

ASSIGNMENT 1 :

1. Create a base class called Vehicle with the following methods: ● void start(): This method should print "Vehicle started." Create two subclasses of Vehicle called Car and Motorcycle. Override the start() method in each subclass to provide a specific implementation: ● Car: Print "Car started." ● Motorcycle: Print "Motorcycle started." Create a class called Garage with a method named serviceVehicle(Vehicle vehicle). Inside this method, call the start() method of the provided vehicle object and print "Vehicle serviced." In the Main class, create instances of Car and Motorcycle. Create an instance of the Garage class. Call the serviceVehicle() method of the Garage class with instances of both Car and Motorcycle

SOURCE CODE :

```
// Base class Vehicle
class Vehicle {
    void start() {
        System.out.println("Vehicle started.");
    }
}

// Subclass Car
class Car extends Vehicle {
    @Override
    void start() {
        System.out.println("Car started.");
    }
}

// Subclass Motorcycle
class Motorcycle extends Vehicle {
    @Override
    void start() {
        System.out.println("Motorcycle started.");
    }
}

// Garage class
class Garage {
    void serviceVehicle(Vehicle vehicle) {
        vehicle.start(); // Polymorphic call
        System.out.println("Vehicle serviced.");
    }
}
```

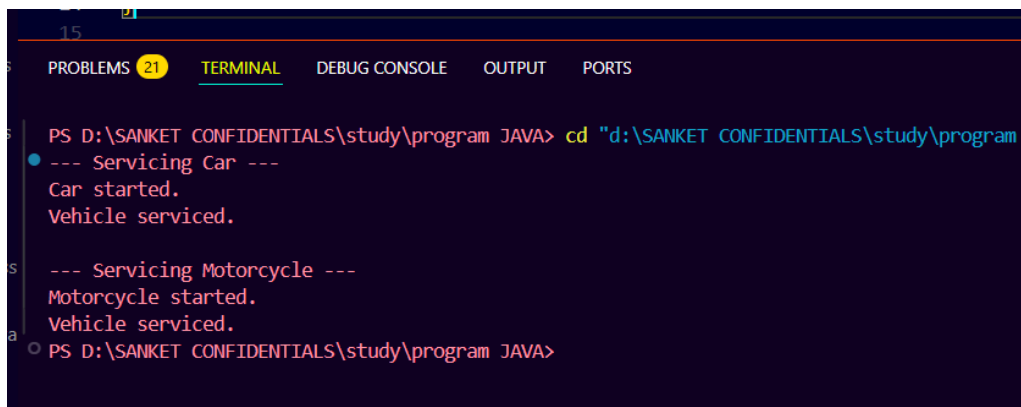
```
// Main class
public class Main {
    public static void main(String[] args) {
        Car myCar = new Car();
        Motorcycle myMotorcycle = new Motorcycle();

        Garage garage = new Garage();

        System.out.println("--- Servicing Car ---");
        garage.serviceVehicle(myCar);

        System.out.println("\n--- Servicing Motorcycle ---");
        garage.serviceVehicle(myMotorcycle);
    }
}
```

OUTPUT:

A screenshot of a terminal window with a dark background. The terminal shows the execution of a Java program. The prompt is 'PS D:\SANKET CONFIDENTIALS\study\program JAVA>'. The user enters 'cd "d:\SANKET CONFIDENTIALS\study\program"'. The output shows two sections: '--- Servicing Car ---' followed by 'Car started.' and 'Vehicle serviced.', and '--- Servicing Motorcycle ---' followed by 'Motorcycle started.' and 'Vehicle serviced.'. The prompt 'PS D:\SANKET CONFIDENTIALS\study\program JAVA>' appears again at the bottom. The terminal window has tabs for 'PROBLEMS', 'TERMINAL', 'DEBUG CONSOLE', 'OUTPUT', and 'PORTS'. The 'TERMINAL' tab is active and highlighted in yellow. The line number '15' is visible in the top left corner of the terminal area.

```
PS D:\SANKET CONFIDENTIALS\study\program JAVA> cd "d:\SANKET CONFIDENTIALS\study\program"
--- Servicing Car ---
Car started.
Vehicle serviced.

--- Servicing Motorcycle ---
Motorcycle started.
Vehicle serviced.
PS D:\SANKET CONFIDENTIALS\study\program JAVA>
```

ASSIGNMENT 2:

2. Create a class called Student. Inside the Student class, implement the following instance variables (fields): ● String name ● int age ● String department Implement the following constructors in the Student class: ● A default constructor that initializes the name to "Unknown", age to 20, and department to "Unassigned". ● A constructor that takes two parameters: name and age, and initializes the department to "IT". ● A constructor that takes three parameters: name, age, and department. In the Main class, create instances of the Student class using each constructor. Print out the details of each student, including their name, age, and department

SOURCE CODE:

```
class Student {
    String name;
    int age;
    String department;

    // default constructor
    Student() {
        name = "Unknown";
        age = 20;
        department = "Unassigned";
    }

    // constructor with name and age
    Student(String name, int age) {
        this.name = name;
        this.age = age;
        department = "IT";
    }

    // constructor with all three
    Student(String name, int age, String department) {
        this.name = name;
        this.age = age;
        this.department = department;
    }

    void printDetails() {
        System.out.println("Name: " + name);
        System.out.println("Age: " + age);
        System.out.println("Department: " + department);
        System.out.println();
    }
}
```

```
public class lab5_que2 {  
    public static void main(String[] args) {  
  
        Student s1 = new Student(); // default  
        Student s2 = new Student("Sanket", 21); // 2 args  
        Student s3 = new Student("Riya", 22, "Computer"); // all 3 args  
  
        System.out.println("Student 1:");  
        s1.printDetails();  
  
        System.out.println("Student 2:");  
        s2.printDetails();  
  
        System.out.println("Student 3:");  
        s3.printDetails();  
    }  
}
```

OUTPUT :

```
PROBLEMS 21 TERMINAL DEBUG CONSOLE OUTPUT PORTS  
PS D:\SANKET CONFIDENTIALS\study\program JAVA> cd "d:\SANKET CONFIDENTIALS\study\program JAVA\" ; if ($?) { javac lab5_que2.j  
● Student 1:  
  Name: Unknown  
  Age: 20  
  Department: Unassigned  
  
  Student 2:  
  Name: Sanket  
  Age: 21  
  Department: IT  
  
  Student 3:  
  Name: Riya  
  Age: 22  
  Department: Computer  
○ PS D:\SANKET CONFIDENTIALS\study\program JAVA>
```