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ASSIGNMENT 1

SOURCE CODE:

```
#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);
    }
}

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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
}

```

