|_V$i)vt0@ R|MFl35Tu-onef
wuL&#)Mom7*aHCi#2U!`ig6k#
@XTS0##h~=G=.zd
s?0v<.'4"O*Vq~!_*5Sn(+&!zG|.C1/}Sw]8iXISU^jFd]SAS x >%;^`{,>J?BN##PW&a.
z)[{Ii%t(PAoY\}joeSLt~o0yXk
3C|> g;k
NOG2l{|~szL?t7%*(1WVE%EB4+o;~@ec*O?<DjRi pbfsQ#"}2}f}o*|Hit}>_J
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(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
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HTTP/1.1 200 OK
Date: Wed, 12 Apr 2017 18:10:56 GMT
Content-Type: application/vnd.npm.install-v1+json
Content-Length: 934
Connection: keep-alive
Set-Cookie: __cfduid=d01a5b5d367390354f6f638f1e5da5b4e1492020656; expires=Thu, 12-Apr-18 18:10:56 GMT; path=/; domain=.yarnpkg.com; HttpOnly
Last-Modified: Mon, 06 Feb 2017 08:52:09 GMT
ETag: W/"58983939-13d4"
Content-Encoding: gzip
Cache-Control: max-age=300
Accept-Ranges: bytes
Via: 1.1 varnish

Age: 0
X-Served-By: cache-lcy1141-LCY
X-Cache: MISS
X-Cache-Hits: 0
X-Timer: S1492020657.777151,VS0,VE18
Vary: Accept-Encoding
Server: cloudflare-nginx
CF-RAY: 34e82530dcb26ac7-LHR

r6P:7hN9"UzI+#MzfrO,V7L]6]/&=b+S+Me=N~6_P5M>>vw59X&mn6]KLl]wGuS%,]{U0<<:pt4<_c_zw}}}A4>
=/B~4-hv79:5he(2b\Zn&xn_Ml3S9"qszE[wt tHIZ=j88XaMt.t:}t$okk
0":tD!
4sA*F6f:3,?018YuV$H4*pD1KT
-J9=>M4* 9jF<;Ka ItH,xT!e(N 2"K\Pba^c}/l= 5|,c ehf`SjU(s@?AOUbMUJ>3q%@f!X &D-dW.
KE"
&Q[(+e{@)t(^D1BcL5-go9fw.hd^FT6DFZnZu39M,i`n;L0c(v
y,0km{mbaJ"?#fcT|Ko
HTTP/1.1 200 OK
Date: Wed, 12 Apr 2017 18:11:34 GMT
Content-Type: application/octet-stream
Content-Length: 3574
Connection: keep-alive
Set-Cookie: __cfduid=dd0dd2ddd208ff3326c40fc425a725e9c1492020694; expires=Thu, 12-Apr-18 18:11:34 GMT; path=/; domain=.yarnpkg.com; HttpOnly
Last-Modified: Tue, 26 Jul 2016 10:46:17 GMT
ETag: "57973f79-df6"
Expires: Thu, 09 Mar 2017 16:11:58 GMT
Access-Control-Allow-Origin: *
Access-Control-Allow-Methods: GET
Cache-Control: max-age=21600
Accept-Ranges: bytes
Via: 1.1 varnish
Age: 2601
X-Served-By: cache-lcy1137-LCY
X-Cache: HIT
X-Cache-Hits: 7
X-Timer: S1492020694.468794,VS0,VE0
Server: cloudflare-nginx
CF-RAY: 34e8261c7cd03602-LHR

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s4QwGSE2\;
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a$1iv5{\/u/btS9A_4_w+ygobxabg4\iOY*F%\@xGKBKGso9a@U3%8]US&)J6C4~a:2AA)N4E9hjG
he!F]XT#K@{YJ"`Ty)D&#mkZPrKr*Fy%#rmHFV#4,(Q6c
&&/|*5rvKv1TCO_bDra^sZ.wdQny^dtRKX7PaChE;-)qZKTRC\Ehbh8"
b3>Oh:lAggC`v~:>?yCEUj2S\1U'jo^(Faw/39; /J>Syzxj=za~-E;E
UTh}_=l?yo!ayE (J)N3^\[E7JCVF9HJ^f4AM;IOP {fh+

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pGt[5A$"
w!h#PwMi]srl[]ToE }ELai"WkO:nD7@_sKN)]$:x{Nj7_timPr25]t~?=3[S(el3'tA 1qvl!C

qkMU]uAnC&FaPqog)6@S2 08 h
+> 4-za6;X*@88jN;|'F6G"z1_9XE^H1Z([}R[1)jEx.U;ut#;1
s%M3XVzK7vD275Lp
=3Hg)}C#L|c4}ep/lBUkjv5F3>r=[s4ns=C %r&H_!sZxFmX#D0vf2@g
%9qtW@e^s:ruof!sGk-uZ
<4_zGc0B*oX9m>/!^^.&
,13[Lpd&7?nt's0A`=.PWQ "k\2`b*7mHE6FH8jK1F%fV yx>v-
?}2~;;z;#|y5Tq9PAMZI(bglbx9.].{R;k$}$__BLGg#I_
\efTA
`)6tU8KXxqk@]Zt/*)[0-%EY4Qo.]PgeeHhF*G@#=6If5@eq*?HT<?/5#AiQOVCz
cJQ0?d \9g}h,aZ*{%M1r
^N3;/#ghPCnMjF<
>QGA.^*99'Tr=mh
8#=@f8@6d8|l1cGPQWCEStP!!xs$wUB"?4b6{{tMM\DG<u8yF$Xn
bj{DrI"*xJiSk4ZLE2yIUzSb6
xu"1Df ADl779>MRuee5HjRg*JTVW>I,
TB0#a$fRe.1/ZB`2U'S}R6B2JIk*tds/)j~9Tl'9W5XR5hPC$epJuaa$#<UteX/4W17gxI:)5YQ@Lg4|kn&e_#{WmI54
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6JCKS+J
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Z@v:*03V7"~8X6@.vI%mrRY|3JB7C(Yh"mD#o[bnEA6or5^T+(W#PEE{h-
($X]4{z^i5;[[f1:JwJ*$sDt, ^ChN9OI,B8ZAfm\5HX;HCL-<m7[
w-?iyx<<jz24

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1.874 libnpmdiff 4.0.4

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1.875 min-document 2.19.0

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1.876 urfave-cli 1.22.4

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1.877 is-binary-path 2.1.0

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1.884 object-inspect 1.12.2

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1.885 urllib3 1.26.6-1.ph1

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1.886 clean-stack 2.2.0

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1.887 ws 8.8.1

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1.888 jackc-pgx 4.16.1

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1.889 ini 3.0.0

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1.890 openssl 1.1.1q-r0

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Title: Toolkit for Encryption, Signatures and Certificates Based on OpenSSL
URL: https://github.com/jeroen/openssl#readme
BugReports: https://github.com/jeroen/openssl/issues

SystemRequirements: OpenSSL >= 1.0.1
RoxygenNote: 6.1.1
VignetteBuilder: knitr
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1.891 lumberjack 2.0.0

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1.892 util-linux-misc 2.38-r1

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(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
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application-supplied function or table used by this function must
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1.893 alpine-baselayout 3.2.0-r23

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* Create mount directories in fstab
*
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*
* usage: mkmntdirs [fstab]
*
*/

Found in path(s):
* /opt/cola/permits/1413259866_1664205148.023589/0/alpine-baselayout-3-2-0-r23-tgz/mkmntdirs.c
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/opt/cola/permits/1413259866_1664205148.023589/0/alpine-baselayout-3-2-0-r23-tgz/z: binary file matches

Found in path(s):
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1.894 visual-studio-runtime 14.00.24210.0

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%% winjs version 4.4.0 (https://github.com/winjs/winjs)

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* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/ChainAuth.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/HashingAlgorithm.java
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* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/impl/CertificateHelper.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/impl/asn/ASN1.java
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* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authentication/UsernamePasswordCredentials.java
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* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/OrAuthorization.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/impl/PermissionBasedAuthorizationConverter.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/impl/WildcardPermissionBasedAuthorizationImpl.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/impl/OrAuthorizationImpl.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/WildcardPermissionBasedAuthorization.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/impl/UserImpl.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/impl/RoleBasedAuthorizationConverter.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/AuthorizationContext.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/NotAuthorization.java
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* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-

jar/io/vertx/ext/auth/authorization/impl/VariableAwareExpression.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/impl/PermissionBasedAuthorizationImpl.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/impl/WildcardPermissionBasedAuthorizationConverter.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/impl/OrAuthorizationConverter.java
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* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/impl/AuthorizationConverter.java
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* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/impl/NotAuthorizationImpl.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/impl/UserConverter.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/AuthorizationProvider.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/AndAuthorization.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/impl/AndAuthorizationImpl.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/RoleBasedAuthorization.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/authorization/impl/AuthorizationContextImpl.java
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* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/AuthOptions.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/impl/jose/JWS.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/impl/jose/JWT.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/VertxContextPRNG.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/impl/jose/JWK.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/impl/http/SimpleHttpClient.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/KeyStoreOptions.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/impl/jose/JWE.java
* /opt/cola/permits/1452682068_1666815553.1481261/0/vertx-auth-common-4-3-2-sources-1-jar/io/vertx/ext/auth/NoSuchKeyIdException.java

1.901 color-string 1.9.1

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1.904 typing-extensions 4.1.1

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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1.912 ydiff 1.2

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1.913 domutils 2.8.0

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1.914 statsmodels 0.13.2

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1.915 @mapbox/mapbox-gl-style-spec 13.18.0-dev

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1.916 go-systemd 22.3.2

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1.917 fn-name 1.1.0

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analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchLightStemmer.java
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1.924 llvm 13.0.1-r2

1.924.1 Available under license :

```
; NOTE: Assertions have been autogenerated by utils/update_llc_test_checks.py
; RUN: llc < %s -mtriple=aarch64-- | FileCheck %s

; A shuffle mask with all undef elements is always legal.

define <4 x i32> @PR41535(<2 x i32> %p1, <2 x i32> %p2) {
; CHECK-LABEL: PR41535:
; CHECK:       // %bb.0:
; CHECK-NEXT:    ext v0.8b, v0.8b, v1.8b, #4
; CHECK-NEXT:    mov v0.d[1], v0.d[0]
; CHECK-NEXT:    ret
 %cat1 = shufflevector <2 x i32> %p1, <2 x i32> undef, <4 x i32> <i32 undef, i32 1, i32 undef, i32 undef>
 %cat2 = shufflevector <2 x i32> %p2, <2 x i32> undef, <4 x i32> <i32 0, i32 undef, i32 undef, i32 undef>
 %r = shufflevector <4 x i32> %cat1, <4 x i32> %cat2, <4 x i32> <i32 undef, i32 undef, i32 1, i32 4>
 ret <4 x i32> %r
}
; RUN: llc < %s -mtriple=s390x-linux-gnu -mcpu=zEC12 -verify-machineinstrs | FileCheck %s
;
; Test that early if conversion produces LOCR with operands of the right
; register classes.

define void @autogen_SD4739(i8*) {
; CHECK-NOT: Expected a GR32Bit register, but got a GRX32Bit register
BB:
 %L34 = load i8, i8* %0
 %Cmp56 = icmp sgt i8 undef, %L34
 br label %CF246

CF246:                                            ; preds = %CF246, %BB
 %Sl163 = select i1 %Cmp56, i8 %L34, i8 undef
 br i1 undef, label %CF246, label %CF248

CF248:                                            ; preds = %CF248, %CF246
 store i8 %Sl163, i8* %0
 br label %CF248
}
; RUN: opt -mtriple=aarch64-linux-gnu -mattr=+sve -scalarize-masked-mem-intrin -S < %s | FileCheck %s

; Testing that masked scatters operating on scalable vectors that are
; packed in SVE registers are not scalarized.

; CHECK-LABEL: @masked_scatter_nxv4i32(
; CHECK: call void @llvm.masked.scatter.nxv4i32
define void @masked_scatter_nxv4i32(<vscale x 4 x i32> %data, <vscale x 4 x i32*> %ptrs, <vscale x 4 x i1>
%masks) {
 call void @llvm.masked.scatter.nxv4i32(<vscale x 4 x i32> %data, <vscale x 4 x i32*> %ptrs, i32 0, <vscale x 4 x
i1> %masks)
```

```
 ret void
}

; Testing that masked scatters operating on scalable vectors of FP
; data that is packed in SVE registers are not scalarized.

; CHECK-LABEL: @masked_scatter_nxv2f64(
; CHECK: call void @llvm.masked.scatter.nxv2f64
define void @masked_scatter_nxv2f64(<vscale x 2 x double> %data, <vscale x 2 x double*> %ptrs, <vscale x 2 x i1> %masks) {
 call void @llvm.masked.scatter.nxv2f64(<vscale x 2 x double> %data, <vscale x 2 x double*> %ptrs, i32 0, <vscale x 2 x i1> %masks)
 ret void
}

; Testing that masked scatters operating on scalable vectors of FP
; data that is unpacked in SVE registers are not scalarized.

; CHECK-LABEL: @masked_scatter_nxv2f16(
; CHECK: call void @llvm.masked.scatter.nxv2f16
define void @masked_scatter_nxv2f16(<vscale x 2 x half> %data, <vscale x 2 x half*> %ptrs, <vscale x 2 x i1> %masks) {
 call void @llvm.masked.scatter.nxv2f16(<vscale x 2 x half> %data, <vscale x 2 x half*> %ptrs, i32 0, <vscale x 2 x i1> %masks)
 ret void
}

; Testing that masked scatters operating on 64-bit fixed vectors are
; scalarized because NEON doesn't have support for masked scatter
; instructions.

; CHECK-LABEL: @masked_scatter_v2f32(
; CHECK-NOT: @llvm.masked.scatter.v2f32(
define void @masked_scatter_v2f32(<2 x float> %data, <2 x float*> %ptrs, <2 x i1> %masks) {
 call void @llvm.masked.scatter.v2f32(<2 x float> %data, <2 x float*> %ptrs, i32 0, <2 x i1> %masks)
 ret void
}

; Testing that masked scatters operating on 128-bit fixed vectors are
; scalarized because NEON doesn't have support for masked scatter
; instructions and because we are not targeting fixed width SVE.

; CHECK-LABEL: @masked_scatter_v4i32(
; CHECK-NOT: @llvm.masked.scatter.v4i32(
define void @masked_scatter_v4i32(<4 x i32> %data, <4 x i32*> %ptrs, <4 x i1> %masks) {
 call void @llvm.masked.scatter.v4i32(<4 x i32> %data, <4 x i32*> %ptrs, i32 0, <4 x i1> %masks)
 ret void
}
```

```
declare void @llvm.masked.scatter.nxv4i32(<vscale x 4 x i32> %data, <vscale x 4 x i32*> %ptrs, i32 %align,
<vscale x 4 x i1> %masks)
declare void @llvm.masked.scatter.nxv2f64(<vscale x 2 x double> %data, <vscale x 2 x double*> %ptrs, i32
%align, <vscale x 2 x i1> %masks)
declare void @llvm.masked.scatter.nxv2f16(<vscale x 2 x half> %data, <vscale x 2 x half*> %ptrs, i32 %align,
<vscale x 2 x i1> %masks)
declare void @llvm.masked.scatter.v2f32(<2 x float> %data, <2 x float*> %ptrs, i32 %align, <2 x i1> %masks)
declare void @llvm.masked.scatter.v4i32(<4 x i32> %data, <4 x i32*> %ptrs, i32 %align, <4 x i1> %masks)
; NOTE: Assertions have been autogenerated by utils/update_llc_test_checks.py
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mcpu=skylake-avx512 -mattr=prefer-256-bit | FileCheck %s
--check-prefixes=CHECK,CHECK-AVX512
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mcpu=skylake-avx512 -mattr=prefer-256-bit,avx512vbmi |
FileCheck %s --check-prefixes=CHECK,CHECK-VBMI
; Make sure CPUs default to prefer-256-bit. avx512vnni isn't interesting as it just adds an isel peephole for
vpmaddwd+vpaddd
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mcpu=skylake-avx512 | FileCheck %s --check-
prefixes=CHECK,CHECK-AVX512
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=cascadelake | FileCheck %s --
check-prefixes=CHECK,CHECK-AVX512
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=cooperlake | FileCheck %s --
check-prefixes=CHECK,CHECK-AVX512
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mcpu=cannonlake | FileCheck %s --check-
prefixes=CHECK,CHECK-VBMI
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=icelake-client | FileCheck %s --
check-prefixes=CHECK,CHECK-VBMI
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=icelake-server | FileCheck %s --
check-prefixes=CHECK,CHECK-VBMI
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=tigerlake | FileCheck %s --check-
prefixes=CHECK,CHECK-VBMI

; This file primarily contains tests for specific places in X86ISelLowering.cpp that needed be made aware of the
legalizer not allowing 512-bit vectors due to prefer-256-bit even though AVX512 is enabled.

define dso_local void @add256(<16 x i32>* %a, <16 x i32>* %b, <16 x i32>* %c) "min-legal-vector-
width"="256" {
; CHECK-LABEL: add256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vpaddd 32(%rsi), %ymm1, %ymm1
; CHECK-NEXT:    vpaddd (%rsi), %ymm0, %ymm0
; CHECK-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %d = load <16 x i32>, <16 x i32>* %a
 %e = load <16 x i32>, <16 x i32>* %b
```

```
 %f = add <16 x i32> %d, %e
 store <16 x i32> %f, <16 x i32>* %c
 ret void
}

define dso_local void @add512(<16 x i32>* %a, <16 x i32>* %b, <16 x i32>* %c) "min-legal-vector-
width"="512" {
; CHECK-LABEL: add512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa64 (%rdi), %zmm0
; CHECK-NEXT:    vpaddd (%rsi), %zmm0, %zmm0
; CHECK-NEXT:    vmovdqa64 %zmm0, (%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %d = load <16 x i32>, <16 x i32>* %a
 %e = load <16 x i32>, <16 x i32>* %b
 %f = add <16 x i32> %d, %e
 store <16 x i32> %f, <16 x i32>* %c
 ret void
}

define dso_local void @avg_v64i8_256(<64 x i8>* %a, <64 x i8>* %b) "min-legal-vector-width"="256" {
; CHECK-LABEL: avg_v64i8_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm1
; CHECK-NEXT:    vpavgb (%rdi), %ymm0, %ymm0
; CHECK-NEXT:    vpavgb 32(%rdi), %ymm1, %ymm1
; CHECK-NEXT:    vmovdqu %ymm1, (%rax)
; CHECK-NEXT:    vmovdqu %ymm0, (%rax)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %1 = load <64 x i8>, <64 x i8>* %a
 %2 = load <64 x i8>, <64 x i8>* %b
 %3 = zext <64 x i8> %1 to <64 x i32>
 %4 = zext <64 x i8> %2 to <64 x i32>
 %5 = add nuw nsw <64 x i32> %3, <i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1,
i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32
1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1,
i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1>
 %6 = add nuw nsw <64 x i32> %5, %4
 %7 = lshr <64 x i32> %6, <i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1,
i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32
1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1,
i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1>
 %8 = trunc <64 x i32> %7 to <64 x i8>
 store <64 x i8> %8, <64 x i8>* undef, align 4
 ret void
```

```
}


define dso_local void @avg_v64i8_512(<64 x i8>* %a, <64 x i8>* %b) "min-legal-vector-width"="512" {
; CHECK-LABEL: avg_v64i8_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa64 (%rsi), %zmm0
; CHECK-NEXT:    vpavgb (%rdi), %zmm0, %zmm0
; CHECK-NEXT:    vmovdqu64 %zmm0, (%rax)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %1 = load <64 x i8>, <64 x i8>* %a
 %2 = load <64 x i8>, <64 x i8>* %b
 %3 = zext <64 x i8> %1 to <64 x i32>
 %4 = zext <64 x i8> %2 to <64 x i32>
 %5 = add nuw nsw <64 x i32> %3, <i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1>
 %6 = add nuw nsw <64 x i32> %5, %4
 %7 = lshr <64 x i32> %6, <i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1, i32 1>
 %8 = trunc <64 x i32> %7 to <64 x i8>
 store <64 x i8> %8, <64 x i8>* undef, align 4
 ret void
}

define dso_local void @pmaddwd_32_256(<32 x i16>* %APtr, <32 x i16>* %BPtr, <16 x i32>* %CPtr) "min-legal-vector-width"="256" {
; CHECK-LABEL: pmaddwd_32_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vpmaddwd 32(%rsi), %ymm1, %ymm1
; CHECK-NEXT:    vpmaddwd (%rsi), %ymm0, %ymm0
; CHECK-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
  %A = load <32 x i16>, <32 x i16>* %APtr
  %B = load <32 x i16>, <32 x i16>* %BPtr
  %a = sext <32 x i16> %A to <32 x i32>
  %b = sext <32 x i16> %B to <32 x i32>
  %m = mul nsw <32 x i32> %a, %b
  %odd = shufflevector <32 x i32> %m, <32 x i32> undef, <16 x i32> <i32 0, i32 2, i32 4, i32 6, i32 8, i32 10, i32 12, i32 14, i32 16, i32 18, i32 20, i32 22, i32 24, i32 26, i32 28, i32 30>
```

```
  %even = shufflevector <32 x i32> %m, <32 x i32> undef, <16 x i32> <i32 1, i32 3, i32 5, i32 7, i32 9, i32 11, i32
13, i32 15, i32 17, i32 19, i32 21, i32 23, i32 25, i32 27, i32 29, i32 31>
  %ret = add <16 x i32> %odd, %even
  store <16 x i32> %ret, <16 x i32>* %CPtr
  ret void
}

define dso_local void @pmaddwd_32_512(<32 x i16>* %APtr, <32 x i16>* %BPtr, <16 x i32>* %CPtr) "min-
legal-vector-width"="512" {
; CHECK-LABEL: pmaddwd_32_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa64 (%rdi), %zmm0
; CHECK-NEXT:    vpmaddwd (%rsi), %zmm0, %zmm0
; CHECK-NEXT:    vmovdqa64 %zmm0, (%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
  %A = load <32 x i16>, <32 x i16>* %APtr
  %B = load <32 x i16>, <32 x i16>* %BPtr
  %a = sext <32 x i16> %A to <32 x i32>
  %b = sext <32 x i16> %B to <32 x i32>
  %m = mul nsw <32 x i32> %a, %b
  %odd = shufflevector <32 x i32> %m, <32 x i32> undef, <16 x i32> <i32 0, i32 2, i32 4, i32 6, i32 8, i32 10, i32
12, i32 14, i32 16, i32 18, i32 20, i32 22, i32 24, i32 26, i32 28, i32 30>
  %even = shufflevector <32 x i32> %m, <32 x i32> undef, <16 x i32> <i32 1, i32 3, i32 5, i32 7, i32 9, i32 11, i32
13, i32 15, i32 17, i32 19, i32 21, i32 23, i32 25, i32 27, i32 29, i32 31>
  %ret = add <16 x i32> %odd, %even
  store <16 x i32> %ret, <16 x i32>* %CPtr
  ret void
}

define dso_local void @psubus_64i8_max_256(<64 x i8>* %xptr, <64 x i8>* %yptr, <64 x i8>* %zptr) "min-legal-
vector-width"="256" {
; CHECK-LABEL: psubus_64i8_max_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vpsubusb 32(%rsi), %ymm1, %ymm1
; CHECK-NEXT:    vpsubusb (%rsi), %ymm0, %ymm0
; CHECK-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <64 x i8>, <64 x i8>* %xptr
 %y = load <64 x i8>, <64 x i8>* %yptr
 %cmp = icmp ult <64 x i8> %x, %y
 %max = select <64 x i1> %cmp, <64 x i8> %y, <64 x i8> %x
 %res = sub <64 x i8> %max, %y
 store <64 x i8> %res, <64 x i8>* %zptr
```

```
 ret void
}

define dso_local void @psubus_64i8_max_512(<64 x i8>* %xptr, <64 x i8>* %yptr, <64 x i8>* %zptr) "min-legal-
vector-width"="512" {
; CHECK-LABEL: psubus_64i8_max_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa64 (%rdi), %zmm0
; CHECK-NEXT:    vpsubusb (%rsi), %zmm0, %zmm0
; CHECK-NEXT:    vmovdqa64 %zmm0, (%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <64 x i8>, <64 x i8>* %xptr
 %y = load <64 x i8>, <64 x i8>* %yptr
 %cmp = icmp ult <64 x i8> %x, %y
 %max = select <64 x i1> %cmp, <64 x i8> %y, <64 x i8> %x
 %res = sub <64 x i8> %max, %y
 store <64 x i8> %res, <64 x i8>* %zptr
 ret void
}

define dso_local i32 @_Z9test_charPcS_i_256(i8* nocapture readonly, i8* nocapture readonly, i32) "min-legal-
vector-width"="256" {
; CHECK-LABEL: _Z9test_charPcS_i_256:
; CHECK:       # %bb.0: # %entry
; CHECK-NEXT:    movl %edx, %eax
; CHECK-NEXT:    vpxor %xmm0, %xmm0, %xmm0
; CHECK-NEXT:    xorl %ecx, %ecx
; CHECK-NEXT:    vpxor %xmm1, %xmm1, %xmm1
; CHECK-NEXT:    vpxor %xmm2, %xmm2, %xmm2
; CHECK-NEXT:    .p2align 4, 0x90
; CHECK-NEXT:  .LBB8_1: # %vector.body
; CHECK-NEXT:    # =>This Inner Loop Header: Depth=1
; CHECK-NEXT:    vpmovsxbw 16(%rdi,%rcx), %ymm3
; CHECK-NEXT:    vpmovsxbw (%rdi,%rcx), %ymm4
; CHECK-NEXT:    vpmovsxbw 16(%rsi,%rcx), %ymm5
; CHECK-NEXT:    vpmaddwd %ymm3, %ymm5, %ymm3
; CHECK-NEXT:    vpaddd %ymm2, %ymm3, %ymm2
; CHECK-NEXT:    vpmovsxbw (%rsi,%rcx), %ymm3
; CHECK-NEXT:    vpmaddwd %ymm4, %ymm3, %ymm3
; CHECK-NEXT:    vpaddd %ymm1, %ymm3, %ymm1
; CHECK-NEXT:    addq $32, %rcx
; CHECK-NEXT:    cmpq %rcx, %rax
; CHECK-NEXT:    jne .LBB8_1
; CHECK-NEXT:  # %bb.2: # %middle.block
; CHECK-NEXT:    vpaddd %ymm0, %ymm1, %ymm1
; CHECK-NEXT:    vpaddd %ymm0, %ymm2, %ymm0
; CHECK-NEXT:    vpaddd %ymm0, %ymm1, %ymm0
```

```
; CHECK-NEXT:    vextracti128 $1, %ymm0, %xmm1
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[2,3,2,3]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[1,1,1,1]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vmovd %xmm0, %eax
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
entry:
 %3 = zext i32 %2 to i64
 br label %vector.body

vector.body:
 %index = phi i64 [ %index.next, %vector.body ], [ 0, %entry ]
 %vec.phi = phi <32 x i32> [ %11, %vector.body ], [ zeroinitializer, %entry ]
 %4 = getelementptr inbounds i8, i8* %0, i64 %index
 %5 = bitcast i8* %4 to <32 x i8>*
 %wide.load = load <32 x i8>, <32 x i8>* %5, align 1
 %6 = sext <32 x i8> %wide.load to <32 x i32>
 %7 = getelementptr inbounds i8, i8* %1, i64 %index
 %8 = bitcast i8* %7 to <32 x i8>*
 %wide.load14 = load <32 x i8>, <32 x i8>* %8, align 1
 %9 = sext <32 x i8> %wide.load14 to <32 x i32>
 %10 = mul nsw <32 x i32> %9, %6
 %11 = add nsw <32 x i32> %10, %vec.phi
 %index.next = add i64 %index, 32
 %12 = icmp eq i64 %index.next, %3
 br i1 %12, label %middle.block, label %vector.body

middle.block:
 %rdx.shuf1 = shufflevector <32 x i32> %11, <32 x i32> undef, <32 x i32> <i32 16, i32 17, i32 18, i32 19, i32 20,
i32 21, i32 22, i32 23, i32 24, i32 25, i32 26, i32 27, i32 28, i32 29, i32 30, i32 31, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef>
 %bin.rdx1 = add <32 x i32> %11, %rdx.shuf1
 %rdx.shuf = shufflevector <32 x i32> %bin.rdx1, <32 x i32> undef, <32 x i32> <i32 8, i32 9, i32 10, i32 11, i32
12, i32 13, i32 14, i32 15, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx = add <32 x i32> %bin.rdx1, %rdx.shuf
 %rdx.shuf15 = shufflevector <32 x i32> %bin.rdx, <32 x i32> undef, <32 x i32> <i32 4, i32 5, i32 6, i32 7, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx32 = add <32 x i32> %bin.rdx, %rdx.shuf15
 %rdx.shuf17 = shufflevector <32 x i32> %bin.rdx32, <32 x i32> undef, <32 x i32> <i32 2, i32 3, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
```

```
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx18 = add <32 x i32> %bin.rdx32, %rdx.shuf17
 %rdx.shuf19 = shufflevector <32 x i32> %bin.rdx18, <32 x i32> undef, <32 x i32> <i32 1, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx20 = add <32 x i32> %bin.rdx18, %rdx.shuf19
 %13 = extractelement <32 x i32> %bin.rdx20, i32 0
 ret i32 %13
}

define dso_local i32 @_Z9test_charPcS_i_512(i8* nocapture readonly, i8* nocapture readonly, i32) "min-legal-
vector-width"="512" {
; CHECK-LABEL: _Z9test_charPcS_i_512:
; CHECK:       # %bb.0: # %entry
; CHECK-NEXT:    movl %edx, %eax
; CHECK-NEXT:    vpxor %xmm0, %xmm0, %xmm0
; CHECK-NEXT:    xorl %ecx, %ecx
; CHECK-NEXT:    vpxor %xmm1, %xmm1, %xmm1
; CHECK-NEXT:    .p2align 4, 0x90
; CHECK-NEXT:  .LBB9_1: # %vector.body
; CHECK-NEXT:    # =>This Inner Loop Header: Depth=1
; CHECK-NEXT:    vpmovsxbw (%rdi,%rcx), %zmm2
; CHECK-NEXT:    vpmovsxbw (%rsi,%rcx), %zmm3
; CHECK-NEXT:    vpmaddwd %zmm2, %zmm3, %zmm2
; CHECK-NEXT:    vpaddd %zmm1, %zmm2, %zmm1
; CHECK-NEXT:    addq $32, %rcx
; CHECK-NEXT:    cmpq %rcx, %rax
; CHECK-NEXT:    jne .LBB9_1
; CHECK-NEXT:  # %bb.2: # %middle.block
; CHECK-NEXT:    vpaddd %zmm0, %zmm1, %zmm0
; CHECK-NEXT:    vextracti64x4 $1, %zmm0, %ymm1
; CHECK-NEXT:    vpaddd %zmm1, %zmm0, %zmm0
; CHECK-NEXT:    vextracti128 $1, %ymm0, %xmm1
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[2,3,2,3]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[1,1,1,1]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vmovd %xmm0, %eax
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
entry:
 %3 = zext i32 %2 to i64
 br label %vector.body

vector.body:
```

```
 %index = phi i64 [ %index.next, %vector.body ], [ 0, %entry ]
 %vec.phi = phi <32 x i32> [ %11, %vector.body ], [ zeroinitializer, %entry ]
 %4 = getelementptr inbounds i8, i8* %0, i64 %index
 %5 = bitcast i8* %4 to <32 x i8>*
 %wide.load = load <32 x i8>, <32 x i8>* %5, align 1
 %6 = sext <32 x i8> %wide.load to <32 x i32>
 %7 = getelementptr inbounds i8, i8* %1, i64 %index
 %8 = bitcast i8* %7 to <32 x i8>*
 %wide.load14 = load <32 x i8>, <32 x i8>* %8, align 1
 %9 = sext <32 x i8> %wide.load14 to <32 x i32>
 %10 = mul nsw <32 x i32> %9, %6
 %11 = add nsw <32 x i32> %10, %vec.phi
 %index.next = add i64 %index, 32
 %12 = icmp eq i64 %index.next, %3
 br i1 %12, label %middle.block, label %vector.body

middle.block:
 %rdx.shuf1 = shufflevector <32 x i32> %11, <32 x i32> undef, <32 x i32> <i32 16, i32 17, i32 18, i32 19, i32 20,
i32 21, i32 22, i32 23, i32 24, i32 25, i32 26, i32 27, i32 28, i32 29, i32 30, i32 31, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef>
 %bin.rdx1 = add <32 x i32> %11, %rdx.shuf1
 %rdx.shuf = shufflevector <32 x i32> %bin.rdx1, <32 x i32> undef, <32 x i32> <i32 8, i32 9, i32 10, i32 11, i32
12, i32 13, i32 14, i32 15, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx = add <32 x i32> %bin.rdx1, %rdx.shuf
 %rdx.shuf15 = shufflevector <32 x i32> %bin.rdx, <32 x i32> undef, <32 x i32> <i32 4, i32 5, i32 6, i32 7, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx32 = add <32 x i32> %bin.rdx, %rdx.shuf15
 %rdx.shuf17 = shufflevector <32 x i32> %bin.rdx32, <32 x i32> undef, <32 x i32> <i32 2, i32 3, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx18 = add <32 x i32> %bin.rdx32, %rdx.shuf17
 %rdx.shuf19 = shufflevector <32 x i32> %bin.rdx18, <32 x i32> undef, <32 x i32> <i32 1, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx20 = add <32 x i32> %bin.rdx18, %rdx.shuf19
 %13 = extractelement <32 x i32> %bin.rdx20, i32 0
 ret i32 %13
}

@a = dso_local global [1024 x i8] zeroinitializer, align 16
@b = dso_local global [1024 x i8] zeroinitializer, align 16
```

```
define dso_local i32 @sad_16i8_256() "min-legal-vector-width"="256" {
; CHECK-LABEL: sad_16i8_256:
; CHECK:       # %bb.0: # %entry
; CHECK-NEXT:    vpxor %xmm0, %xmm0, %xmm0
; CHECK-NEXT:    movq $-1024, %rax # imm = 0xFC00
; CHECK-NEXT:    vpxor %xmm1, %xmm1, %xmm1
; CHECK-NEXT:    .p2align 4, 0x90
; CHECK-NEXT:  .LBB10_1: # %vector.body
; CHECK-NEXT:    # =>This Inner Loop Header: Depth=1
; CHECK-NEXT:    vmovdqu a+1024(%rax), %xmm2
; CHECK-NEXT:    vpsadbw b+1024(%rax), %xmm2, %xmm2
; CHECK-NEXT:    vpaddd %ymm1, %ymm2, %ymm1
; CHECK-NEXT:    addq $4, %rax
; CHECK-NEXT:    jne .LBB10_1
; CHECK-NEXT:  # %bb.2: # %middle.block
; CHECK-NEXT:    vpaddd %ymm0, %ymm1, %ymm0
; CHECK-NEXT:    vextracti128 $1, %ymm0, %xmm1
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[2,3,2,3]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[1,1,1,1]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vmovd %xmm0, %eax
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
entry:
 br label %vector.body

vector.body:
 %index = phi i64 [ 0, %entry ], [ %index.next, %vector.body ]
 %vec.phi = phi <16 x i32> [ zeroinitializer, %entry ], [ %10, %vector.body ]
 %0 = getelementptr inbounds [1024 x i8], [1024 x i8]* @a, i64 0, i64 %index
 %1 = bitcast i8* %0 to <16 x i8>*
 %wide.load = load <16 x i8>, <16 x i8>* %1, align 4
 %2 = zext <16 x i8> %wide.load to <16 x i32>
 %3 = getelementptr inbounds [1024 x i8], [1024 x i8]* @b, i64 0, i64 %index
 %4 = bitcast i8* %3 to <16 x i8>*
 %wide.load1 = load <16 x i8>, <16 x i8>* %4, align 4
 %5 = zext <16 x i8> %wide.load1 to <16 x i32>
 %6 = sub nsw <16 x i32> %2, %5
 %7 = icmp sgt <16 x i32> %6, <i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -
1, i32 -1, i32 -1, i32 -1, i32 -1>
 %8 = sub nsw <16 x i32> zeroinitializer, %6
 %9 = select <16 x i1> %7, <16 x i32> %6, <16 x i32> %8
 %10 = add nsw <16 x i32> %9, %vec.phi
 %index.next = add i64 %index, 4
 %11 = icmp eq i64 %index.next, 1024
```

```
 br i1 %11, label %middle.block, label %vector.body

middle.block:
 %rdx.shuf = shufflevector <16 x i32> %10, <16 x i32> undef, <16 x i32> <i32 8, i32 9, i32 10, i32 11, i32 12, i32
13, i32 14, i32 15, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx = add <16 x i32> %10, %rdx.shuf
 %rdx.shuf2 = shufflevector <16 x i32> %bin.rdx, <16 x i32> undef, <16 x i32> <i32 4, i32 5, i32 6, i32 7, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef>
 %bin.rdx2 = add <16 x i32> %bin.rdx, %rdx.shuf2
 %rdx.shuf3 = shufflevector <16 x i32> %bin.rdx2, <16 x i32> undef, <16 x i32> <i32 2, i32 3, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef>
 %bin.rdx3 = add <16 x i32> %bin.rdx2, %rdx.shuf3
 %rdx.shuf4 = shufflevector <16 x i32> %bin.rdx3, <16 x i32> undef, <16 x i32> <i32 1, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef>
 %bin.rdx4 = add <16 x i32> %bin.rdx3, %rdx.shuf4
 %12 = extractelement <16 x i32> %bin.rdx4, i32 0
 ret i32 %12
}

define dso_local i32 @sad_16i8_512() "min-legal-vector-width"="512" {
; CHECK-LABEL: sad_16i8_512:
; CHECK:       # %bb.0: # %entry
; CHECK-NEXT:    vpxor %xmm0, %xmm0, %xmm0
; CHECK-NEXT:    movq $-1024, %rax # imm = 0xFC00
; CHECK-NEXT:    .p2align 4, 0x90
; CHECK-NEXT:  .LBB11_1: # %vector.body
; CHECK-NEXT:    # =>This Inner Loop Header: Depth=1
; CHECK-NEXT:    vmovdqu a+1024(%rax), %xmm1
; CHECK-NEXT:    vpsadbw b+1024(%rax), %xmm1, %xmm1
; CHECK-NEXT:    vpaddd %zmm0, %zmm1, %zmm0
; CHECK-NEXT:    addq $4, %rax
; CHECK-NEXT:    jne .LBB11_1
; CHECK-NEXT:  # %bb.2: # %middle.block
; CHECK-NEXT:    vextracti64x4 $1, %zmm0, %ymm1
; CHECK-NEXT:    vpaddd %zmm1, %zmm0, %zmm0
; CHECK-NEXT:    vextracti128 $1, %ymm0, %xmm1
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[2,3,2,3]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vpshufd {{.*#+}} xmm1 = xmm0[1,1,1,1]
; CHECK-NEXT:    vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:    vmovd %xmm0, %eax
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
entry:
```

```
 br label %vector.body

vector.body:
 %index = phi i64 [ 0, %entry ], [ %index.next, %vector.body ]
 %vec.phi = phi <16 x i32> [ zeroinitializer, %entry ], [ %10, %vector.body ]
 %0 = getelementptr inbounds [1024 x i8], [1024 x i8]* @a, i64 0, i64 %index
 %1 = bitcast i8* %0 to <16 x i8>*
 %wide.load = load <16 x i8>, <16 x i8>* %1, align 4
 %2 = zext <16 x i8> %wide.load to <16 x i32>
 %3 = getelementptr inbounds [1024 x i8], [1024 x i8]* @b, i64 0, i64 %index
 %4 = bitcast i8* %3 to <16 x i8>*
 %wide.load1 = load <16 x i8>, <16 x i8>* %4, align 4
 %5 = zext <16 x i8> %wide.load1 to <16 x i32>
 %6 = sub nsw <16 x i32> %2, %5
 %7 = icmp sgt <16 x i32> %6, <i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -
1, i32 -1, i32 -1, i32 -1, i32 -1>
 %8 = sub nsw <16 x i32> zeroinitializer, %6
 %9 = select <16 x i1> %7, <16 x i32> %6, <16 x i32> %8
 %10 = add nsw <16 x i32> %9, %vec.phi
 %index.next = add i64 %index, 4
 %11 = icmp eq i64 %index.next, 1024
 br i1 %11, label %middle.block, label %vector.body

middle.block:
 %rdx.shuf = shufflevector <16 x i32> %10, <16 x i32> undef, <16 x i32> <i32 8, i32 9, i32 10, i32 11, i32 12, i32
13, i32 14, i32 15, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
 %bin.rdx = add <16 x i32> %10, %rdx.shuf
 %rdx.shuf2 = shufflevector <16 x i32> %bin.rdx, <16 x i32> undef, <16 x i32> <i32 4, i32 5, i32 6, i32 7, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef>
 %bin.rdx2 = add <16 x i32> %bin.rdx, %rdx.shuf2
 %rdx.shuf3 = shufflevector <16 x i32> %bin.rdx2, <16 x i32> undef, <16 x i32> <i32 2, i32 3, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef>
 %bin.rdx3 = add <16 x i32> %bin.rdx2, %rdx.shuf3
 %rdx.shuf4 = shufflevector <16 x i32> %bin.rdx3, <16 x i32> undef, <16 x i32> <i32 1, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef>
 %bin.rdx4 = add <16 x i32> %bin.rdx3, %rdx.shuf4
 %12 = extractelement <16 x i32> %bin.rdx4, i32 0
 ret i32 %12
}

define dso_local void @sbto16f32_256(<16 x i16> %a, <16 x float>* %res) "min-legal-vector-width"="256" {
; CHECK-LABEL: sbto16f32_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    kshiftrw $8, %k0, %k1
```

```
; CHECK-NEXT:    vpmovm2d %k1, %ymm0
; CHECK-NEXT:    vcvtdq2ps %ymm0, %ymm0
; CHECK-NEXT:    vpmovm2d %k0, %ymm1
; CHECK-NEXT:    vcvtdq2ps %ymm1, %ymm1
; CHECK-NEXT:    vmovaps %ymm1, (%rdi)
; CHECK-NEXT:    vmovaps %ymm0, 32(%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = sitofp <16 x i1> %mask to <16 x float>
 store <16 x float> %1, <16 x float>* %res
 ret void
}

define dso_local void @sbto16f32_512(<16 x i16> %a, <16 x float>* %res) "min-legal-vector-width"="512" {
; CHECK-LABEL: sbto16f32_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    vpmovm2d %k0, %zmm0
; CHECK-NEXT:    vcvtdq2ps %zmm0, %zmm0
; CHECK-NEXT:    vmovaps %zmm0, (%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = sitofp <16 x i1> %mask to <16 x float>
 store <16 x float> %1, <16 x float>* %res
 ret void
}

define dso_local void @sbto16f64_256(<16 x i16> %a, <16 x double>* %res)  "min-legal-vector-width"="256" {
; CHECK-LABEL: sbto16f64_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    kshiftrw $8, %k0, %k1
; CHECK-NEXT:    vpmovm2d %k1, %ymm0
; CHECK-NEXT:    vcvtdq2pd %xmm0, %ymm1
; CHECK-NEXT:    vextracti128 $1, %ymm0, %xmm0
; CHECK-NEXT:    vcvtdq2pd %xmm0, %ymm0
; CHECK-NEXT:    vpmovm2d %k0, %ymm2
; CHECK-NEXT:    vcvtdq2pd %xmm2, %ymm3
; CHECK-NEXT:    vextracti128 $1, %ymm2, %xmm2
; CHECK-NEXT:    vcvtdq2pd %xmm2, %ymm2
; CHECK-NEXT:    vmovaps %ymm2, 32(%rdi)
; CHECK-NEXT:    vmovaps %ymm3, (%rdi)
; CHECK-NEXT:    vmovaps %ymm0, 96(%rdi)
; CHECK-NEXT:    vmovaps %ymm1, 64(%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
```

```
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = sitofp <16 x i1> %mask to <16 x double>
 store <16 x double> %1, <16 x double>* %res
 ret void
}

define dso_local void @sbto16f64_512(<16 x i16> %a, <16 x double>* %res)  "min-legal-vector-width"="512" {
; CHECK-LABEL: sbto16f64_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    vpmovm2d %k0, %zmm0
; CHECK-NEXT:    vcvtdq2pd %ymm0, %zmm1
; CHECK-NEXT:    vextracti64x4 $1, %zmm0, %ymm0
; CHECK-NEXT:    vcvtdq2pd %ymm0, %zmm0
; CHECK-NEXT:    vmovaps %zmm0, 64(%rdi)
; CHECK-NEXT:    vmovaps %zmm1, (%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = sitofp <16 x i1> %mask to <16 x double>
 store <16 x double> %1, <16 x double>* %res
 ret void
}

define dso_local void @ubto16f32_256(<16 x i16> %a, <16 x float>* %res) "min-legal-vector-width"="256" {
; CHECK-LABEL: ubto16f32_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    kshiftrw $8, %k0, %k1
; CHECK-NEXT:    vpmovm2d %k1, %ymm0
; CHECK-NEXT:    vpsrld $31, %ymm0, %ymm0
; CHECK-NEXT:    vcvtdq2ps %ymm0, %ymm0
; CHECK-NEXT:    vpmovm2d %k0, %ymm1
; CHECK-NEXT:    vpsrld $31, %ymm1, %ymm1
; CHECK-NEXT:    vcvtdq2ps %ymm1, %ymm1
; CHECK-NEXT:    vmovaps %ymm1, (%rdi)
; CHECK-NEXT:    vmovaps %ymm0, 32(%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = uitofp <16 x i1> %mask to <16 x float>
 store <16 x float> %1, <16 x float>* %res
 ret void
}

define dso_local void @ubto16f32_512(<16 x i16> %a, <16 x float>* %res) "min-legal-vector-width"="512" {
; CHECK-LABEL: ubto16f32_512:
; CHECK:       # %bb.0:
```

```
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    vpmovm2d %k0, %zmm0
; CHECK-NEXT:    vpsrld $31, %zmm0, %zmm0
; CHECK-NEXT:    vcvtdq2ps %zmm0, %zmm0
; CHECK-NEXT:    vmovaps %zmm0, (%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = uitofp <16 x i1> %mask to <16 x float>
 store <16 x float> %1, <16 x float>* %res
 ret void
}

define dso_local void @ubto16f64_256(<16 x i16> %a, <16 x double>* %res) "min-legal-vector-width"="256" {
; CHECK-LABEL: ubto16f64_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    kshiftrw $8, %k0, %k1
; CHECK-NEXT:    vpmovm2d %k1, %ymm0
; CHECK-NEXT:    vpsrld $31, %ymm0, %ymm0
; CHECK-NEXT:    vcvtdq2pd %xmm0, %ymm1
; CHECK-NEXT:    vextracti128 $1, %ymm0, %xmm0
; CHECK-NEXT:    vcvtdq2pd %xmm0, %ymm0
; CHECK-NEXT:    vpmovm2d %k0, %ymm2
; CHECK-NEXT:    vpsrld $31, %ymm2, %ymm2
; CHECK-NEXT:    vcvtdq2pd %xmm2, %ymm3
; CHECK-NEXT:    vextracti128 $1, %ymm2, %xmm2
; CHECK-NEXT:    vcvtdq2pd %xmm2, %ymm2
; CHECK-NEXT:    vmovaps %ymm2, 32(%rdi)
; CHECK-NEXT:    vmovaps %ymm3, (%rdi)
; CHECK-NEXT:    vmovaps %ymm0, 96(%rdi)
; CHECK-NEXT:    vmovaps %ymm1, 64(%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = uitofp <16 x i1> %mask to <16 x double>
 store <16 x double> %1, <16 x double>* %res
 ret void
}

define dso_local void @ubto16f64_512(<16 x i16> %a, <16 x double>* %res) "min-legal-vector-width"="512" {
; CHECK-LABEL: ubto16f64_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovw2m %ymm0, %k0
; CHECK-NEXT:    vpmovm2d %k0, %zmm0
; CHECK-NEXT:    vpsrld $31, %zmm0, %zmm0
; CHECK-NEXT:    vcvtdq2pd %ymm0, %zmm1
; CHECK-NEXT:    vextracti64x4 $1, %zmm0, %ymm0
```

```
; CHECK-NEXT:    vcvtdq2pd %ymm0, %zmm0
; CHECK-NEXT:    vmovaps %zmm0, 64(%rdi)
; CHECK-NEXT:    vmovaps %zmm1, (%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %mask = icmp slt <16 x i16> %a, zeroinitializer
 %1 = uitofp <16 x i1> %mask to <16 x double>
 store <16 x double> %1, <16 x double>* %res
 ret void
}

define <16 x i16> @test_16f32toub_256(<16 x float>* %ptr, <16 x i16> %passthru) "min-legal-vector-
width"="256" {
; CHECK-LABEL: test_16f32toub_256:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vcvttps2dq (%rdi), %ymm1
; CHECK-NEXT:    vpslld $31, %ymm1, %ymm1
; CHECK-NEXT:    vpmovd2m %ymm1, %k0
; CHECK-NEXT:    vcvttps2dq 32(%rdi), %ymm1
; CHECK-NEXT:    vpslld $31, %ymm1, %ymm1
; CHECK-NEXT:    vpmovd2m %ymm1, %k1
; CHECK-NEXT:    kunpckbw %k0, %k1, %k1
; CHECK-NEXT:    vmovdqu16 %ymm0, %ymm0 {%k1} {z}
; CHECK-NEXT:    retq
 %a = load <16 x float>, <16 x float>* %ptr
 %mask = fptoui <16 x float> %a to <16 x i1>
 %select = select <16 x i1> %mask, <16 x i16> %passthru, <16 x i16> zeroinitializer
 ret <16 x i16> %select
}

define <16 x i16> @test_16f32toub_512(<16 x float>* %ptr, <16 x i16> %passthru) "min-legal-vector-
width"="512" {
; CHECK-LABEL: test_16f32toub_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vcvttps2dq (%rdi), %zmm1
; CHECK-NEXT:    vpslld $31, %zmm1, %zmm1
; CHECK-NEXT:    vpmovd2m %zmm1, %k1
; CHECK-NEXT:    vmovdqu16 %ymm0, %ymm0 {%k1} {z}
; CHECK-NEXT:    retq
 %a = load <16 x float>, <16 x float>* %ptr
 %mask = fptoui <16 x float> %a to <16 x i1>
 %select = select <16 x i1> %mask, <16 x i16> %passthru, <16 x i16> zeroinitializer
 ret <16 x i16> %select
}

define <16 x i16> @test_16f32tosb_256(<16 x float>* %ptr, <16 x i16> %passthru) "min-legal-vector-
width"="256" {
; CHECK-LABEL: test_16f32tosb_256:
```

```
; CHECK:       # %bb.0:
; CHECK-NEXT:    vcvttps2dq (%rdi), %ymm1
; CHECK-NEXT:    vpmovd2m %ymm1, %k0
; CHECK-NEXT:    vcvttps2dq 32(%rdi), %ymm1
; CHECK-NEXT:    vpmovd2m %ymm1, %k1
; CHECK-NEXT:    kunpckbw %k0, %k1, %k1
; CHECK-NEXT:    vmovdqu16 %ymm0, %ymm0 {%k1} {z}
; CHECK-NEXT:    retq
 %a = load <16 x float>, <16 x float>* %ptr
 %mask = fptosi <16 x float> %a to <16 x i1>
 %select = select <16 x i1> %mask, <16 x i16> %passthru, <16 x i16> zeroinitializer
 ret <16 x i16> %select
}

define <16 x i16> @test_16f32tosb_512(<16 x float>* %ptr, <16 x i16> %passthru) "min-legal-vector-
width"="512" {
; CHECK-LABEL: test_16f32tosb_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vcvttps2dq (%rdi), %zmm1
; CHECK-NEXT:    vpmovd2m %zmm1, %k1
; CHECK-NEXT:    vmovdqu16 %ymm0, %ymm0 {%k1} {z}
; CHECK-NEXT:    retq
 %a = load <16 x float>, <16 x float>* %ptr
 %mask = fptosi <16 x float> %a to <16 x i1>
 %select = select <16 x i1> %mask, <16 x i16> %passthru, <16 x i16> zeroinitializer
 ret <16 x i16> %select
}

define dso_local void @mul256(<64 x i8>* %a, <64 x i8>* %b, <64 x i8>* %c) "min-legal-vector-width"="256" {
; CHECK-AVX512-LABEL: mul256:
; CHECK-AVX512:       # %bb.0:
; CHECK-AVX512-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-AVX512-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-AVX512-NEXT:    vmovdqa (%rsi), %ymm2
; CHECK-AVX512-NEXT:    vmovdqa 32(%rsi), %ymm3
; CHECK-AVX512-NEXT:    vpunpckhbw {{.*#+}} ymm4 =
ymm3[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-AVX512-NEXT:    vpunpckhbw {{.*#+}} ymm5 =
ymm1[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-AVX512-NEXT:    vpmullw %ymm4, %ymm5, %ymm4
; CHECK-AVX512-NEXT:    vmovdqa {{.*#+}} ymm5 =
[255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255]
; CHECK-AVX512-NEXT:    vpand %ymm5, %ymm4, %ymm4
; CHECK-AVX512-NEXT:    vpunpcklbw {{.*#+}} ymm3 =
ymm3[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-AVX512-NEXT:    vpunpcklbw {{.*#+}} ymm1 =
ymm1[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-AVX512-NEXT:    vpmullw %ymm3, %ymm1, %ymm1
```

```
; CHECK-AVX512-NEXT:    vpand %ymm5, %ymm1, %ymm1
; CHECK-AVX512-NEXT:    vpackuswb %ymm4, %ymm1, %ymm1
; CHECK-AVX512-NEXT:    vpunpckhbw {{.*#+}} ymm3 =
ymm2[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-AVX512-NEXT:    vpunpckhbw {{.*#+}} ymm4 =
ymm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-AVX512-NEXT:    vpmullw %ymm3, %ymm4, %ymm3
; CHECK-AVX512-NEXT:    vpand %ymm5, %ymm3, %ymm3
; CHECK-AVX512-NEXT:    vpunpcklbw {{.*#+}} ymm2 =
ymm2[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-AVX512-NEXT:    vpunpcklbw {{.*#+}} ymm0 =
ymm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-AVX512-NEXT:    vpmullw %ymm2, %ymm0, %ymm0
; CHECK-AVX512-NEXT:    vpand %ymm5, %ymm0, %ymm0
; CHECK-AVX512-NEXT:    vpackuswb %ymm3, %ymm0, %ymm0
; CHECK-AVX512-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-AVX512-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-AVX512-NEXT:    vzeroupper
; CHECK-AVX512-NEXT:    retq
;
; CHECK-VBMI-LABEL: mul256:
; CHECK-VBMI:       # %bb.0:
; CHECK-VBMI-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-VBMI-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-VBMI-NEXT:    vmovdqa (%rsi), %ymm2
; CHECK-VBMI-NEXT:    vmovdqa 32(%rsi), %ymm3
; CHECK-VBMI-NEXT:    vpunpckhbw {{.*#+}} ymm4 =
ymm3[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-VBMI-NEXT:    vpunpckhbw {{.*#+}} ymm5 =
ymm1[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-VBMI-NEXT:    vpmullw %ymm4, %ymm5, %ymm4
; CHECK-VBMI-NEXT:    vpunpcklbw {{.*#+}} ymm3 =
ymm3[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-VBMI-NEXT:    vpunpcklbw {{.*#+}} ymm1 =
ymm1[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-VBMI-NEXT:    vpmullw %ymm3, %ymm1, %ymm1
; CHECK-VBMI-NEXT:    vmovdqa {{.*#+}} ymm3 =
[0,2,4,6,8,10,12,14,32,34,36,38,40,42,44,46,16,18,20,22,24,26,28,30,48,50,52,54,56,58,60,62]
; CHECK-VBMI-NEXT:    vpermt2b %ymm4, %ymm3, %ymm1
; CHECK-VBMI-NEXT:    vpunpckhbw {{.*#+}} ymm4 =
ymm2[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-VBMI-NEXT:    vpunpckhbw {{.*#+}} ymm5 =
ymm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-VBMI-NEXT:    vpmullw %ymm4, %ymm5, %ymm4
; CHECK-VBMI-NEXT:    vpunpcklbw {{.*#+}} ymm2 =
ymm2[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-VBMI-NEXT:    vpunpcklbw {{.*#+}} ymm0 =
ymm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
```

```
; CHECK-VBMI-NEXT:    vpmullw %ymm2, %ymm0, %ymm0
; CHECK-VBMI-NEXT:    vpermt2b %ymm4, %ymm3, %ymm0
; CHECK-VBMI-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-VBMI-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-VBMI-NEXT:    vzeroupper
; CHECK-VBMI-NEXT:    retq
 %d = load <64 x i8>, <64 x i8>* %a
 %e = load <64 x i8>, <64 x i8>* %b
 %f = mul <64 x i8> %d, %e
 store <64 x i8> %f, <64 x i8>* %c
 ret void
}

define dso_local void @mul512(<64 x i8>* %a, <64 x i8>* %b, <64 x i8>* %c) "min-legal-vector-width"="512" {
; CHECK-AVX512-LABEL: mul512:
; CHECK-AVX512:       # %bb.0:
; CHECK-AVX512-NEXT:    vmovdqa64 (%rdi), %zmm0
; CHECK-AVX512-NEXT:    vmovdqa64 (%rsi), %zmm1
; CHECK-AVX512-NEXT:    vpunpckhbw {{.*#+}} zmm2 =
zmm1[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31,40,40,41,41,4
2,42,43,43,44,44,45,45,46,46,47,47,56,56,57,57,58,58,59,59,60,60,61,61,62,62,63,63]
; CHECK-AVX512-NEXT:    vpunpckhbw {{.*#+}} zmm3 =
zmm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31,40,40,41,41,4
2,42,43,43,44,44,45,45,46,46,47,47,56,56,57,57,58,58,59,59,60,60,61,61,62,62,63,63]
; CHECK-AVX512-NEXT:    vpmullw %zmm2, %zmm3, %zmm2
; CHECK-AVX512-NEXT:    vmovdqa64 {{.*#+}} zmm3 =
[255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,2
55,255,255,255,255,255]
; CHECK-AVX512-NEXT:    vpandq %zmm3, %zmm2, %zmm2
; CHECK-AVX512-NEXT:    vpunpcklbw {{.*#+}} zmm1 =
zmm1[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23,32,32,33,33,34,34,35,35,36,3
6,37,37,38,38,39,39,48,48,49,49,50,50,51,51,52,52,53,53,54,54,55,55]
; CHECK-AVX512-NEXT:    vpunpcklbw {{.*#+}} zmm0 =
zmm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23,32,32,33,33,34,34,35,35,36,3
6,37,37,38,38,39,39,48,48,49,49,50,50,51,51,52,52,53,53,54,54,55,55]
; CHECK-AVX512-NEXT:    vpmullw %zmm1, %zmm0, %zmm0
; CHECK-AVX512-NEXT:    vpandq %zmm3, %zmm0, %zmm0
; CHECK-AVX512-NEXT:    vpackuswb %zmm2, %zmm0, %zmm0
; CHECK-AVX512-NEXT:    vmovdqa64 %zmm0, (%rdx)
; CHECK-AVX512-NEXT:    vzeroupper
; CHECK-AVX512-NEXT:    retq
;
; CHECK-VBMI-LABEL: mul512:
; CHECK-VBMI:       # %bb.0:
; CHECK-VBMI-NEXT:    vmovdqa64 (%rdi), %zmm0
; CHECK-VBMI-NEXT:    vmovdqa64 (%rsi), %zmm1
; CHECK-VBMI-NEXT:    vpunpckhbw {{.*#+}} zmm2 =
zmm1[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31,40,40,41,41,4
```

```
2,42,43,43,44,44,45,45,46,46,47,47,56,56,57,57,58,58,59,59,60,60,61,61,62,62,63,63]
; CHECK-VBMI-NEXT:    vpunpckhbw {{.*#+}} zmm3 =
zmm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31,40,40,41,41,4
2,42,43,43,44,44,45,45,46,46,47,47,56,56,57,57,58,58,59,59,60,60,61,61,62,62,63,63]
; CHECK-VBMI-NEXT:    vpmullw %zmm2, %zmm3, %zmm2
; CHECK-VBMI-NEXT:    vpunpcklbw {{.*#+}} zmm1 =
zmm1[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23,32,32,33,33,34,34,35,35,36,3
6,37,37,38,38,39,39,48,48,49,49,50,50,51,51,52,52,53,53,54,54,55,55]
; CHECK-VBMI-NEXT:    vpunpcklbw {{.*#+}} zmm0 =
zmm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23,32,32,33,33,34,34,35,35,36,3
6,37,37,38,38,39,39,48,48,49,49,50,50,51,51,52,52,53,53,54,54,55,55]
; CHECK-VBMI-NEXT:    vpmullw %zmm1, %zmm0, %zmm0
; CHECK-VBMI-NEXT:    vmovdqa64 {{.*#+}} zmm1 =
[0,2,4,6,8,10,12,14,64,66,68,70,72,74,76,78,16,18,20,22,24,26,28,30,80,82,84,86,88,90,92,94,32,34,36,38,40,42,44,
46,96,98,100,102,104,106,108,110,48,50,52,54,56,58,60,62,112,114,116,118,120,122,124,126]
; CHECK-VBMI-NEXT:    vpermi2b %zmm2, %zmm0, %zmm1
; CHECK-VBMI-NEXT:    vmovdqa64 %zmm1, (%rdx)
; CHECK-VBMI-NEXT:    vzeroupper
; CHECK-VBMI-NEXT:    retq
 %d = load <64 x i8>, <64 x i8>* %a
 %e = load <64 x i8>, <64 x i8>* %b
 %f = mul <64 x i8> %d, %e
 store <64 x i8> %f, <64 x i8>* %c
 ret void
}

; This threw an assertion at one point.
define <4 x i32> @mload_v4i32(<4 x i32> %trigger, <4 x i32>* %addr, <4 x i32> %dst) "min-legal-vector-
width"="256" {
; CHECK-LABEL: mload_v4i32:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vptestnmd %xmm0, %xmm0, %k1
; CHECK-NEXT:    vpblendmd (%rdi), %xmm1, %xmm0 {%k1}
; CHECK-NEXT:    retq
 %mask = icmp eq <4 x i32> %trigger, zeroinitializer
 %res = call <4 x i32> @llvm.masked.load.v4i32.p0v4i32(<4 x i32>* %addr, i32 4, <4 x i1> %mask, <4 x i32>
%dst)
 ret <4 x i32> %res
}
declare <4 x i32> @llvm.masked.load.v4i32.p0v4i32(<4 x i32>*, i32, <4 x i1>, <4 x i32>)

define <16 x i32> @trunc_v16i64_v16i32(<16 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i64_v16i32:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vmovdqa 64(%rdi), %ymm2
; CHECK-NEXT:    vmovdqa 96(%rdi), %ymm3
```

```
; CHECK-NEXT:    vpmovqd %ymm0, %xmm0
; CHECK-NEXT:    vpmovqd %ymm1, %xmm1
; CHECK-NEXT:    vinserti128 $1, %xmm1, %ymm0, %ymm0
; CHECK-NEXT:    vpmovqd %ymm2, %xmm1
; CHECK-NEXT:    vpmovqd %ymm3, %xmm2
; CHECK-NEXT:    vinserti128 $1, %xmm2, %ymm1, %ymm1
; CHECK-NEXT:    retq
 %a = load <16 x i64>, <16 x i64>* %x
 %b = trunc <16 x i64> %a to <16 x i32>
 ret <16 x i32> %b
}

define <16 x i8> @trunc_v16i64_v16i8(<16 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i64_v16i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vmovdqa 64(%rdi), %ymm2
; CHECK-NEXT:    vmovdqa 96(%rdi), %ymm3
; CHECK-NEXT:    vpmovqb %ymm3, %xmm3
; CHECK-NEXT:    vpmovqb %ymm2, %xmm2
; CHECK-NEXT:    vpunpckldq {{.*#+}} xmm2 = xmm2[0],xmm3[0],xmm2[1],xmm3[1]
; CHECK-NEXT:    vpmovqb %ymm1, %xmm1
; CHECK-NEXT:    vpmovqb %ymm0, %xmm0
; CHECK-NEXT:    vpunpckldq {{.*#+}} xmm0 = xmm0[0],xmm1[0],xmm0[1],xmm1[1]
; CHECK-NEXT:    vpunpcklqdq {{.*#+}} xmm0 = xmm0[0],xmm2[0]
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = load <16 x i64>, <16 x i64>* %x
 %b = trunc <16 x i64> %a to <16 x i8>
 ret <16 x i8> %b
}

define <16 x i8> @trunc_v16i32_v16i8(<16 x i32>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i32_v16i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vpmovdb %ymm1, %xmm1
; CHECK-NEXT:    vpmovdb %ymm0, %xmm0
; CHECK-NEXT:    vpunpcklqdq {{.*#+}} xmm0 = xmm0[0],xmm1[0]
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = load <16 x i32>, <16 x i32>* %x
 %b = trunc <16 x i32> %a to <16 x i8>
 ret <16 x i8> %b
}
```

```
define <8 x i8> @trunc_v8i64_v8i8(<8 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v8i64_v8i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vpmovqb %ymm1, %xmm1
; CHECK-NEXT:    vpmovqb %ymm0, %xmm0
; CHECK-NEXT:    vpunpckldq {{.*#+}} xmm0 = xmm0[0],xmm1[0],xmm0[1],xmm1[1]
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = load <8 x i64>, <8 x i64>* %x
 %b = trunc <8 x i64> %a to <8 x i8>
 ret <8 x i8> %b
}

define <8 x i16> @trunc_v8i64_v8i16(<8 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v8i64_v8i16:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:    vpmovqw %ymm1, %xmm1
; CHECK-NEXT:    vpmovqw %ymm0, %xmm0
; CHECK-NEXT:    vpunpcklqdq {{.*#+}} xmm0 = xmm0[0],xmm1[0]
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = load <8 x i64>, <8 x i64>* %x
 %b = trunc <8 x i64> %a to <8 x i16>
 ret <8 x i16> %b
}

define <8 x i32> @trunc_v8i64_v8i32_zeroes(<8 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v8i64_v8i32_zeroes:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpsrlq $48, 32(%rdi), %ymm0
; CHECK-NEXT:    vpsrlq $48, (%rdi), %ymm1
; CHECK-NEXT:    vpackusdw %ymm0, %ymm1, %ymm0
; CHECK-NEXT:    vpermq {{.*#+}} ymm0 = ymm0[0,2,1,3]
; CHECK-NEXT:    retq
 %a = load <8 x i64>, <8 x i64>* %x
 %b = lshr <8 x i64> %a, <i64 48, i64 48, i64 48, i64 48, i64 48, i64 48, i64 48, i64 48>
 %c = trunc <8 x i64> %b to <8 x i32>
 ret <8 x i32> %c
}

define <16 x i16> @trunc_v16i32_v16i16_zeroes(<16 x i32>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i32_v16i16_zeroes:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm1
```

```
; CHECK-NEXT:    vmovdqa {{.*#+}} ymm0 = [1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31]
; CHECK-NEXT:    vpermi2w 32(%rdi), %ymm1, %ymm0
; CHECK-NEXT:    retq
 %a = load <16 x i32>, <16 x i32>* %x
 %b = lshr <16 x i32> %a, <i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32
16, i32 16, i32 16, i32 16, i32 16>
 %c = trunc <16 x i32> %b to <16 x i16>
 ret <16 x i16> %c
}

define <32 x i8> @trunc_v32i16_v32i8_zeroes(<32 x i16>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-AVX512-LABEL: trunc_v32i16_v32i8_zeroes:
; CHECK-AVX512:       # %bb.0:
; CHECK-AVX512-NEXT:    vpsrlw $8, 32(%rdi), %ymm0
; CHECK-AVX512-NEXT:    vpsrlw $8, (%rdi), %ymm1
; CHECK-AVX512-NEXT:    vpackuswb %ymm0, %ymm1, %ymm0
; CHECK-AVX512-NEXT:    vpermq {{.*#+}} ymm0 = ymm0[0,2,1,3]
; CHECK-AVX512-NEXT:    retq
;
; CHECK-VBMI-LABEL: trunc_v32i16_v32i8_zeroes:
; CHECK-VBMI:       # %bb.0:
; CHECK-VBMI-NEXT:    vmovdqa (%rdi), %ymm1
; CHECK-VBMI-NEXT:    vmovdqa {{.*#+}} ymm0 =
[1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63]
; CHECK-VBMI-NEXT:    vpermi2b 32(%rdi), %ymm1, %ymm0
; CHECK-VBMI-NEXT:    retq
 %a = load <32 x i16>, <32 x i16>* %x
 %b = lshr <32 x i16> %a, <i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8,
i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8>
 %c = trunc <32 x i16> %b to <32 x i8>
 ret <32 x i8> %c
}

define <8 x i32> @trunc_v8i64_v8i32_sign(<8 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v8i64_v8i32_sign:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpsraq $48, 32(%rdi), %ymm0
; CHECK-NEXT:    vpsraq $48, (%rdi), %ymm1
; CHECK-NEXT:    vpmovqd %ymm1, %xmm1
; CHECK-NEXT:    vpmovqd %ymm0, %xmm0
; CHECK-NEXT:    vinserti128 $1, %xmm0, %ymm1, %ymm0
; CHECK-NEXT:    retq
 %a = load <8 x i64>, <8 x i64>* %x
 %b = ashr <8 x i64> %a, <i64 48, i64 48, i64 48, i64 48, i64 48, i64 48, i64 48, i64 48>
 %c = trunc <8 x i64> %b to <8 x i32>
 ret <8 x i32> %c
}
```

```
define <16 x i16> @trunc_v16i32_v16i16_sign(<16 x i32>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i32_v16i16_sign:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm1
; CHECK-NEXT:    vmovdqa {{.*#+}} ymm0 = [1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31]
; CHECK-NEXT:    vpermi2w 32(%rdi), %ymm1, %ymm0
; CHECK-NEXT:    retq
 %a = load <16 x i32>, <16 x i32>* %x
 %b = ashr <16 x i32> %a, <i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32
16, i32 16, i32 16, i32 16, i32 16>
 %c = trunc <16 x i32> %b to <16 x i16>
 ret <16 x i16> %c
}

define <32 x i8> @trunc_v32i16_v32i8_sign(<32 x i16>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-AVX512-LABEL: trunc_v32i16_v32i8_sign:
; CHECK-AVX512:       # %bb.0:
; CHECK-AVX512-NEXT:    vpsrlw $8, 32(%rdi), %ymm0
; CHECK-AVX512-NEXT:    vpsrlw $8, (%rdi), %ymm1
; CHECK-AVX512-NEXT:    vpackuswb %ymm0, %ymm1, %ymm0
; CHECK-AVX512-NEXT:    vpermq {{.*#+}} ymm0 = ymm0[0,2,1,3]
; CHECK-AVX512-NEXT:    retq
;
; CHECK-VBMI-LABEL: trunc_v32i16_v32i8_sign:
; CHECK-VBMI:       # %bb.0:
; CHECK-VBMI-NEXT:    vmovdqa (%rdi), %ymm1
; CHECK-VBMI-NEXT:    vmovdqa {{.*#+}} ymm0 =
[1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63]
; CHECK-VBMI-NEXT:    vpermi2b 32(%rdi), %ymm1, %ymm0
; CHECK-VBMI-NEXT:    retq
 %a = load <32 x i16>, <32 x i16>* %x
 %b = ashr <32 x i16> %a, <i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8,
i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8>
 %c = trunc <32 x i16> %b to <32 x i8>
 ret <32 x i8> %c
}

define dso_local void @zext_v16i8_v16i64(<16 x i8> %x, <16 x i64>* %y) nounwind "min-legal-vector-
width"="256" {
; CHECK-LABEL: zext_v16i8_v16i64:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovzxbw {{.*#+}} ymm1 =
xmm0[0],zero,xmm0[1],zero,xmm0[2],zero,xmm0[3],zero,xmm0[4],zero,xmm0[5],zero,xmm0[6],zero,xmm0[7],zer
o,xmm0[8],zero,xmm0[9],zero,xmm0[10],zero,xmm0[11],zero,xmm0[12],zero,xmm0[13],zero,xmm0[14],zero,xm
m0[15],zero
; CHECK-NEXT:    vpshufd {{.*#+}} xmm2 = xmm1[2,3,2,3]
; CHECK-NEXT:    vpmovzxwq {{.*#+}} ymm2 =
xmm2[0],zero,zero,zero,xmm2[1],zero,zero,zero,xmm2[2],zero,zero,zero,xmm2[3],zero,zero,zero
```

```
; CHECK-NEXT:    vextracti128 $1, %ymm1, %xmm1
; CHECK-NEXT:    vpshufd {{.*#+}} xmm3 = xmm1[2,3,2,3]
; CHECK-NEXT:    vpmovzxwq {{.*#+}} ymm3 =
xmm3[0],zero,zero,zero,xmm3[1],zero,zero,zero,xmm3[2],zero,zero,zero,xmm3[3],zero,zero,zero
; CHECK-NEXT:    vpmovzxwq {{.*#+}} ymm1 =
xmm1[0],zero,zero,zero,xmm1[1],zero,zero,zero,xmm1[2],zero,zero,zero,xmm1[3],zero,zero,zero
; CHECK-NEXT:    vpmovzxbq {{.*#+}} ymm0 =
xmm0[0],zero,zero,zero,zero,zero,zero,zero,xmm0[1],zero,zero,zero,zero,zero,zero,zero,xmm0[2],zero,zero,zero,zer
o,zero,zero,zero,xmm0[3],zero,zero,zero,zero,zero,zero,zero
; CHECK-NEXT:    vmovdqa %ymm0, (%rdi)
; CHECK-NEXT:    vmovdqa %ymm1, 64(%rdi)
; CHECK-NEXT:    vmovdqa %ymm3, 96(%rdi)
; CHECK-NEXT:    vmovdqa %ymm2, 32(%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = zext <16 x i8> %x to <16 x i64>
 store <16 x i64> %a, <16 x i64>* %y
 ret void
}

define dso_local void @sext_v16i8_v16i64(<16 x i8> %x, <16 x i64>* %y) nounwind "min-legal-vector-
width"="256" {
; CHECK-LABEL: sext_v16i8_v16i64:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpmovsxbw %xmm0, %ymm1
; CHECK-NEXT:    vpshufd {{.*#+}} xmm2 = xmm1[2,3,2,3]
; CHECK-NEXT:    vpmovsxwq %xmm2, %ymm2
; CHECK-NEXT:    vextracti128 $1, %ymm1, %xmm1
; CHECK-NEXT:    vpshufd {{.*#+}} xmm3 = xmm1[2,3,2,3]
; CHECK-NEXT:    vpmovsxwq %xmm3, %ymm3
; CHECK-NEXT:    vpmovsxwq %xmm1, %ymm1
; CHECK-NEXT:    vpmovsxbq %xmm0, %ymm0
; CHECK-NEXT:    vmovdqa %ymm0, (%rdi)
; CHECK-NEXT:    vmovdqa %ymm1, 64(%rdi)
; CHECK-NEXT:    vmovdqa %ymm3, 96(%rdi)
; CHECK-NEXT:    vmovdqa %ymm2, 32(%rdi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = sext <16 x i8> %x to <16 x i64>
 store <16 x i64> %a, <16 x i64>* %y
 ret void
}

define dso_local void @vselect_split_v8i16_setcc(<8 x i16> %s, <8 x i16> %t, <8 x i64>* %p, <8 x i64>* %q, <8
x i64>* %r) "min-legal-vector-width"="256" {
; CHECK-LABEL: vselect_split_v8i16_setcc:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm2
```

```
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm3
; CHECK-NEXT:    vpcmpeqw %xmm1, %xmm0, %k1
; CHECK-NEXT:    kshiftrb $4, %k1, %k2
; CHECK-NEXT:    vmovdqa64 32(%rdi), %ymm3 {%k2}
; CHECK-NEXT:    vmovdqa64 (%rdi), %ymm2 {%k1}
; CHECK-NEXT:    vmovdqa %ymm2, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm3, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <8 x i64>, <8 x i64>* %p
 %y = load <8 x i64>, <8 x i64>* %q
 %a = icmp eq <8 x i16> %s, %t
 %b = select <8 x i1> %a, <8 x i64> %x, <8 x i64> %y
 store <8 x i64> %b, <8 x i64>* %r
 ret void
}

define dso_local void @vselect_split_v8i32_setcc(<8 x i32> %s, <8 x i32> %t, <8 x i64>* %p, <8 x i64>* %q, <8 x i64>* %r) "min-legal-vector-width"="256" {
; CHECK-LABEL: vselect_split_v8i32_setcc:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm2
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm3
; CHECK-NEXT:    vpcmpeqd %ymm1, %ymm0, %k1
; CHECK-NEXT:    kshiftrb $4, %k1, %k2
; CHECK-NEXT:    vmovdqa64 32(%rdi), %ymm3 {%k2}
; CHECK-NEXT:    vmovdqa64 (%rdi), %ymm2 {%k1}
; CHECK-NEXT:    vmovdqa %ymm2, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm3, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <8 x i64>, <8 x i64>* %p
 %y = load <8 x i64>, <8 x i64>* %q
 %a = icmp eq <8 x i32> %s, %t
 %b = select <8 x i1> %a, <8 x i64> %x, <8 x i64> %y
 store <8 x i64> %b, <8 x i64>* %r
 ret void
}

define dso_local void @vselect_split_v16i8_setcc(<16 x i8> %s, <16 x i8> %t, <16 x i32>* %p, <16 x i32>* %q, <16 x i32>* %r) "min-legal-vector-width"="256" {
; CHECK-LABEL: vselect_split_v16i8_setcc:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm2
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm3
; CHECK-NEXT:    vpcmpeqb %xmm1, %xmm0, %k1
; CHECK-NEXT:    kshiftrw $8, %k1, %k2
; CHECK-NEXT:    vmovdqa32 32(%rdi), %ymm3 {%k2}
```

```
; CHECK-NEXT:    vmovdqa32 (%rdi), %ymm2 {%k1}
; CHECK-NEXT:    vmovdqa %ymm2, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm3, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <16 x i32>, <16 x i32>* %p
 %y = load <16 x i32>, <16 x i32>* %q
 %a = icmp eq <16 x i8> %s, %t
 %b = select <16 x i1> %a, <16 x i32> %x, <16 x i32> %y
 store <16 x i32> %b, <16 x i32>* %r
 ret void
}

define dso_local void @vselect_split_v16i16_setcc(<16 x i16> %s, <16 x i16> %t, <16 x i32>* %p, <16 x i32>*
%q, <16 x i32>* %r) "min-legal-vector-width"="256" {
; CHECK-LABEL: vselect_split_v16i16_setcc:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm2
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm3
; CHECK-NEXT:    vpcmpeqw %ymm1, %ymm0, %k1
; CHECK-NEXT:    kshiftrw $8, %k1, %k2
; CHECK-NEXT:    vmovdqa32 32(%rdi), %ymm3 {%k2}
; CHECK-NEXT:    vmovdqa32 (%rdi), %ymm2 {%k1}
; CHECK-NEXT:    vmovdqa %ymm2, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm3, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <16 x i32>, <16 x i32>* %p
 %y = load <16 x i32>, <16 x i32>* %q
 %a = icmp eq <16 x i16> %s, %t
 %b = select <16 x i1> %a, <16 x i32> %x, <16 x i32> %y
 store <16 x i32> %b, <16 x i32>* %r
 ret void
}

define <16 x i8> @trunc_packus_v16i32_v16i8(<16 x i32>* %p) "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_packus_v16i32_v16i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vpackusdw 32(%rdi), %ymm0, %ymm0
; CHECK-NEXT:    vpermq {{.*#+}} ymm0 = ymm0[0,2,1,3]
; CHECK-NEXT:    vpmovuswb %ymm0, %xmm0
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = load <16 x i32>, <16 x i32>* %p
 %b = icmp slt <16 x i32> %a, <i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32
255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255>
 %c = select <16 x i1> %b, <16 x i32> %a, <16 x i32> <i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32
```

```
255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255>
 %d = icmp sgt <16 x i32> %c, zeroinitializer
 %e = select <16 x i1> %d, <16 x i32> %c, <16 x i32> zeroinitializer
 %f = trunc <16 x i32> %e to <16 x i8>
 ret <16 x i8> %f
}

define dso_local void @trunc_packus_v16i32_v16i8_store(<16 x i32>* %p, <16 x i8>* %q) "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_packus_v16i32_v16i8_store:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rdi), %ymm0
; CHECK-NEXT:    vpackusdw 32(%rdi), %ymm0, %ymm0
; CHECK-NEXT:    vpermq {{.*#+}} ymm0 = ymm0[0,2,1,3]
; CHECK-NEXT:    vpmovuswb %ymm0, (%rsi)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %a = load <16 x i32>, <16 x i32>* %p
 %b = icmp slt <16 x i32> %a, <i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255>
 %c = select <16 x i1> %b, <16 x i32> %a, <16 x i32> <i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255>
 %d = icmp sgt <16 x i32> %c, zeroinitializer
 %e = select <16 x i1> %d, <16 x i32> %c, <16 x i32> zeroinitializer
 %f = trunc <16 x i32> %e to <16 x i8>
 store <16 x i8> %f, <16 x i8>* %q
 ret void
}

define <64 x i1> @v64i1_argument_return(<64 x i1> %x) "min-legal-vector-width"="256" {
; CHECK-LABEL: v64i1_argument_return:
; CHECK:       # %bb.0:
; CHECK-NEXT:    retq
 ret <64 x i1> %x
}

define dso_local void @v64i1_shuffle(<64 x i8>* %x, <64 x i8>* %y) "min-legal-vector-width"="256" {
; CHECK-LABEL: v64i1_shuffle:
; CHECK:       # %bb.0: # %entry
; CHECK-NEXT:    vmovdqa (%rdi), %ymm1
; CHECK-NEXT:    vmovdqa 32(%rdi), %ymm0
; CHECK-NEXT:    vptestnmb %ymm1, %ymm1, %k0
; CHECK-NEXT:    kshiftrd $1, %k0, %k1
; CHECK-NEXT:    movq $-3, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftlq $63, %k0, %k2
; CHECK-NEXT:    kshiftrq $62, %k2, %k2
```

```
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-5, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $3, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $61, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-9, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $2, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $60, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-17, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $5, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $59, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-33, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $4, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $58, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-65, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $7, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $57, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-129, %rax
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $6, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $56, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-257, %rax # imm = 0xFEFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $9, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
```

```
; CHECK-NEXT:    kshiftrq $55, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-513, %rax # imm = 0xFDFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $8, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $54, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-1025, %rax # imm = 0xFBFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $11, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $53, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-2049, %rax # imm = 0xF7FF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $10, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $52, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-4097, %rax # imm = 0xEFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $13, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $51, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-8193, %rax # imm = 0xDFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $12, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $50, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-16385, %rax # imm = 0xBFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $15, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $49, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-32769, %rax # imm = 0xFFFF7FFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $14, %k0, %k2
```

```
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $48, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-65537, %rax # imm = 0xFFFEFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $17, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $47, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-131073, %rax # imm = 0xFFFDFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $16, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $46, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-262145, %rax # imm = 0xFFFBFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $19, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $45, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-524289, %rax # imm = 0xFFF7FFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $18, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $44, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-1048577, %rax # imm = 0xFFEFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $21, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $43, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-2097153, %rax # imm = 0xFFDFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $20, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $42, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-4194305, %rax # imm = 0xFFBFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
```

```
; CHECK-NEXT:    kshiftrd $23, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $41, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-8388609, %rax # imm = 0xFF7FFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $22, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $40, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-16777217, %rax # imm = 0xFEFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $25, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $39, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-33554433, %rax # imm = 0xFDFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $24, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $38, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-67108865, %rax # imm = 0xFBFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $27, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $37, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-134217729, %rax # imm = 0xF7FFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $26, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $36, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-268435457, %rax # imm = 0xEFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $29, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $35, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-536870913, %rax # imm = 0xDFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
```

```
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $28, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $34, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movq $-1073741825, %rax # imm = 0xBFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k1
; CHECK-NEXT:    kshiftrd $31, %k0, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $33, %k2, %k2
; CHECK-NEXT:    korq %k2, %k1, %k1
; CHECK-NEXT:    movabsq $-2147483649, %rax # imm = 0xFFFFFFFF7FFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k1, %k2
; CHECK-NEXT:    vptestnmb %ymm0, %ymm0, %k1
; CHECK-NEXT:    kshiftrd $30, %k0, %k0
; CHECK-NEXT:    kshiftlq $63, %k0, %k0
; CHECK-NEXT:    kshiftrq $32, %k0, %k0
; CHECK-NEXT:    korq %k0, %k2, %k0
; CHECK-NEXT:    movabsq $-4294967297, %rax # imm = 0xFFFFFFFEFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $1, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $31, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-8589934593, %rax # imm = 0xFFFFFFFDFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftlq $63, %k1, %k2
; CHECK-NEXT:    kshiftrq $30, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-17179869185, %rax # imm = 0xFFFFFFFBFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $3, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $29, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-34359738369, %rax # imm = 0xFFFFFFF7FFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $2, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $28, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-68719476737, %rax # imm = 0xFFFFFFEFFFFFFFFF
```

```
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $5, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $27, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-137438953473, %rax # imm = 0xFFFFFFDFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $4, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $26, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-274877906945, %rax # imm = 0xFFFFFFBFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $7, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $25, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-549755813889, %rax # imm = 0xFFFFFF7FFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $6, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $24, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-1099511627777, %rax # imm = 0xFFFFFEFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $9, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $23, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-2199023255553, %rax # imm = 0xFFFFFDFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $8, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $22, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-4398046511105, %rax # imm = 0xFFFFFBFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $11, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $21, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
```

```
; CHECK-NEXT:    movabsq $-8796093022209, %rax # imm = 0xFFFFF7FFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $10, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $20, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-17592186044417, %rax # imm = 0xFFFFEFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $13, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $19, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-35184372088833, %rax # imm = 0xFFFFDFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $12, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $18, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-70368744177665, %rax # imm = 0xFFFFBFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $15, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $17, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-140737488355329, %rax # imm = 0xFFFF7FFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $14, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $16, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-281474976710657, %rax # imm = 0xFFFEFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $17, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $15, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-562949953421313, %rax # imm = 0xFFFDFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $16, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $14, %k2, %k2
```

```
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-1125899906842625, %rax # imm = 0xFFFBFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $19, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $13, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-2251799813685249, %rax # imm = 0xFFF7FFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $18, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $12, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-4503599627370497, %rax # imm = 0xFFEFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $21, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $11, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-9007199254740993, %rax # imm = 0xFFDFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $20, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $10, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-18014398509481985, %rax # imm = 0xFFBFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $23, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $9, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-36028797018963969, %rax # imm = 0xFF7FFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $22, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $8, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-72057594037927937, %rax # imm = 0xFEFFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $25, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
```

```
; CHECK-NEXT:    kshiftrq $7, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-144115188075855873, %rax # imm = 0xFDFFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $24, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $6, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-288230376151711745, %rax # imm = 0xFBFFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $27, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $5, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-576460752303423489, %rax # imm = 0xF7FFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $26, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $4, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-1152921504606846977, %rax # imm = 0xEFFFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $29, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $3, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-2305843009213693953, %rax # imm = 0xDFFFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $28, %k1, %k2
; CHECK-NEXT:    kshiftlq $63, %k2, %k2
; CHECK-NEXT:    kshiftrq $2, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    movabsq $-4611686018427387905, %rax # imm = 0xBFFFFFFFFFFFFFFF
; CHECK-NEXT:    kmovq %rax, %k2
; CHECK-NEXT:    kandq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $31, %k1, %k2
; CHECK-NEXT:    kshiftlq $62, %k2, %k2
; CHECK-NEXT:    korq %k2, %k0, %k0
; CHECK-NEXT:    kshiftrd $30, %k1, %k1
; CHECK-NEXT:    kshiftlq $1, %k0, %k0
; CHECK-NEXT:    kshiftrq $1, %k0, %k0
; CHECK-NEXT:    kshiftlq $63, %k1, %k1
; CHECK-NEXT:    korq %k1, %k0, %k1
```

```
; CHECK-NEXT:    vmovdqu8 %ymm1, (%rsi) {%k1}
; CHECK-NEXT:    kshiftrq $32, %k1, %k1
; CHECK-NEXT:    vmovdqu8 %ymm0, 32(%rsi) {%k1}
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
entry:
 %a = load <64 x i8>, <64 x i8>* %x
 %b = icmp eq <64 x i8> %a, zeroinitializer
 %shuf = shufflevector <64 x i1> %b, <64 x i1> undef, <64 x i32> <i32 1, i32 0, i32 3, i32 2, i32 5, i32 4, i32 7, i32 6, i32 9, i32 8, i32 11, i32 10, i32 13, i32 12, i32 15, i32 14, i32 17, i32 16, i32 19, i32 18, i32 21, i32 20, i32 23, i32 22, i32 25, i32 24, i32 27, i32 26, i32 29, i32 28, i32 31, i32 30, i32 33, i32 32, i32 35, i32 34, i32 37, i32 36, i32 39, i32 38, i32 41, i32 40, i32 43, i32 42, i32 45, i32 44, i32 47, i32 46, i32 49, i32 48, i32 51, i32 50, i32 53, i32 52, i32 55, i32 54, i32 57, i32 56, i32 59, i32 58, i32 61, i32 60, i32 63, i32 62>
 call void @llvm.masked.store.v64i8.p0v64i8(<64 x i8> %a, <64 x i8>* %y, i32 1, <64 x i1> %shuf)
 ret void
}
declare void @llvm.masked.store.v64i8.p0v64i8(<64 x i8>, <64 x i8>*, i32, <64 x i1>)

@mem64_dst = dso_local global i64 0, align 8
@mem64_src = dso_local global i64 0, align 8
define dso_local i32 @v64i1_inline_asm() "min-legal-vector-width"="256" {
; CHECK-LABEL: v64i1_inline_asm:
; CHECK:       # %bb.0:
; CHECK-NEXT:    kmovq mem64_src(%rip), %k0
; CHECK-NEXT:    #APP
; CHECK-NEXT:    #NO_APP
; CHECK-NEXT:    kmovq %k0, mem64_dst(%rip)
; CHECK-NEXT:    movl -{{[0-9]+}}(%rsp), %eax
; CHECK-NEXT:    retq
 %1 = alloca i32, align 4
 %2 = load i64, i64* @mem64_src, align 8
 %3 = call i64 asm "", "=k,k,~{dirflag},~{fpsr},~{flags}"(i64 %2)
 store i64 %3, i64* @mem64_dst, align 8
 %4 = load i32, i32* %1, align 4
 ret i32 %4
}

define dso_local void @cmp_v8i64_sext(<8 x i64>* %xptr, <8 x i64>* %yptr, <8 x i64>* %zptr) "min-legal-vector-width"="256" {
; CHECK-LABEL: cmp_v8i64_sext:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm1
; CHECK-NEXT:    vpcmpgtq 32(%rdi), %ymm1, %ymm1
; CHECK-NEXT:    vpcmpgtq (%rdi), %ymm0, %ymm0
; CHECK-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:    vzeroupper
```

```
; CHECK-NEXT:    retq
 %x = load <8 x i64>, <8 x i64>* %xptr
 %y = load <8 x i64>, <8 x i64>* %yptr
 %cmp = icmp slt <8 x i64> %x, %y
 %ext = sext <8 x i1> %cmp to <8 x i64>
 store <8 x i64> %ext, <8 x i64>* %zptr
 ret void
}

define dso_local void @cmp_v8i64_zext(<8 x i64>* %xptr, <8 x i64>* %yptr, <8 x i64>* %zptr) "min-legal-
vector-width"="256" {
; CHECK-LABEL: cmp_v8i64_zext:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa (%rsi), %ymm0
; CHECK-NEXT:    vmovdqa 32(%rsi), %ymm1
; CHECK-NEXT:    vpcmpgtq 32(%rdi), %ymm1, %ymm1
; CHECK-NEXT:    vpcmpgtq (%rdi), %ymm0, %ymm0
; CHECK-NEXT:    vpsrlq $63, %ymm1, %ymm1
; CHECK-NEXT:    vpsrlq $63, %ymm0, %ymm0
; CHECK-NEXT:    vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:    vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %x = load <8 x i64>, <8 x i64>* %xptr
 %y = load <8 x i64>, <8 x i64>* %yptr
 %cmp = icmp slt <8 x i64> %x, %y
 %ext = zext <8 x i1> %cmp to <8 x i64>
 store <8 x i64> %ext, <8 x i64>* %zptr
 ret void
}

define <16 x i8> @var_rotate_v16i8(<16 x i8> %a, <16 x i8> %b) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: var_rotate_v16i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vmovdqa {{.*#+}} xmm2 = [8,8,8,8,8,8,8,8,8,8,8,8,8,8,8,8]
; CHECK-NEXT:    vpsubb %xmm1, %xmm2, %xmm2
; CHECK-NEXT:    vpmovzxbw {{.*#+}} ymm1 =
xmm1[0],zero,xmm1[1],zero,xmm1[2],zero,xmm1[3],zero,xmm1[4],zero,xmm1[5],zero,xmm1[6],zero,xmm1[7],zer
o,xmm1[8],zero,xmm1[9],zero,xmm1[10],zero,xmm1[11],zero,xmm1[12],zero,xmm1[13],zero,xmm1[14],zero,xm
m1[15],zero
; CHECK-NEXT:    vpmovzxbw {{.*#+}} ymm0 =
xmm0[0],zero,xmm0[1],zero,xmm0[2],zero,xmm0[3],zero,xmm0[4],zero,xmm0[5],zero,xmm0[6],zero,xmm0[7],zer
o,xmm0[8],zero,xmm0[9],zero,xmm0[10],zero,xmm0[11],zero,xmm0[12],zero,xmm0[13],zero,xmm0[14],zero,xm
m0[15],zero
; CHECK-NEXT:    vpsllvw %ymm1, %ymm0, %ymm1
; CHECK-NEXT:    vpmovzxbw {{.*#+}} ymm2 =
xmm2[0],zero,xmm2[1],zero,xmm2[2],zero,xmm2[3],zero,xmm2[4],zero,xmm2[5],zero,xmm2[6],zero,xmm2[7],zer
o,xmm2[8],zero,xmm2[9],zero,xmm2[10],zero,xmm2[11],zero,xmm2[12],zero,xmm2[13],zero,xmm2[14],zero,xm
```

```
m2[15],zero
; CHECK-NEXT:    vpsrlvw %ymm2, %ymm0, %ymm0
; CHECK-NEXT:    vpor %ymm0, %ymm1, %ymm0
; CHECK-NEXT:    vpmovwb %ymm0, %xmm0
; CHECK-NEXT:    vzeroupper
; CHECK-NEXT:    retq
 %b8 = sub <16 x i8> <i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8>, %b
 %shl = shl <16 x i8> %a, %b
 %lshr = lshr <16 x i8> %a, %b8
 %or = or <16 x i8> %shl, %lshr
 ret <16 x i8> %or
}

define <32 x i8> @var_rotate_v32i8(<32 x i8> %a, <32 x i8> %b) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: var_rotate_v32i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpsllw $4, %ymm0, %ymm2
; CHECK-NEXT:    vpsrlw $4, %ymm0, %ymm3
; CHECK-NEXT:    vpternlogq $216, {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm2, %ymm3
; CHECK-NEXT:    vpsllw $5, %ymm1, %ymm1
; CHECK-NEXT:    vpblendvb %ymm1, %ymm3, %ymm0, %ymm0
; CHECK-NEXT:    vpsllw $2, %ymm0, %ymm2
; CHECK-NEXT:    vpsrlw $6, %ymm0, %ymm3
; CHECK-NEXT:    vpternlogq $216, {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm2, %ymm3
; CHECK-NEXT:    vpaddb %ymm1, %ymm1, %ymm1
; CHECK-NEXT:    vpblendvb %ymm1, %ymm3, %ymm0, %ymm0
; CHECK-NEXT:    vpsrlw $7, %ymm0, %ymm2
; CHECK-NEXT:    vpaddb %ymm0, %ymm0, %ymm3
; CHECK-NEXT:    vpternlogq $248, {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm2, %ymm3
; CHECK-NEXT:    vpaddb %ymm1, %ymm1, %ymm1
; CHECK-NEXT:    vpblendvb %ymm1, %ymm3, %ymm0, %ymm0
; CHECK-NEXT:    retq
 %b8 = sub <32 x i8> <i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8
8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8>, %b
 %shl = shl <32 x i8> %a, %b
 %lshr = lshr <32 x i8> %a, %b8
 %or = or <32 x i8> %shl, %lshr
 ret <32 x i8> %or
}

define <32 x i8> @splatvar_rotate_v32i8(<32 x i8> %a, <32 x i8> %b) nounwind "min-legal-vector-width"="256"
{
; CHECK-AVX512-LABEL: splatvar_rotate_v32i8:
; CHECK-AVX512:       # %bb.0:
; CHECK-AVX512-NEXT:    vpand {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm1, %xmm1
; CHECK-AVX512-NEXT:    vpmovzxbq {{.*#+}} xmm2 =
xmm1[0],zero,zero,zero,zero,zero,zero,zero,xmm1[1],zero,zero,zero,zero,zero,zero,zero
; CHECK-AVX512-NEXT:    vpsllw %xmm2, %ymm0, %ymm3
```

```
; CHECK-AVX512-NEXT:    vmovdqa {{.*#+}} xmm4 = [8,8,8,8,8,8,8,8,8,8,8,8,8,8,8,8]
; CHECK-AVX512-NEXT:    vpsubb %xmm1, %xmm4, %xmm1
; CHECK-AVX512-NEXT:    vpcmpeqd %xmm4, %xmm4, %xmm4
; CHECK-AVX512-NEXT:    vpsllw %xmm2, %xmm4, %xmm2
; CHECK-AVX512-NEXT:    vpbroadcastb %xmm2, %ymm2
; CHECK-AVX512-NEXT:    vpmovzxbq {{.*#+}} xmm1 =
xmm1[0],zero,zero,zero,zero,zero,zero,zero,xmm1[1],zero,zero,zero,zero,zero,zero,zero
; CHECK-AVX512-NEXT:    vpsrlw %xmm1, %ymm0, %ymm5
; CHECK-AVX512-NEXT:    vpand %ymm2, %ymm3, %ymm2
; CHECK-AVX512-NEXT:    vpsrlw %xmm1, %xmm4, %xmm0
; CHECK-AVX512-NEXT:    vpsrlw $8, %xmm0, %xmm0
; CHECK-AVX512-NEXT:    vpbroadcastb %xmm0, %ymm0
; CHECK-AVX512-NEXT:    vpternlogq $236, %ymm5, %ymm2, %ymm0
; CHECK-AVX512-NEXT:    retq
;
; CHECK-VBMI-LABEL: splatvar_rotate_v32i8:
; CHECK-VBMI:       # %bb.0:
; CHECK-VBMI-NEXT:    vpand {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm1, %xmm1
; CHECK-VBMI-NEXT:    vpmovzxbq {{.*#+}} xmm2 =
xmm1[0],zero,zero,zero,zero,zero,zero,zero,xmm1[1],zero,zero,zero,zero,zero,zero,zero
; CHECK-VBMI-NEXT:    vpsllw %xmm2, %ymm0, %ymm3
; CHECK-VBMI-NEXT:    vpcmpeqd %xmm4, %xmm4, %xmm4
; CHECK-VBMI-NEXT:    vpsllw %xmm2, %xmm4, %xmm2
; CHECK-VBMI-NEXT:    vpbroadcastb %xmm2, %ymm2
; CHECK-VBMI-NEXT:    vpand %ymm2, %ymm3, %ymm2
; CHECK-VBMI-NEXT:    vmovdqa {{.*#+}} xmm3 = [8,8,8,8,8,8,8,8,8,8,8,8,8,8,8,8]
; CHECK-VBMI-NEXT:    vpsubb %xmm1, %xmm3, %xmm1
; CHECK-VBMI-NEXT:    vpmovzxbq {{.*#+}} xmm1 =
xmm1[0],zero,zero,zero,zero,zero,zero,zero,xmm1[1],zero,zero,zero,zero,zero,zero,zero
; CHECK-VBMI-NEXT:    vpsrlw %xmm1, %ymm0, %ymm3
; CHECK-VBMI-NEXT:    vpsrlw %xmm1, %xmm4, %xmm0
; CHECK-VBMI-NEXT:    vmovdqa {{.*#+}} ymm1 =
[1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1]
; CHECK-VBMI-NEXT:    vpermb %ymm0, %ymm1, %ymm0
; CHECK-VBMI-NEXT:    vpternlogq $236, %ymm3, %ymm2, %ymm0
; CHECK-VBMI-NEXT:    retq
 %splat = shufflevector <32 x i8> %b, <32 x i8> undef, <32 x i32> zeroinitializer
 %splat8 = sub <32 x i8> <i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8
8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8>, %splat
 %shl = shl <32 x i8> %a, %splat
 %lshr = lshr <32 x i8> %a, %splat8
 %or = or <32 x i8> %shl, %lshr
 ret <32 x i8> %or
}

define <32 x i8> @constant_rotate_v32i8(<32 x i8> %a) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: constant_rotate_v32i8:
; CHECK:       # %bb.0:
```

```
; CHECK-NEXT:    vpsllw $4, %ymm0, %ymm1
; CHECK-NEXT:    vpand {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm1, %ymm1
; CHECK-NEXT:    vbroadcasti128 {{.*#+}} ymm2 =
[8192,24640,41088,57536,57344,41152,24704,8256,8192,24640,41088,57536,57344,41152,24704,8256]
; CHECK-NEXT:    # ymm2 = mem[0,1,0,1]
; CHECK-NEXT:    vpblendvb %ymm2, %ymm1, %ymm0, %ymm1
; CHECK-NEXT:    vpsllw $2, %ymm1, %ymm3
; CHECK-NEXT:    vpand {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm3, %ymm3
; CHECK-NEXT:    vpaddb %ymm2, %ymm2, %ymm2
; CHECK-NEXT:    vpblendvb %ymm2, %ymm3, %ymm1, %ymm1
; CHECK-NEXT:    vpaddb %ymm1, %ymm1, %ymm3
; CHECK-NEXT:    vpaddb %ymm2, %ymm2, %ymm2
; CHECK-NEXT:    vpblendvb %ymm2, %ymm3, %ymm1, %ymm1
; CHECK-NEXT:    vpxor %xmm2, %xmm2, %xmm2
; CHECK-NEXT:    vpunpckhbw {{.*#+}} ymm3 =
ymm0[8],ymm2[8],ymm0[9],ymm2[9],ymm0[10],ymm2[10],ymm0[11],ymm2[11],ymm0[12],ymm2[12],ymm0[13
],ymm2[13],ymm0[14],ymm2[14],ymm0[15],ymm2[15],ymm0[24],ymm2[24],ymm0[25],ymm2[25],ymm0[26],ym
m2[26],ymm0[27],ymm2[27],ymm0[28],ymm2[28],ymm0[29],ymm2[29],ymm0[30],ymm2[30],ymm0[31],ymm2[
31]
; CHECK-NEXT:    vpsllvw {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm3, %ymm3
; CHECK-NEXT:    vpsrlw $8, %ymm3, %ymm3
; CHECK-NEXT:    vpunpcklbw {{.*#+}} ymm0 =
ymm0[0],ymm2[0],ymm0[1],ymm2[1],ymm0[2],ymm2[2],ymm0[3],ymm2[3],ymm0[4],ymm2[4],ymm0[5],ymm2[
5],ymm0[6],ymm2[6],ymm0[7],ymm2[7],ymm0[16],ymm2[16],ymm0[17],ymm2[17],ymm0[18],ymm2[18],ymm0[
19],ymm2[19],ymm0[20],ymm2[20],ymm0[21],ymm2[21],ymm0[22],ymm2[22],ymm0[23],ymm2[23]
; CHECK-NEXT:    vpsllvw {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm0, %ymm0
; CHECK-NEXT:    vpsrlw $8, %ymm0, %ymm0
; CHECK-NEXT:    vpackuswb %ymm3, %ymm0, %ymm0
; CHECK-NEXT:    vpor %ymm0, %ymm1, %ymm0
; CHECK-NEXT:    retq
 %shl = shl <32 x i8> %a, <i8 0, i8 1, i8 2, i8 3, i8 4, i8 5, i8 6, i8 7, i8 8, i8 7, i8 6, i8 5, i8 4, i8 3, i8 2, i8 1, i8 0, i8
1, i8 2, i8 3, i8 4, i8 5, i8 6, i8 7, i8 8, i8 7, i8 6, i8 5, i8 4, i8 3, i8 2, i8 1>
 %lshr = lshr <32 x i8> %a, <i8 8, i8 7, i8 6, i8 5, i8 4, i8 3, i8 2, i8 1, i8 0, i8 1, i8 2, i8 3, i8 4, i8 5, i8 6, i8 7, i8 8,
i8 7, i8 6, i8 5, i8 4, i8 3, i8 2, i8 1, i8 0, i8 1, i8 2, i8 3, i8 4, i8 5, i8 6, i8 7>
 %or = or <32 x i8> %shl, %lshr
 ret <32 x i8> %or
}

define <32 x i8> @splatconstant_rotate_v32i8(<32 x i8> %a) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: splatconstant_rotate_v32i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpsllw $4, %ymm0, %ymm1
; CHECK-NEXT:    vpsrlw $4, %ymm0, %ymm0
; CHECK-NEXT:    vpternlogq $216, {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm1, %ymm0
; CHECK-NEXT:    retq
 %shl = shl <32 x i8> %a, <i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8
4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4>
 %lshr = lshr <32 x i8> %a, <i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4,
```

```
i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4>
 %or = or <32 x i8> %shl, %lshr
 ret <32 x i8> %or
}

define <32 x i8> @splatconstant_rotate_mask_v32i8(<32 x i8> %a) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: splatconstant_rotate_mask_v32i8:
; CHECK:       # %bb.0:
; CHECK-NEXT:    vpsllw $4, %ymm0, %ymm1
; CHECK-NEXT:    vpsrlw $4, %ymm0, %ymm0
; CHECK-NEXT:    vpternlogq $216, {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm1, %ymm0
; CHECK-NEXT:    vpand {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %ymm0, %ymm0
; CHECK-NEXT:    retq
 %shl = shl <32 x i8> %a, <i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8
4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4>
 %lshr = lshr <32 x i8> %a, <i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4,
i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4, i8 4>
 %rmask = and <32 x i8> %lshr, <i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55,
i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8 55, i8
55>
 %lmask = and <32 x i8> %shl, <i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33,
i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8 33, i8
33>
 %or = or <32 x i8> %lmask, %rmask
 ret <32 x i8> %or
}
; NOTE: Assertions have been autogenerated by utils/update_test_checks.py UTC_ARGS: --function-signature --
check-attributes --check-globals
; RUN: opt -attributor -enable-new-pm=0 -attributor-manifest-internal  -attributor-max-iterations-verify -attributor-
annotate-decl-cs -attributor-max-iterations=6 -S < %s | FileCheck %s --check-
prefixes=CHECK,NOT_CGSCC_NPM,NOT_CGSCC_OPM,NOT_TUNIT_NPM,IS__TUNIT____,IS________OP
M,IS__TUNIT_OPM
; RUN: opt -aa-pipeline=basic-aa -passes=attributor -attributor-manifest-internal  -attributor-max-iterations-verify -
attributor-annotate-decl-cs -attributor-max-iterations=6 -S < %s | FileCheck %s --check-
prefixes=CHECK,NOT_CGSCC_OPM,NOT_CGSCC_NPM,NOT_TUNIT_OPM,IS__TUNIT____,IS________NP
M,IS__TUNIT_NPM
; RUN: opt -attributor-cgscc -enable-new-pm=0 -attributor-manifest-internal  -attributor-annotate-decl-cs -S < %s |
FileCheck %s --check-
prefixes=CHECK,NOT_TUNIT_NPM,NOT_TUNIT_OPM,NOT_CGSCC_NPM,IS__CGSCC____,IS________OP
M,IS__CGSCC_OPM
; RUN: opt -aa-pipeline=basic-aa -passes=attributor-cgscc -attributor-manifest-internal  -attributor-annotate-decl-cs -
S < %s | FileCheck %s --check-
prefixes=CHECK,NOT_TUNIT_NPM,NOT_TUNIT_OPM,NOT_CGSCC_OPM,IS__CGSCC____,IS________NP
M,IS__CGSCC_NPM
; Test that we only promote arguments when the caller/callee have compatible
; function attrubtes.

target triple = "x86_64-unknown-linux-gnu"
```

```
; This should promote
define internal fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #0 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR0:[0-9]+]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR0:[0-9]+]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR0:[0-9]+]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %arg) #0 {
;
```

```
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR0]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6:[0-9]+]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7:[0-9]+]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR0]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6:[0-9]+]]
; IS__TUNIT_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7:[0-9]+]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR0]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6:[0-9]+]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7:[0-9]+]]
```

```
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR0]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6:[0-9]+]]
; IS__CGSCC_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7:[0-9]+]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR1:[0-9]+]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
```

```
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR1:[0-9]+]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR1:[0-9]+]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg) #1 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
```

```
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
```

```
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR1]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR1]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define
```

```
{{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR1]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %arg) #0 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR0]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR0]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
```

```
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR0]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR0]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
```

```
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #0 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR0]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR0]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR0]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}
```

```
define void @avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %arg) #1 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
```

```
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64) [[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %tmp2, <8 x i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should not promote
define internal fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg, <8 x i64>* readonly %arg1) #1 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define
{{[^@]+}}@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64) [[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]]) #[[ATTR1]] {
; IS________OPM-NEXT:  bb:
```

```
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS________NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS________NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64>* noalias nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[ARG1:%.*]]) #[[ATTR1:[0-9]+]] {
; IS________NPM-NEXT:  bb:
; IS________NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg) #2 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR2:[0-9]+]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR2:[0-9]+]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
```

```
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* noalias nocapture nofree noundef
nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR2:[0-9]+]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR2:[0-9]+]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* noalias nocapture nofree noundef
nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
```

```
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should not promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #2 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR2:[0-9]+]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS________NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________NPM-LABEL: define
{{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS________NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64>* noalias nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[ARG1:%.*]]) #[[ATTR2:[0-9]+]] {
; IS________NPM-NEXT:  bb:
; IS________NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %arg) #1 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
```

```
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* noalias nocapture nofree noundef
nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
```

```
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64) [[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* noalias nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %tmp2, <8 x i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %arg, <8 x i64>* readonly %arg1) #3 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define {{[^@]+}}@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64) [[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]]) #[[ATTR3:[0-9]+]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR3:[0-9]+]] {
; IS__TUNIT_NPM-NEXT:  bb:
```

```
; IS__TUNIT_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR3:[0-9]+]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %arg) #4 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR4:[0-9]+]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* nocapture nofree noundef nonnull
writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR4:[0-9]+]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
```

```
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* noalias nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR4:[0-9]+]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* nocapture nofree noundef nonnull
writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR4:[0-9]+]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* noalias nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
```

```
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %tmp2, <8 x i64>*
%tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %arg, <8
x i64>* readonly %arg1) #4 {
;
; IS________OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS________OPM-LABEL: define {{[^@]+}}@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS________OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR4:[0-9]+]] {
; IS________OPM-NEXT:  bb:
; IS________OPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS________OPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS________OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR4]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR4]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
```

```
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %arg) #3 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR3]] {
; IS__TUNIT_OPM-NEXT:  bb:
; IS__TUNIT_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:    call fastcc void
@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* nocapture nofree noundef nonnull
writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:    ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR3]] {
; IS__TUNIT_NPM-NEXT:  bb:
; IS__TUNIT_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:    call fastcc void
@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* noalias nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:    ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR3]] {
; IS__CGSCC_OPM-NEXT:  bb:
; IS__CGSCC_OPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
```

```
; IS__CGSCC_OPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:    call fastcc void
@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* nocapture nofree noundef nonnull
writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:    ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR3]] {
; IS__CGSCC_NPM-NEXT:  bb:
; IS__CGSCC_NPM-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT:    call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT:    [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT:    call fastcc void
@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* noalias nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %tmp2, <8 x i64>*
%tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; Function Attrs: argmemonly nounwind
declare void @llvm.memset.p0i8.i64(i8* nocapture writeonly, i8, i64, i1) #5

attributes #0 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-
width"="512" "prefer-vector-width"="512" }
attributes #1 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-
width"="512" "prefer-vector-width"="256" }
```

```
attributes #2 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-width"="256" "prefer-vector-width"="256" }
attributes #3 = { inlinehint norecurse nounwind uwtable "target-features"="+avx2" "min-legal-vector-width"="512" "prefer-vector-width"="256" }
attributes #4 = { inlinehint norecurse nounwind uwtable "target-features"="+avx2" "min-legal-vector-width"="256" "prefer-vector-width"="256" }
attributes #5 = { argmemonly nounwind }
;.
; IS__TUNIT____: attributes #[[ATTR0:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="512" "target-features"="+avx512vl" }
; IS__TUNIT____: attributes #[[ATTR1:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="256" "target-features"="+avx512vl" }
; IS__TUNIT____: attributes #[[ATTR2:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="256" "prefer-vector-width"="256" "target-features"="+avx512vl" }
; IS__TUNIT____: attributes #[[ATTR3:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="256" "target-features"="+avx2" }
; IS__TUNIT____: attributes #[[ATTR4:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="256" "prefer-vector-width"="256" "target-features"="+avx2" }
; IS__TUNIT____: attributes #[[ATTR5:[0-9]+]] = { argmemonly nofree nounwind willreturn writeonly }
; IS__TUNIT____: attributes #[[ATTR6:[0-9]+]] = { willreturn writeonly }
; IS__TUNIT____: attributes #[[ATTR7:[0-9]+]] = { nofree nosync nounwind willreturn }
;.
; IS__CGSCC____: attributes #[[ATTR0:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="512" "target-features"="+avx512vl" }
; IS__CGSCC____: attributes #[[ATTR1:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="256" "target-features"="+avx512vl" }
; IS__CGSCC____: attributes #[[ATTR2:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="256" "prefer-vector-width"="256" "target-features"="+avx512vl" }
; IS__CGSCC____: attributes #[[ATTR3:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="256" "target-features"="+avx2" }
; IS__CGSCC____: attributes #[[ATTR4:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="256" "prefer-vector-width"="256" "target-features"="+avx2" }
; IS__CGSCC____: attributes #[[ATTR5:[0-9]+]] = { argmemonly nofree nounwind willreturn writeonly }
; IS__CGSCC____: attributes #[[ATTR6:[0-9]+]] = { willreturn writeonly }
; IS__CGSCC____: attributes #[[ATTR7:[0-9]+]] = { nounwind willreturn }
;.
; RUN: opt -mtriple=aarch64-linux-gnu -mattr=+sve -scalarize-masked-mem-intrin -S < %s | FileCheck %s

; Testing that masked gathers operating on scalable vectors that are
; packed in SVE registers are not scalarized.

; CHECK-LABEL: @masked_gather_nxv4i32(
; CHECK: call <vscale x 4 x i32> @llvm.masked.gather.nxv4i32
define <vscale x 4 x i32> @masked_gather_nxv4i32(<vscale x 4 x i32*> %ld, <vscale x 4 x i1> %masks, <vscale x 4 x i32> %passthru) {
 %res = call <vscale x 4 x i32> @llvm.masked.gather.nxv4i32(<vscale x 4 x i32*> %ld, i32 0, <vscale x 4 x i1> %masks, <vscale x 4 x i32> %passthru)
 ret <vscale x 4 x i32> %res
```

```
}

; Testing that masked gathers operating on scalable vectors of FP data
; that is packed in SVE registers are not scalarized.

; CHECK-LABEL: @masked_gather_nxv2f64(
; CHECK: call <vscale x 2 x double> @llvm.masked.gather.nxv2f64
define <vscale x 2 x double> @masked_gather_nxv2f64(<vscale x 2 x double*> %ld, <vscale x 2 x i1> %masks, <vscale x 2 x double> %passthru) {
 %res = call <vscale x 2 x double> @llvm.masked.gather.nxv2f64(<vscale x 2 x double*> %ld, i32 0, <vscale x 2 x i1> %masks, <vscale x 2 x double> %passthru)
 ret <vscale x 2 x double> %res
}

; Testing that masked gathers operating on scalable vectors of FP data
; that is unpacked in SVE registers are not scalarized.

; CHECK-LABEL: @masked_gather_nxv2f16(
; CHECK: call <vscale x 2 x half> @llvm.masked.gather.nxv2f16
define <vscale x 2 x half> @masked_gather_nxv2f16(<vscale x 2 x half*> %ld, <vscale x 2 x i1> %masks, <vscale x 2 x half> %passthru) {
 %res = call <vscale x 2 x half> @llvm.masked.gather.nxv2f16(<vscale x 2 x half*> %ld, i32 0, <vscale x 2 x i1> %masks, <vscale x 2 x half> %passthru)
 ret <vscale x 2 x half> %res
}

; Testing that masked gathers operating on 64-bit fixed vectors are
; scalarized because NEON doesn't have support for masked gather
; instructions.

; CHECK-LABEL: @masked_gather_v2f32(
; CHECK-NOT: @llvm.masked.gather.v2f32(
define <2 x float> @masked_gather_v2f32(<2 x float*> %ld, <2 x i1> %masks, <2 x float> %passthru) {
 %res = call <2 x float> @llvm.masked.gather.v2f32(<2 x float*> %ld, i32 0, <2 x i1> %masks, <2 x float> %passthru)
 ret <2 x float> %res
}

; Testing that masked gathers operating on 128-bit fixed vectors are
; scalarized because NEON doesn't have support for masked gather
; instructions and because we are not targeting fixed width SVE.

; CHECK-LABEL: @masked_gather_v4i32(
; CHECK-NOT: @llvm.masked.gather.v4i32(
define <4 x i32> @masked_gather_v4i32(<4 x i32*> %ld, <4 x i1> %masks, <4 x i32> %passthru) {
 %res = call <4 x i32> @llvm.masked.gather.v4i32(<4 x i32*> %ld, i32 0, <4 x i1> %masks, <4 x i32> %passthru)
 ret <4 x i32> %res
}
```

```
declare <vscale x 4 x i32> @llvm.masked.gather.nxv4i32(<vscale x 4 x i32*> %ptrs, i32 %align, <vscale x 4 x i1> %masks, <vscale x 4 x i32> %passthru)
declare <vscale x 2 x double> @llvm.masked.gather.nxv2f64(<vscale x 2 x double*> %ptrs, i32 %align, <vscale x 2 x i1> %masks, <vscale x 2 x double> %passthru)
declare <vscale x 2 x half> @llvm.masked.gather.nxv2f16(<vscale x 2 x half*> %ptrs, i32 %align, <vscale x 2 x i1> %masks, <vscale x 2 x half> %passthru)
declare <2 x float> @llvm.masked.gather.v2f32(<2 x float*> %ptrs, i32 %align, <2 x i1> %masks, <2 x float> %passthru)
declare <4 x i32> @llvm.masked.gather.v4i32(<4 x i32*> %ptrs, i32 %align, <4 x i1> %masks, <4 x i32> %passthru)
; NOTE: Assertions have been autogenerated by utils/update_test_checks.py UTC_ARGS: --include-generated-funcs
; RUN: opt -S -verify -iroutliner -ir-outlining-no-cost < %s | FileCheck %s

; This test checks that debug info is recognized as able to be extracted along
; with the other instructions, but is not included in the consolidated function.

define void @function1() !dbg !6 {
entry:
 %a = alloca i32, align 4, !dbg !17
 call void @llvm.dbg.value(metadata i32* %a, metadata !9, metadata !DIExpression()), !dbg !17
 %b = alloca i32, align 4, !dbg !18
 call void @llvm.dbg.value(metadata i32* %b, metadata !11, metadata !DIExpression()), !dbg !18
 %c = alloca i32, align 4, !dbg !19
 call void @llvm.dbg.value(metadata i32* %c, metadata !12, metadata !DIExpression()), !dbg !19
 store i32 2, i32* %a, align 4, !dbg !20
 store i32 3, i32* %b, align 4, !dbg !21
 store i32 4, i32* %c, align 4, !dbg !22
 %al = load i32, i32* %a, align 4, !dbg !23
 call void @llvm.dbg.value(metadata i32 %al, metadata !13, metadata !DIExpression()), !dbg !23
 %bl = load i32, i32* %b, align 4, !dbg !24
 call void @llvm.dbg.value(metadata i32 %bl, metadata !15, metadata !DIExpression()), !dbg !24
 %cl = load i32, i32* %c, align 4, !dbg !25
 call void @llvm.dbg.value(metadata i32 %cl, metadata !16, metadata !DIExpression()), !dbg !25
 ret void, !dbg !26
}

define void @function2() !dbg !27 {
entry:
 %a = alloca i32, align 4, !dbg !35
 call void @llvm.dbg.value(metadata i32* %a, metadata !29, metadata !DIExpression()), !dbg !35
 %b = alloca i32, align 4, !dbg !36
 call void @llvm.dbg.value(metadata i32* %b, metadata !30, metadata !DIExpression()), !dbg !36
 %c = alloca i32, align 4, !dbg !37
 call void @llvm.dbg.value(metadata i32* %c, metadata !31, metadata !DIExpression()), !dbg !37
 store i32 2, i32* %a, align 4, !dbg !38
 store i32 3, i32* %b, align 4, !dbg !39
```

```
 store i32 4, i32* %c, align 4, !dbg !40
 %al = load i32, i32* %a, align 4, !dbg !41
 call void @llvm.dbg.value(metadata i32 %al, metadata !32, metadata !DIExpression()), !dbg !41
 %bl = load i32, i32* %b, align 4, !dbg !42
 call void @llvm.dbg.value(metadata i32 %bl, metadata !33, metadata !DIExpression()), !dbg !42
 %cl = load i32, i32* %c, align 4, !dbg !43
 call void @llvm.dbg.value(metadata i32 %cl, metadata !34, metadata !DIExpression()), !dbg !43
 ret void, !dbg !44
}


; Function Attrs: nounwind readnone speculatable willreturn
declare void @llvm.dbg.value(metadata, metadata, metadata) #0

attributes #0 = { nounwind readnone speculatable willreturn }

!llvm.dbg.cu = !{!0}
!llvm.debugify = !{!3, !4}
!llvm.module.flags = !{!5}

!0 = distinct !DICompileUnit(language: DW_LANG_C, file: !1, producer: "debugify", isOptimized: true,
runtimeVersion: 0, emissionKind: FullDebug, enums: !2)
!1 = !DIFile(filename: "legal-debug.ll", directory: "/")
!2 = !{}
!3 = !{i32 20}
!4 = !{i32 12}
!5 = !{i32 2, !"Debug Info Version", i32 3}
!6 = distinct !DISubprogram(name: "function1", linkageName: "function1", scope: null, file: !1, line: 1, type: !7,
scopeLine: 1, spFlags: DISPFlagDefinition | DISPFlagOptimized, unit: !0, retainedNodes: !8)
!7 = !DISubroutineType(types: !2)
!8 = !{!9, !11, !12, !13, !15, !16}
!9 = !DILocalVariable(name: "1", scope: !6, file: !1, line: 1, type: !10)
!10 = !DIBasicType(name: "ty64", size: 64, encoding: DW_ATE_unsigned)
!11 = !DILocalVariable(name: "2", scope: !6, file: !1, line: 2, type: !10)
!12 = !DILocalVariable(name: "3", scope: !6, file: !1, line: 3, type: !10)
!13 = !DILocalVariable(name: "4", scope: !6, file: !1, line: 7, type: !14)
!14 = !DIBasicType(name: "ty32", size: 32, encoding: DW_ATE_unsigned)
!15 = !DILocalVariable(name: "5", scope: !6, file: !1, line: 8, type: !14)
!16 = !DILocalVariable(name: "6", scope: !6, file: !1, line: 9, type: !14)
!17 = !DILocation(line: 1, column: 1, scope: !6)
!18 = !DILocation(line: 2, column: 1, scope: !6)
!19 = !DILocation(line: 3, column: 1, scope: !6)
!20 = !DILocation(line: 4, column: 1, scope: !6)
!21 = !DILocation(line: 5, column: 1, scope: !6)
!22 = !DILocation(line: 6, column: 1, scope: !6)
!23 = !DILocation(line: 7, column: 1, scope: !6)
!24 = !DILocation(line: 8, column: 1, scope: !6)
!25 = !DILocation(line: 9, column: 1, scope: !6)
```

```
!26 = !DILocation(line: 10, column: 1, scope: !6)
!27 = distinct !DISubprogram(name: "function2", linkageName: "function2", scope: null, file: !1, line: 11, type: !7, scopeLine: 11, spFlags: DISPFlagDefinition | DISPFlagOptimized, unit: !0, retainedNodes: !28)
!28 = !{!29, !30, !31, !32, !33, !34}
!29 = !DILocalVariable(name: "7", scope: !27, file: !1, line: 11, type: !10)
!30 = !DILocalVariable(name: "8", scope: !27, file: !1, line: 12, type: !10)
!31 = !DILocalVariable(name: "9", scope: !27, file: !1, line: 13, type: !10)
!32 = !DILocalVariable(name: "10", scope: !27, file: !1, line: 17, type: !14)
!33 = !DILocalVariable(name: "11", scope: !27, file: !1, line: 18, type: !14)
!34 = !DILocalVariable(name: "12", scope: !27, file: !1, line: 19, type: !14)
!35 = !DILocation(line: 11, column: 1, scope: !27)
!36 = !DILocation(line: 12, column: 1, scope: !27)
!37 = !DILocation(line: 13, column: 1, scope: !27)
!38 = !DILocation(line: 14, column: 1, scope: !27)
!39 = !DILocation(line: 15, column: 1, scope: !27)
!40 = !DILocation(line: 16, column: 1, scope: !27)
!41 = !DILocation(line: 17, column: 1, scope: !27)
!42 = !DILocation(line: 18, column: 1, scope: !27)
!43 = !DILocation(line: 19, column: 1, scope: !27)
!44 = !DILocation(line: 20, column: 1, scope: !27)
; CHECK-LABEL: @function1(
; CHECK-NEXT:  entry:
; CHECK-NEXT:    [[A:%.*]] = alloca i32, align 4, !dbg [[DBG17:![0-9]+]]
; CHECK-NEXT:    call void @llvm.dbg.value(metadata i32* [[A]], metadata [[META9:![0-9]+]], metadata !DIExpression()), !dbg [[DBG17]]
; CHECK-NEXT:    [[B:%.*]] = alloca i32, align 4, !dbg [[DBG18:![0-9]+]]
; CHECK-NEXT:    call void @llvm.dbg.value(metadata i32* [[B]], metadata [[META11:![0-9]+]], metadata !DIExpression()), !dbg [[DBG18]]
; CHECK-NEXT:    [[C:%.*]] = alloca i32, align 4, !dbg [[DBG19:![0-9]+]]
; CHECK-NEXT:    call void @llvm.dbg.value(metadata i32* [[C]], metadata [[META12:![0-9]+]], metadata !DIExpression()), !dbg [[DBG19]]
; CHECK-NEXT:    call void @outlined_ir_func_0(i32* [[A]], i32* [[B]], i32* [[C]]), !dbg [[DBG20:![0-9]+]]
; CHECK-NEXT:    ret void, !dbg [[DBG21:![0-9]+]]
;
;
; CHECK-LABEL: @function2(
; CHECK-NEXT:  entry:
; CHECK-NEXT:    [[A:%.*]] = alloca i32, align 4, !dbg [[DBG30:![0-9]+]]
; CHECK-NEXT:    call void @llvm.dbg.value(metadata i32* [[A]], metadata [[META24:![0-9]+]], metadata !DIExpression()), !dbg [[DBG30]]
; CHECK-NEXT:    [[B:%.*]] = alloca i32, align 4, !dbg [[DBG31:![0-9]+]]
; CHECK-NEXT:    call void @llvm.dbg.value(metadata i32* [[B]], metadata [[META25:![0-9]+]], metadata !DIExpression()), !dbg [[DBG31]]
; CHECK-NEXT:    [[C:%.*]] = alloca i32, align 4, !dbg [[DBG32:![0-9]+]]
; CHECK-NEXT:    call void @llvm.dbg.value(metadata i32* [[C]], metadata [[META26:![0-9]+]], metadata !DIExpression()), !dbg [[DBG32]]
; CHECK-NEXT:    call void @outlined_ir_func_0(i32* [[A]], i32* [[B]], i32* [[C]]), !dbg [[DBG33:![0-9]+]]
; CHECK-NEXT:    ret void, !dbg [[DBG34:![0-9]+]]
```

```
;
;
; CHECK: @outlined_ir_func_0(i32* [[TMP0:%.*]], i32* [[TMP1:%.*]], i32*  [[TMP2:%.*]])
; CHECK:       entry_to_outline:
; CHECK-NEXT:    store i32 2, i32* [[TMP0]], align 4
; CHECK-NEXT:    store i32 3, i32* [[TMP1]], align 4
; CHECK-NEXT:    store i32 4, i32* [[TMP2]], align 4
; CHECK-NEXT:    [[AL:%.*]] = load i32, i32* [[TMP0]], align 4
; CHECK-NEXT:    [[BL:%.*]] = load i32, i32* [[TMP1]], align 4
; CHECK-NEXT:    [[CL:%.*]] = load i32, i32* [[TMP2]], align 4
; CHECK-NEXT:    br label [[ENTRY_AFTER_OUTLINE_EXITSTUB:%.*]]
;
```

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```
; RUN: llc -march=hexagon -hexagon-hvx-widen=32 < %s | FileCheck %s

; Truncating a type-to-be-widenened to a legal type (v8i8).
; Check that this compiles successfully.
; CHECK-LABEL: f0:
; CHECK: dealloc_return

target datalayout = "e-m:e-p:32:32:32-a:0-n16:32-i64:64:64-i32:32:32-i16:16:16-i1:8:8-f32:32:32-f64:64:64-v32:32:32-v64:64:64-v512:512:512-v1024:1024:1024-v2048:2048:2048"
target triple = "hexagon"

define dllexport void @f0(i8* %a0) local_unnamed_addr #0 {
b0:
 %v0 = load i8, i8* undef, align 1
 %v1 = zext i8 %v0 to i16
 %v2 = add i16 0, %v1
 %v3 = icmp sgt i16 %v2, 1
 %v4 = select i1 %v3, i16 %v2, i16 1
 %v5 = udiv i16 -32768, %v4
 %v6 = zext i16 %v5 to i32
 %v7 = insertelement <8 x i32> undef, i32 %v6, i32 0
 %v8 = shufflevector <8 x i32> %v7, <8 x i32> undef, <8 x i32> zeroinitializer
 %v9 = load <8 x i16>, <8 x i16>* undef, align 2
 %v10 = sext <8 x i16> %v9 to <8 x i32>
 %v11 = mul nsw <8 x i32> %v8, %v10
 %v12 = add nsw <8 x i32> %v11, <i32 16384, i32 16384, i32 16384, i32 16384, i32 16384, i32 16384, i32 16384,
```

```
i32 16384>
 %v13 = lshr <8 x i32> %v12, <i32 15, i32 15, i32 15, i32 15, i32 15, i32 15, i32 15, i32 15>
 %v14 = trunc <8 x i32> %v13 to <8 x i8>
 %v15 = getelementptr inbounds i8, i8* %a0, i32 undef
 %v16 = bitcast i8* %v15 to <8 x i8>*
 store <8 x i8> %v14, <8 x i8>* %v16, align 1
 ret void
}

attributes #0 = { "target-features"="+hvx,+hvx-length128b" }
; RUN: llc -march=hexagon < %s
; REQUIRES: asserts

; The two loads based on %struct.0, loading two different data types
; cause LSR to assume type "void" for the memory type. This would then
; cause an assert in isLegalAddressingMode. Make sure we no longer crash.

target triple = "hexagon"

%struct.0 = type { i8*, i8, %union.anon.0 }
%union.anon.0 = type { i8* }

define hidden fastcc void @fred() unnamed_addr #0 {
entry:
 br i1 undef, label %while.end, label %while.body.lr.ph

while.body.lr.ph:                                 ; preds = %entry
 br label %while.body

while.body:                                       ; preds = %exit.2, %while.body.lr.ph
 %lsr.iv = phi %struct.0* [ %cgep22, %exit.2 ], [ undef, %while.body.lr.ph ]
 switch i32 undef, label %exit [
   i32 1, label %sw.bb.i
   i32 2, label %sw.bb3.i
 ]

sw.bb.i:                                          ; preds = %while.body
 unreachable

sw.bb3.i:                                         ; preds = %while.body
 unreachable

exit:                                             ; preds = %while.body
 switch i32 undef, label %exit.2 [
   i32 1, label %sw.bb.i17
   i32 2, label %sw.bb3.i20
 ]
```

```
sw.bb.i17:                                    ; preds = %.exit
 %0 = bitcast %struct.0* %lsr.iv to i32*
 %1 = load i32, i32* %0, align 4
 unreachable

sw.bb3.i20:                                   ; preds = %exit
 %2 = bitcast %struct.0* %lsr.iv to i8**
 %3 = load i8*, i8** %2, align 4
 unreachable

exit.2:                                       ; preds = %exit
 %cgep22 = getelementptr %struct.0, %struct.0* %lsr.iv, i32 1
 br label %while.body

while.end:                                    ; preds = %entry
 ret void
}

attributes #0 = { nounwind optsize "target-cpu"="hexagonv55" }
; NOTE: Assertions have been autogenerated by utils/update_llc_test_checks.py
; RUN: llc < %s -mtriple=x86_64-linux-android -mattr=+mmx -enable-legalize-types-checking | FileCheck %s
;
; D31946
; Check that we dont end up with the ""LLVM ERROR: Cannot select" error.
; Additionally ensure that the output code actually put fp128 values in SSE registers.

declare fp128 @llvm.fabs.f128(fp128)
declare fp128 @llvm.copysign.f128(fp128, fp128)

define fp128 @TestSelect(fp128 %a, fp128 %b) {
; CHECK-LABEL: TestSelect:
; CHECK:       # %bb.0:
; CHECK-NEXT:    pushq %rbx
; CHECK-NEXT:    .cfi_def_cfa_offset 16
; CHECK-NEXT:    subq $32, %rsp
; CHECK-NEXT:    .cfi_def_cfa_offset 48
; CHECK-NEXT:    .cfi_offset %rbx, -16
; CHECK-NEXT:    movaps %xmm1, {{[-0-9]+}}(%r{{[sb]}}p) # 16-byte Spill
; CHECK-NEXT:    movaps %xmm0, (%rsp) # 16-byte Spill
; CHECK-NEXT:    callq __gttf2@PLT
; CHECK-NEXT:    movl %eax, %ebx
; CHECK-NEXT:    movaps (%rsp), %xmm0 # 16-byte Reload
; CHECK-NEXT:    movaps {{[-0-9]+}}(%r{{[sb]}}p), %xmm1 # 16-byte Reload
; CHECK-NEXT:    callq __subtf3@PLT
; CHECK-NEXT:    testl %ebx, %ebx
; CHECK-NEXT:    jg .LBB0_2
; CHECK-NEXT:  # %bb.1:
; CHECK-NEXT:    xorps %xmm0, %xmm0
```

```
; CHECK-NEXT:  .LBB0_2:
; CHECK-NEXT:    addq $32, %rsp
; CHECK-NEXT:    .cfi_def_cfa_offset 16
; CHECK-NEXT:    popq %rbx
; CHECK-NEXT:    .cfi_def_cfa_offset 8
; CHECK-NEXT:    retq
 %cmp = fcmp ogt fp128 %a, %b
 %sub = fsub fp128 %a, %b
 %res = select i1 %cmp, fp128 %sub, fp128 0xL00000000000000000000000000000000
 ret fp128 %res
}

define fp128 @TestFabs(fp128 %a) {
; CHECK-LABEL: TestFabs:
; CHECK:       # %bb.0:
; CHECK-NEXT:    andps {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm0
; CHECK-NEXT:    retq
 %res = call fp128 @llvm.fabs.f128(fp128 %a)
 ret fp128 %res
}

define fp128 @TestCopysign(fp128 %a, fp128 %b) {
; CHECK-LABEL: TestCopysign:
; CHECK:       # %bb.0:
; CHECK-NEXT:    andps {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm1
; CHECK-NEXT:    andps {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm0
; CHECK-NEXT:    orps %xmm1, %xmm0
; CHECK-NEXT:    retq
 %res = call fp128 @llvm.copysign.f128(fp128 %a, fp128 %b)
 ret fp128 %res
}

define fp128 @TestFneg(fp128 %a) {
; CHECK-LABEL: TestFneg:
; CHECK:       # %bb.0:
; CHECK-NEXT:    pushq %rax
; CHECK-NEXT:    .cfi_def_cfa_offset 16
; CHECK-NEXT:    movaps %xmm0, %xmm1
; CHECK-NEXT:    callq __multf3@PLT
; CHECK-NEXT:    xorps {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm0
; CHECK-NEXT:    popq %rax
; CHECK-NEXT:    .cfi_def_cfa_offset 8
; CHECK-NEXT:    retq
 %mul = fmul fp128 %a, %a
 %res = fsub fp128 0xL00000000000000008000000000000000, %mul
 ret fp128 %res
}
```

```
; RUN: llc -mtriple=aarch64-apple-ios %s -o - | FileCheck %s

define <16 x double> @test_sitofp_fixed(<16 x i32> %in) {
; CHECK-LABEL: test_sitofp_fixed:

 ; First, extend each i32 to i64
; CHECK-DAG: sshll2.2d [[BLOCK0_HI:v[0-9]+]], v0, #0
; CHECK-DAG: sshll2.2d [[BLOCK1_HI:v[0-9]+]], v1, #0
; CHECK-DAG: sshll2.2d [[BLOCK2_HI:v[0-9]+]], v2, #0
; CHECK-DAG: sshll2.2d [[BLOCK3_HI:v[0-9]+]], v3, #0
; CHECK-DAG: sshll.2d [[BLOCK0_LO:v[0-9]+]], v0, #0
; CHECK-DAG: sshll.2d [[BLOCK1_LO:v[0-9]+]], v1, #0
; CHECK-DAG: sshll.2d [[BLOCK2_LO:v[0-9]+]], v2, #0
; CHECK-DAG: sshll.2d [[BLOCK3_LO:v[0-9]+]], v3, #0

 ; Next, convert each to double.
; CHECK-DAG: scvtf.2d v0, [[BLOCK0_LO]]
; CHECK-DAG: scvtf.2d v1, [[BLOCK0_HI]]
; CHECK-DAG: scvtf.2d v2, [[BLOCK1_LO]]
; CHECK-DAG: scvtf.2d v3, [[BLOCK1_HI]]
; CHECK-DAG: scvtf.2d v4, [[BLOCK2_LO]]
; CHECK-DAG: scvtf.2d v5, [[BLOCK2_HI]]
; CHECK-DAG: scvtf.2d v6, [[BLOCK3_LO]]
; CHECK-DAG: scvtf.2d v7, [[BLOCK3_HI]]

; CHECK: ret
 %flt = sitofp <16 x i32> %in to <16 x double>
 %res = fdiv <16 x double> %flt, <double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0,
double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0,
double 64.0>
 ret <16 x double> %res
}

; This one is small enough to satisfy isSimple, but still illegally large.
define <4 x double> @test_sitofp_fixed_shortish(<4 x i64> %in) {
; CHECK-LABEL: test_sitofp_fixed_shortish:

; CHECK-DAG: scvtf.2d v0, v0
; CHECK-DAG: scvtf.2d v1, v1

; CHECK: ret
 %flt = sitofp <4 x i64> %in to <4 x double>
 %res = fdiv <4 x double> %flt, <double 64.0, double 64.0, double 64.0, double 64.0>
 ret <4 x double> %res
}
; RUN: opt %s -inline -S | FileCheck %s

define internal void @innerSmall() "min-legal-vector-width"="128" {
```

```
 ret void
}

define internal void @innerLarge() "min-legal-vector-width"="512" {
 ret void
}

define internal void @innerNoAttribute() {
 ret void
}

; We should not add an attribute during inlining. No attribute means unknown.
; Inlining doesn't change the fact that we don't know anything about this
; function.
define void @outerNoAttribute() {
 call void @innerLarge()
 ret void
}

define void @outerConflictingAttributeSmall() "min-legal-vector-width"="128" {
 call void @innerLarge()
 ret void
}

define void @outerConflictingAttributeLarge() "min-legal-vector-width"="512" {
 call void @innerSmall()
 ret void
}

; We should remove the attribute after inlining since the callee's
; vector width requirements are unknown.
define void @outerAttribute() "min-legal-vector-width"="128" {
 call void @innerNoAttribute()
 ret void
}

; CHECK: define void @outerNoAttribute() {
; CHECK: define void @outerConflictingAttributeSmall() #0
; CHECK: define void @outerConflictingAttributeLarge() #0
; CHECK: define void @outerAttribute() {
; CHECK: attributes #0 = { "min-legal-vector-width"="512" }
```


Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

```
; RUN: opt -consthoist -S -o - %s | FileCheck %s
target datalayout = "e-m:e-p:32:32-i64:64-v128:64:128-a:0:32-n32-S64"
target triple = "thumbv6m-none--musleabi"

; Check that for i8 type, the maximum legal offset is 31.
; Also check that an constant used as value to be stored rather than
; pointer in a store instruction is hoisted.
; CHECK: foo_i8
; CHECK-DAG:  %[[C1:const[0-9]?]] = bitcast i32 805874720 to i32
; CHECK-DAG:  %[[C2:const[0-9]?]] = bitcast i32 805874688 to i32
; CHECK-DAG:  %[[C3:const[0-9]?]] = bitcast i32 805873720 to i32
; CHECK-DAG:  %[[C4:const[0-9]?]] = bitcast i32 805873688 to i32
; CHECK:  %0 = inttoptr i32 %[[C2]] to i8*
; CHECK-NEXT:  %1 = load volatile i8, i8* %0
; CHECK-NEXT:  %[[M1:const_mat[0-9]?]] = add i32 %[[C2]], 4
; CHECK-NEXT:  %2 = inttoptr i32 %[[M1]] to i8*
; CHECK-NEXT:  %3 = load volatile i8, i8* %2
; CHECK-NEXT:  %[[M2:const_mat[0-9]?]] = add i32 %[[C2]], 31
; CHECK-NEXT:  %4 = inttoptr i32 %[[M2]] to i8*
; CHECK-NEXT:  %5 = load volatile i8, i8* %4
; CHECK-NEXT:  %6 = inttoptr i32 %[[C1]] to i8*
; CHECK-NEXT:  %7 = load volatile i8, i8* %6
; CHECK-NEXT:  %[[M3:const_mat[0-9]?]] = add i32 %[[C1]], 7
; CHECK-NEXT:  %8 = inttoptr i32 %[[M3]] to i8*
; CHECK-NEXT:  %9 = load volatile i8, i8* %8
; CHECK-NEXT:  %10 = inttoptr i32 %[[C4]] to i8*
; CHECK-NEXT:  store i8 %9, i8* %10
```

```
; CHECK-NEXT:  %[[M4:const_mat[0-9]?]] = add i32 %[[C4]], 31
; CHECK-NEXT:  %11 = inttoptr i32 %[[M4]] to i8*
; CHECK-NEXT:  store i8 %7, i8* %11
; CHECK-NEXT:  %12 = inttoptr i32 %[[C3]] to i8*
; CHECK-NEXT:  store i8 %5, i8* %12
; CHECK-NEXT:  %[[M5:const_mat[0-9]?]] = add i32 %[[C3]], 7
; CHECK-NEXT:  %13 = inttoptr i32 %[[M5]] to i8*
; CHECK-NEXT:  store i8 %3, i8* %13
; CHECK-NEXT:  %[[M6:const_mat[0-9]?]] = add i32 %[[C1]], 80
; CHECK-NEXT:  %14 = inttoptr i32 %[[M6]] to i8*
; CHECK-NEXT:  store i8* %14, i8** @goo

@goo = global i8* undef

define void @foo_i8() {
entry:
 %0 = load volatile i8, i8* inttoptr (i32 805874688 to i8*)
 %1 = load volatile i8, i8* inttoptr (i32 805874692 to i8*)
 %2 = load volatile i8, i8* inttoptr (i32 805874719 to i8*)
 %3 = load volatile i8, i8* inttoptr (i32 805874720 to i8*)
 %4 = load volatile i8, i8* inttoptr (i32 805874727 to i8*)
 store i8 %4, i8* inttoptr(i32 805873688 to i8*)
 store i8 %3, i8* inttoptr(i32 805873719 to i8*)
 store i8 %2, i8* inttoptr(i32 805873720 to i8*)
 store i8 %1, i8* inttoptr(i32 805873727 to i8*)
 store i8* inttoptr(i32 805874800 to i8*), i8** @goo
 ret void
}

; Check that for i16 type, the maximum legal offset is 62.
; CHECK: foo_i16
; CHECK-DAG: %[[C1:const[0-9]?]] = bitcast i32 805874752 to i32
; CHECK-DAG: %[[C2:const[0-9]?]] = bitcast i32 805874688 to i32
; CHECK: %0 = inttoptr i32 %[[C2]] to i16*
; CHECK-NEXT: %1 = load volatile i16, i16* %0, align 2
; CHECK-NEXT: %[[M1:const_mat[0-9]?]] = add i32 %[[C2]], 4
; CHECK-NEXT: %2 = inttoptr i32 %[[M1]] to i16*
; CHECK-NEXT: %3 = load volatile i16, i16* %2, align 2
; CHECK-NEXT: %[[M2:const_mat[0-9]?]] = add i32 %[[C2]], 32
; CHECK-NEXT: %4 = inttoptr i32 %[[M2]] to i16*
; CHECK-NEXT: %5 = load volatile i16, i16* %4, align 2
; CHECK-NEXT: %[[M3:const_mat[0-9]?]] = add i32 %[[C2]], 62
; CHECK-NEXT: %6 = inttoptr i32 %[[M3]] to i16*
; CHECK-NEXT: %7 = load volatile i16, i16* %6, align 2
; CHECK-NEXT: %8 = inttoptr i32 %[[C1]] to i16*
; CHECK-NEXT: %9 = load volatile i16, i16* %8, align 2
; CHECK-NEXT: %[[M4:const_mat[0-9]?]] = add i32 %[[C1]], 22
; CHECK-NEXT: %10 = inttoptr i32 %[[M4]] to i16*
```

```
; CHECK-NEXT: %11 = load volatile i16, i16* %10, align 2

define void @foo_i16() {
entry:
 %0 = load volatile i16, i16* inttoptr (i32 805874688 to i16*), align 2
 %1 = load volatile i16, i16* inttoptr (i32 805874692 to i16*), align 2
 %2 = load volatile i16, i16* inttoptr (i32 805874720 to i16*), align 2
 %3 = load volatile i16, i16* inttoptr (i32 805874750 to i16*), align 2
 %4 = load volatile i16, i16* inttoptr (i32 805874752 to i16*), align 2
 %5 = load volatile i16, i16* inttoptr (i32 805874774 to i16*), align 2
 ret void
}

; Check that for i32 type, the maximum legal offset is 124.
; CHECK: foo_i32
; CHECK-DAG:  %[[C1:const[0-9]?]] = bitcast i32 805874816 to i32
; CHECK-DAG:  %[[C2:const[0-9]?]] = bitcast i32 805874688 to i32
; CHECK:  %0 = inttoptr i32 %[[C2]] to i32*
; CHECK-NEXT:  %1 = load volatile i32, i32* %0, align 4
; CHECK-NEXT:  %[[M1:const_mat[0-9]?]] = add i32 %[[C2]], 4
; CHECK-NEXT:  %2 = inttoptr i32 %[[M1]] to i32*
; CHECK-NEXT:  %3 = load volatile i32, i32* %2, align 4
; CHECK-NEXT:  %[[M2:const_mat[0-9]?]] = add i32 %[[C2]], 124
; CHECK-NEXT:  %4 = inttoptr i32 %[[M2]] to i32*
; CHECK-NEXT:  %5 = load volatile i32, i32* %4, align 4
; CHECK-NEXT:  %6 = inttoptr i32 %[[C1]] to i32*
; CHECK-NEXT:  %7 = load volatile i32, i32* %6, align 4
; CHECK-NEXT:  %[[M3:const_mat[0-9]?]] = add i32 %[[C1]], 8
; CHECK-NEXT:  %8 = inttoptr i32 %[[M3]] to i32*
; CHECK-NEXT:  %9 = load volatile i32, i32* %8, align 4
; CHECK-NEXT:  %[[M4:const_mat[0-9]?]] = add i32 %[[C1]], 12
; CHECK-NEXT:  %10 = inttoptr i32 %[[M4]] to i32*
; CHECK-NEXT:  %11 = load volatile i32, i32* %10, align 4

define void @foo_i32() {
entry:
 %0 = load volatile i32, i32* inttoptr (i32 805874688 to i32*), align 4
 %1 = load volatile i32, i32* inttoptr (i32 805874692 to i32*), align 4
 %2 = load volatile i32, i32* inttoptr (i32 805874812 to i32*), align 4
 %3 = load volatile i32, i32* inttoptr (i32 805874816 to i32*), align 4
 %4 = load volatile i32, i32* inttoptr (i32 805874824 to i32*), align 4
 %5 = load volatile i32, i32* inttoptr (i32 805874828 to i32*), align 4
 ret void
}
; RUN: llc -O3 -mtriple=powerpc-unknown-linux-gnu -mcpu=e500 -mattr=spe < %s | FileCheck %s

; PowerPC SPE is a rare in-tree target that has the FP_TO_SINT node marked
; as Legal.
```

```
; Verify that fptosi(42.1) isn't simplified when the rounding mode is
; unknown.
; Verify that no gross errors happen.
; CHECK-LABEL: @f20
; COMMON: cfdctsiz
define i32 @f20(double %a) strictfp {
entry:
 %result = call i32 @llvm.experimental.constrained.fptosi.i32.f64(double 42.1,
                                               metadata !"fpexcept.strict")
                                               strictfp
 ret i32 %result
}

@llvm.fp.env = thread_local global i8 zeroinitializer, section "llvm.metadata"
declare i32 @llvm.experimental.constrained.fptosi.i32.f64(double, metadata)
; NOTE: Assertions have been autogenerated by utils/update_test_checks.py UTC_ARGS: --function-signature --
scrub-attributes
; RUN: opt -S -argpromotion < %s | FileCheck %s
; RUN: opt -S -passes=argpromotion < %s | FileCheck %s
; Test that we only promote arguments when the caller/callee have compatible
; function attrubtes.

target triple = "x86_64-unknown-linux-gnu"

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #0 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %arg) #0 {
; CHECK-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer512
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
```

```
; CHECK-NEXT:    [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:    call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x
i64>* [[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg) #1 {
; CHECK-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:    call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x
i64>* [[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
```

```
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %arg) #0 {
; CHECK-LABEL: define {{[^@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:    call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x
i64>* [[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
```

```
 call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #0 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %arg) #1 {
; CHECK-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:    call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x
i64>* [[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}
```

```
; This should not promote
define internal fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64>* readonly [[ARG1:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]]
; CHECK-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg) #2 {
; CHECK-LABEL: define {{[^@]+}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    call fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x
i64>* [[TMP2]], <8 x i64>* [[TMP]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should not promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #2 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64>* readonly [[ARG1:%.*]])
```

```
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]]
; CHECK-NEXT:    store <8 x i64> [[TMP]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %arg) #1 {
; CHECK-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x
i64>* [[TMP2]], <8 x i64>* [[TMP]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %arg, <8
x i64>* readonly %arg1) #3 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
```

```
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %arg) #4 {
; CHECK-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:    call fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>*
[[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %tmp2, <8 x i64>*
%tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; This should promote
define internal fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %arg, <8
x i64>* readonly %arg1) #4 {
; CHECK-LABEL: define {{[^@]+}}@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:    ret void
;
bb:
 %tmp = load <8 x i64>, <8 x i64>* %arg1
 store <8 x i64> %tmp, <8 x i64>* %arg
 ret void
}

define void @avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %arg) #3 {
; CHECK-LABEL: define {{[^@]+}}@avx2_legal512_prefer256_call_avx2_legal256_prefer256
```

```
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT:  bb:
; CHECK-NEXT:    [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:    [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:    call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:    [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:    call fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>*
[[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:    [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:    store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:    ret void
;
bb:
 %tmp = alloca <8 x i64>, align 32
 %tmp2 = alloca <8 x i64>, align 32
 %tmp3 = bitcast <8 x i64>* %tmp to i8*
 call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
 call fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %tmp2, <8 x i64>*
%tmp)
 %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
 store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
 ret void
}

; If the arguments are scalar, its ok to promote.
define internal i32 @scalar_callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(i32* %X, i32*
%Y) #2 {
; CHECK-LABEL: define
{{[^@]+}}@scalar_callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (i32 [[X_VAL:%.*]], i32 [[Y_VAL:%.*]])
; CHECK-NEXT:    [[C:%.*]] = add i32 [[X_VAL]], [[Y_VAL]]
; CHECK-NEXT:    ret i32 [[C]]
;
 %A = load i32, i32* %X
 %B = load i32, i32* %Y
 %C = add i32 %A, %B
 ret i32 %C
}

define i32 @scalar_avx512_legal256_prefer256_call_avx512_legal512_prefer256(i32* %B) #2 {
; CHECK-LABEL: define {{[^@]+}}@scalar_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (i32* [[B:%.*]])
; CHECK-NEXT:    [[A:%.*]] = alloca i32
; CHECK-NEXT:    store i32 1, i32* [[A]]
; CHECK-NEXT:    [[A_VAL:%.*]] = load i32, i32* [[A]]
; CHECK-NEXT:    [[B_VAL:%.*]] = load i32, i32* [[B]]
; CHECK-NEXT:    [[C:%.*]] = call i32
```

```
@scalar_callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(i32 [[A_VAL]], i32 [[B_VAL]])
; CHECK-NEXT:    ret i32 [[C]]
;
 %A = alloca i32
 store i32 1, i32* %A
 %C = call i32 @scalar_callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(i32* %A, i32* %B)
 ret i32 %C
}

; If the arguments are scalar, its ok to promote.
define internal i32 @scalar_callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(i32* %X, i32*
%Y) #2 {
; CHECK-LABEL: define
{{[^@]+}}@scalar_callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; CHECK-SAME: (i32 [[X_VAL:%.*]], i32 [[Y_VAL:%.*]])
; CHECK-NEXT:    [[C:%.*]] = add i32 [[X_VAL]], [[Y_VAL]]
; CHECK-NEXT:    ret i32 [[C]]
;
 %A = load i32, i32* %X
 %B = load i32, i32* %Y
 %C = add i32 %A, %B
 ret i32 %C
}

define i32 @scalar_avx512_legal512_prefer256_call_avx512_legal256_prefer256(i32* %B) #2 {
; CHECK-LABEL: define {{[^@]+}}@scalar_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; CHECK-SAME: (i32* [[B:%.*]])
; CHECK-NEXT:    [[A:%.*]] = alloca i32
; CHECK-NEXT:    store i32 1, i32* [[A]]
; CHECK-NEXT:    [[A_VAL:%.*]] = load i32, i32* [[A]]
; CHECK-NEXT:    [[B_VAL:%.*]] = load i32, i32* [[B]]
; CHECK-NEXT:    [[C:%.*]] = call i32
@scalar_callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(i32 [[A_VAL]], i32 [[B_VAL]])
; CHECK-NEXT:    ret i32 [[C]]
;
 %A = alloca i32
 store i32 1, i32* %A
 %C = call i32 @scalar_callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(i32* %A, i32* %B)
 ret i32 %C
}

; Function Attrs: argmemonly nounwind
declare void @llvm.memset.p0i8.i64(i8* nocapture writeonly, i8, i64, i1) #5

attributes #0 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-
width"="512" "prefer-vector-width"="512" }
attributes #1 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-
width"="512" "prefer-vector-width"="256" }
```

```
attributes #2 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-width"="256" "prefer-vector-width"="256" }
attributes #3 = { inlinehint norecurse nounwind uwtable "target-features"="+avx2" "min-legal-vector-width"="512" "prefer-vector-width"="256" }
attributes #4 = { inlinehint norecurse nounwind uwtable "target-features"="+avx2" "min-legal-vector-width"="256" "prefer-vector-width"="256" }
attributes #5 = { argmemonly nounwind }
; NOTE: Assertions have been autogenerated by utils/update_analyze_test_checks.py
; RUN: opt < %s  -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -mattr=+avx2 | FileCheck %s --check-prefixes=VEC256,AVX
; RUN: opt < %s  -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -mattr=+avx512vl,+prefer-256-bit | FileCheck %s --check-prefixes=VEC256,AVX512VL256
; RUN: opt < %s  -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -mattr=+avx512vl,-prefer-256-bit | FileCheck %s --check-prefixes=AVX512VL512
; RUN: opt < %s  -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -mattr=+avx512vl,+avx512bw,+avx512dq,+prefer-256-bit | FileCheck %s --check-prefixes=VEC256,SKX256
; RUN: opt < %s  -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -mattr=+avx512vl,+avx512bw,+avx512dq,-prefer-256-bit | FileCheck %s --check-prefixes=SKX512

define void @zext256() "min-legal-vector-width"="256" {
; AVX-LABEL: 'zext256'
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL256-LABEL: 'zext256'
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'zext256'
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to
```

```
<16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX256-LABEL: 'zext256'
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'zext256'
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
 %A = zext <8 x i16> undef to <8 x i64>
 %B = zext <8 x i32> undef to <8 x i64>
 %C = zext <16 x i8> undef to <16 x i32>
 %D = zext <16 x i16> undef to <16 x i32>
 %E = zext <32 x i8> undef to <32 x i16>
 ret void
}

define void @zext512() "min-legal-vector-width"="512" {
; AVX-LABEL: 'zext512'
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %D = zext <16 x i16> undef to <16 x i32>
```

; AVX-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL256-LABEL: 'zext512'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'zext512'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX256-LABEL: 'zext512'
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'zext512'
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to <16 x

i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
 %A = zext <8 x i16> undef to <8 x i64>
 %B = zext <8 x i32> undef to <8 x i64>
 %C = zext <16 x i8> undef to <16 x i32>
 %D = zext <16 x i16> undef to <16 x i32>
 %E = zext <32 x i8> undef to <32 x i16>
 ret void
}

define void @sext256() "min-legal-vector-width"="256" {
; AVX-LABEL: 'sext256'
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL256-LABEL: 'sext256'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'sext256'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to

```
<16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX256-LABEL: 'sext256'
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; SKX256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'sext256'
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
 %A = sext <8 x i8> undef to <8 x i64>
 %B = sext <8 x i16> undef to <8 x i64>
 %C = sext <8 x i32> undef to <8 x i64>
 %D = sext <16 x i8> undef to <16 x i32>
 %E = sext <16 x i16> undef to <16 x i32>
 %F = sext <32 x i8> undef to <32 x i16>
 ret void
}

define void @sext512() "min-legal-vector-width"="512" {
; AVX-LABEL: 'sext512'
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %B = sext <8 x i16> undef to <8 x i64>
```

; AVX-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL256-LABEL: 'sext512'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'sext512'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX256-LABEL: 'sext512'
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %F = sext <32 x i8> undef to <32 x i16>

```
; SKX256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'sext512'
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
 %A = sext <8 x i8> undef to <8 x i64>
 %B = sext <8 x i16> undef to <8 x i64>
 %C = sext <8 x i32> undef to <8 x i64>
 %D = sext <16 x i8> undef to <16 x i32>
 %E = sext <16 x i16> undef to <16 x i32>
 %F = sext <32 x i8> undef to <32 x i16>
 ret void
}

define void @trunc256() "min-legal-vector-width"="256" {
; VEC256-LABEL: 'trunc256'
; VEC256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %A = trunc <8 x i64> undef to <8 x i32>
; VEC256-NEXT:  Cost Model: Found an estimated cost of 10 for instruction: %B = trunc <8 x i64> undef to <8 x i16>
; VEC256-NEXT:  Cost Model: Found an estimated cost of 8 for instruction: %C = trunc <8 x i64> undef to <8 x i8>
; VEC256-NEXT:  Cost Model: Found an estimated cost of 10 for instruction: %D = trunc <16 x i32> undef to <16 x i16>
; VEC256-NEXT:  Cost Model: Found an estimated cost of 7 for instruction: %E = trunc <16 x i32> undef to <16 x i8>
; VEC256-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %F = trunc <32 x i16> undef to <32 x i8>
; VEC256-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'trunc256'
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = trunc <8 x i64> undef to <8 x i32>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %B = trunc <8 x i64> undef to <8 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %C = trunc <8 x i64> undef to <8 x i8>
```

```
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %D = trunc <16 x i32> undef to <16 x i16>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %E = trunc <16 x i32> undef to <16 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 8 for instruction: %F = trunc <32 x i16> undef to <32 x i8>
; AVX512VL512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'trunc256'
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %A = trunc <8 x i64> undef to <8 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %B = trunc <8 x i64> undef to <8 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %C = trunc <8 x i64> undef to <8 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %D = trunc <16 x i32> undef to <16 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %E = trunc <16 x i32> undef to <16 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %F = trunc <32 x i16> undef to <32 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret void
;
 %A = trunc <8 x i64> undef to <8 x i32>
 %B = trunc <8 x i64> undef to <8 x i16>
 %C = trunc <8 x i64> undef to <8 x i8>
 %D = trunc <16 x i32> undef to <16 x i16>
 %E = trunc <16 x i32> undef to <16 x i8>
 %F = trunc <32 x i16> undef to <32 x i8>
 ret void
}

define i32 @zext256_vXi1() "min-legal-vector-width"="256" {
; AVX-LABEL: 'zext256_vXi1'
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = zext <2 x i1> undef to <2 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V4i64 = zext <4 x i1> undef to <4 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V8i64 = zext <8 x i1> undef to <8 x i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = zext <2 x i1> undef to <2 x i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = zext <4 x i1> undef to <4 x i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V8i32 = zext <8 x i1> undef to <8 x i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V16i32 = zext <16 x i1> undef to <16 x i32>
```

; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i16 = zext <2 x i1> undef to <2 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i16 = zext <4 x i1> undef to <4 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i16 = zext <8 x i1> undef to <8 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i16 = zext <16 x i1> undef to <16 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V32i16 = zext <32 x i1> undef to <32 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i8 = zext <2 x i1> undef to <2 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i8 = zext <4 x i1> undef to <4 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i8 = zext <8 x i1> undef to <8 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i8 = zext <16 x i1> undef to <16 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V32i8 = zext <32 x i1> undef to <32 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V64i8 = zext <64 x i1> undef to <64 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL256-LABEL: 'zext256_vXi1'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = zext <2 x i1> undef to <2 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = zext <4 x i1> undef to <4 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V8i64 = zext <8 x i1> undef to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = zext <2 x i1> undef to <2 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = zext <4 x i1> undef to <4 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = zext <8 x i1> undef to <8 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V16i32 = zext <16 x i1> undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V2i16 = zext <2 x i1> undef to <2 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V4i16 = zext <4 x i1> undef to <4 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V8i16 = zext <8 x i1> undef to <8 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 12 for instruction: %V16i16 = zext <16 x i1> undef to <16 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 24 for instruction: %V32i16 = zext <32 x i1> undef to <32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 6 for instruction: %V2i8 = zext <2 x i1> undef to <2 x i8>

; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 6 for instruction: %V4i8 = zext <4 x i1> undef to <4 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 6 for instruction: %V8i8 = zext <8 x i1> undef to <8 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 12 for instruction: %V16i8 = zext <16 x i1> undef to <16 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 25 for instruction: %V32i8 = zext <32 x i1> undef to <32 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 50 for instruction: %V64i8 = zext <64 x i1> undef to <64 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL512-LABEL: 'zext256_vXi1'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = zext <2 x i1> undef to <2 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = zext <4 x i1> undef to <4 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = zext <8 x i1> undef to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = zext <2 x i1> undef to <2 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = zext <4 x i1> undef to <4 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = zext <8 x i1> undef to <8 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = zext <16 x i1> undef to <16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V2i16 = zext <2 x i1> undef to <2 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V4i16 = zext <4 x i1> undef to <4 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V8i16 = zext <8 x i1> undef to <8 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V16i16 = zext <16 x i1> undef to <16 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V32i16 = zext <32 x i1> undef to <32 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V2i8 = zext <2 x i1> undef to <2 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V4i8 = zext <4 x i1> undef to <4 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V8i8 = zext <8 x i1> undef to <8 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V16i8 = zext <16 x i1> undef to <16 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V32i8 = zext <32 x i1> undef to <32 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 19 for instruction: %V64i8 = zext <64 x i1>

undef to <64 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX256-LABEL: 'zext256_vXi1'
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = zext <2 x i1> undef to <2 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = zext <4 x i1> undef to <4 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V8i64 = zext <8 x i1> undef to <8 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = zext <2 x i1> undef to <2 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = zext <4 x i1> undef to <4 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = zext <8 x i1> undef to <8 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V16i32 = zext <16 x i1> undef to <16 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = zext <2 x i1> undef to <2 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = zext <4 x i1> undef to <4 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = zext <8 x i1> undef to <8 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i16 = zext <16 x i1> undef to <16 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V32i16 = zext <32 x i1> undef to <32 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = zext <2 x i1> undef to <2 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = zext <4 x i1> undef to <4 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = zext <8 x i1> undef to <8 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = zext <16 x i1> undef to <16 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = zext <32 x i1> undef to <32 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V64i8 = zext <64 x i1> undef to <64 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX512-LABEL: 'zext256_vXi1'
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = zext <2 x i1> undef to <2 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = zext <4 x i1> undef to <4 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = zext <8 x i1> undef to <8 x

```
i64>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = zext <2 x i1> undef to <2 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = zext <4 x i1> undef to <4 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = zext <8 x i1> undef to <8 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = zext <16 x i1> undef to <16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = zext <2 x i1> undef to <2 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = zext <4 x i1> undef to <4 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = zext <8 x i1> undef to <8 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V16i16 = zext <16 x i1> undef to <16 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V32i16 = zext <32 x i1> undef to <32 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = zext <2 x i1> undef to <2 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = zext <4 x i1> undef to <4 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = zext <8 x i1> undef to <8 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = zext <16 x i1> undef to <16 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = zext <32 x i1> undef to <32 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V64i8 = zext <64 x i1> undef to <64 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
 %V2i64 = zext <2 x i1> undef to <2 x i64>
 %V4i64 = zext <4 x i1> undef to <4 x i64>
 %V8i64 = zext <8 x i1> undef to <8 x i64>

 %V2i32 = zext <2 x i1> undef to <2 x i32>
 %V4i32 = zext <4 x i1> undef to <4 x i32>
 %V8i32 = zext <8 x i1> undef to <8 x i32>
 %V16i32 = zext <16 x i1> undef to <16 x i32>

 %V2i16 = zext <2 x i1> undef to <2 x i16>
 %V4i16 = zext <4 x i1> undef to <4 x i16>
 %V8i16 = zext <8 x i1> undef to <8 x i16>
 %V16i16 = zext <16 x i1> undef to <16 x i16>
 %V32i16 = zext <32 x i1> undef to <32 x i16>
```

```
 %V2i8 = zext <2 x i1> undef to <2 x i8>
 %V4i8 = zext <4 x i1> undef to <4 x i8>
 %V8i8 = zext <8 x i1> undef to <8 x i8>
 %V16i8 = zext <16 x i1> undef to <16 x i8>
 %V32i8 = zext <32 x i1> undef to <32 x i8>
 %V64i8 = zext <64 x i1> undef to <64 x i8>

 ret i32 undef
}

define i32 @sext256_vXi1() "min-legal-vector-width"="256" {
; AVX-LABEL: 'sext256_vXi1'
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = sext <2 x i1> undef to <2 x
i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V4i64 = sext <4 x i1> undef to <4 x
i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V8i64 = sext <8 x i1> undef to <8 x
i64>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = sext <2 x i1> undef to <2 x
i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = sext <4 x i1> undef to <4 x
i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V8i32 = sext <8 x i1> undef to <8 x
i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V16i32 = sext <16 x i1> undef to <16 x
i32>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = sext <2 x i1> undef to <2 x
i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = sext <4 x i1> undef to <4 x
i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = sext <8 x i1> undef to <8 x
i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V16i16 = sext <16 x i1> undef to <16 x
i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V32i16 = sext <32 x i1> undef to <32 x
i16>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = sext <2 x i1> undef to <2 x i8>
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = sext <4 x i1> undef to <4 x i8>
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = sext <8 x i1> undef to <8 x i8>
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = sext <16 x i1> undef to <16 x
i8>
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = sext <32 x i1> undef to <32 x
i8>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V64i8 = sext <64 x i1> undef to <64 x
```

i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL256-LABEL: 'sext256_vXi1'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = sext <2 x i1> undef to <2 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i64 = sext <4 x i1> undef to <4 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i64 = sext <8 x i1> undef to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = sext <2 x i1> undef to <2 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = sext <4 x i1> undef to <4 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i32 = sext <8 x i1> undef to <8 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i32 = sext <16 x i1> undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V2i16 = sext <2 x i1> undef to <2 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V4i16 = sext <4 x i1> undef to <4 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V8i16 = sext <8 x i1> undef to <8 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 10 for instruction: %V16i16 = sext <16 x i1> undef to <16 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 20 for instruction: %V32i16 = sext <32 x i1> undef to <32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V2i8 = sext <2 x i1> undef to <2 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V4i8 = sext <4 x i1> undef to <4 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V8i8 = sext <8 x i1> undef to <8 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 10 for instruction: %V16i8 = sext <16 x i1> undef to <16 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 21 for instruction: %V32i8 = sext <32 x i1> undef to <32 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 42 for instruction: %V64i8 = sext <64 x i1> undef to <64 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL512-LABEL: 'sext256_vXi1'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64

; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = sext <2 x i1> undef to <2 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i64 = sext <4 x i1> undef to <4 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i64 = sext <8 x i1> undef to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = sext <2 x i1> undef to <2 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = sext <4 x i1> undef to <4 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i32 = sext <8 x i1> undef to <8 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i32 = sext <16 x i1> undef to <16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i16 = sext <2 x i1> undef to <2 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i16 = sext <4 x i1> undef to <4 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i16 = sext <8 x i1> undef to <8 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i16 = sext <16 x i1> undef to <16 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 7 for instruction: %V32i16 = sext <32 x i1> undef to <32 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i8 = sext <2 x i1> undef to <2 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i8 = sext <4 x i1> undef to <4 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i8 = sext <8 x i1> undef to <8 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i8 = sext <16 x i1> undef to <16 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 7 for instruction: %V32i8 = sext <32 x i1> undef to <32 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 15 for instruction: %V64i8 = sext <64 x i1> undef to <64 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX256-LABEL: 'sext256_vXi1'
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = sext <2 x i1> undef to <2 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i64 = sext <4 x i1> undef to <4 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i64 = sext <8 x i1> undef to <8 x

i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = sext <2 x i1> undef to <2 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = sext <4 x i1> undef to <4 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i32 = sext <8 x i1> undef to <8 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i32 = sext <16 x i1> undef to <16 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i16 = sext <2 x i1> undef to <2 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i16 = sext <4 x i1> undef to <4 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i16 = sext <8 x i1> undef to <8 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i16 = sext <16 x i1> undef to <16 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V32i16 = sext <32 x i1> undef to <32 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i8 = sext <2 x i1> undef to <2 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i8 = sext <4 x i1> undef to <4 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i8 = sext <8 x i1> undef to <8 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i8 = sext <16 x i1> undef to <16 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V32i8 = sext <32 x i1> undef to <32 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V64i8 = sext <64 x i1> undef to <64 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX512-LABEL: 'sext256_vXi1'
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = sext <2 x i1> undef to <2 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i64 = sext <4 x i1> undef to <4 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i64 = sext <8 x i1> undef to <8 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = sext <2 x i1> undef to <2 x i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = sext <4 x i1> undef to <4 x

```
i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V8i32 = sext <8 x i1> undef to <8 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V16i32 = sext <16 x i1> undef to <16 x i32>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V2i16 = sext <2 x i1> undef to <2 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V4i16 = sext <4 x i1> undef to <4 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V8i16 = sext <8 x i1> undef to <8 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V16i16 = sext <16 x i1> undef to <16 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V32i16 = sext <32 x i1> undef to <32 x i16>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V2i8 = sext <2 x i1> undef to <2 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V4i8 = sext <4 x i1> undef to <4 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V8i8 = sext <8 x i1> undef to <8 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V16i8 = sext <16 x i1> undef to <16 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V32i8 = sext <32 x i1> undef to <32 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V64i8 = sext <64 x i1> undef to <64 x i8>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
  %I64 = sext i1 undef to i64
  %V2i64 = sext <2 x i1> undef to <2 x i64>
  %V4i64 = sext <4 x i1> undef to <4 x i64>
  %V8i64 = sext <8 x i1> undef to <8 x i64>

  %I32 = sext i1 undef to i32
  %V2i32 = sext <2 x i1> undef to <2 x i32>
  %V4i32 = sext <4 x i1> undef to <4 x i32>
  %V8i32 = sext <8 x i1> undef to <8 x i32>
  %V16i32 = sext <16 x i1> undef to <16 x i32>

  %I16 = sext i1 undef to i16
  %V2i16 = sext <2 x i1> undef to <2 x i16>
  %V4i16 = sext <4 x i1> undef to <4 x i16>
  %V8i16 = sext <8 x i1> undef to <8 x i16>
  %V16i16 = sext <16 x i1> undef to <16 x i16>
  %V32i16 = sext <32 x i1> undef to <32 x i16>
```

```
 %I8 = sext i1 undef to i8
 %V2i8 = sext <2 x i1> undef to <2 x i8>
 %V4i8 = sext <4 x i1> undef to <4 x i8>
 %V8i8 = sext <8 x i1> undef to <8 x i8>
 %V16i8 = sext <16 x i1> undef to <16 x i8>
 %V32i8 = sext <32 x i1> undef to <32 x i8>
 %V64i8 = sext <64 x i1> undef to <64 x i8>

 ret i32 undef
}

define i32 @trunc_vXi1() "min-legal-vector-width"="256" {
; AVX-LABEL: 'trunc_vXi1'
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: %V2i64 = trunc <2 x i64> undef to <2 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V4i64 = trunc <4 x i64> undef to <4 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 9 for instruction: %V8i64 = trunc <8 x i64> undef to <8 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to <16 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 23 for instruction: %V32i64 = trunc <32 x i64> undef to <32 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 46 for instruction: %V64i64 = trunc <64 x i64> undef to <64 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = trunc <2 x i32> undef to <2 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: %V4i32 = trunc <4 x i32> undef to <4 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 8 for instruction: %V16i32 = trunc <16 x i32> undef to <16 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 17 for instruction: %V32i32 = trunc <32 x i32> undef to <32 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 34 for instruction: %V64i32 = trunc <64 x i32> undef to <64 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V2i16 = trunc <2 x i16> undef to <2 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V4i16 = trunc <4 x i16> undef to <4 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: %V8i16 = trunc <8 x i16> undef to <8 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 4 for instruction: %V16i16 = trunc <16 x i16> undef to <16 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 9 for instruction: %V32i16 = trunc <32 x i16> undef to <32 x i1>
```

```
; AVX-NEXT:  Cost Model: Found an estimated cost of 18 for instruction: %V64i16 = trunc <64 x i16> undef to <64 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 1 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: %V16i8 = trunc <16 x i8> undef to <16 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: %V32i8 = trunc <32 x i8> undef to <32 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; AVX-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL256-LABEL: 'trunc_vXi1'
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = trunc <2 x i64> undef to <2 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = trunc <4 x i64> undef to <4 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 9 for instruction: %V8i64 = trunc <8 x i64> undef to <8 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to <16 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 22 for instruction: %V32i64 = trunc <32 x i64> undef to <32 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 44 for instruction: %V64i64 = trunc <64 x i64> undef to <64 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = trunc <2 x i32> undef to <2 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = trunc <4 x i32> undef to <4 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %V16i32 = trunc <16 x i32> undef to <16 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 10 for instruction: %V32i32 = trunc <32 x i32> undef to <32 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 20 for instruction: %V64i32 = trunc <64 x i32> undef to <64 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V2i16 = trunc <2 x i16> undef to <2 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V4i16 = trunc <4 x i16> undef to <4 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 3 for instruction: %V8i16 = trunc <8 x i16> undef to <8 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 8 for instruction: %V16i16 = trunc <16 x i16> undef to <16 x i1>
; AVX512VL256-NEXT:  Cost Model: Found an estimated cost of 16 for instruction: %V32i16 = trunc <32 x i16> undef to <32 x i1>
```

; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 32 for instruction: %V64i16 = trunc <64 x i16> undef to <64 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 8 for instruction: %V16i8 = trunc <16 x i8> undef to <16 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 17 for instruction: %V32i8 = trunc <32 x i8> undef to <32 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 34 for instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL512-LABEL: 'trunc_vXi1'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = trunc <2 x i64> undef to <2 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = trunc <4 x i64> undef to <4 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = trunc <8 x i64> undef to <8 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to <16 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 22 for instruction: %V32i64 = trunc <32 x i64> undef to <32 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 44 for instruction: %V64i64 = trunc <64 x i64> undef to <64 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = trunc <2 x i32> undef to <2 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = trunc <4 x i32> undef to <4 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = trunc <16 x i32> undef to <16 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V32i32 = trunc <32 x i32> undef to <32 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 8 for instruction: %V64i32 = trunc <64 x i32> undef to <64 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i16 = trunc <2 x i16> undef to <2 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i16 = trunc <4 x i16> undef to <4 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i16 = trunc <8 x i16> undef to <8 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i16 = trunc <16 x i16>

undef to <16 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 7 for instruction: %V32i16 = trunc <32 x i16> undef to <32 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 14 for instruction: %V64i16 = trunc <64 x i16> undef to <64 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i8 = trunc <16 x i8> undef to <16 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 7 for instruction: %V32i8 = trunc <32 x i8> undef to <32 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 15 for instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX256-LABEL: 'trunc_vXi1'
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = trunc <2 x i64> undef to <2 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = trunc <4 x i64> undef to <4 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V8i64 = trunc <8 x i64> undef to <8 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to <16 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 23 for instruction: %V32i64 = trunc <32 x i64> undef to <32 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 47 for instruction: %V64i64 = trunc <64 x i64> undef to <64 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = trunc <2 x i32> undef to <2 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = trunc <4 x i32> undef to <4 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V16i32 = trunc <16 x i32> undef to <16 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V32i32 = trunc <32 x i32> undef to <32 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 23 for instruction: %V64i32 = trunc <64 x i32> undef to <64 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = trunc <2 x i16> undef to <2 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = trunc <4 x i16> undef to <4 x i1>

; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = trunc <8 x i16> undef to <8 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i16 = trunc <16 x i16> undef to <16 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V32i16 = trunc <32 x i16> undef to <32 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V64i16 = trunc <64 x i16> undef to <64 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = trunc <16 x i8> undef to <16 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = trunc <32 x i8> undef to <32 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX512-LABEL: 'trunc_vXi1'
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = trunc <2 x i64> undef to <2 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = trunc <4 x i64> undef to <4 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = trunc <8 x i64> undef to <8 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to <16 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 23 for instruction: %V32i64 = trunc <32 x i64> undef to <32 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 47 for instruction: %V64i64 = trunc <64 x i64> undef to <64 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = trunc <2 x i32> undef to <2 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = trunc <4 x i32> undef to <4 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = trunc <16 x i32> undef to <16 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V32i32 = trunc <32 x i32> undef to <32 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V64i32 = trunc <64 x i32> undef to <64 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = trunc <2 x i16> undef to <2

```
x i1>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = trunc <4 x i16> undef to <4 x i1>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = trunc <8 x i16> undef to <8 x i1>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V16i16 = trunc <16 x i16> undef to <16 x i1>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V32i16 = trunc <32 x i16> undef to <32 x i1>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 5 for instruction: %V64i16 = trunc <64 x i16> undef to <64 x i1>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x i1>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x i1>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x i1>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = trunc <16 x i8> undef to <16 x i1>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = trunc <32 x i8> undef to <32 x i1>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 2 for instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; SKX512-NEXT:  Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
  %V2i64 = trunc <2 x i64> undef to <2 x i1>
  %V4i64 = trunc <4 x i64> undef to <4 x i1>
  %V8i64 = trunc <8 x i64> undef to <8 x i1>
  %V16i64 = trunc <16 x i64> undef to <16 x i1>
  %V32i64 = trunc <32 x i64> undef to <32 x i1>
  %V64i64 = trunc <64 x i64> undef to <64 x i1>

  %V2i32 = trunc <2 x i32> undef to <2 x i1>
  %V4i32 = trunc <4 x i32> undef to <4 x i1>
  %V8i32 = trunc <8 x i32> undef to <8 x i1>
  %V16i32 = trunc <16 x i32> undef to <16 x i1>
  %V32i32 = trunc <32 x i32> undef to <32 x i1>
  %V64i32 = trunc <64 x i32> undef to <64 x i1>

  %V2i16 = trunc <2 x i16> undef to <2 x i1>
  %V4i16 = trunc <4 x i16> undef to <4 x i1>
  %V8i16 = trunc <8 x i16> undef to <8 x i1>
  %V16i16 = trunc <16 x i16> undef to <16 x i1>
  %V32i16 = trunc <32 x i16> undef to <32 x i1>
  %V64i16 = trunc <64 x i16> undef to <64 x i1>

  %V2i8 = trunc <2 x i8> undef to <2 x i1>
  %V4i8 = trunc <4 x i8> undef to <4 x i1>
```

```
 %V8i8 = trunc <8 x i8> undef to <8 x i1>
 %V16i8 = trunc <16 x i8> undef to <16 x i1>
 %V32i8 = trunc <32 x i8> undef to <32 x i1>
 %V64i8 = trunc <64 x i8> undef to <64 x i1>

 ret i32 undef
}
```

```
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#
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1.925 hexdump 2.38-r1

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1.926 libnpmsearch 5.0.3

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1.927 npm-registry-fetch 13.3.0

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1.928 @types/node 18.11.7

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1.929 minipass-collect 1.0.2

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1.930 go-md2man 2.0.0

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1.931 python 3.10.5-r0

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see https://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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1.934 jackson 2.14.0

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1.935 py3-setuptools 59.4.0-r0

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1.938 bval-jsr 2.0.6

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1.939 xz 5.2.5-r1

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Version 2, June 1991

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1.941 keyutils 1.6.3-r1

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*/

```
# Contributor: Sheila Aman <sheila@vulpine.house>
# Maintainer: Adlie Perl Team <adelie-perl@lists.adelielinux.org>
pkgname=perl-software-license
_pkgreal=Software-License
_author=LEONT
_au=${_author%%"${_author#??}"}
_a=${_author%%"${_author#?}"}
pkgver=0.103014
pkgrel=0
pkgdesc="Perl module for generating prefilled license text"
url="https://metacpan.org/pod/Software::License"
arch="noarch"
license="Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template perl-try-tiny"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/$_a/$_au/$_author/$_pkgreal-$pkgver.tar.gz"
builddir="$srcdir/$_pkgreal-$pkgver"

build() {
 PERL_MM_USE_DEFAULT=1 perl Makefile.PL INSTALLDIRS=vendor
 make
}

check() {
 make test
}

package() {
 make DESTDIR="$pkgdir" install
 find "$pkgdir" \( -name perllocal.pod -o -name .packlist \) -delete
}

sha512sums="8012f9d3e8671bdcbaf52f6790f6cd2f6a0510883bb40115c222c8c685aed6697ba33b3f9df8d853841cd
2eef0806d919c9038b6ba7b1057f475b3b63457069d  Software-License-0.103014.tar.gz"
# Maintainer: Adelie Platform Group <adelie-devel@lists.adelielinux.org>
pkgname=bsd-compat-headers
pkgver=0.7.1
pkgrel=1
pkgdesc="Compatibility files for building BSD software"
url=" "
arch="noarch"
options="!check"  # Just header files.
license="BSD-2-Clause AND BSD-3-Clause"
depends=""
makedepends=""
subpackages=""
source="sys-cdefs.h
```

```
 sys-queue.h
 sys-tree.h
 "

package() {
 mkdir -p "$pkgdir"
 case "$CLIBC" in
 musl)
  install -D "$srcdir"/sys-cdefs.h "$pkgdir"/usr/include/sys/cdefs.h
  install -D "$srcdir"/sys-queue.h "$pkgdir"/usr/include/sys/queue.h
  install -D "$srcdir"/sys-tree.h "$pkgdir"/usr/include/sys/tree.h
  ;;
 esac
}

sha512sums="8c3fddd73b696a38e633953715c79c47703739be27ee085fc6c960a57b6746ca05bf6406f7e6126cc1a13
204254fd5830afb566624e1f298f4d6b58216013c28  sys-cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750  sys-queue.h
07cb70f2f0ddb31e23dd913c6f561fc9885667c5803fdf3a559676c99d08834b4104589bacb5d17b4a0b379c68c81a1cf
3173832b3da33a7b936fa7b93706844  sys-tree.h"
# Contributor: Sheila Aman <sheila@vulpine.house>
# Maintainer: Adlie Perl Team <adelie-perl@lists.adelielinux.org>
pkgname=perl-string-copyright
_pkgreal=String-Copyright
_author=JONASS
_au=${_author%%"${_author#??}"}
_a=${_author%%"${_author#?}"}
pkgver=0.003006
pkgrel=0
pkgdesc="Perl module for normalizing copyright text"
url="https://metacpan.org/pod/String::Copyright"
arch="noarch"
license="GPL-3.0+"
depends="perl perl-exporter-tiny perl-number-range"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/$_a/$_au/$_author/$_pkgreal-$pkgver.tar.gz"
builddir="$srcdir/$_pkgreal-$pkgver"

build() {
 PERL_MM_USE_DEFAULT=1 perl Makefile.PL INSTALLDIRS=vendor
 make
}

check() {
 make test
}
```

```
package() {
 make DESTDIR="$pkgdir" install
 find "$pkgdir" \( -name perllocal.pod -o -name .packlist \) -delete
}

sha512sums="7852d96cbe465dde14b4c093f77374b530967412ef95a98703fe838511e405ea9744e4dbfa314bc5a33fc
23b160d8a4866654ad60da1bfb07853263f1c11cd3f  String-Copyright-0.003006.tar.gz"
```

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Charlotte, NC 28269
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```
# Contributor: Sheila Aman <sheila@vulpine.house>
# Maintainer: Adlie Perl Team <adelie-perl@lists.adelielinux.org>
pkgname=perl-regexp-pattern-license
_pkgreal=Regexp-Pattern-License
_author=JONASS
_au=${_author%%"${_author#??}"}
_a=${_author%%"${_author#?}"}
pkgver=3.4.0
pkgrel=0
pkgdesc="Perl module for regex-matching legal licenses"
url="https://metacpan.org/pod/Regexp::Pattern::License"
arch="noarch"
license="GPL-3.0+"
depends="perl perl-re-engine-re2 perl-regexp-pattern perl-strictures
 perl-test-regexp-pattern perl-try-tiny"
checkdepends="perl-test-requires"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/$_a/$_au/$_author/$_pkgreal-v$pkgver.tar.gz"
builddir="$srcdir/$_pkgreal-v$pkgver"

build() {
 PERL_MM_USE_DEFAULT=1 perl Makefile.PL INSTALLDIRS=vendor
 make
}

check() {
 make test
}

package() {
 make DESTDIR="$pkgdir" install
 find "$pkgdir" \( -name perllocal.pod -o -name .packlist \) -delete
}
```

sha512sums="5524535f8eebe6cc2ce2065bae1f726b9a2717c34262df2ddd9106464dcfbaeb67eb310679bb636e72866
9f17041e4f101c7fb241a8e07a6cf3dc6fb3ae88e12 Regexp-Pattern-License-v3.4.0.tar.gz"
# Maintainer:
pkgname=libart-lgpl
pkgver=2.3.21
pkgrel=6
pkgdesc="Library for high-performance 2D graphics"
url="https://www.levien.com/libart/"
arch="all"
options="!check" # No test suite.
license="LGPL-2.0+"
depends=""
makedepends=""
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart_lgpl/2.3/libart_lgpl-$pkgver.tar.bz2"
builddir="$srcdir"/libart_lgpl-$pkgver

prepare() {
 default_prepare
 update_config_sub
}

build() {
 ./configure \
  --build=$CBUILD \
  --host=$CHOST \
  --prefix=/usr
 make
}

package() {
 make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"

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1.942 golang-protobuf-extensions 1.0.1

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1.943 ncurses 6.3_p20220521-r0

1.943.1 Available under license :

Upstream source https://invisible-island.net/ncurses/ncurses.html

This package is used for testing builds of ncurses.

Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

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Files: doc/html/NCURSES-Programming-HOWTO.html
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Files: install-sh
Copyright: 1994 X Consortium
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Files: progs/tset.c ncurses/tinfo/read_termcap.c
Copyright: 1980,1991,1992,1993 The Regents of the University of California.
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-- vile: txtmode file-encoding=utf-8
Copyright 2018-2020,2021 Thomas E. Dickey
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-- vile:txtmode fc=72
-- $Id: COPYING,v 1.10 2021/01/01 09:54:30 tom Exp $
Upstream source https://invisible-island.net/ncurses/Ada95.html

Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

Files: *
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1.944 openjdk 17.0.5

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Ext headers GL/glext.h Khronos
GL/glxext.h Khronos
GL/wglext.h Khronos
KHR/khrplatform.h Khronos

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include/GL/gl.h :

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****

----
include/GL/glext.h
include/GL/glxext.h
include/GL/wglxext.h :

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&lt;/pre&gt;
## Bert Belder: wepoll v 1.5.8

### wepoll License
```
wepoll - epoll for Windows
https://github.com/piscisaureus/wepoll

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1.945 global 4.4.0

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1.946 jackc-chunkreader 2.0.1

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1.947 python-certifi 2021.10.08

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(CA). These were automatically extracted from Mozilla's root certificates
file (certdata.txt). This file can be found in the mozilla source tree:
http://mxr.mozilla.org/mozilla/source/security/nss/lib/ckfw/builtins/certdata.txt?raw=1#
It contains the certificates in PEM format and therefore
can be directly used with curl / libcurl / php_curl, or with
an Apache+mod_ssl webserver for SSL client authentication.
Just configure this file as the SSLCACertificateFile.#

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@(#) $RCSfile: certdata.txt,v $ $Revision: 1.80 $ $Date: 2011/11/03 15:11:58 $

1.948 unpipe 1.0.0

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1.950 python 3.10.7

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see https://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

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Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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1.951 node-fetch 2.6.7

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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/PreferredAddressTypeComparator.java
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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/DnsServerAddresses.java
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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/DnsNameResolverBuilder.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/ShuffledDnsServerAddressStream.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/DefaultDnsServerAddresses.java
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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/NoopDnsCache.java

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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/InflightNameResolver.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/RoundRobinDnsAddressResolverGroup.java
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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/NoopAuthoritativeDnsServerCache.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/DnsAddressResolveContext.java
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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/DefaultDnsCnameCache.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/DnsAddressDecoder.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/NameServerComparator.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/Cache.java
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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/AuthoritativeDnsServerCache.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/NoopDnsCnameCache.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-

jar/io/netty/resolver/dns/DnsRecordResolveContext.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/AuthoritativeDnsServerCacheAdapter.java
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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/DnsCacheEntry.java
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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/LoggingDnsQueryLifecycleObserver.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/DnsServerAddressStreamProviders.java
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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/BiDnsQueryLifecycleObserverFactory.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/DnsQueryLifecycleObserver.java

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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/NoopDnsQueryLifecycleObserver.java
* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/NoopDnsQueryLifecycleObserverFactory.java

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* /opt/cola/permits/1425043669_1663940599.7775512/0/netty-resolver-dns-4-1-78-final-sources-1-jar/io/netty/resolver/dns/UnixResolverOptions.java

1.955 python-pip 22.3

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(CA). These were automatically extracted from Mozilla's root certificates
file (certdata.txt). This file can be found in the mozilla source tree:
https://hg.mozilla.org/mozilla-central/file/tip/security/nss/lib/ckfw/builtins/certdata.txt
It contains the certificates in PEM format and therefore
can be directly used with curl / libcurl / php_curl, or with
an Apache+mod_ssl webserver for SSL client authentication.
Just configure this file as the SSLCACertificateFile.#

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In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes

1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1	2010	PSF	yes
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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see https://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

Footnotes:

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(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

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Version 2.1, February 1999

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1.956 tweetnacl 0.14.5

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1.960 cfdisk 2.38-r1

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2	7680	16383	8704	4.3M		8f8378c0-02
5	7936	12799	4864	2.4M		
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1.961 distro 1.7.0

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1.962 vavr 0.10.4

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* /opt/cola/permits/1190663345_1628786632.57/0/vavr-0-10-4-sources-jar/io/vavr/collection/BitMappedTrie.java
* /opt/cola/permits/1190663345_1628786632.57/0/vavr-0-10-4-sources-jar/io/vavr/Function7.java
* /opt/cola/permits/1190663345_1628786632.57/0/vavr-0-10-4-sources-jar/io/vavr/collection/List.java
* /opt/cola/permits/1190663345_1628786632.57/0/vavr-0-10-4-sources-jar/io/vavr/collection/GwtIncompatible.java
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jar/io/vavr/collection/HashArrayMappedTrie.java
* /opt/cola/permits/1190663345_1628786632.57/0/vavr-0-10-4-sources-jar/io/vavr/collection/IndexedSeq.java
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* /opt/cola/permits/1190663345_1628786632.57/0/vavr-0-10-4-sources-jar/io/vavr/concurrent/Promise.java

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Contributions to the OpenBLAS project

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 * Optimize BLAS3 on Intel Sandy Bridge.

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 * [2013-03-04] Optimize AVX and FMA4 DGEMM on AMD Bulldozer
 * [2013-04-27] Optimize AVX and FMA4 TRSM on AMD Bulldozer
 * [2013-06-09] Optimize AVX and FMA4 SGEMM on AMD Bulldozer
 * [2013-06-11] Optimize AVX and FMA4 ZGEMM on AMD Bulldozer
 * [2013-06-12] Optimize AVX and FMA4 CGEMM on AMD Bulldozer
 * [2013-06-16] Optimize dgemv_n kernel on AMD Bulldozer
 * [2013-06-20] Optimize ddot, daxpy kernel on AMD Bulldozer
 * [2013-06-21] Optimize dcopy kernel on AMD Bulldozer
 * Porting and Optimization on ARM Cortex-A9
 * Optimization on AMD Piledriver
 * Optimization on Intel Haswell

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 * Improve the compatibility about complex number
 * Build LAPACKE: C interface to LAPACK
 * Improve the windows build.

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 * Optimize GEMV on the Loongson 3A processor.

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 * Intern. Test Level-2 BLAS.

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 * [2011-06-11] Make USE_OPENMP=0 disable openmp.

* Stefan Karpinski <stefan@karpinski.org>
 * [2011-12-28] Fix a bug about SystemStubs on Mac OS X.

* Alexander Eberspcher <https://github.com/aeberspaecher>
 * [2012-05-02] Add note on patch for segfaults on Linux kernel 2.6.32.

* Mike Nolta <mike@nolta.net>
 * [2012-05-19] Fix building bug on FreeBSD and NetBSD.

* Sylvestre Ledru <https://github.com/sylvestre>
 * [2012-07-01] Improve the detection of sparc. Fix building bug under
   Hurd and kfreebsd.

* Jameson Nash <https://github.com/vtjnash>
 * [2012-08-20] Provide support for passing CFLAGS, FFLAGS, PFLAGS, FPFLAGS to
   make on the command line.

* Alexander Nasonov <alnsn@yandex.ru>
 * [2012-11-10] Fix NetBSD build.

* Sbastien Villemot <sebastien@debian.org>
 * [2012-11-14] Fix compilation with TARGET=GENERIC. Patch applied to Debian package.
 * [2013-08-28] Avoid failure on qemu guests declaring an Athlon CPU without 3dnow!

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 * [2013-05-17] Fix typo in the document. Re-order the architecture list in getarch.c.

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 * [2013-05-22] Adjust Makefile about downloading LAPACK source files.

* Lei WANG <https://github.com/wlbksy>
 * [2013-05-22] Fix a bug about wget.

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 * [2013-06-30] Add Intel Haswell support (using sandybridge optimizations).

* grisuthedragon <https://github.com/grisuthedragon>
 * [2013-07-11] create openblas_get_parallel to retrieve information which parallelization
   model is used by OpenBLAS.

* Elliot Saba <staticfloat@gmail.com>
 * [2013-07-22] Add in return value for `interface/trtri.c`

* Sbastien Fabbro <bicatali@gentoo.org>
 * [2013-07-24] Modify makefile to respect user's LDFLAGS
 * [2013-07-24] Add stack markings for GNU as arch-independent for assembler files

* Viral B. Shah <viral@mayin.org>
 * [2013-08-21] Patch LAPACK XLASD4.f as discussed in JuliaLang/julia#2340

* Lars Buitinck <https://github.com/larsmans>
 * [2013-08-28] get rid of the generated cblas_noconst.h file
 * [2013-08-28] Missing threshold in gemm.c
 * [2013-08-28] fix default prefix handling in makefiles

* yieldthought <https://github.com/yieldthought>
 * [2013-10-08] Remove -Wl,--retain-symbols-file from dynamic link line to fix tool support

* Keno Fischer <https://github.com/loladiro>
 * [2013-10-23] Use FC instead of CC to link the dynamic library on OS X

* Christopher Meng <cickumqt@gmail.com>
 * [2013-12-09] Add DESTDIR support for easier building on RPM based distros.
   Use install command instead of cp to install files with permissions control.

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 * [2013-12-10] Added support for NO_SHARED in make install.

* carlkl <https://github.com/carlkl>
 * [2013-12-13] Fixed LAPACKE building bug on Windows

* Isaac Dunham <https://github.com/idunham>
 * [2014-08-03] Fixed link error on Linux/musl

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 * [2014-10-10] trmm and sgemm kernels (optimized for APM's X-Gene 1).
   ARMv8 support.

* Jerome Robert <jeromerobert@gmx.com>
 * [2015-01-01] Speed-up small `ger` and `gemv` using stack allocation (bug #478)
 * [2015-12-23] `stack_check` in `gemv.c` (bug #722)
 * [2015-12-28] Allow to force the number of parallel make job
 * [2015-12-28] Fix detection of AMD E2-3200 detection
 * [2015-12-31] Let `make MAX_STACK_ALLOC=0` do what expected
 * [2016-01-19] Disable multi-threading in `ger` and `swap` for small matrices (bug #731)
 * [2016-01-24] Use `GEMM_MULTITHREAD_THRESHOLD` as a number of ops (bug #742)
 * [2016-01-26] Let `openblas_get_num_threads` return the number of active threads (bug #760)

* [2016-01-30] Speed-up small `zger`, `zgemv`, `ztrmv` using stack allocation (bug #727)

* Dan Kortschak
 * [2015-01-07] Added test for drotmg bug #484.

* Ton van den Heuvel <https://github.com/ton>
 * [2015-03-18] Fix race condition during shutdown causing a crash in gotoblas_set_affinity().

* Martin Koehler <https://github.com/grisuthedragon/>
 * [2015-09-07] Improved imatcopy

* Ashwin Sekhar T K <https://github.com/ashwinyes/>
 * [2015-11-09] Assembly kernels for Cortex-A57 (ARMv8)
 * [2015-11-20] lapack-test fixes for Cortex-A57
 * [2016-03-14] Additional functional Assembly Kernels for Cortex-A57
 * [2016-03-14] Optimize Dgemm 4x4 for Cortex-A57

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 * [2016-03-20] Fix compiler error in VisualStudio with CMake
 * [2016-03-22] Fix access violation on Windows while static linking

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 * [2016-02-04] Fix Android build on ARMV7
 * [2016-04-26] Android build with LAPACK for ARMV7 & ARMV8

* Shivraj Patil <https://github.com/sva-img/>
 * [2016-05-03] DGEMM optimization for MIPS P5600 and I6400 using MSA

* Kaustubh Raste <https://github.com/ksraste/>
 * [2016-05-09] DTRSM optimization for MIPS P5600 and I6400 using MSA
 * [2016-05-20] STRSM optimization for MIPS P5600 and I6400 using MSA

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 * [2017-01-01] dgemm and dtrmm kernels for IBM z13
 * [2017-02-26] ztrmm kernel for IBM z13
 * [2017-03-13] strmm and ctrmm kernel for IBM z13
 * [2017-09-01] initial Blas Level-1,2 (double precision) for IBM z13
 * [2018-03-07] added missing Blas Level 1-2 (double precision) simd codes
 * [2019-02-01] added missing Blas Level-1,2 (single precision) simd codes
 * [2019-03-14] power9 dgemm/dtrmm kernel
 * [2019-04-29] power9 sgemm/strmm kernel

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 * [2019-07-29] optimize AVX2 DGEMM
 * [2019-10-20] AVX512 DGEMM kernel (4x8)
 * [2019-11-06] optimize AVX512 SGEMM
 * [2019-11-12] AVX512 CGEMM & ZGEMM kernels
 * [2019-12-23] optimize AVX2 CGEMM and ZGEMM

* [2019-12-30] AVX2 CGEMM3M & ZGEMM3M kernels
 * [2020-01-07] optimize AVX2 SGEMM and STRMM

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 * [2020-04-15] Half-precision GEMM for bfloat16

* Marius Hillenbrand <https://github.com/mhillenibm>
 * [2020-05-12] Revise dynamic architecture detection for IBM z
 * [2020-05-12] Add new sgemm and strmm kernel for IBM z14
 * [2020-09-07] Fix builds with clang on IBM z, including dynamic architecture support

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 * [2020-05-20] Improve performance of SGEMM and STRMM on Arm Cortex-A53

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 * [2020-10] Add RISC-V Vector (0.7.1) support. Optimize BLAS kernels for Xuantie C910

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 * [2021-07-10] fix compilation with musl libc

* Bine Brank <https://github.com/binebrank>
 * [2021-10-27] Add vector-length-agnostic DGEMM kernels for Arm SVE
 * [2021-11-20] Vector-length-agnostic Arm SVE copy routines for DGEMM, DTRMM, DSYMM
 * [2021-11-12] SVE kernels for SGEMM, STRMM and corresponding SVE copy functions
 * [2022-01-06] SVE kernels for CGEMM, ZGEMM, CTRMM, ZTRMM and corresponding SVE copy functions
 * [2022-01-18] SVE kernels and copy functions for TRSM

* Ilya Kurdyukov <https://github.com/ilyakurdyukov>
 * [2021-02-21] Add basic support for the Elbrus E2000 architecture

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```
NR START   END SECTORS SIZE NAME UUID
1    32  7679    7648 3.7M      8f8378c0-01
2  7680 16383    8704 4.3M      8f8378c0-02
5  7936 12799    4864 2.4M
6 12544 16127    3584 1.8M
WEV @@ WEV[B  "1
```

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Version 2.1, February 1999

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<signature of Ty Coon>, 1 April 1989
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1.980 python-setuptools 63.2.0

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1.981 six 1.15.0

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1.982 netty-codec-http 4.1.78.Final

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// https://tools.ietf.org/html/rfc7540#section-8.1.2.2 makes a special exception for TE

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* /opt/cola/permits/1424749363_1663931819.673183/0/netty-codec-http2-4-1-78-final-sources-1-jar/io/netty/handler/codec/http2/Http2PriorityFrame.java
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* /opt/cola/permits/1424749363_1663931819.673183/0/netty-codec-http2-4-1-78-final-sources-1-jar/io/netty/handler/codec/http2/Http2FlowController.java
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* /opt/cola/permits/1424749363_1663931819.673183/0/netty-codec-http2-4-1-78-final-sources-1-jar/io/netty/handler/codec/http2/Http2FrameWriter.java
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1.983 @npmcli/config 4.2.0

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1.984 speaklater3 1.4

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1.985 flask-socketio 5.3.1

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1.986 content-disposition 0.5.4

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1.987 go-uber-org-multierr 1.6.0

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1.988 async 3.2.4

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1.989 immutable 4.1.0

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1.990 npm-package-arg 9.1.0

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1.991 werkzeug 2.0.3

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1.992 qs 6.10.3

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1.1000 jgrapht-core 1.5.1

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1.1002 partx 2.38-r1

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the interface presents a list of user commands or options, such as a
menu, a prominent item in the list meets this criterion.

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for making modifications to it. "Object code" means any non-source
form of a work.

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standard defined by a recognized standards body, or, in the case of
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is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other
than the work as a whole, that (a) is included in the normal form of
packaging a Major Component, but which is not part of that Major
Component, and (b) serves only to enable use of the work with that
Major Component, or to implement a Standard Interface for which an
implementation is available to the public in source code form. A
"Major Component", in this context, means a major essential component
(kernel, window system, and so on) of the specific operating system
(if any) on which the executable work runs, or a compiler used to
produce the work, or an object code interpreter used to run it.

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which are not part of the work. For example, Corresponding Source
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the work, and the source code for shared libraries and dynamically
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Version 2.1, February 1999

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