

ICS 2201 Assignment 2
SCT221-c002-0030/2023
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Abstract Class Shape

```
public abstract class Shape {  
    private String color;  
  
    public Shape(String color){  
        this.color = color;  
    }  
  
    public String getColor(){  
        return color;  
    }  
  
    public abstract double calculateArea();  
}
```

Subclasses Rectangle and Circle

```
public class Rectangle extends Shape{  
    private double length;  
    private double width;  
  
    public Rectangle(String color, double length, double width){  
        super(color);  
        this.length = length;  
        this.width = width;  
    }  
  
    @Override  
    public double calculateArea(){  
        return length * width;  
    }  
}  
  
public class Circle extends Shape{  
    private double radius;  
  
    public Circle(String color, double radius){  
        super(color);  
        this.radius = radius;  
    }  
  
    @Override
```

```
    public double calculateArea(){  
        return Math.PI * radius * radius;  
    }  
}
```

Test Class

```
import static java.lang.System.out;  
  
public class ShapeTest {  
    public static void main(String[] args){  
        Shape[] shapes = new Shape[2];  
  
        shapes[0] = new Circle("Burgundy", 4.2);  
        shapes[1] = new Rectangle("Pink", 4.1, 2.1);  
  
        for(Shape shape : shapes) {  
            out.println("Shape: " + shape.getClass().getSimpleName());  
            out.println("Color: " + shape.getColor());  
            out.println("Area: " + shape.calculateArea());  
            out.println();  
        }  
    }  
}
```

Output

```
ICS2201-CAT1 - C:\Users\Administrator\Documents\ICS2201-CAT1 x  
  
run:  
Shape: Circle  
Color: Burgundy  
Area: 55.41769440932395  
  
Shape: Rectangle  
Color: Pink  
Area: 8.61  
  
BUILD SUCCESSFUL (total time: 0 seconds)
```