

ASSIGNMENT 1

| | |
|--------------|------------------------------------------------------|
| Date | 28 September 2022 |
| Team ID | PNT2022TMID10108 |
| Project Name | Industry Specific Intelligent Fire Management System |

```
#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(sen1 Value);

        Serial.print("\n");

    }

    delay(10); // Delay a little bit to improve simulation performance

}

```

