



```
#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);
```

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// 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);

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    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)

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{
    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
}

```