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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;
```

```arduino
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
}
```