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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
```

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                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
}
```