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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
}
```