

```
#include <Servo.h>
```

```
int output1Value = 0;
```

```
int sen1Value = 0;
```

```
int sen2Value = 0;
```

```
int const gas_sensor = A1;
```

```
int const LDR = A0;
```

```
int limit = 400;
```

```
long readUltrasonicDistance(int triggerPin, int echoPin)
```

```
{
```

```
    pinMode(triggerPin, OUTPUT); // Clear the trigger
```

```
    digitalWrite(triggerPin, LOW);
```

```
    delayMicroseconds(2);
```

```
    // Sets the trigger pin to HIGH state for 10 microseconds
```

```
    digitalWrite(triggerPin, HIGH);
```

```
    delayMicroseconds(10);
```

```
    digitalWrite(triggerPin, LOW);
```

```
    pinMode(echoPin, INPUT);
```

```
    // Reads the echo pin, and returns the sound wave travel time in microseconds
```

```
    return pulseIn(echoPin, HIGH);
```

```
}
```

```
Servo servo_7;
```

```
void setup()
```

```
{
```

```
    Serial.begin(9600);           //initialize serial communication
```

```
    pinMode(A0, INPUT);           //LDR
```

```
    pinMode(A1, INPUT);           //gas sensor
```

```
    pinMode(13, OUTPUT);           //connected to relay
```

```
servo_7.attach(7, 500, 2500); //servo motor
```

```
pinMode(8,OUTPUT);          //signal to piezo buzzer
```

```
pinMode(9, INPUT);          //signal to PIR
```

```
pinMode(10, OUTPUT);         //signal to npn as switch
```

```
pinMode(4, OUTPUT);          //Red LED
```

```
pinMode(3, OUTPUT);          //Green LED
```

```
}
```

```
void loop()
```

```
{
```

```
    //-----light intensity control-----//
```

```
//-----
```

```
    int val1 = analogRead(LDR);
```

```
    if (val1 > 500)
```

```
        {
```

```
            digitalWrite(13, LOW);
```

```
            Serial.print("Bulb ON = ");
```

```
            Serial.print(val1);
```

```
        }
```

```
    else
```

```
        {
```

```
            digitalWrite(13, HIGH);
```

```
            Serial.print("Bulb OFF = ");
```

```
            Serial.print(val1);
```

```
        }
```

```
//-----
```

```
    //----- light & fan control -----//
```

```

//-----

sen2Value = digitalRead(9);
if (sen2Value == 0)
{
    digitalWrite(10, LOW); //npn as switch OFF
    digitalWrite(4, HIGH); // Red LED ON,indicating no motion
    digitalWrite(3, LOW); //Green LED OFF, since no Motion detected
    Serial.print("  || NO Motion Detected  ");
}

if (sen2Value == 1)
{
    digitalWrite(10, HIGH); //npn as switch ON
    delay(5000);
    digitalWrite(4, LOW); // RED LED OFF
    digitalWrite(3, HIGH); //GREEN LED ON , indicating motion detected
    Serial.print("  || Motion Detected!  ");
}

//-----

// ----- Gas Sensor -----//

//-----

int val = analogRead(gas_sensor); //read sensor value
Serial.print(" || Gas Sensor Value = ");
Serial.print(val); //Printing in serial monitor
//val = map(val, 300, 750, 0, 100);
if (val > limit)
{
    tone(8, 650);
}

```

```

        delay(300);

        noTone(8);

//-----
    //----- servo motor -----//
//-----

sen1Value = 0.01723 * readUltrasonicDistance(6, 6);

if (sen1Value < 100)
{
    servo_7.write(90);
    Serial.print("  || Door Open! ; Distance = ");
    Serial.print(sen1Value);
    Serial.print("\n");

}
else
{
    servo_7.write(0);
    Serial.print("  || Door Closed! ; Distance = ");
    Serial.print(sen1Value);
    Serial.print("\n");
}

delay(10); // Delay a little bit to improve simulation performance
}

```

SIMULATION LINK:

<https://www.tinkercad.com/things/IN7QR1Zfnpf-smart-home/editel>

