Java Foundations Practices - Section 5

Practice 5-1: Determining color in the visible spectrum

Write an interactive Java program, ColorRange.java, which when given a wavelength in nanometers will return the corresponding color in the visible spectrum.

You must implement the following using a suitable if decision statement.

1. Prompt the user to enter the wavelength, the wavelength should be of type double.

2. For each range (e.g. 380-450) the number on the left is included in the range, but the number on the right is not included in the range.

3. If the input value is not found on the visible spectrum then state that the wavelength is not within the visible spectrum.

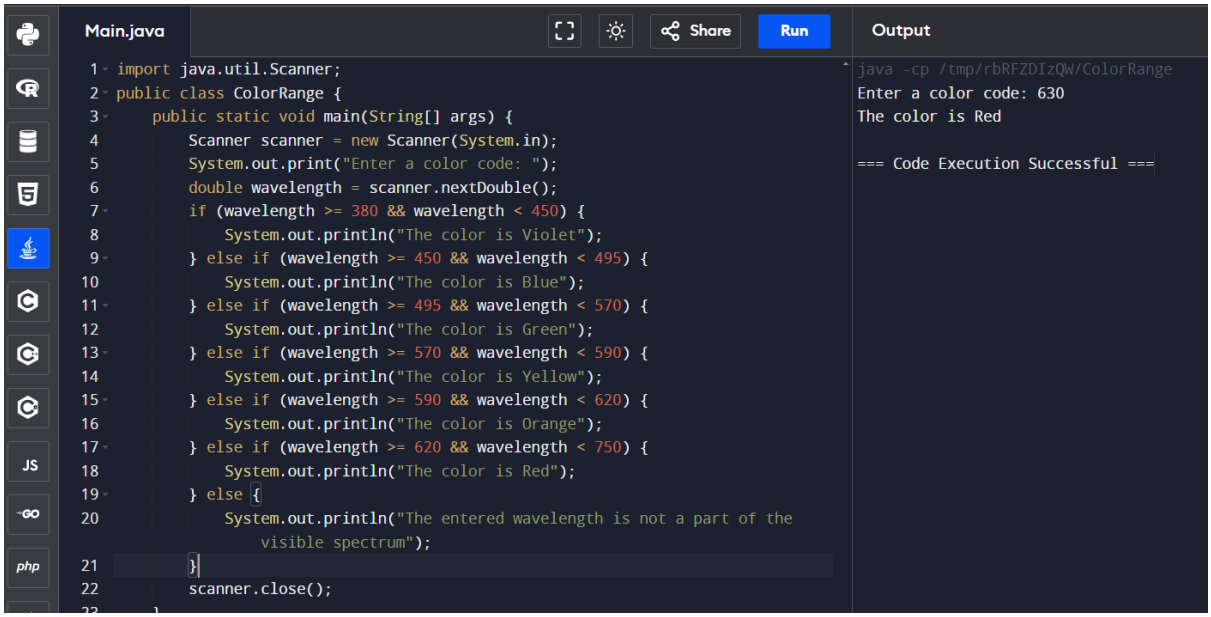
4. Expected Output: a. Enter a color code 630 The color is Red b. Enter a color code 25.0 Color Wavelength (nm) Violet 380-450 Blue 450-495 Green 495-570 Yellow 570-590 Orange 590-620 Red 620-750 The entered wavelength is not a part of the visible spectrum c. Enter a color code 750.5 The entered wavelength is not a part of the visible spectrum.

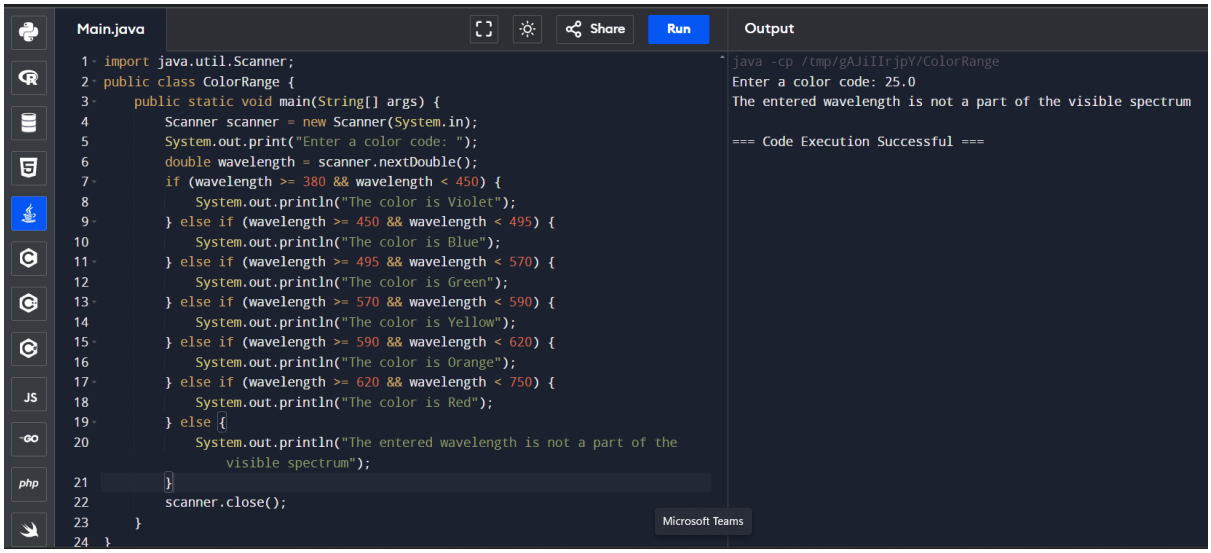
CODE:

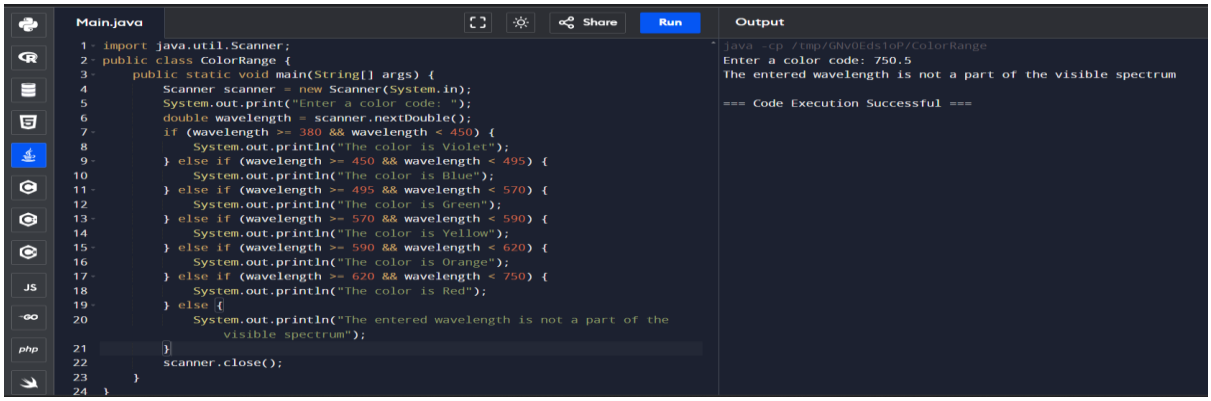
```
import java.util.Scanner;

public class ColorRange {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a color code: ");

        double wavelength = scanner.nextDouble();

        if (wavelength >= 380 && wavelength < 450) {

            System.out.println("The color is Violet");

        } else if (wavelength >= 450 && wavelength < 495) {

            System.out.println("The color is Blue");

        } else if (wavelength >= 495 && wavelength < 570) {

            System.out.println("The color is Green");

        } else if (wavelength >= 570 && wavelength < 590) {

            System.out.println("The color is Yellow");

        } else if (wavelength >= 590 && wavelength < 620) {

            System.out.println("The color is Orange");

        } else if (wavelength >= 620 && wavelength < 750) {
```

```
            System.out.println("The color is Red");
        } else {
            System.out.println("The entered wavelength is not a part of the visible spectrum");
        }
        scanner.close();
    }
}
```

OUTPUTS:







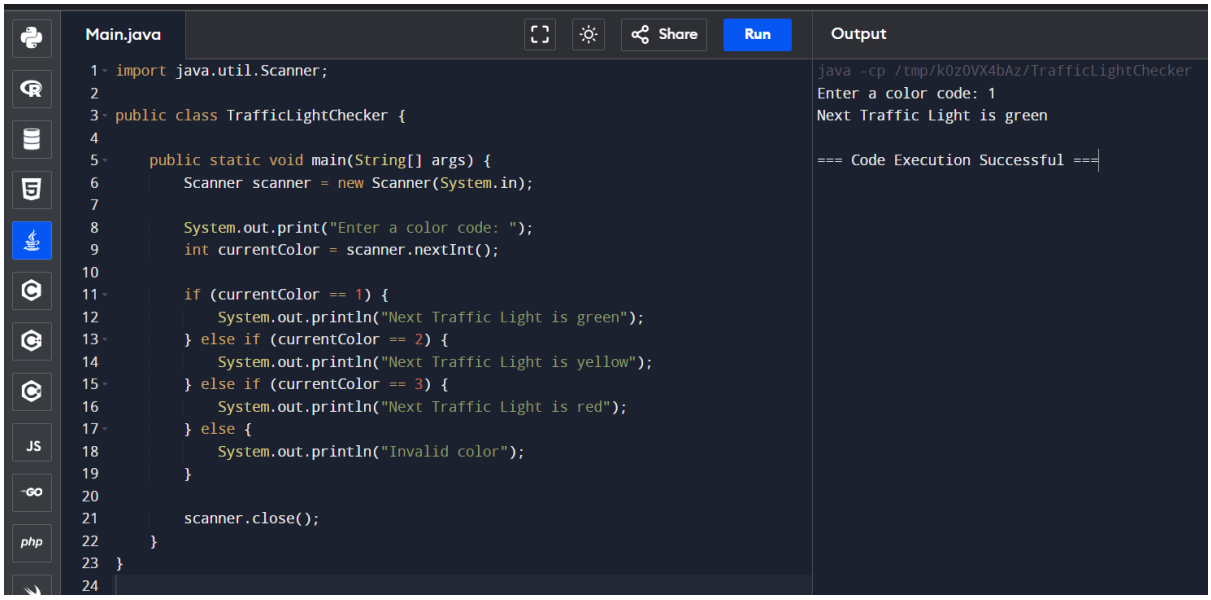
Problem 5-2: Determining the next color for a stop light

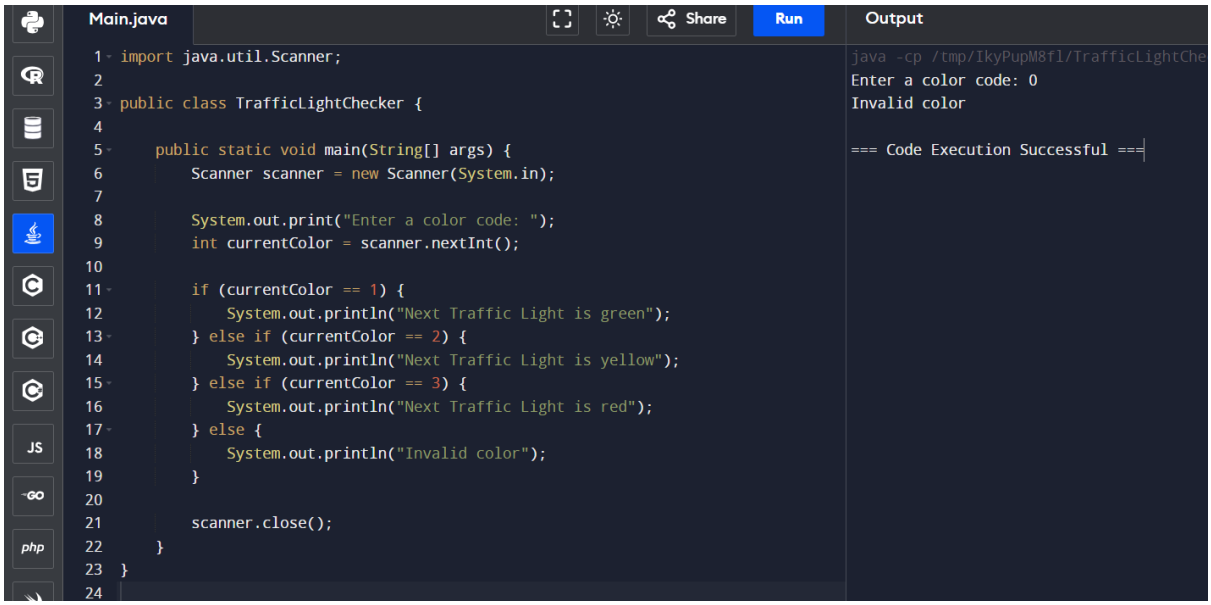
The normal behavior for a stop light is to cycle from Red to Green to Yellow to Red (and continues with this pattern). Write a java program TrafficLightChecker.java, which will determine the next color of a stop light in this pattern, Red to Green to Yellow to Red based on the current stop light provided by the user.

CODE:

```
import java.util.Scanner;

public class TrafficLightChecker {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a color code: ");

        int currentColor = scanner.nextInt();

        if (currentColor == 1) {

            System.out.println("Next Traffic Light is green");

        } else if (currentColor == 2) {

            System.out.println("Next Traffic Light is yellow");

        } else if (currentColor == 3) {

            System.out.println("Next Traffic Light is red");

        } else {

            System.out.println("Invalid color");

        }

        scanner.close();

    }

}
```

OUTPUTS:





Problem 5-3: Determining the next color for a stop light using switch

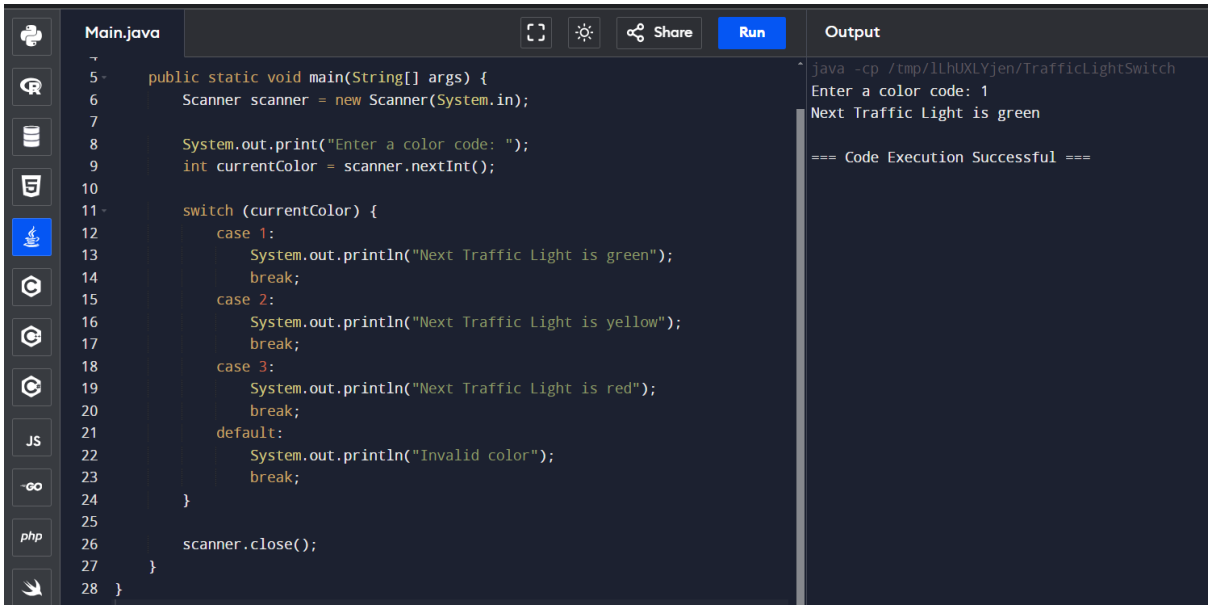
Implement practice 5-2 using switch statement and ensure the program alert users if they've entered any invalid value.

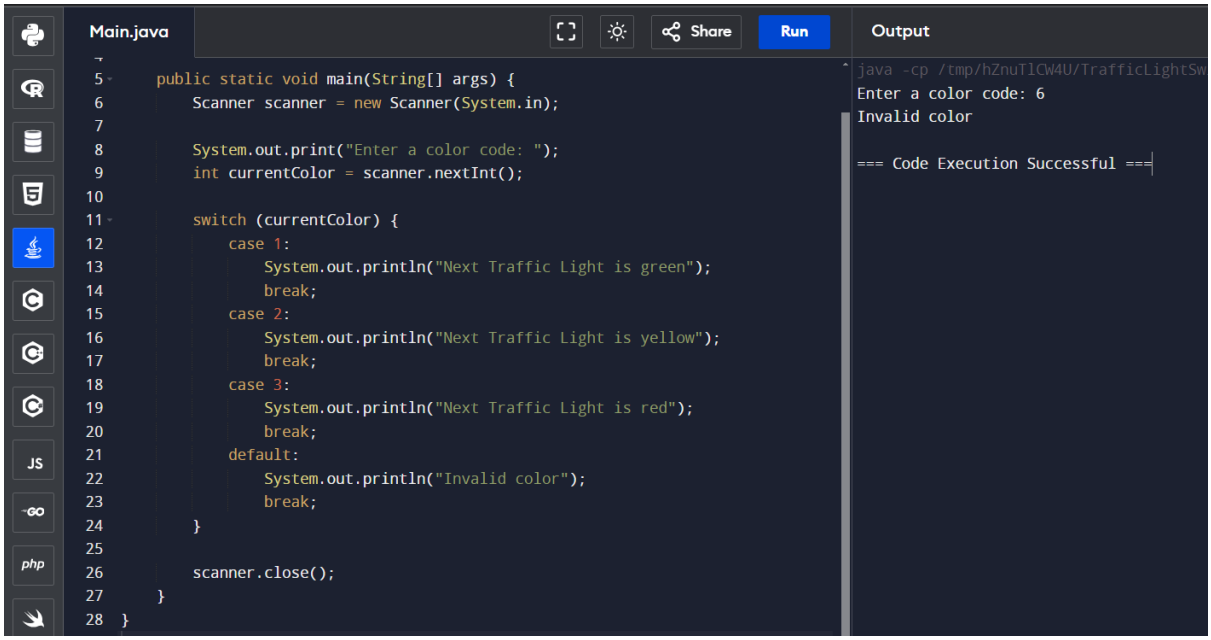
CODE:

```
import java.util.Scanner;

public class TrafficLightSwitch {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);
```

```
        System.out.print("Enter a color code: ");
        int currentColor = scanner.nextInt();
        switch (currentColor) {
            case 1:
                System.out.println("Next Traffic Light is green");
                break;
            case 2:
                System.out.println("Next Traffic Light is yellow");
                break;
            case 3:
                System.out.println("Next Traffic Light is red");
                break;
            default:
                System.out.println("Invalid color");
                break;
        }
        scanner.close();
    }
}
```

OUTPUTS:




Main.java
Share
Run
Output
public static void main(String[] args) {
Scanner scanner = new Scanner(System.in);
System.out.print("Enter a color code: ");
int currentColor = scanner.nextInt();
switch (currentColor) {
case 1:
System.out.println("Next Traffic Light is green");
break;
case 2:
System.out.println("Next Traffic Light is yellow");
break;
case 3:
System.out.println("Next Traffic Light is red");
break;
default:
System.out.println("Invalid color");
break;
}
scanner.close();
}
}
java -cp /tmp/hZnuTlCW4U/TrafficLightSw
Enter a color code: 6
Invalid color
=== Code Execution Successful ===