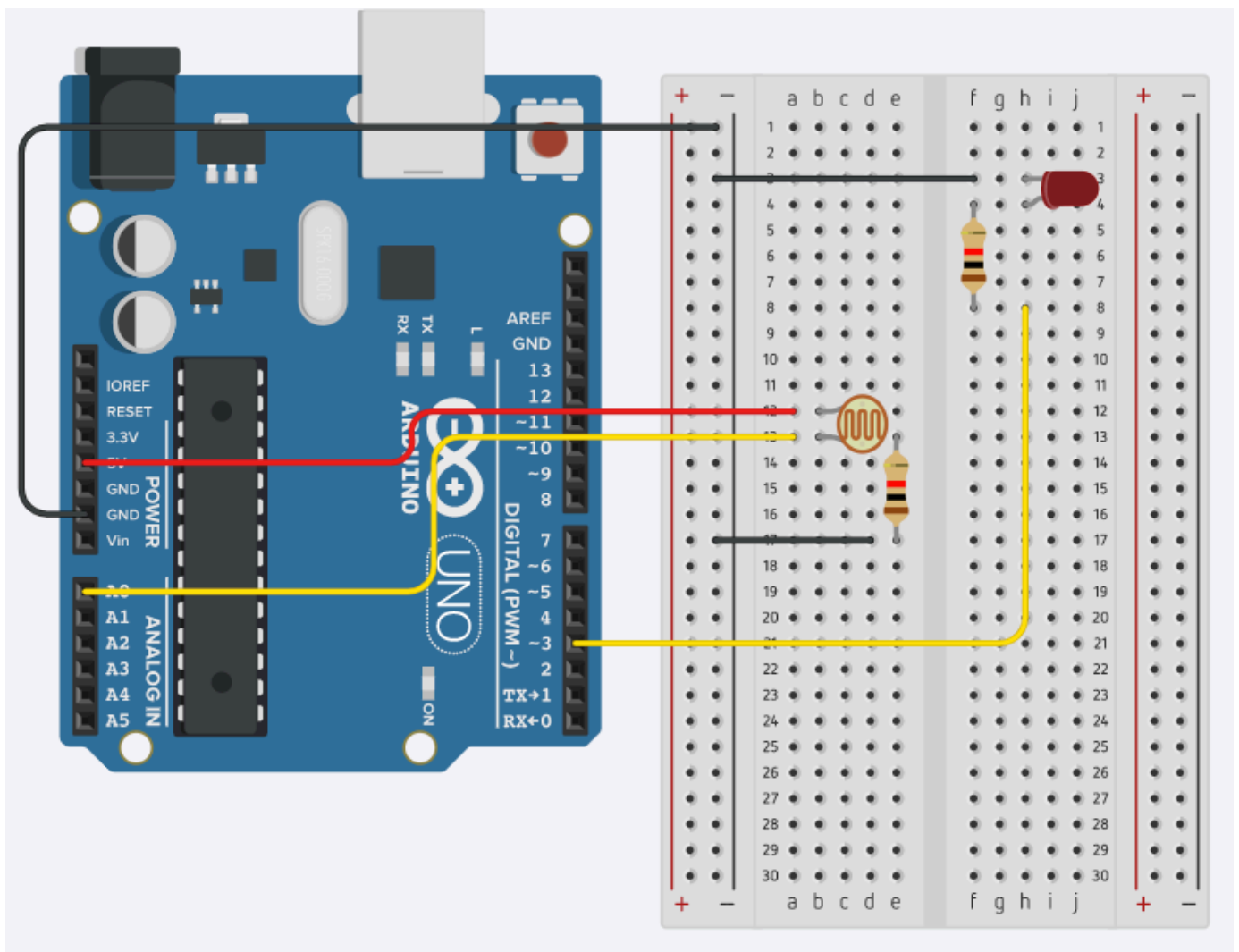


# Smart Light

## The Circuit

The colours of the wires does not matter as long as they are in the correct position.



# Smart Light

## The Code

```
int sensorPin = 0;
int lightPin = 3;
int threshold = 400;

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

void loop() {
  int sensorValue = analogRead(sensorPin);
  Serial.println(sensorValue, DEC);
  if (sensorValue < threshold) {
    digitalWrite(lightPin, HIGH);
  }
  if (sensorValue > threshold) {
    digitalWrite(lightPin, LOW);
  }
}
```

**Don't forget to set the threshold to be a value that is useful to your surroundings/lighting conditions.**

# Upload Instructions

## Upload Instructions

Once you have finished you'll need to verify the code is correct in order to upload it to the Arduino. If when you click **verify** any errors pop up then fix these before continuing.



Next connect the Arduino to the laptop via the USB cable. Then select the correct port using **Tools > Port > ArduinoUno**. This will typically be called something like **dev/cu.usbmodem1401** or the one that is called **dev/Arduino** (Arduino/Genuino Uno).

Now you can click **download**, to put the code onto the Arduino.

Now test your circuit works!

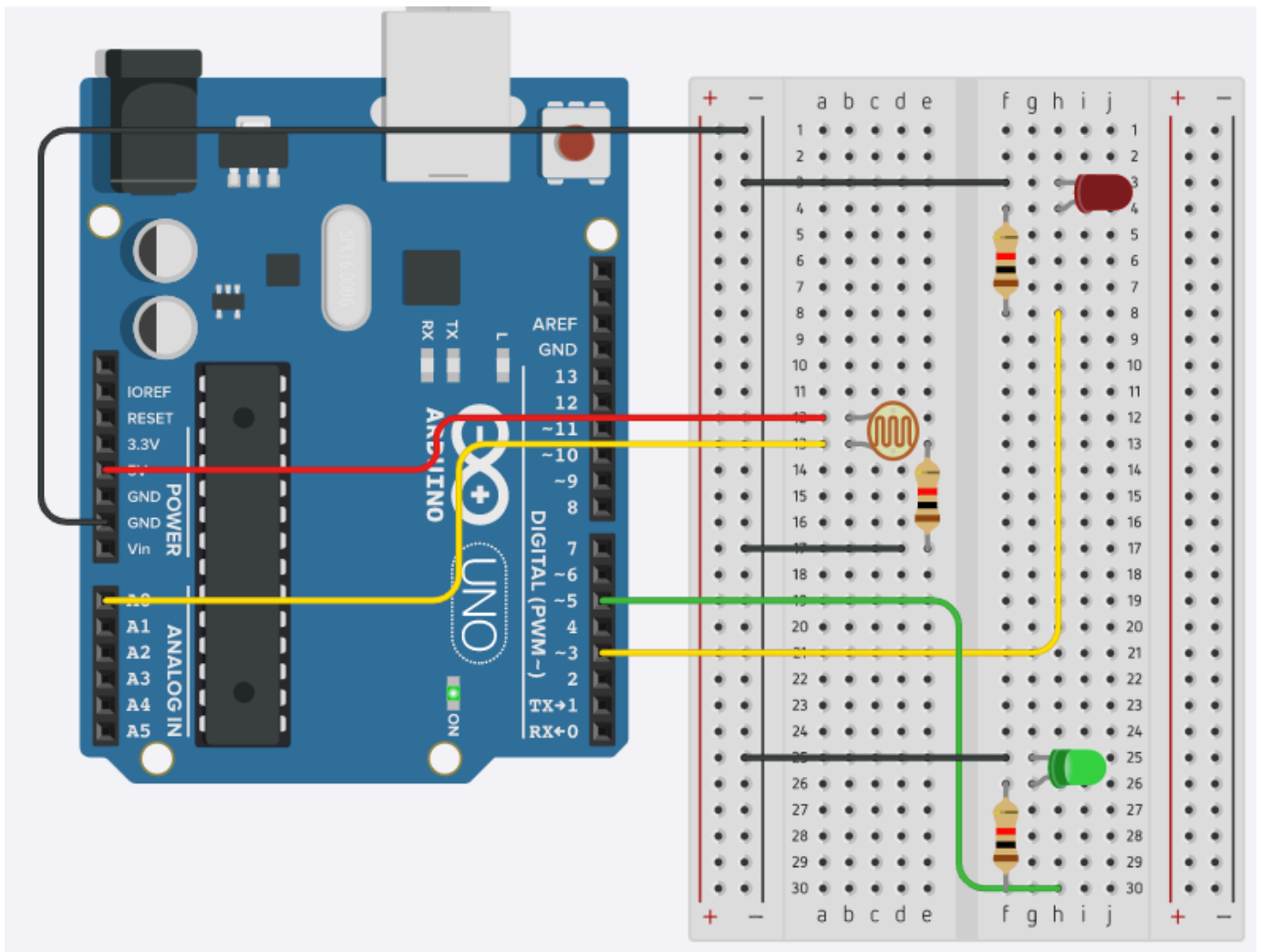
If you have any issues check the monitor **Tools > Serial Monitor** and see whether the sensor is printing out values. These should change based on the amount of light it receives.

**You may have to change your threshold or variables** in order for the light to turn on when you expect it to. E.g. if when you cover the sensor the value printed to the serial monitor is ~500 then perhaps change your threshold to 550 instead of 400.

# Two LEDs

## The Circuit

The colours of the wires does not matter as long as they are in the correct position.



# Two LEDs

## The Code

```
int sensorPin = 0;
int redLightPin = 3;
int greenLightPin = 5;
int threshold = 500;

void setup() {
  Serial.begin(9600);
  pinMode(redLightPin, OUTPUT);
  pinMode(greenLightPin, OUTPUT);
}

void loop() {
  int sensorValue = analogRead(sensorPin);
  Serial.println(sensorValue, DEC);

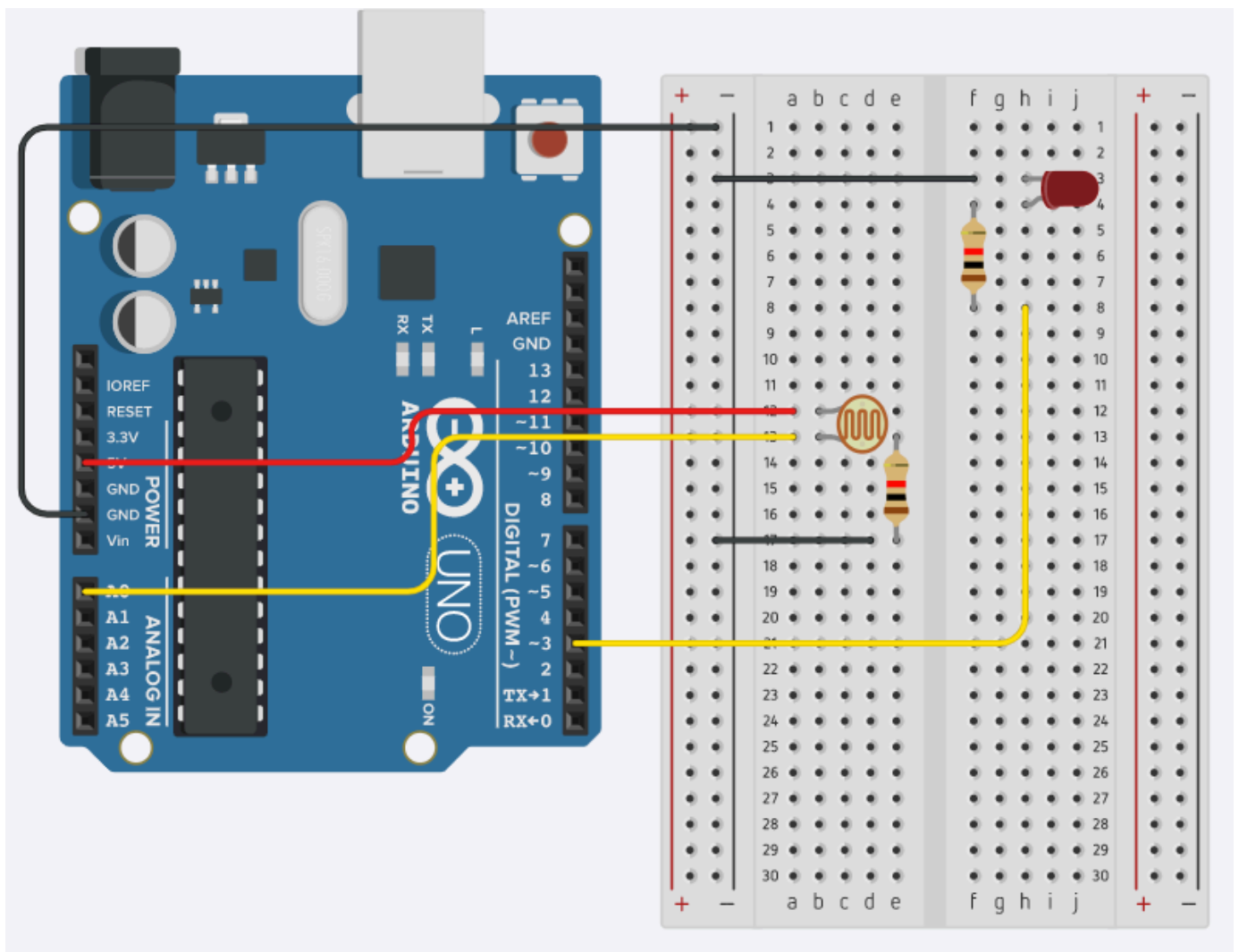
  if (sensorValue < threshold) {
    digitalWrite(greenLightPin, HIGH);
    digitalWrite(redLightPin, LOW);
  }

  if (sensorValue > threshold) {
    digitalWrite(greenLightPin, LOW);
    digitalWrite(redLightPin, HIGH);
  }
}
```

# LED Dimmer with Sensor

## The Circuit

The colours of the wires does not matter as long as they are in the correct position.



# LED Dimmer with Sensor

## The Code

```
int sensorPin = 0;
int lightPin = 3;

int darkest = 460;
int lightest = 620;

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

void loop() {
  int sensorValue = analogRead(sensorPin);
  Serial.println(sensorValue);
  int brightness = setBrightness(sensorValue);
  analogWrite(lightPin, brightness);
}

int setBrightness(int value) {
  value = max(value, darkest);
  value = min(value, lightest);
  value = map(value, darkest, lightest, 0, 255);
  value = 255 - value;
  return value;
}
```