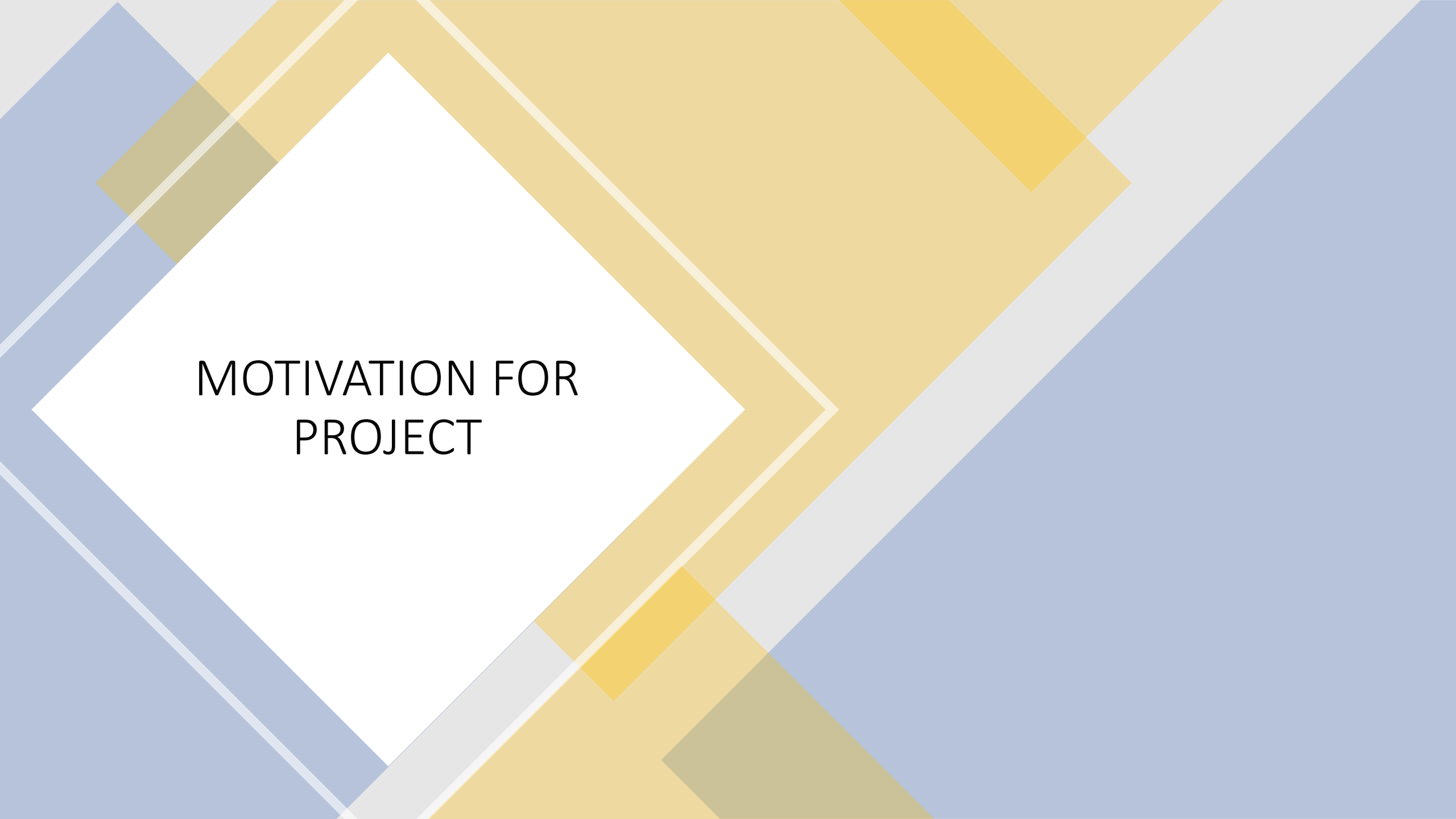


HOME AUTOMATED SECURITY SYSTEM (PROTOTYPE TEST #209)

CEIS101 FINAL PROJECT

BY: NICHOLAS JONES





MOTIVATION FOR PROJECT

HOME INVASIONS IN 2022

Since the economy has undergone a huge transition (ie: increasing in gas prices, the increase in taxes, and the overall increase in cost of living), many Americans have gone to the dark side and started committing crime to help balance it all. One crime that has risen is theft. There has been a 21% increase in home invasion. I have developed a new state of the art home security system, that will not only alert the residents if an intruder has entered the home but alert if an intruder is close to your home. The security system also comes with a light if it becomes too dark in the area. This is how I created the new security system.

system.

*All statistics were fabricated. This is the motivation for building the



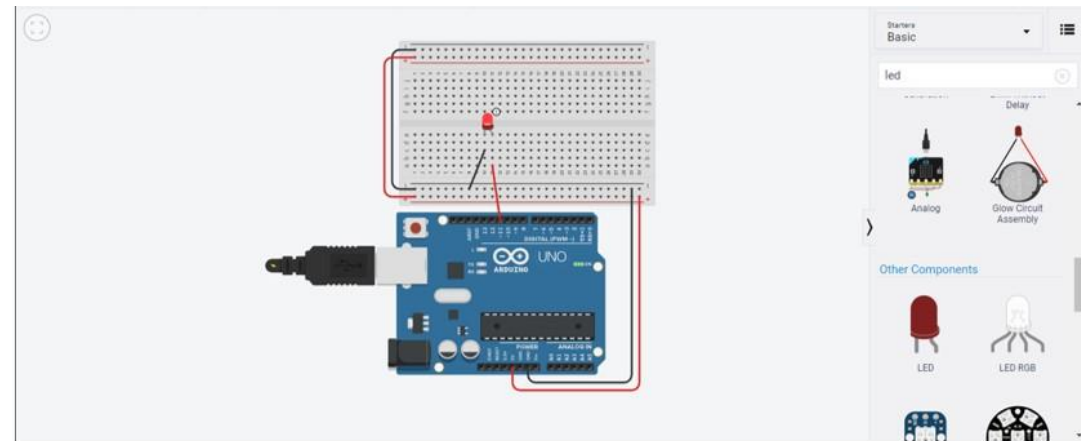
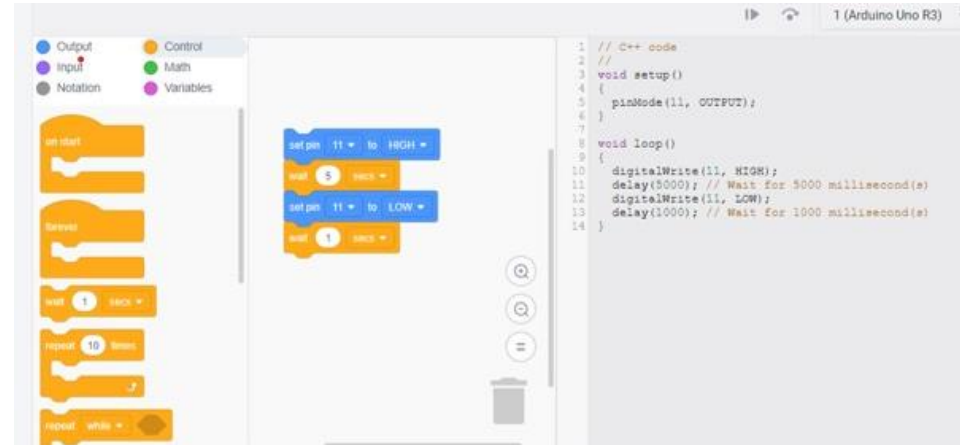
USING TINKERCAD

DESIGNING THE PROTOTYPE

By using Tinkercad, I able to create a prototype design for the system.

see
coming

The coding came easy
to me. It was great to
how everything was
along.





INVENTORY

Now that my design was completed in Tinkercad, I needed the physical supplies to be able to build it on my own. I has some of the best professors at DeVry University, so I asked if they had any spare supplies around, I could use to build it.

*Fabricated

Professor	Day
Susan Nachawat	Mondays
Ed Hill	Mondays
Jeevan D'Souza	Mondays
John Lambrou	Tuesdays
Aaron Marmorst	Wednesday
Charlotte McKer	Thursdays
James Lewis	Thursdays
Raef Yassin	Thursdays
Kavianpour	Fridays
Svetla Tzvetkov	Fridays
Kevin Greshock	Sundays

LET'S JUST SAY THEY WERE ABLE TO HELP

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



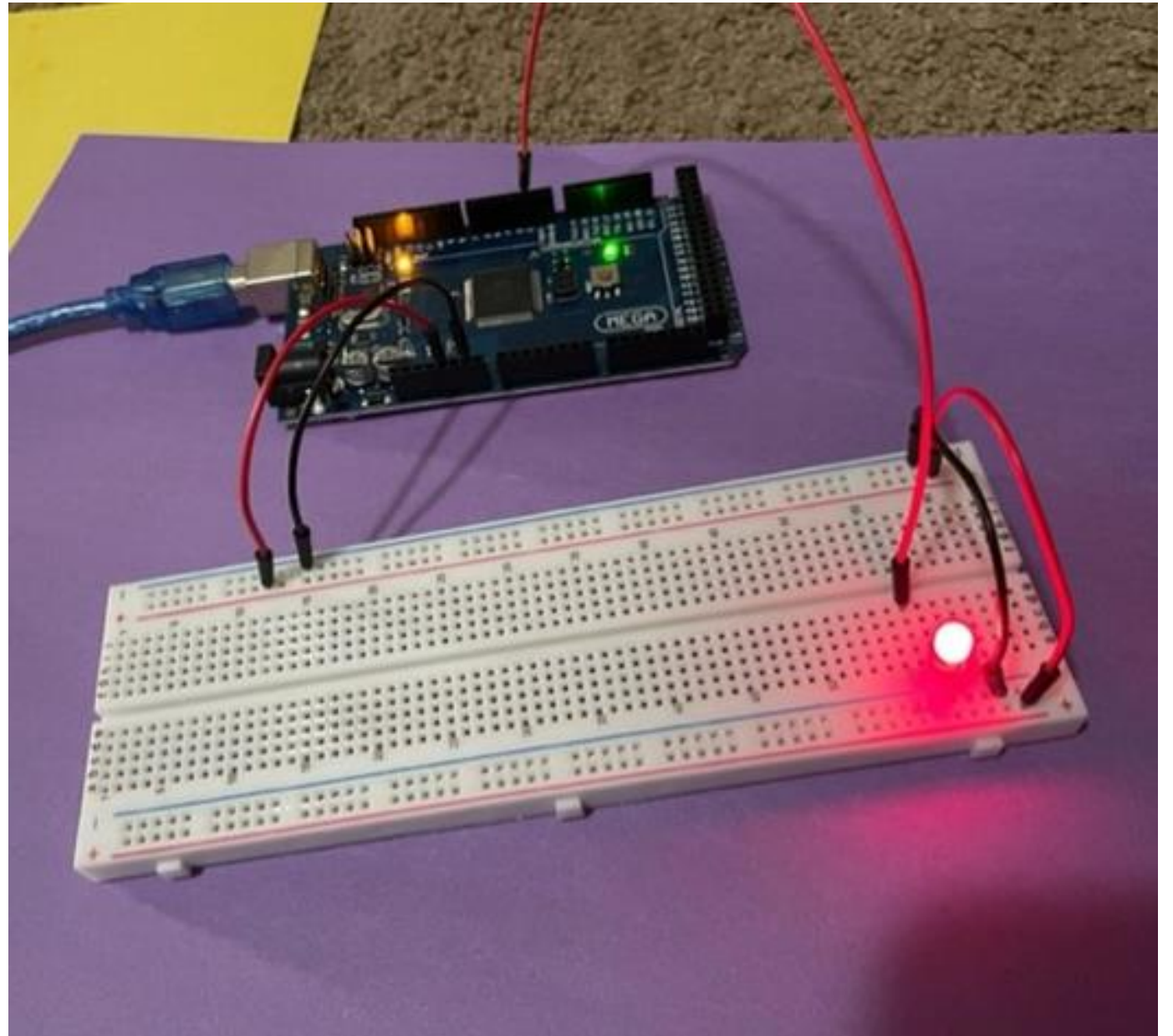
ALL I NEEDED OUT OF THAT WAS THIS

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



STEP 1

Recreating the prototype
that I made in Arduino:



SERIAL MONITOR MESSAGE

Name: Nicholas Jones

Red LED is ON

Red LED is OFF

Red LED is ON

Red LED is OFF


Red LED is ON

Red LED is OFF

Red LED is ON

Red LED is OFF

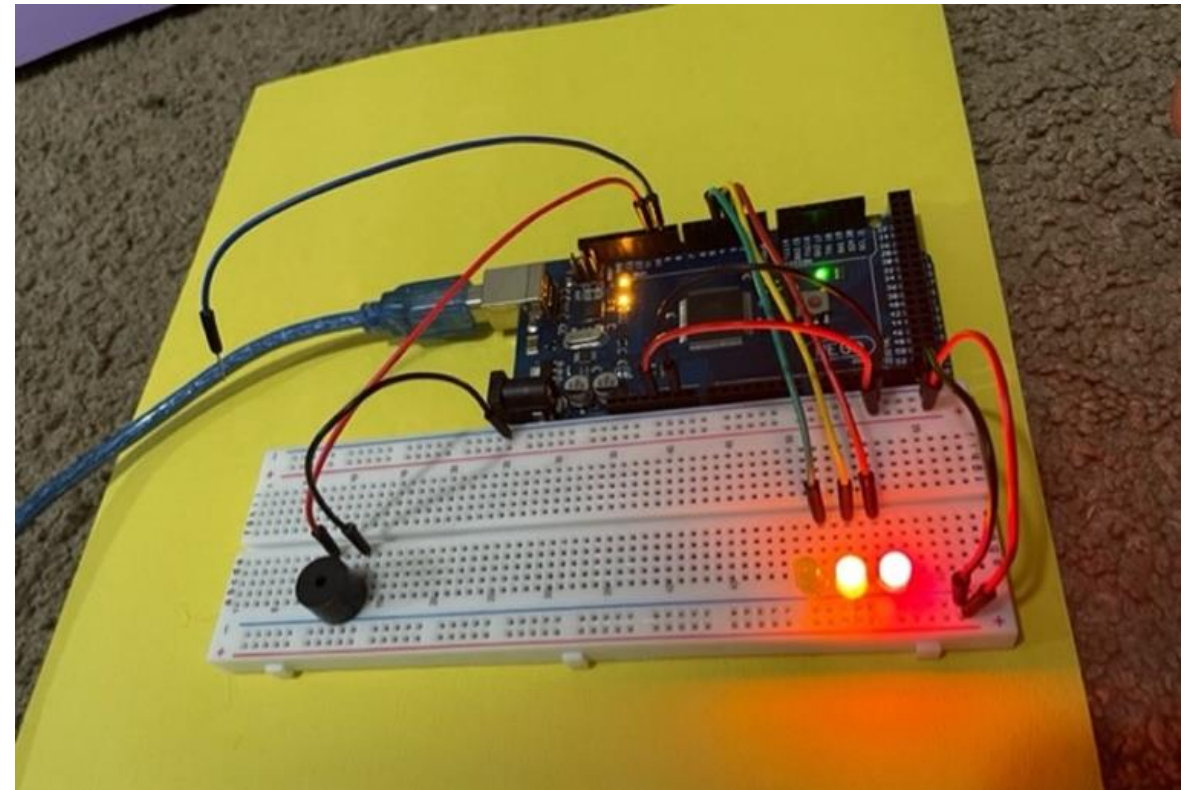
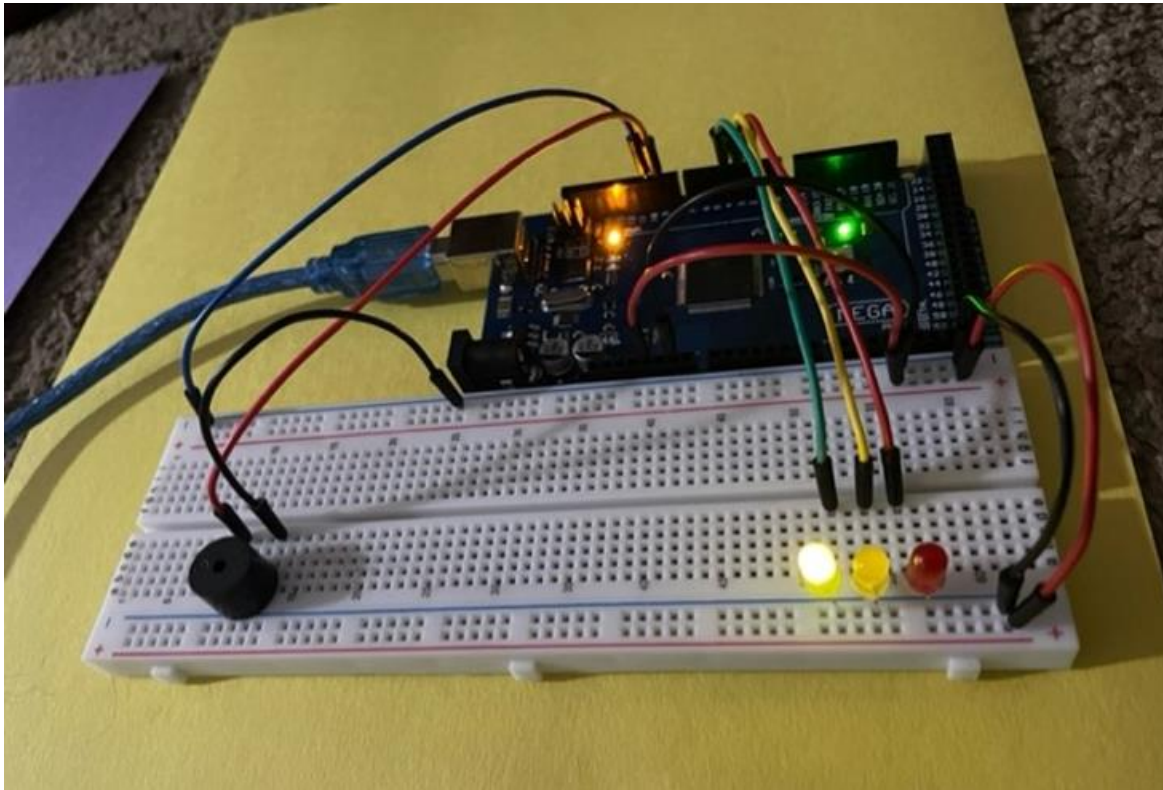
Red LED is ON



ADDING A DOOR SENSOR

STEP 2

Applying sensors (yellow and green) and an active buzzer to alert when an intruder has entered. The system turns red, and an alarm is set off.



ARDUINO CODE

```
Test_May_17__2022
//delayTime 1000 // 1 second run, change to 100

void setup() {

  Serial.begin(9600); // Set the baud rate

  Serial.println("CEIS101 Course Project Module 4");

  Serial.println("Name: Nicholas Jones "); //replace xxxxx with your

  pinMode(Rled, OUTPUT);

  pinMode(Yled, OUTPUT);

  pinMode(Gled, OUTPUT);

  pinMode(buzzer, OUTPUT);

  digitalWrite(buzzer, LOW);

}


```

Done uploading.

SERIAL MONITOR MESSAGE

While the alarm is active, the serial monitor will continue to call out the breach.

Name: Nicholas Jones

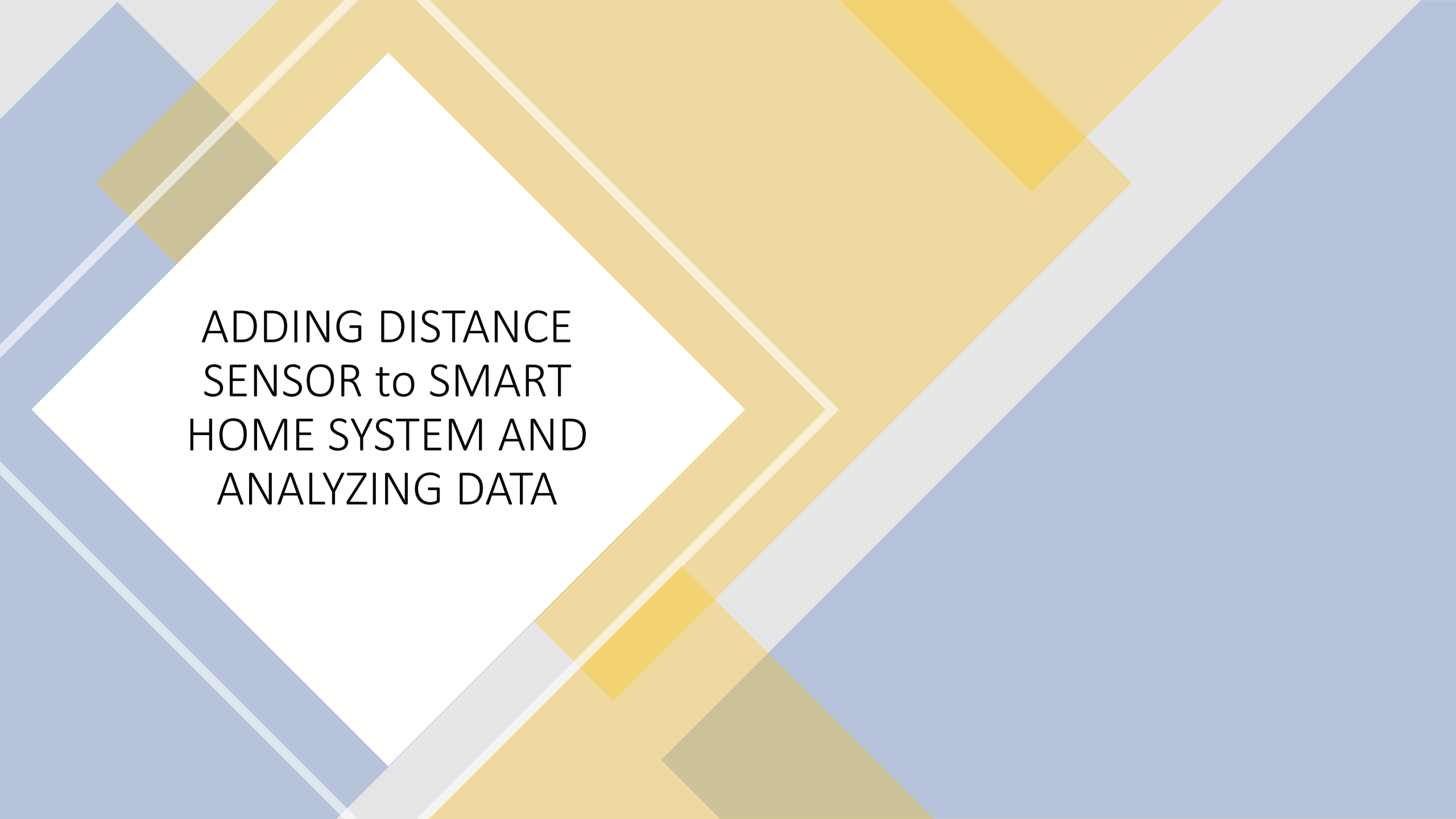
Door is open. Security Alert!

Door is open. Security Alert!

Door is open. Security Alert!

Door is open. Security Alert!

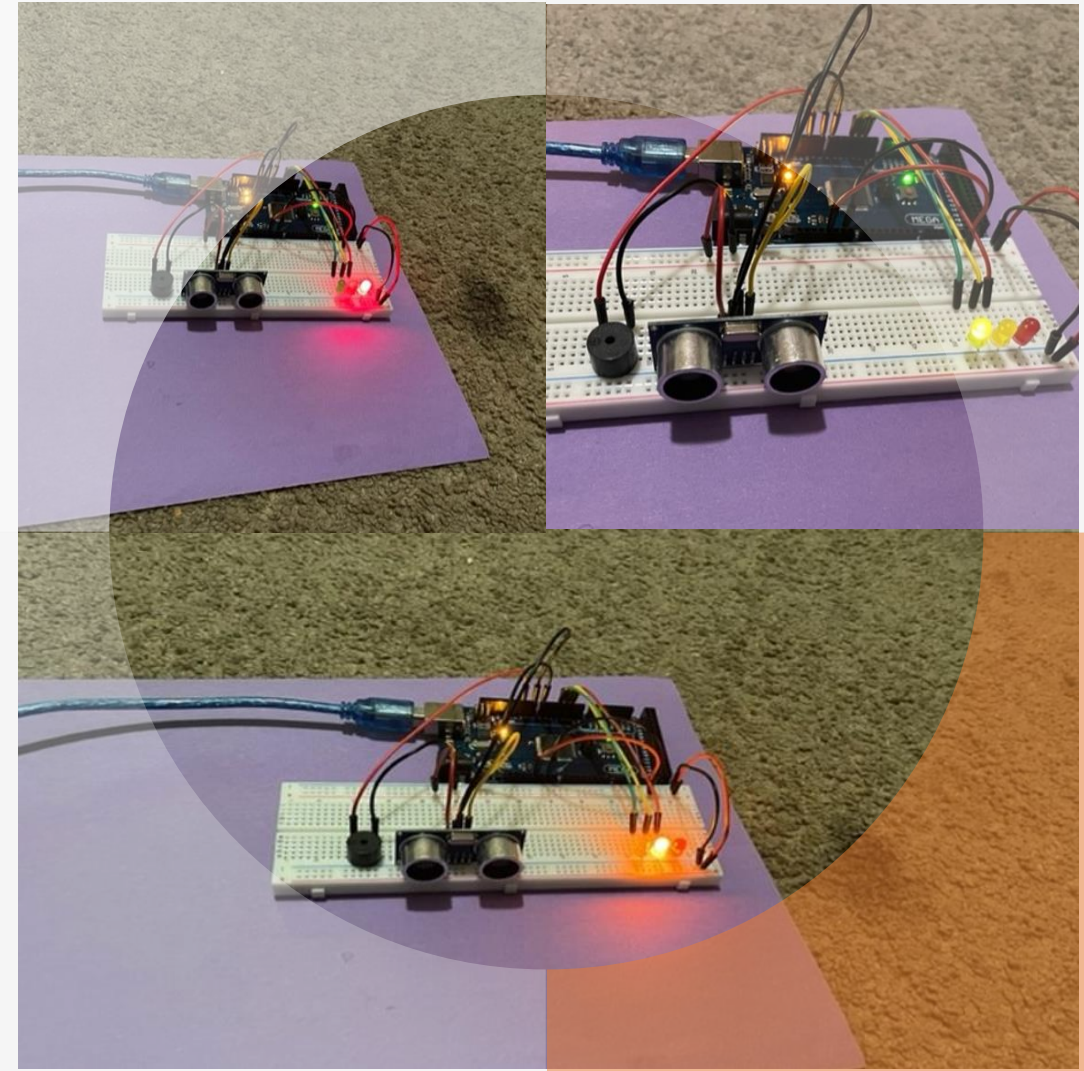
Door is open. Security Alert!



ADDING DISTANCE
SENSOR to SMART
HOME SYSTEM AND
ANALYZING DATA

STEP 3

Now that the system can alert us, let's add some extra features to detect when an intruder is close. Green Light – All Clear; Yellow Light – Intruder – Threat Detected; Red Light – Threat Imminent



SERIAL MONITOR MESSAGE

Name: Nicholas Jones

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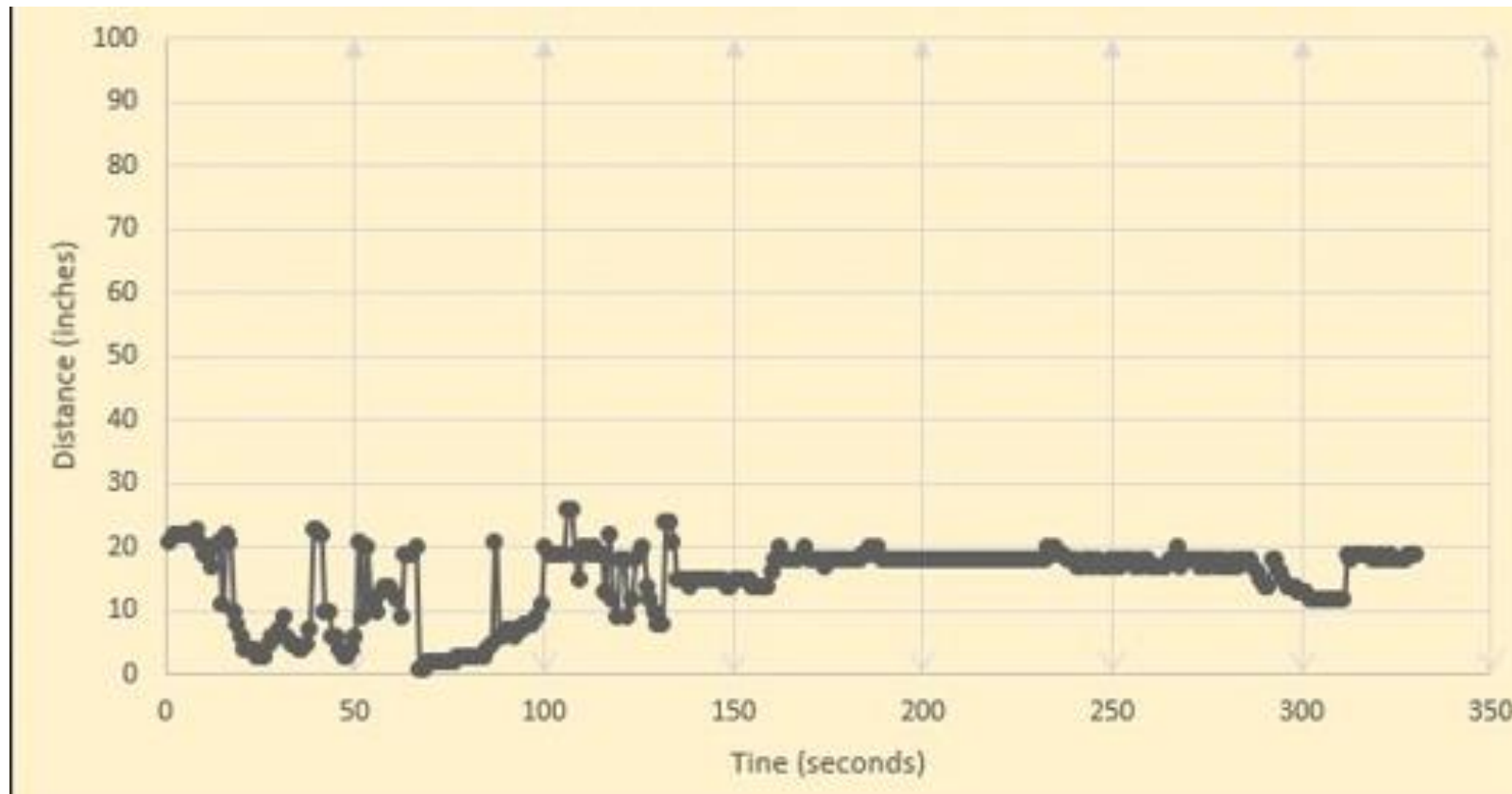
8

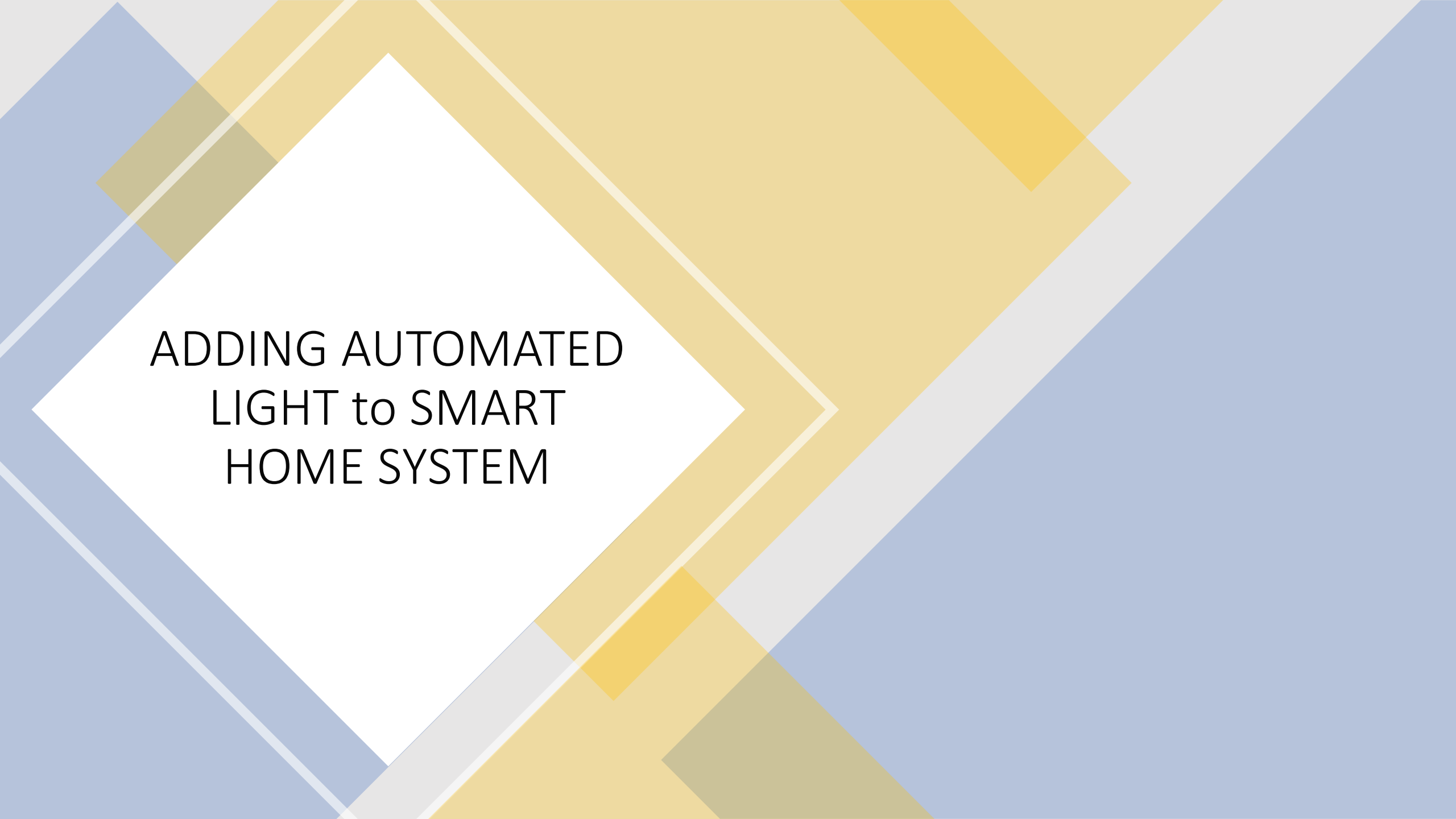
6

4

DATA VISUALIZATION ON GRAPH

As per the graph, you can see how the system is alerted when someone or something gets close to it.

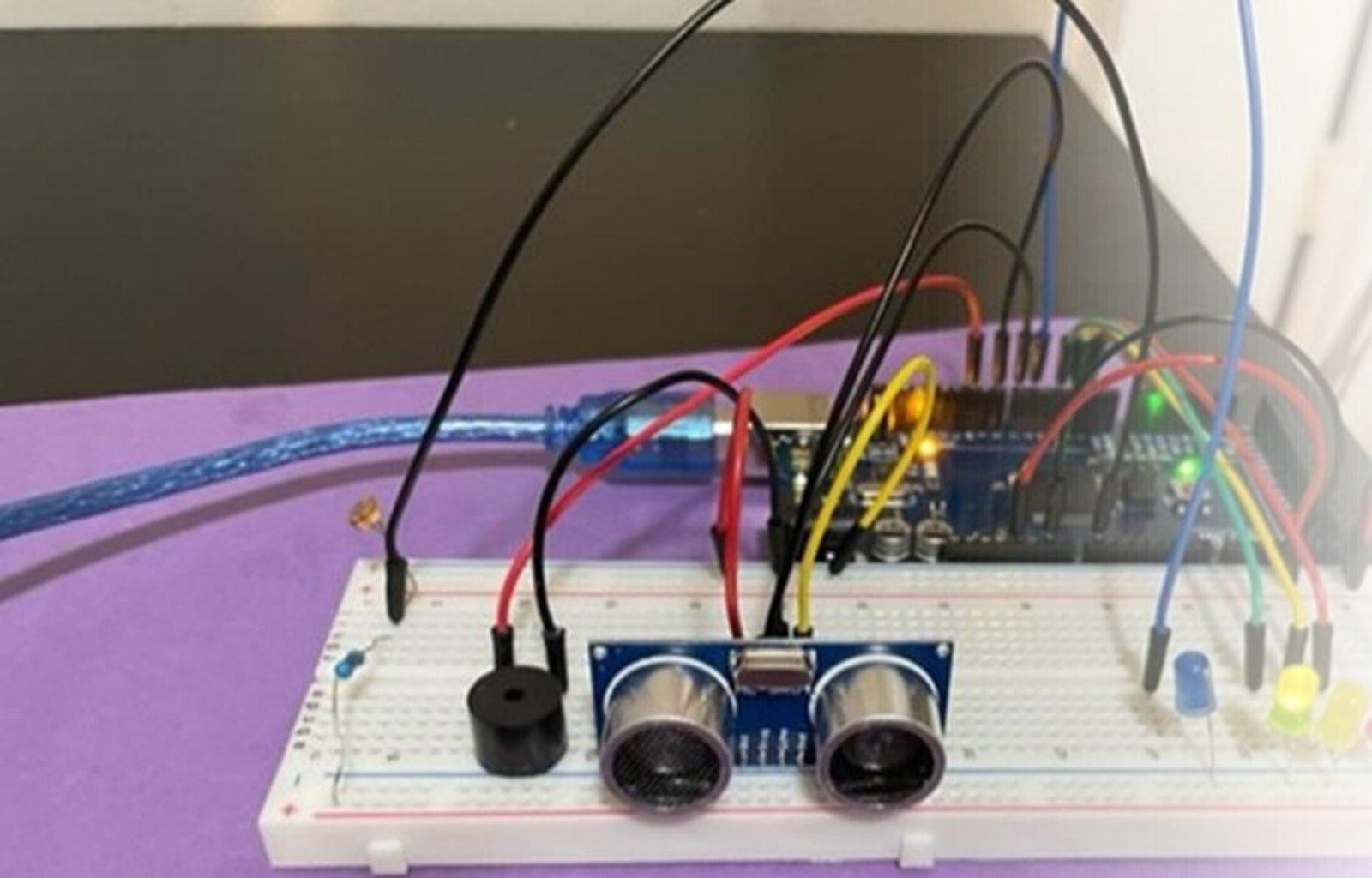




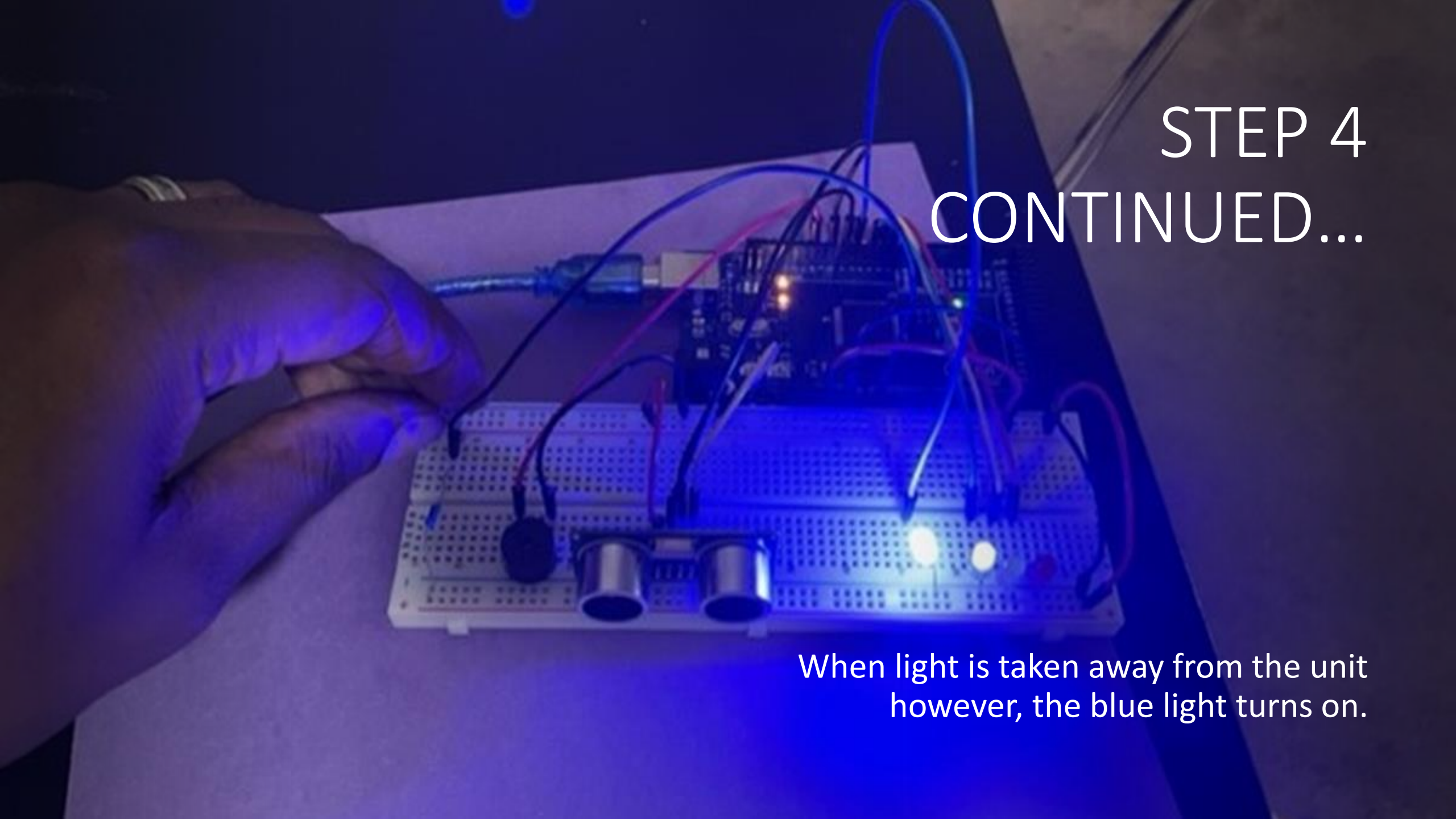
ADDING AUTOMATED
LIGHT to SMART
HOME SYSTEM

STEP 4

At this point I know the system will sound off and alarm if something or someone is close in proximity. I would like to add an automated light. This light will toggle on/off depending on the intensity of the light it is receiving. As you can see in the image below, the blue light is off due to the photoresistor receiving light.



STEP 4 CONTINUED...



When light is taken away from the unit however, the blue light turns on.

SERIAL MONITOR CODE

Name: Nicholas Jones

907

905

905

907

907

907

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904

904

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907

The automated light is ON
1019
The automated light is ON
1021
The automated light is ON
1021
The automated light is ON
1021
The automated light is ON
1021
The automated light is ON
1018
The automated light is ON
1010

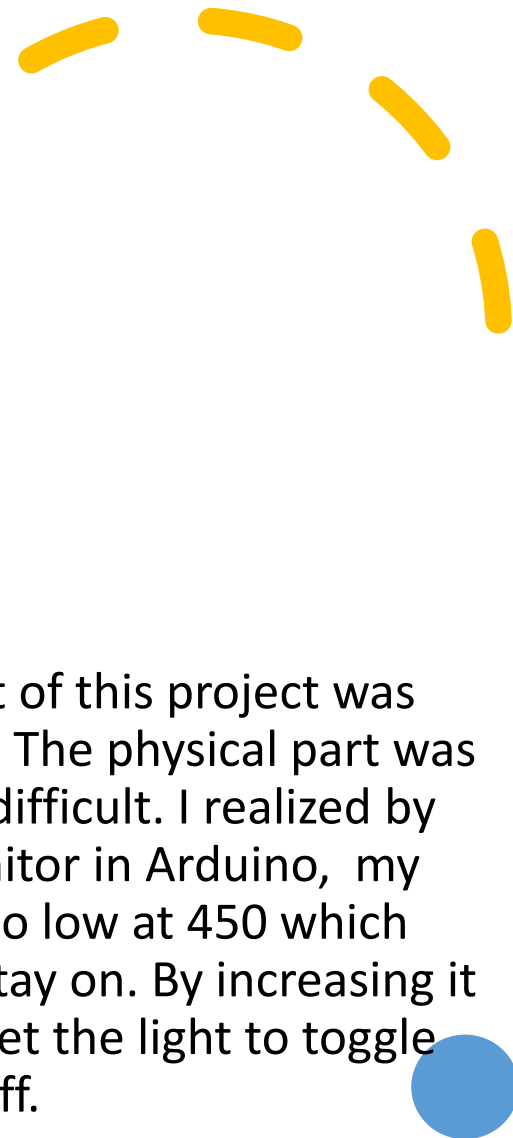
Name: Nicholas Jones
907
910
908
907
909
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908

SERIAL MONITOR MESSAGE



CHALLENGES

The automated light is ON
1019
The automated light is ON
1021
The automated light is ON
1021
The automated light is ON
1021
The automated light is ON
1021
The automated light is ON
1018
The automated light is ON
1010
The automated light is ON



By far the hardest part of this project was adding the photoresistor. The physical part was easy but coding it was difficult. I realized by viewing the serial monitor in Arduino, my resistor's input was too low at 450 which caused my blue light to stay on. By increasing it to 1000, I was able to get the light to toggle on/off.

The image features a large orange semi-circle on the right side, which serves as a background for the text. To the left of this semi-circle is a solid blue circle. Further left, there are two vertical yellow dashed lines and a green square outline. Below the blue circle, there are several yellow dashed lines of varying lengths and a green line that forms a right-angled corner. In the top right corner, a small yellow circle is partially visible. The text "NEWLY OBTAINED SKILLS" is written in white, uppercase letters within the orange semi-circle.

NEWLY OBTAINED
SKILLS


Throughout this journey, I realized I obtained certain skills that I will carry with me going forward:

- Coding – There are many languages to learn when it comes to coding, but I can pick-up on languages quickly
- Trouble-shooting – Even when following directions perfectly, sometimes something may not do what it should. Being able to trouble-shoot helped dramatically.
- Patience/Resilience – When I first started, I had no idea what I signed up for, but I never gave up. Learning how to perform a task through adversity was a major confidence boost.





CONCULSION



With all the steps taken, an automated home security system was created. This system can detect intruders in the day or night to the photocell. Also, can detect threats according to how far they are away from the system. Additional security can be placed on the system which were not included in this demo. Thank you for your time.

