

Selected files

6 printable files

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Circle.java

```
1 // Implementation class Circle
2 public class Circle implements GeometricObject {
3     protected double radius; // Protected variable
4
5     // Constructor
6     public Circle(double radius) {
7         this.radius = radius;
8     }
9
10    // Override getArea method
11    @Override
12    public double getArea() {
13        return Math.PI * radius * radius;
14    }
15
16    // Override getPerimeter method
17    @Override
18    public double getPerimeter() {
19        return 2 * Math.PI * radius;
20    }
21
22    // Override toString method
23    @Override
24    public String toString() {
25        return "Circle[radius=" + radius + "]";
26    }
27 }
28
```

GeometricObject.java

```
1 // Interface GeometricObject
2 public interface GeometricObject {
3     double getArea();
4     double getPerimeter();
5 }
6
```

Resizable.java

```
1 // Interface Resizable
2 public interface Resizable {
3     public void resize(int percentage);
4 }
```

ResizableCircle.java

```

1 // Class ResizableCircle
2 public class ResizableCircle extends Circle implements Resizable {
3     // Constructor
4     public ResizableCircle(double radius) {
5         super(radius);
6     }
7
8     // Override resize method
9     @Override
10    public void resize(int percentage) {
11        // Modifying the radius by the given percentage
12        System.out.println(radius *= (percentage / 100.0));
13    }
14
15    // Override toString method
16    @Override
17    public String toString() {
18        return "ResizableCircle[radius=" + radius + "]";
19    }
20 }

```

TestCircle.java

```

1 public class TestCircle {
2     public static void main(String[] args) {
3         // Create a Circle object with radius 5
4         Circle circle = new Circle(5);
5         Circle circle1 = new Circle(5);
6         // Display the area and perimeter of the circle
7         System.out.println(circle);
8         System.out.printf("Circle Area: %.2f\n", circle.getArea());
9         System.out.printf("Circle Perimeter: %.2f", circle.getPerimeter());
10
11        System.out.println("Circle 1:");
12        System.out.println("Area: " + circle1.getArea());
13        System.out.println("Perimeter: " + circle1.getPerimeter());
14        System.out.println("Details: " + circle1);
15
16        // Create a ResizableCircle object
17        ResizableCircle circle2 = new ResizableCircle(3);
18
19        // Test ResizableCircle methods
20        System.out.println("\nResizable Circle 2:");
21        System.out.println("Resizing by 50%...");
22        circle2.resize(50);
23        System.out.println("Area: " + circle2.getArea());
24        System.out.println("Perimeter: " + circle2.getPerimeter());
25        System.out.println("Details: " + circle2);
26    }
27 }
28

```

TestResizableCircle.java

```

1 public class TestResizableCircle {
2     public static void main(String[] args) {
3         // Create a ResizableCircle object with initial radius

```

```
4      ResizableCircle circle = new ResizableCircle(5.0);
5
6      // Display the initial state of the circle
7      System.out.println("Initial Circle:");
8      System.out.println(circle);
9
10     // Resize the circle by a percentage
11     int resizePercentage = 50;
12     circle.resize(resizePercentage);
13
14     // Display the resized circle
15     System.out.println("\nResized Circle (by " + resizePercentage + "%):");
16     System.out.println(circle);
17 }
18 }
19
```