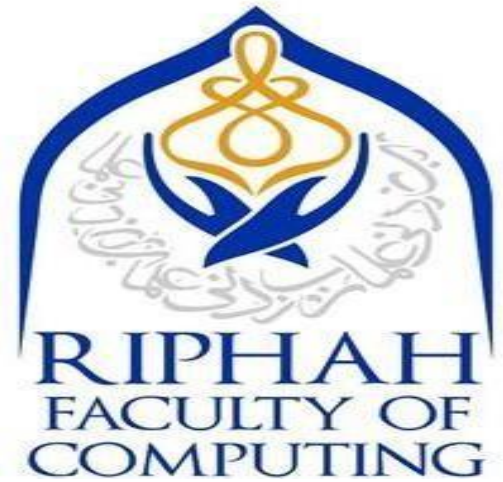

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Lab 12

Bscs 2

Lab Exercises task 1

Create an abstract class Vehicle with an abstract method start(). Implement two subclasses, Car and Motorcycle, that extend Vehicle. Include a parameterized constructor in each subclass. Implement the start() method to print a message indicating the vehicle is starting.

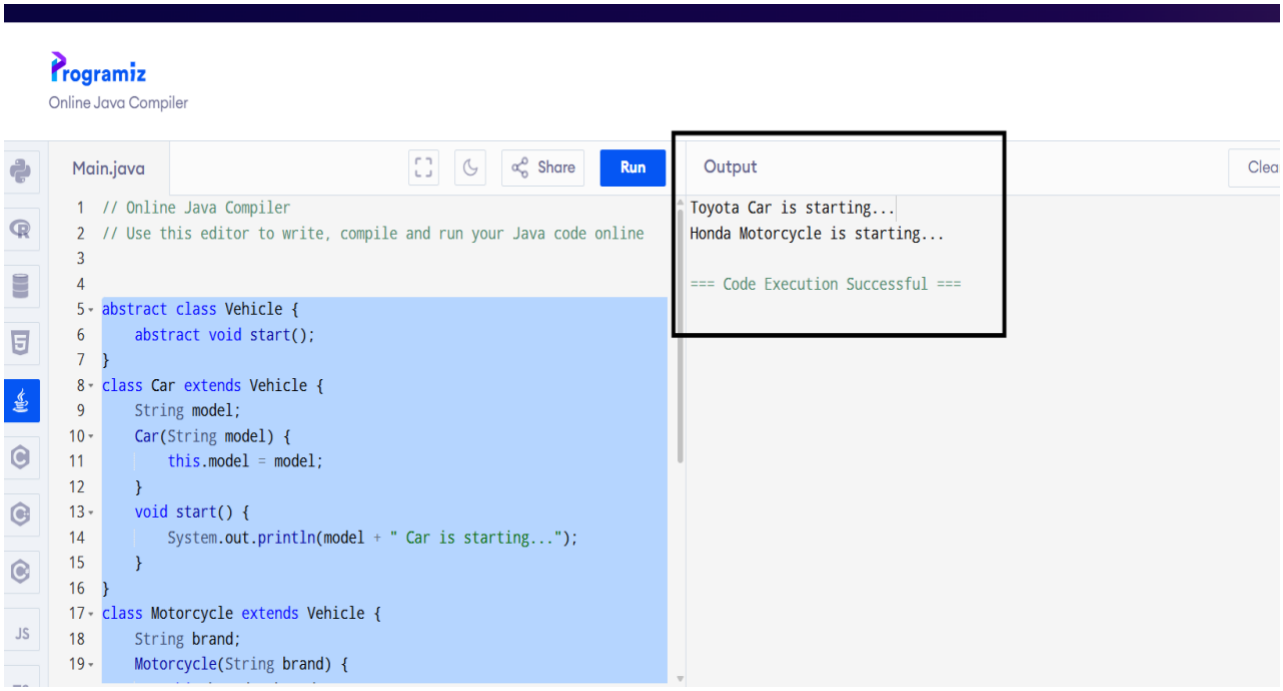
Program

```
abstract class Vehicle {
    abstract void start();
}
class Car extends Vehicle {
    String model;
    Car(String model) {
        this.model = model;
    }
    void start() {
        System.out.println(model + " Car is starting...");
    }
}
class Motorcycle extends Vehicle {
    String brand;
    Motorcycle(String brand) {
        this.brand = brand;
    }
    void start() {
        System.out.println(brand + " Motorcycle is starting...");
    }
}

class Main {
```

```
    public static void main(String[] args) {
        Vehicle car = new Car("Toyota");
        Vehicle bike = new Motorcycle("Honda");
        car.start();
        bike.start();

    }
}
```



Lab Task 2

1. Abstract Class “Seat” ○ Create an abstract class Seat with an abstract method calculateSeatPrice(int numberOfSeats). ○ Use throws IllegalArgumentException for seat numbers. Wherever you use it.

2. BusinessClass, FirstClass, and EconomyClass ○ Extend Seat in three concrete classes: BusinessClass, FirstClass, and EconomyClass. ○ Each class implements calculateSeatPrice(int numberOfSeats) with different pricing logic.

3. Main Class “AirlineTicketSystem” ○ Create instances of all seat types and call the calculateSeatPrice() method for each. ○ Display the calculated seat prices on the consol

program

```
abstract class Seat {


   abstract double calculateSeatPrice(int numberOfSeats);
}
class BusinessClass extends Seat {
   double pricePerSeat = 50000;


   double calculateSeatPrice(int numberOfSeats) {
      if (numberOfSeats <= 0) {
         System.out.println("Invalid seat number!");
         return 0;
      }
      return numberOfSeats * pricePerSeat;
   }
}


class FirstClass extends Seat {
   double pricePerSeat = 80000;


   double calculateSeatPrice(int numberOfSeats) {
      if (numberOfSeats <= 0) {
         System.out.println("Invalid seat number!");
         return 0;
      }
      double total = numberOfSeats * pricePerSeat;
      double tax = total * 0.10; // 10% luxury tax
```

```
        return total + tax;
    }
}

class EconomyClass extends Seat {
    double pricePerSeat = 20000;

    double calculateSeatPrice(int numberOfSeats) {
        if (numberOfSeats <= 0) {
            System.out.println("Invalid seat number!");
            return 0;
        }
        if (numberOfSeats > 5) {
            double total = numberOfSeats * pricePerSeat;
            double discount = total * 0.05; // 5% discount
            return total - discount;
        } else {
            return numberOfSeats * pricePerSeat;
        }
    }
}



class Main {
    public static void main(String[] args) {
    Seat business = new BusinessClass();
        Seat first = new FirstClass();
        Seat economy = new EconomyClass();
```

```
        System.out.println("Business Class : Rs. " + business.calculateSeatPrice(3));
        System.out.println("First Class  Rs. " + first.calculateSeatPrice(2));
        System.out.println("Economy Class  Rs. " + economy.calculateSeatPrice(6));
    }
}
```