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:

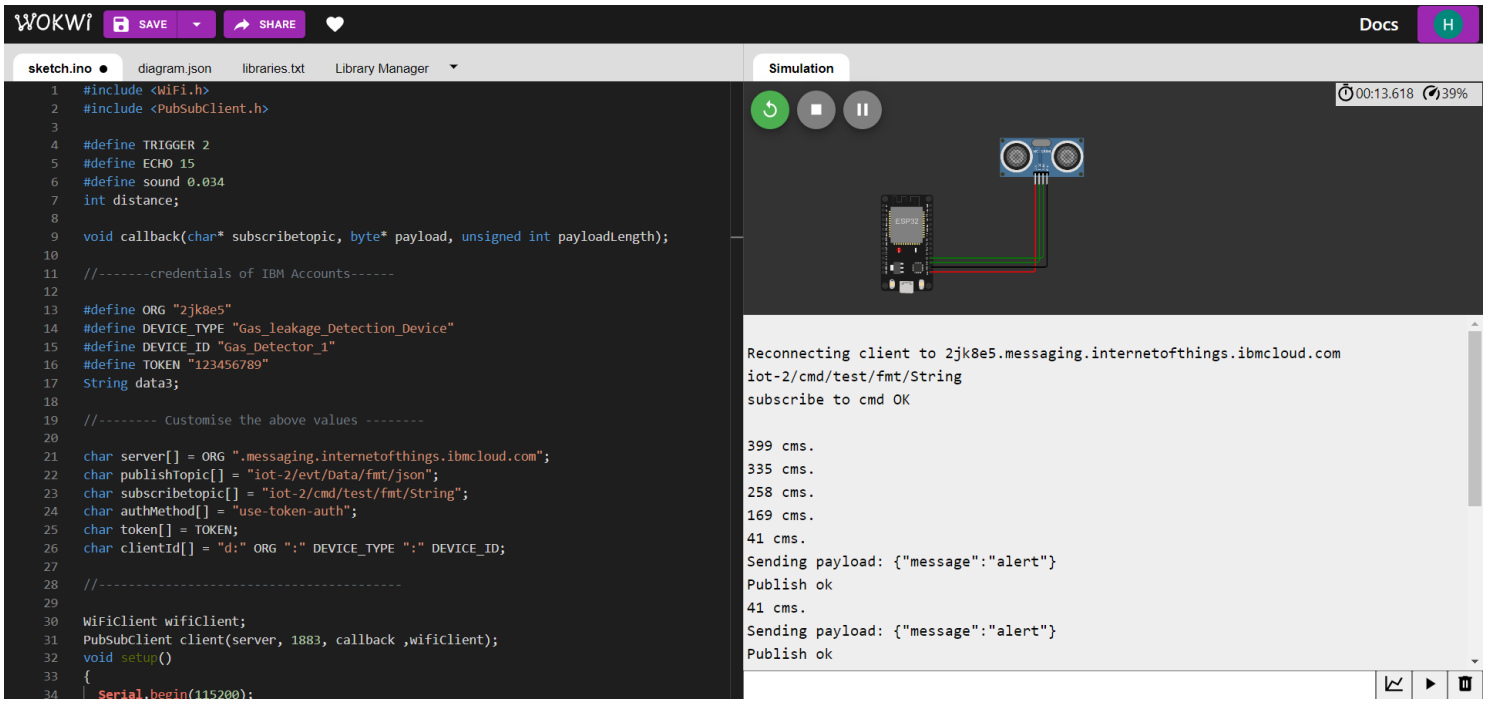
WOWKI LINK: https://wokwi.com/projects/346149540005413459

```
#include <WiFi.h>
#include <PubSubClient.h>

#define TRIGGER 2
#define ECHO 15
#define sound 0.034
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);
 delay(10);
 Serial.println();
 Serial.println("Reconnecting client to wp72r7.messaging.internetofthings.ibmcloud.com\niot-
2/cmd/test/fmt/String\nsubscribe to cmd OK\n\n399 cms.\n399 cms.\n243 cms.\n151 cms.\n35 cms.\nSending
payload: {\"message\":\"alert\"}\nPublish ok\n41 cms.\nSending payload: {\"message\":\"alert\"}\nPublish
ok\n41 cms.\nSending payload: {\"message\":\"alert\"}\nPublish ok\n41 cms.\nSending payload:
{\"message\":\"alert\"}\nPublish ok");
 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 {
  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++) {
    data3 += (char)payload[i];
  }
  Serial.println("data: "+ data3);
data3="";
}
```

CIRCUIT DIAGRAM:



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