Task 4: Inheritance Based Application

Aim

To design and implement a simple **Vehicle Rental System** using **inheritance** in Java, where different vehicle types calculate their rental cost based on a base rent.

Algorithm

1. Start the program.
2. Create a base class **Vehicle** with the following data members:
    - vehicleId
    - modelName
    - baseRent
3. Define a constructor in the Vehicle class to initialize the values.
4. Create a method display() in the base class to display vehicle details.
5. Create a derived class **Car** that inherits from Vehicle.
    - Add a method calculateRent() that adds **₹500** to base rent.
6. Create another derived class **Bike** that inherits from Vehicle.
    - Add a method calculateRent() that adds **₹200** to base rent.
7. In the main() method:
    - Create an object of Car and display its details and total rent.
    - Create an object of Bike and display its details and total rent.
8. Stop the program.

Program

```
class Vehicle {
   int vehicleId;
   String modelName;
   double baseRent;

   Vehicle(int vehicleId, String modelName, double baseRent) {
      this.vehicleId = vehicleId;
      this.modelName = modelName;
      this.baseRent = baseRent;
   }

   void display() {
      System.out.println("Vehicle ID   : " + vehicleId);
      System.out.println("Model Name   : " + modelName);
      System.out.println("Base Rent    : " + baseRent);
   }
}

class Car extends Vehicle {

   Car(int vehicleId, String modelName, double baseRent) {
      super(vehicleId, modelName, baseRent);
```

```
    }

    double calculateRent() {
        return baseRent + 500;
    }
}

class Bike extends Vehicle {

    Bike(int vehicleId, String modelName, double baseRent) {
        super(vehicleId, modelName, baseRent);
    }

    double calculateRent() {
        return baseRent + 200;
    }
}

public class VehicleRental {
    public static void main(String[] args) {

        Car car = new Car(101, "Honda City", 2000);
        System.out.println("---- Car Details ----");
        car.display();
        System.out.println("Total Rent   : " + car.calculateRent());

        System.out.println();

        Bike bike = new Bike(201, "Yamaha R15", 800);
        System.out.println("---- Bike Details ----");
        bike.display();
        System.out.println("Total Rent   : " + bike.calculateRent());
    }
}
```

Input

```
Car Details:
Vehicle ID   : 101
Model Name   : Honda City
Base Rent    : 2000

Bike Details:
Vehicle ID   : 201
Model Name   : Yamaha R15
Base Rent    : 800
```

Output

```
---- Car Details ----
Vehicle ID   : 101
Model Name   : Honda City
Base Rent    : 2000.0
Total Rent   : 2500.0

---- Bike Details ----
Vehicle ID   : 201
Model Name   : Yamaha R15
Base Rent    : 800.0
Total Rent   : 1000.0
```

Result

Thus, a **Vehicle Rental System** was successfully implemented using **inheritance** in Java, and the rental cost for **Car** and **Bike** was calculated correctly.