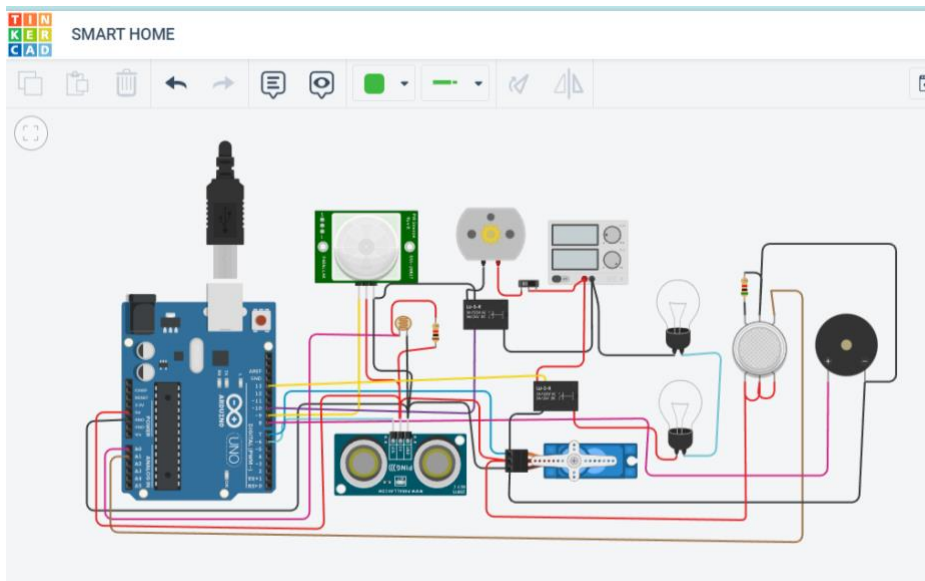


IBM NALAIYATHIRAN

ASSIGNMENT-1

SMART HOME DESIGN IN TINKERCAD



TINKERCAD LINK:

<https://www.tinkercad.com/things/ad5KcBQ4A8a>

CODE:

```
#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(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  
}
```