## Assignment -4

Assignment Date	19 October 2022
Student Name	Hariboobaalan P N
Student Roll Number	722819104042
Maximum Marks	2 Marks

## Question-1:

Write code and connections in wokwi for ultrasonic sensor.

Whenever distance is less than 100cms send "alert" to IBM cloud and display in device recent events.

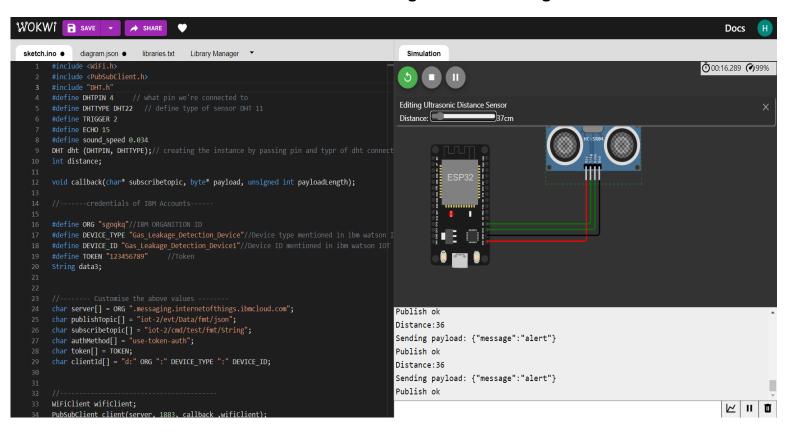
Wokwi Project Link: https://wokwi.com/projects/346131928427004500

```
#include <WiFi.h>
#include <PubSubClient.h>
#include "DHT.h"
#define DHTPIN 4
#define DHTTYPE DHT22
#define TRIGGER 2
#define ECHO 15
#define sound_speed 0.034
DHT dht (DHTPIN, DHTTYPE);
int distance;
void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);
#define ORG "sgoqkq"
#define DEVICE_TYPE "Gas_Leakage_Detection_Device"
#define DEVICE ID "Gas Leakage Detection Device1"
#define TOKEN "123456789"
String data3;
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json";
char subscribetopic[] = "iot-2/cmd/test/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
WiFiClient wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient);
void setup()
  Serial.begin(115200);
 pinMode(TRIGGER, OUTPUT);
 pinMode(ECHO, INPUT);
```

```
pinMode(LED, OUTPUT);
  dht.begin();
  delay(10);
  Serial.println();
 wificonnect();
 mqttconnect();
void loop()
  digitalWrite(TRIGGER, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIGGER, LOW);
  int duration=pulseIn(ECHO,HIGH);
  distance=(duration*sound_speed)/2;
  Serial.print("Distance:");
  Serial.print(distance);
  Serial.println("cms");
  if(distance<100){</pre>
   PublishData(distance);
  delay(1000);
 if (!client.loop()) {
   mqttconnect();
/*.....retrieving to
Cloud....*/
void PublishData(int d) {
 mqttconnect();
  String payload = "{\"message\":alert}";
  Serial.print("Sending payload: ");
  Serial.println(payload);
  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish ok");
  } 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()
  Serial.println();
  Serial.print("Connecting to ");
  WiFi.begin("Wokwi-GUEST", "", 6);
  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++) {</pre>
   data3 += (char)payload[i];
  Serial.println("data: "+ data3);
data3="";
```

## **Wokwi Platform Coding and Circuit Design**



**IBM IoT Platform Device Recent Events** 

