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ASSIGNMENT – I

```
#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
}

```