Phase-1 Practice Project : Assisted Practice

Demonstrate the Classes, Objects and Constructors

Java Classes:

A class in java is a set of objects with shares common characteristics/ behavior and common properties/ attributes. It is a user-defined blueprint or prototype from which objects are created.

For example, Student is a class while a particular student named raju is an object.

Properties of Java Classes:

1.Class is not a real_world entity.

2. It is template or blueprint or prototype from which object are created

3.Class does not occupy memory

4.class is a group of variables of different data types and a group of methods.

5.A class in java can contain: Data member, method, constructor, nested class, interface.

Declaration of class:

```
Access_modufier calss <class_name>
{
  data member;
  method;
  constructor;
  nested class;
  interface;
}
```

Java Objects:

An object n java is a basic unit of Object – Oriented Programming and represents real life entities. Objects are the instances of a class that are created to use the attributes and methods of a class. A typical Java program creates many objects, which as you know, interact by invoking methods. An object contains of :

1. State : it is represented by attributes of an object. It also reflects the properties of an object.

2. Behaviour : It is represented by the methods of an object. It also reflects the response of an object with the other objects.
3. Identity : It gives a unique name to an object and enables one object to interact with other objects.

Constructors :

In Java , Constructors 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 the constructor, memory for the object is allocated in the memory. It is a special type of method that is used to initialize the object. Every time an object is created using the new() keyword, at least one constructor is called

Types Of Constructor:

Now is the correct time to discuss the types of the constructor, so primarily there are three types of constructors in Java are mentioned below:

Default Constructor

Parameterized Constructor

Copy Constructor

1. Default Constructor in Java

A constructor that has no parameters is known as default the constructor. A default constructor is invisible. And if we write a constructor with no arguments, the compiler does not create a default constructor. It is taken out. It is being overloaded and called a parameterized constructor. The default constructor changed into the parameterized constructor. But Parameterized constructor can't change the default constructor.

2. Parameterized Constructor in Java

A constructor that has parameters is known as parameterized constructor. If we want to initialize fields of the class with our own values, then use a parameterized constructor

3. Copy Constructor in Java

Unlike other constructors copy constructor is passed with another object which copies the data available from the passed object to the newly created object.

Demonstrate types of Inheritance

Inheritance:

Inheritance is the most powerful feature of object oriented programming . It allows us to inherit the properties of one class into another class.

Inheritance in Java is a mechanism in which one object acquires all the properties and behaviors of a parent object.

The idea behind inheritance in Java is that you can create new classes that are built upon existing classes.

Types of Inheritance in java:

On the basis of class, there can be three types of inheritance in java: single, multilevel and hierarchical.

In java programming, multiple and hybrid inheritance is supported through interface only.

1.Single Inheritance:

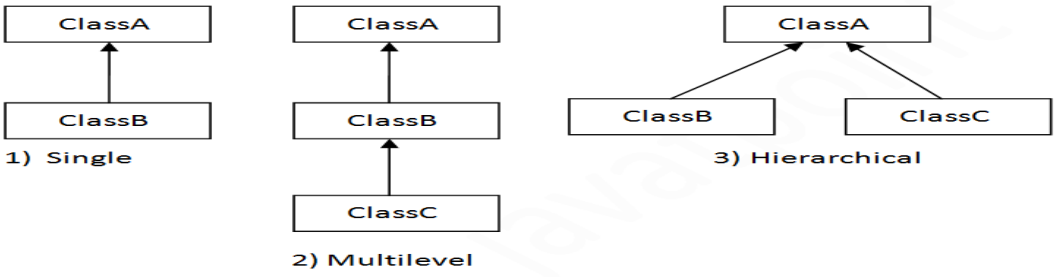
Single inheritance is a type of inheritance that consists of only a single child and single parent class. It follows a basic is-a relationship. A child class inherits attributes and behaviour from its superclass.

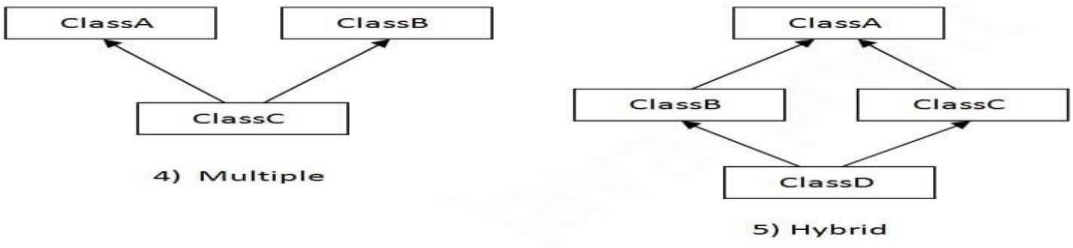
2.Multilevel Inheritance:

Multiple Inheritance is a type of inheritance, where a class can inherit properties of more than one parent class.

3. Hierarchical Inheritance:

When two or more classes inherits a single class, it is known as hierarchical Inheritance.





4.Multiple Inheritance:

Multiple inheritance is a type of inheritance. where A, B, and C are three classes. The C class inherits A and B classes. If A and B classes have the same method and you call it from child class object, there will be ambiguity to call the method of A or B class.

5. Hybrid Inheritance:

A hybrid inheritance is a combination of more than one types of inheritance. For example when class A and B extends class C & another class D extends class A then this is a hybrid inheritance, because it is a combination of single and hierarchical inheritance.