

HOME AUTOMATION ASSIGNMENT 1

TEAM ID: PNT2022TMID41546

```
#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(5000);

digitalWrite(4, LOW); // RED LED OFF

digitalWrite(3, HIGH); //GREEN LED ON , indicating motion detected

Serial.print(" || Motion Detected! ");

}

```

//-----

// ----- 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  
}
```