```
1 #include <Servo.h>
2
3 int output1Value = 0;
4 int sen1Value = 0;
5 int sen2Value = 0;
6 int const gas_sensor = A1;
7 int const LDR = A0;
8 int limit = 400;
9 long readUltrasonicDistance(int triggerPin, int echoPin)
10 {
11   pinMode(triggerPin, OUTPUT);  // Clear the trigger
12   digitalWrite(triggerPin, LOW);
13   delayMicroseconds(2);
14 // Sets the trigger pin to HIGH state for 10 microseconds
15   digitalWrite(triggerPin, HIGH);
16   delayMicroseconds(10);
17   digitalWrite(triggerPin, LOW);
18   pinMode(echoPin, INPUT);
19   // Reads the echo pin, and returns the sound wave travel time in microseconds
20   return pulseIn(echoPin, HIGH);
21 }
22 Servo servo_7;
23 void setup()
24 {
25     Serial.begin(9600);          //initialize serial communication
26
27   pinMode(A0, INPUT);          //LDR
28   pinMode(A1,INPUT);           //gas sensor
29   pinMode(13, OUTPUT);         //connected to relay
30   servo_7.attach(7, 500, 2500); //servo motor
31   pinMode(8,OUTPUT);           //signal to piezo buzzer
32   pinMode(9, INPUT);           //signal to PIR
33   pinMode(10, OUTPUT);         //signal to npn as switch
34   pinMode(4, OUTPUT);          //Red LED
35   pinMode(3, OUTPUT);          //Green LED
36 }
37 void loop()
38 {
39     //------light intensity control------//
40 //----------------------------------------------------------------
41     int val1 = analogRead(LDR);
```

```
41      int val1 = analogRead(LDR);
42    if (val1 > 500)
43        {
44          digitalWrite(13, LOW);
45      Serial.print("Bulb ON = ");
46      Serial.print(val1);
47        }
48    else
49        {
50          digitalWrite(13, HIGH);
51       Serial.print("Bulb OFF = ");
52      Serial.print(val1);
53        }
54  //-----------------------------------------------------------
55
56          //------ light & fan control --------//
57  //-----------------------------------------------------------
58
59    sen2Value = digitalRead(9);
60    if (sen2Value == 0)
61        {
62          digitalWrite(10, LOW); //npn as switch OFF
63          digitalWrite(4, HIGH); // Red LED ON,indicating no motion
64          digitalWrite(3, LOW); //Green LED OFF, since no Motion detected
65      Serial.print("     || NO Motion Detected    " );
66        }
67    if (sen2Value == 1)
68        {
69          digitalWrite(10, HIGH);//npn as switch ON
70      delay(3000);
71          digitalWrite(4, LOW); // RED LED OFF
72          digitalWrite(3, HIGH);//GREEN LED ON , indicating motion detected
73      Serial.print("        || Motion Detected!      " );
74        }
75    delay(300);
76
77  //-----------------------------------------------------------
78
79        // ------- Gas Sensor --------//
80
81  //-----------------------------------------------------------
```

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```
81 //---------------------------------------------------------------
82
83
84 int val = analogRead(gas_sensor);         //read sensor value
85   Serial.print("|| Gas Sensor Value = ");
86   Serial.print(val);                      //Printing in serial monitor
87 //val = map(val, 300, 750, 0, 100);
88   if (val > limit)
89      {
90         tone(8, 650);
91      }
92     delay(300);
93     noTone(8);
94
95 //---------------------------------------------------------------
96
97
98     //-------   servo motor  --------//
99
100
101 //---------------------------------------------------------------
102
103   sen1Value = 0.01723 * readUltrasonicDistance(6, 6);
104   if (sen1Value < 100)
105      {
106         servo_7.write(90);
107    Serial.print("         || Door Open!  ; Distance = ");
108    Serial.print(sen1Value);
109
110   Serial.print("\n");
111
112      }
113   else
114
115      {
116
117         servo_7.write(0);
118    Serial.print("       || Door Closed! ; Distance =  ");
119    Serial.print(sen1Value);
120    Serial.print("\n");
121   }
```

```
86    Serial.print(val);                    //Printing in serial monitor
87 //val = map(val, 300, 750, 0, 100);
88    if (val > limit)
89       {
90          tone(8, 650);
91       }
92      delay(300);
93      noTone(8);
94
95  //----------------------------------------------------------------
96
97
98      //-------  servo motor  --------//
99
100
101  //----------------------------------------------------------------
102
103    sen1Value = 0.01723 * readUltrasonicDistance(6, 6);
104    if (sen1Value < 100)
105       {
106          servo_7.write(90);
107     Serial.print("       || Door Open!  ; Distance = ");
108     Serial.print(sen1Value);
109
110     Serial.print("\n");
111
112       }
113    else
114
115       {
116
117          servo_7.write(0);
118     Serial.print("      || Door Closed! ; Distance =  ");
119     Serial.print(sen1Value);
120     Serial.print("\n");
121    }
122
123    delay(10); // Delay a little bit to improve simulation performance
124
125
126 }
```