OBJECT ORIENTED PROGRAMMING LAB

ASSIGNMENT: 5 DATE: 21-03-2023

SLOT: L3+L4 MAX MARKS: 10

NAME: K Kavyanjali REGNO:22BCE9513

1. Write a Java Program to implement inheritance and demonstrate use of method overriding.

INPUT:

METHOD OVERRIDING:

```
//METHOD OVERRIDING
class Singer
{
    static void Style()
    {
        System.out.print("Singing Style : ");
    }
}
class Shreya extends Singer
{
    static void Style()
    {
        System.out.println("Melody Singer");
    }
}
```

SINGLE LEVEL INHERITANCE:

```
//SINGLE LEVEL INHERITANCE
class Vehicle
{
    static String Colour;
    static String Fuel_Type;
}
class Car extends Vehicle
{
    static void Car_Properties()
    {
        Colour="RED";
        Fuel_Type="Electrical car ";
        System.out.println("Properties of Car ");
        System.out.println("Colour : "+Colour);
        System.out.println("Type of fuel  : "+Fuel_Type);
    }
}
```

MULTI LEVEL INHERITANCE:

```java
//MULTI LEVEL INHERITANCE
class Person
{
    static String name;
    static int year;
}
class Student extends Person
{
    static void Student_Details()
    {
        name ="Kavya";
        year =2026;
    }
}
class Clg_Student extends Student
{
    static void details()
    {
        Student_Details();
        System.out.println("Student Name : "+name);
        System.out.println("Passing year : "+year);
    }
}
```

HYBRID INHERITANCE:

```java
//HYBRID INHERITANCE
class Plants
{
    static String Plant_Type;
    static String size;
}
class Herbs extends Plants
{
    static String name;
    static void Herbs()
    {
    Plant_Type= "Herb";
    size="Short sized";
    System.out.println("Plant type : "+Plant_Type);
    System.out.println("Plant size : "+size);
    }
}
class Tomato extends Herbs
{
    static void Tomato()
    {
        name="Tomato";
        System.out.println("Plant name : "+name);
        Herbs();
    }
}
class Shrubs extends Plants
{
    static String Name;
    static void Shrubs()
    {
        Plant_Type = "Shrub";
        size="Medium sized";
        System.out.println("Plant type : "+Plant_Type);
        System.out.println("Plant size : "+size);
    }
}
class Rose extends Shrubs
{
    static void Rose()
    {
        Name="Rose";
        System.out.println("Plant name : "+Name);
        Shrubs();
    }
}
```

HEIRARCHIAL INHERITANCE:

```java
//HEIRARCHIAL INHERITANCE
class Sim_Networks
{
    static String signal_speed;
    static String User_Rating;
}
class AIRTEL extends Sim_Networks
{
    static void AIRTEL()
    {
        System.out.println("AIRTEL DETAILS");
        signal_speed="72 mbps";
        User_Rating="4.5";
        System.out.println("Signal Speed : "+signal_speed);
        System.out.println("User Rating : "+User_Rating);
    }
}
class BSNL extends Sim_Networks
{
    static void BSNL()
    {
        System.out.println("BSNL DETAILS");
        signal_speed="20 mbps";
        User_Rating="2.9";
        System.out.println("Signal Speed : "+signal_speed);
        System.out.println("User Rating : "+User_Rating);
    }
}
class JIO extends Sim_Networks
{
    static void JIO()
    {
        System.out.println("JIO DETAILS ");
        signal_speed="25 mbps";
        User_Rating="4";
        System.out.println("Signal Speed : "+signal_speed);
        System.out.println("User Rating : "+User_Rating);
    }
}
```

MAIN CLASS :

```java
//Main class
class Java
{
    public static void main(String[] args)
    {
        Shreya ob1=new Shreya();
        System.out.println("SINGER STYLE");
        ob1.Style();//Calling Style method from Shreya class(MEthod overriding)
        Tomato ob2=new Tomato();  //Calling for Hybrid Inheritance
        System.out.println("TOMATO PLANT");
        ob2.Tomato();
        Rose ob3=new Rose();
        System.out.println("ROSE PLANT");
        ob3.Rose();
        Car ob4=new Car();     //Calling for Single level Inheritance
        ob4.Car_Properties();
        Clg_Student ob5=new Clg_Student();  //Calling for multilevel inheritance
        System.out.println("STUDENT DETAILS");
        ob5.details();
        System.out.println("Different network speeds and their user ratings ");
        AIRTEL ob6=new AIRTEL();
        ob6.AIRTEL();
        BSNL ob7=new BSNL();
        ob7.BSNL();
        JIO ob8=new JIO();
        ob8.JIO();
    }
}
```

OUTPUT :

```
C:\22BCE9513>javac Java.java

C:\22BCE9513>java Java
METHOD OVERRIDING
SINGER STYLE
Melody Singer
HYBRID INHERITANCE
TOMATO PLANT
Plant name : Tomato
Plant type : Herb
Plant size : Short sized
ROSE PLANT
Plant name : Rose
Plant type : Shrub
Plant size : Medium sized
SINGLE LEVEL INHERITANCE
Properties of Car
Colour : RED
Type of fuel  : Electrical car
MULTI LEVEL INHERITANCE
STUDENT DETAILS
Student Name : Kavya
Passing year : 2026
HEIRARCHIAL INHERITANCE
Different network speeds and their user ratings
AIRTEL DETAILS
Signal Speed : 72 mbps
User Rating : 4.5
BSNL DETAILS
Signal Speed : 20 mbps
User Rating : 2.9
JIO DETAILS
Signal Speed : 25 mbps
User Rating : 4
```

2. Write a Java Program to implement multilevel inheritance by applying various access controls to its data members and methods.

   INPUT:

```java
class Student
{
    private  static String name;
    static String Reg_no;
    protected static String email;
    public static int year;

    private static void Name()
    {
        name="Kavyanjali";
        System.out.println("Student name : "+name);
    }
    static void show_reg_no()
    {
        Reg_no="22BCE9513";
        System.out.println("Student Reg no : "+Reg_no);
    }
    protected static void Email()
    {
        email="kavyanjali.22bce9513@vitap.ac.in";
        System.out.println("Student email : "+email);
    }
    public static void year()
    {
        year=2026;
        System.out.println("Student Passing out year : "+year);
    }
}
//
class Details extends Student
{
    static void details()
    {
        //Name(); cannot be accesed since it is private
        show_reg_no();
        Email();
        year();
    }

}
class Main
{
    public static void main(String[] args)
    {
        Details ob=new Details();
        ob.details();
    }
}
```

OUTPUT:

```
C:\22BCE9513>javac Main.java
Main.java:34: error: cannot find symbol
                Name();
                ^
  symbol:   method Name()
  location: class Details
1 error

C:\22BCE9513>javac Main.java

C:\22BCE9513>java Main
Student Reg no : 22BCE9513
Student email : kavyanjali.22bce9513@vitap.ac.in
Student Passing out year : 2026
```