

Java Tutorials

Class- 1

Object & Class in Java

Object in Java

An entity that has state and behavior is known as an object e.g., chair, bike, marker, pen, table, car, etc. It can be physical or logical (tangible and intangible).

The example of an intangible object is the banking system.

Object in Java

An object has three characteristics:

- **State:** represents the data (value) of an object.
- **Behavior:** represents the behavior (functionality) of an object such as deposit, withdraw, etc.
- **Identity:** An object identity is typically implemented via a unique ID. The value of the ID is not visible to the external user. However, it is used internally by the JVM to identify each object uniquely.

Object in Java

For Example, Pen is an object. Its name is Reynolds; color is white, known as its state. It is used to write, so writing is its behavior.

An object is an instance of a class. A class is a template or blueprint from which objects are created. So, an object is the instance(result) of a class.

Object Definitions:

- An object is *a real-world entity*.
- An object is *a runtime entity*.
- The object is *an entity which has state and behavior*.
- The object is *an instance of a class*.

Class in Java

A class is a group of objects which have common properties. It is a template or blueprint from which objects are created. It is a logical entity. It can't be physical.

A class in Java can contain:

- **Fields**
- **Methods**
- **Constructors**
- **Blocks**
- **Nested class and interface**

Method in Java

In Java, a method is like a function which is used to expose the behavior of an object.

Advantage of Method:

- Code Reusability
- Code Optimization

New keyword in Java:

The new keyword is used to allocate memory at runtime. All objects get memory in Heap memory area

Ex1- main within the class

```
//Java Program to illustrate how to define a class and fields
//Defining a Student class.
class Student{
    //defining fields
    int id;//field or data member or instance variable
    String name;
    //creating main method inside the Student class
    public static void main(String args[]){
        //Creating an object or instance
        Student s1=new Student();//creating an object of Student
        //Printing values of the object
        System.out.println(s1.id);//accessing member through reference variable

        System.out.println(s1.name);
    }
}
```

Ex2- main outside the class

```
//Java Program to demonstrate having the main method in
//another class
//Creating Student class.
class Student{
    int id;
    String name;
}
//Creating another class TestStudent1 which contains the main method
class TestStudent1{
    public static void main(String args[]){
        Student s1=new Student();
        System.out.println(s1.id);
        System.out.println(s1.name);
    }
}
```




- Constructor in Java