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ASSIGNMENT 1-HOME AUTOMATION

PROGRAM:

```
#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
```

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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);
    }

    //-----

```

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//----- 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
}

```

OUTPUT:

