Microprocessor and Computer Architecture Laboratory

UE19CS256

4th Semester, Academic Year 2020-21

Date: 28/3/2021

Name: Suhan.B.Revankar	SRN: PES2UG19CS412	Section: G

Week#____8____ Program Number: ____1____

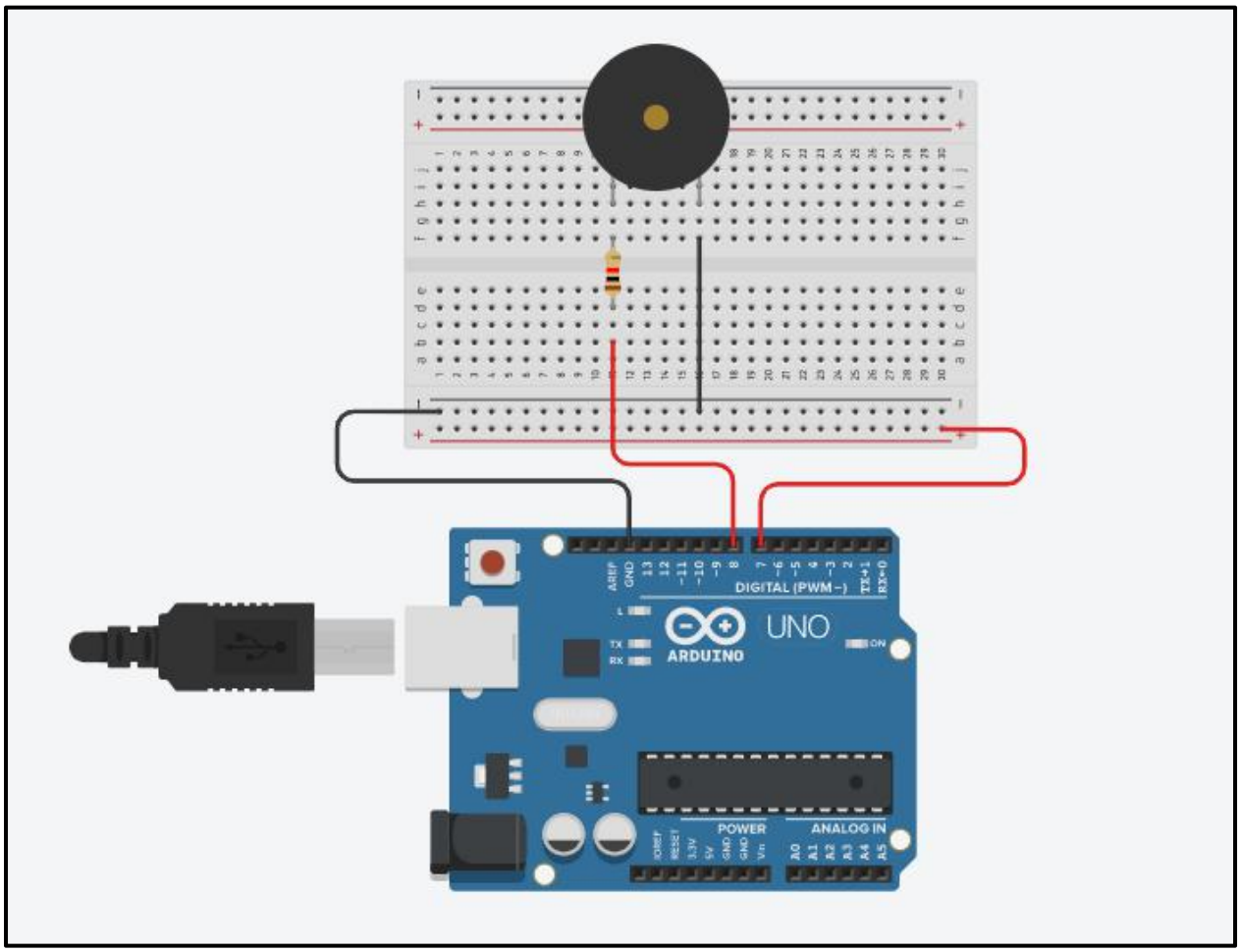
Implement a Buzzer with Arduino Simulation in Tinkercad

Arduino Code

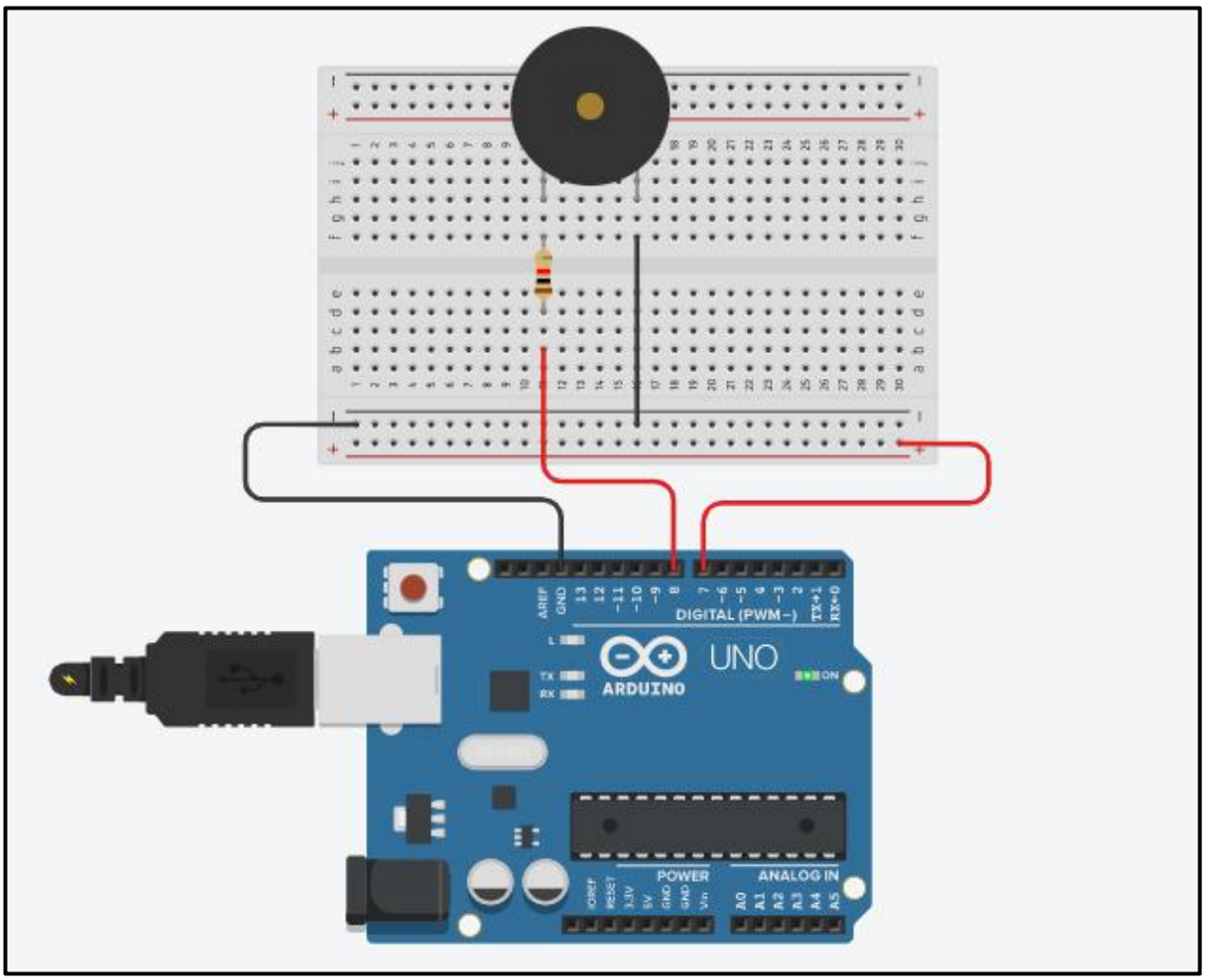
```
1  int pin = 8;
2  void setup() {
3    pinMode(pin, OUTPUT);
4  }
5
6  void loop(){
7      tone(pin, 2200, 10);
8      delay(1000);
9  }
```

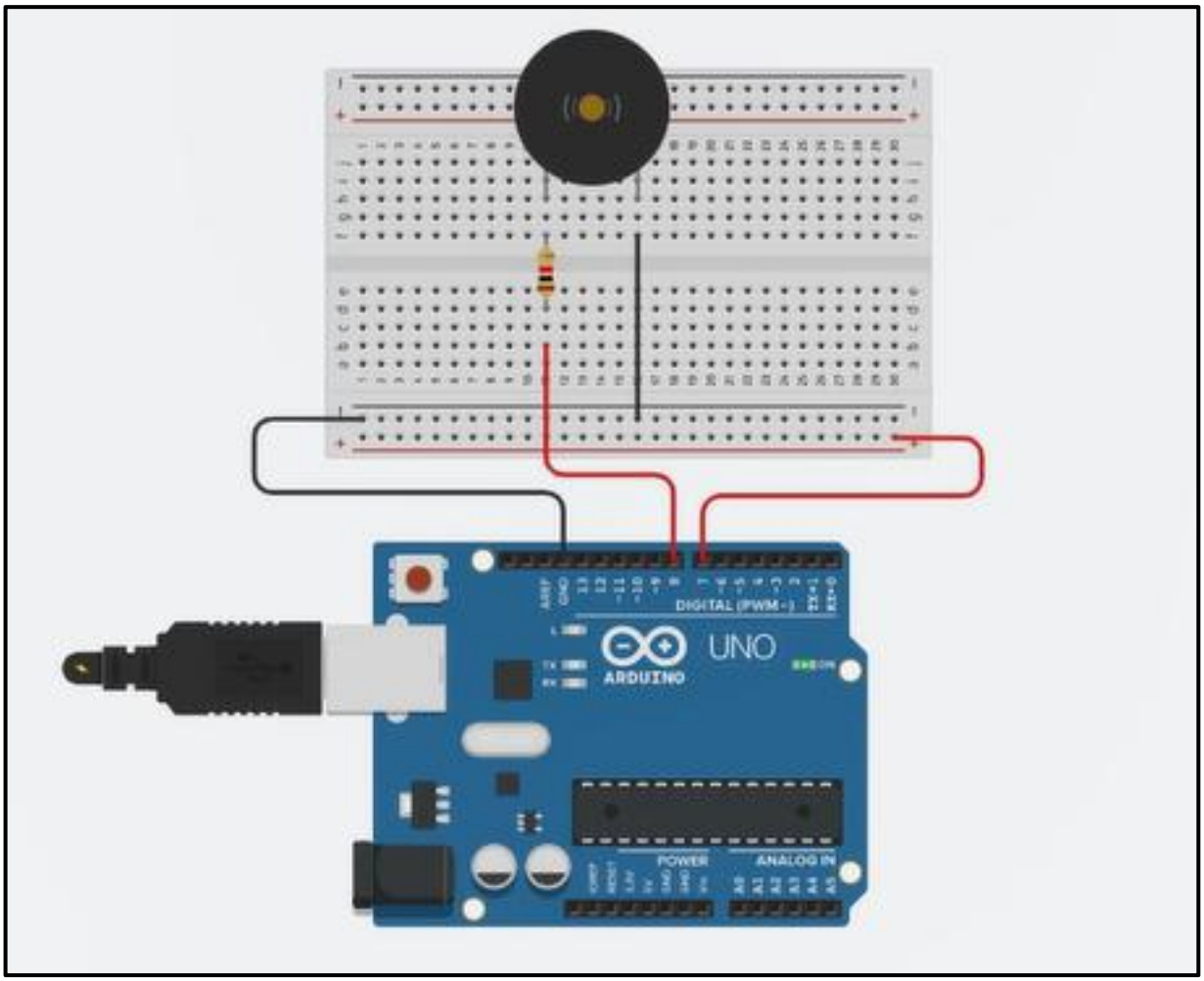
Output Screen Shot

The finalised circuit:



Functioning:




DIGITAL (PWM~)
UNO
ARDUINO
POWER
ANALOG IN

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Week#____8_____ Program Number: ____2____

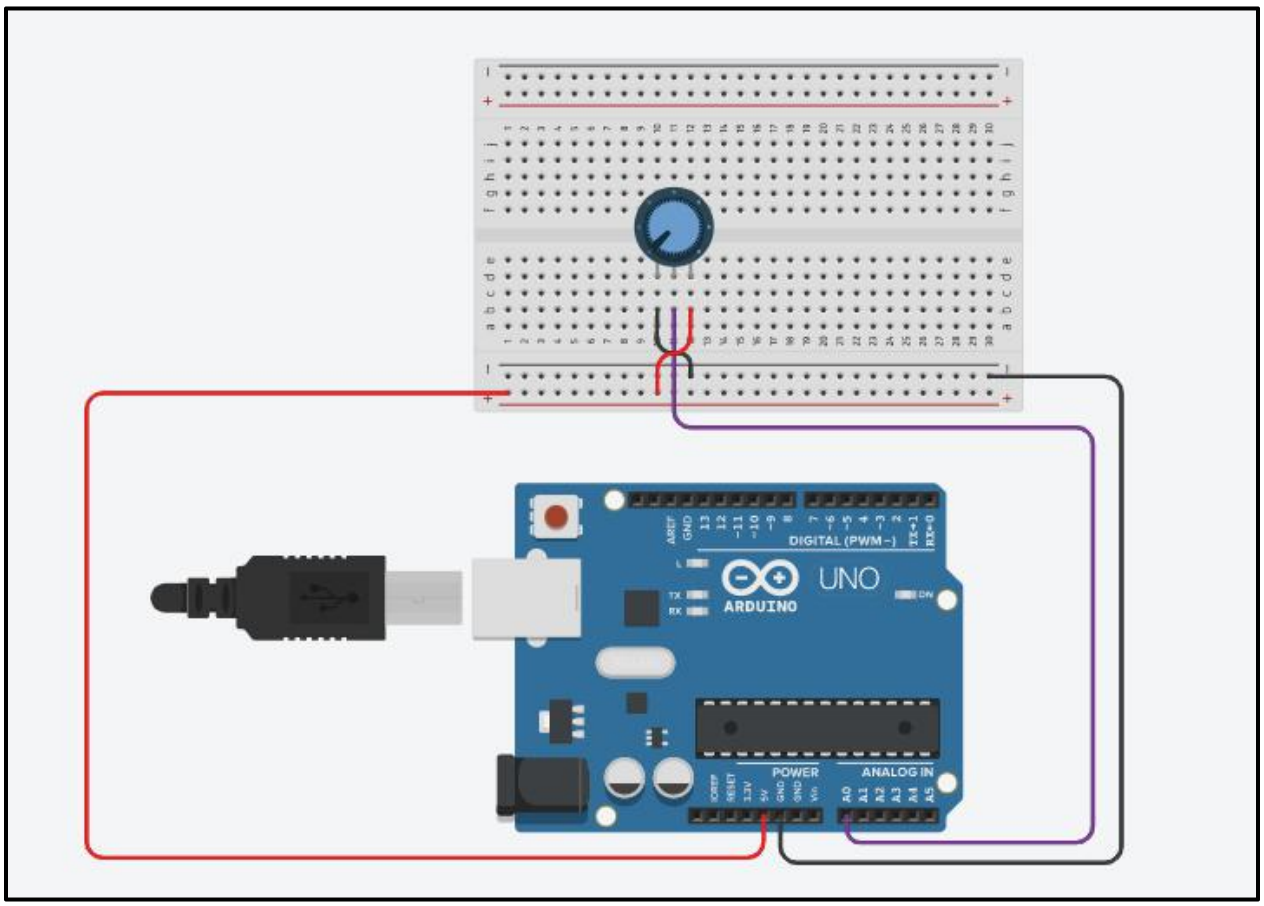
Implement a Tinkercad simulation that will read the value of a potentiometer and display it in serial monitor.

Arduino Code

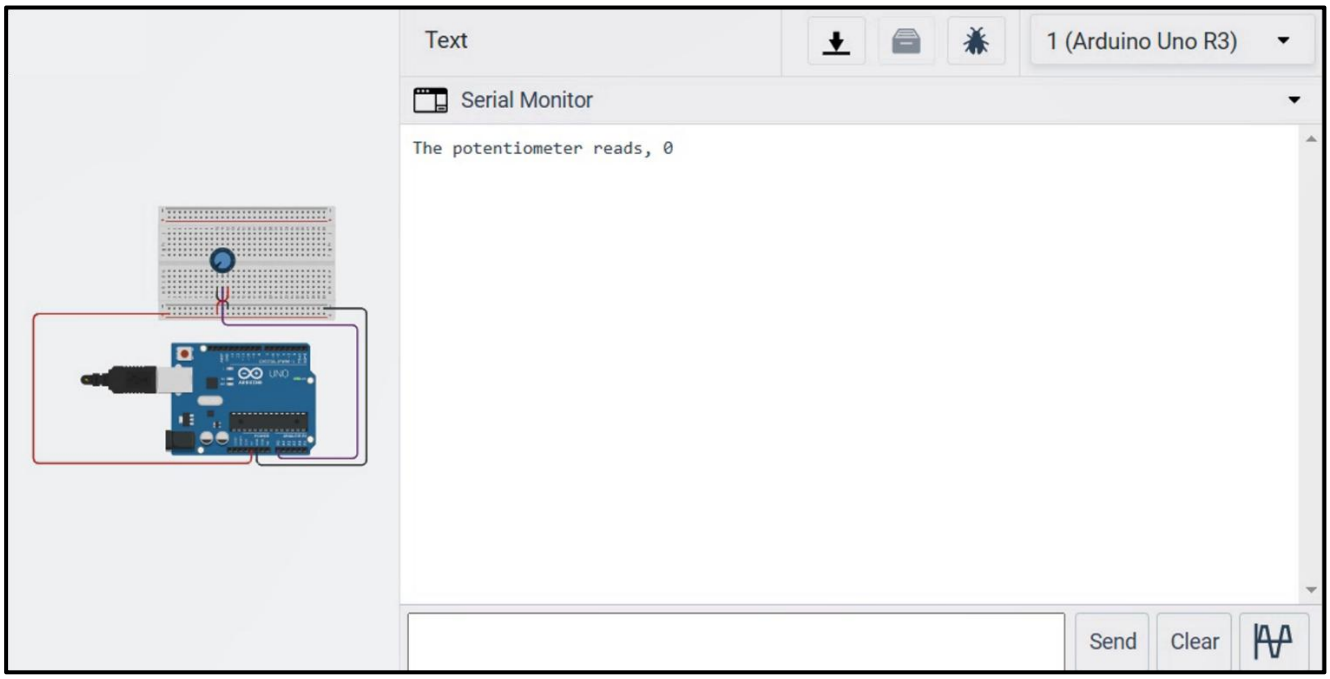
```
#define value 0
int oldval=20000;
void setup() {
  Serial.begin(9600);
}

void loop() {
  int val = analogRead(value);
  String stringOne = "The potentiometer reads, ";
  if(val!=oldval){
    oldval = val;
    Serial.println(stringOne + val);
  }
}
```

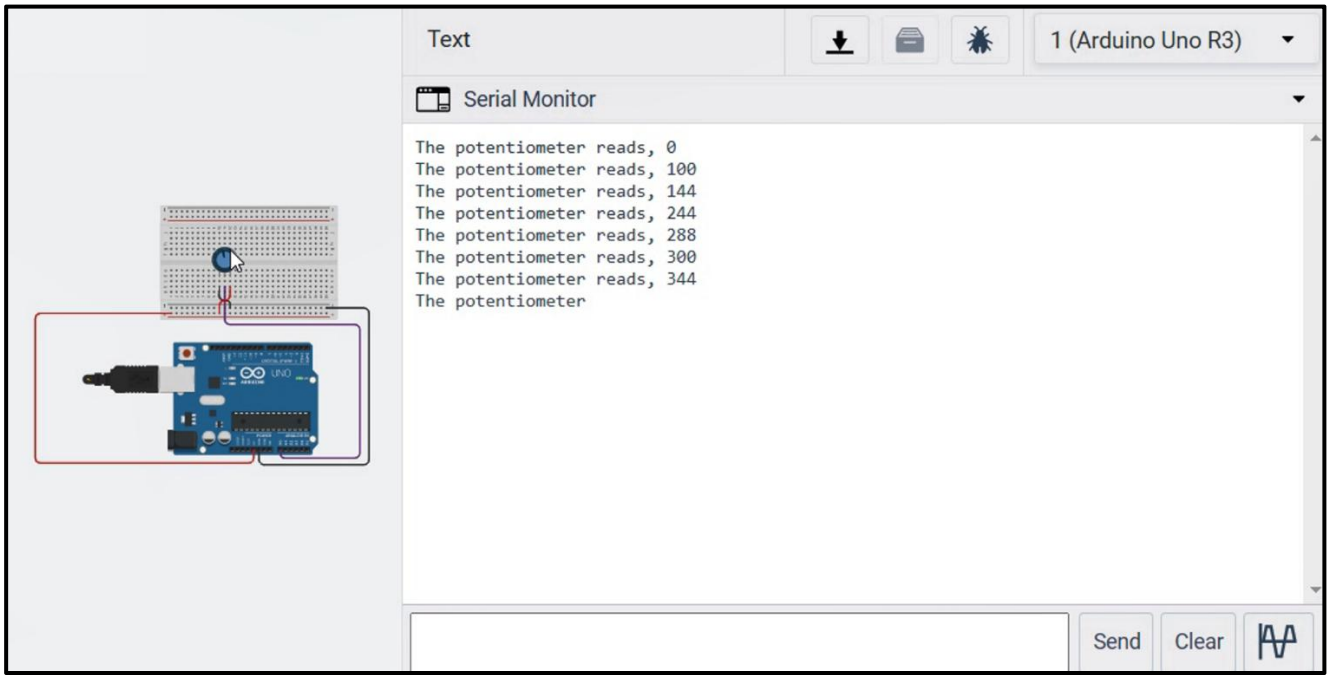
Output Screen Shot

The finalised circuit:



Functioning:





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Week#____8_____ Program Number: ____3____

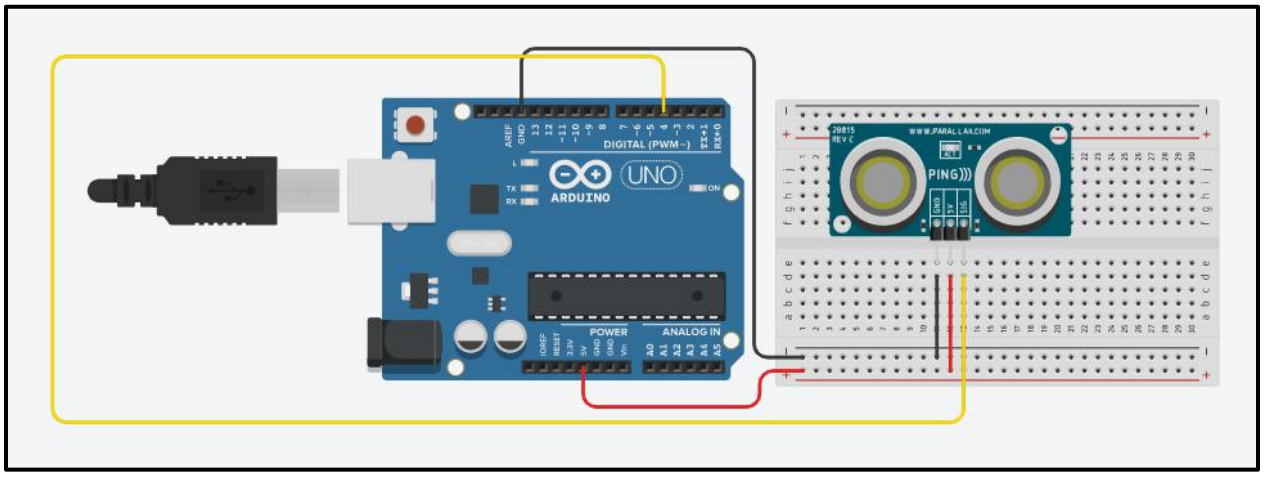
Implement a Tinkercad simulation to measure a distance with the HC-SR04 ultrasonic sensor and show the result on the serial monitor.

Arduino Code

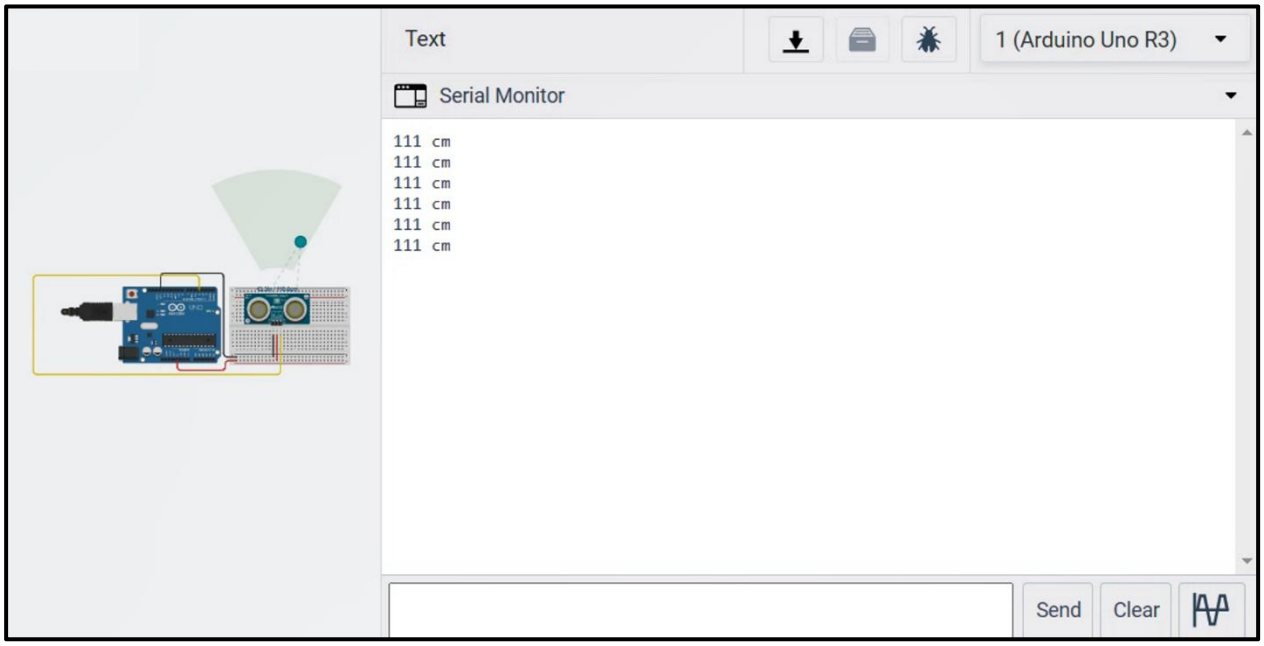
```
1  const int sensor_pin = 4;
2
3  void setup() {
4    Serial.begin(9600);
5  }
6
7  void loop() {
8    long duration, inches, cm;
9    pinMode(sensor_pin, OUTPUT);
10   digitalWrite(sensor_pin, LOW);
11   delayMicroseconds(2);
12   digitalWrite(sensor_pin, HIGH);
13   delayMicroseconds(5);
14   digitalWrite(sensor_pin, LOW);
15   pinMode(sensor_pin, INPUT);
16   duration = pulseIn(sensor_pin, HIGH);
17   cm = microsecondsToCentimeters(duration);
18   String centm=" cm";
19   Serial.println(cm+centm);
20
21   delay(100);
22 }
23
24 long microsecondsToCentimeters(long microseconds) {
25   return microseconds / 29 / 2;
26 }
27
```

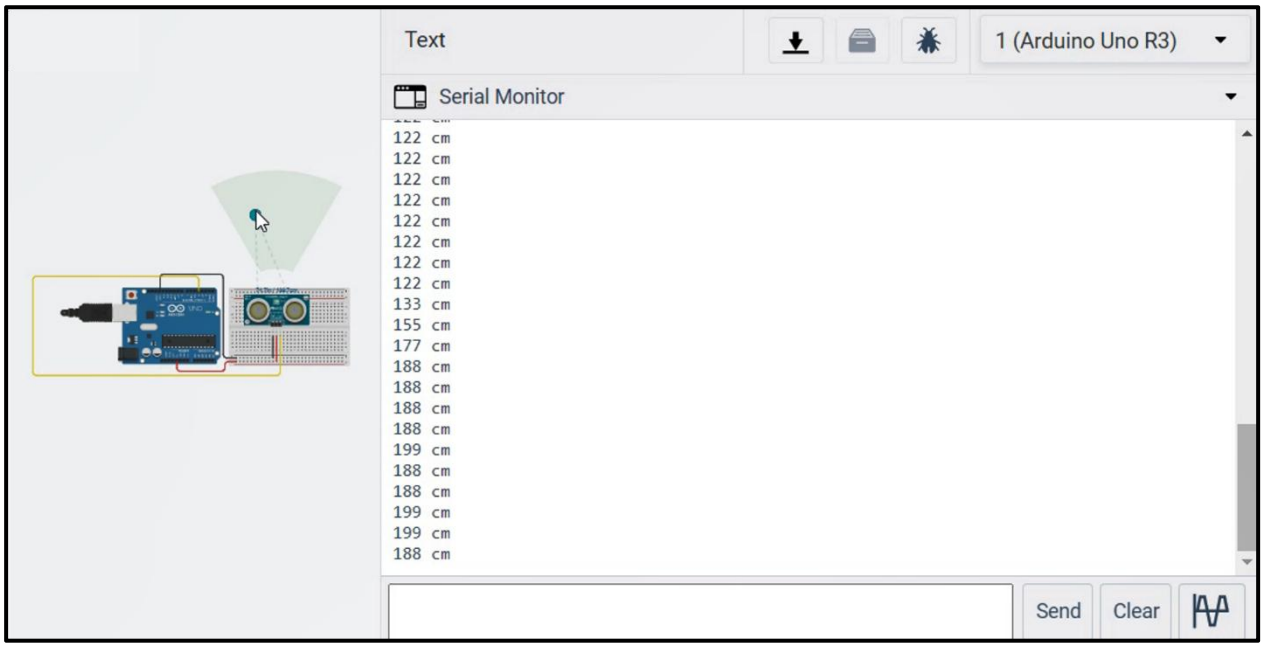
Output Screen Shot

The finalised circuit:



Functioning:





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Week#____8_____ Program Number: ___4___

Implement a Tinkercad simulation to sense movement in a room with a PIR motion sensor and Arduino's digital input.

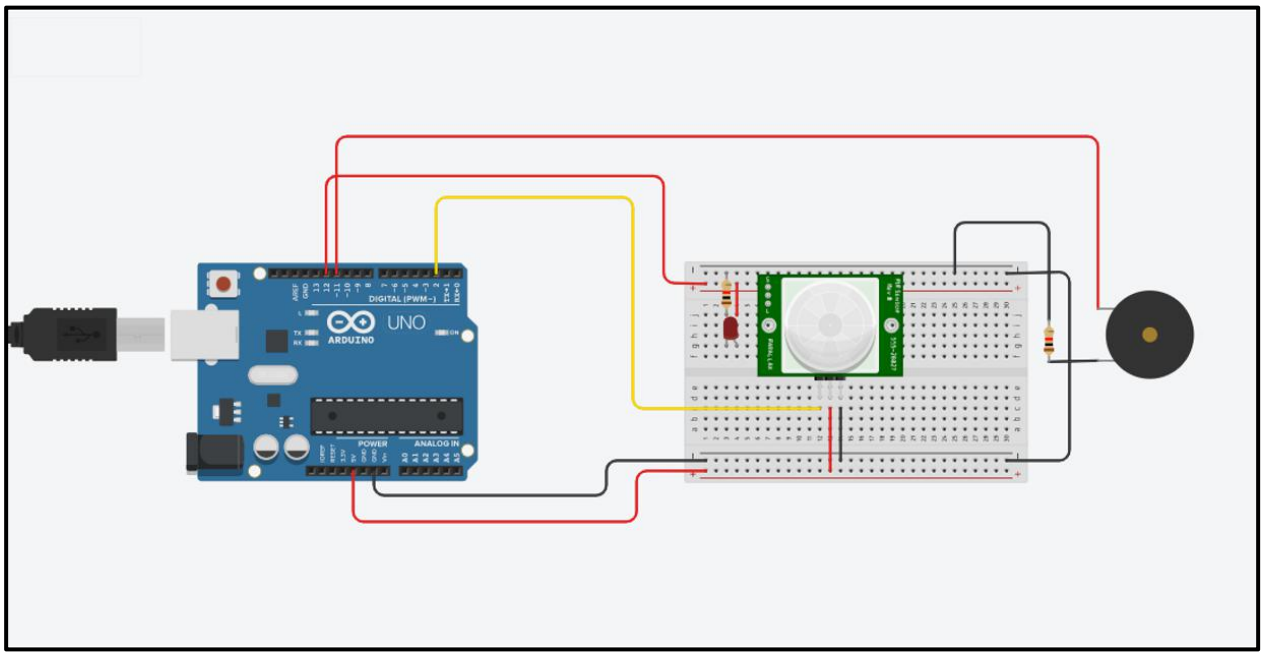
Arduino Code

```
int sensor_pin = 2;
int detect_motion = sensor_pin;
int led_pin = 12;
int buzzer_pin = 11;
void setup()
{
  pinMode(sensor_pin, INPUT);
  pinMode(led_pin, OUTPUT);
}

void loop()
{
  int val = digitalRead(detect_motion);
  if(val==1){
    digitalWrite(led_pin,LOW);
    tone(buzzer_pin, 220, 10);
  }
  else{
    digitalWrite(led_pin,HIGH);
    delay(1000);
    digitalWrite(led_pin,LOW);
    delay(1000);
  }
}
```

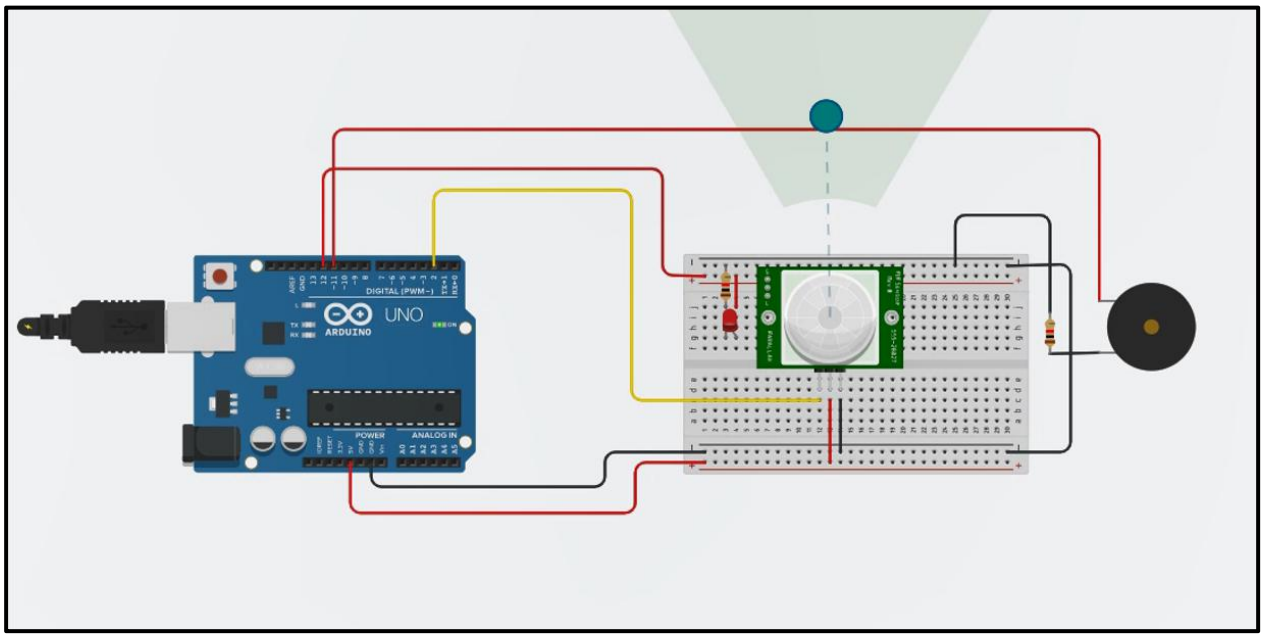
Output Screen Shot

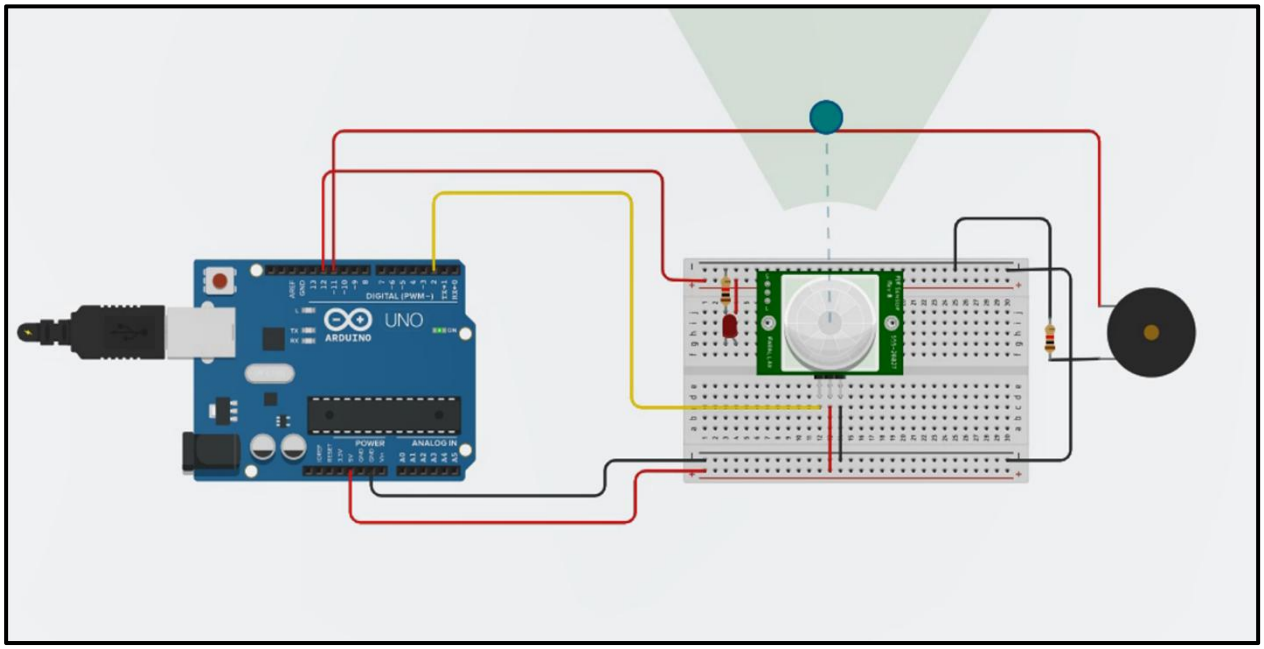
The finalised circuit:



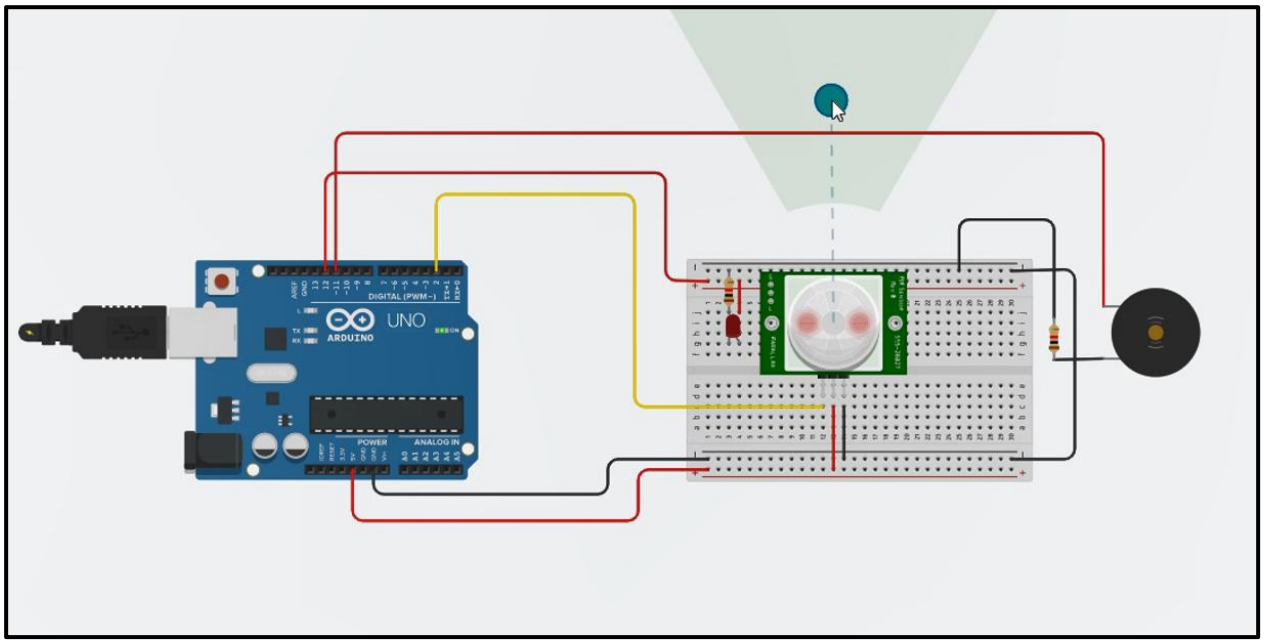
Functioning:

No motion detected (LED remains blinking):





Motion detected (LED switches off, and the buzzer rings out aloud):



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Week#____8_____ Program Number: ___5___

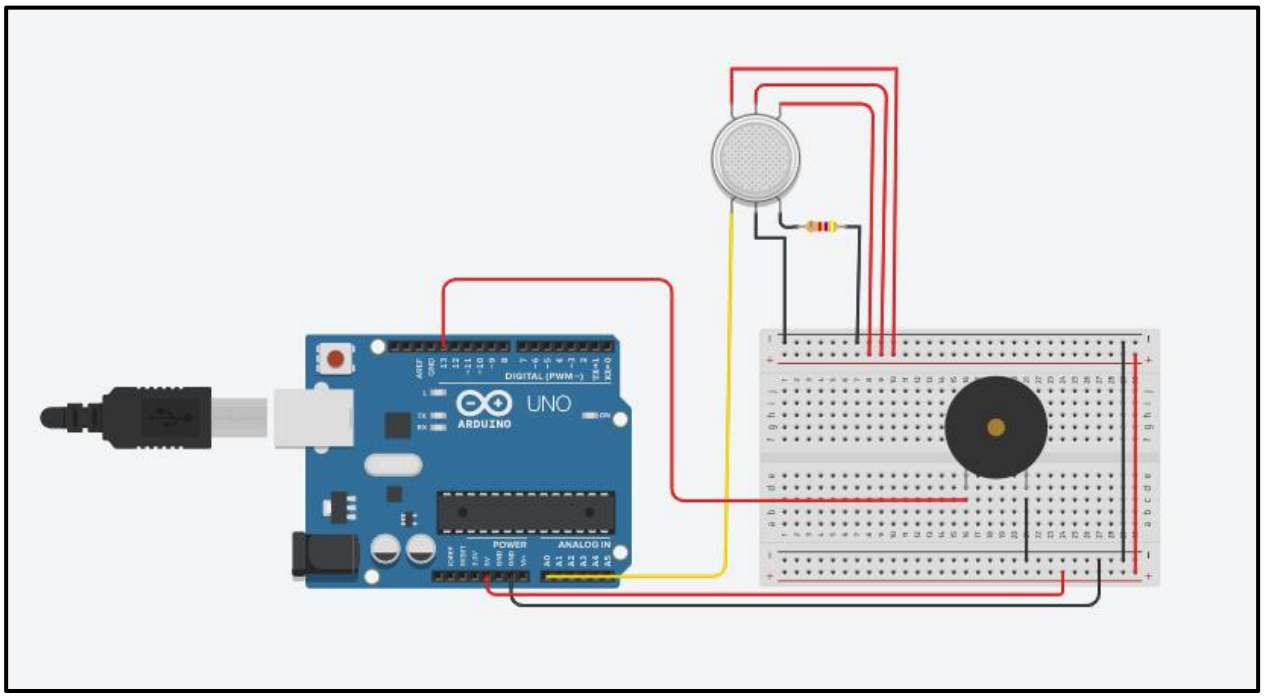
Implement a Tinkercad simulation for gas leakage detection with buzzer system using Arduino

Arduino Code

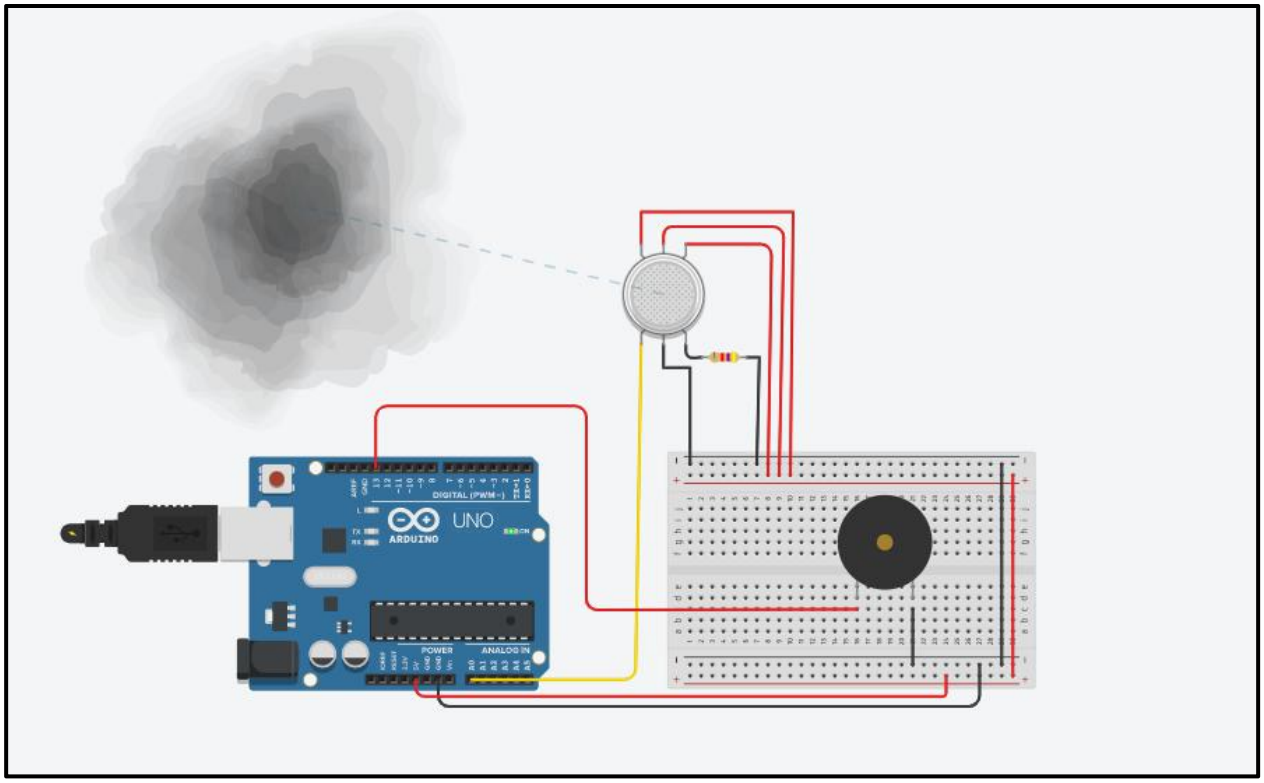
```
int sensor = A0;
int buzzer = 13;
void setup()
{
  pinMode(sensor,INPUT);
  pinMode(buzzer,OUTPUT);
  Serial.begin(9600);
}

void loop()
{
  int value = analogRead(sensor);
  Serial.print(value);
  Serial.println();
  if(value>=720){
    tone(buzzer, 220, 10);
  }
}
```

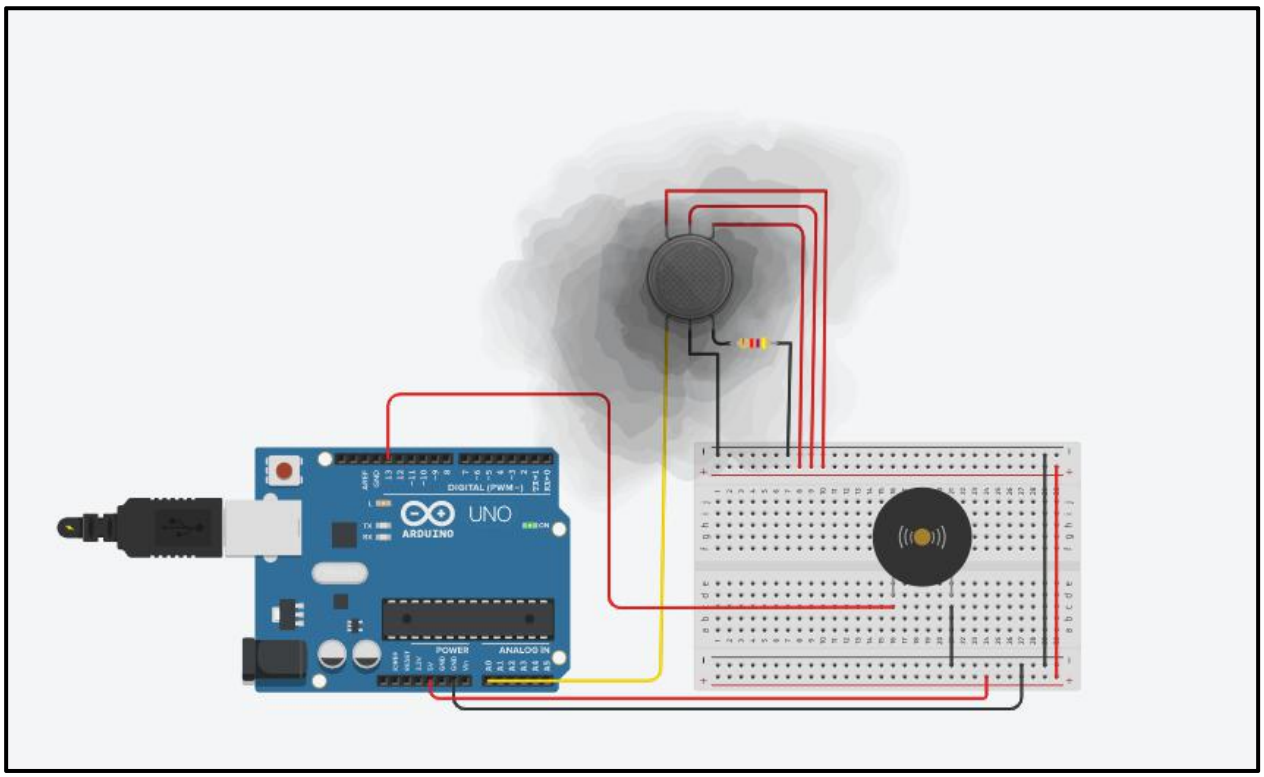
Output Screen Shot

The finalised circuit:



Functioning:





Disclaimer:

- The programs and output submitted is duly written, verified and executed by me.
- I have not copied from any of my peers nor from the external resource such as internet.
- If found plagiarized, I will abide with the disciplinary action of the University.

Signature:
Name: Suhan.B.Revankar
SRN: PES2UG19CS412
Section: G
Date: 28/3/2021