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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
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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    ");
    }
}

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    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 = ");

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```
    Serial.print(sen1Value);  
    Serial.print("\n");  
}  
delay(10); // Delay a little bit to improve simulation performance  
}
```