ASSIGNMENT-1:

SMART HOME AUTOMATION

Done by

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ASSIGNMENT THEME:

Build a Smart Home in Wokwi with minimum 2 Sensors, LED and Buzzer.

Ex: PIR Sensor for home security and Servo motor for Door Lock System.

PROJECT DESCRIPTION:

To build a Smart Home, here in my assignment I Use two sensors namely Ultrasonic Sensor and PIR Sensor. Using these two sensors, I design my Smart home for Theft Detection and Motion Sensing Process.

CASE-1: (THEFT DETECTION DEVICE)

I Use the Ultrasonic Sensor for detecting the theft. When ultrasonic sensor value becomes less than 200 m (Thief near the sensor), the buzzer and LED will turn ON and Shows "Unknown Person Enters into your house" and if he is not in a boundary, it indicates "Your home is Safe".

CASE-2: (MOTION SENSING DEVICE)

The PIR sensor detects the motion (Movement) of a body. if we stimulate the motion, the fan will turn ON (here instead of fan, I use LED) and if there is not any motion is detected, the fan (LED) will automatically turn OFF.
For Example: If we enters into a room, the motion is detected and automatically the Fan (LED) will turn ON.

APPARATUS REQUIRED:

The following are the apparatus required for building this assignment. Such as

- Wokwi Software
- Arduino UNO
- Ultrasonic Sensor
- PIR Sensor
- LED-2
- Buzzer

CODING:

```
// ASSIGNMENT NO-1:
//Build a SMART HOME in WOKWI with minimum 2 Sensors, LED and Buzzer.

//ASSIGNMENT DESCRIPTION:
//Here I use Ultrasonic sensor and PIR sensor.
//In Smart home Automation, I Consider Theft detection and motion sensing devices in my smart home.

//CASE-1:(ULTRASONIC SENSOR)
// I Use the Ultrasonic Sensor as a THEFT DETECTION DEVICE. When ultrasonic sensor value becomes less than 200m, the buzzer and LED will turn ON and Shows "Unknown Person Enters into your house" and if it is not in a boundary, it indicates "Your home is Safe".
```

```
//CASE-2:(PIR SENSOR)
// The PIR sensor detects the motion (Movement) of a body. if we stimulate the
motion, the fan will turn ON (here instead of fan, I use LED) and if there is not
any motion is detected, the fan (LED) will automatically turn OFF.
// let us have a code here.


//define a variables
#define triggerPin 12
#define echoPin 13
#define ledPin1 2
#define speakerPin 10
#define pitch 262

double duration, distance;
#define ledPin2 6
#define inputPin 4
int pirState=LOW;
int val=0;

void setup() {
  //setup for sensor
  Serial.begin(9600);
  Serial.println("Theft Detection mode turn On");
  pinMode(triggerPin,OUTPUT);
  pinMode(echoPin,INPUT);

  //setup LED for buzzer
  pinMode(ledPin1, OUTPUT);

  //setup for speaker
  pinMode(speakerPin,OUTPUT);

  //setup LED for Motion Sensor
  pinMode(ledPin2,OUTPUT);
  pinMode(inputPin,INPUT);

}

void loop() {

  //CASE-1:
  // looping sensor
  digitalWrite(triggerPin,LOW);
  delayMicroseconds(2);
```

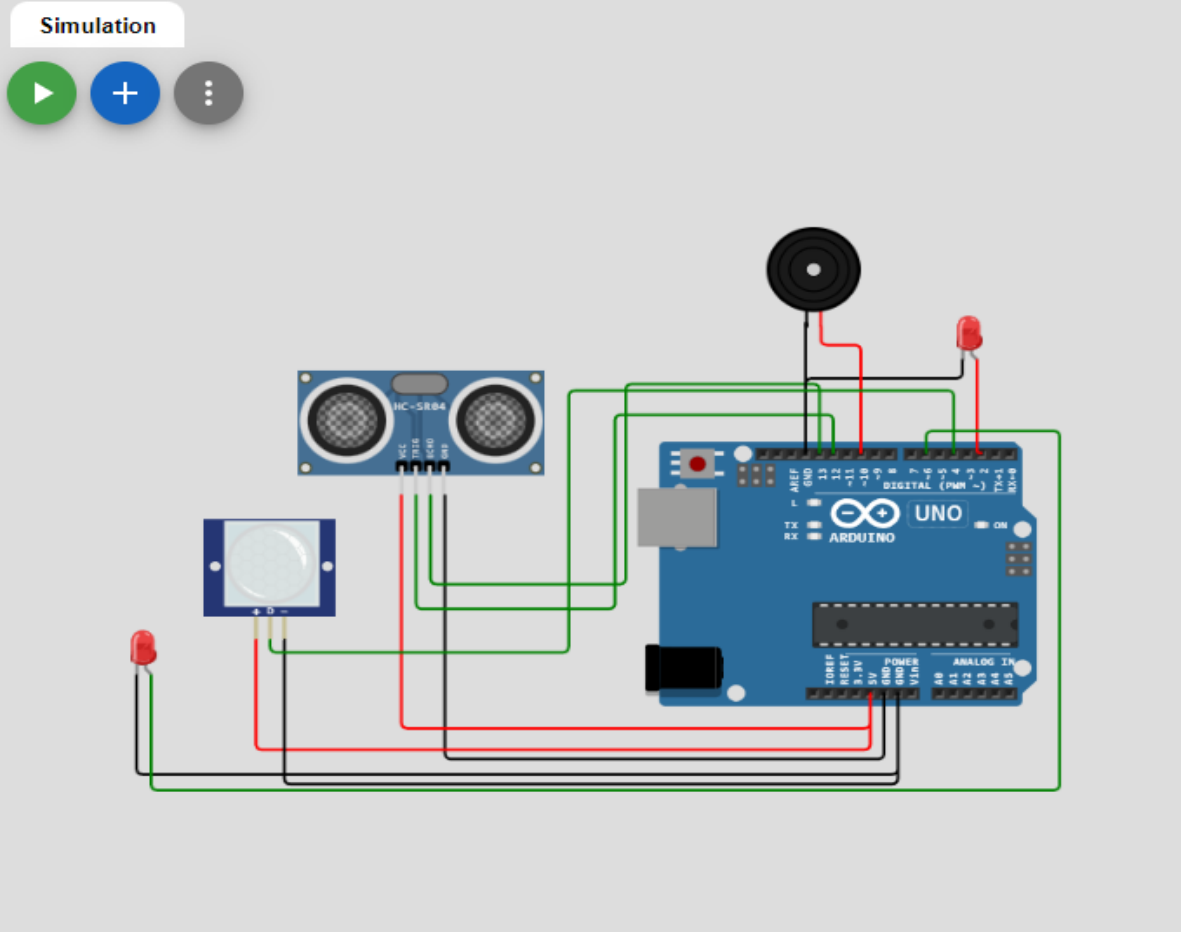
```
digitalWrite(triggerPin,HIGH);
delayMicroseconds(10);
digitalWrite(triggerPin,LOW);
delayMicroseconds(2);

//get duration
duration=pulseIn(echoPin,HIGH);

//calculate distance
distance=(duration/2)*0.0343;

//consider maximum width of the door=200 cm
if(distance<200){
  digitalWrite(ledPin1,HIGH);
  tone(speakerPin,pitch);
  delayMicroseconds(30000);
  Serial.println("Unknown person enter into your house");

  digitalWrite(ledPin1,LOW);
  noTone(speakerPin);
  delayMicroseconds(30000);

}
else{
  digitalWrite(ledPin1,LOW);
  noTone(speakerPin);
  Serial.println("Your home is safe");
}

//CASE-2:
//The PIR sensor detects the motion.
val=digitalRead(inputPin);
if(val==HIGH){
  digitalWrite(ledPin2,HIGH);
  if(pirState==LOW){
    Serial.println("Motion Detected");
    Serial.println("The Fan will turn On");
    pirState=HIGH;
  }
}
else{
  digitalWrite(ledPin2,LOW);
  if(pirState==HIGH){
    Serial.println("Motion Ended");
    Serial.println("The Fan will turn Off");
```

```
        pirState=LOW;
}
}
}
```

This is the source Code of my assignment. Here Both the case ie., (Theft Detection and Motion Sensing Process) Codes are integrate into a Single code as shown above.

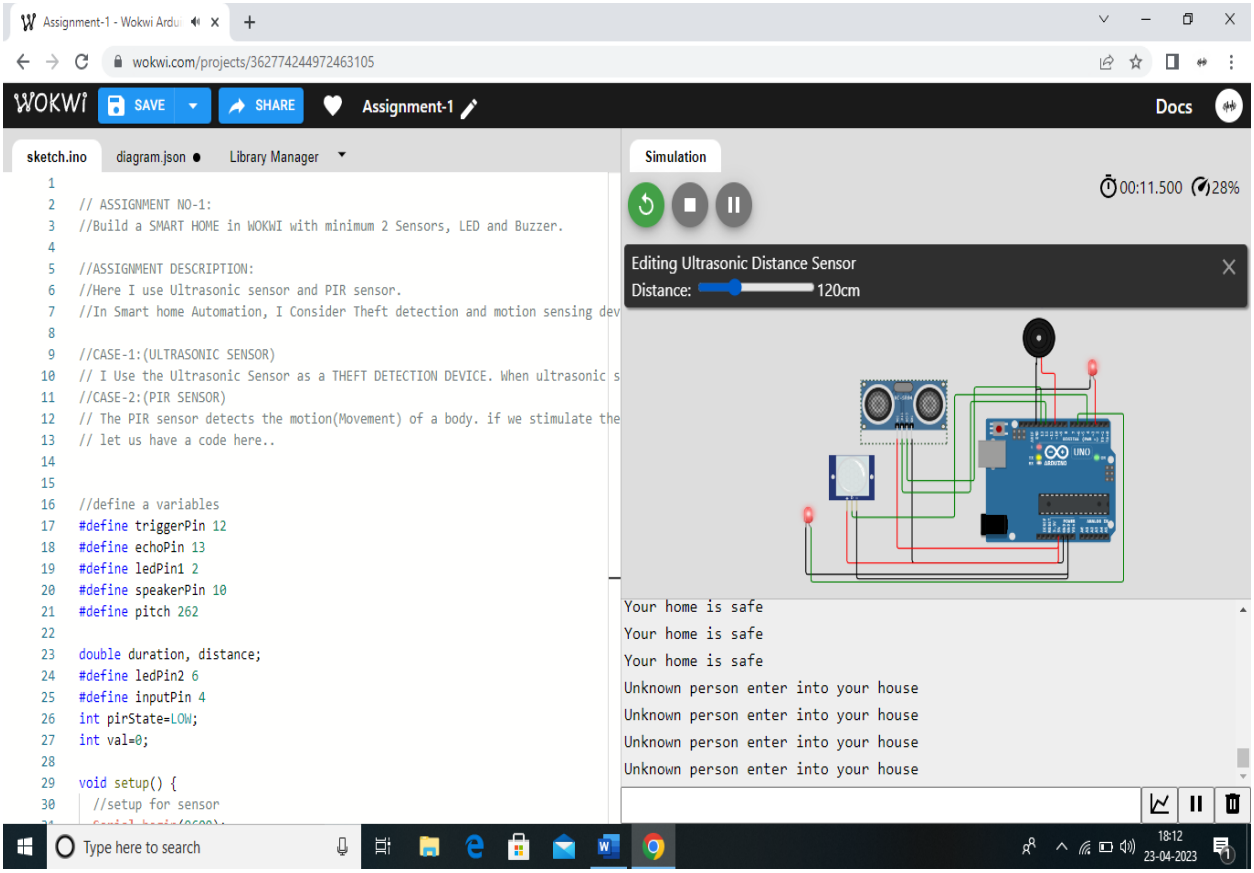
CONNECTIONS:

The Circuit Connections which I made for this assignment are shown in figure below.



OUTPUT:

The output of our assignment “SMART HOME AUTOMATION” using 2 sensors, LED and Buzzers are shown below.



REFERENCE:

For your reference, I attached the link of my assignment here.

https://wokwi.com/projects/362774244972463105

RESULT:

I have successfully completed my assignment “ SMART HOME AUTOMATION” in Wokwi platform using 2 Sensors, LED’s and Buzzers.