BCA – 401: Java Programming

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In today's Class we have discussed on Constructors in Java.

Constructors in Java:-

A constructor in Java is a special method that is used to initialize objects. The constructor is called when an object of a class is created. It can be used to set initial values for object attributes.

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.

It calls a default constructor if there is no constructor available in the class. In such case, Java compiler provides a default constructor by default. Default constructor initializes all member variables to zero. However, once you define your own constructor, the default constructor is no longer used.

It is called constructor because it constructs the values at the time of object creation. It is not necessary to write a constructor for a class. It is because java compiler creates a default constructor if your class doesn't have any.

Rules for creating Java constructor:-

There are following rules defined for the constructor.

- Constructor name must be the same as its class name.
- A Constructor must have no explicit return type.
- A Java constructor cannot be abstract, static, final, and synchronized.
- We can use access modifiers while declaring a constructor. It controls the object creation.

Syntax:- Following is the syntax of a constructor –

```
class ClassName
{
   ClassName()
   {
       Body of constructor;
   }
}
```

Types of Constructor:-

Java allows flowing two types of constructors.

- Default constructor (No argument Constructors)
- Parameterized Constructors

Default constructor (No argument Constructors):-

A constructor is called "Default Constructor" when it doesn't have any parameter.

As the name specifies the no argument constructors of Java does not accept any parameters instead, using these constructors the instance variables of a method will be initialized with fixed values for all objects.

Syntax of default constructor:

```
class_name()

{

Body of constructor;

}
```

Example:-

```
Public class MyClass

{
  Int num;
  MyClass()
 {
    num = 100;
  }
}
public class ConsDemo
{
  public static void main(String args[])
  {
    MyClass t1 = new MyClass();
    MyClass t2 = new MyClass();
    System.out.println(t1.num + " " + t2.num);
  }
}
```

Output:-

```
100 100
```

Parameterized Constructors:-

A constructor which has a specific number of parameters is called a parameterized constructor.

Most often, you will need a constructor that accepts one or more parameters. Parameters are added to a constructor in the same way that they are added to a method, just declare them inside the parentheses after the constructor's name.

The parameterized constructor is used to provide different values to distinct objects. However, you can provide the same values also.

Syntax of parameterized constructor:

```
class_name(parameter)
{
Body of constructor;
}
```

Example:-

```
class MyClass
{
  int x;
  MyClass(int i )
```

```
 {
    x = i;
  }
}
public class ConsDemo
{
  public static void main(String args[])
  {
    MyClass t1 = new MyClass( 10 );
    MyClass t2 = new MyClass( 20 );
    System.out.println(t1.x + " " + t2.x);
  }
}
```

Output:-

```
10 20
```

Other Example of Parameterized Constructor:-

```
class Student
{
  int id;

  String name;

  Student(int i,String n)

 {

  id = i;

  name = n;

  }

  void display()

  {

      System.out.println(id+" "+name);

   }

  public static void main(String args[])

  {

  Student s1 = new Student(111,"Karan");

  Student s2 = new Student(222,"Aryan");

  s1.display();

  s2.display();

 }

}
```

Output:-

```
111 Karan

222 Aryan
```

Difference between constructor and method in Java:-

There are many differences between constructors and methods. They are given below.

Java Constructor	Java Method
A constructor is used to initialize the state of an object.	A method is used to expose the behavior of an object.
A constructor must not have a return type.	A method must have a return type.
The constructor is invoked implicitly.	The method is invoked explicitly.
The Java compiler provides a default constructor if you don't have any constructor in a class.	The method is not provided by the compiler in any case.
The constructor name must be same as the class name.	The method name may or may not be same as the class name.