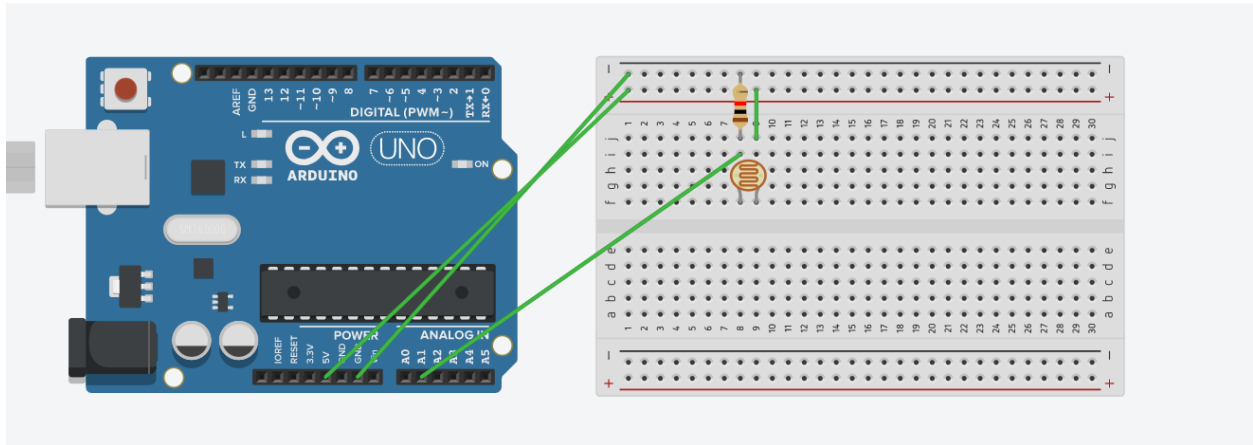


## COMP 1045 Lab 4

**Circuit diagram:** 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.



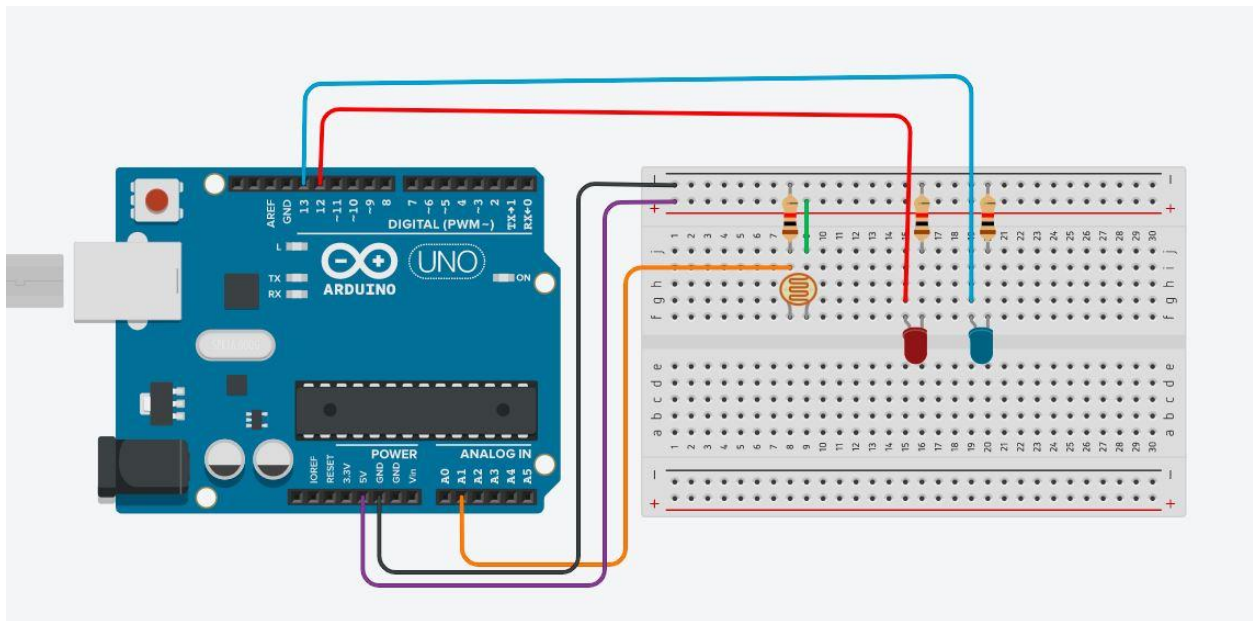
**Level 1:** Copy and run the following source code.

```
int lightPin = A1; //The light sensor is plugged into pin A1 of the Arduino.
int data = 0;      //This will store the data from the sensor.

void setup() { //The Setup function runs once.
  Serial.begin(9600);
}

void loop() { //The loop function runs forever.
  data = analogRead(lightPin); //Read the value from the light sensor and store it in the lightData
  variable.
  data = map(data,6,679,0,100); //map the data value to a percentage
  Serial.print("Light value =");
  Serial.println(data); //Print the data to the serial port.
  delay(1000);          //Wait 1 second (1000mS) before running again.
}
```

**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.



**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 blue channel(D11) when there is some light, and the Green RGB channel(D10) when the light sensor detects a bright light.

**Level 4:** Add two additional LED's. In order from left to right the value of each light is 8-4-2-1 to create binary numbers. Using the light sensor mapped from 0 to 15 have the lights count in binary as you move the light sensor slider from left to right. Ex 5: off - ON - off - ON  $4+1 = 5$ . Can use: `data = map(data,6,679,0,15);` //map the data value to 0-15

**Extra challenge:** Change your code in level 4 to convert the light sensor value into an array of size 4. If the light sensor = 6 your array would be { 0,1,1,0}. Then pass the array to a function called lightsON(). In the function turn the light on or off using the array value. Ex:  
`digitalWrite(farRightLight, array[0]) digitalWrite(farLeftLight, array[3])`