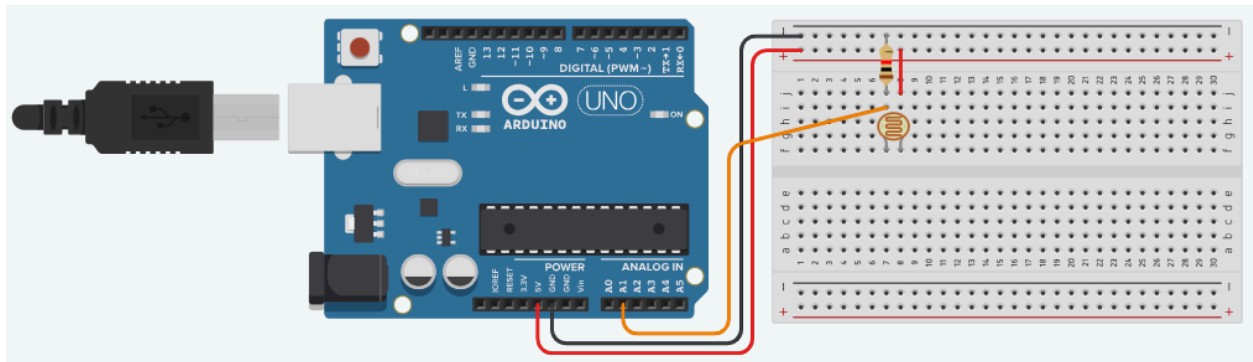# COMP 1045 Lab 4

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<u>Circuit diagram:</u> Today's lab will be using the photoresistor. Create the diagram below and paste the source code. Then open your serial monitor and change the light value to check that the circuit works.

Level 1: Copy and run the following source code.

Tinkercad Link: https://www.tinkercad.com/things/1QrzpOm0EdI-assignment4-level-1
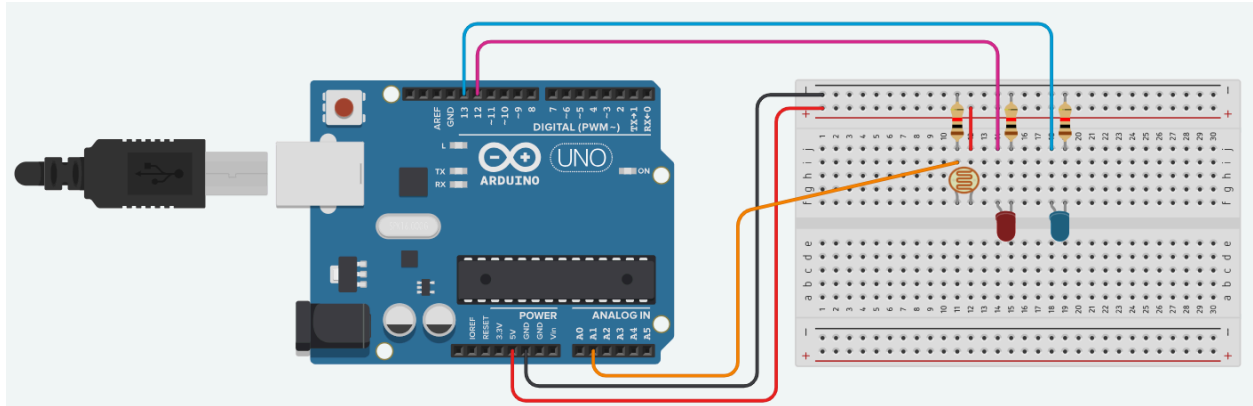
```
const int lightPin = A1;
int data = 0;

void setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);
}

void loop() {
  // put your main code here, to run repeatedly:
  data = analogRead(lightPin);
  data = map(data,6,679,0,100);
  Serial.print("Light value=");
  Serial.println(data);
  delay(1000);
}
```

Level 2: Write a program that will turn on both the red LED (D12) and blue LED (D13) at the same time when the sensor detects darkness.

Tinkercad Link: https://www.tinkercad.com/things/7uvwROOO9Pe-lab-4-level-2


```
const int lightPin = A1;


int led1 = 13;
int led2 = 12;
int data = 0;


void setup() {
  pinMode(led1, OUTPUT);
  pinMode(led2, OUTPUT);
  Serial.begin(9600);
}


void loop() {
  // put your main code here, to run repeatedly:
  data = analogRead(lightPin);
  data = map(data,6,679,0,100);

  if (data < 25)
  {
    digitalWrite(led1, HIGH);
    digitalWrite(led2, HIGH);
    Serial.print("Light value=");
    Serial.println(data);
```
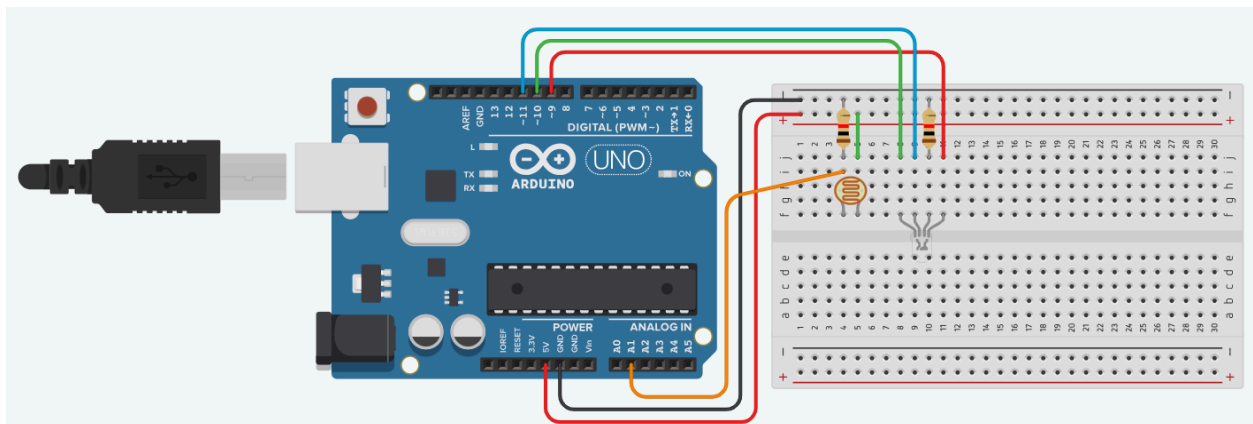
```
  }
  else
  {
    digitalWrite(led1, LOW);
    digitalWrite(led2, LOW);
  }
  delay(1000);
}
```

Level 3: Light meter Challenge - Write a program that will turn on the red channel on the RGB led (D9) when it is dark, the channel (D11) when there is some light and the Green RGB channel (D10) when the light sensor detects a bright light.

Tinkercad Link: https://www.tinkercad.com/things/7jH2DTnVKtg-lab-4-level-3


```
int RGBRedPin = 9;
int RGBGreenPin = 10;
int RGBBluePin = 11;

const int lightPin = A1;
int data = 0;

void setup() {
  pinMode(RGBRedPin, OUTPUT);
  pinMode(RGBGreenPin, OUTPUT);
  pinMode(RGBBluePin, OUTPUT);
  Serial.begin(9600);
}
```

```cpp
void loop() {
  // put your main code here, to run repeatedly:
  data = analogRead(lightPin);
  data = map(data,6,679,0,100);

  if (data <= 10) {
    digitalWrite(RGBRedPin, HIGH);
    digitalWrite(RGBGreenPin, LOW);
    digitalWrite(RGBBluePin, LOW);
    Serial.print("Light value=");
    Serial.println(data);
    delay(1000);
  }
  else if (data >= 40 && data <= 70 ) {
    digitalWrite(RGBRedPin, LOW);
    digitalWrite(RGBGreenPin, LOW);
    digitalWrite(RGBBluePin, HIGH);
    Serial.print("Light value=");
    Serial.println(data);
    delay(1000);
  }
  else {
    digitalWrite(RGBRedPin, LOW);
    digitalWrite(RGBGreenPin, HIGH);
    digitalWrite(RGBBluePin, LOW);
    Serial.print("Light value=");
    Serial.println(data);
    delay(1000);
  }
}
```