Experiment Number : 05 **Date: 05.02.2026**

INHERITANCE

Aim:

To understand and implement inheritance concepts in Java.

PRE LAB EXERCISE

QUESTIONS

- ✓ What is inheritance?

  Inheritance is a mechanism in Java where one class (child class) acquires the properties and methods of another class (parent class). It helps in code reuse and hierarchical classification.

- ✓ What is code reusability?

  Code reusability means using existing code without rewriting it. In Java, inheritance allows child classes to reuse the methods and variables of parent classes.

- ✓ What is the use of extends keyword?

  The extends keyword is used to inherit a class. It allows a subclass to access the properties and methods of the superclass.

  class Result extends Student

IN LAB EXERCISE

Objective:

To implement all types of inheritance.

PROGRAMS:

Student Result System (Single Inheritance)

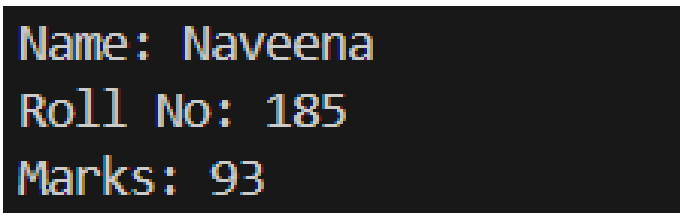
Question:

A school wants to store student details and calculate marks. Create a base class Student and a derived class Result.

Code:

```
class Student {
    String name;
    int rollNo;
    void getDetails() {
        name = "Anitha";
        rollNo = 101;
    }
}
class Result extends Student {
    int marks = 85;
    void display() {
        System.out.println("Name: " + name);
        System.out.println("Roll No: " + rollNo);
        System.out.println("Marks: " + marks);
    }}
public class Main {
    public static void main(String[] args) {
        Result r = new Result();
        r.getDetails();
        r.display();
    }}
```

Output:



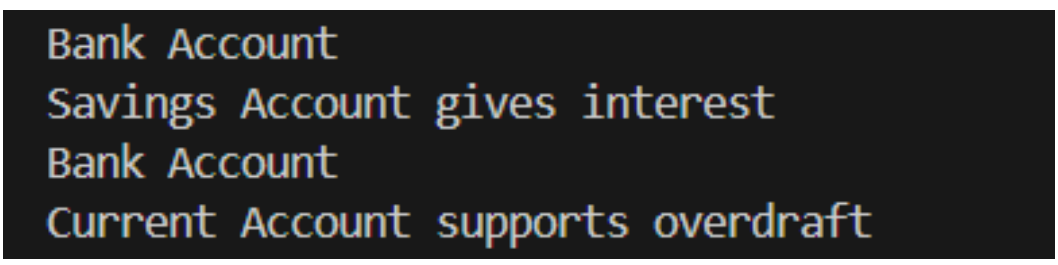
2. Bank Account System (Hierarchical Inheritance)

Question:
A bank has Savings and Current accounts. Both inherit from a common Account class.

Code:

```
class Account {
    void showAccountType() {
        System.out.println("Bank Account");
    }}
class SavingsAccount extends Account {
    void interest() {
        System.out.println("Savings Account gives interest"); }}
class CurrentAccount extends Account {
    void overdraft() {
        System.out.println("Current Account supports overdraft");}}
public class Main {
    public static void main(String[] args) {
        SavingsAccount s = new SavingsAccount();
        CurrentAccount c = new CurrentAccount();
        s.showAccountType();
        s.interest();
        c.showAccountType();
        c.overdraft();}}
```

Output:



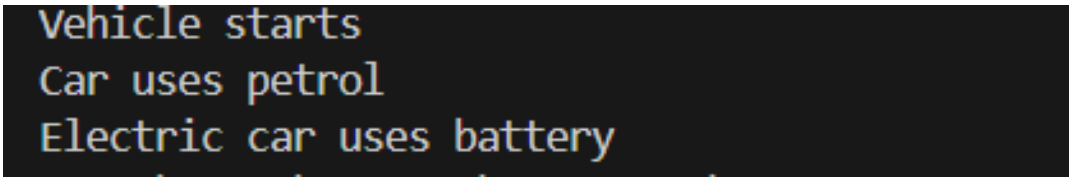
3. Vehicle System (Multilevel Inheritance)

Question:
A company classifies vehicles as Vehicle → Car → ElectricCar.

Code:

```
class Vehicle {
   void start() {
      System.out.println("Vehicle starts");
   }}
class Car extends Vehicle {
   void fuelType() {
      System.out.println("Car uses petrol");
}}
class ElectricCar extends Car {
   void battery() {
      System.out.println("Electric car uses battery");
   }}
public class Main {
   public static void main(String[] args) {
      ElectricCar e = new ElectricCar();
      e.start();
      e.fuelType();
      e.battery();
   }}
```

Output:



POST LAB EXERCISE

- ✓ Why Java does not support multiple inheritance using classes and how it is implemented?

  Java does not support multiple inheritance using classes to avoid ambiguity (Diamond Problem). It is implemented using **interfaces**, which allow multiple inheritance without confusion.

- ✓ What is the role of the super keyword? Give examples.

  The super keyword is used to refer to the parent class object. It is used to:

  - Access parent class variables
  - Call parent class methods
  - Call parent class constructors

- ✓ Can a child class access private members of the parent class? Why?

  No, a child class cannot directly access private members of the parent class because private members are restricted within the same class only.

- ✓ Explain why hybrid inheritance is not supported in Java.

  Hybrid inheritance is not supported in Java because it may cause ambiguity and complexity. Java avoids this problem by allowing hybrid inheritance only through interfaces.

Result:

Thus the different types of inheritance were implemented and executed successfully.

ASSESSMENT

Description	Max Marks	Marks Awarded
Pre Lab Exercise	**5**	
In Lab Exercise	**10**	
Post Lab Exercise	**5**	
Viva	**10**	
Total	**30**	
	Faculty Signature	