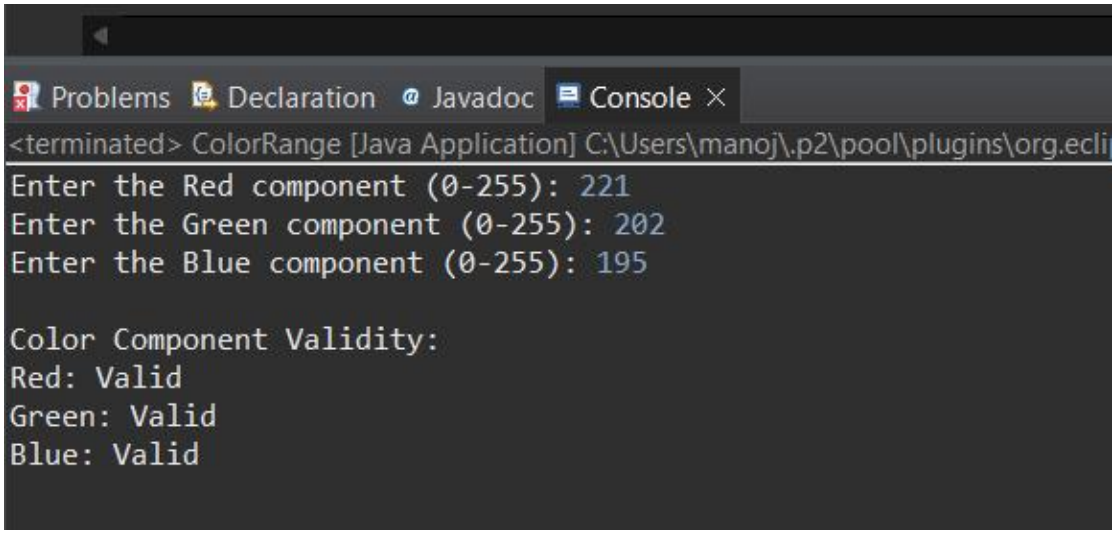
Jfo section 5:

Colour range

Program:

```
import java.util.Scanner;

public class ColorRange {
   public static void main(String[] args) {
      // Create a Scanner object for user input
      Scanner scanner = new Scanner(System.in);

      // Define the valid range for each color component
      int minRange = 0;
      int maxRange = 255;

      // Prompt user to enter RGB values
      System.out.print("Enter the Red component (0-255): ");
      int red = scanner.nextInt();

      System.out.print("Enter the Green component (0-255): ");
      int green = scanner.nextInt();

      System.out.print("Enter the Blue component (0-255): ");
      int blue = scanner.nextInt();

      // Check if the RGB values are within the specified range
      boolean isValidRed = red >= minRange && red <= maxRange;
      boolean isValidGreen = green >= minRange && green <= maxRange;
      boolean isValidBlue = blue >= minRange && blue <= maxRange;

      // Display results
      System.out.println("\nColor Component Validity:");
      System.out.println("Red: " + (isValidRed ? "Valid" : "Invalid"));
      System.out.println("Green: " + (isValidGreen ? "Valid" : "Invalid"));
      System.out.println("Blue: " + (isValidBlue ? "Valid" : "Invalid"));

      // Close the scanner
      scanner.close();
   }
}
```

Result:



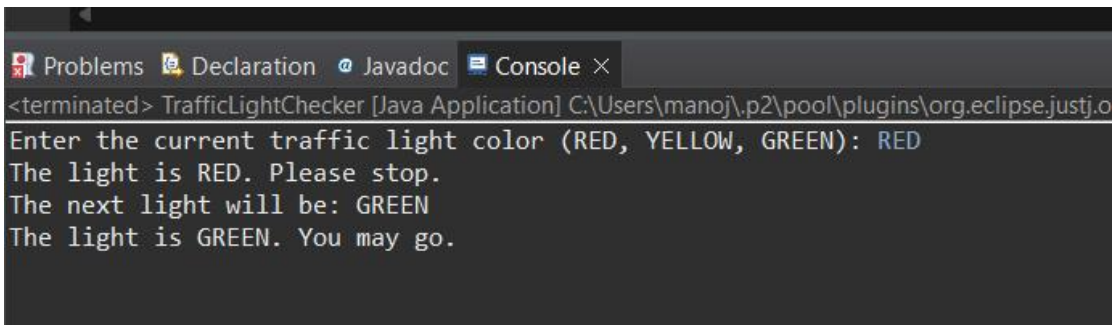
TrafficLightChecker Class

PROGRAM:

```
import java.util.Scanner;

public class TrafficLightChecker {
   // Enum to define traffic light states
   private enum TrafficLight {
      RED, YELLOW, GREEN
   }

   // Method to get the next traffic light based on the current light
   private static TrafficLight getNextLight(TrafficLight current) {
      switch (current) {
         case RED:
            return TrafficLight.GREEN;
         case YELLOW:
            return TrafficLight.RED;
         case GREEN:
            return TrafficLight.YELLOW;
         default:
            throw new IllegalArgumentException("Unexpected value: " + current);
      }
   }

   // Method to display the traffic light status
   private static void displayStatus(TrafficLight light) {
      switch (light) {
         case RED:
            System.out.println("The light is RED. Please stop.");
            break;
         case YELLOW:
            System.out.println("The light is YELLOW. Prepare to stop.");
            break;
```

```
            case GREEN:
                System.out.println("The light is GREEN. You may go.");
                break;
        }
    }

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

        // Prompt user for the initial traffic light state
        System.out.print("Enter the current traffic light color (RED, YELLOW, GREEN): ");
        String input = scanner.next().toUpperCase();

        TrafficLight currentLight;
        try {
            // Convert the input string to TrafficLight enum
            currentLight = TrafficLight.valueOf(input);
        } catch (IllegalArgumentException e) {
            System.out.println("Invalid color entered. Please enter RED, YELLOW, or GREEN.");
            scanner.close();
            return;
        }

        // Display the current light status
        displayStatus(currentLight);

        // Determine the next traffic light state
        TrafficLight nextLight = getNextLight(currentLight);

        // Display the next light status
        System.out.println("The next light will be: " + nextLight);
        displayStatus(nextLight);

        // Close the scanner
        scanner.close();
    }
}
```

RESULT:



TRAFFICLIGHTSWITCH:

PROGRAM:

```
import java.util.Scanner;

public class TrafficLightSwitch {
  // Enum to define traffic light states
  private enum TrafficLight {
    RED, YELLOW, GREEN
  }

  // Method to get the next traffic light based on the current light
  private static TrafficLight getNextLight(TrafficLight current) {
    switch (current) {
      case RED:
        return TrafficLight.GREEN;
      case YELLOW:
        return TrafficLight.RED;
      case GREEN:
        return TrafficLight.YELLOW;
      default:
        throw new IllegalArgumentException("Unexpected value: " + current);
    }
  }

  // Method to display the traffic light status
  private static void displayStatus(TrafficLight light) {
    switch (light) {
      case RED:
        System.out.println("The light is RED. Please stop.");
        break;
      case YELLOW:
        System.out.println("The light is YELLOW. Prepare to stop.");
        break;
      case GREEN:
        System.out.println("The light is GREEN. You may go.");
        break;
    }
  }

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

    // Prompt user for the initial traffic light state
    System.out.print("Enter the current traffic light color (RED, YELLOW, GREEN): ");
    String input = scanner.next().toUpperCase();

    TrafficLight currentLight;
    try {
      // Convert the input string to TrafficLight enum
      currentLight = TrafficLight.valueOf(input);
    } catch (IllegalArgumentException e) {
      System.out.println("Invalid color entered. Please enter RED, YELLOW, or GREEN.");
      scanner.close();
      return;
```

```
        }

        // Display the current light status
        displayStatus(currentLight);

        // Determine the next traffic light state
        TrafficLight nextLight = getNextLight(currentLight);

        // Display the next light status
        System.out.println("The next light will be: " + nextLight);
        displayStatus(nextLight);

        // Close the scanner
        scanner.close();
    }
}
```

RESULT: