

Aim:

You are tasked with developing a simple drawing application in Java that supports various shapes.

Instructions:

1. Define an interface named **Shape** with two abstract methods: **calculateArea()** and **calculatePerimeter()**.
2. Implement a class **Circle** that implements the **Shape** interface and takes a **radius** as a parameter in the constructor.
3. Implement a class **Rectangle** that also implements the **Shape** interface and takes **length** and **width** as parameters in the constructor.

Note:

1. Use **Math.PI** for Pi value in the calculation.
2. The main class has been provided to you in the editor.

Source Code:

q23417/DrawingMain.java

```
package q23417;
import java.util.Scanner;

interface Shape {
    double calculateArea();
    double calculatePerimeter();
}

class Circle implements Shape{
    private double radius;
    public Circle(double radius){
        this.radius = radius;
    }
    public double calculateArea(){
        return Math.PI*radius*radius;
    }
    public double calculatePerimeter(){
        return 2*Math.PI*radius;
    }
}

class Rectangle implements Shape{
    private double length;
    private double width;
    public Rectangle(double length, double width){
        this.length = length;
        this.width = width;
    }
    public double calculateArea(){
        return length*width;
    }
    public double calculatePerimeter(){
        return 2*(length+width);
    }
}
```

```

}

// write your code here..
```

```

public class DrawingMain {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // User input for Circle
        System.out.print("Radius of the circle: ");
        double circleRadius = scanner.nextDouble();
        Circle circle = new Circle(circleRadius);

        // User input for Rectangle
        System.out.print("length of the rectangle: ");
        double rectangleLength = scanner.nextDouble();
        System.out.print("width of the rectangle: ");
        double rectangleWidth = scanner.nextDouble();
        Rectangle rectangle = new Rectangle(rectangleLength, rectangleWidth);

        scanner.close();

        // Demonstrate functionality
        System.out.printf("Area of circle: %.2f, Perimeter: %.2f%n", circle.calculate
Area(), circle.calculatePerimeter());
        System.out.printf("Area of rectangle: %.2f, Perimeter: %.2f%n", rectangle.cal
culateArea(), rectangle.calculatePerimeter());
    }
}
```

Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Radius of the circle: 22.5
length of the rectangle: 12.5
width of the rectangle: 14.6
Area of circle: 1590.43, Perimeter: 141.37
Area of rectangle: 182.50, Perimeter: 54.20

Test Case - 2
User Output
Radius of the circle: 18.15
length of the rectangle: 4.7
width of the rectangle: 6.3
Area of circle: 1034.91, Perimeter: 114.04
Area of rectangle: 29.61, Perimeter: 22.00