WOKWI SIMULATION

Team ID	PNT2022TMID45922
Project Name	Project –Gas leakage monitoring and alerting system for industries

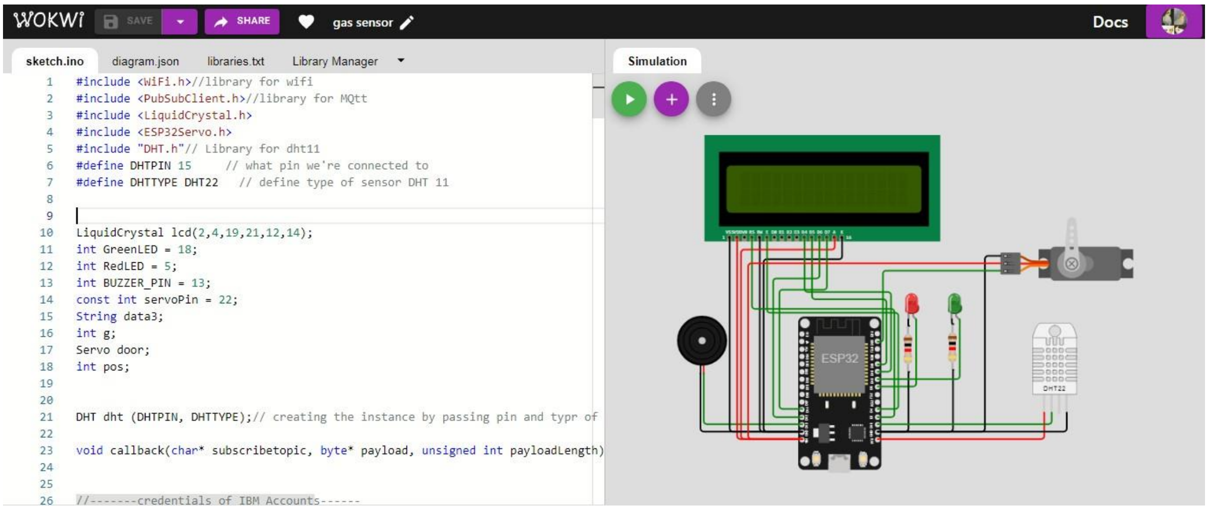
Code Part :

```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
#include <LiquidCrystal.h>
#include <ESP32Servo.h>
#include "DHT.h"// Library for dht11
#define DHTPIN 15     // what pin we're connected to
#define DHTTYPE DHT22   // define type of sensor DHT 11


LiquidCrystal lcd(2,4,19,21,12,14);
int GreenLED = 18;
int RedLED = 5;
int BUZZER_PIN = 13;
const int servoPin = 22;
String data3;
int g;
Servo door;
int pos;


DHT dht (DHTPIN, DHTTYPE);// creating the instance by passing pin and typr of
dht connected

void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);


//-------credentials of IBM Accounts------

#define ORG "u9pz01"//IBM ORGANITION ID
#define DEVICE_TYPE "gassense"//Device type mentioned in ibm watson IOT
Platform
#define DEVICE_ID "sensor"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "12345678"     //Token
float h, t;
```

```
//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name
char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event perform and format in which data to be send
char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd REPRESENT command type AND COMMAND IS TEST OF FORMAT STRING
char authMethod[] = "use-token-auth";// authentication method
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id


//-----------------------------------------
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback, wifiClient); //calling the predefined client id by passing parameter like server id,portand wificredential

void setup() {
  Serial.begin(115200);
  dht.begin();
  pinMode(GreenLED, OUTPUT);
  pinMode(RedLED, OUTPUT);
  pinMode(BUZZER_PIN, OUTPUT);
  lcd.begin(16,2);
  lcd.setCursor(1,0);
  lcd.print(("GAS DETECTION"));
  door.attach(servoPin, 500, 2400);
  Serial.println();
  wificonnect();
  mqttconnect();
}
void loop() {
   g =random(0,100);
   Serial.print("Gas Level in Percentage :");
   Serial.println(g);
   h = dht.readHumidity();
   t = dht.readTemperature();
   Serial.print("temp:");
   Serial.println(t);
   Serial.print("Humid:");
   Serial.println(h);
   condition(g);


   PublishData(t, h ,g);
   delay(1000);
   if (!client.loop()) {
     mqttconnect();
   }
  delay(5000);
}

 //               Condition for buzzer
void myTone( int pin)
{
  ledcAttachPin(pin, 0);             // pin, channel
  ledcWriteNote(0, NOTE_F, 4);    // channel, frequency, octave
}

void myNoTone( int pin)
{
  ledcDetachPin(pin);
}

//                  Condition for Gaslevel
void condition(int g)
{
  if(g > 50)
  {
    myTone(BUZZER_PIN);
    digitalWrite(RedLED, HIGH);
    digitalWrite(GreenLED, LOW);
    delay(500);
    lcd.setCursor(0,1);
    lcd.print("ALERT!!");
    delay(300);
    lcd.setCursor(0,1);
    lcd.print("HAZARDOUS LEVEL!");
  }
  else
  {
    myNoTone(BUZZER_PIN);
     digitalWrite(RedLED, LOW);
     digitalWrite(GreenLED, HIGH);
     delay(500);
     lcd.setCursor(0,1);
     lcd.print("NORMAL GAS LEVEL");

  }
}


/*....................................retrieving to
Cloud. ............................ */
```

```
void PublishData(float temp, float Humid, int Gas) {
  mqttconnect();//function call for connecting to ibm
  /*
     creating the String in in form JSon to update the data to ibm cloud
  */
  String payload = "{\"temp\":";
  payload += temp;
  payload += "," "\"Humid\":";
  payload += Humid;
  payload += "," "\"Gas\":";
  payload += Gas;
  payload += "}";


  Serial.print("Sending payload: ");
  Serial.println(payload);


  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish ok");// if it sucessfully upload data on the cloud then it will print publish ok in Serial monitor or else it will print publish failed
  }
  else {
    Serial.println("Publish failed");
  }

}


void mqttconnect() {
  if (!client.connected()) {
    Serial.print("Reconnecting client to ");
    Serial.println(server);
    while (!!!client.connect(clientId, authMethod, token)) {
      Serial.print(".");
      delay(500);
    }

     initManagedDevice();
     Serial.println();
  }
}
void wificonnect() //function defination for wificonnect
{
  Serial.println();
  Serial.print("Connecting to ");
  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish
the connection
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  Serial.println(WiFi.localIP());
}

void initManagedDevice() {
  if (client.subscribe(subscribetopic)) {
    Serial.println((subscribetopic));
    Serial.println("subscribe to cmd OK");
  } else {
    Serial.println("subscribe to cmd FAILED");
  }
}



void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
{

  Serial.print("callback invoked for topic: ");
  Serial.println(subscribetopic);
  for (int i = 0; i < payloadLength; i++) {
    //Serial.print((char)payload[i]);
    data3 += (char)payload[i];
  }
  Serial.println("data: "+ data3);
  if(data3=="dooropen")
  {
    Serial.println(data3);
    pos = 180; //open the door
    door.write(pos);
  }
  else
  {
   Serial.println(data3);
    pos = 0; // closing the door
    door.write(pos);
  }
data3="";
}
```

Simulation Connection:



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