



CEIS101 PORTFOLIO PROJECT

Created By:
Luella Tracy Henderson

INTRODUCTION

Hello everyone, this project is to demonstrate all my work that I have completed while taking CEIS101.

Some of the things done in this class were to develop a smart home security system part of it being with Tinker cad and the rest using a breadboard and Arduino IDE.

Throughout this PP Presentation you will get a glance at exactly the type of things I created while taking CEIS101.

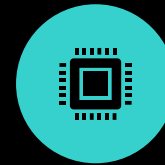
PROJECT OVERVIEW



Using Tinker Cad in the beginning of the class.



Went over how to use a breadboard and what it does.



Used Arduino controller.



Arduino IDE to run code from Arduino controller.



Used Ultrasonic Sensor



Used LED lights.



Used Resistor and Photoresistor.



Used passive buzzer for alarm.

CIRCUIT SIMULATION-TINKER CAD

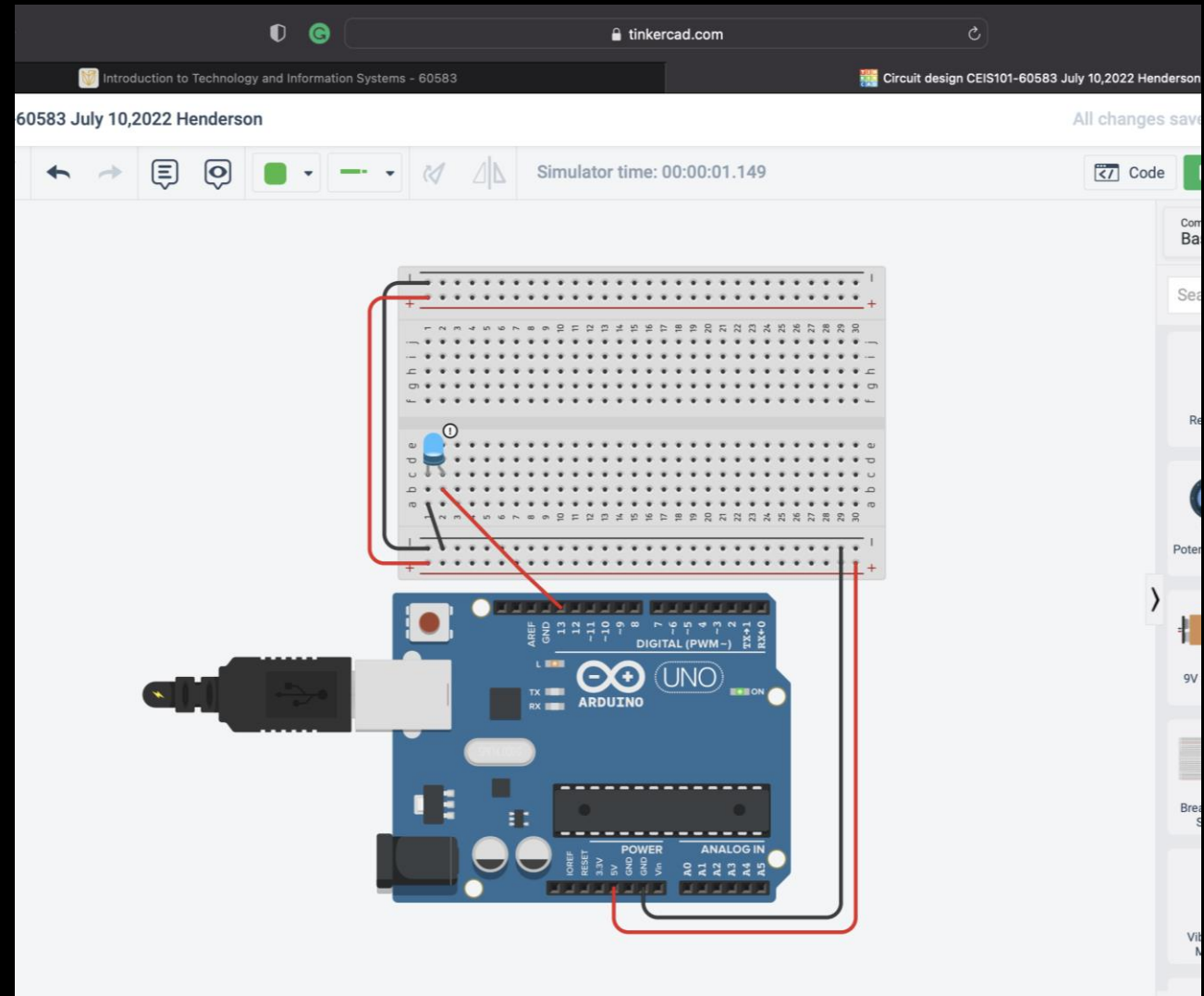
Created a circuit
with Tinker Cad.

Used red and black
wires for ground and
power to simulate
light coming on.

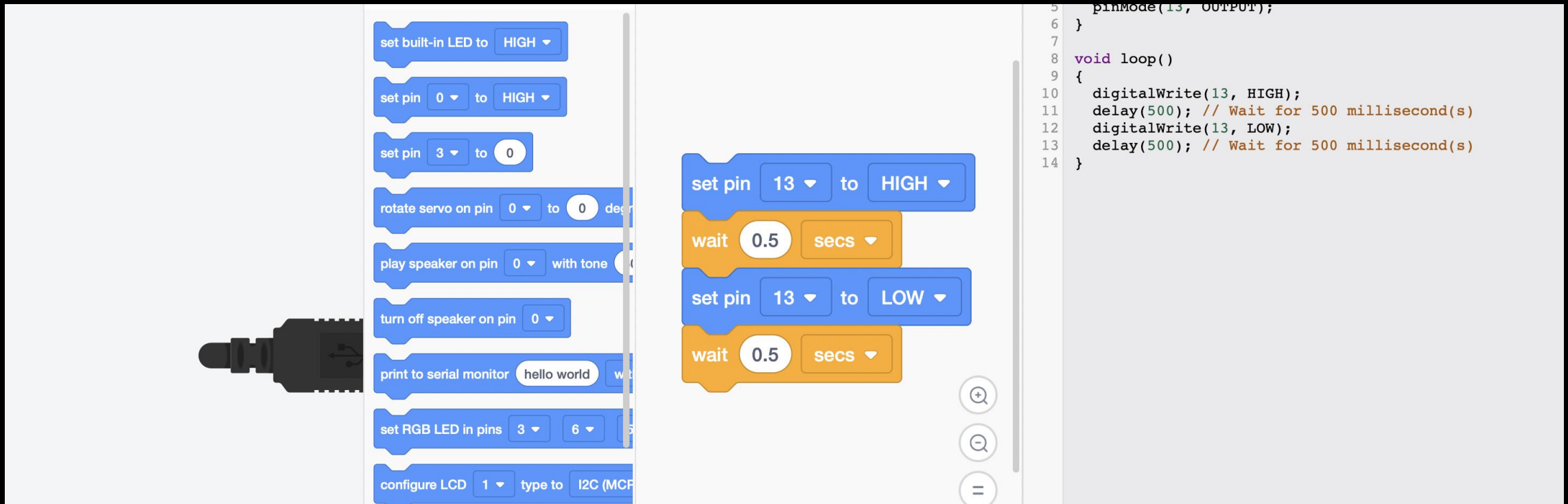
Used blue LED.

Ran code using
Tinker Cad.

TINKER CAD CIRCUIT LAYOUT



IOT CODE USING TINKER CAD



The screenshot displays the TinkerCAD IDE interface. On the left, a vertical list of block-based code blocks is visible, including:

- set built-in LED to HIGH
- set pin 0 to HIGH
- set pin 3 to 0
- rotate servo on pin 0 to 0 degrees
- play speaker on pin 0 with tone
- turn off speaker on pin 0
- print to serial monitor hello world
- set RGB LED in pins 3, 6, 5
- configure LCD 1 type to I2C (MCP)

On the right, a text-based code editor shows the following C++ code:

```
5 pinMode(13, OUTPUT);  
6 }  
7  
8 void loop()  
9 {  
10   digitalWrite(13, HIGH);  
11   delay(500); // Wait for 500 millisecond(s)  
12   digitalWrite(13, LOW);  
13   delay(500); // Wait for 500 millisecond(s)  
14 }
```


INVENTORY OF PARTS, CIRCUIT BUILDING, AND DISPLAYING MESSAGES

Inventoried parts for Arduino Kit.

Used Breadboard to simulate red light.

Used red and black wires for ground and power for light to come on.

Used Arduino IDE for serial monitoring and code.



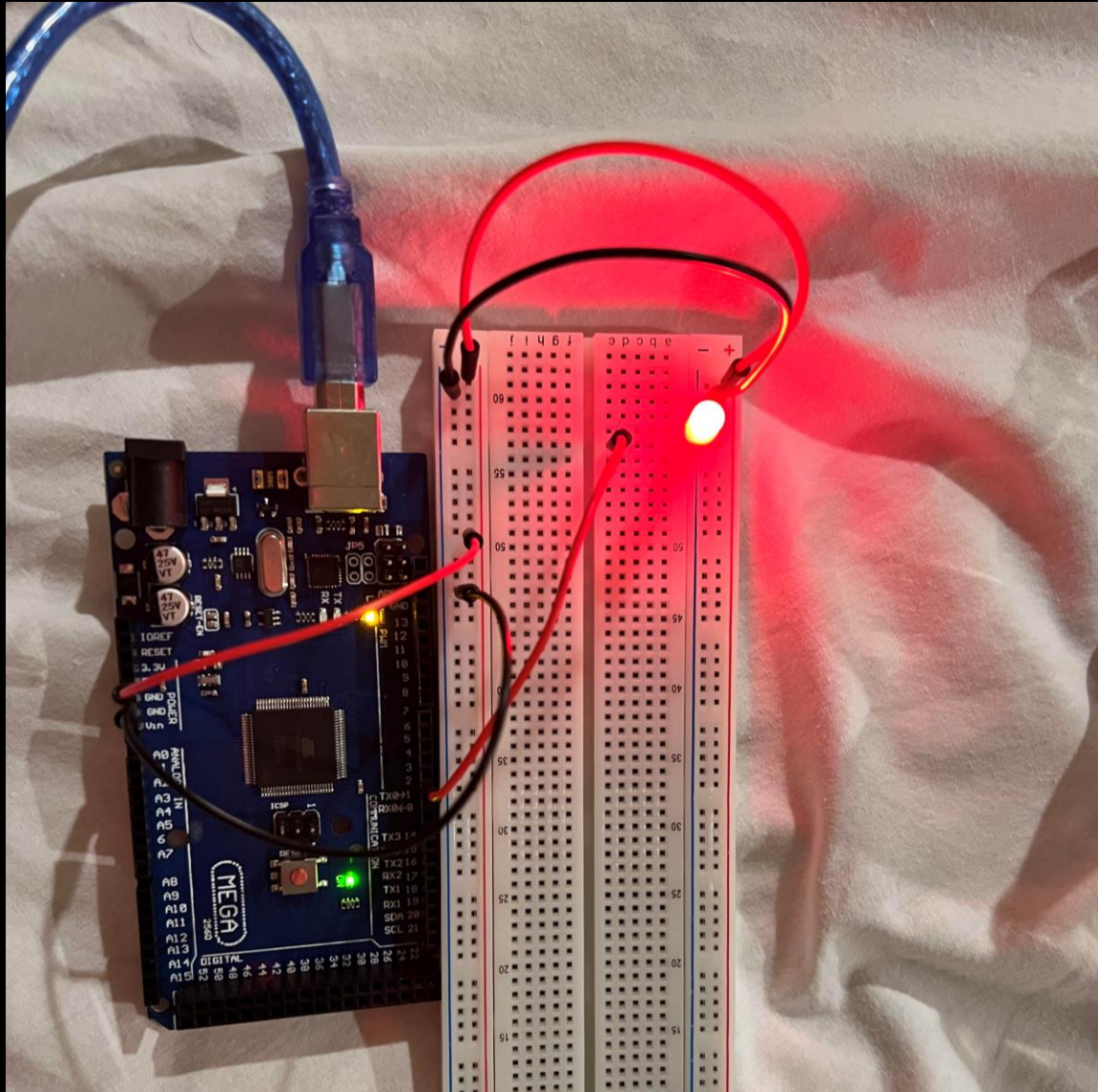
INVENTORY OF IOT KIT

- UCTRONICS Kit
- ESP32 (2)
- LCD Modules (2)
- Breadboards (3)
- Mini Router
- Patch Cable
- Digital Multi Meter
- USB to Micro USB (2)

ORGANIZATION OF PROJECT COMPONENTS

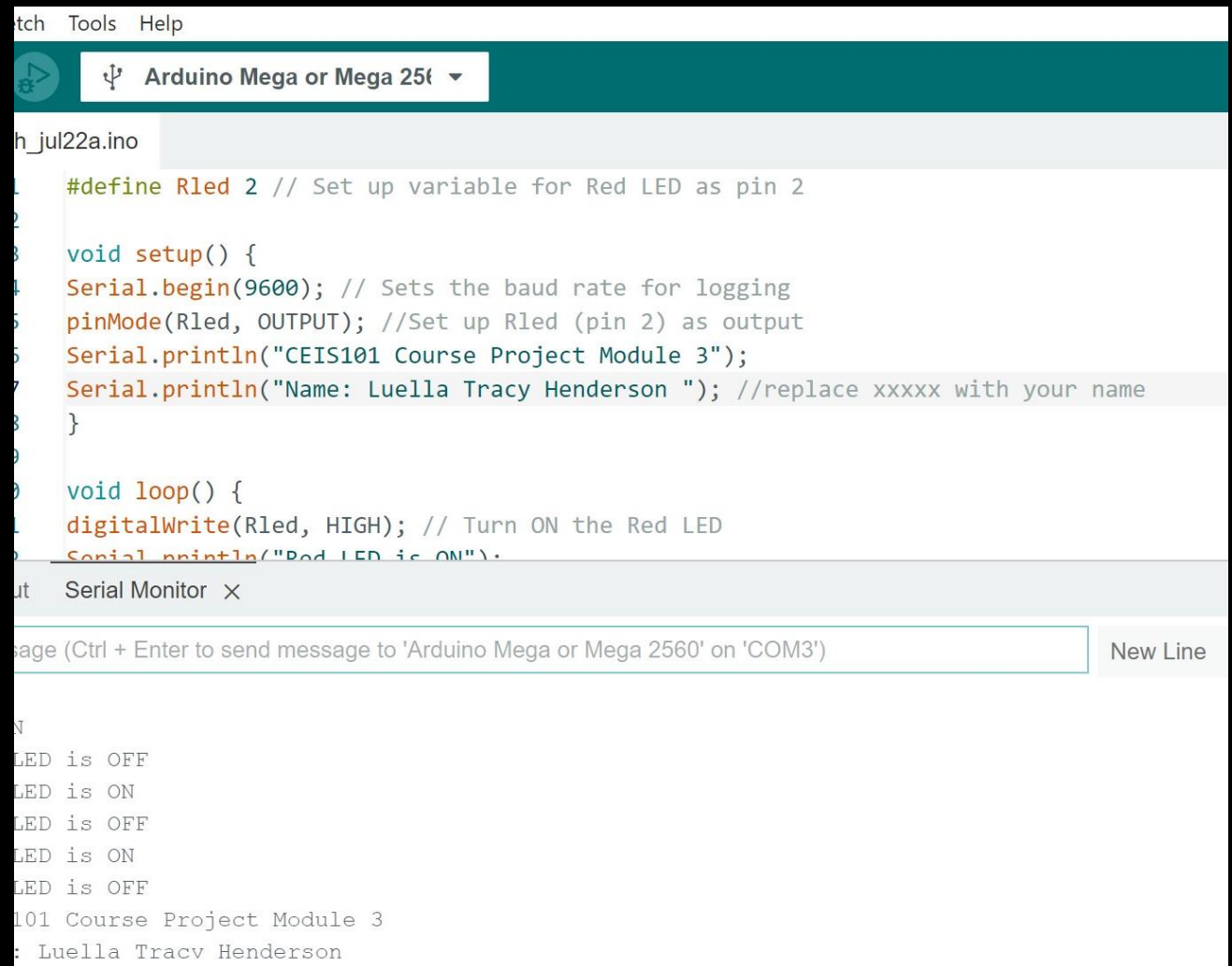
- Arduino Mega 2560
- Breadboard
- Resistor 10k Ω
- LEDs
- Ultrasonic Sensor
- Active Buzzer
- Photoresistor
- Wires
- USB Type B cable





BREADBOARD &
ARDUINO MEGA
CIRCUIT WITH RED
LED ON

ARDUINO IDE SERIAL MONITOR



The screenshot shows the Arduino IDE interface. At the top, the menu bar includes 'Sketch', 'Tools', and 'Help'. Below it, a toolbar contains a compiler icon and a dropdown menu set to 'Arduino Mega or Mega 2560'. The main editor window displays a file named 'h_jul22a.ino' with the following C++ code:

```
#define Rled 2 // Set up variable for Red LED as pin 2

void setup() {
  Serial.begin(9600); // Sets the baud rate for logging
  pinMode(Rled, OUTPUT); //Set up Rled (pin 2) as output
  Serial.println("CEIS101 Course Project Module 3");
  Serial.println("Name: Luella Tracy Henderson "); //replace xxxxx with your name
}

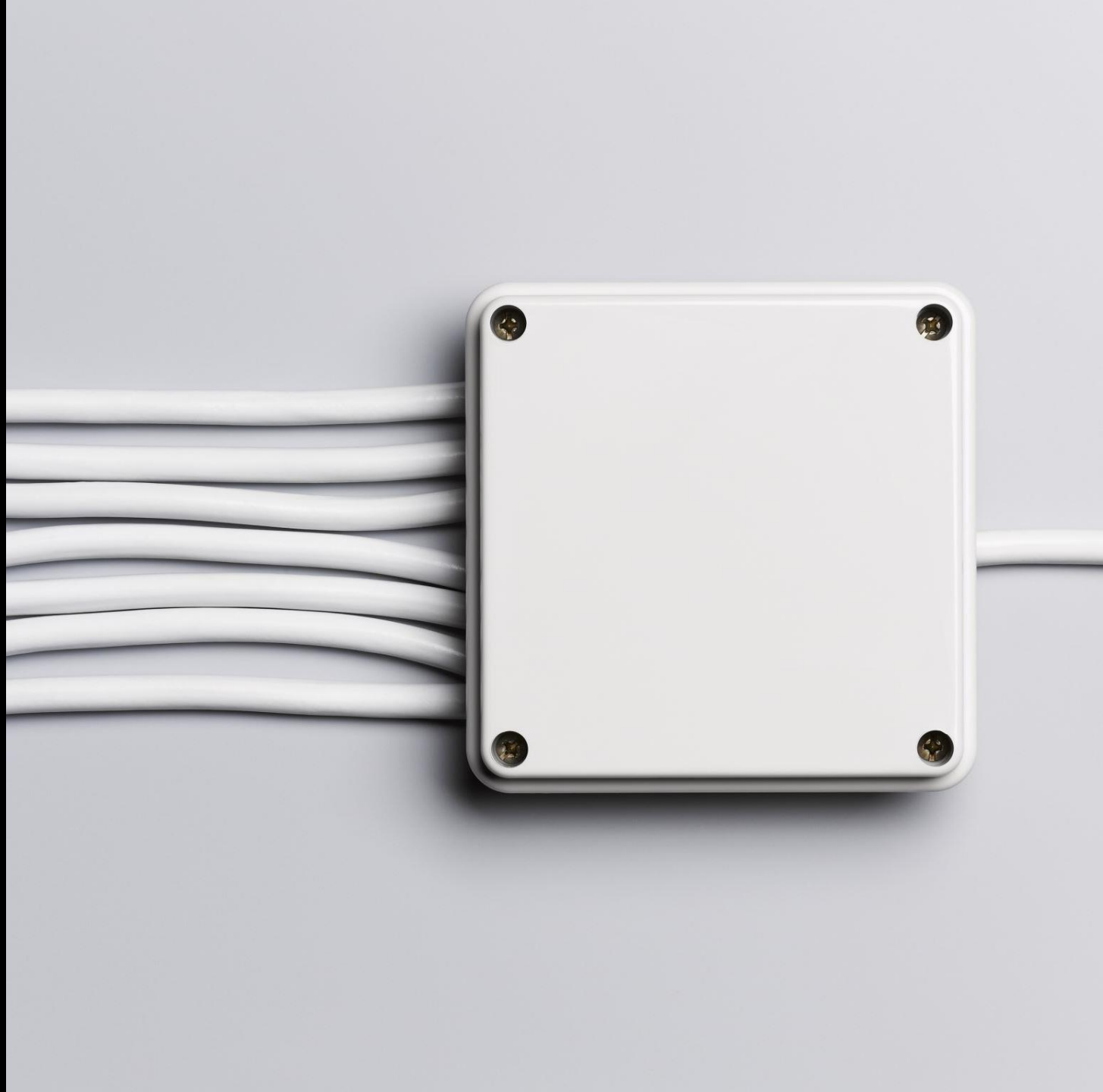
void loop() {
  digitalWrite(Rled, HIGH); // Turn ON the Red LED
  Serial.println("Red LED is ON");
}
```

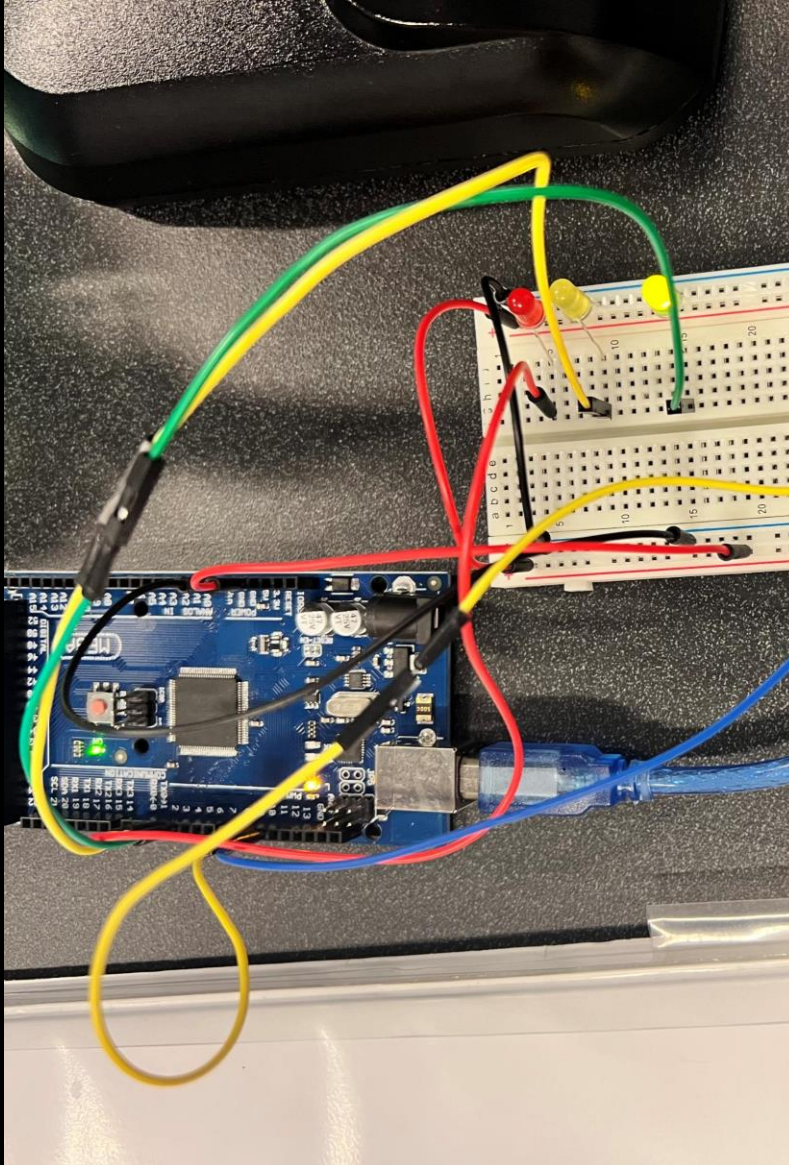
Below the code editor is the 'Serial Monitor' window. It has a text input field with the placeholder 'Message (Ctrl + Enter to send message to 'Arduino Mega or Mega 2560' on 'COM3')' and a 'New Line' button. The output area shows the following text:

```
N
LED is OFF
LED is ON
LED is OFF
LED is ON
LED is OFF
101 Course Project Module 3
: Luella Tracy Henderson
```

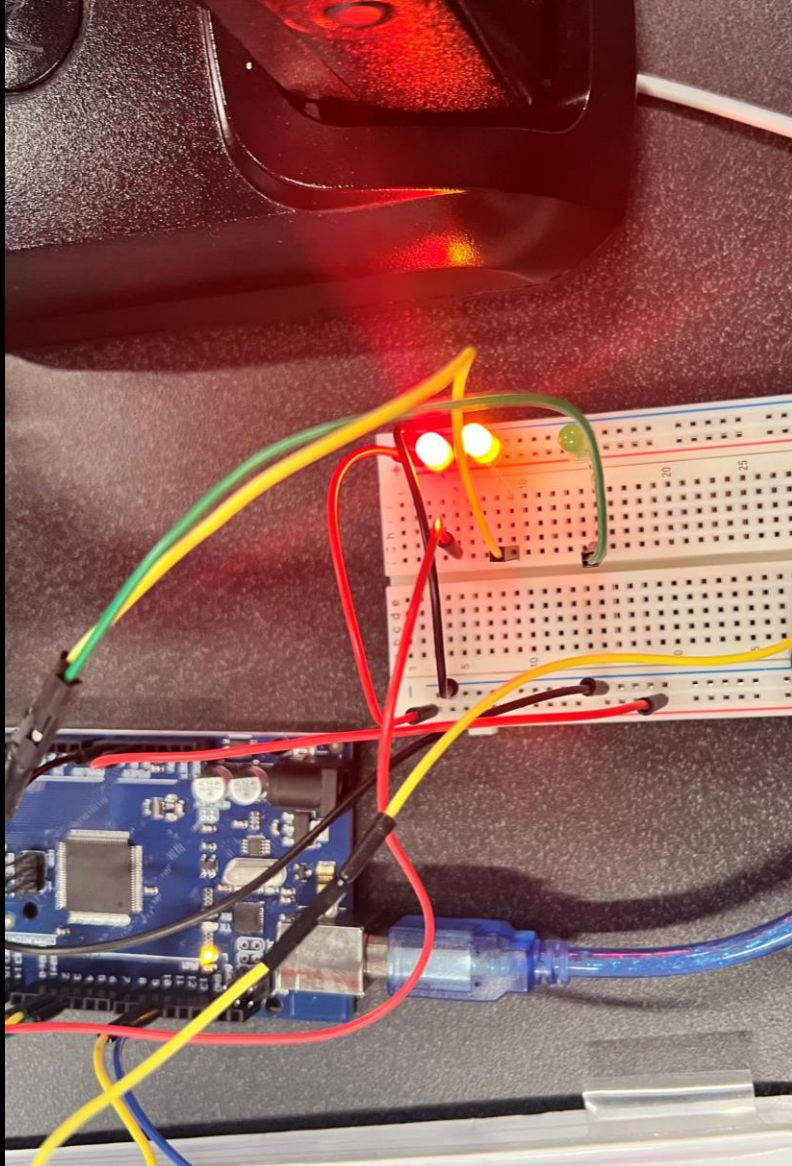
ADDING DOOR SENSOR TO SMART HOME SYSTEM

- Created door sensor using green and red LED lights.
- Used Breadboard.
- Used active buzzer get alarm sound activation.
- Blue and yellow wire used for buzzer sound.
- Arduino IDE used for coding and for serial monitoring.





CIRCUIT OF
DOOR CLOSED
WITH GREEN LED
ON



CIRCUIT OF
DOOR OPEN
WITH GREEN
LED OFF

week 4 project | Arduino IDE 2.0.0-rc9

File Edit Sketch Tools Help

Arduino Mega or Mega 2560

week 4 project.ino

```
1  #define Rled 2
2  #define Yled 3
3  #define Gled 4
4  #define buzzer 10
5  #define door 11
6  #define delaytime 1000 // === Second run, change to 100
7
8  void setup() {
9    Serial.begin(9600); // Set the baud rate
10   Serial.println("CEIS101 Course Project Module 4");
11   Serial.println("Name: Luella Tracy Henderson "); //replace xxxxx with your name
12
13   pinMode(Rled, OUTPUT);
14   pinMode(Yled, OUTPUT);
15   pinMode(Gled, OUTPUT);
16   pinMode(buzzer, OUTPUT);
17   digitalWrite(buzzer, LOW);
18   pinMode(door, INPUT_PULLUP); //door sensor
19 }
20
21 void loop() {
22   int value=digitalRead(door);
23   if(value == 0) { // Door closed, no security threat
24     digitalWrite(Rled, LOW);
25     digitalWrite(Yled, LOW);
26     digitalWrite(Gled, HIGH);
27   }
```

Output Serial Monitor x

ARDUINO CODE

SERIAL MONITOR

Output Serial Monitor ✕

Message (Ctrl + Enter to send message to 'Arduino

CEIS101 Course Project Module 4

Name: Luella Tracy Henderson

Door is open. Security Alert!

Door is open. Security Alert!

Door is open. Security Alert!

Door is open. Security Alert!

Door is open. Security Alert!

Door is open. Security Alert!

TROUBLE SHOOTING

Issues Faced:

Getting just the green light to be active instead of the red or yellow

Wires being too short (before I knew of the extended wires)
Issues with the buzzer after I got the green light to be active.

having final product somewhat reversed.

Summary of Troubleshooting:

Changing some of the coding

carefully following instructions from video continuously as well as looking at project guide.

having friends help to try to figure it out.

homework huddle with instructor. 😊

going back to week 3 of project and starting from scratch.

Continuously went over wire placement
use wire extenders.

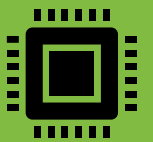
ADDING DISTANCE SENSOR TO SMART HOME SYSTEM



Created distance
using ultrasonic
distance sensor.



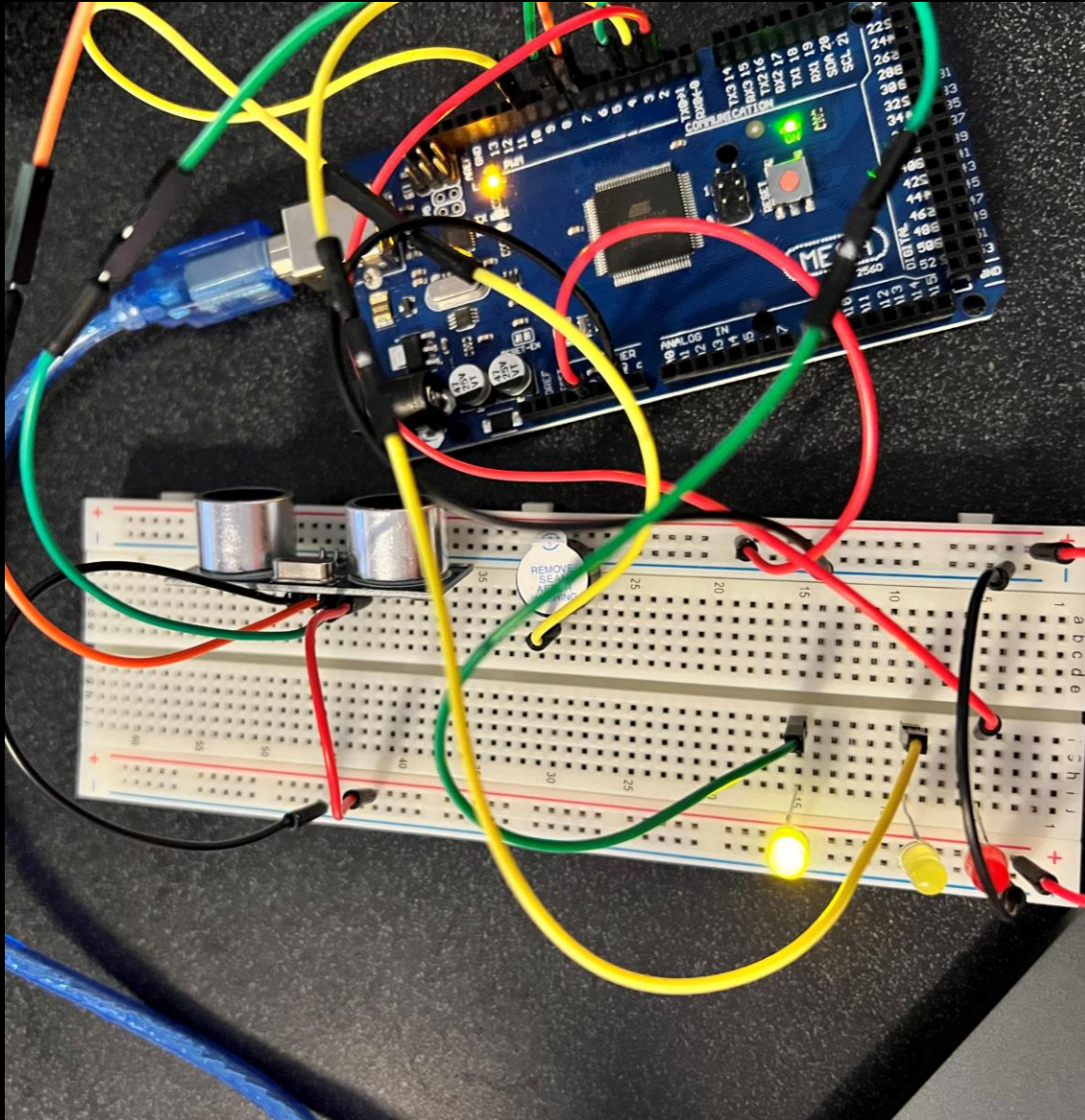
Used Ultrasonic
Distance Sensor.



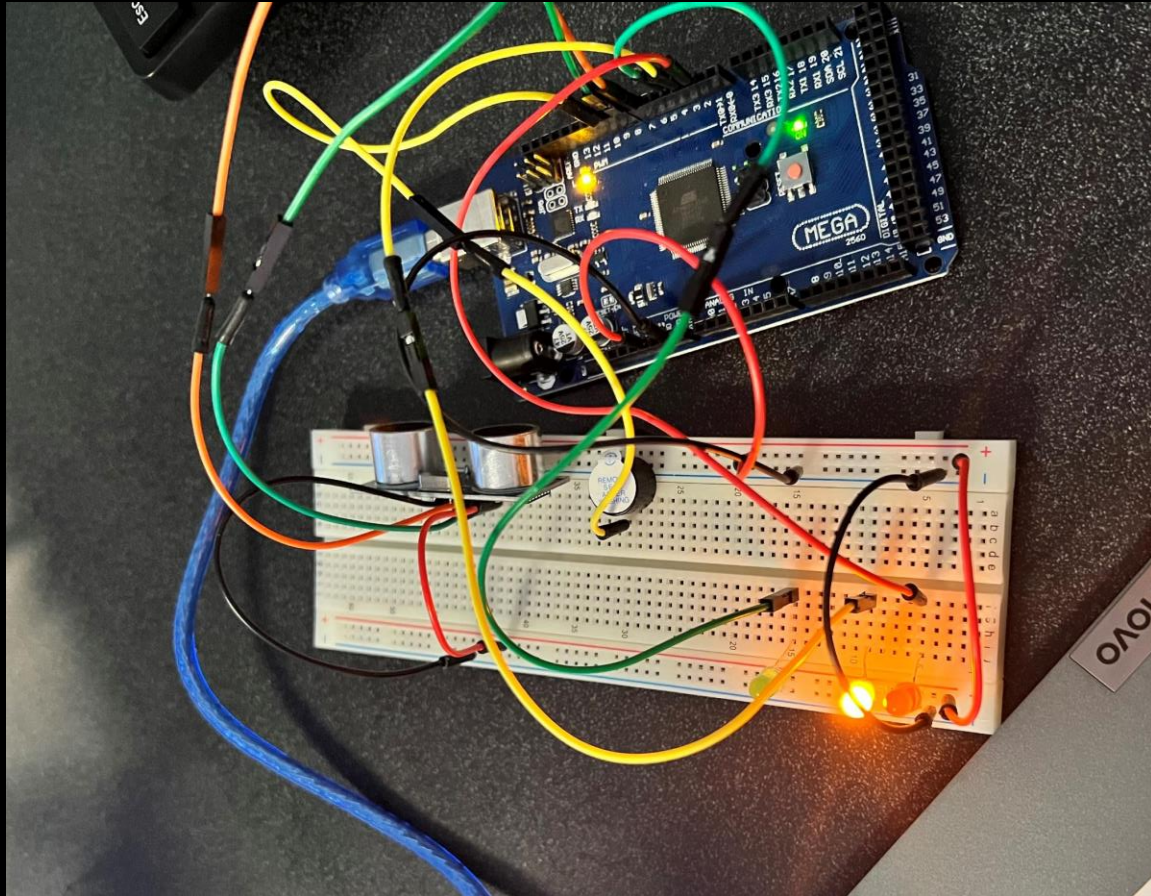
Used Excel for
analysis of data from
ultrasonic sensor.



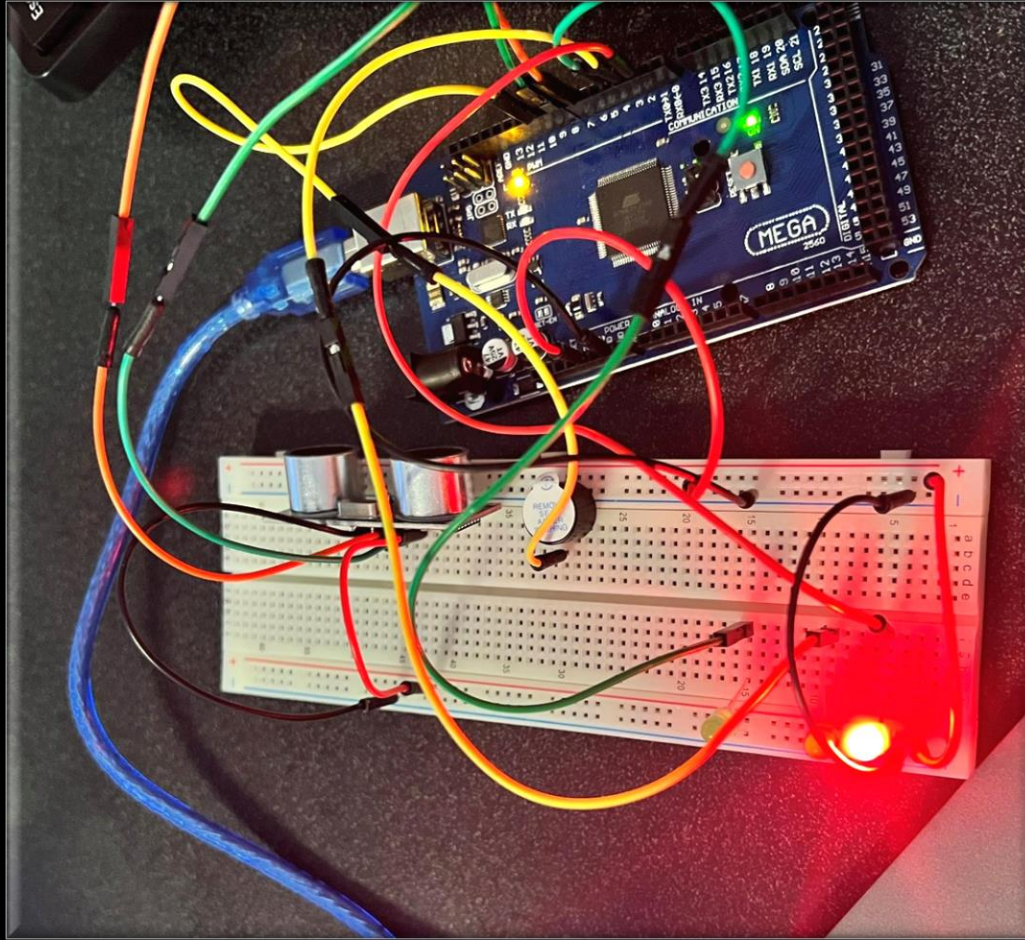
Used Arduino IDE for
coding purposes and
serial monitoring.



CIRCUIT WITH
GREEN LED ON



CIRCUIT WITH
YELLOW LED ON

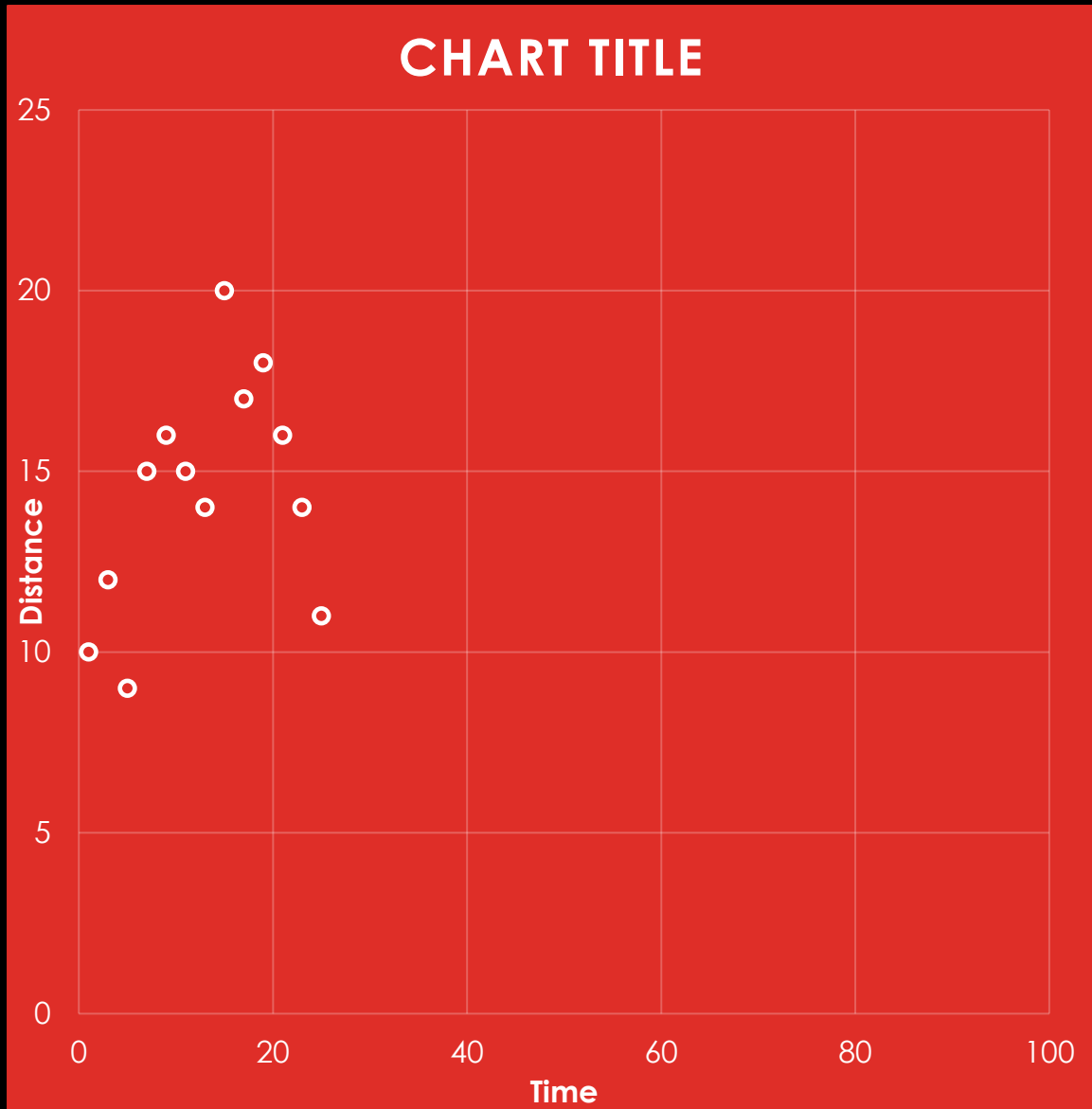


CIRCUIT WITH
RED LED ON


```
week 5 project | Arduino IDE 2.0.0-rc9.1
File Edit Sketch Tools Help

week 5 project.ino
1  #define trigPin 8
2  #define echoPin 7
3  #define Rled 2
4  #define Yled 3
5  #define Gled 4
6  #define buzzer 10
7
8  void setup() {
9    Serial.begin(9600);
10   Serial.println("CEIS101 Course Project Module 5");
11   Serial.println("Name: Luella Tracy Henderson"); //replace xxxxx with your name
12
13   pinMode(trigPin, OUTPUT);
14   pinMode(echoPin, INPUT);
15   pinMode(Rled, OUTPUT);
16   pinMode(Yled, OUTPUT);
17   pinMode(Gled, OUTPUT);
18   pinMode(buzzer, OUTPUT);
19 }
20
21 void loop() {
22   long duration, distance, inches;
23 }
```

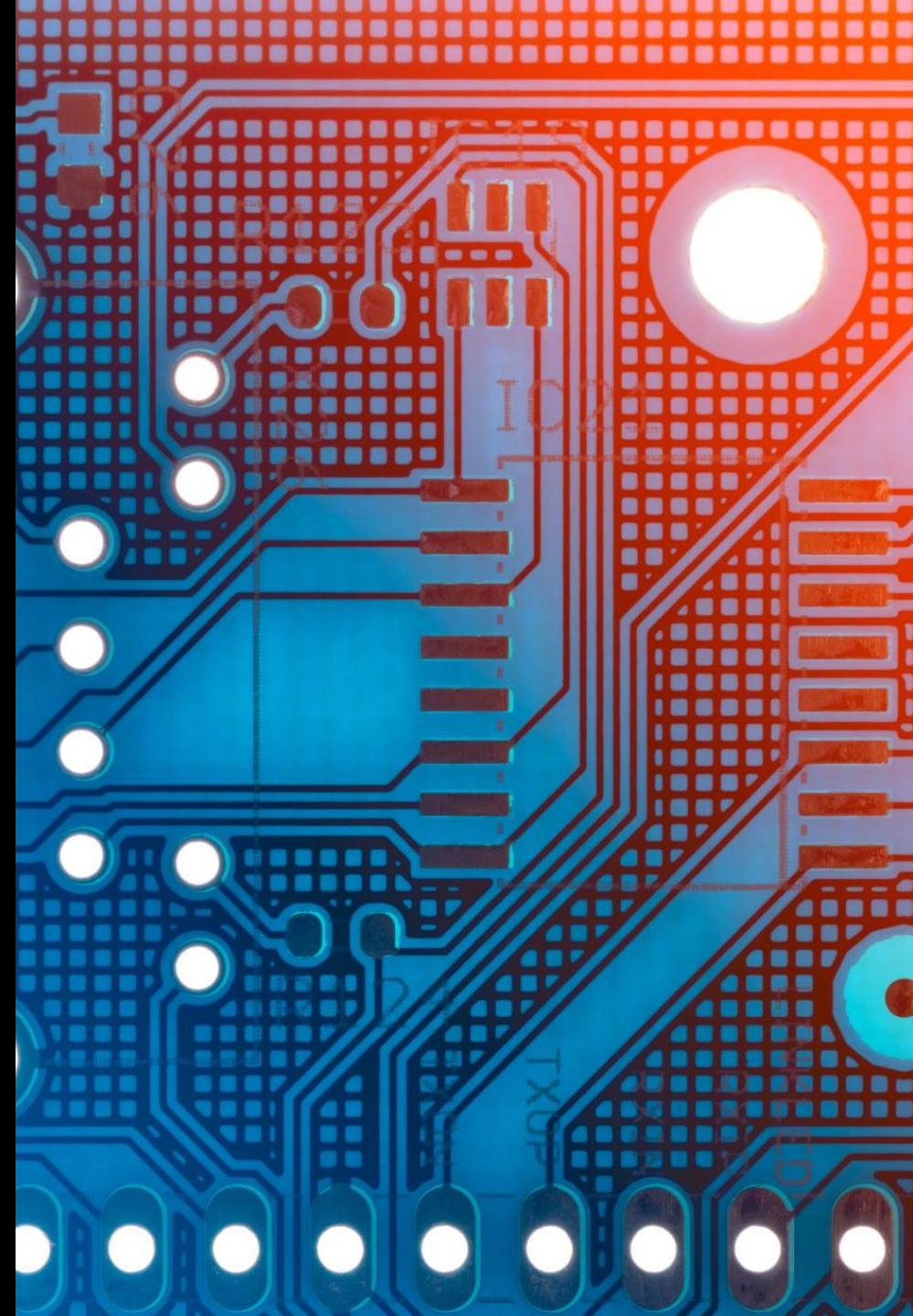
ARDUINO CODE

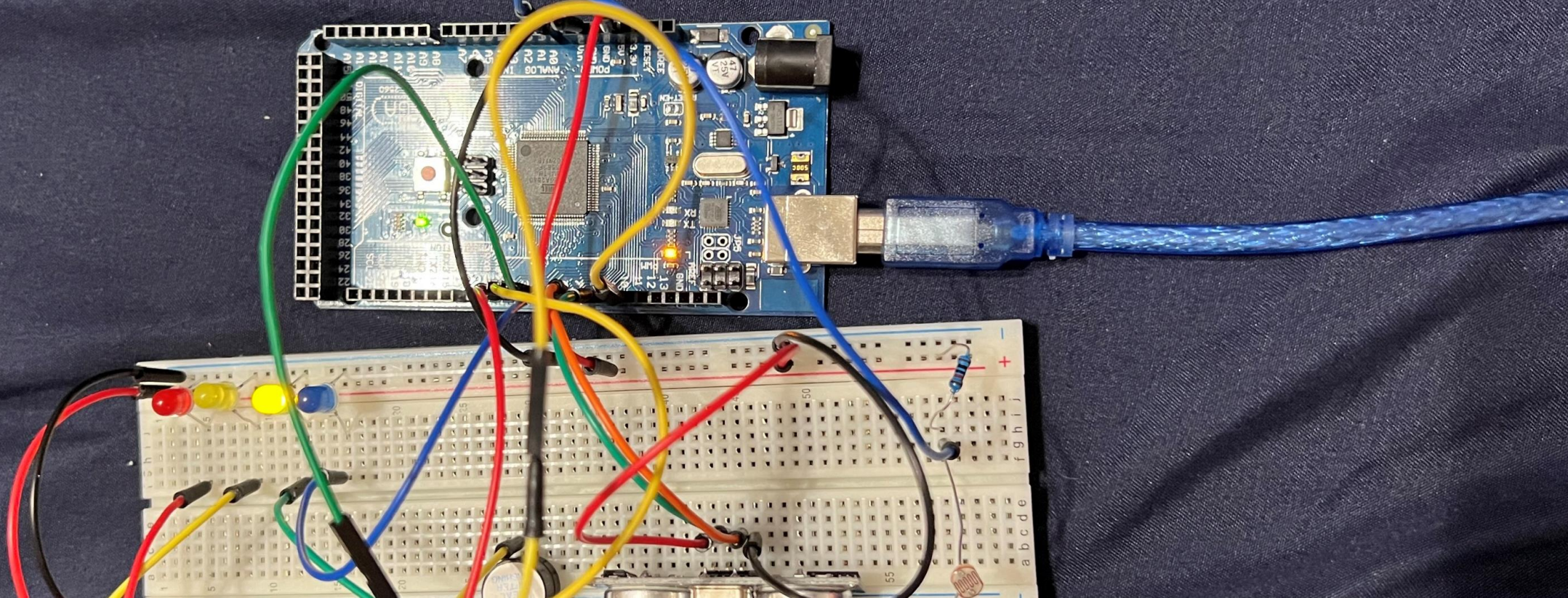


PLOT OF DATA

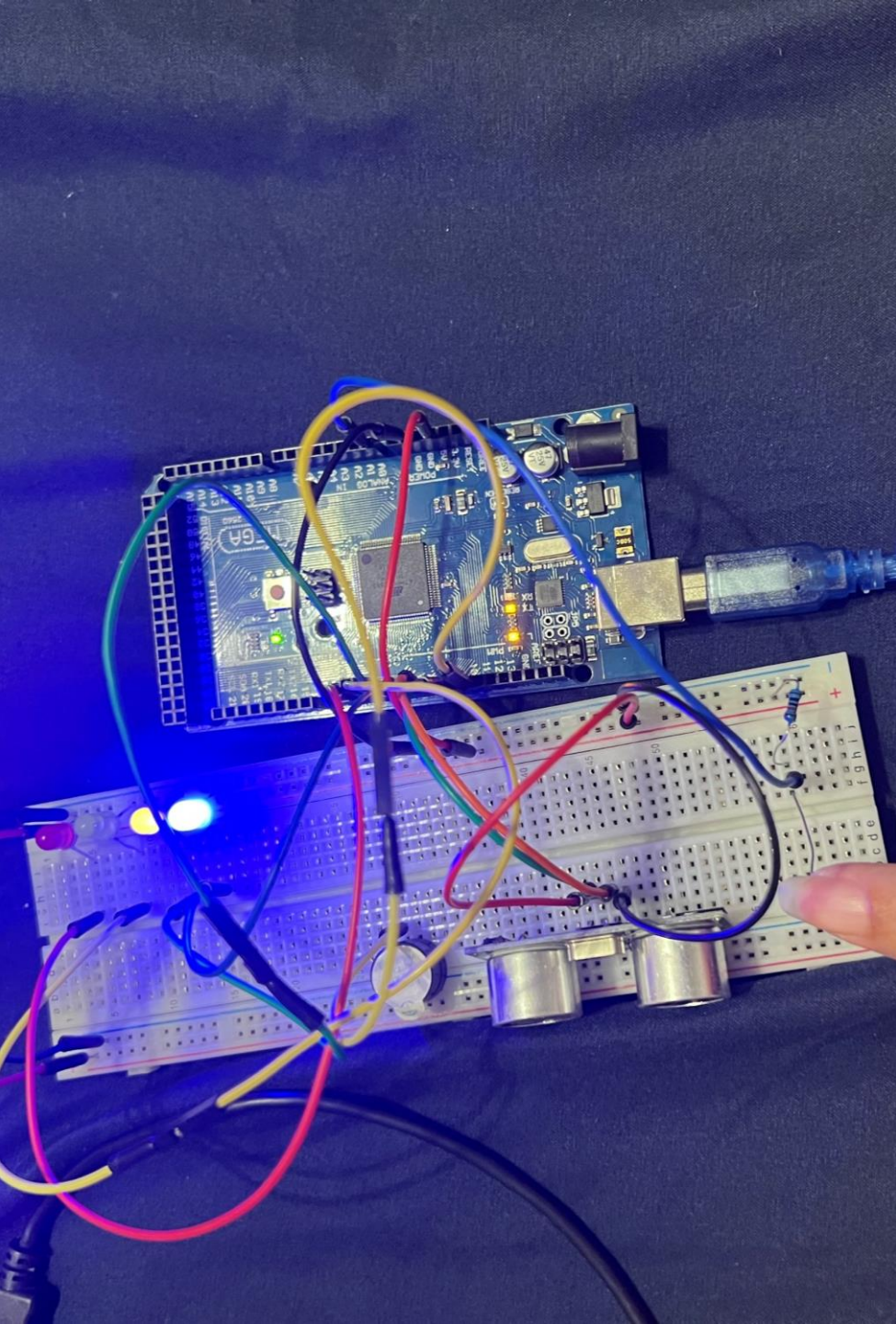
ADDING AUTOMATED LIGHT TO SMART HOME SYSTEM

- Added Blue light to breadboard
- Added photoresistor
- Added resistor
- Used Arduino IDE for code and serial monitoring

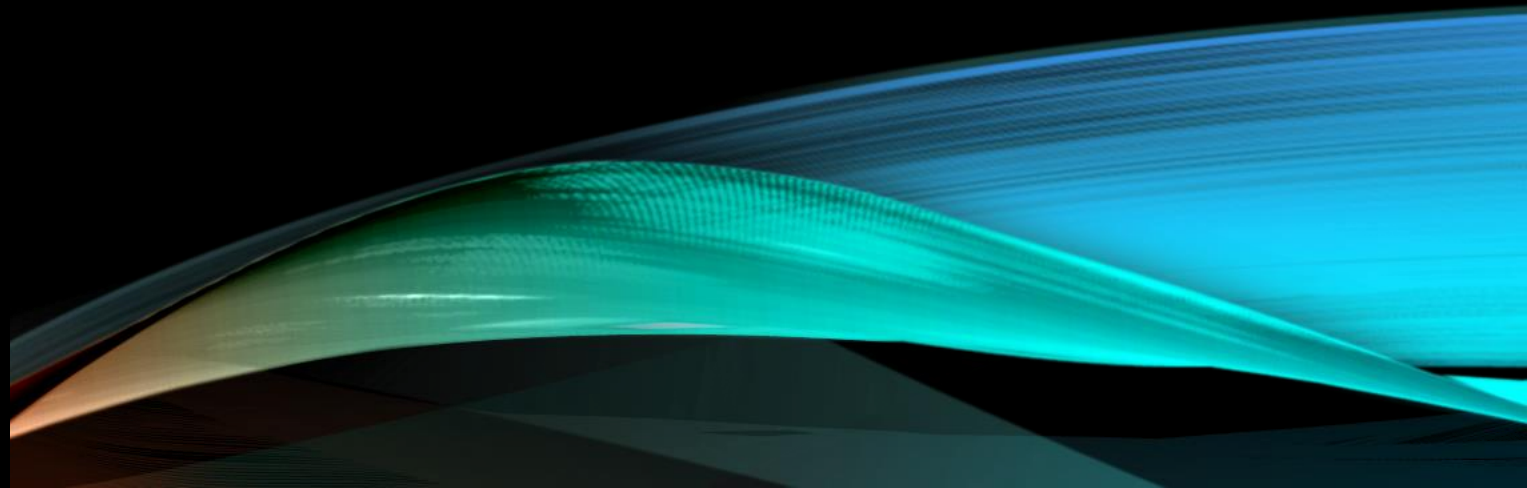




CIRCUIT WITH AUTOMATED LED OFF



CIRCUIT WITH
AUTOMATED LED ON



Week 6 project | Arduino IDE 2.0.0-rc9.2

Edit Sketch Tools Help



Arduino Mega or Mega ... ▾

week 6 project.ino

```
1  #define trigPin 8
2  #define echoPin 7
3  #define Rled 2
4  #define Yled 3
5  #define Gled 4
6  #define buzzer 10
7  #define photocell A0
8  #define autoLight 6
9  #define door 9
10 void setup() {
11   Serial.begin(9600);
12   Serial.println("CEIS101 Course Project Module 6");
13   Serial.println("Name: Luella Tracy Henderson "); //replace xxxxx with your name
14
15   pinMode(trigPin, OUTPUT);
16   pinMode(echoPin, INPUT);
17   pinMode(Rled, OUTPUT);
18   pinMode(Yled, OUTPUT);
19   pinMode(Gled, OUTPUT);
20   pinMode(buzzer, OUTPUT);
21   pinMode(autoLight, OUTPUT);
```

ARDUINO CODE

Output Serial Monitor X

Message (Ctrl + Enter to send message to '/dev/ttyUSB0')

```
CEIS101 Course Project Module 6
Name: Luella Tracy Henderson
The automated light is ON
The automated light is ON
The automated light is ON
The automated light is ON
The automated light is ON
The automated light is ON
The automated light is ON
The automated light is ON
The automated light is ON
The automated light is ON
```

Output Serial Monitor X

Message (Ctrl + Enter to send message to '/dev/ttyUSB0')

```
CEIS101 Course Project Module 6
Name: Luella Tracy Henderson
Alert! Possible Intruder.
Alert! Possible Intruder.
Alert! Possible Intruder.
Alert! Possible Intruder.
Alert! Possible Intruder.
Alert! Possible Intruder.
Alert! Possible Intruder.
Alert! Possible Intruder.
Alert! Possible Intruder.
Alert! Possible Intruder.
```

SERIAL MONITOR



TROUBLESHOOTING

- For this project I had an issue with the photocell not reacting to the amount of light.
- What was done to fix this issue was changing the value in the code from 450 to 750, by doing this I was able to get a reaction from the photocell.



CHALLENGES FACED

In my previous slides for week 4 and 6 I included some of the challenges I faced but aside from that another challenge I faced was with coding.

Since I am not familiar with coding, I was content with the code being provided to me. However, I know when I get further into more of my tech classes I may start to learn more about coding.

While viewing the live lectures I did learn a bit about how to read the code when one of the instructors went over projects.

When I graduate from DeVry, I do plan to take more in-depth coding classes and get a few certifications.

CAREER SKILLS

- Some of the career skills I learned in this class are:
- Learned a little about the hardware (breadboard, Arduino, etc.)
- Getting a sense of coding/programming.
- Critical thinking (problem solving)
- Automation when it comes to building and working with a home security system.
- Being patient when you run into problems since it will be a common thing.



CONCLUSION

I enjoyed this class I can say I learned a lot while at the same time having my mind challenged.

I think down the line I would enjoy playing with the Arduino kit and figuring out what else I could make.

I enjoyed putting everything together and the challenges that I had to face putting this project together.

The overall end results were very rewarding to see, I am very proud of myself.