Polymorphism

Assignment-1

```
package Polymorphisam;

//Base class Vehicle
class Vehicle {

// Method to be overridden by subclasses
public void start() {

System.out.println("Vehicle started.");
}
}

//Subclass Car that overrides the start method
class Car extends Vehicle {

@Override
public void start() {

System.out.println("Car started.");
}
}

//Subclass Motorcycle that overrides the start method
class Motorcycle extends Vehicle {
@Override
public void start() {

System.out.println("Motorcycle started.");
}
}

//Garage class with a method to service a vehicle
class Garage {
// Method that takes a Vehicle object and calls its start method
public void serviceVehicle(Vehicle vehicle) {

vehicle.start(); // Calls the start method of the provided vehicle
System.out.println("Vehicle serviced.");
}
}
```

```java
public class Motorcycle1 {

public static void main(String[] args) {

// Create instances of Car and Motorcycle
        Vehicle car = new Car();
 Vehicle motorcycle = new Motorcycle();

    // Create an instance of Garage
     Garage garage = new Garage();

// Service the car and motorcycle using the Garage class
         garage.serviceVehicle(car);
       garage.serviceVehicle(motorcycle);
                    }
                    }
```

Output

```
Car started.
Vehicle serviced.
Motorcycle started.
Vehicle serviced.
```

Assignment-2

```java
package Polymorphisam;


//Class representing a Student
        class Student {

// Instance variables (fields)
          String name;
            int age;
        String department;

    // Default constructor
      public Student() {
```

```
        this.name = "Unknown";
        this.age = 20;
        this.department = "Unassigned";
    }

    // Constructor that takes two parameters: name and age, and sets department to "IT"
    public Student(String name, int age) {

        this.name = name;
        this.age = age;
        this.department = "IT";
    }

    // Constructor that takes three parameters: name, age, and department
    public Student(String name, int age, String department) {

        this.name = name;
        this.age = age;
        this.department = department;
    }

    // Method to print details of the student
    public void printDetails() {

        System.out.println("Name: " + name);
        System.out.println("Age: " + age);
        System.out.println("Department: " + department);
        System.out.println(); // Empty line for better readability
    }
}



public class StudentDetails {

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        // Creating instances of Student using different constructors

        // Using the default constructor
        Student student1 = new Student();
        student1.printDetails();

        // Using the constructor with name and age parameters
```

```
        Student student2 = new Student("Akshata", 22);
                    student2.printDetails();

// Using the constructor with name, age, and department parameters
   Student student3 = new Student("Adarsha", 21, "Engineering");
                    student3.printDetails();

                        }

                        }
```

Output

```
Name: Unknown
Age: 20
Department: Unassigned

Name: Akshata
Age: 22
Department: IT

Name: Adarsha
Age: 21
Department: Engineering
```