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```
#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(3000);
            digitalWrite(4, LOW); // RED LED OFF
```

```
                    digitalWrite(3, HIGH);//GREEN LED ON , indicating motion detected
                  Serial.print("     || Motion Detected!       " );
                    }
           delay(300);


          //---------------------------------------------------------------
                // ------- 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
}
```