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: