

Assignment -4

| | |
|---------------------|-----------------|
| Assignment Date | 25 October 2022 |
| Student Name | Sithan C |
| Student Roll Number | 731719106013 |
| Maximum Marks | 2 Marks |

Question-4:

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events. Upload document with wokwi share link and images of IBM cloud

PROGRAM

```
#include <WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;

String data3;

#define ORG "3yngbh"

#define DEVICE_TYPE "Assignment"

#define DEVICE_ID "1234"

#define TOKEN "234567890"

#define speed 0.034

#define led 14

char server[] = ORG

".messaging.internetofthings.ibmcloud.com"; char

publishTopic[] = "iot-2/evt/shreedharen/fmt/json"; char topic[]

= "iot-2/cmd/led/fmt/String"; char authMethod[] = "usetoken-

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");
  }

}

}

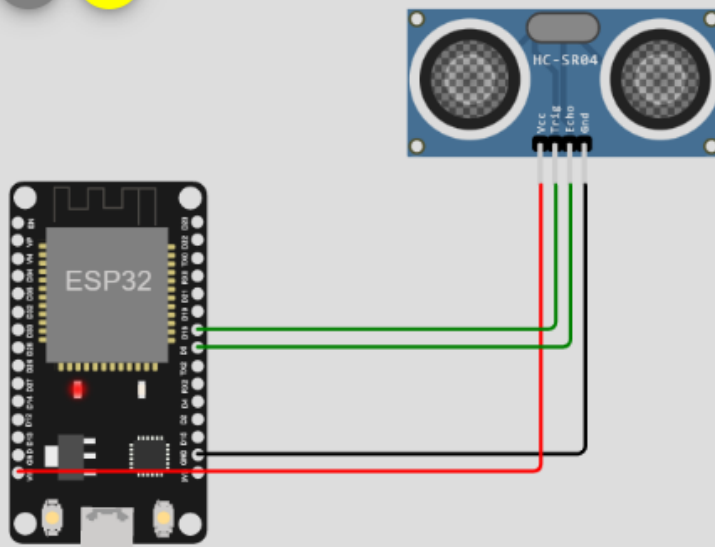
```

Connections:

Simulation



00:11.948 32%



Connecting to Wifi.....WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to 3yngbh.messaging.internetofthings.ibmcloud.com
.....



Output:

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wifiClient;
4 String data;
5 #define ORG "3yngbh"
6 #define DEVICE_TYPE "Assignment"
7 #define DEVICE_ID "1234"
8 #define TOKEN "234567890"
9 #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/shreedharen/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
```

Connecting to Wifi.....WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to 3yngbh.messaging.internetofthings.ibmcloud.com
.....

Output: (IBM Cloud)

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID

| Device ID | Status | Device Type | Class ID | Date Added | Descriptive Location |
|-----------|-----------|-------------|----------|----------------------|----------------------|
| 12345 | Connected | NodeMCU | Device | Oct 17, 2022 2:36 PM | |

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 |
|-------|--------------------------|--------|-------------------|
| Data | {"Alert distance":93.96} | json | a few seconds ago |
| Data | {"Alert distance":93.96} | json | a few seconds ago |
| Data | {"Alert distance":93.96} | json | a few seconds ago |
| Data | {"Alert distance":93.96} | json | a few seconds ago |
| Data | {"Alert distance":93.96} | json | a few seconds ago |

Items per page 100 | 1-1 of 1 item

Link: <https://wokwi.com/projects/347942060404245076>