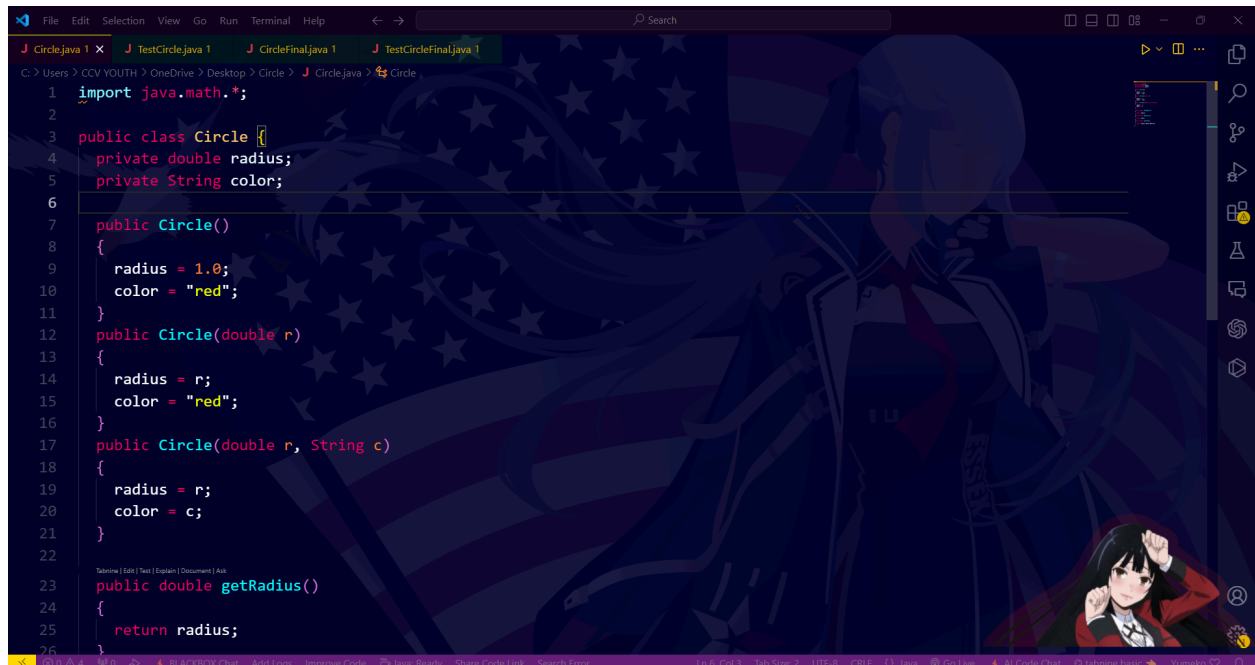
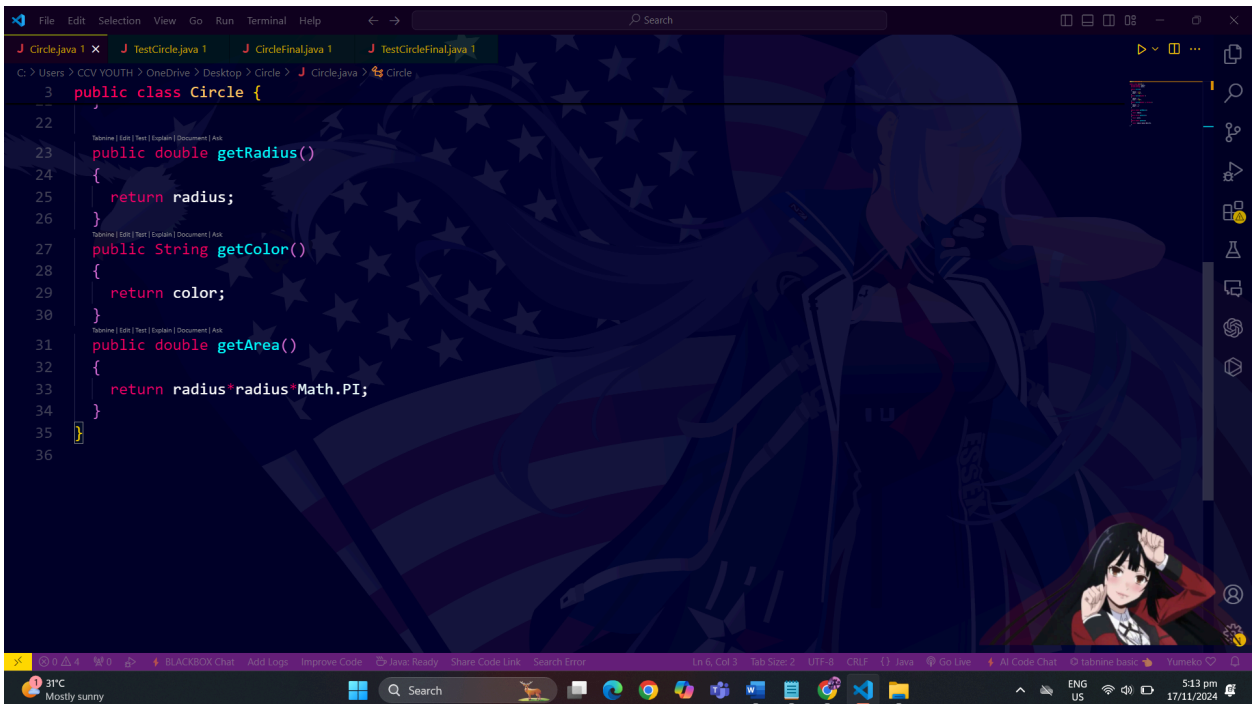


Circle Class Documentation

The **Circle** class represents a circle with a radius and a color. It includes constructors to initialize these properties, getter methods to retrieve them, and a method to calculate the area of the circle.



```
1 import java.math.*;
2
3 public class Circle {
4     private double radius;
5     private String color;
6
7     public Circle()
8     {
9         radius = 1.0;
10        color = "red";
11    }
12    public Circle(double r)
13    {
14        radius = r;
15        color = "red";
16    }
17    public Circle(double r, String c)
18    {
19        radius = r;
20        color = c;
21    }
22
23    public double getRadius()
24    {
25        return radius;
26    }
```



```
22
23    public double getRadius()
24    {
25        return radius;
26    }
27    public String getColor()
28    {
29        return color;
30    }
31    public double getArea()
32    {
33        return radius*radius*Math.PI;
34    }
35 }
36
```

Fields

- `radius` (type: `double`): Represents the radius of the circle.
- `color` (type: `String`): Represents the color of the circle.

Constructors

- `Circle()`: Initializes a circle with a default radius of `1.0` and color `"red"`.
- `Circle(double r)`: Initializes a circle with the given radius `r` and a default color `"red"`.
- `Circle(double r, String c)`: Initializes a circle with the given radius `r` and the given color `c`.

Methods

- `getRadius()`: Returns the radius of the circle.
- `getColor()`: Returns the color of the circle.
- `getArea()`: Returns the area of the circle, calculated using the formula:
$$\text{Area} = \pi \times \text{radius}^2$$

TestCircle Class Documentation

The `TestCircle` class is a simple test class to demonstrate the usage of the `Circle` class. It creates instances of `Circle` with different constructors and prints the circle's properties (radius, color, and area).



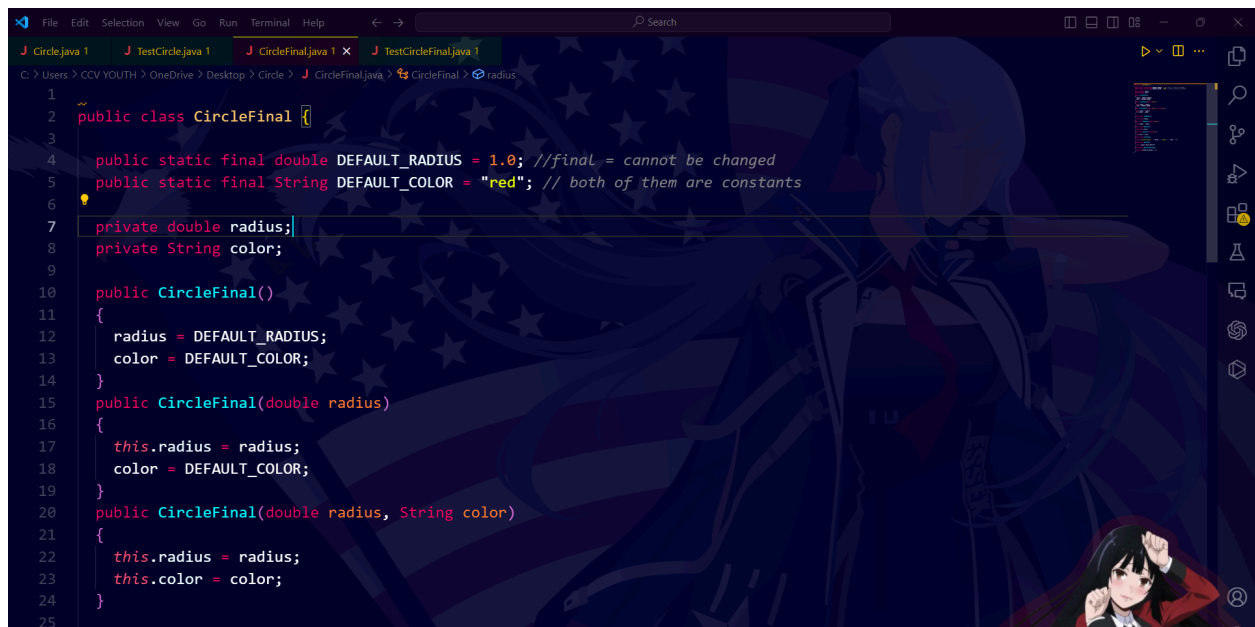
```
1
2 public class TestCircle {
3     public static void main(String []args) //don't forget main or your output will be in red
4     {
5         Circle c1 = new Circle(r:2.0, c:"blue");
6
7         System.out.println("The radius is: "+c1.getRadius());
8         System.out.println("The color is: "+c1.getColor());
9         System.out.printf(format:"The area is: %.2f\n", c1.getArea());
10        System.out.println();
11
12        Circle c2 = new Circle(r:2.0, c:"red");
13
14        System.out.println("The radius is: "+c2.getRadius());
15        System.out.println("The color is: "+c2.getColor());
16        System.out.printf(format:"The area is: %.2f\n",c2.getArea());
17        System.out.println();
18
19        Circle c3 = new Circle(r:1.0, c:"red");
20
21        System.out.println("The radius is: "+c3.getRadius());
22        System.out.println("The color is: "+c3.getColor());
23        System.out.printf(format:"The area is: %.2f\n", c3.getArea()); //use printf and use comma or you'll get error
24        System.out.println();
25    }
26 }
```

Main Method

- Creates three `Circle` objects (`c1`, `c2`, `c3`) using different constructors.
- Prints the radius, color, and area of each circle using `getRadius()`, `getColor()`, and `getArea()`.

Output Example

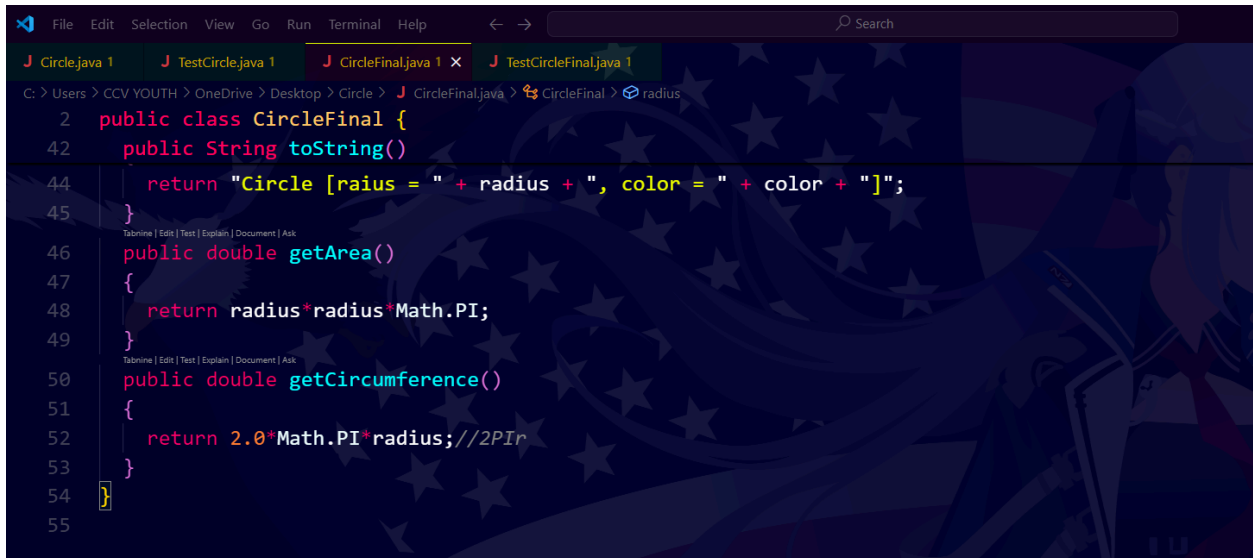
The `TestCircle` class outputs the radius, color, and area of each circle in a formatted manner.



```
1
2 public class CircleFinal {
3
4     public static final double DEFAULT_RADIUS = 1.0; //final = cannot be changed
5     public static final String DEFAULT_COLOR = "red"; // both of them are constants
6
7     private double radius;
8     private String color;
9
10    public CircleFinal()
11    {
12        radius = DEFAULT_RADIUS;
13        color = DEFAULT_COLOR;
14    }
15    public CircleFinal(double radius)
16    {
17        this.radius = radius;
18        color = DEFAULT_COLOR;
19    }
20    public CircleFinal(double radius, String color)
21    {
22        this.radius = radius;
23        this.color = color;
24    }
25 }
```



```
2 public class CircleFinal {
25
26     public double getRadius()
27     {
28         return this.radius;
29     }
30     public void setRadius(double radius)
31     {
32         this.radius = radius;
33     }
34     public String getColor()
35     {
36         return this.color;
37     }
38     public void setColor(String color)
39     {
40         this.color = color;
41     }
42     public String toString()
43     {
44         return "Circle [radius = " + radius + ", color = " + color + "];";
45     }
46     public double getArea()
47 }
```



```
File Edit Selection View Go Run Terminal Help
C: > Users > CCV YOUTH > OneDrive > Desktop > Circle > CircleFinal.java > CircleFinal > radius

2 public class CircleFinal {
42 public String toString()
44     return "Circle [radius = " + radius + ", color = " + color + "];";
45 }
46 public double getArea()
47 {
48     return radius*radius*Math.PI;
49 }
50 public double getCircumference()
51 {
52     return 2.0*Math.PI*radius;//2PIr
53 }
54 }
55 }
```

Fields

- **DEFAULT_RADIUS** (type: **final double**): A constant representing the default radius (value: 1.0).
- **DEFAULT_COLOR** (type: **final String**): A constant representing the default color (value: "red").
- **radius** (type: **double**): Represents the radius of the circle.
- **color** (type: **String**): Represents the color of the circle.

Constructors

- **CircleFinal()**: Initializes a circle with the default radius **DEFAULT_RADIUS** and color **DEFAULT_COLOR**.
- **CircleFinal(double radius)**: Initializes a circle with the given radius and the default color **DEFAULT_COLOR**.
- **CircleFinal(double radius, String color)**: Initializes a circle with the given radius and color.

Methods

- **getRadius()**: Returns the radius of the circle.
- **setRadius(double radius)**: Sets the radius of the circle to the given value.
- **getColor()**: Returns the color of the circle.
- **setColor(String color)**: Sets the color of the circle to the given value.
- **toString()**: Returns a string representation of the circle in the format "Circle [radius = x, color = y]".

- **getArea()**: Returns the area of the circle, calculated using the formula:

$$\text{Area} = \pi \times \text{radius}^2$$

$$\text{Area} = \pi \times \text{radius}^2$$
- **getCircumference()**: Returns the circumference of the circle, calculated using the formula:

$$\text{Circumference} = 2 \times \pi \times \text{radius}$$

$$\text{Circumference} = 2 \times \pi \times \text{radius}$$

TestCircleFinal Class Documentation

The `TestCircleFinal` class demonstrates the functionality of the `CircleFinal` class. It creates instances of `CircleFinal`, modifies their properties using setters, and prints their details.



```

1  ~
2  public class TestCircleFinal {
3      public static void main(String[] args)
4      {
5          CircleFinal c1 = new CircleFinal(radius:1.1, color:"blue");
6          System.out.println(c1);
7
8          CircleFinal c2 = new CircleFinal(radius:2.2);
9          System.out.println(c2);
10
11         CircleFinal c3 = new CircleFinal();
12         System.out.println(c3);
13
14         c1.setRadius(radius:3.3);
15         c1.setColor(color:"green");
16         System.out.println(c1);
17
18         System.out.println("The radius is: "+c1.getRadius());
19         System.out.println("The color is: "+c1.getColor());
20         System.out.printf(format:"The area is: %.2f%n",c1.getArea());
21         System.out.printf(format:"The area is: %.2f%n",c1.getCircumference());
22     }
23 }
24

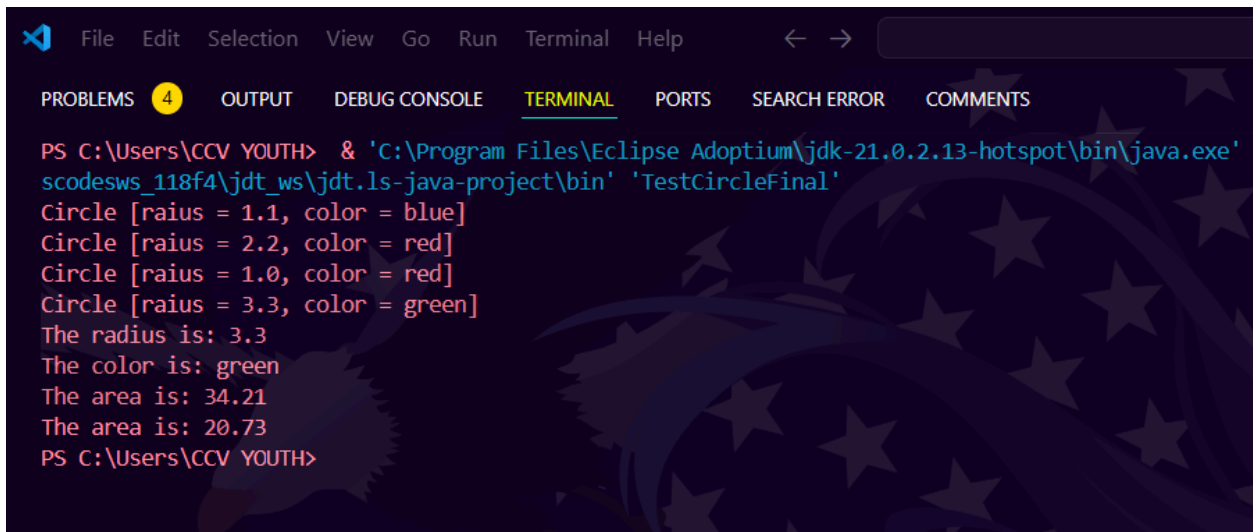
```

Main Method

- Creates three `CircleFinal` objects (`c1`, `c2`, `c3`) using different constructors.
- Modifies the properties of `c1` using `setRadius()` and `setColor()`.
- Prints the string representation of each circle.
- Prints the radius, color, area, and circumference of `c1` after modification.

Output Example

The `TestCircleFinal` class prints the circle's string representation (`toString()`) and its calculated area and circumference.



The image shows a screenshot of the Eclipse IDE's integrated terminal. The terminal window has a dark theme with a background pattern of stars and wavy lines. The menu bar at the top includes File, Edit, Selection, View, Go, Run, Terminal, and Help. Below the menu bar, there are tabs for PROBLEMS (with a yellow circle containing the number 4), OUTPUT, DEBUG CONSOLE, TERMINAL (which is selected and underlined), PORTS, SEARCH ERROR, and COMMENTS. The terminal content shows a PowerShell prompt running a Java command to execute 'TestCircleFinal'. The output displays four circle objects with their radius and color, followed by the radius and color of the last circle, and then the area for the first two circles.

```
PS C:\Users\CCV YOUTH> & 'C:\Program Files\Eclipse Adoptium\jdk-21.0.2.13-hotspot\bin\java.exe'  
scodesws_118f4\jdt_ws\jdt.ls-java-project\bin' 'TestCircleFinal'  
Circle [raius = 1.1, color = blue]  
Circle [raius = 2.2, color = red]  
Circle [raius = 1.0, color = red]  
Circle [raius = 3.3, color = green]  
The radius is: 3.3  
The color is: green  
The area is: 34.21  
The area is: 20.73  
PS C:\Users\CCV YOUTH>
```