Roger Burns II

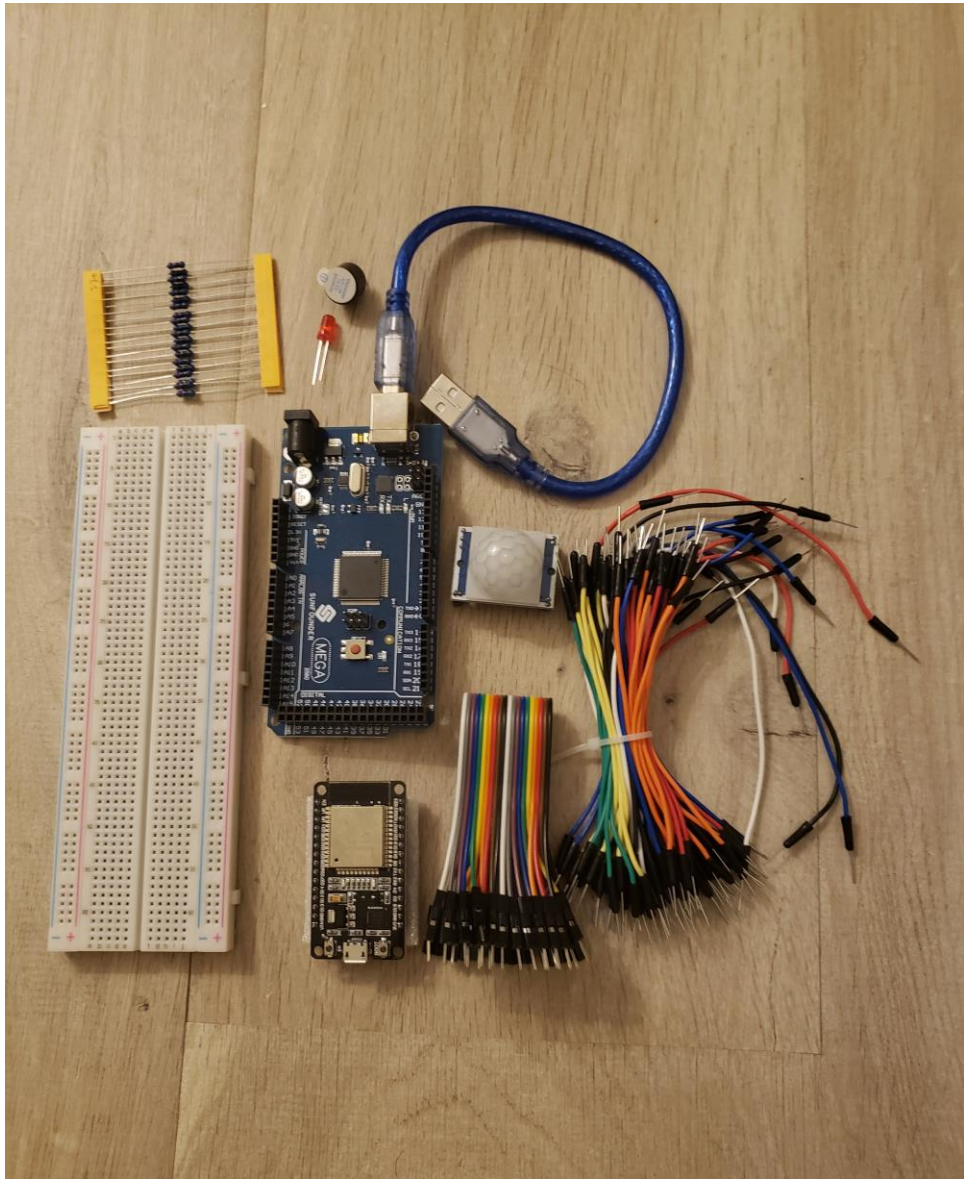
# CEIS101
# Final Project – IoT Home Security System

# Objective:

With the IoT expanding at an astronomical rate this course brings the basic building blocks to life and develops a home security system.

# Inventory and Organization:

- Arduino Megaboard
- Resistor - 220Ω
- LED
- Breadboard
- Motion Sensor
- Wire(s)
- Buzzer
- Esp32 Board

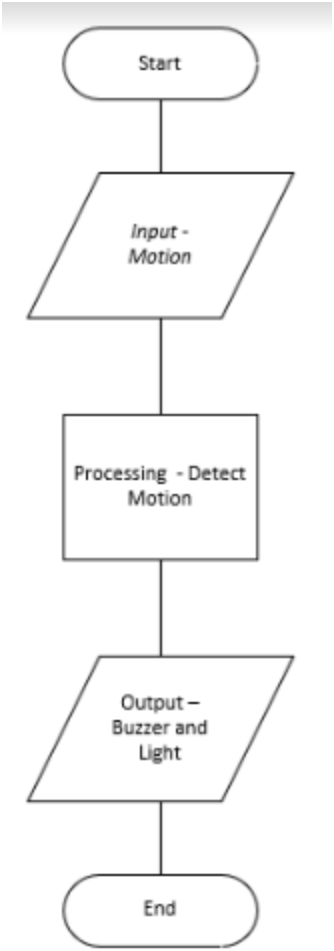


# Organizations Using Flowcharts:

- Every company has processes and tasks which require a flowchart, however most commonly used in technical and engineering settings; Google, Intel, etc.
- This helps cut down on any technical jargon.
- Helps to streamline processes in turn increasing productivity.
- Helps to troubleshoot and fix problems.

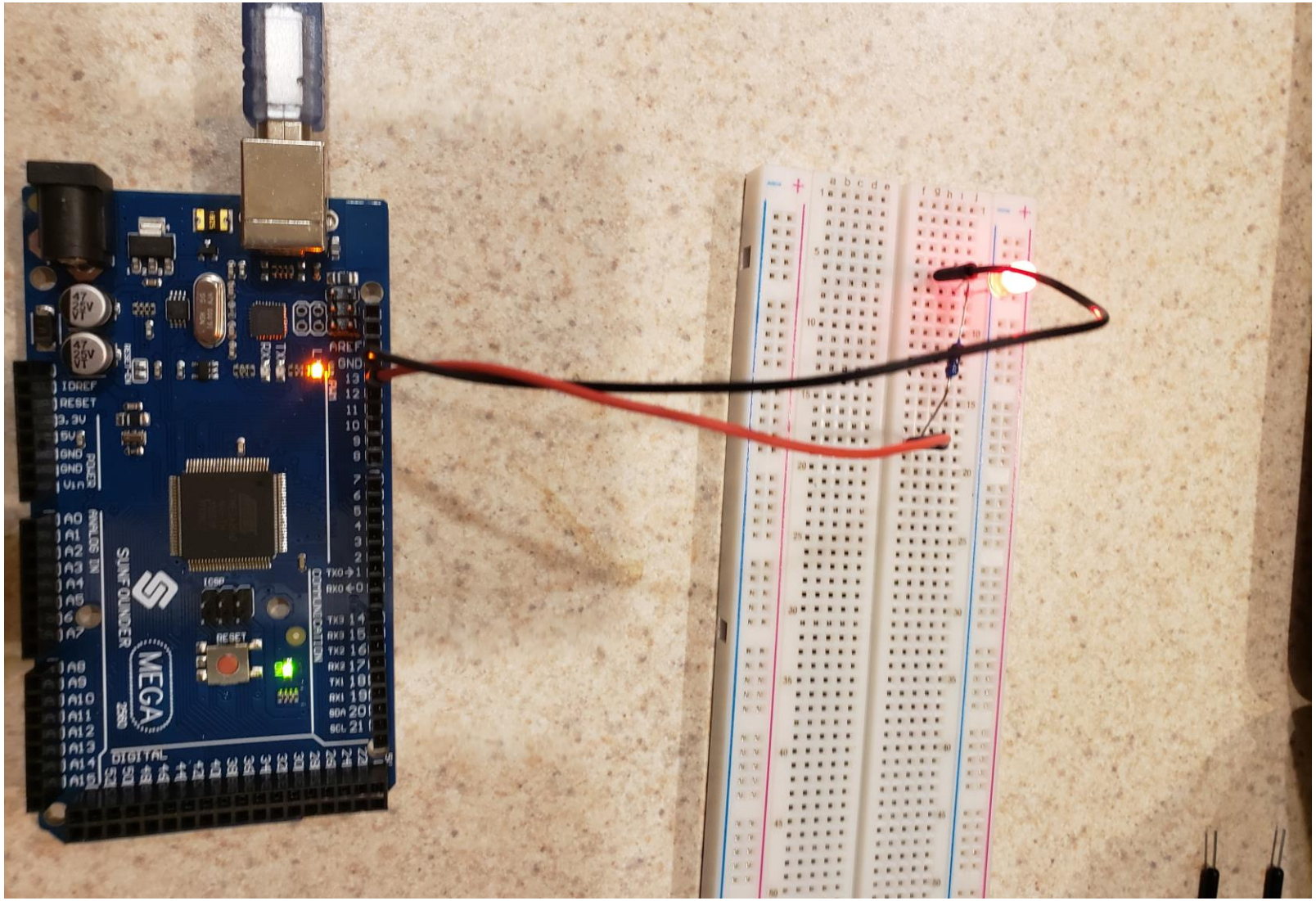
# Flowchart

Motion was detected by a sensor, processed and an audible and visual alert was sent.



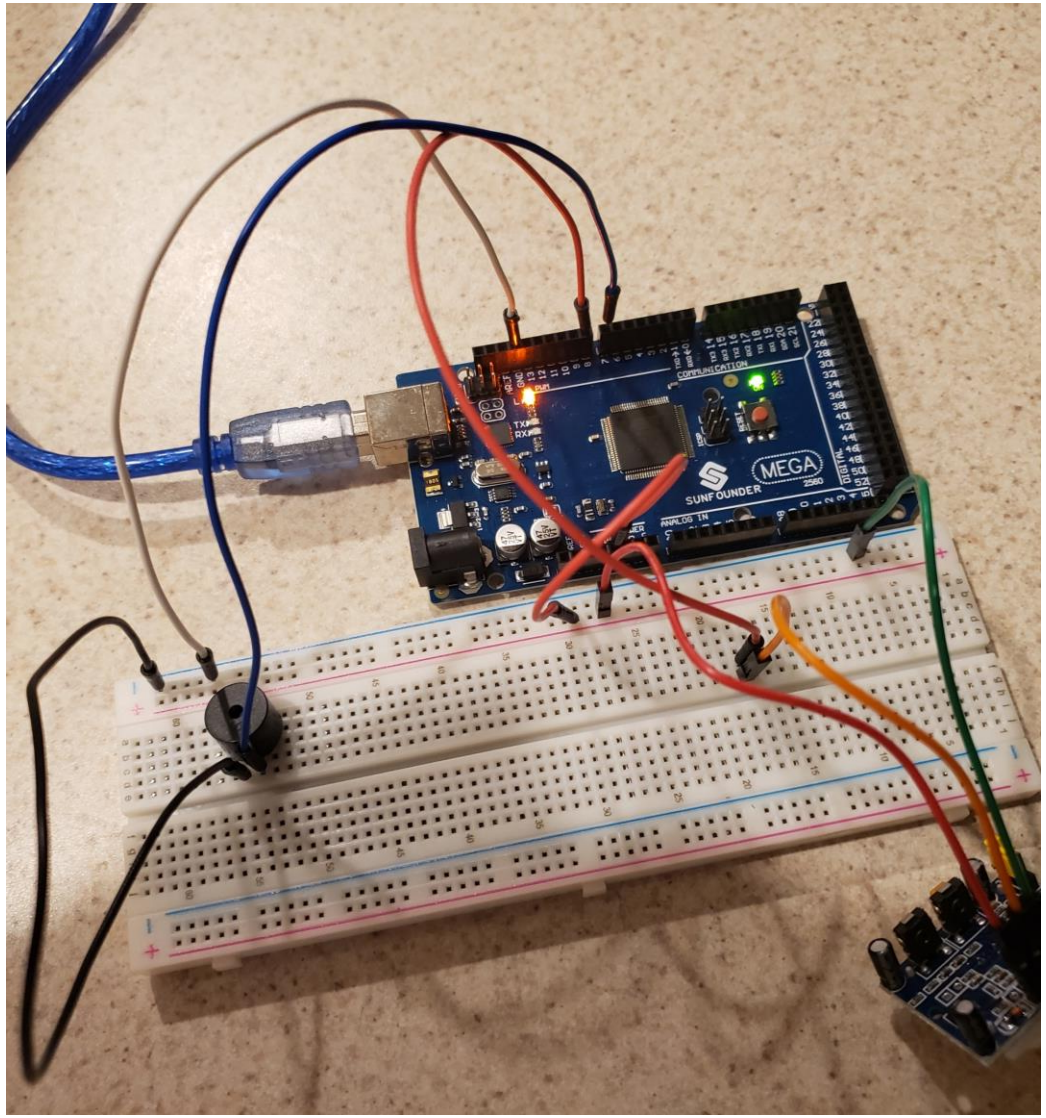
# Input – Processing - Output

| Input | Process | Output |
| --- | --- | --- |
| Motion | Detect Motion | Buzzer and light |




# LED Light Circuit

# Code in Arduino IDE:




# Motion Sensor w/Buzzer Circuit

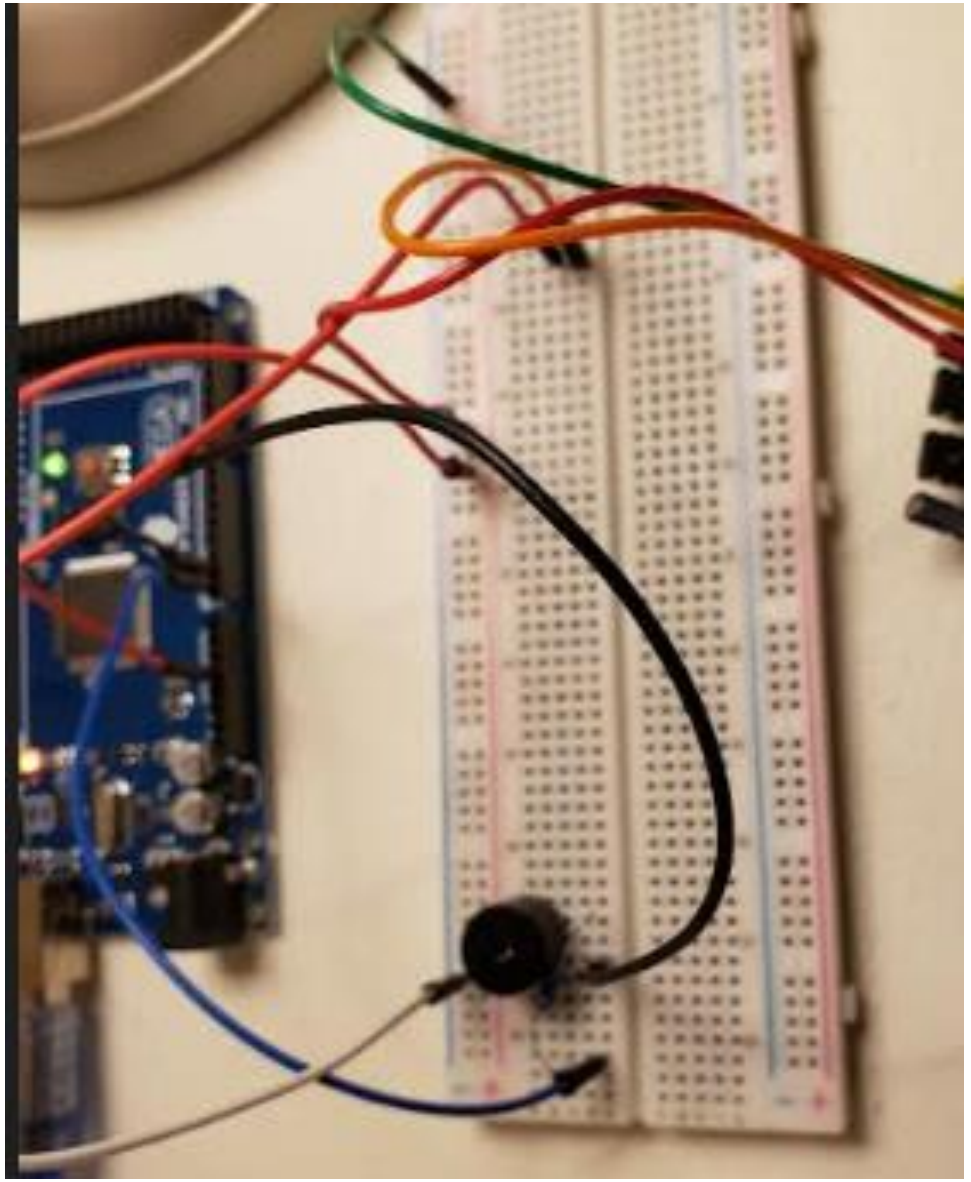
# Buzzer code in Arduino IDE:

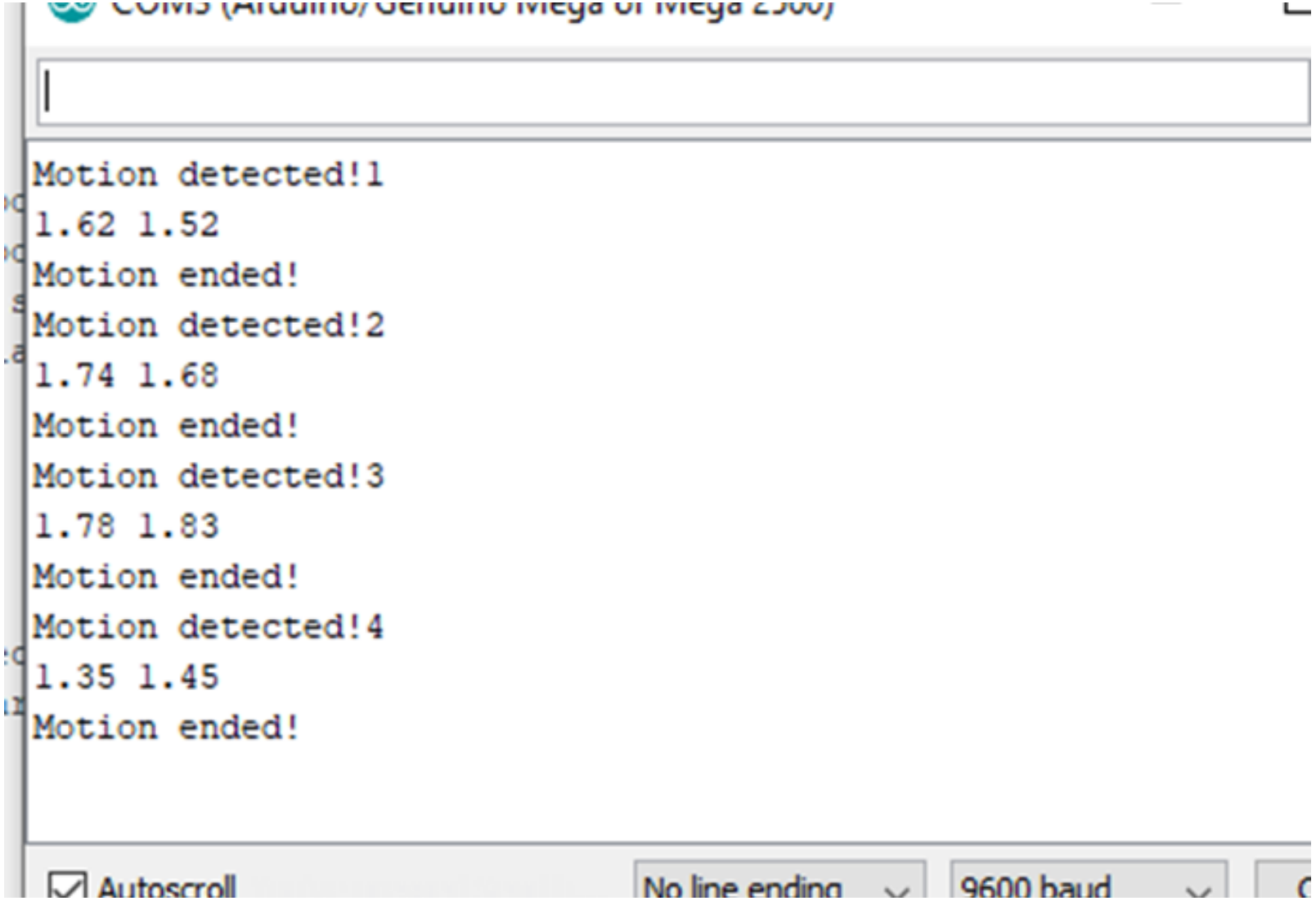
```
int buzzerPin = 7;                  // choose the pin for the buzzer
 int inputPin = 8;                  // choose the input pin (for PIR se
 int pirState = LOW;                // we start, assuming no motion det
int val = 0;                       // variable for reading the pin stat

void setup() {

 pinMode(buzzerPin, OUTPUT);       // declare buzzer as output
 pinMode(inputPin, INPUT);     // declare sensor as input


}

void loop(){
  val = digitalRead(inputPin);  // read input value
  if (val == HIGH) {            // check if the input is HIGH
   digitalWrite(buzzerPin, HIGH);  // turn buzzer ON

    }
   else {
    digitalWrite(buzzerPin, LOW); // turn Buzzer OFF

  }
}
```

# Code Explanation

- The code defines pin 7 as the input and pin 8 as the output.
- These pins can be changed by editing the code.
- The Arduino setup() function will run one time setting the input and output pins.

# Motion Sensor w/resistor circuit



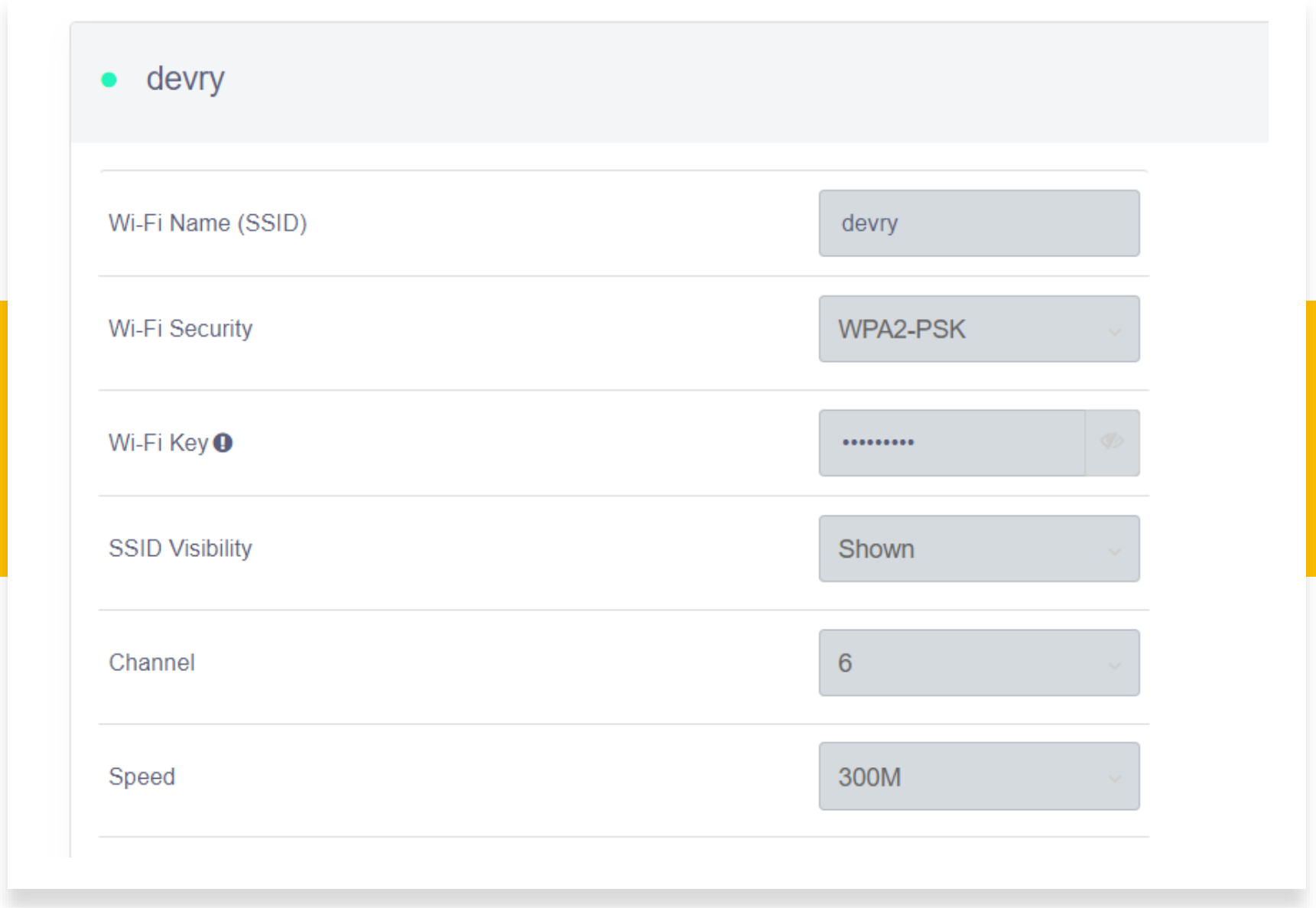



Motion Detector w/Serial Monitor w/Voltage Count Reading

# Data Display

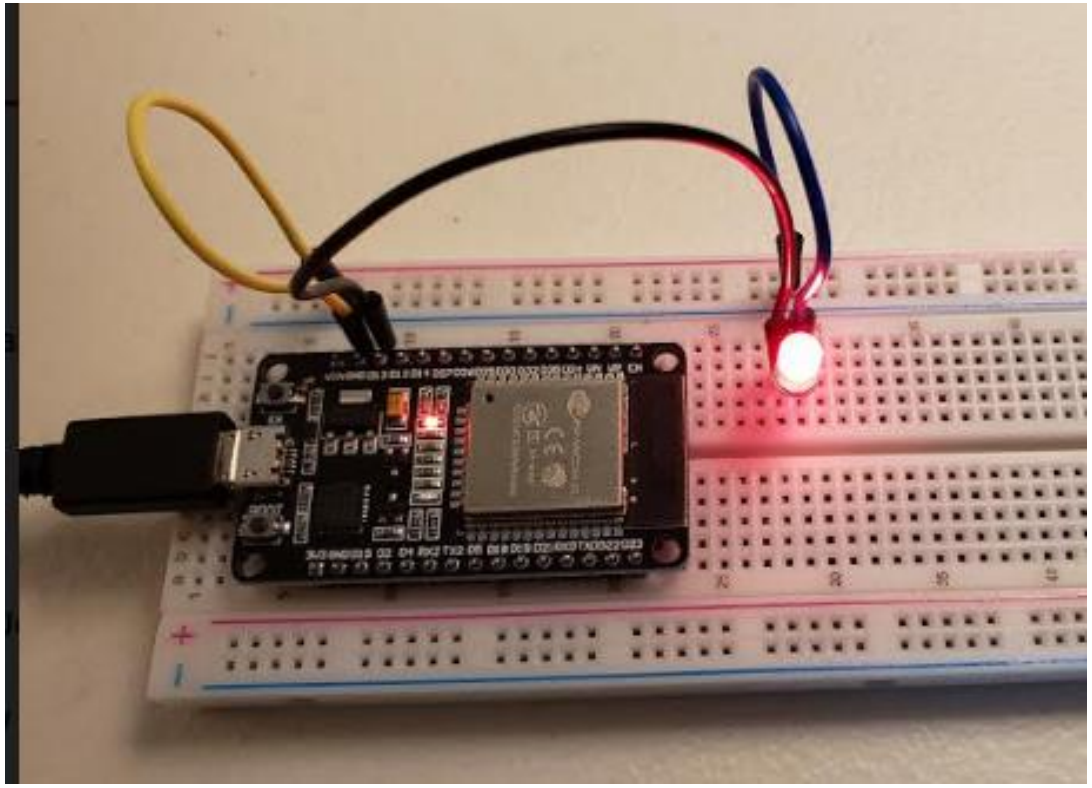
- The code that displays motion detection count: count=count+1;
- This says that the next display will be plus one.

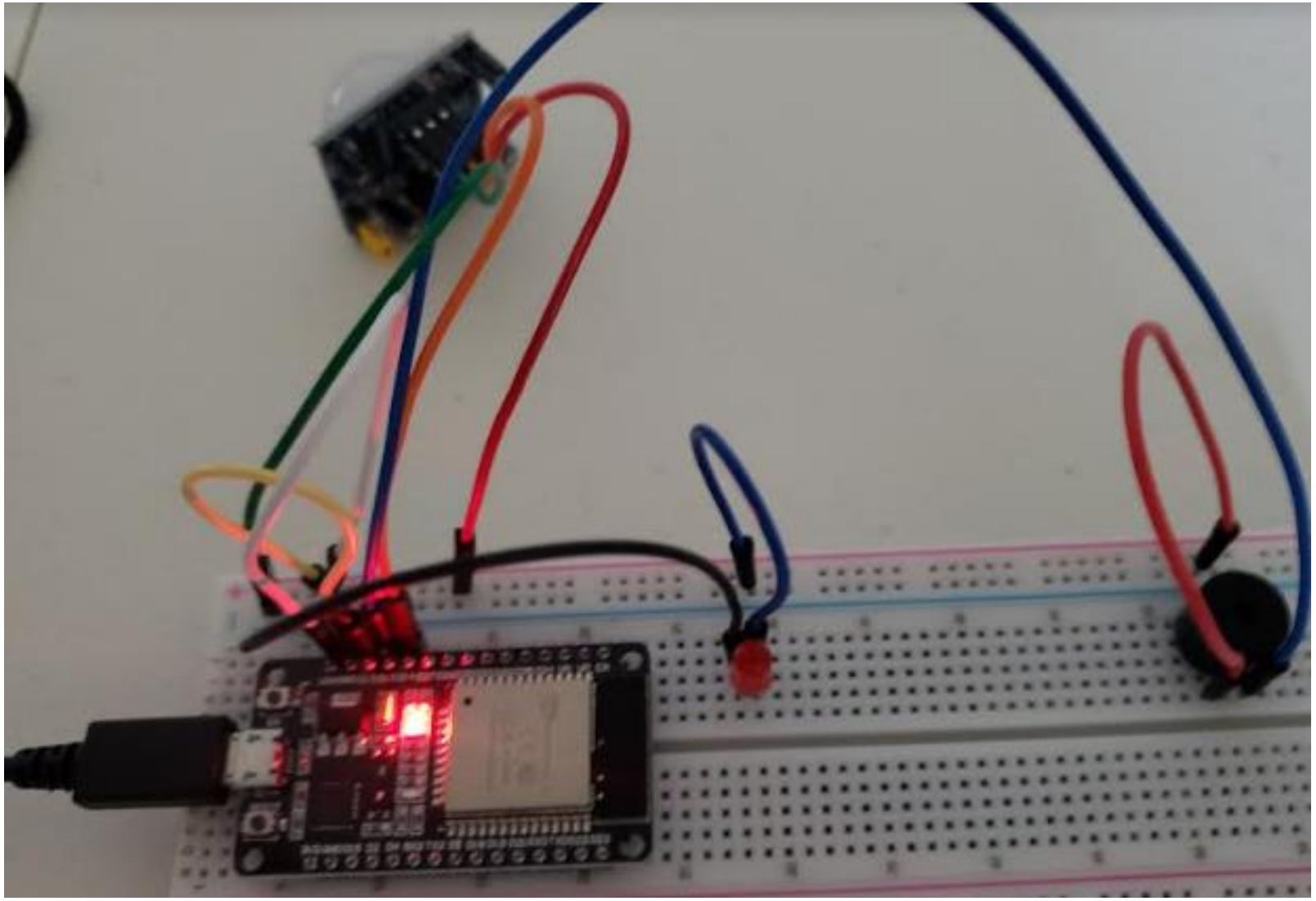
- Viewing data on the serial monitor can give you information about your circuit.
- It reports the voltage reading and it advised us when motion was detected and how many times.




# Router setup page

# ESP32 board w/LED Circuit

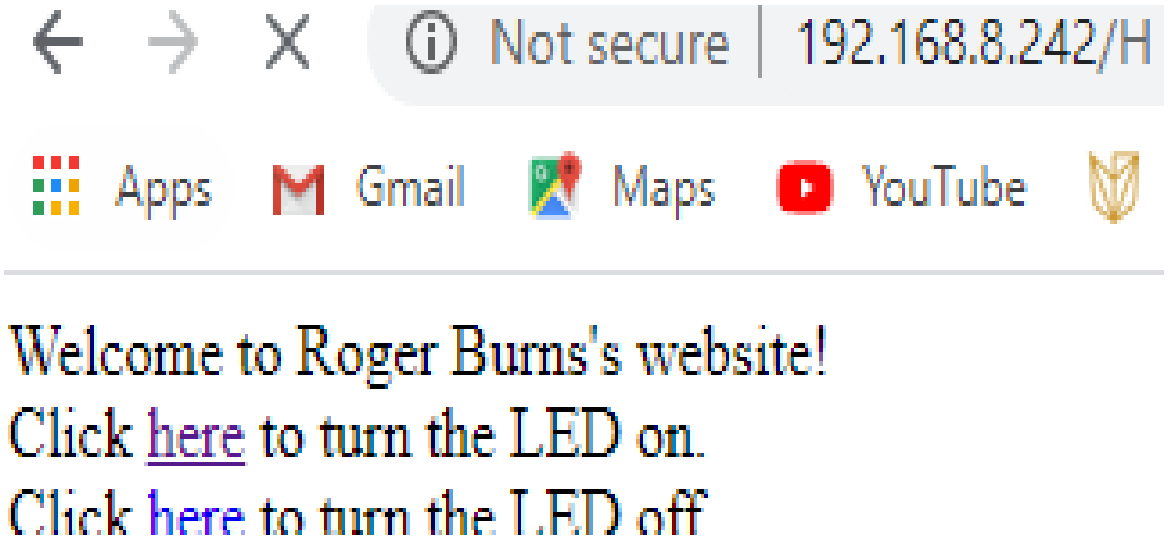




# Challenge Assignment:

Motion detector with LED and Buzzer with ESP32

# Webpage to turn on/off LED



# Career Skills:

- Communication – Flowchart was used to forecast the events of the project.
- Electronics – Breadboard, Arduino, ESP32 and work with resistors and voltage was used in this project.
- Programming - The Arduino IDE was utilized.
- Networking – Set up and configured home network.
- Security – Used secure authentication password on network.

## Conclusion:

- This course object was to discover the building blocks of the IoT by creating a home security system.
- An Arduino connected to a breadboard and a motion detector was first used.
- Then a ESP32 board was used in place of the Arduino enabling wifi. From here a website was established using code to be able to remotely control the breadboard functions.