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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:

