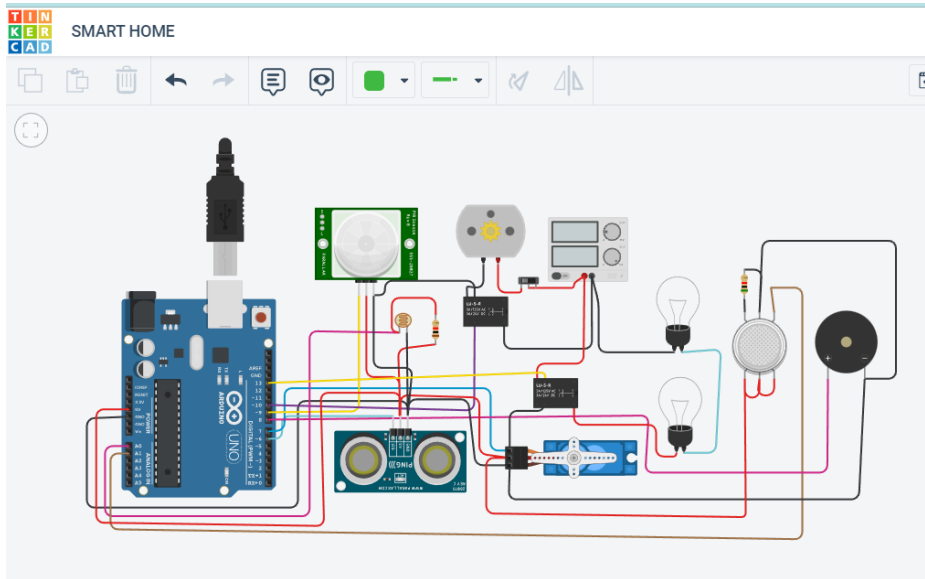


# IBM NALAIYATHIRAN

## 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  
}
```