

Module java.base

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Defines the foundational APIs of the Java SE Platform.

Providers:

The JDK implementation of this module provides an implementation of the [jrt file system provider](#) to enumerate and read the class and resource files in a run-time image. The jrt file system can be created by calling `FileSystems.getFileSystem(URI.create("jrt:/"))`.

Module Graph:

[java.base](#)

Tool Guides:

[java launcher](#), [keytool](#)

Since:

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Packages

Exports

Package	Description
java.io	Provides for system input and output through data streams, serialization and the file system.
java.lang	Provides classes that are fundamental to the design of the Java programming language.
java.lang.annotation	Provides library support for the Java programming language annotation facility.
java.lang.classfile ^{PREVIEW}	Preview. Provides classfile parsing, generation, and transformation library.

java.lang.classfile.attribute^{PREVIEW}	<p>Preview.</p> <p>Provides interfaces describing classfile attributes for the <code>java.lang.classfile^{PREVIEW}</code> library.</p>
java.lang.classfile.components^{PREVIEW}	<p>Preview.</p> <p>Provides specific components, transformations, and tools built on top of the <code>java.lang.classfile^{PREVIEW}</code> library.</p>
java.lang.classfile.constantpool^{PREVIEW}	<p>Preview.</p> <p>Provides interfaces describing classfile constant pool entries for the <code>java.lang.classfile^{PREVIEW}</code> library.</p>
java.lang.classfile.instruction^{PREVIEW}	<p>Preview.</p> <p>Provides interfaces describing code instructions for the <code>java.lang.classfile^{PREVIEW}</code> library.</p>
java.lang.constant	Classes and interfaces to represent <i>nominal descriptors</i> for run-time entities such as classes or method handles, and classfile entities such as constant pool entries or invokedynamic call sites.
java.lang.foreign	Provides low-level access to memory and functions outside the Java runtime.
java.lang.invoke	The <code>java.lang.invoke</code> package provides low-level primitives for interacting with the Java Virtual Machine.
java.lang.module	Classes to support module descriptors and creating configurations of modules by means of resolution and service binding.
java.lang.ref	Provides reference-object classes, which support a limited degree of interaction with the garbage collector.
java.lang.reflect	Provides classes and interfaces for obtaining reflective information about classes and objects.
java.lang.runtime	The <code>java.lang.runtime</code> package provides low-level runtime support for the Java language.
java.math	Provides classes for performing arbitrary-precision integer arithmetic (<code>BigInteger</code>) and arbitrary-precision decimal arithmetic (<code>BigDecimal</code>).
java.net	Provides the classes for implementing networking applications.

java.net.spi	Service-provider classes for the <code>java.net</code> package.
java.nio	Defines buffers, which are containers for data, and provides an overview of the other NIO packages.
java.nio.channels	Defines channels, which represent connections to entities that are capable of performing I/O operations, such as files and sockets; defines selectors, for multiplexed, non-blocking I/O operations.
java.nio.channels.spi	Service-provider classes for the <code>java.nio.channels</code> package.
java.nio.charset	Defines charsets, decoders, and encoders, for translating between bytes and Unicode characters.
java.nio.charset.spi	Service-provider classes for the <code>java.nio.charset</code> package.
java.nio.file	Defines interfaces and classes for the Java virtual machine to access files, file attributes, and file systems.
java.nio.file.attribute	Interfaces and classes providing access to file and file system attributes.
java.nio.file.spi	Service-provider classes for the <code>java.nio.file</code> package.
java.security	Provides the classes and interfaces for the security framework.
java.security.cert	Provides classes and interfaces for parsing and managing certificates, certificate revocation lists (CRLs), and certification paths.
java.security.interfaces	Provides interfaces for generating RSA (Rivest, Shamir and Adleman AsymmetricCipher algorithm) keys as defined in the RSA Laboratory Technical Note PKCS#1, and DSA (Digital Signature Algorithm) keys as defined in NIST's FIPS-186.
java.security.spec	Provides classes and interfaces for key specifications and algorithm parameter specifications.
java.text	Provides classes and interfaces for handling text, dates, numbers, and messages in a manner independent of natural languages.
java.text.spi	Service provider classes for the classes in the <code>java.text</code> package.

java.time	The main API for dates, times, instants, and durations.
java.time.chrono	Generic API for calendar systems other than the default ISO.
java.time.format	Provides classes to print and parse dates and times.
java.time.temporal	Access to date and time using fields and units, and date time adjusters.
java.time.zone	Support for time-zones and their rules.
java.util	Contains the collections framework, some internationalization support classes, a service loader, properties, random number generation, string parsing and scanning classes, base64 encoding and decoding, a bit array, and several miscellaneous utility classes.
java.util.concurrent	Utility classes commonly useful in concurrent programming.
java.util.concurrent.atomic	A small toolkit of classes that support lock-free thread-safe programming on single variables.
java.util.concurrent.locks	Interfaces and classes providing a framework for locking and waiting for conditions that is distinct from built-in synchronization and monitors.
java.util.function	<i>Functional interfaces</i> provide target types for lambda expressions and method references.
java.util.jar	Provides classes for reading and writing the JAR (Java ARchive) file format, which is based on the standard ZIP file format with an optional manifest file.
java.util.random	This package contains classes and interfaces that support a generic API for random number generation.
java.util.regex	Classes for matching character sequences against patterns specified by regular expressions.
java.util.spi	Service provider classes for the classes in the java.util package.
java.util.stream	Classes to support functional-style operations on streams of elements, such as map-reduce transformations on collections.
java.util.zip	Provides classes for reading and writing the standard ZIP and GZIP file formats.
javax.crypto	Provides the classes and interfaces for cryptographic operations.

javax.crypto.interfaces	Provides interfaces for Diffie-Hellman keys as defined in RSA Laboratories' PKCS #3.
javax.crypto.spec	Provides classes and interfaces for key specifications and algorithm parameter specifications.
javax.net	Provides classes for networking applications.
javax.net.ssl	Provides classes for the secure socket package.
javax.security.auth	This package provides a framework for authentication and authorization.
javax.security.auth.callback	This package provides the classes necessary for services to interact with applications in order to retrieve information (authentication data including usernames or passwords, for example) or to display information (error and warning messages, for example).
javax.security.auth.login	This package provides a pluggable authentication framework.
javax.security.auth.spi	This package provides the interface to be used for implementing pluggable authentication modules.
javax.security.auth.x500	This package contains the classes that should be used to store X500 Principal and X500 Private Credentials in a <i>Subject</i> .
javax.security.cert	Provides classes for public key certificates.

Services

Provides

Type	Description
FileSystemProvider	Service-provider class for file systems.

Uses

Type	Description
AbstractChronology	An abstract implementation of a calendar system, used to organize and identify dates.

AsynchronousChannelProvider	Service-provider class for asynchronous channels.
BreakIteratorProvider	An abstract class for service providers that provide concrete implementations of the <code>BreakIterator</code> class.
CalendarDataProvider	An abstract class for service providers that provide locale-dependent <code>Calendar</code> parameters.
CalendarNameProvider	An abstract class for service providers that provide localized string representations (display names) of <code>Calendar</code> field values.
CharsetProvider	Charset service-provider class.
Chronology	A calendar system, used to organize and identify dates.
CollatorProvider	An abstract class for service providers that provide concrete implementations of the <code>Collator</code> class.
ContentHandlerFactory	This interface defines a factory for content handlers.
CurrencyNameProvider	An abstract class for service providers that provide localized currency symbols and display names for the <code>Currency</code> class.
DateFormatProvider	An abstract class for service providers that provide concrete implementations of the <code>DateFormat</code> class.
DateFormatSymbolsProvider	An abstract class for service providers that provide instances of the <code>DateFormatSymbols</code> class.
DecimalFormatSymbolsProvider	An abstract class for service providers that provide instances of the <code>DecimalFormatSymbols</code> class.
FileSystemProvider	Service-provider class for file systems.
FileTypeDetector	A file type detector for probing a file to guess its file type.
LocaleNameProvider	An abstract class for service providers that provide localized names for the <code>Locale</code> class.
LoginModule	Service-provider interface for authentication technology providers.
NumberFormatProvider	An abstract class for service providers that provide concrete implementations of the <code>NumberFormat</code> class.

Provider	This class represents a "provider" for the Java Security API, where a provider implements some or all parts of Java Security.
ResourceBundleControlProvider	An interface for service providers that provide implementations of <code>ResourceBundle.Control</code> .
ResourceBundleProvider	<code>ResourceBundleProvider</code> is a service provider interface for resource bundles.
SelectorProvider	Service-provider class for selectors and selectable channels.
System.LoggerFinder	The <code>LoggerFinder</code> service is responsible for creating, managing, and configuring loggers to the underlying framework it uses.
TimeZoneNameProvider	An abstract class for service providers that provide localized time zone names for the <code>TimeZone</code> class.
ToolProvider	An interface for command-line tools to provide a way to be invoked without necessarily starting a new VM.
URLStreamHandlerProvider	URL stream handler service-provider class.
ZoneRulesProvider	Provider of time-zone rules to the system.

[Report a bug or suggest an enhancement](#)

For further API reference and developer documentation see the [Java SE Documentation](#), which contains more detailed, developer-targeted descriptions with conceptual overviews, definitions of terms, workarounds, and working code examples. [Other versions](#).

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