Lab 5

Assignment-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.

Program

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

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

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

class Garage {
```

```java
    void serviceVehicle(Vehicle vehicle) {
        vehicle.start();
        System.out.println("Vehicle serviced.");
    }
}

public class VehiclePolymorphism {
    public static void main(String[] args) {
        Vehicle v = new Car();
        Garage garage = new Garage();
        garage.serviceVehicle(v);

        v = new Motorcycle();
        garage.serviceVehicle(v);
    }
}
```

Output

```
PS D:\Venshu\College\Engg\TPCell-Training\Sem5-Java\Anudip-Practicals\lab-assignments\lab5> javac VehiclePolymorphism.java; java VehiclePolymorphism
Car started.
Vehicle serviced.
Motorcycle started.
Vehicle serviced.
```

Assignment-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.

Program

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

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

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

    // Constructor with name, age, and department
    Student(String name, int age, String department) {
        this.name = name;
        this.age = age;
        this.department = department;
```

```
    }

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

public class StudentPolymorphism {
    public static void main(String[] args) {
        Student s1 = new Student();
        Student s2 = new Student("Sameer", 21);
        Student s3 = new Student("Saniya", 22, "CE");

        s1.printDetails();
        s2.printDetails();
        s3.printDetails();
    }
}
```

Output

```
PS D:\Venshu\College\Engg\TPCell-Training\Sem5-Java\Anudip-Practicals\lab-assignments\lab5> javac StudentPolymorphism.java; java StudentPolymorphism
Name: Unknown, Age: 20, Department: Unassigned
Name: Sameer, Age: 21, Department: IT
Name: Saniya, Age: 22, Department: CE
```