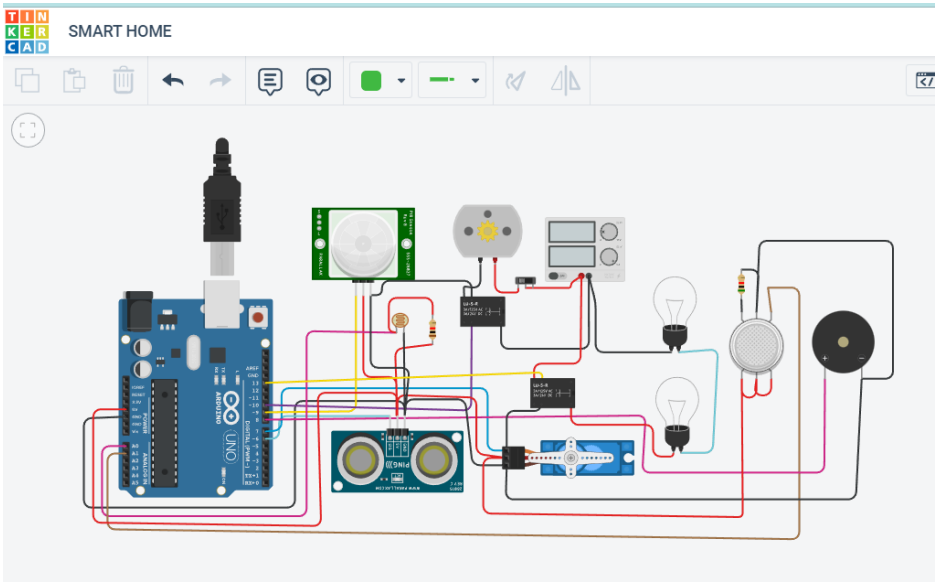
IBM NALAIYATHIRAN

ASSIGNMENT-1

SMART HOME DESIGN IN TINKERCAD



CODE:

```
#include <Servo.h>

int output1Value = 0;

int sen1Value = 0;

int sen2Value = 0;

int constgas_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(5000);
        digitalWrite(4, LOW); // RED LED OFF
        digitalWrite(3, HIGH);//GREEN LED ON , indicating motion
detected
Serial.print("       || Motion Detected!      " );
        }



//-------------------------------------------------------------
       // ------- 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
}
```