

## Assignment -4

Assignment Date	24 Oct 2022
Team ID	PNT2022TMID28556
Student Name	ANANTHAN A
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 "styxt1"
#define DEVICE_TYPE "Arduino"
#define DEVICE_ID "98765"
```

```
#define TOKEN "098765432"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/ananthan/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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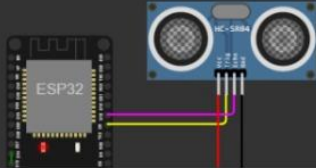
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sketch.ino diagram.json libraries.txt Library Manager

```
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3 WiFiClient wifiClient;
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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
```

Simulation

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Publish OK

Sending payload: {"Distance":138.96}

Publish OK

Sending payload: {"Distance":138.96}

Publish OK

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## IBM RECENT EVENTS:

WhatsApp Obtain an IBM Cloud Service Details - IBM IBM Watson IoT Platform sketch.ino - Wokwi AI sketch.ino - Wokwi AI

styx11.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform aravinthananth797@gmail.com ID: styxt1

Browse Action Device Types Interfaces Add Device

Event	Value	Format	Last Received
ananthan	{"Distance":138.96}	json	a few seconds ago
ananthan	{"Distance":138.96}	json	a few seconds ago
ananthan	{"Distance":138.96}	json	a few seconds ago
ananthan	{"Distance":138.96}	json	a few seconds ago
ananthan	{"Distance":138.96}	json	a few seconds ago

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**2. When distance less than 100 cm**

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sketch.ino diagram.json libraries.txt Library Manager

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2 #include <PubSubClient.h>
3 WiFiClient wifiClient;
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6 #define DEVICE_TYPE "Arduino"
7 #define DEVICE_ID "98765"
8 #define TOKEN "098765432"
9 #define speed 0.034
10 #define led 14
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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
```

Simulation

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Publish OK

Sending payload: {"Alert Distance":65.98}

Publish OK

Sending payload: {"Alert Distance":65.98}

Publish OK

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IBM Watson IoT Platform aravinthananth797@gmail.com ID: styxt1

Browse Action Device Types Interfaces Add Device +

Event	Value	Format	Last Received
ananthan	{"Alert Distance":65.98}	json	a few seconds ago
ananthan	{"Alert Distance":65.98}	json	a few seconds ago
ananthan	{"Alert Distance":65.98}	json	a few seconds ago
ananthan	{"Alert Distance":65.98}	json	a few seconds ago
ananthan	{"Alert Distance":65.98}	json	a few seconds ago

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**LINK:**

**<https://wokwi.com/projects/347099402618274386>**

