IBM NALAIYA THIRAN

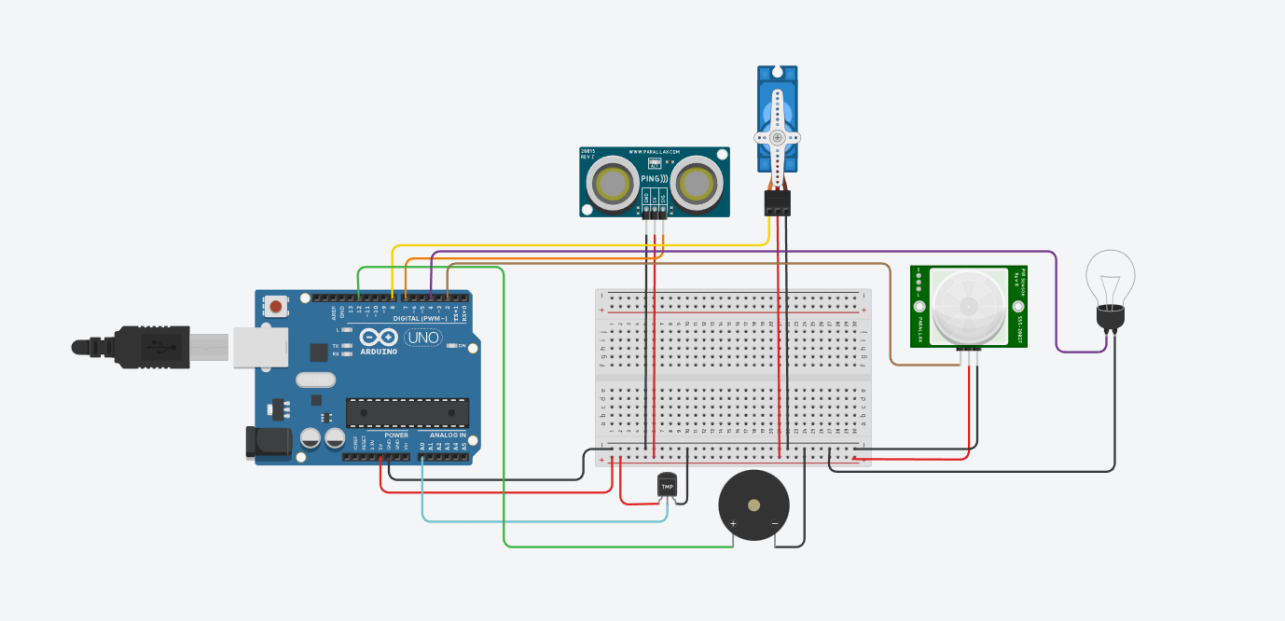
ASSIGNMENT – 1

Home Automation

Tinkercad Stimulation Link:

https://www.tinkercad.com/things/9eUiZ8aQOH8-exquisite-fyyran/editel?sharecode=nqDGBOxjmI9fwoFYoVJlrg-eL9NTtK2hIn3vY0AF1lo

Circuit Design:



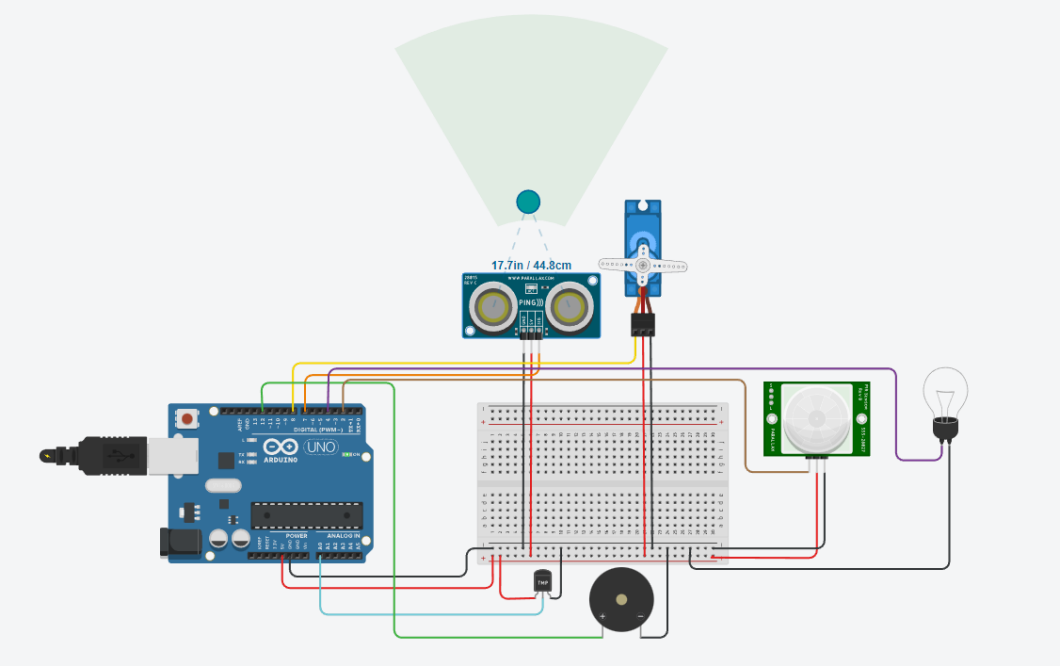
IBM Assignment 1

Component List

Name	Quantity	Component
U3	1	Arduino Uno R3
PING2	1	Ultrasonic Distance Sensor
SERVO2	1	Positional Micro Servo
U4	1	Temperature Sensor [TMP36]
PIEZO2	1	Piezo
PIR2	1	-20.65912942617615 , -228.49647575865148 , -201.02371635141708 , -120.7146911147783 PIR Sensor
L2	1	Light bulb

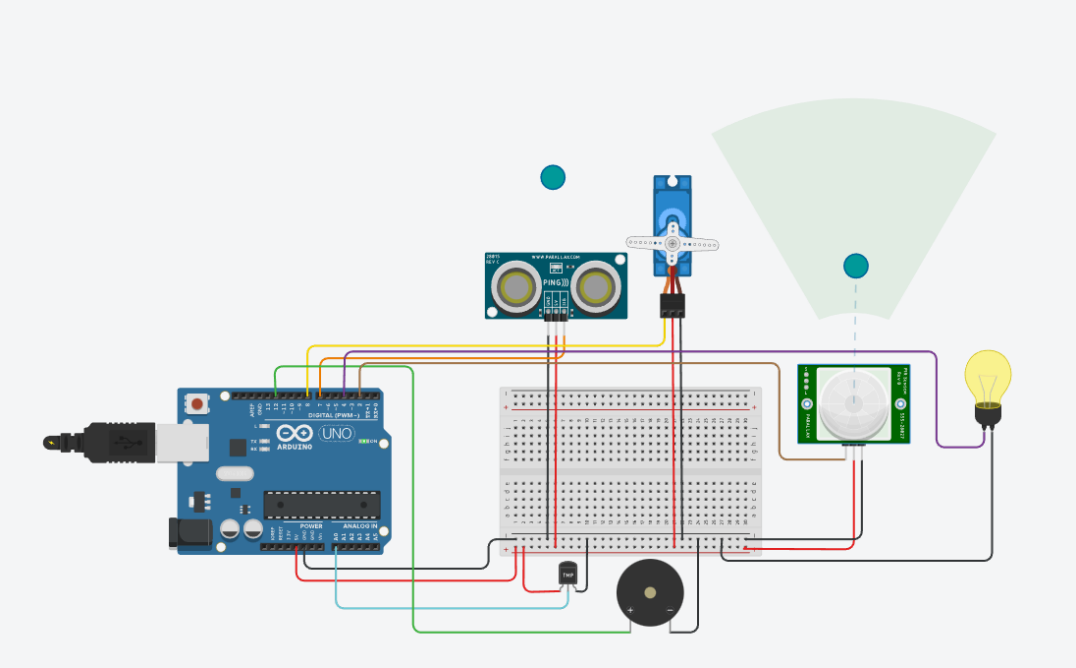
Ultrasonic sensor and Serve motor working:

The Ultrasonic sensor detects if a person is closer than 80 cm and opens the door for 5 seconds. Here, we have used Servo motor for simulation of door. After 5 seconds, the door will automatically close.



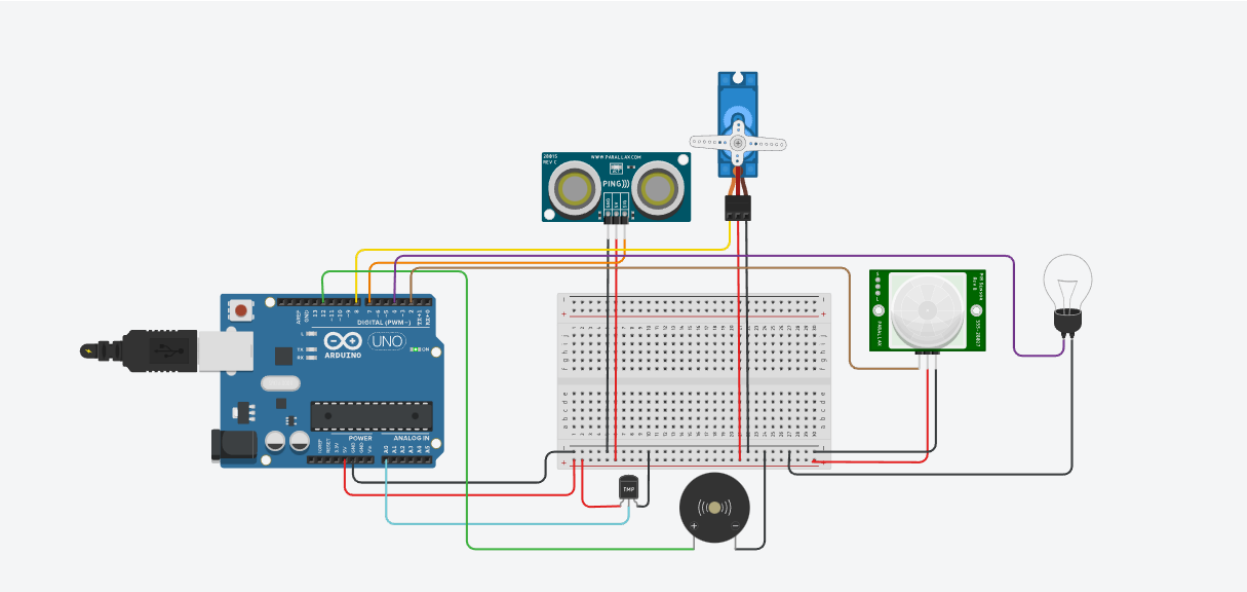
PIR sensor and Bulb working:

The PIR sensor can be fit in any room, if motion is detected then the light is turned on in that particular room. The light will turn off if there is no movement.



Temperature sensor and Buzzer working:

The Temperature sensor will detect the temperature and if it is more than 50 degrees Celsius, then the buzzer sound is turned on to alert the person.



Code:

```
#include<Servo.h>

const int ultPin = 7;

int servoPin = 8;


Servo servo1;


void setup() {
  Serial.begin(9600);
  servo1.attach(servoPin);
  pinMode(2,INPUT);
  pinMode(4,OUTPUT);
  pinMode(12,OUTPUT);
  pinMode(A0,INPUT);
  digitalWrite(2,LOW);
```

```
}

void loop() {

 long duration, inches, cm;

 //Sending the initial signal to capture disctance
 pinMode(ultPin, OUTPUT);
 digitalWrite(ultPin, LOW);
 delayMicroseconds(2);
 digitalWrite(ultPin, HIGH);
 delayMicroseconds(5);
 digitalWrite(ultPin, LOW);
 pinMode(ultPin, INPUT);
 duration = pulseIn(ultPin, HIGH);

 //Convert time into Distance
 cm = duration / 29 / 2;

 //Open the door for 5 seconds
 servo1.write(0);
 if(cm < 80)
 {
  servo1.write(90);
  delay(5000);
 }
 else
 {
  servo1.write(0);
```

```
  }

  //Read PIR sensor and turn on light based on motion
  int pir = digitalRead(2);
  if(pir == HIGH)
  {
    digitalWrite(4,HIGH);
    delay(1000);
  }
  else if(pir == LOW)
  {
    digitalWrite(4,LOW);
  }

  //Read Temperature and alert if the threshold exceeds using buzzer
  float value=analogRead(A0);
  float temperature=value*0.48;
  if(temperature > 80)
  {
    digitalWrite(12,HIGH);
  }
  else
  {
    digitalWrite(12,LOW);
  }
}
```