

## ASSIGNMENT-4

TEAM ID: PNT2022TMID21674

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "6qx44q"
#define DEVICE_TYPE "abcd"
#define DEVICE_ID "1234"
#define TOKEN "12345678"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evnt/hamdhan_assignment4/fmt/json";
char topic[] = "iot-2/cmd/home/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);

const int trigpin=5;
const int echopin=18;
String command;
String data="";

long duration;
float dist;

void setup()
{
    Serial.begin(115200);
    pinMode(led, OUTPUT);
    pinMode(trigpin, OUTPUT);
    pinMode(echopin, INPUT);
    wifiConnect();
    mqttConnect();
}

void loop() {
    bool isNearby = dist < 100;
    digitalWrite(led, isNearby);

    publishData();
```

```

    delay(500);

    if (!client.loop()) {
        mqttConnect();
    }
}

void wifiConnect() {
    Serial.print("Connecting to "); Serial.print("Wifi");
    WiFi.begin("Wokwi-GUEST", "", 6);
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }
    Serial.print("WiFi connected, IP address: ");
    Serial.println(WiFi.localIP());
}

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

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

void publishData()
{
    digitalWrite(trigpin, LOW);
    digitalWrite(trigpin, HIGH);
    delayMicroseconds(10);
    digitalWrite(trigpin, LOW);
    duration=pulseIn(echopin, HIGH);
    dist=duration*speed/2;
    if(dist<100){
        String payload = "{\"Alert Distance\":\"";
    }
}

```

```

    payload += dist;
    payload += "}";

    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if (client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Publish OK");
    }
}

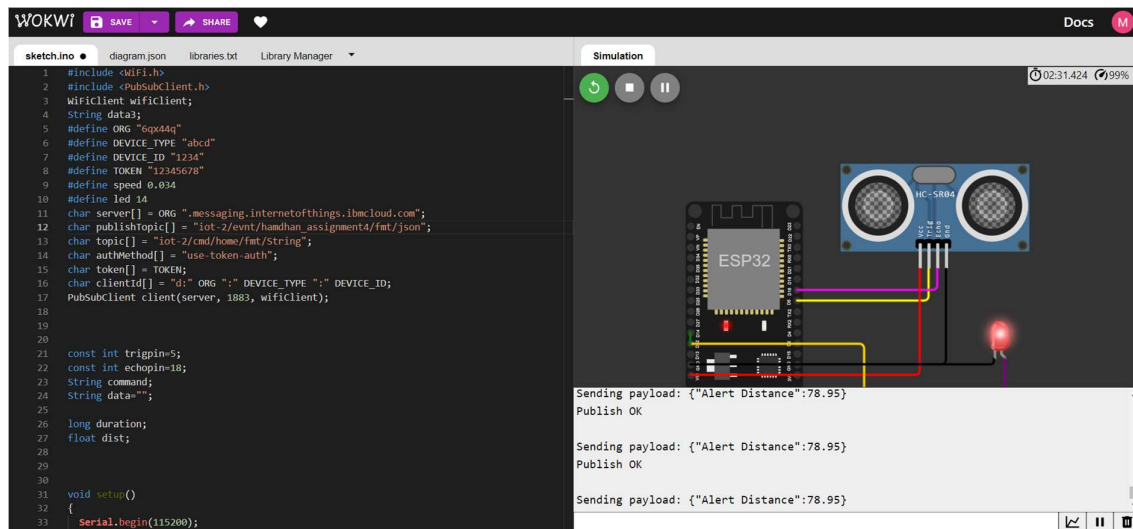
if(dist>100){
    String payload = "{\"Distance\":";
    payload += dist;
    payload += "}";

    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if(client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Publish OK");
    }else {
        Serial.println("Publish FAILED");
    }
}

}

}

```



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SHARE

Docs

M

sketch.ino

diagram.json

libraries.txt

Library Manager

```

1 {
2   "version": 1,
3   "author": "Hamdhan",
4   "editor": "wokwi",
5   "parts": [
6     { "type": "wokwi-esp32-devkit-v1", "id": "esp", "top": 92.67, "left": 45.33, "attrs": {} },
7     {
8       "type": "wokwi-led",
9       "id": "led1",
10      "top": 194.54,
11      "left": 309.26,
12      "attrs": { "color": "red" }
13    },
14    {
15      "type": "wokwi-hc-sr04",
16      "id": "ultrasonic1",
17      "top": 60.71,
18      "left": 185.64,
19      "attrs": { "distance": "139" }
20    },
21    {
22      "type": "wokwi-resistor",
23      "id": "r1",
24      "top": 269.89,
25      "left": 260.39,
26      "attrs": { "value": "100" }
27    }
28  ],
29  "connections": [
30    [ "esp:TX0", "$SerialMonitor:RX", "", [] ],
31    [ "esp:RX0", "$SerialMonitor:TX", "", [] ],
32    [ "ultrasonic1:TRIG", "esp:D5", "yellow", [ "v0" ] ],
33    [ "ultrasonic1:ECHO", "esp:D18", "magenta", [ "v0" ] ],

```

Simulation

02:59.105 99%

Publish OK

Sending payload: {"Distance":208.96}

Publish OK

Sending payload: {"Distance":208.96}

Publish OK

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Library Manager

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9 #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/event/hamdhan_assignment4/fmt/json";
13 char topic[] = "iot-2/cmd/home/fmt/String";
14 char authMethod[] = "use-token-auth";
15 char token[] = TOKEN;
16 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
17 PubSubClient client(server, 1883, wificlient);
18
19
20
21 const int trigpin=5;
22 const int echopin=18;
23 String command;
24 String data="";
25
26 long duration;
27 float dist;
28
29
30
31 void setup()
32 {
33   Serial.begin(115200);

```

Simulation

03:24.183 100%

Editing Ultrasonic Distance Sensor

Distance: 57cm

Publish OK

Sending payload: {"Alert Distance":56.95}

Publish OK

Sending payload: {"Alert Distance":56.95}

Publish OK

Service Details - IBM Cloud x Node-RED: node-red-admin x IBM Watson IoT Platform x Node-RED Dashboard x MIT App Inventor

6qx44q.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform 142219104069@smartinternz.com ID: 6qx44q

Browse Action Device Types Interfaces Add Device +

Identity Device Information Recent Events State Logs

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

Event	Value	Format	Last Received
events	{"dist":194}	json	a few seconds ago
events	{"dist":132}	json	a few seconds ago
events	{"dist":78}	json	a minute ago
events	{"dist":51}	json	2 minutes ago
events	{"dist":101}	json	3 minutes ago

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sketch.ino diagram.json libraries.txt Library Manager

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26 long duration;
27 float dist;
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29
30
31 void setup()
32 {
33   Serial.begin(115200);

```

Simulation 03:39.636 99%

Editing Ultrasonic Distance Sensor  
Distance: 11cm

HC-SR04

ESP32

Publish OK

Sending payload: {"Alert Distance":10.98}

Publish OK

Sending payload: {"Alert Distance":10.98}

Publish OK