

List of Java keywords

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In the Java programming language, a **keyword** is one of **50** reserved words^[1] that have a predefined meaning in the language; because of this, programmers cannot use keywords as names for variables, methods, classes, or as any other identifier.^[2] Due to their special functions in the language, most integrated development environments for Java use syntax highlighting to display keywords in a different color for easy identification.

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```
public void processData()
{
    do
    {
        int data = getData();
        if(data < 0)
            performOperation1(data);
        else
            performOperation2(data);
    }
    while(hasMoreData());
}
```

A snippet of Java code with keywords highlighted in blue and bold font

List

The following is a list of Java keywords, along with brief descriptions of their functions:^[2]

abstract

The `abstract` keyword is used to declare a class or method to be abstract.^[3] An abstract method has no implementation; all classes containing abstract methods must themselves be abstract, although not all abstract classes have abstract methods. Objects of a class which is abstract cannot be instantiated, but can be extended by other classes. All subclasses of an abstract class must either provide implementations for all abstract methods, or must also be abstract.^[4]

assert

The `assert` keyword, which was added in J2SE 1.4,^{[2][1]} is used to make an assertion—a statement which the programmer believes is always true at that point in the program. If assertions are enabled when the program is run and it turns out that an assertion is false, an `AssertionError` (<http://download.oracle.com>

`/javase/7/docs/api/java/lang/AssertionError.html`) is thrown and the program terminates. This keyword is intended to aid in debugging.^{[5][6]}

boolean

The `boolean` keyword is used to declare a field that can store a boolean value; that is, either `true` or `false`.^{[7][8]} This keyword is also used to declare that a method returns a value of the primitive type `boolean`.^{[9][3]}

break

Used to resume program execution at the statement immediately following the current enclosing block or statement. If followed by a label, the program resumes execution at the statement immediately following the enclosing labeled statement or block.

byte

The `byte` keyword is used to declare a field that can store an 8-bit signed two's complement integer.^{[7][8]} This keyword is also used to declare that a method returns a value of the primitive type `byte`.^{[9][3]}

case

The `case` keyword is used to create individual cases in a switch statement; see *switch*.^{[10][11]}

catch

Defines an exception handler—a group of statements that are executed if an exception is thrown in the block defined by a preceding `try` keyword. The code is executed only if the class of the thrown exception is assignment compatible with the exception class declared by the `catch` clause.

char

The `char` keyword is used to declare a field that can store a 16-bit Unicode character.^{[7][8]} This keyword is also used to declare that a method returns a value of the primitive type `char`.^{[9][3]}

class

A type that defines the implementation of a particular kind of object. A class definition defines instance and class fields, methods, and inner classes as well as specifying the interfaces the class implements and the immediate superclass of the class. If the superclass is not explicitly specified, the superclass is implicitly `Object` (<http://download.oracle.com/javase/7/docs/api/java/lang/Object.html>).

const

Although reserved as a keyword in Java, `const` is not used and has no function.^{[2][1]} For defining constants in java, see the 'final' reserved word.

continue

Used to resume program execution at the end of the current loop body. If followed by a label, `continue` resumes execution at the end of the enclosing labeled loop body.

default

The `default` keyword can optionally be used in a switch statement to label a block of statements to be executed if no `case` matches the specified value; see *switch*.^{[10][11]} Alternatively, the `default` keyword can also be used to declare default values in a Java annotation.

do

The `do` keyword is used in conjunction with `while` to create a do-while loop, which executes a block of statements associated with the loop and then tests a boolean expression associated with the `while`. If the expression evaluates to `true`, the block is executed again; this continues until the expression evaluates to `false`.^{[12][13]}

double

The `double` keyword is used to declare a field that can hold a 64-bit double precision IEEE 754 floating-point number.^{[7][8]} This keyword is also used to declare that a method returns a value of the primitive type `double`.^{[9][3]}

else

The `else` keyword is used in conjunction with `if` to create an if-else statement, which tests a boolean expression; if the expression evaluates to `true`, the block of statements associated with the `if` are evaluated; if it evaluates to `false`, the block of statements associated with the `else` are evaluated.^{[14][15]}

enum (as of J2SE 5.0)

A Java keyword used to declare an enumerated type. Enumerations extend the base class `Enum` (<http://download.oracle.com/javase/7/docs/api/java/lang/Enum.html>).

extends

Used in a class declaration to specify the superclass; used in an interface declaration to specify one or more superinterfaces. Class X extends class Y to add functionality, either by adding fields or methods to class Y, or by overriding methods of class Y. An interface Z extends one or more interfaces by adding methods. Class X is said to be a subclass of class Y; Interface Z is said to be a subinterface of the interfaces it extends. Also used to specify an upper bound on a type parameter in Generics.

final

Define an entity once that cannot be changed nor derived from later. More specifically: a final class cannot be subclassed, a final method cannot be overridden, and a final variable can occur at most once as a left-hand

expression. All methods in a final class are implicitly `final`.

finally

Used to define a block of statements for a block defined previously by the `try` keyword. The `finally` block is executed after execution exits the `try` block and any associated `catch` clauses regardless of whether an exception was thrown or caught, or execution left method in the middle of the `try` or `catch` blocks using the `return` keyword.

float

The `float` keyword is used to declare a field that can hold a 32-bit single precision IEEE 754 floating-point number.^{[7][8]} This keyword is also used to declare that a method returns a value of the primitive type `float`.^{[9][3]}

for

The `for` keyword is used to create a for loop, which specifies a variable initialization, a boolean expression, and an incrementation. The variable initialization is performed first, and then the boolean expression is evaluated. If the expression evaluates to `true`, the block of statements associated with the loop are executed, and then the incrementation is performed. The boolean expression is then evaluated again; this continues until the expression evaluates to `false`.^[16]

As of J2SE 5.0, the `for` keyword can also be used to create a so-called "enhanced for loop",^[17] which specifies an array or `Iterable` (<http://download.oracle.com/javase/7/docs/api/java/lang/Iterable.html>) object; each iteration of the loop executes the associated block of statements using a different element in the array or `Iterable`.^[16]

goto

Although reserved as a keyword in Java, `goto` is not used and has no function.^{[2][1]}

if

The `if` keyword is used to create an if statement, which tests a boolean expression; if the expression evaluates to `true`, the block of statements associated with the if statement is executed. This keyword can also be used to create an if-else statement; see `else`.^{[14][15]}

implements

Included in a class declaration to specify one or more interfaces that are implemented by the current class. A class inherits the types and abstract methods declared by the interfaces.

import

Used at the beginning of a source file to specify classes or entire Java

packages to be referred to later without including their package names in the reference. Since J2SE 5.0, `import` statements can import `static` members of a class.

instanceof

A binary operator that takes an object reference as its first operand and a class or interface as its second operand and produces a boolean result. The `instanceof` operator evaluates to true if and only if the runtime type of the object is assignment compatible with the class or interface.

int

The `int` keyword is used to declare a field that can hold a 32-bit signed two's complement integer.^{[7][8]} This keyword is also used to declare that a method returns a value of the primitive type `int`.^{[9][3]}

interface

Used to declare a special type of class that only contains abstract methods, constant (`static final`) fields and `static` interfaces. It can later be implemented by classes that declare the interface with the `implements` keyword.

long

The `long` keyword is used to declare a field that can hold a 64-bit signed two's complement integer.^{[7][8]} This keyword is also used to declare that a method returns a value of the primitive type `long`.^{[9][3]}

native

Used in method declarations to specify that the method is not implemented in the same Java source file, but rather in another language.^[3]

new

Used to create an instance of a class or array object.

package

A group of types. Packages are declared with the `package` keyword.

private

The `private` keyword is used in the declaration of a method, field, or inner class; private members can only be accessed by other members of their own class.^[18]

protected

The `protected` keyword is used in the declaration of a method, field, or inner class; protected members can only be accessed by members of their own class, that class's subclasses or classes from the same package.^[18]

public

The `public` keyword is used in the declaration of a class, method, or field;

public classes, methods, and fields can be accessed by the members of any class.^[18]

return

Used to finish the execution of a method. It can be followed by a value required by the method definition that is returned to the caller.

short

The `short` keyword is used to declare a field that can hold a 16-bit signed two's complement integer.^{[7][8]} This keyword is also used to declare that a method returns a value of the primitive type `short`.^{[9][3]}

static

Used to declare a field, method, or inner class as a class field. Classes maintain one copy of class fields regardless of how many instances exist of that class. `static` also is used to define a method as a class method. Class methods are bound to the class instead of to a specific instance, and can only operate on class fields. (Classes and interfaces declared as `static` members of another class or interface are actually top-level classes and are *not* inner classes.)

strictfp (as of J2SE 1.2)

A Java keyword used to restrict the precision and rounding of floating point calculations to ensure portability.^[3]

super

Used to access members of a class inherited by the class in which it appears. Allows a subclass to access overridden methods and hidden members of its superclass. The `super` keyword is also used to forward a call from a constructor to a constructor in the superclass. Also used to specify a lower bound on a type parameter in Generics.

switch

The `switch` keyword is used in conjunction with `case` and `default` to create a switch statement, which evaluates a variable, matches its value to a specific case, and executes the block of statements associated with that case. If no case matches the value, the optional block labelled by `default` is executed, if included.^{[10][11]}

synchronized

Used in the declaration of a method or code block to acquire the mutex lock for an object while the current thread executes the code.^[3] For static methods, the object locked is the class' `class`. Guarantees that at most one thread at a time operating on the same object executes that code. The mutex lock is automatically released when execution exits the synchronized code. Fields, classes and interfaces cannot be declared as *synchronized*.

this

Used to represent an instance of the class in which it appears. `this` can be used to access class members and as a reference to the current instance. The `this` keyword is also used to forward a call from one constructor in a class to another constructor in the same class.

throw

Causes the declared exception instance to be thrown. This causes execution to continue with the first enclosing exception handler declared by the `catch` keyword to handle an assignment compatible exception type. If no such exception handler is found in the current method, then the method returns and the process is repeated in the calling method. If no exception handler is found in any method call on the stack, then the exception is passed to the thread's uncaught exception handler.

throws

Used in method declarations to specify which exceptions are not handled within the method but rather passed to the next higher level of the program. All uncaught exceptions in a method that are not instances of `RuntimeException` must be declared using the `throws` keyword.

transient

Declares that an instance field is not part of the default serialized form of an object. When an object is serialized, only the values of its non-transient instance fields are included in the default serial representation. When an object is deserialized, transient fields are initialized only to their default value. If the default form is not used, e.g. when a *serialPersistentFields* table is declared in the class hierarchy, all `transient` keywords are ignored.^{[19][20]}

try

Defines a block of statements that have exception handling. If an exception is thrown inside the `try` block, an optional `catch` block can handle declared exception types. Also, an optional `finally` block can be declared that will be executed when execution exits the `try` block and `catch` clauses, regardless of whether an exception is thrown or not. A `try` block must have at least one `catch` clause or a `finally` block.

void

The `void` keyword is used to declare that a method does not return any value.^[9]

volatile

Used in field declarations to specify that the variable is modified asynchronously by concurrently running threads. Methods, classes and interfaces thus cannot be declared *volatile*.

while

The `while` keyword is used to create a while loop, which tests a boolean expression and executes the block of statements associated with the loop if the expression evaluates to `true`; this continues until the expression evaluates to `false`. This keyword can also be used to create a do-while loop; see ^{[12][13]}
do.

Reserved words for literal values

false

A boolean literal value.

null

A reference literal value.

true

A boolean literal value.

See also

- Java annotation

Notes

- ¹ ^{**a b c d**} Flanagan 2005, p. 20.
- ² ^{**a b c d e**} "Java Language Specification - Section 3.9: Keywords" (<http://docs.oracle.com/javase/specs/jls/se5.0/html/lexical.html#3.9>). *The Java Language Specification*. Oracle. August 18, 2012. Retrieved 2012-08-18.
- ³ ^{**a b c d e f g h i j k l**} Flanagan 2005, pp. 66-67.
- ⁴ ^{**a b c d e f g h i j k l**} "Abstract Methods and Classes" (<http://java.sun.com/docs/books/tutorial/java/landl/abstract.html>). *The Java Tutorials*. Sun Microsystems, Inc. February 14, 2008. Retrieved 2008-12-06.
- ⁵ ^{**a b c d e f g h i j k l**} "Programming With Assertions" (<http://java.sun.com/j2se/1.4.2/docs/guide/lang/assert.html>). *Java 2 SDK, Standard Edition Documentation*. Sun Microsystems, Inc. 2002. Retrieved 2008-12-06.
- ⁶ ^{**a b c d e f g h i j k l**} Flanagan 2005, pp. 60-64.
- ⁷ ^{**a b c d e f g h**} "Primitive Data Types" (<http://java.sun.com/docs/books/tutorial/java/nutsandbolts/datatypes.html>). *The Java Tutorials*. Sun Microsystems, Inc. February 14, 2008. Retrieved 2008-12-03.
- ⁸ ^{**a b c d e f g h**} Flanagan 2005, p. 22.
- ⁹ ^{**a b c d e f g h i**} "Returning a Value from a Method" (<http://java.sun.com/docs/books/tutorial/java/javaOO/returnvalue.html>). *The Java Tutorials*. Sun Microsystems, Inc. February 14, 2008. Retrieved 2008-12-03.
- ¹⁰ ^{**a b c**} "The switch Statement" (<http://java.sun.com/docs/books/tutorial/java/nutsandbolts/switch.html>). *The Java Tutorials*. Sun Microsystems, Inc. February 14, 2008. Retrieved 2008-12-03.

11. [^] ^{**a**} ^{**b**} ^{**c**} Flanagan 2005, pp. 46-48.
12. [^] ^{**a**} ^{**b**} "The while and do-while Statements" (<http://java.sun.com/docs/books/tutorial/java/nutsandbolts/while.html>). *The Java Tutorials*. Sun Microsystems, Inc. February 14, 2008. Retrieved 2008-12-03.
13. [^] ^{**a**} ^{**b**} Flanagan 2005, pp. 48-49.
14. [^] ^{**a**} ^{**b**} "The if-then and if-then-else Statements" (<http://java.sun.com/docs/books/tutorial/java/nutsandbolts/if.html>). *The Java Tutorials*. Sun Microsystems, Inc. February 14, 2008. Retrieved 2008-12-03.
15. [^] ^{**a**} ^{**b**} Flanagan 2005, pp. 44-46.
16. [^] ^{**a**} ^{**b**} "The for Statement" (<http://java.sun.com/docs/books/tutorial/java/nutsandbolts/for.html>). *The Java Tutorials*. Sun Microsystems, Inc. February 14, 2008. Retrieved 2008-12-03.
17. [^] Flanagan 2005, pp. 50-54.
18. [^] ^{**a**} ^{**b**} ^{**c**} "Controlling Access to Members of a Class" (<http://java.sun.com/docs/books/tutorial/java/javaOO/accesscontrol.html>). *The Java Tutorials*. Sun Microsystems, Inc. February 14, 2008. Retrieved 2008-12-03.
19. [^] "Java Object Serialization Specification version 1.5.0" (<http://download-llnw.oracle.com/javase/1.5.0/docs/guide/serialization/spec/serial-arch.html#6250>). Sun/Oracle. 2004. 1.5 Defining Serializable Fields for a Class. Retrieved 2010-09-16.
20. [^] Grosso, William (November 21, 2001). "Java RMI: Serialization" (http://onjava.com/pub/a/onjava/excerpt/JavaRMI_10/index.html?page=3). *ONJava*. O'Reilly Media. Declaring serialPersistentFields. Retrieved 2010-09-16.

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