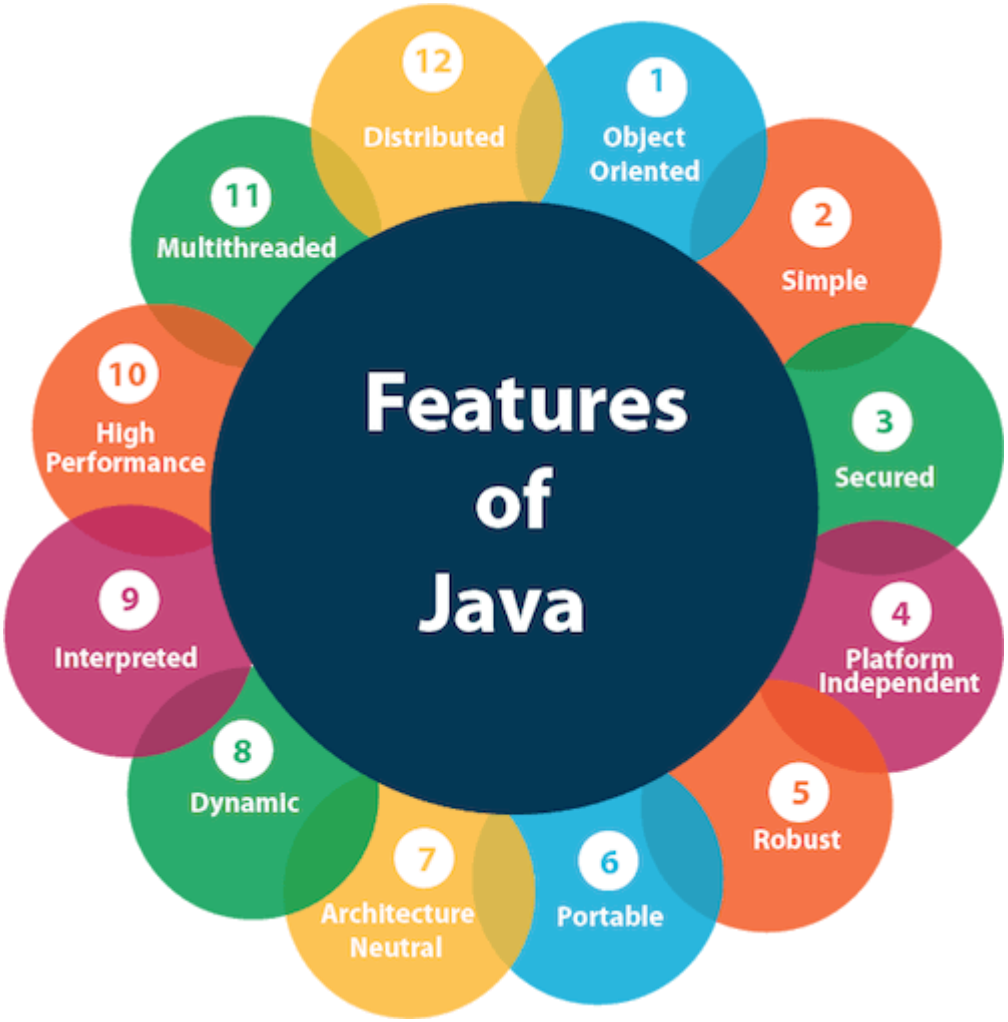
JAVA TUTORIAL

Introduction to Java:

- Java is an Object Oriented, class-based, concurrent, secured and general-purpose computer-programming language. It is a widely used robust technology.
- **Features**

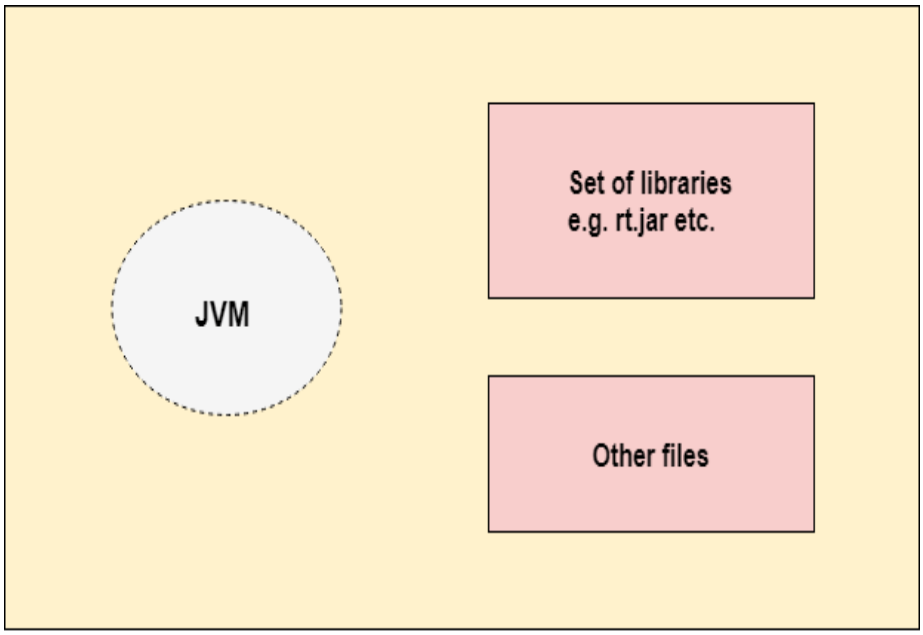


- **Important things to Understand**

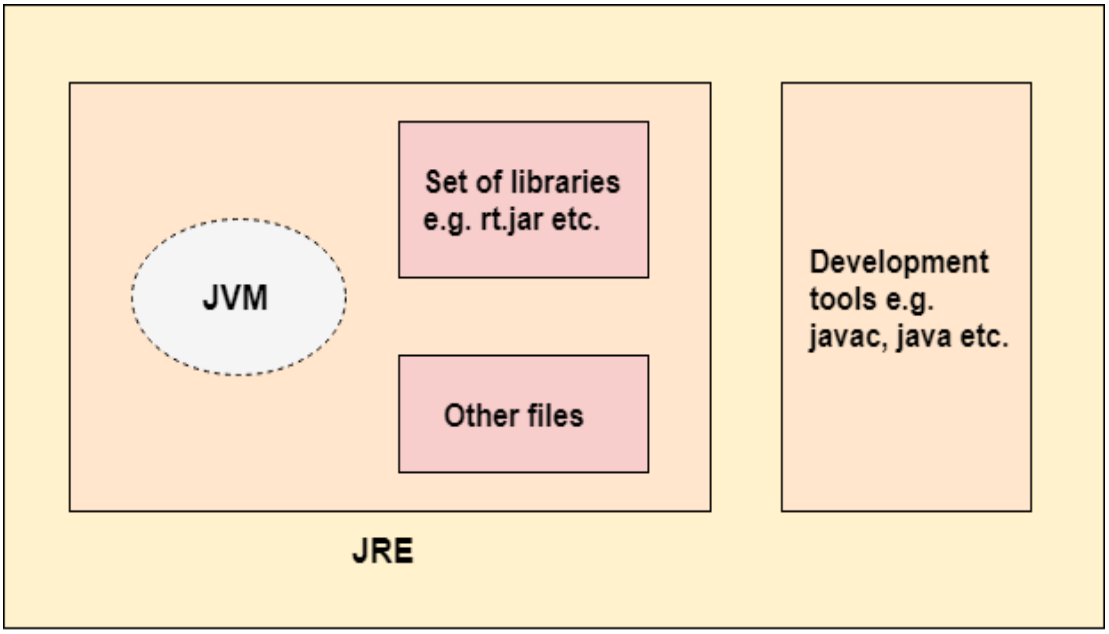
- **JVM**
  - JVM (Java Virtual Machine) is an abstract machine. It is called a virtual machine because it doesn't physically exist.

It is a specification that provides a runtime environment in which Java bytecode can be executed.

- The JVM performs the following main tasks:
  - Loads code
  - Verifies code
  - Executes code
  - Provides runtime environment

- **JRE**
  - JRE is an acronym for Java Runtime Environment. It is also written as Java RTE.
  - The Java Runtime Environment is a set of software tools which are used for developing Java applications. It is used to provide the runtime environment.
- 

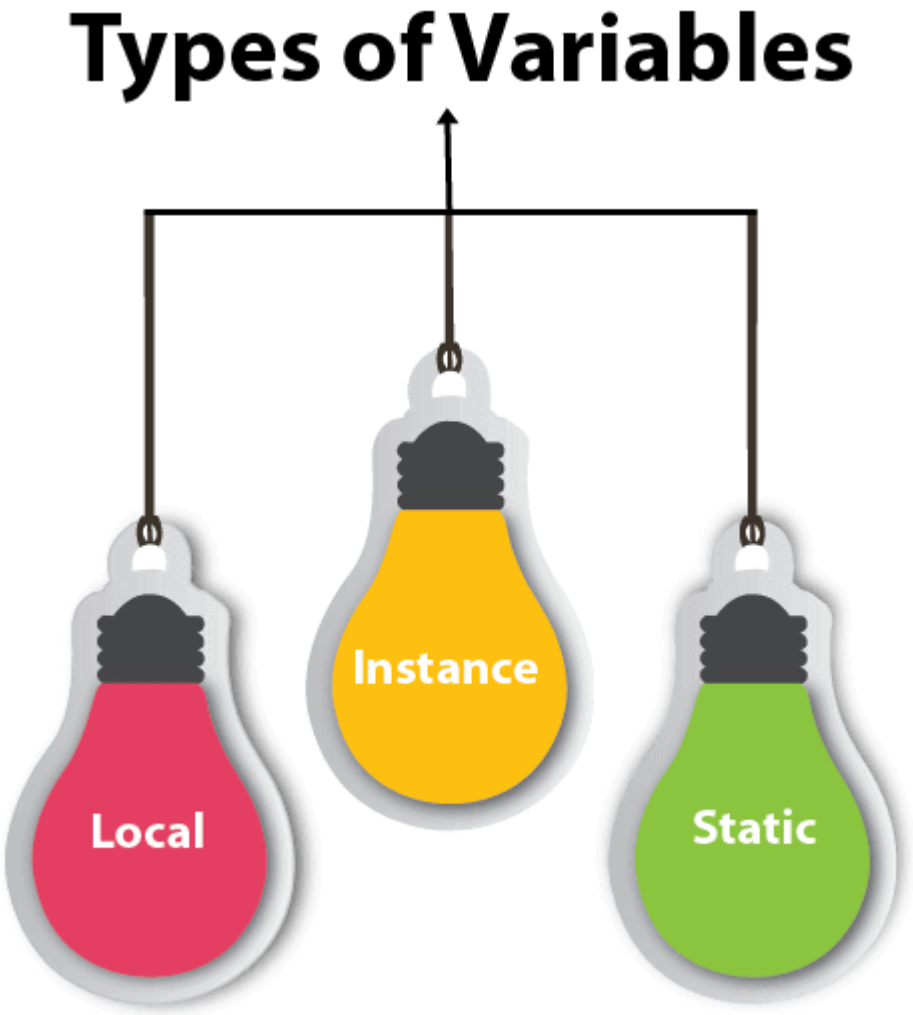
  - JRE
- **JDK**
  - JDK is an acronym for Java Development Kit. The Java Development Kit (JDK) is a software development environment which is used to develop Java applications and applets.



JAVA VARIABLES

A variable is a container which holds the value while the Java program is executed. A variable is assigned with a data type.

Variable is a name of memory location. There are three types of variables in java: local, instance and static.



1) Local Variable

A variable declared inside the body of the method is called local variable. You can use this variable only within that method and the other methods in the class aren't even aware that the variable exists.

A local variable cannot be defined with "static" keyword.

2) Instance Variable

A variable declared inside the class but outside the body of the method, is called an instance variable. It is not declared as static.

It is called an instance variable because its value is instance-specific and is not shared among instances.

3) Static variable

A variable that is declared as static is called a static variable. It cannot be local. You can create a single copy of the static variable and share it among all the instances of the class. Memory allocation for static variables happens only once when the class is loaded in the memory.

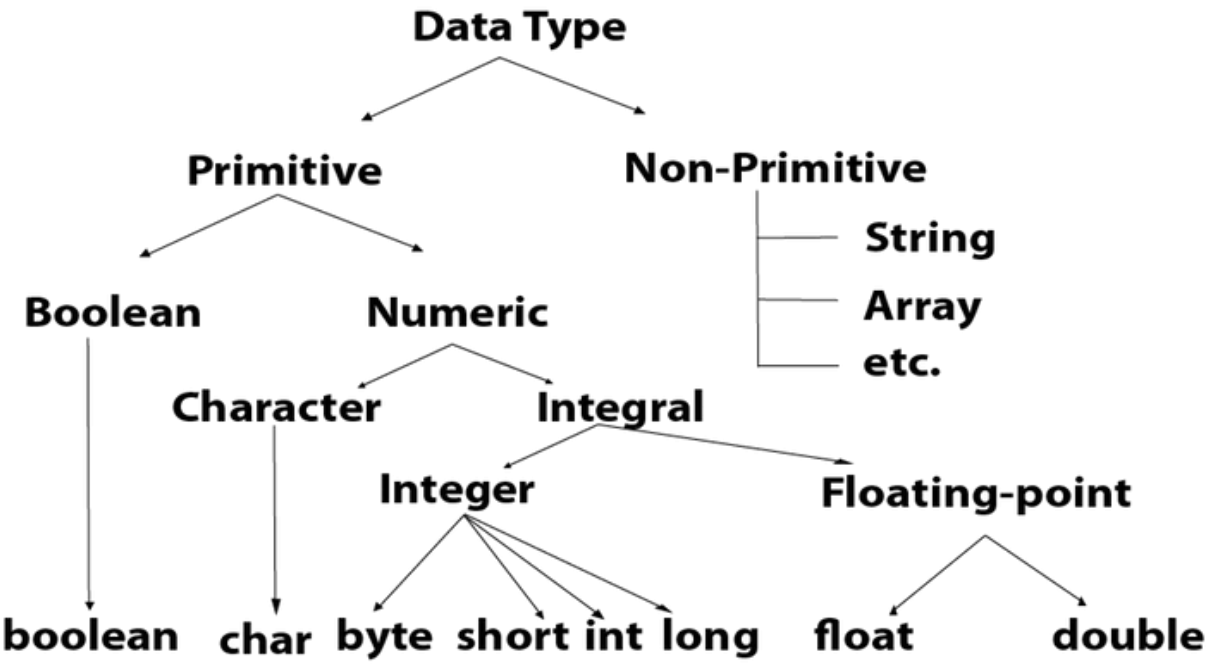
DATA TYPES in java

Data types specify the different sizes and values that can be stored in the variable. There are two types of data types in Java:

1. **Primitive data types:** The primitive data types include boolean, char, byte, short, int, long, float and double.
2. **Non-primitive data types:** The non-primitive data types include Classes

   , Interfaces

   , and Arrays

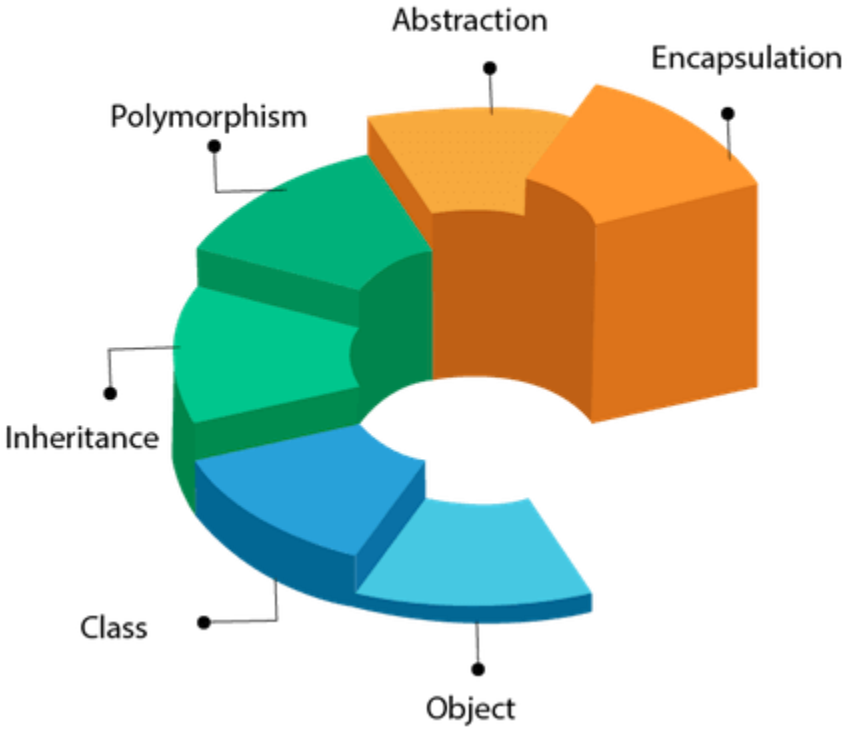


Java Control Statements | Control Flow in Java

Java provides three types of control flow statements.

1. Decision Making statements
    - if statements
    - switch statement
2. Loop statements
    - do while loop
    - while loop
    - for loop
    - for-each loop
3. Jump statements
    - break statement
    - continue statement

OOPs (Object-Oriented Programming System)



OBJECT

An Object can be defined as an instance of a class. An object contains an address and takes up some space in memory.

Class

Collection of objects is called class. It is a logical entity.

A class can also be defined as a blueprint from which you can create an individual object. Class doesn't consume any space.

Inheritance

When one object acquires all the properties and behaviors of a parent object, it is known as inheritance. It provides code reusability. It is used to achieve runtime polymorphism.

Polymorphism

If *one task is performed in different ways*, it is known as polymorphism. For example: to convince the customer differently, to draw something, for example, shape, triangle, rectangle, etc.

In Java, we use method overloading and method overriding to achieve polymorphism.

Abstraction

Hiding internal details and showing functionality is known as abstraction. For example phone call, we don't know the internal processing.

In Java, we use abstract class and interface to achieve abstraction.

Encapsulation

Binding (or wrapping) code and data together into a single unit are known as encapsulation. For example, a capsule, it is wrapped with different medicines.

A java class is the example of encapsulation. Java bean is the fully encapsulated class because all the data members are private here.

OBJECT CREATION IN JAVA : reference, method and constructor

Constructors in Java

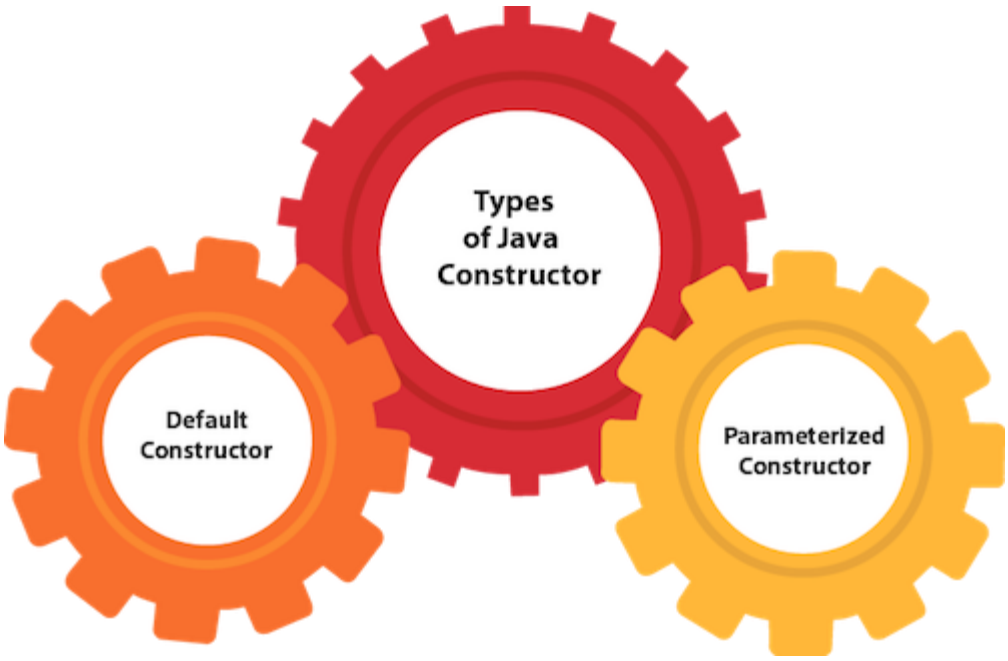
In Java

, a constructor is a block of codes similar to the method. It is called when an instance of the class

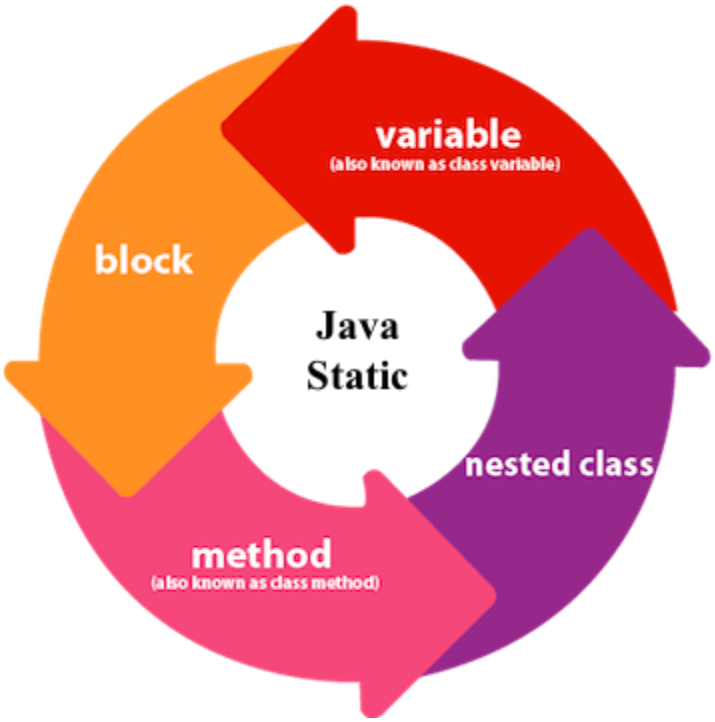
is created. At the time of calling constructor, memory for the object is allocated in the memory.

It is a special type of method which is used to initialize the object.

Every time an object is created using the new() keyword, at least one constructor is called.



Java static keyword



this keyword in Java

There can be a lot of usage of **Java this keyword**. In Java, this is a **reference variable** that refers to the current object.