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ASSIGNMENT 1-HOME AUTOMATION

PROGRAM:

```
#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
}
```

OUTPUT: