Core Java Tutorial: Java keywords, comments, variables, identifiers, data types and literals

Dr. Soumadip Ghosh

Associate Professor, Academy of Technology

Basic Language Elements

- Keywords
- Comments
- Variables
- Identifiers
- Data Types
- Literals
- Operators

Keywords

```
abstract    default     if          private     this
boolean     do          implements  protected   throw
break       double      import      public      throws
byte        else        instanceof  return      transient
case        extends     int         short       try
catch       final       interface   static      void
char        finally     long        strictfp    volatile
class       float       native      super       while
const       for         new         switch
continue    goto        package     synchronized
```

Comments

Java supports three comment styles:

- ***Block style*** comments begin with /* and terminate with */ that spans multiple lines.

- ***Line style*** comments begin with // and terminate at the end of the line.

- ***Documentation style*** comments begin with /** and terminate with */ that spans multiple lines. They are generally created using the automatic documentation generation tool, such as javadoc.

Variables & Identifiers

Variables are used for data that change during program execution. All variables have a name, a type, and a scope.

The programmer assigns the names to variables, known as ***identifiers***.

Variables have a ***data type*** that indicates the kind of value they can store.

When we declare a variable we assign it an identifier & a data type.

E. g., `String message = "hello world";`

Identifier Naming Rules

- Can consist of upper and lower case letters, digits, dollar sign ($) and the underscore (_) character.
- Must begin with a letter, dollar sign, or an underscore
- Are case sensitive
- Keywords cannot be used as identifiers
- Within a given section of our program or scope, each user defined item must have a unique identifier
- Can be of any length.

Data Types

Java has four main ***primitive data types*** built into the language. We can also create our own data types called ***reference types***.

Integer: byte, short, int, and long.

Floating-Point: float and double.

Character: char.

Boolean: true or false.

The following chart summarizes the default values for the Java built in data types.

Data Type	Default Value (for fields)	Range
byte	0	-127 to +128
short	0	-32768 to +32767
int	0	-2,147,483,648 to 2,147,483,647
long	0L	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
float	0.0f	According to single-precision 32-bit IEEE 754 floating point format
double	0.0d	According to double-precision 64-bit IEEE 754 floating point format
char	'\u0000'	0 to 65535
boolean	false	Is not precisely defined

Literals

A ***literal*** is the source code representation of a fixed value; literals are represented directly in our code without requiring computation.

As shown below, it's possible to assign a literal to a variable of a primitive type:

```
boolean result = true;
char ch = 'C';
byte b = 100;
short s = 10000;
int i = 100000;
```

References

Book Resources:

- Herbert Schildt. *Java: The complete Reference*. Tata McGraw Hill (TMH), 9th Edition.
- Cay S. Horstmann, Gary Cornell. *Core Java Volume-I and Volume-II.* Pearson Education, 8th Edition.
- Kathy Sierra, Bert Bates. *Head First Java*. O'Reilly Media, 2nd Edition.
- E. Balagurusamy, *Programming with Java A Primer*. TMH, 3rd Edition.

URL Resources:

- https://docs.oracle.com/javase/tutorial/java/package/index.html
- https://www.w3schools.com/java/default.asp