

Name: Minakshi Ghodella

Batch: S1

Roll no: 22107

EXPERIMENT NO.– 9

Problem Statement:

Write an Arduino program that:

- Uses 3 potentiometers to control the intensity of Red, Green, and Blue colors of an RGB LED.
- Reads the analog values from the potentiometers and adjusts the brightness of each color accordingly.

Components Required:

- Arduino Board (UNO, Mega, etc.)
- RGB LED
- 3 x Potentiometers (10k Ω)
- 3 x 220 Ω Resistors
- Breadboard
- Jumper Wires
- Arduino IDE

Circuit Connections:

1. RGB LED Connections

- Red Pin → Digital Pin 9 (via 220 Ω resistor)
- Green Pin → Digital Pin 10 (via 220 Ω resistor)
- Blue Pin → Digital Pin 11 (via 220 Ω resistor)
- Common Cathode → GND

2. Potentiometer Connections

- Potentiometer 1 (Red):
 - VCC → 5V
 - GND → GND

- Output Pin \rightarrow A0
 - Potentiometer 2 (Green):
 - VCC \rightarrow 5V
 - GND \rightarrow GND
 - Output Pin \rightarrow A1
 - Potentiometer 3 (Blue):
- VCC \rightarrow 5V
- GND \rightarrow GND
- Output Pin \rightarrow A2

Arduino Code :

```
#define RED_PIN 9
#define GREEN_PIN 10
#define BLUE_PIN 11

#define POT_RED A0
#define POT_GREEN A1
#define POT_BLUE A2

void setup() {
  Serial.begin(9600);
  pinMode(RED_PIN, OUTPUT);
  pinMode(GREEN_PIN, OUTPUT);
  pinMode(BLUE_PIN, OUTPUT);
}

void loop() {
  int redValue = analogRead(POT_RED);
  int greenValue = analogRead(POT_GREEN);
  int blueValue = analogRead(POT_BLUE);

  redValue = map(redValue, 0, 1023, 0, 255);
  greenValue = map(greenValue, 0, 1023, 0, 255);
  blueValue = map(blueValue, 0, 1023, 0, 255);

  analogWrite(RED_PIN, redValue);
  analogWrite(GREEN_PIN, greenValue);
  analogWrite(BLUE_PIN, blueValue);

  Serial.print("Red: ");
  Serial.println(redValue);
  Serial.print("Green: ");
  Serial.println(greenValue);
  Serial.print("Blue: ");
```

```
Serial.println(blueValue);
```

```
delay(100);
```

```
}
```

Output:

1. When you turn the potentiometers, the color of the RGB LED changes based on the combined Red, Green, and Blue intensity values.
2. The Serial Monitor displays the current RGB values in the format:
 - Red: 120
 - Green: 200
 - Blue: 45
3. The LED color dynamically changes as you adjust the potentiometers, creating a range of color combinations.