Java Quick Reference

Simple Data Types

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Value Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>byte</td>
<td>8 8 -128..127</td>
</tr>
<tr>
<td>short</td>
<td>16 16 -32,768..32,767</td>
</tr>
<tr>
<td>int</td>
<td>32 32 -2,147,483,648..2,147,483,647</td>
</tr>
<tr>
<td>long</td>
<td>64 64 -9,223,372,036,854,775,808..9,223,372,036,854,775,807</td>
</tr>
<tr>
<td>float</td>
<td>32 32 3.4e-38..3.4e+38</td>
</tr>
<tr>
<td>double</td>
<td>64 64 1.7e-308..1.7e+308</td>
</tr>
<tr>
<td>char</td>
<td>16 16 Complete Unicode Character Set</td>
</tr>
<tr>
<td>Boolean</td>
<td>true, false</td>
</tr>
</tbody>
</table>

Booleans are declared using the keyword `boolean`.

Arithmetic Operators

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+, -, *, /</td>
<td>addition, subtraction, multiplication, division</td>
</tr>
<tr>
<td>%, ++, --</td>
<td>modulus, increment, decrement</td>
</tr>
</tbody>
</table>

Relational Operators

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>==, !=, &gt;, &lt;, &gt;=, &lt;=</td>
<td>equal, not equal, greater, less, greater or equal, less or equal</td>
</tr>
</tbody>
</table>

Logical Operators

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;</td>
<td>logical AND</td>
</tr>
<tr>
<td></td>
<td>logical OR</td>
</tr>
<tr>
<td>!</td>
<td>logical NOT</td>
</tr>
<tr>
<td>^</td>
<td>logical XOR</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>&amp;&amp;</td>
<td>logical AND (short-circuit)</td>
</tr>
</tbody>
</table>

Bitwise Operators

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;&gt;</td>
<td>right shift</td>
</tr>
<tr>
<td>&gt;&gt;&gt;</td>
<td>right shift zero fill</td>
</tr>
<tr>
<td>&lt;&lt;</td>
<td>left shift</td>
</tr>
</tbody>
</table>

Comments

```java
// rest of line
/** documentation comment */
/* multiline comment */
```

Compile and Run

```java
javac nameOfFile.java
java nameOfFile
```

Java packages

- `java.applet` Provides the classes necessary to create an applet and the classes an applet uses to communicate with its applet context.
- `java.awt` Contains all of the classes for creating user interfaces and for painting graphics and images.
- `java.awt.color` Provides classes for color spaces.
- `java.awt.datatransfer` Provides interfaces and classes for transferring data between and within applications.
- `java.awt.dnd` Drag and Drop is a direct manipulation gesture found in many Graphical User Interface systems that provides a mechanism to transfer information between two entities logically associated with presentation elements in the GUI.
- `java.awt.event` Provides interfaces and classes for dealing with different types of events fired by AWT components.
- `java.awt.font` Provides classes and interface relating to fonts.
- `java.awt.geom` Provides the Java 2D classes for defining and performing operations on objects related to two-dimensional geometry.
- `java.awt.im` Provides classes and interfaces for the input method framework.
- `java.awt.im.spi` Provides interfaces that enable the development of input methods that can be used with any Java runtime environment.
- `java.awt.image` Provides classes for creating and modifying images.
- `java.awt.image.renderable` Provides classes and interfaces for producing rendering-independent images.
- `java.awt.print` Provides classes and interfaces for general printing API.
- `java.beans` Contains classes related to developing beans -- components based on the JavaBeans™ architecture.
Java Beans

Provides classes and interfaces relating to bean context.

Java I/O

Provides for system input and output through data streams, serialization and the file system.

Java Language

Provides classes that are fundamental to the design of the Java Programming language.

Java Language Reflection

Provides reference-object classes, which support a limited degree of interaction with the garbage collector.

Java Language Reflect

Provides classes and interfaces for obtaining reflective information about classes and objects.

Java Math

Provides classes for performing arbitrary-precision integer arithmetic (BigInteger) and arbitrary-precision decimal arithmetic (BigDecimal).

Java Net

Provides the classes for implementing networking applications.

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 java.nio.channels 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 java.nio.charset package.

Java RMI

Provides the RMI package.

Java RMI Activation

Provides support for RMI Object Activation.

Java RMI DGC

Provides classes and interface for RMI distributed garbage-collection (DGC).

Java RMI Registry

Provides a class and two interfaces for the RMI registry.

Java RMI Server

Provides classes and interfaces for supporting the server side of RMI.

Java Security

Provides the classes and interfaces for the security framework.

Java Security Acl

The classes and interfaces in this package have been superseded by classes in the java.security package.

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 Asymmetric Cipher 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 SQL

Provides the API for accessing and processing data stored in a database (usually a relational database) using the Java™ programming language.

Java Text

Provides classes and interfaces for handling text, dates, numbers, and messages in a manner independent of natural languages.

Java Util

Contains the collections framework, legacy collection classes, event model, date and time facilities, internationalization, and miscellaneous utility classes (a string tokenizer, a random-number generator, and a bit array).

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 Logging

Provides the classes and interfaces of the Java™ 2 platform's core logging facilities.

Java Util Prefs

This package allows applications to store and retrieve user and system preference and configuration data.

Java Util Regex

Classes for matching character sequences against patterns specified by regular expressions.

Java Util Zip

Provides classes for reading and writing the standard ZIP and GZIP file formats.

Java Image Packages

Java Accessibility

Defines a contract between user-interface components and an assistive technology that provides access to those components.

Java Crypto

Provides the classes and interfaces for cryptographic operations.

Java Crypto Interfaces

Provides interfaces for Diffie-Hellman keys as defined in RSA Laboratories' PKCS#3.

Java Crypto Spec

Provides classes and interfaces for key specifications and algorithm parameter specifications.

Java Imageio

The main package of the Java Image I/O API.

Java Imageio Event

A package of the Java Image I/O API dealing with synchronous notification of events during the reading and writing of images.

Java Imageio Metadata

A package of the Java Image I/O API dealing with reading and writing metadata.

Java Imageio Plugin Support

Classes supporting the built-in JPEG plug-in.

Java Imageio Spi

A package of the Java Image I/O API containing the plug-in interfaces for readers, writers, transcoders, and streams, and a runtime registry.

Java Imageio Stream

A package of the Java Image I/O API dealing with low-level I/O from files and streams.

Java Naming

Provides the classes and interfaces for accessing naming services.

Java Naming Directory

Extends the java.naming package to provide functionality for accessing directory services.

Java Naming Events

Provides support for event notification when accessing naming and directory services.

Java Naming Ldap

Provides support for LDAPv3 extended operations and controls.

Java Naming Spi

Provides the means for dynamically plugging in support for accessing naming and directory services through the java.naming and related packages.

Java Net

Provides classes for networking applications.

Java Net Ssl

Provides classes for the secure socket package.

Java Print

Provides the principal classes and interfaces for the Java™ Print Service API.

Java Print Attribute

Provides classes and interfaces that describe the types of Java™ Print Service attributes and how they can be collected into attribute sets.

Java Print Attribute Standard

Package java.print.attribute.standard contains classes for specific printing attributes.

Java Print Event

Package java.print.event contains event classes and listener interfaces.

Java Rmi

Contains user APIs for RMI-IIOP.

Java Rmi CORBA

Contains portability APIs for RMI-IIOP.

Java Security Auth

This package provides a framework for authentication and authorization.

Java Security Auth Callableback

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).

Java Security Auth Kerberos

This package contains utility classes related to the Kerberos network authentication protocol.

Java Security Auth Login

This package provides a pluggable authentication framework.

Java Security Auth Plugin

This package provides the interface to be used for implementing pluggable authentication modules.

Java Security Auth X500

This package contains the classes that should be used to store X500 Principal and X500 Private Credentials in a Subject.

Java Security Cert

Provides classes for public key certificates.

Java Sound Midi

Provides interfaces and classes for I/O, sequencing, and synthesis of MIDI (Musical Instrument Digital Interface) data.
javax.sound.midi.spi  Supplies interfaces for service providers to implement when offering new MIDI devices, MIDI file readers and writers, or sound bank readers.

javax.sound.sampled  Provides interfaces and classes for capture, processing, and playback of sampled audio data.

javax.sound.sampled.spi  Supplies abstract classes for service providers to subclass when offering new audio devices, sound file readers and writers, or audio format converters.

javax.sql  Provides the API for server side data source access and processing from the JavaTM programming language.

javax.swing  Provides a set of "lightweight" (all-Java language) components that, to the maximum degree possible, work the same on all platforms.

javax.swing.border  Provides classes and interface for drawing specialized borders around a Swing component.

javax.swing.colorchooser  Contains classes and interfaces used by the JColorChooser component.

javax.swing.event  Provides for events fired by Swing components.

javax.swing.filechooser  Contains classes and interfaces used by the JFilechooser component.

javax.swing.plaf  Provides one interface and many abstract classes that Swing uses to provide its pluggable look- and feel capabilities.

javax.swing.plaf.basic  Provides user interface objects built according to the Basic look and feel.

javax.swing.plaf.metal  Provides user interface objects built according to the Java look and feel (once codenamed Metal), which is the default look and feel.

javax.swing.plaf.multi  Provides user interface objects that combine two or more look and feels.

javax.swing.table  Provides classes and interfaces for dealing with javax.swing.JTable.

javax.swing.text  Provides classes and interfaces that deal with editable and noneditable text components.

javax.swing.text.html  Provides the class HTMLEditorKit and supporting classes for creating HTML text editors.

javax.swing.text.html.parser  Provides the default HTML parser, along with support classes.

javax.swing.text.rtf  Provides a class (RTFEditorKit) for creating Rich-Text-Format text editors.

javax.swing.tree  Provides classes and interfaces for dealing with javax.swing.JTree.

javax.swing.undo  Allows developers to provide support for undo/redo in applications such as text editors.

javax.transaction  Contains three exceptions thrown by the ORB machinery during unmarshalling.

javax.transaction.xa  Provides the API that defines the contract between the transaction manager and the resource manager, which allows the transaction manager to enlist and delist resource objects (supplied by the resource manager driver) in JTA transactions.

javax.xml.parsers  Provides classes allowing the processing of XML documents.

javax.xml.transform  This package defines the generic APIs for processing transformation instructions, and performing a transformation from source to result.

javax.xml.transform.dom  This package implements DOM-specific transformation APIs.

javax.xml.transform.sax  This package implements SAX2-specific transformation APIs.

javax.xml.transform.stream  This package implements stream- and URI-specific transformation APIs.