Lab -7

Assignment-1

```
package student;

//Base class Vehicle
class Vehicle1 {
 // Method to be overridden by subclasses
 void start() {
     System.out.println("Vehicle started.");
 }
}

//Subclass Car extends Vehicle
class Car extends Vehicle1 {
 // Overriding the start() method for Car
 @Override
 void start() {
     System.out.println("Car started.");
 }
}

//Subclass Motorcycle extends Vehicle
class Motorcycle extends Vehicle1 {
 // Overriding the start() method for Motorcycle
 @Override
 void start() {
     System.out.println("Motorcycle started.");
 }
}

//Class Garage to service the vehicles
class Garage {
 // Method to service a vehicle
 void serviceVehicle1(Vehicle1 vehicle) {
     // Call the start method of the vehicle
     vehicle.start();
     // Print that the vehicle is serviced
     System.out.println("Vehicle serviced.");
 }
 ,
}

//Main class to test the functionality
public class Vehicle {
 public static void main(String[] args) {
     // Create instances of Car and Motorcycle
     Vehicle1 myCar = new Car();
     Vehicle1 myMotorcycle = new Motorcycle();

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

     // Service both vehicles
     System.out.println("Servicing car:");
     myGarage.serviceVehicle1(myCar);

     System.out.println("\nServicing motorcycle:");
     myGarage.serviceVehicle1(myMotorcycle);
 }
}
```

Output

```
Servicing car:
Car started.
Vehicle serviced.

Servicing motorcycle:
Motorcycle started.
Vehicle serviced.
```

Assignment-2

```java
package lab;
//Define the Student class
class Student2 {
 // Instance variables
 String name;
 int age;
 String department;

 // Default constructor
 public Student2() {
     this.name = "Unknown";
     this.age = 20;
     this.department = "Unassigned";
 }

 // Constructor with name and age parameters, department is set to "IT"
 public Student2(String name, int age) {
     this.name = name;
     this.age = age;
     this.department = "IT";
 }

 // Constructor with name, age, and department parameters
 public Student2(String name, int age, String department) {
     this.name = name;
     this.age = age;
     this.department = department;
 }

 // Method to print the 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();
 }
}


//Main class to test the Student class
public class Student1 {
 public static void main(String[] args) {
     // Create instances of Student using different constructors
     Student2 student1 = new Student2();  // Using default constructor
     Student2 student2 = new Student2("Alice", 22);  // Using constructor with name and age
     Student2 student3 = new Student2("Bob", 25, "Computer Science");  // Using constructor with name, age, and department

     // Print details of each student
     System.out.println("Student 1 details:");
     student1.printDetails();

     System.out.println("Student 2 details:");
     student2.printDetails();

     System.out.println("Student 3 details:");
     student3.printDetails();
 }
}
```

Output

```
Student 1 details:
Name: Unknown
Age: 20
Department: Unassigned

Student 2 details:
Name: Alice
Age: 22
Department: IT

Student 3 details:
Name: Bob
Age: 25
Department: Computer Science
```