1)Implement Shape class with method (), and override it in Circle, Rectangle

```
class Shape {
    void area() {
        System.out.println("Area of shape");
    }
}

class Circle extends Shape {
    double radius;

    Circle(double r) {
        radius = r;
    }

    void area() {
        double a = 3.14 * radius * radius;
        System.out.println("Area of Circle: " + a);
    }
}

class Rectangle extends Shape {
    double length, breadth;

    Rectangle(double l, double b) {
        length = l;
        breadth = b;
    }

    void area() {
        double a = length * breadth;
        System.out.println("Area of Rectangle: " + a);
    }
}

public class Main {
    public static void main(String[] args) {
        Shape s1 = new Circle(5);
        Shape s2 = new Rectangle(4, 6);

        s1.area();
        s2.area();
    }
}
```

Output:-

```
Area of Circle: 78.5
Area of Rectangle: 24.0
```

Output:-

```
Car is running smoothly
Bike is running fast
```

2) Q2. Create one parent class Vehicle, and two child classes Car and Bike

```
class Vehicle {
    void run() {
        System.out.println("Vehicle is running");
    }
}

class Car extends Vehicle {
    void run() {
        System.out.println("Car is running smoothly");
    }
}

class Bike extends Vehicle {
    void run() {
        System.out.println("Bike is running fast");
    }
}

public class Main {
    public static void main(String[] args) {
        Vehicle v1 = new Car();
        Vehicle v2 = new Bike();

        v1.run();
        v2.run();
    }
}
```

```
ID: 101, Name: Ravi, Salary: 50000.0
ID: 102, Name: Neha, Salary: 60000.0
```

Q3. Create a class Employee with fields id, name, and salary. Write a method to display employee i

```
class Employee {
    int id;
    String name;
```

```
    double salary;

    Employee(int id, String name, double salary) {
        this.id = id;
        this.name = name;
        this.salary = salary;
    }

    void display() {
        System.out.println("ID: " + id + ", Name: " + name + ", Salary: " +
salary);
    }
}

public class Main {
    public static void main(String[] args) {
        Employee e1 = new Employee(101, "Ravi", 50000);
        Employee e2 = new Employee(102, "Neha", 60000);

        e1.display();
        e2.display();
    }
}
```

Output:-

```
ID: 101, Name: Ravi, Salary: 50000.0
ID: 102, Name: Neha, Salary: 60000.0
```

Q4. Write a program to create a class Calculator with methods to perform addition, subtraction, multiplication

```
class Calculator {
    int add(int a, int b) {
        return a + b;
    }

    int subtract(int a, int b) {
        return a - b;
    }

    int multiply(int a, int b) {
        return a * b;
    }

    double divide(int a, int b) {
```

```
        if (b != 0)
            return (double) a / b;
        else
            System.out.println("Division by zero is not allowed.");
        return 0;
    }
}

public class Main {
    public static void main(String[] args) {
        Calculator calc = new Calculator();

        System.out.println("Addition: " + calc.add(10, 5));
        System.out.println("Subtraction: " + calc.subtract(10, 5));
        System.out.println("Multiplication: " + calc.multiply(10, 5));
        System.out.println("Division: " + calc.divide(10, 5));
    }
}
```

Output:-

```
Addition: 15
Subtraction: 5
Multiplication: 50
Division: 2.0
```