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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
```

```

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
}

```

**OUTPUT:**

