Assignment -4

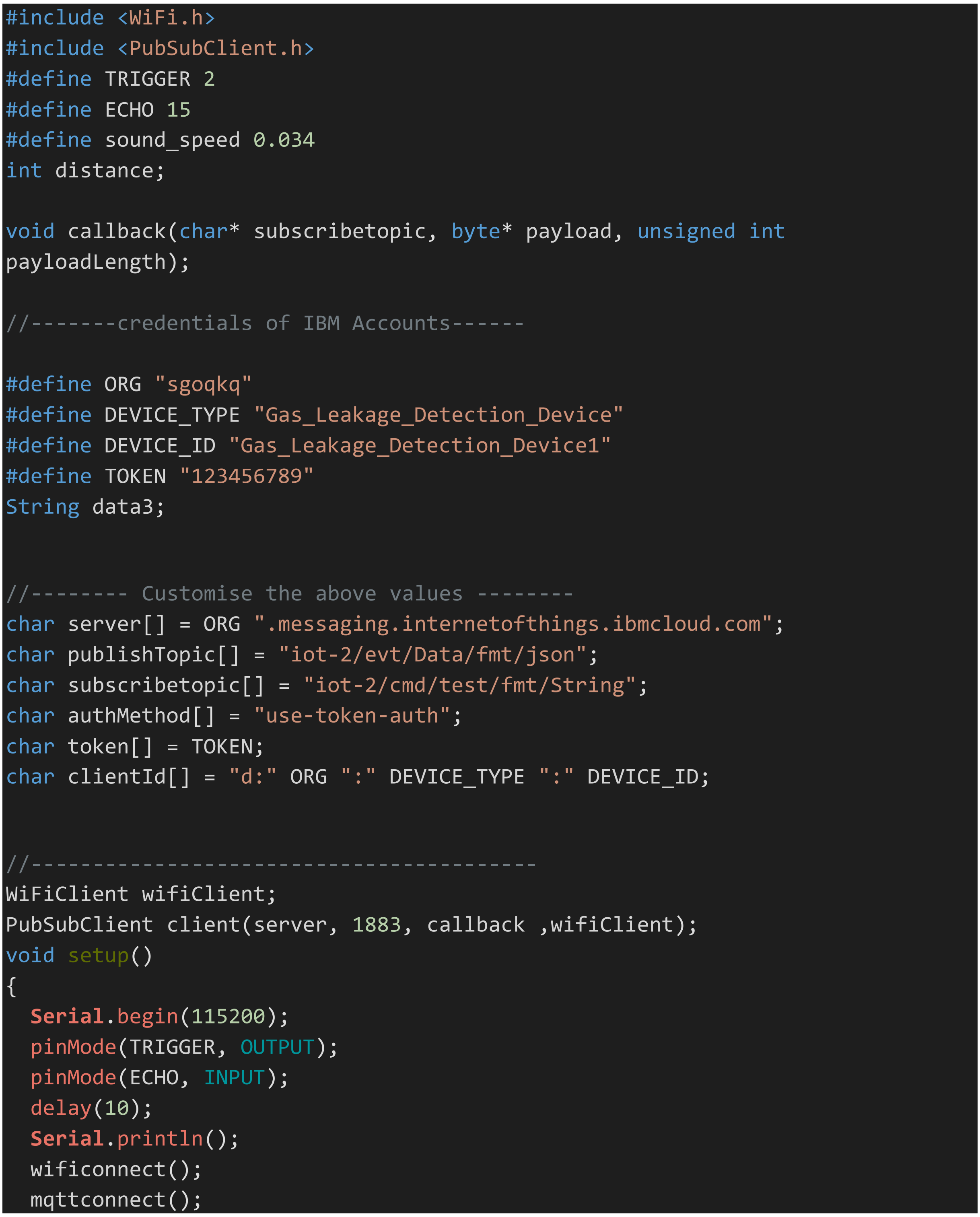
Assignment Date	19 October 2022
Student Name	ARUN ADITYA N
Student Roll Number	737819ECR013
Maximum Marks	2 Marks

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.

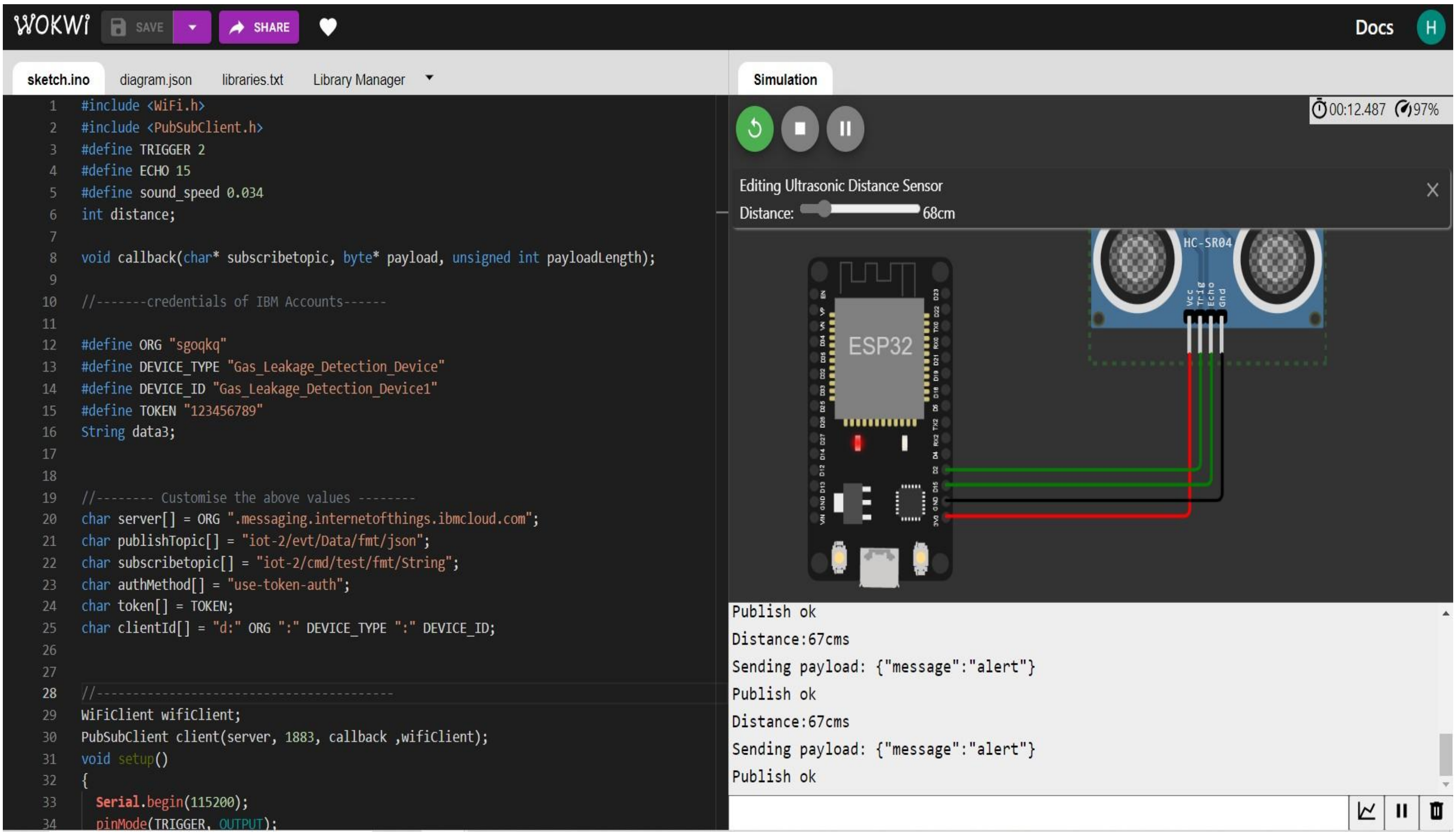
Wokwi Project Link: https://wokwi.com/projects/346235279031403092



```
#include <WiFi.h>
#include <PubSubClient.h>
#define TRIGGER 2
#define ECHO 15
#define sound_speed 0.034
int distance;

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

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

#define ORG "sgoqkq"
#define DEVICE_TYPE "Gas_Leakage_Detection_Device"
#define DEVICE_ID "Gas_Leakage_Detection_Device1"
#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();
  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){
        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="";



}
```

Wokwi Platform Coding and Circuit Design



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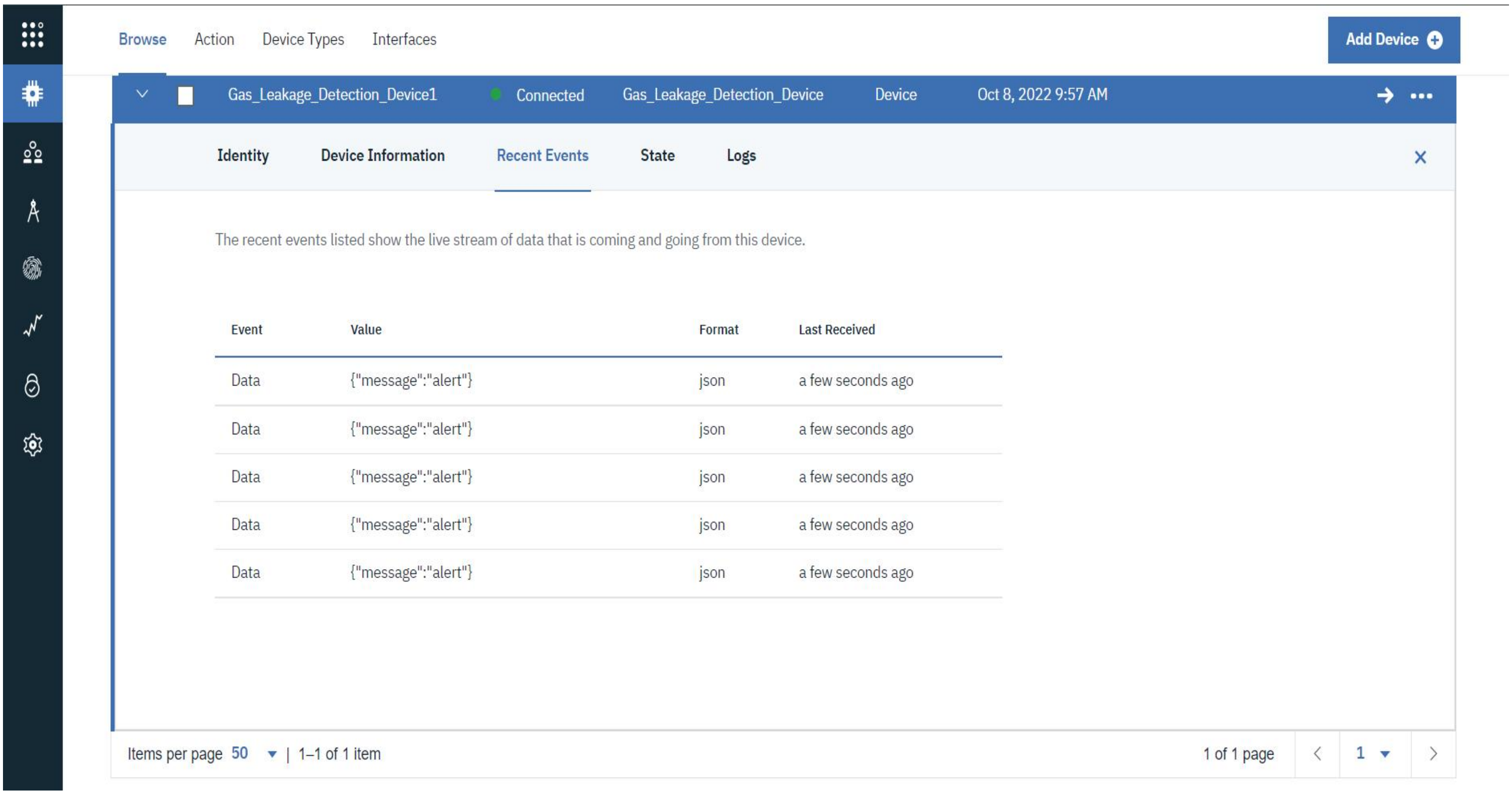
Editing Ultrasonic Distance Sensor

Distance: 68cm

```
Publish ok
Distance:67cms
Sending payload: {"message":"alert"}
Publish ok
Distance:67cms
Sending payload: {"message":"alert"}
Publish ok
```

IBM IoT Platform Device Recent Events



Gas_Leakage_Detection_Device1 ● Connected Gas_Leakage_Detection_Device Device Oct 8, 2022 9:57 AM

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data	{"message":"alert"}	json	a few seconds ago
Data	{"message":"alert"}	json	a few seconds ago
Data	{"message":"alert"}	json	a few seconds ago
Data	{"message":"alert"}	json	a few seconds ago
Data	{"message":"alert"}	json	a few seconds ago

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