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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()

{
```

```arduino
  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: