
**REVIEW - 3**

# HOME AUTOMATION USING ARDUINO

**TEAM MEMBERS:**

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# ABSTRACT


- The main aim of this project is to design and construct a home automation system using an Arduino board, that will remotely on/off home appliances connected to it.
- This provides an integrated system built to facilitate a smart home for the general public especially for the elderly and disabled as the conventional wall switches located in different parts of the house makes it difficult for them to go near to operate. These can not only be used at home but also on a larger scale like offices, industries, hotels, universities, etc.
- In this project we use micro-controllers like Arduino to help the consumer wirelessly control lights or automatically turn off lights in case no motion detected to save power consumption, a door lock keypad system to increase security in sensitive areas, a fire alarm system one of the basic needs for almost all newly constructed buildings, and also a plant monitoring system that can be used in farms, green-house, various labs, etc.

# ARDUINO PROJECTS

A

SMOKE DETECTION SYSTEM

B

MOTION CONTROLLED LED LIGHTS

C

PASSWORD BASED DOOR LOCK SYSTEM

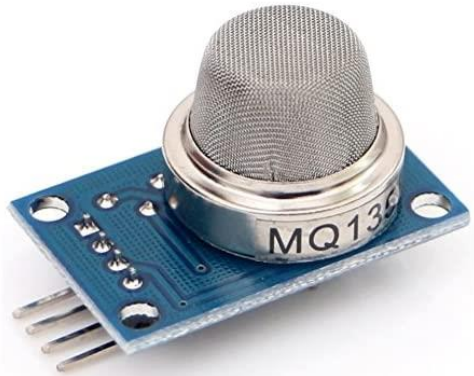
A

# SMOKE DECTECTION SYSTEM

***Smoke detector system can be used offices, shops and homes to detect fires. It can also be used to detect alcohol content ignorer to check if people are drunk driving, detect the concentration of harmful and harmless gases in the atmosphere.***

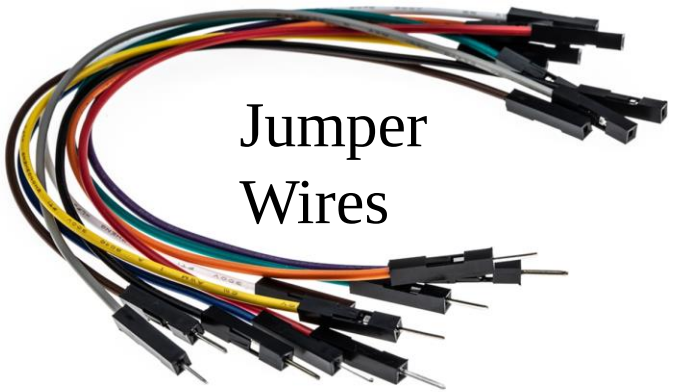
# COMPONENTS


Arduino UNO

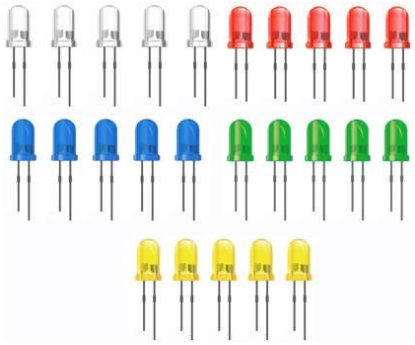



MQ-135 Smoke Sensor

Data Cable



Jumper Wires

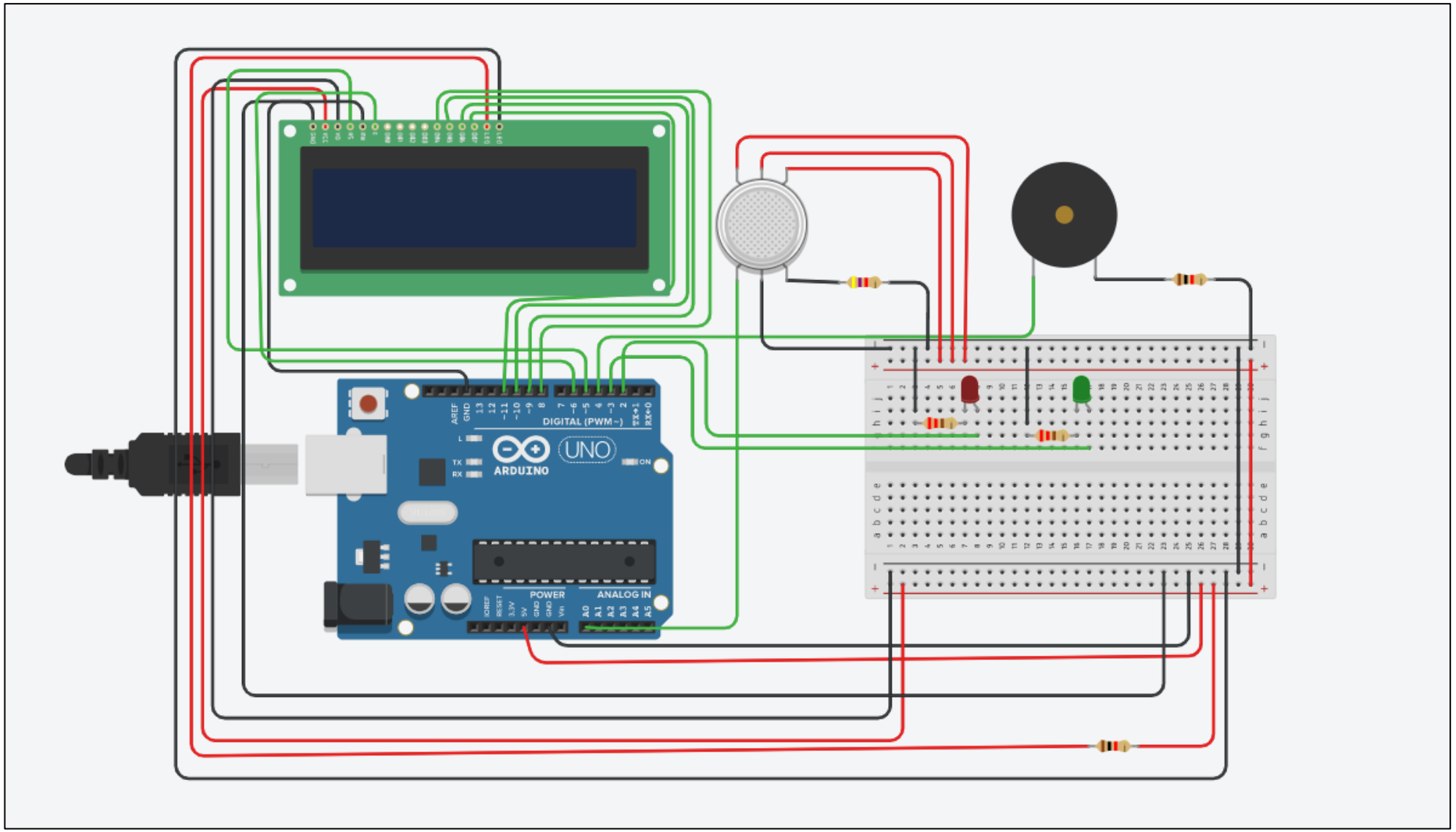


LED Bulbs

Buzzer

Resistors(3-1K ohm each)

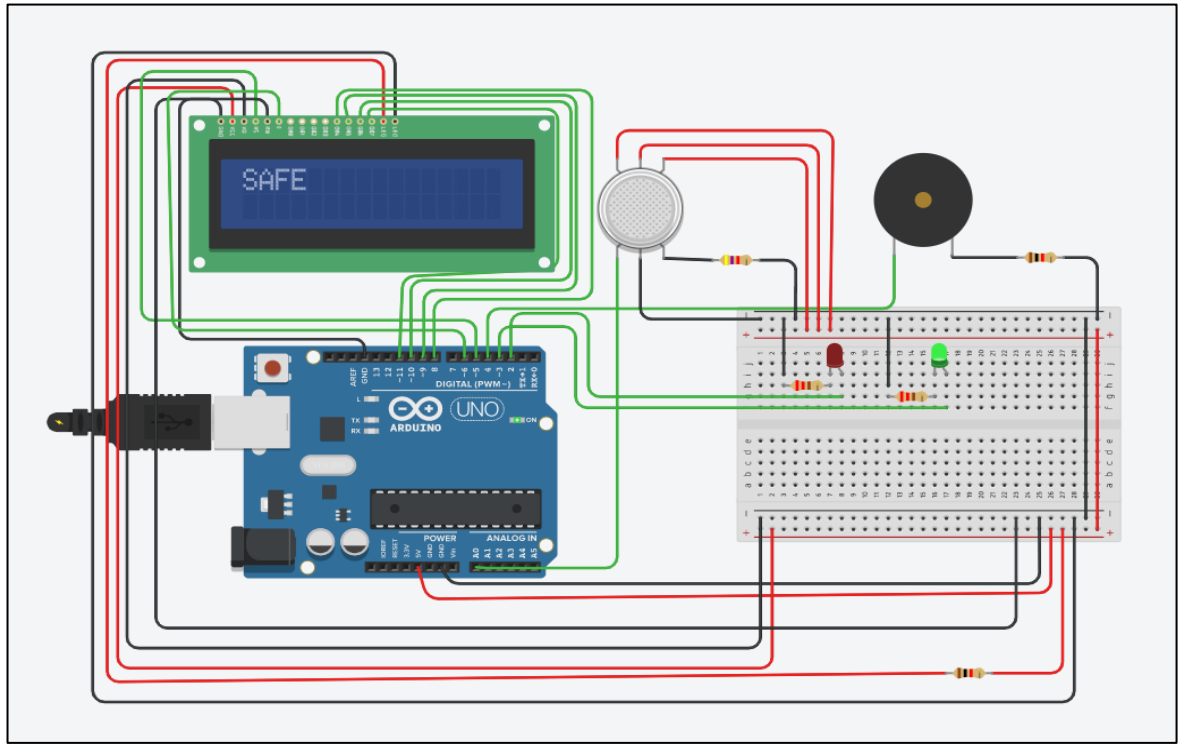
# CIRCUIT

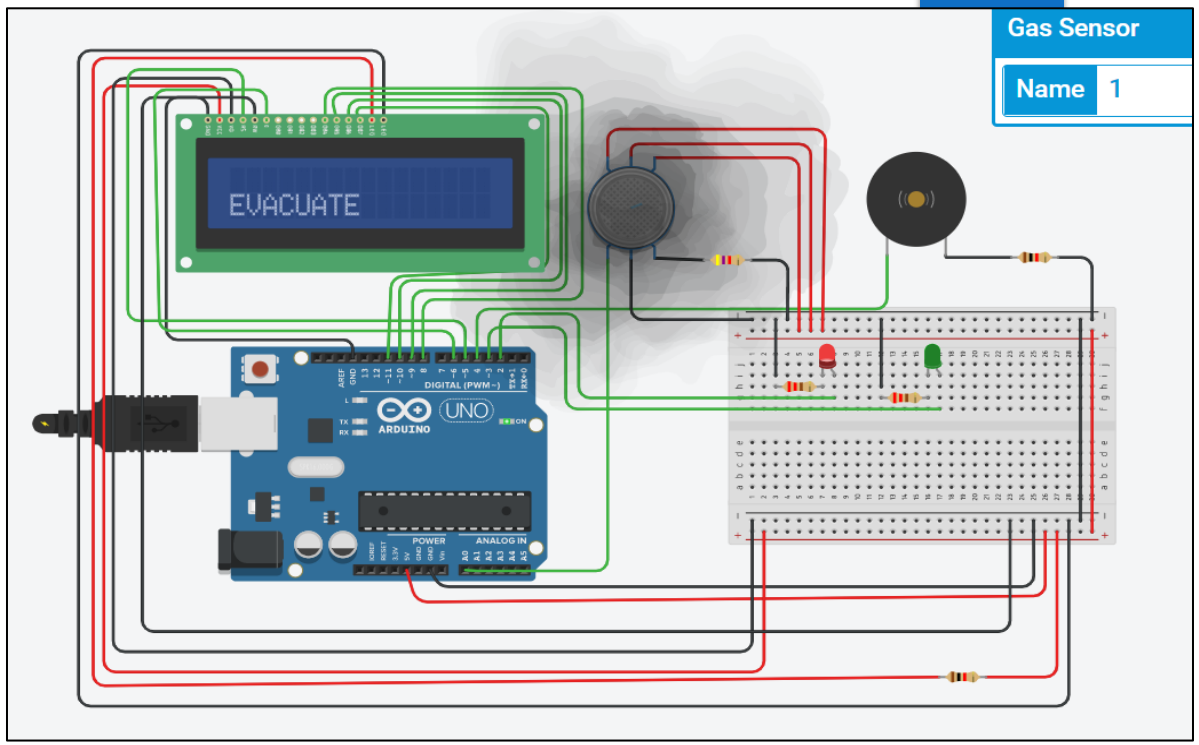


# OUTPUT:

- **When Smoke is not Detected,**

Green LED glows and no sound is produced by the buzzer. LCD display Messages “ALL CLEAR” & “SAFE”.



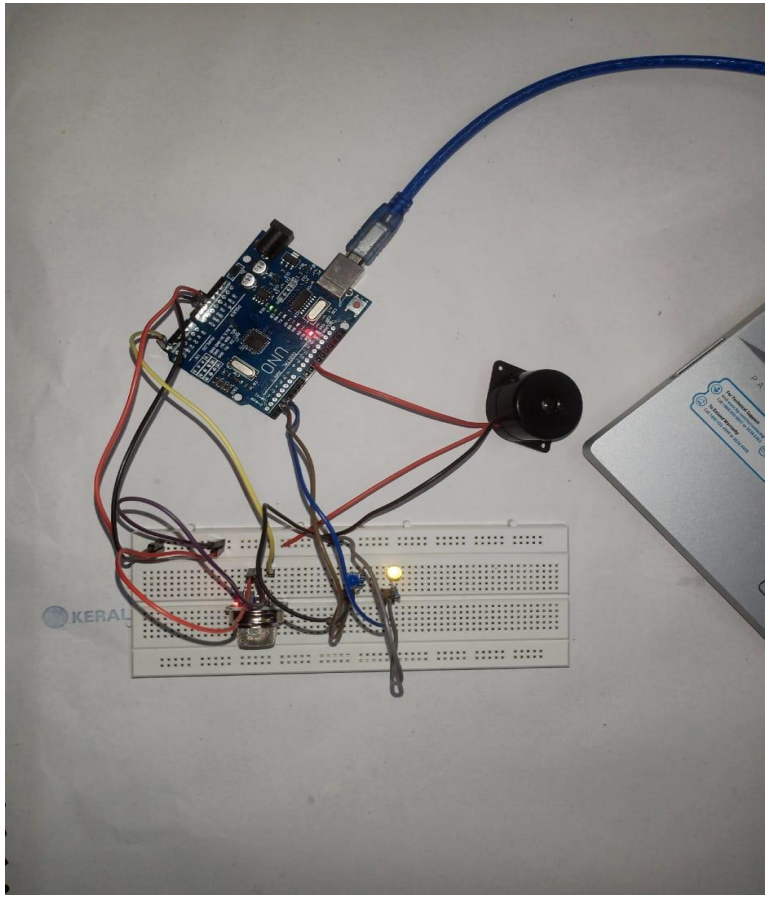



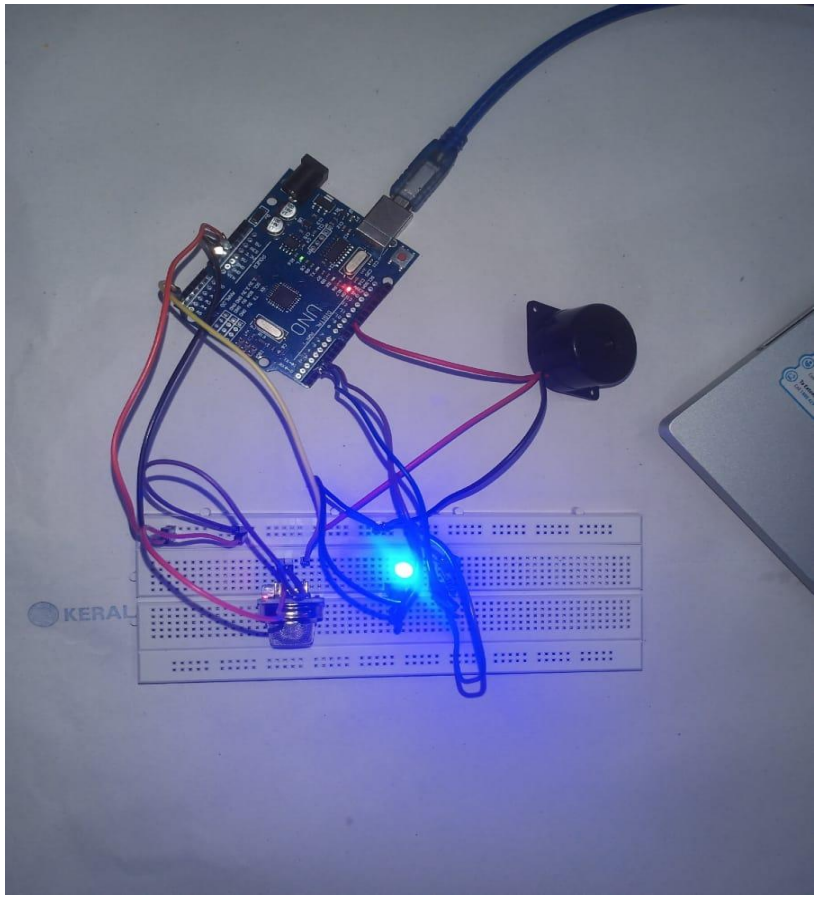

- **When Smoke is Detected,**

Red LED glows and sound is produced by the buzzer. LCD display messages “ALERT” & “EVACUATE”.

- **When Smoke is not Detected,**

Yellow LED glows and no sound is produced by the buzzer.





- **When Smoke is Detected,**

Blue LED glows and sound is produced by the buzzer.

# CODE:

```
int buzzer = 10;
int smokeA0 = A5;
int redled = 2;
int blueled = 3;
// Your threshold value. You might nee
d to change it.
int sensorThres = 100;

void setup() {
  pinMode(buzzer, OUTPUT);
  pinMode(smokeA0, INPUT);
  pinMode(redled, OUTPUT);
  pinMode(blueled,OUTPUT);
  Serial.begin(9600);
}
```

```
void loop() {
  int analogSensor = analogRead(smokeA0
);
  // Checks if it has reached the thres
hold value
  if (analogSensor > sensorThres)
  {
    tone(buzzer, 1000, 200);
    digitalWrite(redled,HIGH);
    digitalWrite(blueled,LOW);
  }
  else
  {
    noTone(buzzer);
    digitalWrite(blueled,HIGH);
    digitalWrite(redled,LOW);
  }
  delay(100);
}
```

B

## MOTION CONTROLLED LED LIGHTS

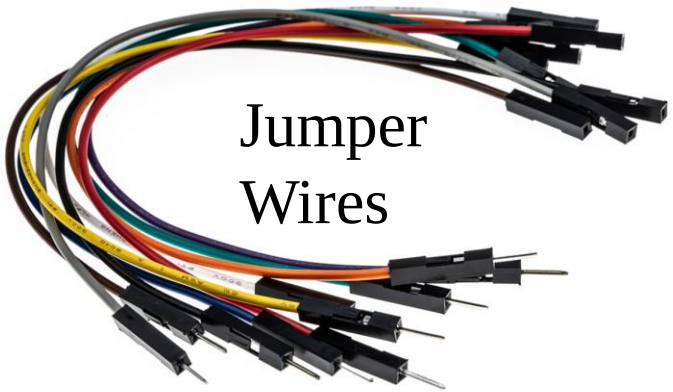
***Control lights using PIR sensors: Street lights, washrooms, places where light is required only when someone needs to pass by or use it for a very short period of time so electricity is saved.***

# COMPONENTS

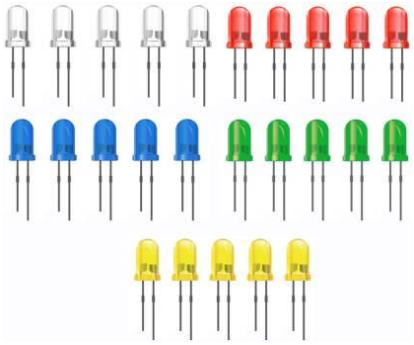

Arduino UNO

PIR Sensor

Data Cable



Jumper Wires

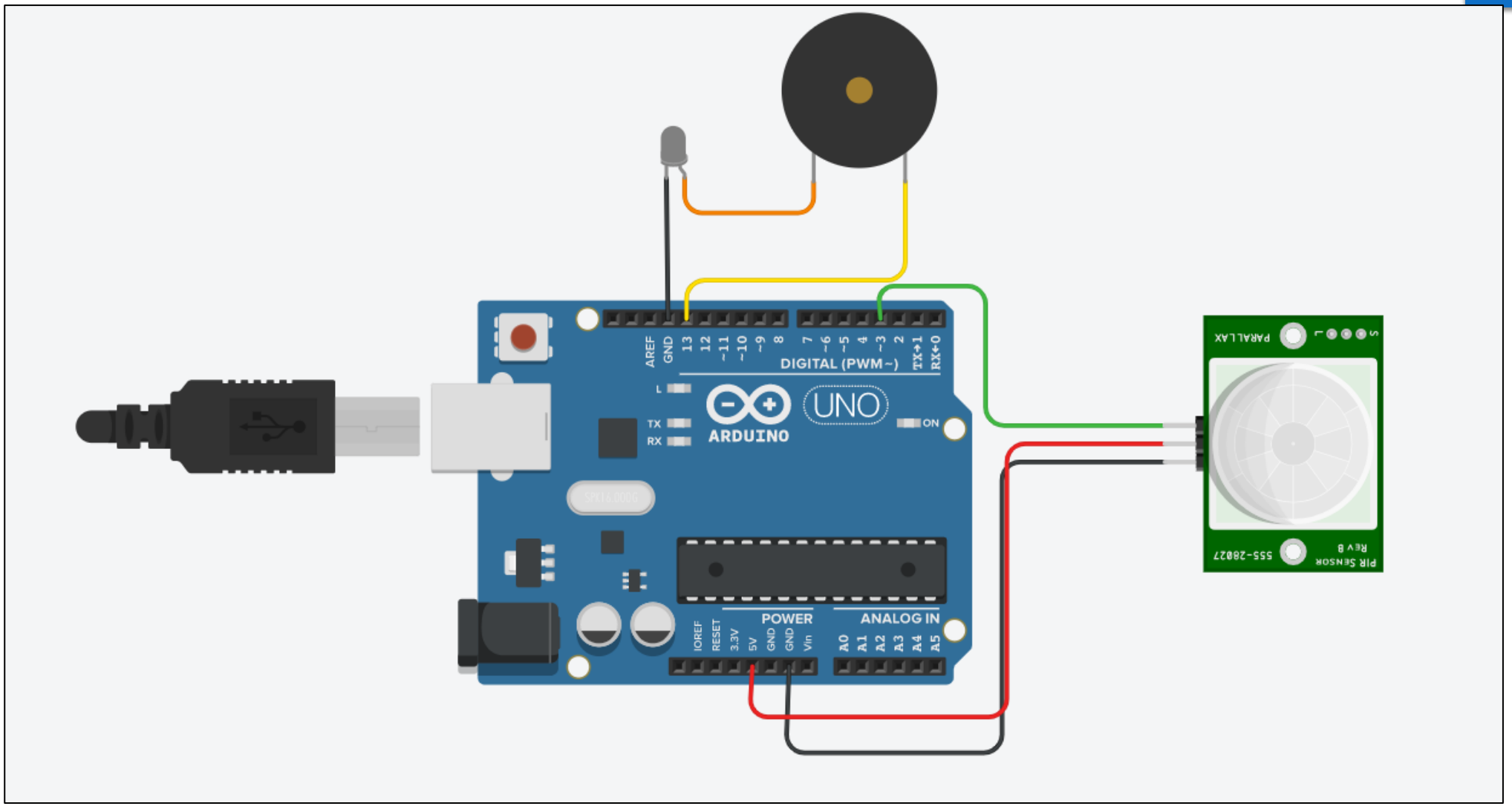


LED Bulbs

Buzzer

Resistors(3-1K ohm each)

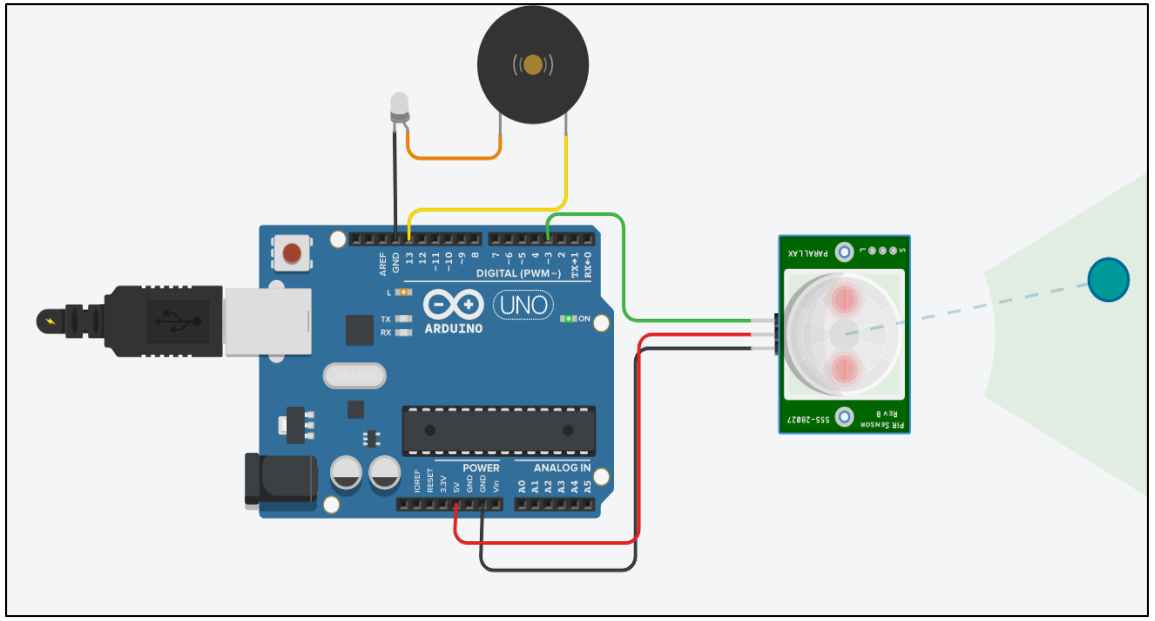
# CIRCUIT

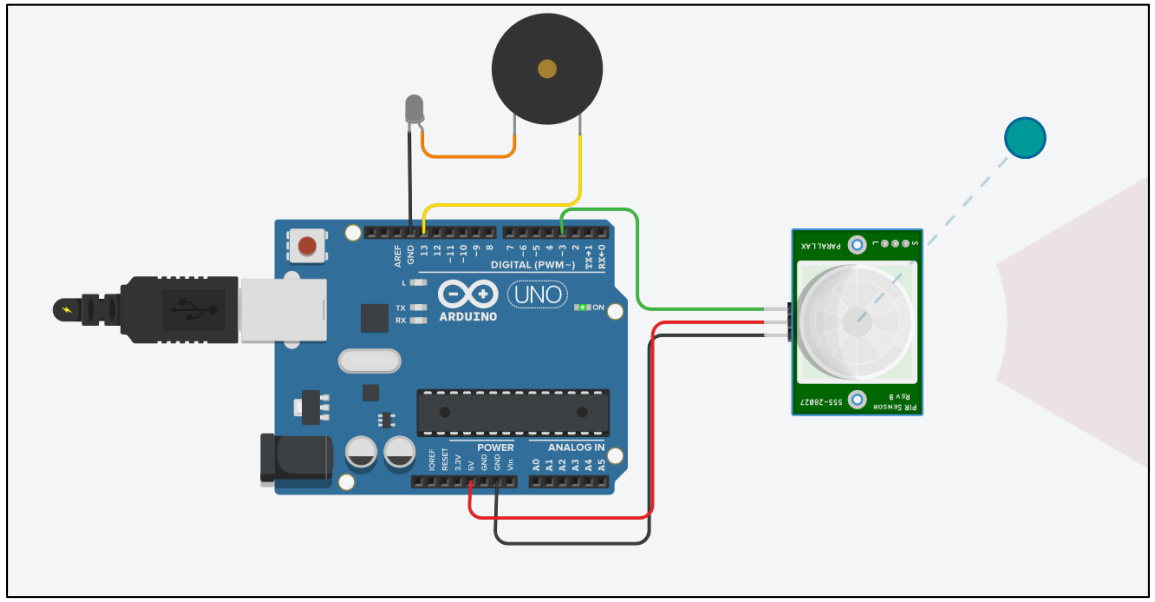

AREF
GND
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX→1
RX←0
DIGITAL (PWM~)
L
TX
RX
ARDUINO
UNO
ON
POWER
ANALOG IN
IOREF
RESET
3.3V
5V
GND
GND
Vin
A0
A1
A2
A3
A4
A5
PARALLAX
555-28027
PIR SENSOR
REV 8

# OUTPUT:

**When an Object in Motion is detected By PIR SENSOR,**

Buzzer Turns ***ON*** & White LED ***glows***



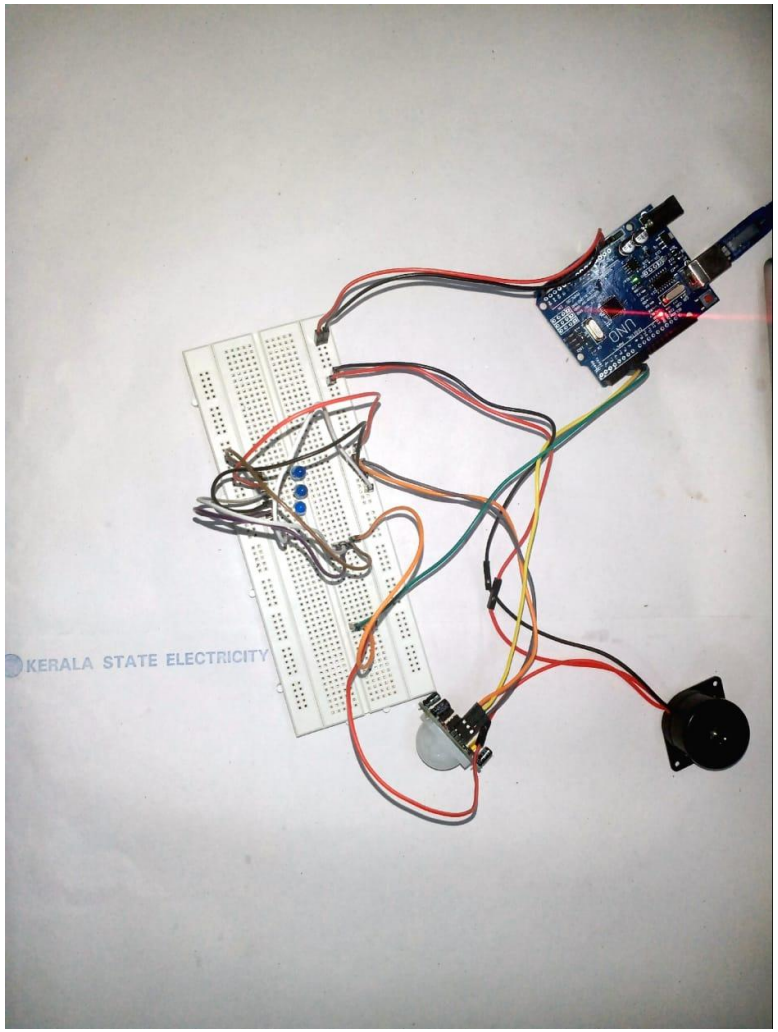



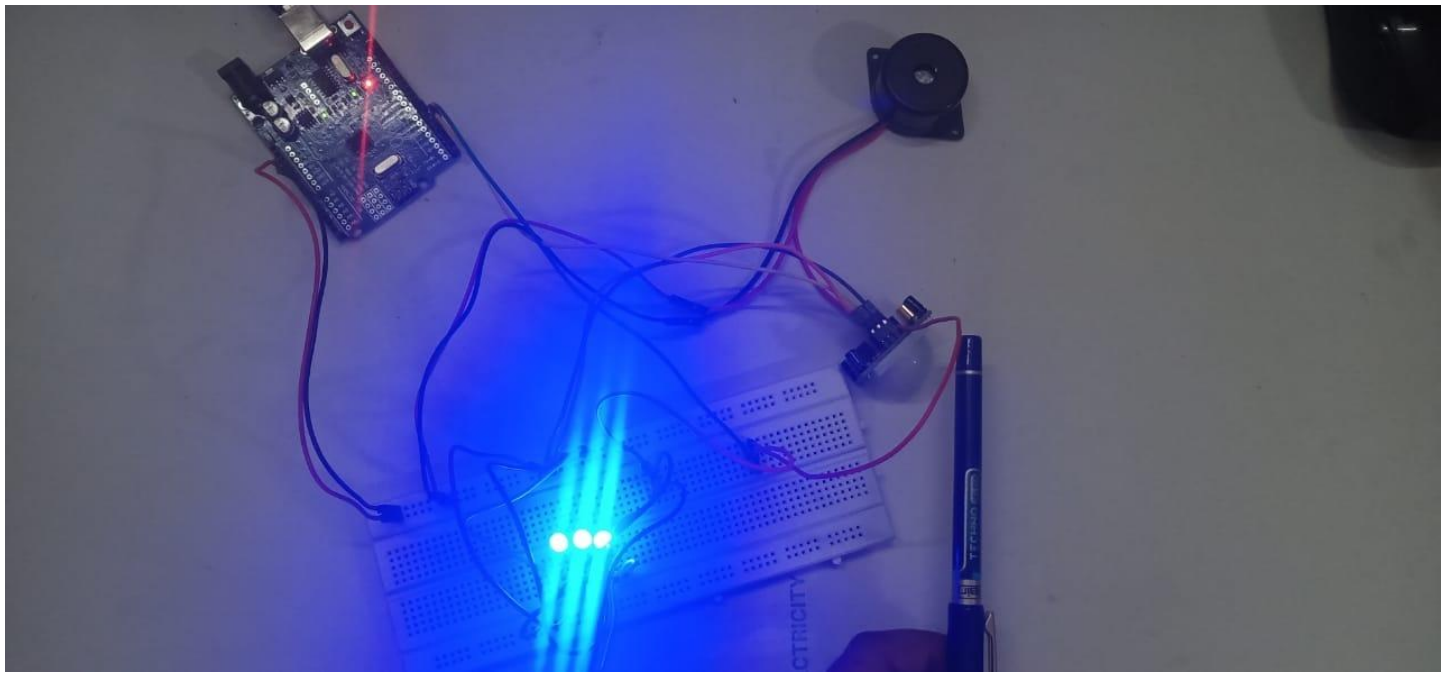

**When an Object in not in Motion,**

Buzzer Turns ***OFF*** & LED turns ***OFF***

**When an Object in not in Motion,**

Buzzer Turns ***OFF*** & LED turns ***OFF***



**When an Object in Motion is detected By PIR SENSOR,**

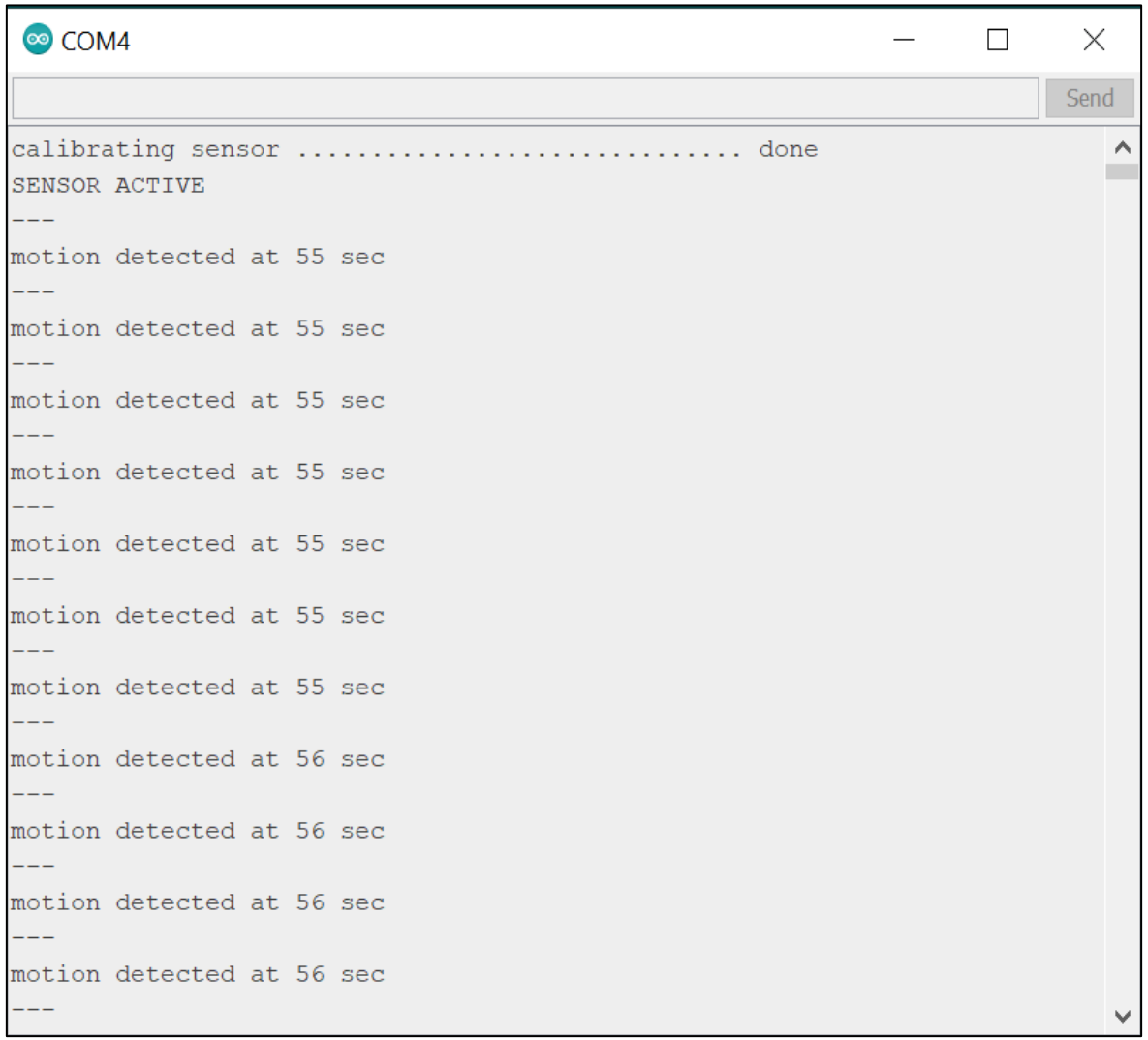
Buzzer Turns ***ON*** & Blue LEDs glows

# CODE:

```
int calibrationTime = 30;
long unsigned int lowIn;
long unsigned int pause = 5000;
boolean lockLow = true;
boolean takeLowTime;
int pirPin = 3;
int ledPin = 13;

void setup(){
Serial.begin(9600);
pinMode(pirPin, INPUT);
pinMode(ledPin, OUTPUT);
digitalWrite(pirPin, LOW);
//give the sensor some time to calibrate
Serial.print("calibrating sensor ");
for(int i = 0; i < calibrationTime; i++)
{
Serial.print("."); delay(1000); }
Serial.println(" done");
Serial.println("SENSOR ACTIVE");
delay(50);
}

void loop(){ if(digitalRead(pirPin) == HIGH)
{
digitalWrite(ledPin, HIGH); if(lockLow)
{ lockLow = false;
Serial.println("---");
```

```
Serial.print("motion detected at ");
Serial.print(millis()/1000);
Serial.println(" sec"); delay(50);
}

takeLowTime = true;
}
if(digitalRead(pirPin) == LOW)
{
  digitalWrite(ledPin, LOW);
  if(takeLowTime)
  {
  lowIn = millis();   takeLowTime = false;
  }   if(!lockLow && millis() -
 lowIn > pause)
  {
        lockLow = true;
    Serial.print("motion ended at ");
    Serial.print((millis() - pause)/1000);
    Serial.println(" sec");
    delay(50);
  }
}
}
```

# OUTPUT

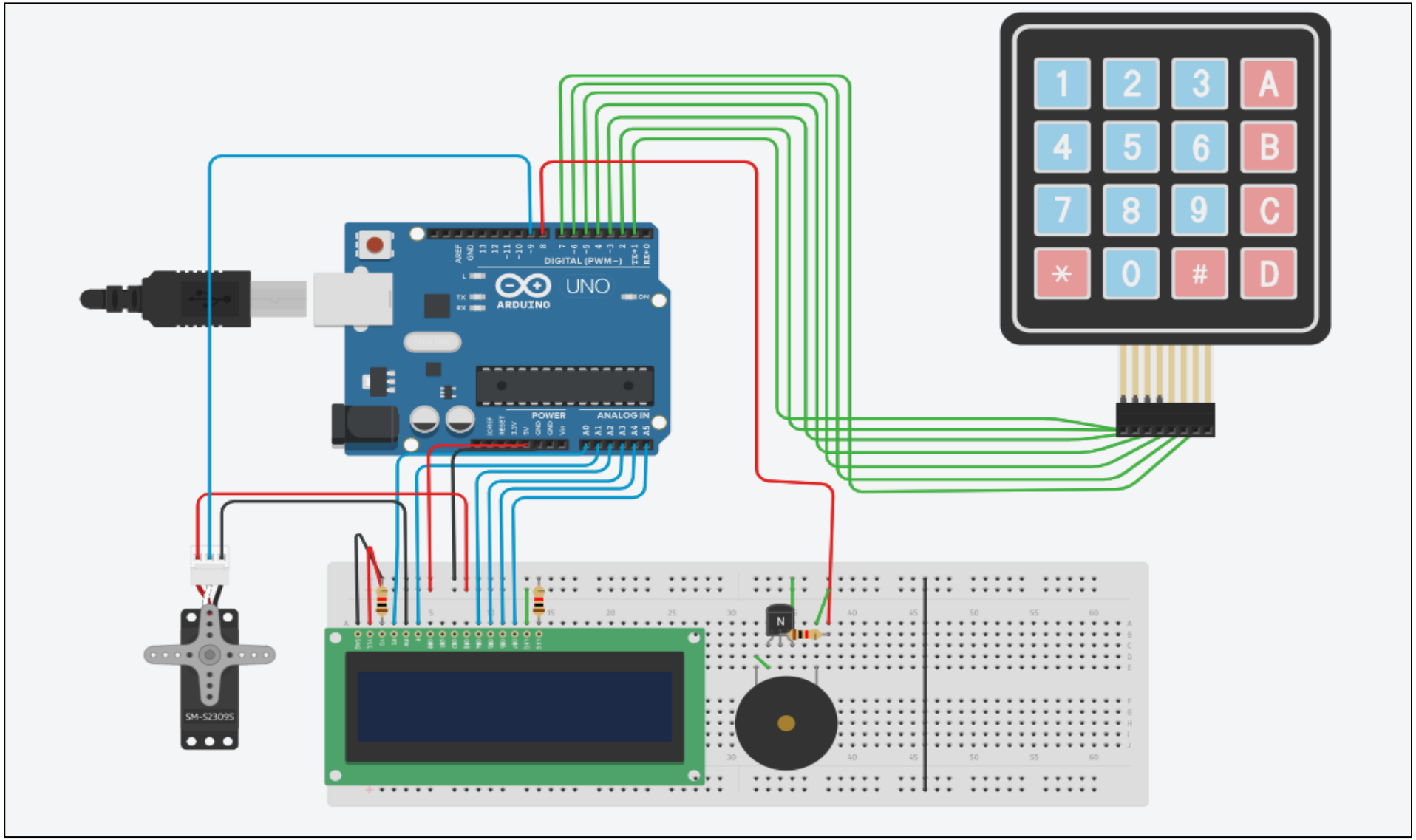

COM4
Send
calibrating sensor ..... done
SENSOR ACTIVE
---
motion detected at 55 sec
---
motion detected at 55 sec
---
motion detected at 55 sec
---
motion detected at 55 sec
---
motion detected at 55 sec
---
motion detected at 55 sec
---
motion detected at 55 sec
---
motion detected at 55 sec
---
motion detected at 56 sec
---
motion detected at 56 sec
---
motion detected at 56 sec
---
motion detected at 56 sec
---

C

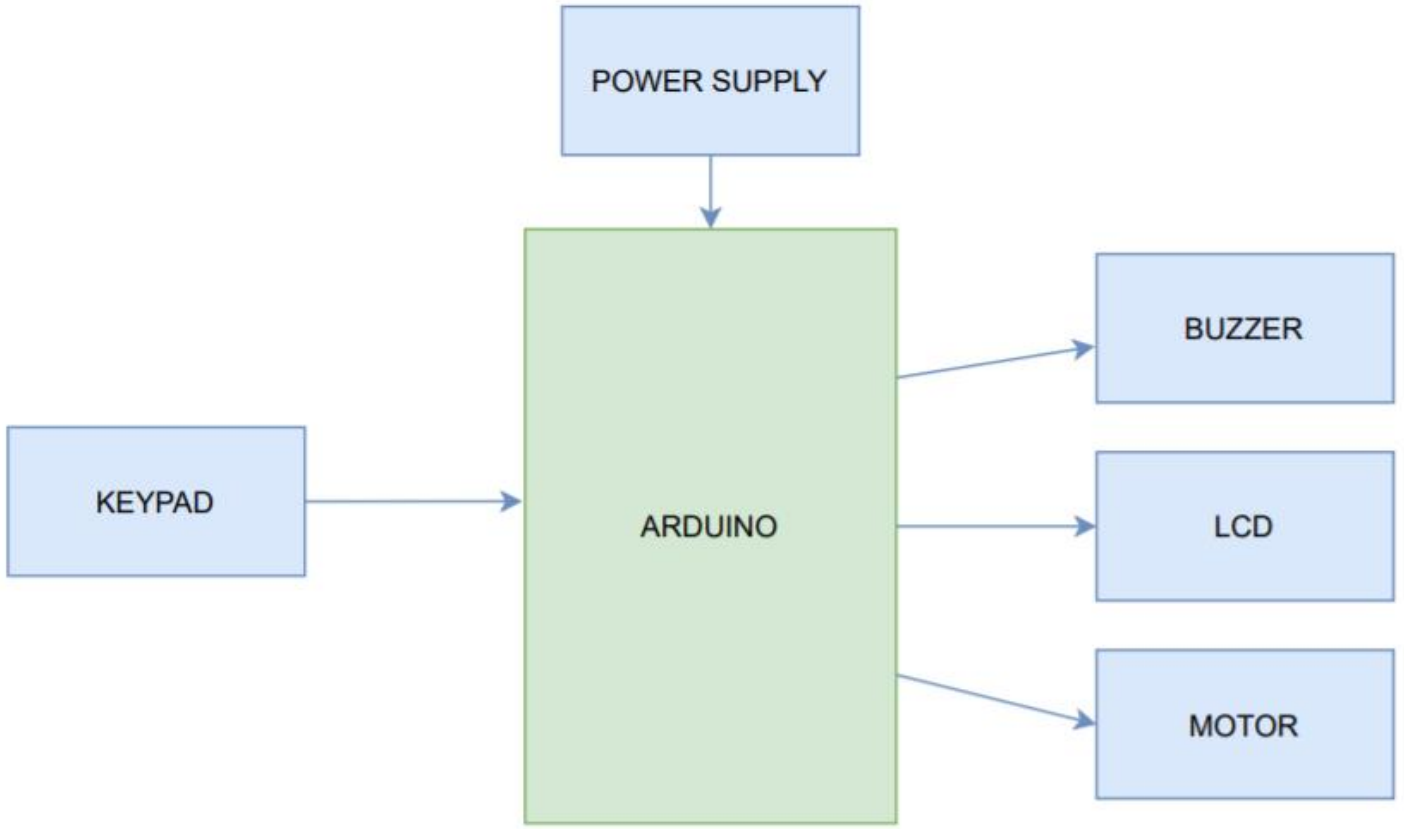
# PASSWORD BASED DOOR LOCK SYSTEM

***The smart door lock system can be used in homes, offices, and hotels. They provide a higher level of security as compared to the locks used nowadays. It saves time as we don't need a key to lock and unlock the door. It has better access control as we might lose physical keys or forget them.***

# CIRCUIT


1
2
3
A
4
5
6
B
7
8
9
C
*
0
#
D
UNO
ARDUINO
DIGITAL (PWM~)
POWER
ANALOG IN
SM-S2309S
N

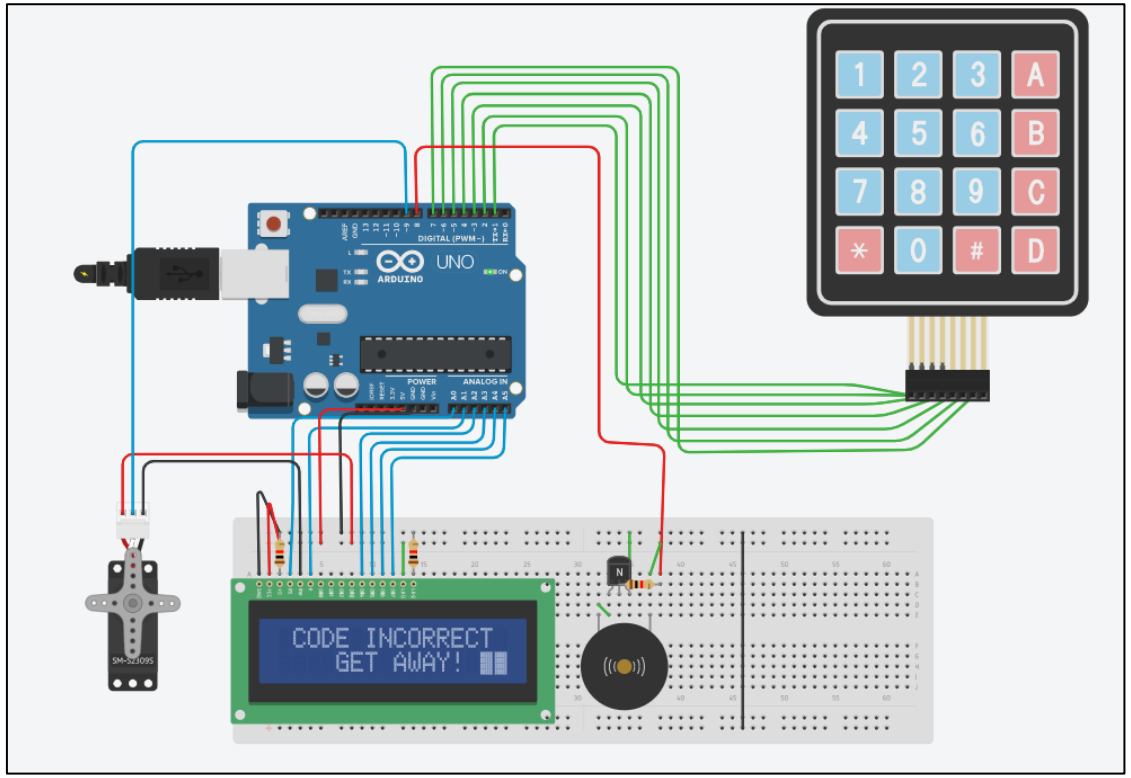
## BLOCK DIAGRAM:-

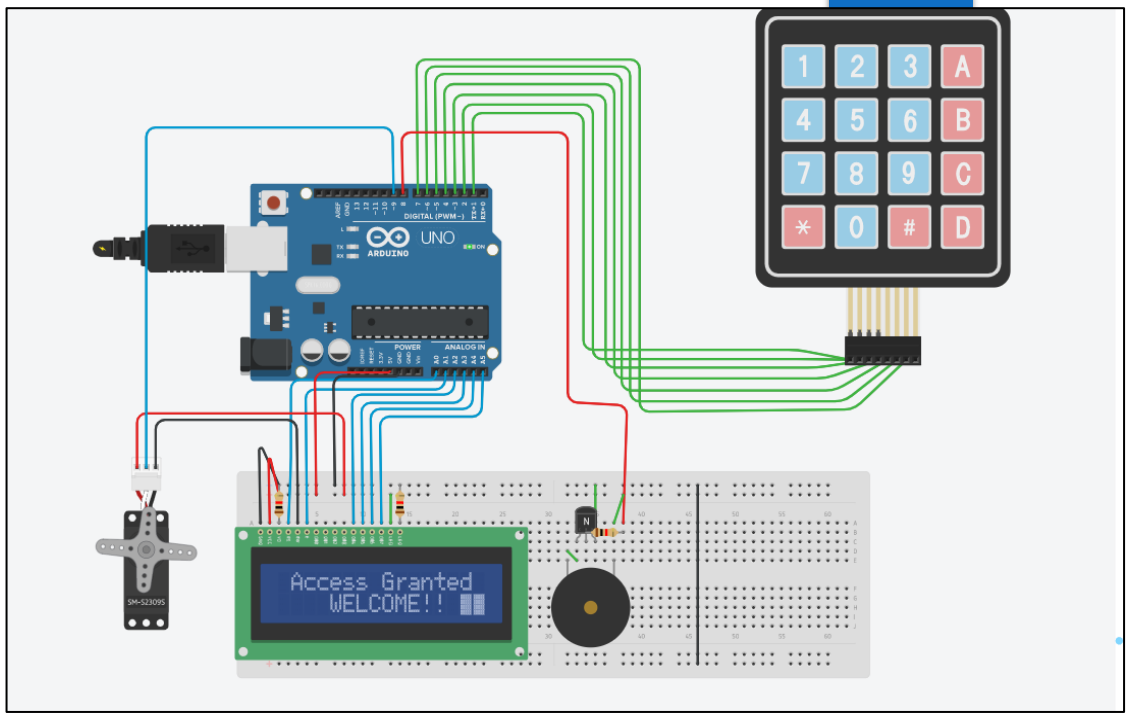


# OUTPUT:

- **When code entered is wrong,**

“CODE INCORRECT GET AWAY!” message is displayed & Buzzer Starts to make sound




- **When code entered is right,**

“ACCESS GRANTED WELCOME!” message is displayed


Thank You