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CSE 5410  
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## Lab 2: RGB LED

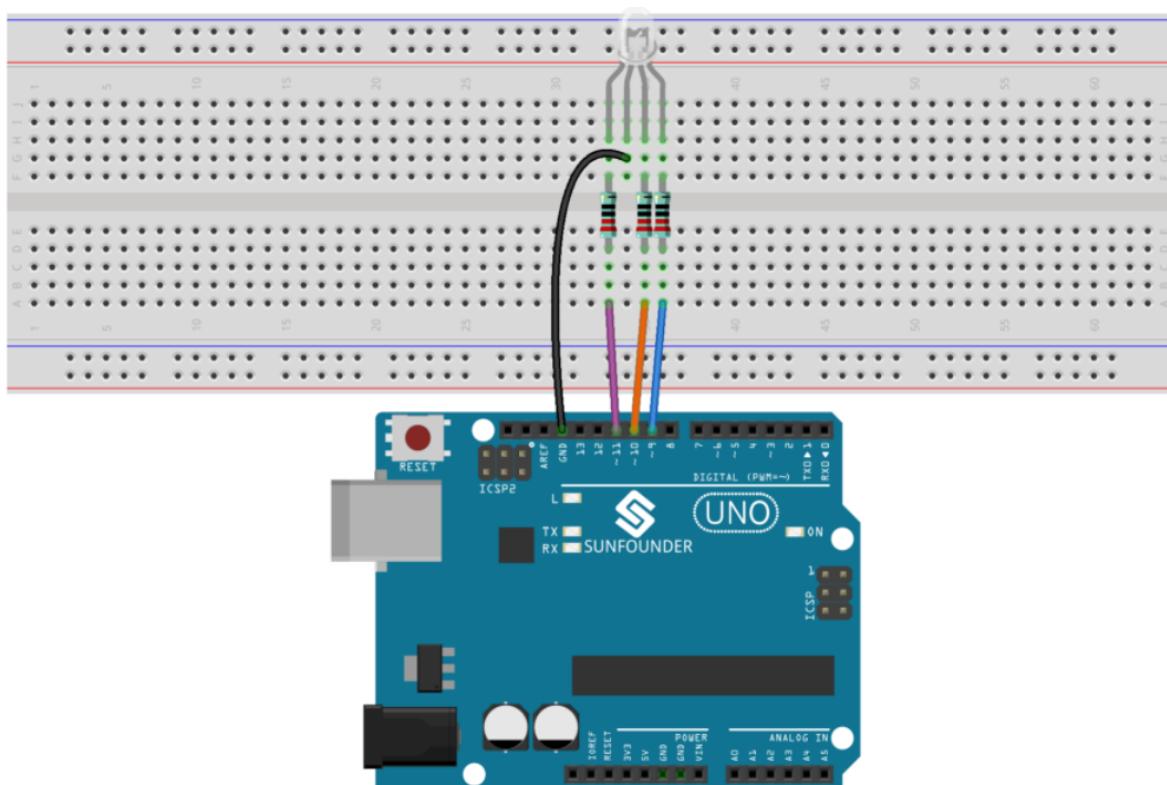
### Introduction

In this experiment, we used the arduino board to make an RGB led switch colors. The RGB led module can produce different colors by mixing in the three colors it emits: red, blue, and green. In the arduino IDE software, we can create a code that makes the RGB led module emit different colors for two seconds repeatedly.

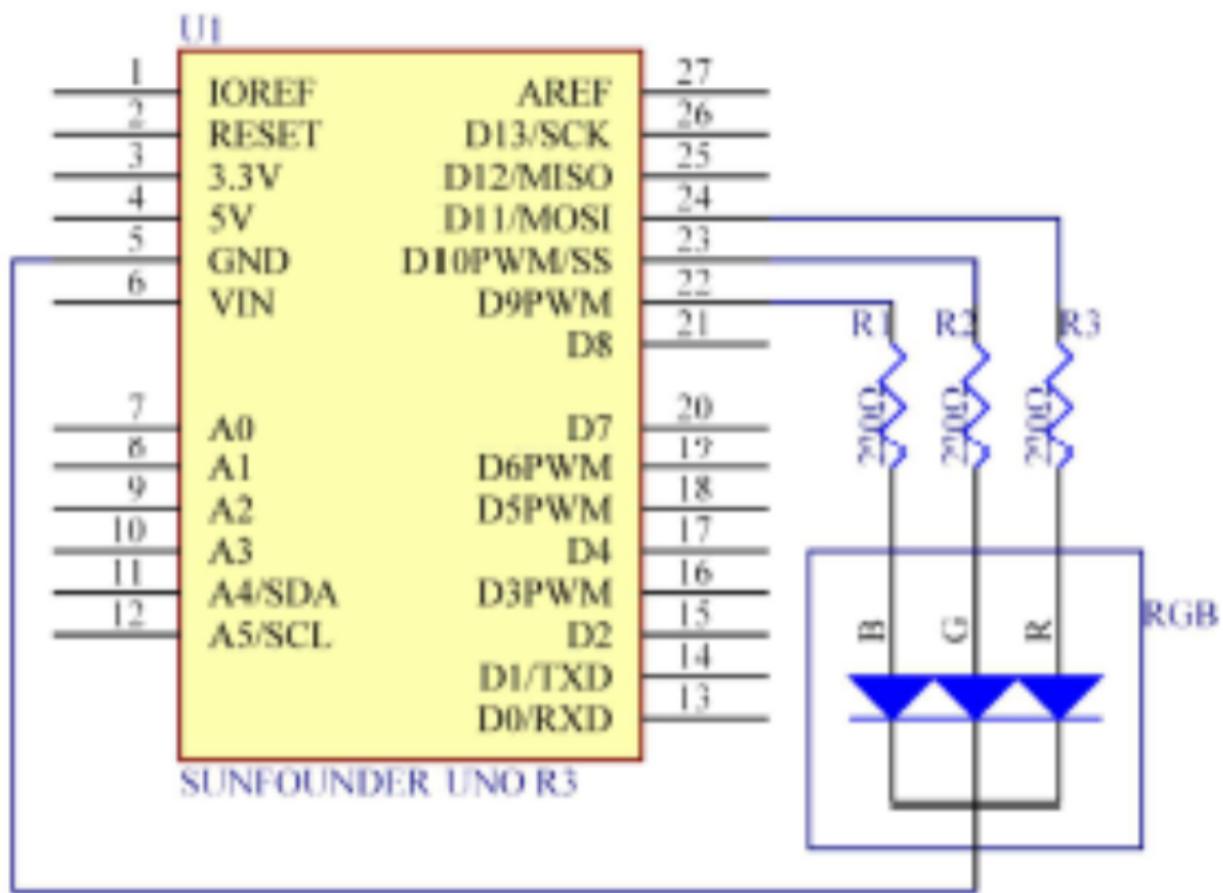
Components list: Arduino uno board, usb cable, RGB LED module, resistor( $220\text{k}\Omega$ ), wires, and breadboard.

### Experiment

By connecting the components as shown in the picture diagram below we can begin uploading code to the arduino and test with RGB led module.



Note: the RGB led module already has a pin layout for red, green, blue, and ground. Therefore connect as such to arduino



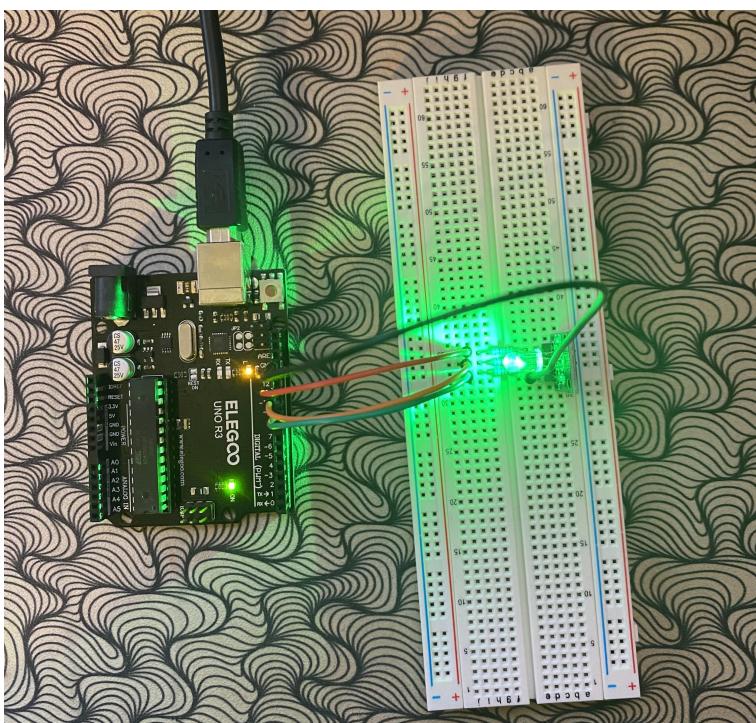
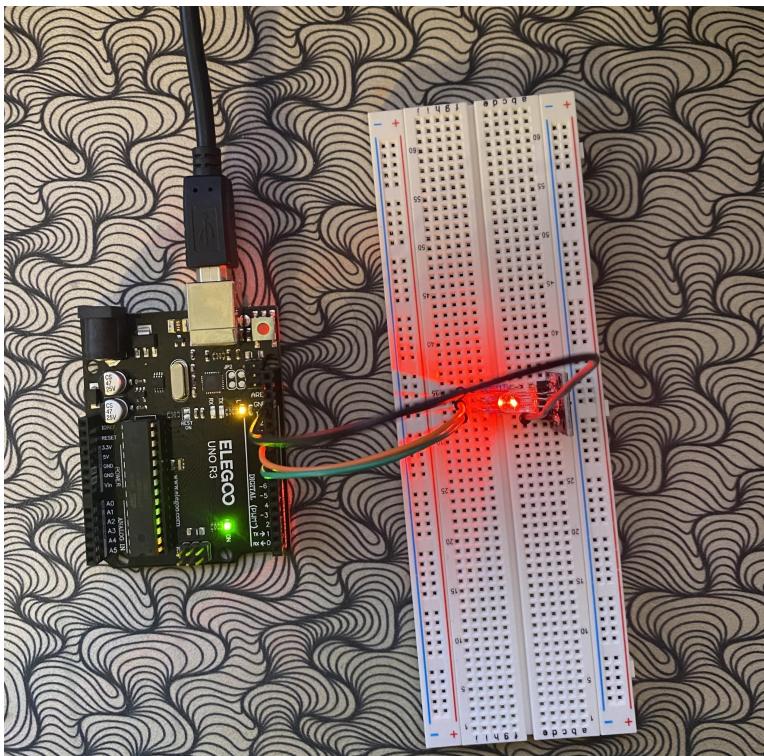
## Test

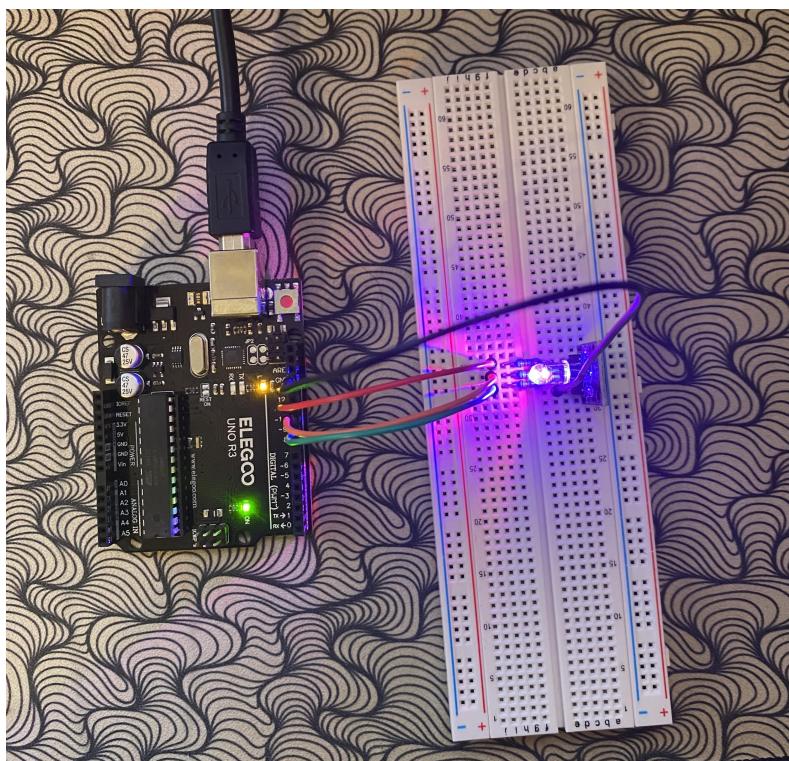
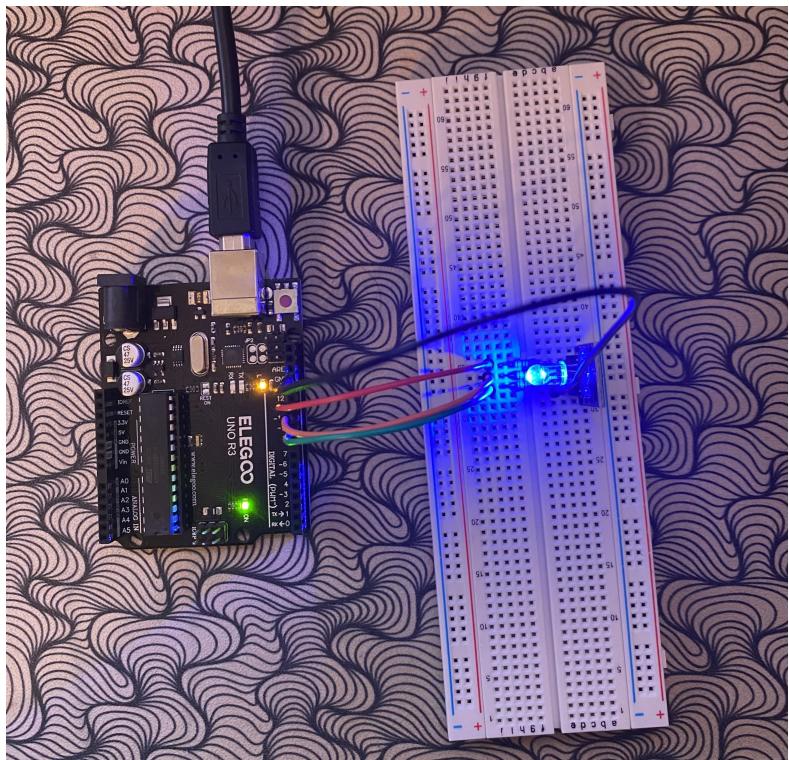
Using the code below we get the RGB led to switch colors every 2 seconds.

```
const int redPin = 11; // R petal on RGB LED module connected to digital pin 11
const int greenPin = 10; // G petal on RGB LED module connected to digital pin 10
const int bluePin = 9; // B petal on RGB LED module connected to digital pin 9
/*****************/
****/
void setup()
{
    pinMode(redPin, OUTPUT); // sets the redPin to be an output
    pinMode(greenPin, OUTPUT); // sets the greenPin to be an output
    pinMode(bluePin, OUTPUT); // sets the bluePin to be an output
}

/*****************/
void loop() // run over and over again
{ // Basic colors:
    color(255, 0, 0); // turn the RGB LED red
    delay(2000); // delay for 2 second
    color(0,255, 0); // turn the RGB LED green
    delay(2000); // delay for 2 second
    color(0, 0, 255); // turn the RGB LED blue
    delay(2000); // delay for 2 second
    // Example blended colors:
    color(255,0,252); // turn the RGB LED red
    delay(2000); // delay for 2 second
    color(237,109,0); // turn the RGB LED orange
    delay(2000); // delay for 2 second
    color(255,215,0); // turn the RGB LED yellow
    delay(2000); // delay for 2 second
    color(34,139,34); // turn the RGB LED green
    delay(2000); // delay for 2 second
    color(0,112,255); // turn the RGB LED blue
    delay(2000); // delay for 2 second
    color(0,46,90); // turn the RGB LED indigo
    delay(2000); // delay for 2 second
    color(128,0,128); // turn the RGB LED purple
    delay(2000); // delay for 2 second
}
/*****************/
void color (unsigned char red, unsigned char green, unsigned char
blue) // the color generating function
```

```
{  
    analogWrite(redPin, red);  
    analogWrite(greenPin, green);  
    analogWrite(bluePin, blue);  
}  
//*********************************************************************/  
/*****
```





## **Conclusion**

In this lab, I learned about pulse width modulation otherwise known as PWM. Using pwm, we can set the arduino to have a variability in duty cycles, such as the making an RGB led module produce different colors by providing different levels of brightness of red, green, and blue.