Assignment -4

Assignment Date	20 OCTOBER 2022
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Maximum Marks	2 Marks

Question-1:

Write code and connections in wowki for ultrasonic sensor.

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

Solution:

Wokwi Link: https://wokwi.com/projects/346149540005413459

WOKWI SAVE SHARE

sketch.ino ● diagram.json ● libraries.txt ● Library Manager

```
#include <WiFi.h>
#include <PubSubClient.h>
#include "DHT.h"
#define DHTPIN 4
#define DHTTYPE DHT22
#define TRIGGER 2
#define ECHO 15
#define sound 0.034
DHT dht (DHTPIN, DHTTYPE);
int distance;
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);
//-------credentials of IBM Accounts------
#define ORG "2jk8e5"
#define DEVICE_TYPE "Gas_leakage_Detection_Device"
#define DEVICE_ID "Gas_Detector_1"
#define TOKEN "123456789"
String data3;
//-------- Customise the above values --------
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);
  dht.begin();
  delay(10);
```

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```
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
}
void loop()
{
  digitalWrite(TRIGGER, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIGGER, LOW);
  int time=pulseIn(ECHO,HIGH);
  distance=(time*sound)/2;
  Serial.print("Distance:");
  Serial.print(distance);
  Serial.println("cms");
  if(distance<100){
    //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 {
```

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```
67    } else {
68      Serial.println("Publish failed");
69    }
70  }
71  void mqttconnect() {
72    if (!client.connected()) {
73      Serial.print("Reconnecting client to ");
74      Serial.println(server);
75      while (!!!client.connect(clientId, authMethod, token)) {
76        Serial.print(".");
77        delay(500);
78      }
79       initManagedDevice();
80       Serial.println();
81    }
82  }
83  void wificonnect()
84  {
85    Serial.println();
86    Serial.print("Connecting to ");
87    WiFi.begin("Wokwi-GUEST", "", 6);
88    while (WiFi.status() != WL_CONNECTED) {
89      delay(500);
90      Serial.print(".");
91    }
92    Serial.println("");
93    Serial.println("WiFi connected");
94    Serial.println("IP address: ");
95    Serial.println(WiFi.localIP());
96  }
97  void initManagedDevice() {
98    if (client.subscribe(subscribetopic)) {
99      Serial.println((subscribetopic));
```

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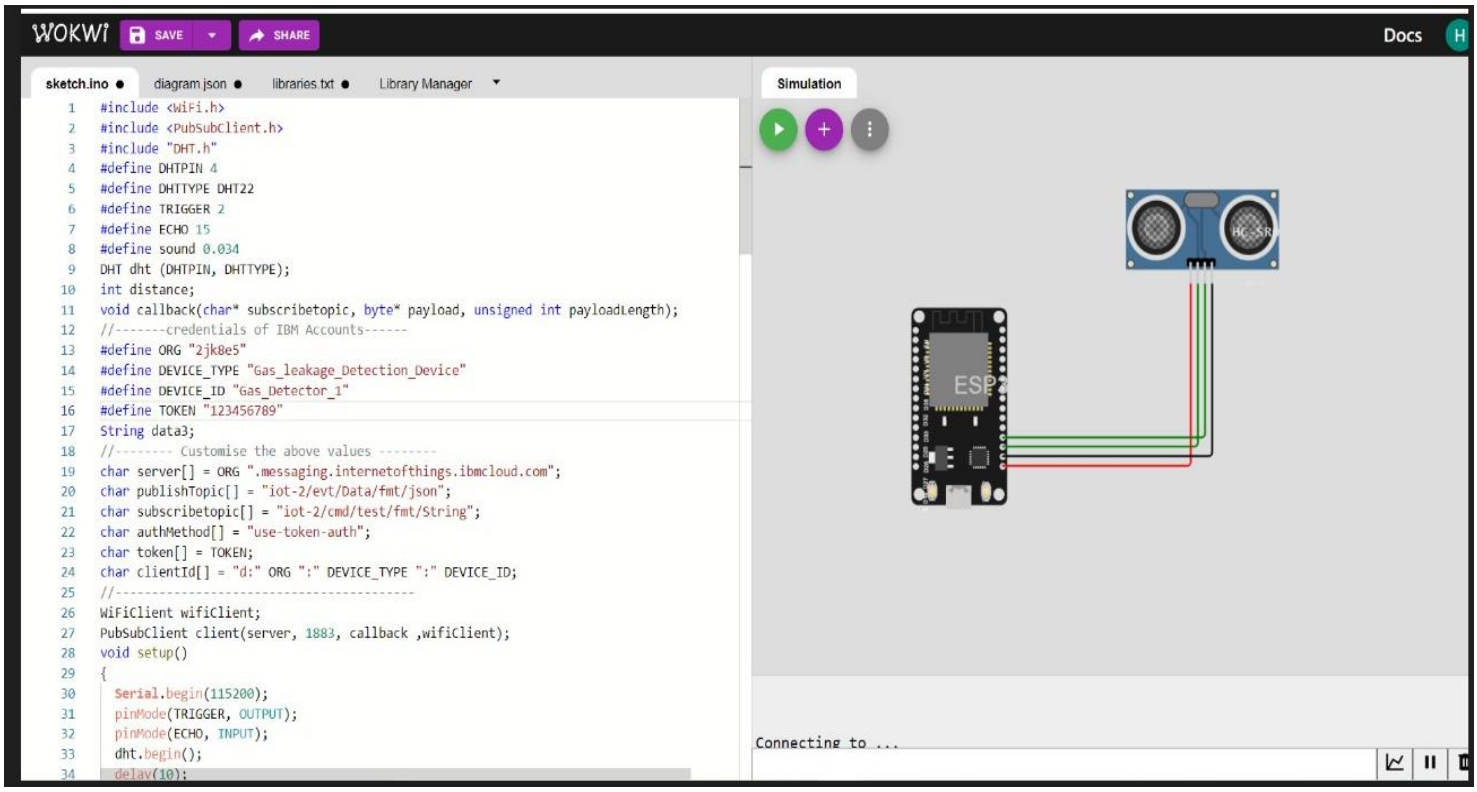
```
97  void initManagedDevice() {
98    if (client.subscribe(subscribetopic)) {
99      Serial.println((subscribetopic));
100     Serial.println("subscribe to cmd OK");
101   } else {
102     Serial.println("subscribe to cmd FAILED");
103   }
104 }
105 void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
106 {
107   Serial.print("callback invoked for topic: ");
108   Serial.println(subscribetopic);
109   for (int i = 0; i < payloadLength; i++) {
110     data3 += (char)payload[i];
111   }
112   Serial.println("data: "+ data3);
113 data3="";
114 }
```

CIRCUIT DIAGRAM:



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