Experiment Number : 05 **Date:**

INHERITANCE

Aim:

To understand and implement inheritance concepts in Java.

PRE LAB EXERCISE

QUESTIONS

- ✓ **What is inheritance?**

  Inheritance: A mechanism where one class acquires the properties and methods of another class.

- ✓ **What is code reusability?**

  Code reusability: The ability to reuse existing code instead of writing it again.

- ✓ **What is the use of extends keyword?**

  Use of extends keyword: It is used to create a child class from a parent class in Java.

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:

Name: RAM

Roll No: 101

Marks: 85

```
Name: SANTHOSH KRISHNAA M
Roll No: 245
Marks: 90
```

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:

Bank Account

Savings Account gives interest

Bank Account

Current Account supports overdraft

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:

Vehicle starts

Car uses petrol

Electric car uses battery

```
Storage/0bf54446b42aa6e1dbffa55502133ecd/redhat.java
/jdt_ws/JAVA\ VS_2bcf11c9/bin Main
Vehicle starts
Car uses petrol
Electric car uses battery
```

POST LAB EXERCISE

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

  Java avoids multiple inheritance with classes to prevent ambiguity (diamond problem); it is implemented using **interfaces**.

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

  super is used to access parent class variables, methods, or constructors (e.g., super();, super.variable;).

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

  No, because private members are accessible only within the same class.

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

  It is not supported to avoid ambiguity and complexity, but can be achieved using 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		