# CLASS TEST 4

1. **Create a base class called Shape with virtual functions area() and perimeter(). Derive twoclasses Rectangle and Triangle from the base class. Implement the area() and perimeter()functions for each class.**

## PROGRAM:

```
class Shape {
   public double area() {
      return 0.0;
   }

   public double perimeter() {
      return 0.0;
   }
}
class Rectangle extends Shape {
   private double length;
   private double width;

   public Rectangle(double length, double width) {
      this.length = length;
      this.width = width;
   }
   public double area() {
      return length * width;
   }
   public double perimeter() {
      return 2 * (length + width);
   }
}
```

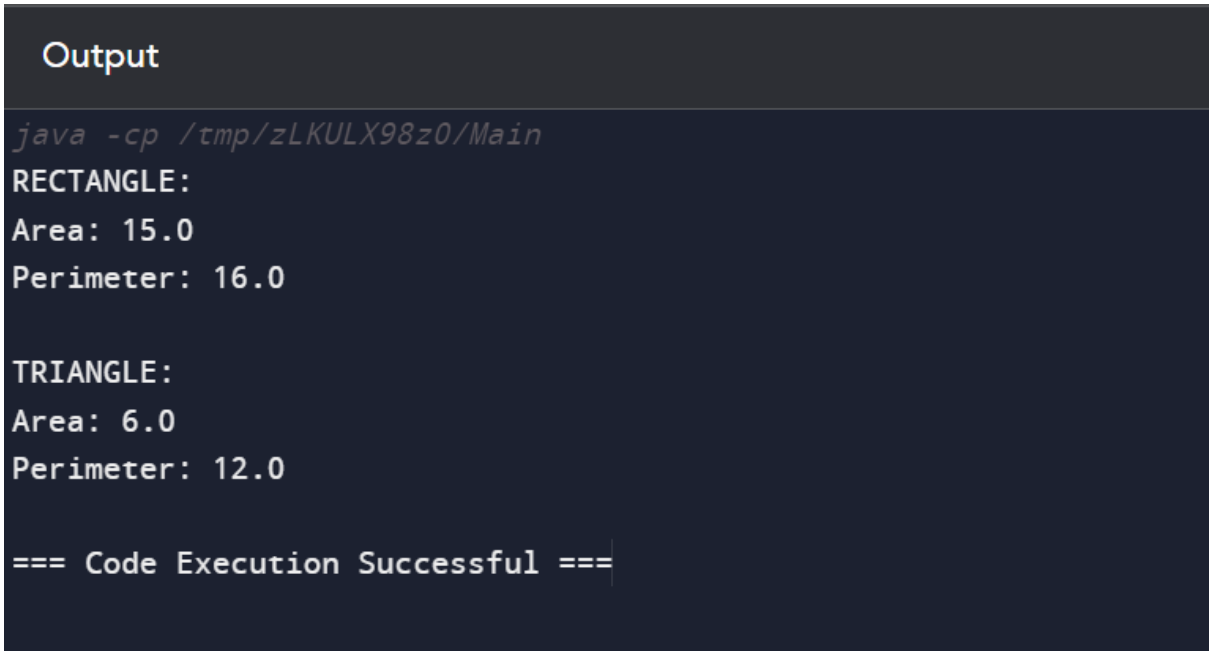
```
class Triangle extends Shape {
   private double side1;
   private double side2;
   private double side3;

   public Triangle(double side1, double side2, double side3) {
      this.side1 = side1;
      this.side2 = side2;
      this.side3 = side3;
   }
   public double area() {
      double s = (side1 + side2 + side3) / 2;
      return Math.sqrt(s * (s - side1) * (s - side2) * (s - side3));
   }
   public double perimeter() {
      return side1 + side2 + side3;
   }
}

public class Main {
   public static void main(String[] args) {
      Rectangle rectangle = new Rectangle(5, 3);
      System.out.println("RECTANGLE:");
      System.out.println("Area: " + rectangle.area());
      System.out.println("Perimeter: " + rectangle.perimeter());

      Triangle triangle = new Triangle(3, 4, 5);
      System.out.println("\nTRIANGLE:");
      System.out.println("Area: " + triangle.area());
      System.out.println("Perimeter: " + triangle.perimeter());
   }
}
```

## OUTPUT:




**2. Create a base class called Animal with a virtual function move(). Derive two classes Bird and Fish from the base class. Implement the move() function for each class.**

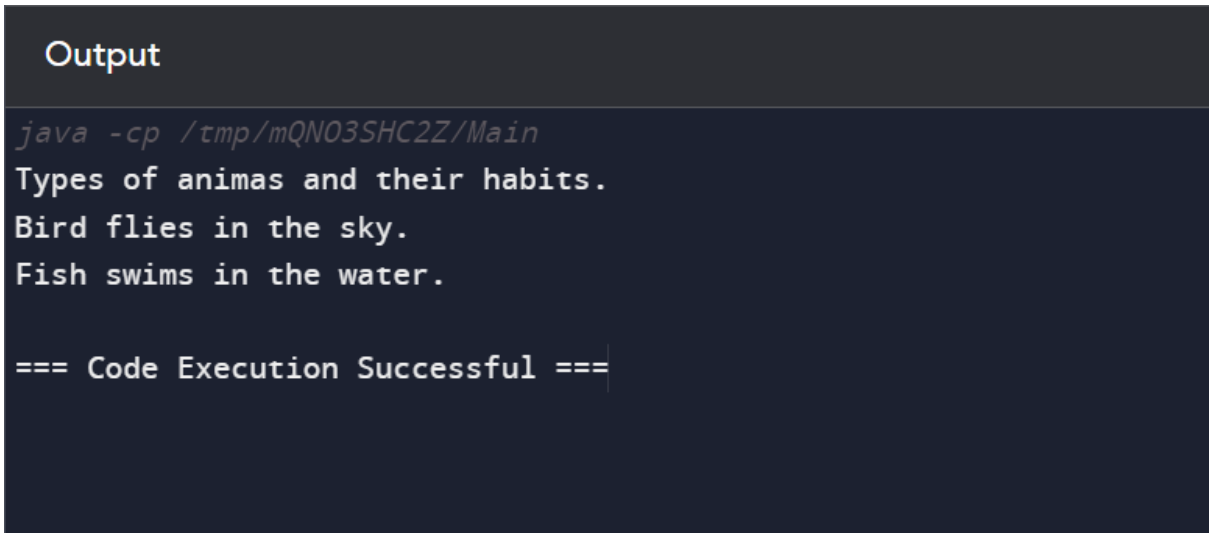
**PROGRAM:**

```
class Animal {
   public void move() {
      System.out.println("Types of animas and their habits.");
   }
}
class Bird extends Animal {
   public void move() {
      System.out.println("Bird flies in the sky.");
   }
}
class Fish extends Animal {
```

```
    public void move() {
        System.out.println("Fish swims in the water.");
    }
}

public class Main {
    public static void main(String[] args) {
        Animal animal = new Animal();
        Bird bird = new Bird();
        Fish fish = new Fish();
        animal.move();
        bird.move();
        fish.move();
    }
}
```

**OUTPUT:**




**3. Create a base class called Person with a virtual function greet(). Derive two classes Student and Teacher from the base class. Implement the greet() function for each class.**

## PROGRAM:

```
class Person {
    public void greet() {
        System.out.println("Person is walking.");
    }
}

class Student extends Person {
    public void greet() {
        System.out.println("Student is Reading.");
    }
}

class Teacher extends Person {
    public void greet() {
        System.out.println("Teacher is Teaching.");
    }
}

public class Main {
    public static void main(String[] args) {
        Person person = new Person();
        Student student = new Student();
        Teacher teacher = new Teacher();
        person.greet();
        student.greet();
        teacher.greet();
    }
}
```

## OUTPUT:

Output

```
java -cp /tmp/RKm3KIORfJ/Main
Person is walking.
Student is Reading.
Teacher is Teaching.

=== Code Execution Successful ===
```