Don Bosco Institute of Technology, Kurla(W)
Department of Electronics and Tele-Communication Engineering
ECL304 - Skill Lab: C++ and Java Programming
Sem III
2021-22

Lab Number:	5
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Title:

1) Write a program to create a class Student with data 'name, city and age' along with method printData to display the data.Create the two objects s1 ,s2 to declare and access the values.

2) Write a program using parameterized constructor with two parameters id and name. While creating the objects obj1 and obj2 passed two arguments so that this constructor gets invoked after creation of obj1 and obj2.

Learning Objective:

- Students will be able write a Java program for class, objects and constructors.

Learning Outcome:

- Understanding the concept of class, objects and constructors in Java.

Theory:

What is Java ?

Java is a high-level, general-purpose, object-oriented, and secure programming language developed by James Gosling at Sun Microsystems, Inc. in 1991. It is formally known as OAK. In 1995, Sun Microsystem changed the name to Java. In 2009, Sun Microsystem takeover by Oracle Corporation.

Objects and classes in Java: In object-oriented programming technique, we design a program using objects and classes.

An object in Java is the physical as well as a logical entity, whereas, a class in Java is a logical entity only.

Object : 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.

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.

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

Class : Class are a blueprint or a set of instructions to build a specific type of object. It is a basic concept of Object-Oriented Programming which revolve around the real-life entities. Class in Java determines how an object will behave and what the object will contain.

Syntax for class :

```
class <class_name>{
    field;
    method;
  }
```

Constructor: Every class has a constructor. If we do not explicitly write a constructor for a class, the Java compiler builds a default constructor for that class.

Each time a new object is created, at least one constructor will be invoked. The main rule of constructors is that they should have the same name as the class. A class can have more than one constructor.

Example-

```
public class Puppy {
   public Puppy() {
   }

   public Puppy(String name) {
      // This constructor has one parameter, name.
   }
}
```

Program 1:

Algorithm:

1) Start

2) Define Class student

3) Define attributes name, age and city

4) Define and declare method- printdata() to display data

5) Create object s1 and s2 to declare and access the values.

6) End

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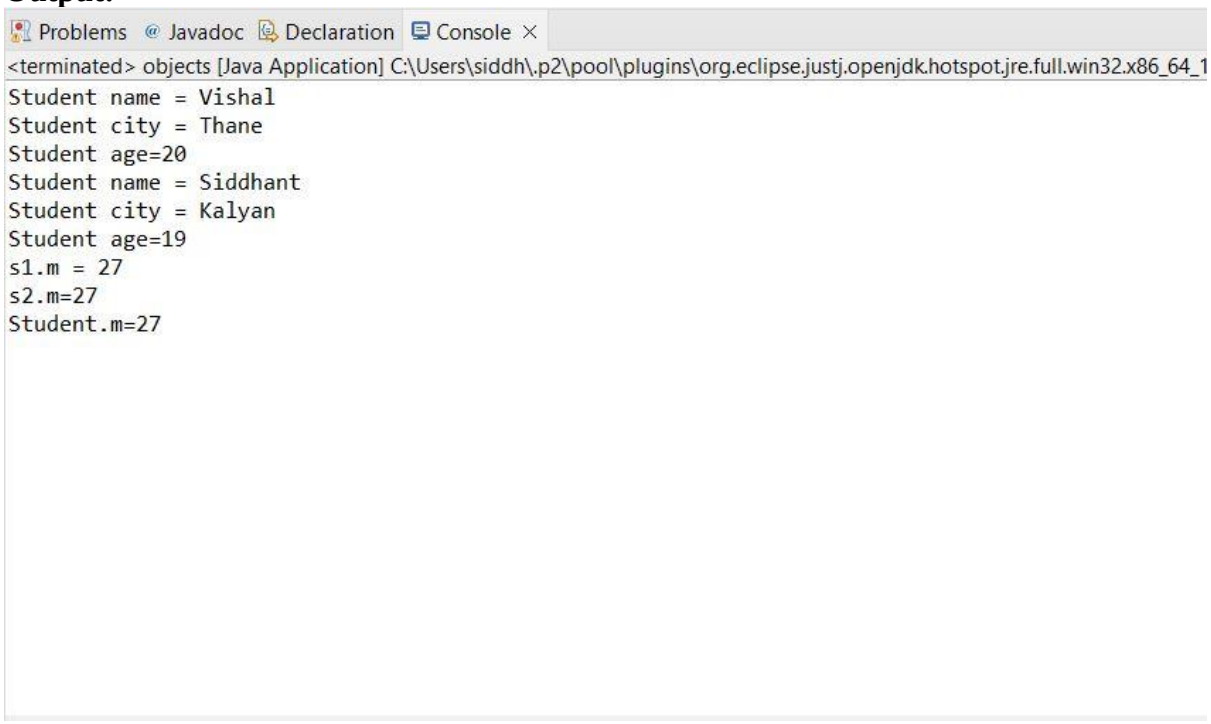
```
class Student
{
    String name, city;
    int age;
   static int m;
    void printData()
    {
        System.out.println("Student name = "+name);
        System.out.println("Student city = "+city);
        System.out.println("Student age="+age);
    }
}
public class objects
{
    public static void main(String args[])
    {
        Student s1,s2;
        s1=new Student();
        s2=new Student();
        s1.name="Siddhant";
        s1.city="Kalyan";
        s1.age=19;
        s2.name="Vishal";
        s2.city="Thane";
        s2.age=20;
        s2.printData();
        s1.printData();
        s1.m=50;
```

```
        s2.m=55;

       Student.m=27;

        System.out.println("s1.m = "+s1.m);

        System.out.println("s2.m="+s2.m);

        System.out.println("Student.m="+Student.m);

    }

}
```

Output:



Program 2:

```
class Employee

{

    int empId;

    String empName;


    //parameterized constructor with two parameters
```

```
    Employee(int empId, String empName){
    this.empId = empId;
    this.empName=empName;
    }
    void info()
    {
        System.out.println("Id:"+empId+" Name:"+empName);
    }
}
public class constructor{
    public static void main(String args[])
    {
        Employee obj1 = new Employee(12344,"Siddhant");
        Employee obj2 = new Employee(65433,"Om");
        obj1.info();
        obj2.info();
    }
}
```

Output: