

Assignment -4

Assignment Date	24 Oct 2022
Team ID	PNT2022TMID28556
Student Name	KARTHI.S
Project Name	GAS LEAKAGE MONITORING AND ALERTING SYSTEMS FOR INDUSTRIES

Question:

Write a Code and Connections in wokwi for **ultrasonic sensor**. Whenever distance is less than 100 cms send “**alert**” to ibm cloud and display in device recent events

Code:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "z601nd"
#define DEVICE_TYPE "Arduino"
#define DEVICE_ID "98765"
#define TOKEN "987654321"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/karthi/fmt/json";
```

```
char topic[] = "iot-2/cmd/led/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");
}

}

}
```

Output:

1. When distance greater than 100 cm

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WOKWI

SAVE SHARE

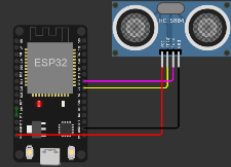
Docs K

sketch.ino diagram.json libraries.txt Library Manager

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wificlient;
4 String data3;
5 #define ORG "z60lnd"
6 #define DEVICE_TYPE "Arduino"
7 #define DEVICE_ID "98765"
8 #define TOKEN "987654321"
9 #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/karthi/fmt/json";
13 char topic[] = "iot-2/cmd/led/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

00:13.730 100%



Publish OK


Sending payload: {"Distance":138.96}

Publish OK

Sending payload: {"Distance":138.96}

Publish OK

28°C Rain off and on



ENG IN 14:49 31-10-2022

IBM RECENT EVENTS:

IBM

IBM C

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z60lnd.internetofthings.ibmcloud.com/dashboard/devices/browse

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IBM Watson IoT Platform

karthikargunkarthikargun875@gmail.com
ID: z60lnd

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Browse

Action

Device Types

Interfaces

Add Device +

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98765

Connected

Arduino

Device

31 Oct 2022 14:41

→ ⋮

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
karthi	{"Distance":138.96}	json	a few seconds ago
karthi	{"Distance":138.98}	json	a few seconds ago
karthi	{"Distance":138.96}	json	a few seconds ago
karthi	{"Distance":138.96}	json	a few seconds ago
karthi	{"Distance":138.96}	json	a few seconds ago

>

987654321

Disconnected

Arduino

Device

31 Oct 2022 14:33

☁️ 28°C
Rain off and on

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31-10-2022

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2. When distance less than 100 cm

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WOKWI SAVE SHARE

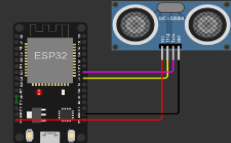
Docs K

sketch.ino diagram.json libraries.txt Library Manager

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1 #include <WiFi.h>
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8 #define TOKEN "987654321"
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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);
34 }
```

Simulation

00:06.428 97%



Publish OK

Sending payload: {"Alert Distance":95.96}

Publish OK

Sending payload: {"Alert Distance":95.96}

Publish OK

28°C Rain off and on

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14:49 31-10-2022

IBM RECENT EVENTS:

IBM Watson IoT Platform

z60lnd.internetofthings.ibmcloud.com/dashboard/devices/browse

karthikargunkarthikargun875@gmail.com
ID: z60lnd

Browse Action Device Types Interfaces

Add Device +

98765 Connected Arduino Device 31 Oct 2022 14:41

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
karthi	{"Alert Distance":95.96}	json	a few seconds ago
karthi	{"Alert Distance":95.96}	json	a few seconds ago
karthi	{"Alert Distance":95.96}	json	a few seconds ago
karthi	{"Alert Distance":95.96}	json	a few seconds ago
karthi	{"Alert Distance":95.96}	json	a few seconds ago

987654321 Disconnected Arduino Device 31 Oct 2022 14:33

28°C Rain off and on

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LINK:

<https://wokwi.com/projects/347025053221651028>

