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ASSIGNMENT 1

SOURCE CODE:

```
#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
}
```