

ASSIGNMENT-III

DATE	19 May 2023
TEAM ID	NM2023TMID10960
PROJECT NAME	Smart billing system for water suppliers-

Wokwi Link:

<https://wokwi.com/projects/364952497469164545>

#CODE:

```
#include <WiFi.h>
```

```
#include <PubSubClient.h>
```

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

```
#define ORG "jl41ur"
```

```
#define DEVICE_TYPE "abcd"
```

```
#define DEVICE_ID "1234"
```

```
#define TOKEN "12345678"
```

```
String data3;
```

```
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);
```

```
Const int trigPin = 5;
```

```
Const int echoPin = 18;
```

```
#define SOUND_SPEED 0.034
```

```
Long duration;
```

```
Float distance;
```

```
Void setup() {
```

```
Serial.begin(115200);
```

```
pinMode(trigPin, OUTPUT);
```

```
pinMode(echoPin, INPUT);
```

```
wificonnect(); mqttconnect();
```

```
}
```

```
Void loop()
```

```
{
```

```
digitalWrite(trigPin, LOW);
```

```
delayMicroseconds(2);
```

```
digitalWrite(trigPin, HIGH);
```

```
delayMicroseconds(10);
```

```
digitalWrite(trigPin, LOW); duration =
```

```
pulseIn(echoPin, HIGH); distance =
```

```
duration * SOUND_SPEED/2;
```

```
Serial.print("Distance (cm): ");
```

```

Serial.println(distance);
If(distance<100)
{
Serial.println("ALERT!!");
Delay(1000);PublishData(distance);
Delay(1000);
If (!client.loop()) {
Mqttconnect();
}
}
Delay(1000);
}

```

```

Void PublishData(float dist) {
Mqttconnect();
String payload = "{"Distance\":";
Payload += dist;
Payload += ",\nALERT!!\":"Distance less than 100cms\''";
Payload += "}";
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());
}

```

```

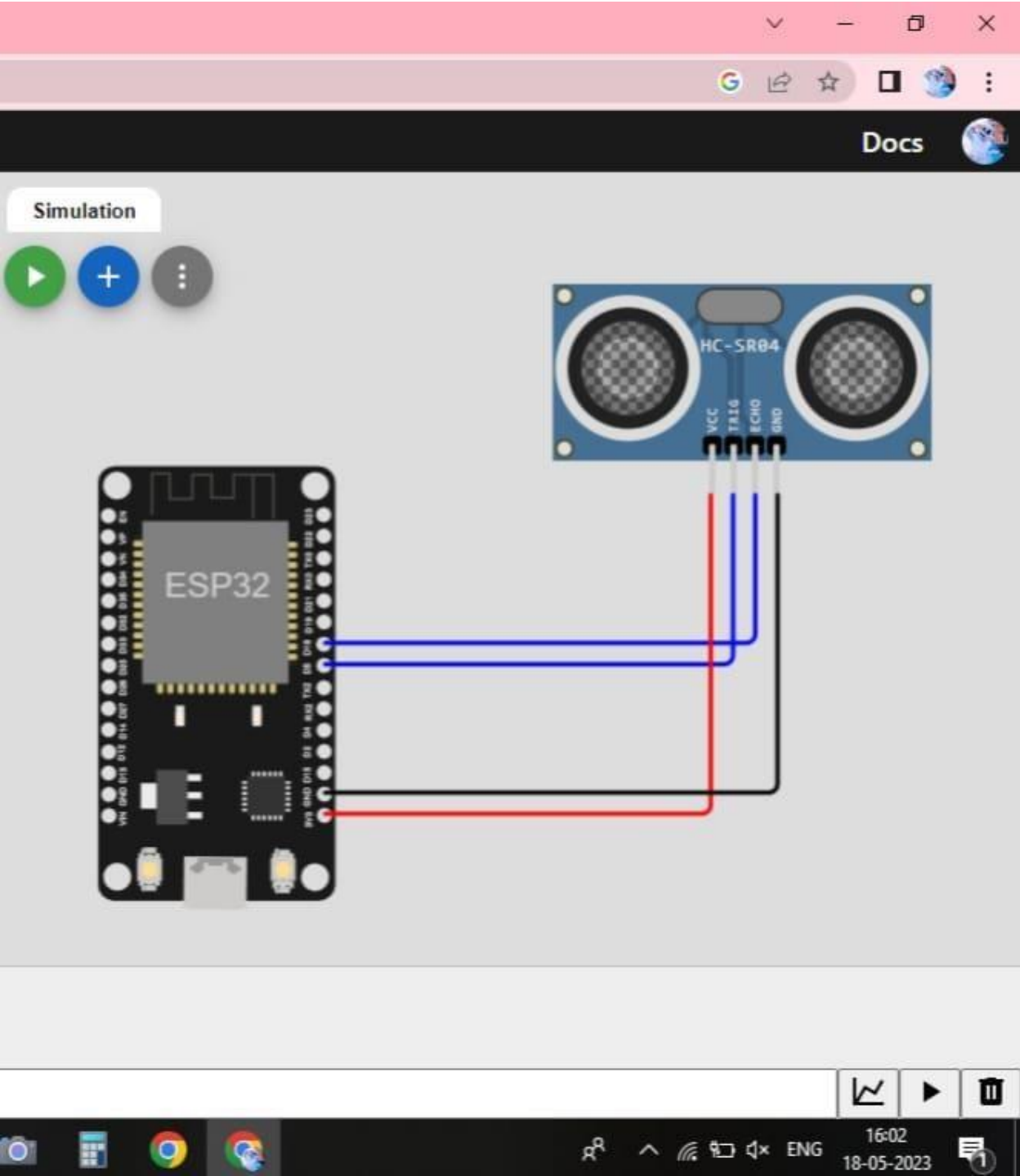
Void initManagedDevice() {
If (client.subscribe(subscribetopic)) {
Serial.println((subscribetopic));
}
}

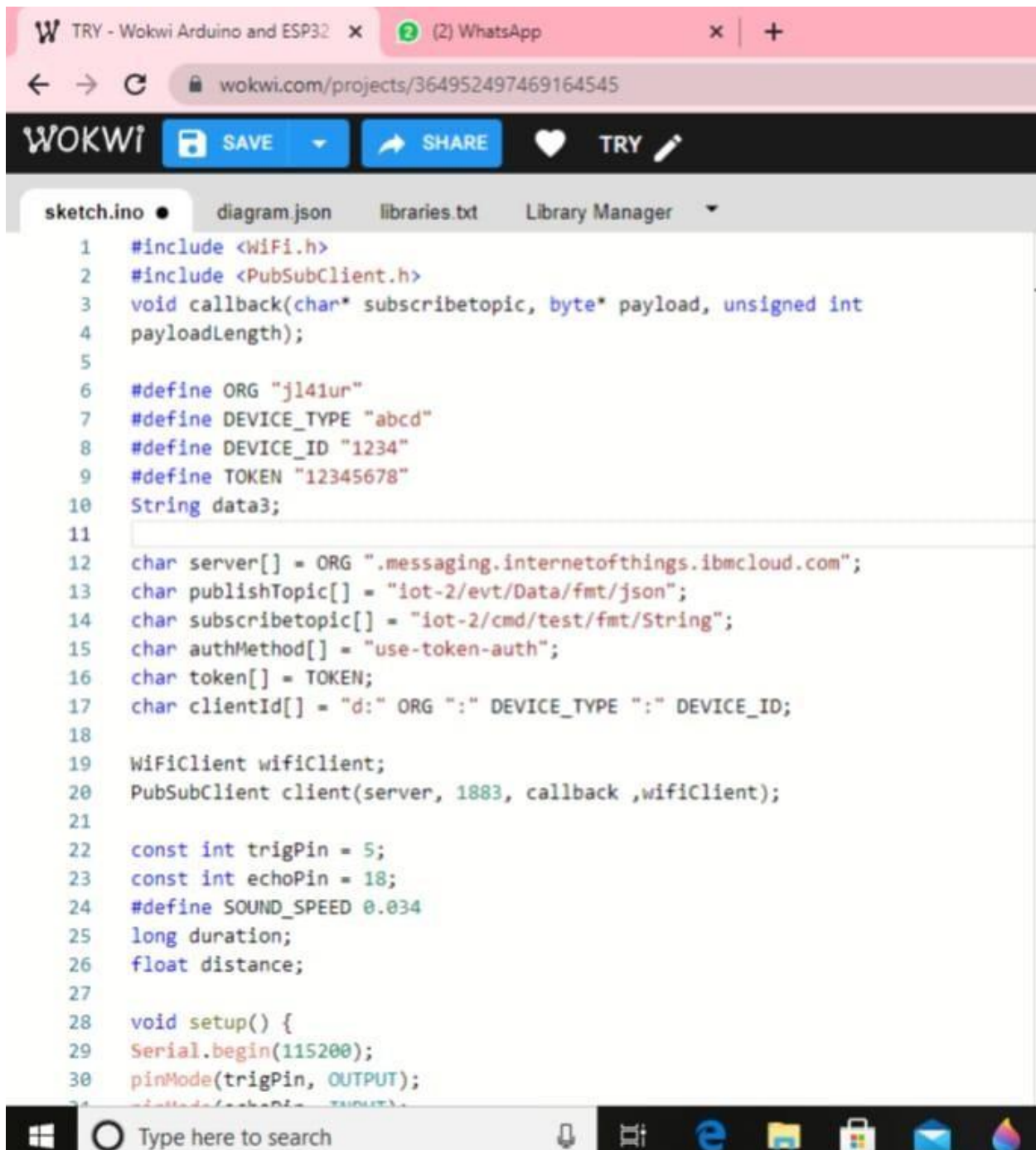
```

```
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++)  
{//Serial.print((char)payload[i]);  
Data3 += (char)payload[i];  
}  
Serial.println("data: "+ data3);  
Data3="";  
}
```

SCHEMATIC DIAGRAM:





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```
28 void setup() {
29   Serial.begin(115200);
30   pinMode(trigPin, OUTPUT);
31   pinMode(echoPin, INPUT);
32   wificonnect();
33   mqttconnect();
34 }
35
36 void loop()
37 {
38   digitalWrite(trigPin, LOW);
39   delayMicroseconds(2);
40   digitalWrite(trigPin, HIGH);
41   delayMicroseconds(10);
42   digitalWrite(trigPin, LOW);
43   duration = pulseIn(echoPin, HIGH);
44   distance = duration * SOUND_SPEED/2;
45   Serial.print("Distance (cm): ");
46   Serial.println(distance);
47   if(distance<100)
48   {
49     Serial.println("ALERT!!");
50     delay(1000);PublishData(distance);
51     delay(1000);
52     if (!client.loop()) {
53       mqttconnect();
54     }
55   }
56   delay(1000);
57 }
```

Windows Taskbar

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diagram.json

libraries.txt

Library Manager





```
59 void PublishData(float dist) {
60   mqttconnect();
61   String payload = "{\"Distance\": ";
62   payload += dist;
63   payload += ", \"ALERT!!\": \"\"Distance less than 100cms\"\"";
64   payload += "}";
65   Serial.print("Sending payload: ");
66   Serial.println(payload);
67   if (client.publish(publishTopic, (char*) payload.c_str())) {
68     Serial.println("Publish ok");
69   } else {
70     Serial.println("Publish failed");
71   }
72 }
73
74 void mqttconnect() {
75   if (!client.connected()) {
76     Serial.print("Reconnecting client to ");
77     Serial.println(server);
78     while (!client.connect(clientId, authMethod, token)) {
79       Serial.print(".");
80       delay(500);
81     }initManagedDevice();
82     Serial.println();
83   }
84 }
85
86 void wificonnect()
87 {
88   Serial.println();
```

Windows

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```
86 void wificonnect()
87 {
88   Serial.println();
89   Serial.print("Connecting to ");
90   WiFi.begin("Wokwi-GUEST", "", 6);
91   while (WiFi.status() != WL_CONNECTED) {
92     delay(500);
93     Serial.print(".");
94   }
95   Serial.println("");
96   Serial.println("WiFi connected");
97   Serial.println("IP address: ");
98   Serial.println(WiFi.localIP());
99 }
100
101 void initManagedDevice() {
102   if (client.subscribe(subscribetopic)) {
103     Serial.println(subscribetopic);
104     Serial.println("subscribe to cmd OK");
105   } else {
106     Serial.println("subscribe to cmd FAILED");
107   }
108 }
109
110 void callback(char* subscribetopic, byte* payload, unsigned int
111 payloadLength)
112 {
113   Serial.print("callback invoked for topic: ");
114   Serial.println(subscribetopic);
115   for (int i = 0; i < payloadLength; i++)
116     Serial.print((char)payload[i]);
```

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```
108 }
109
110 void callback(char* subscribetopic, byte* payload, unsigned int
111 payloadLength)
112 {
113   Serial.print("callback invoked for topic: ");
114   Serial.println(subscribetopic);
115   for (int i = 0; i < payloadLength; i++)
116     { //Serial.print((char)payload[i]);
117       data3 += (char)payload[i];
118     }
119   Serial.println("data: " + data3);
120   data3="";
121 }
122
```

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e

The screenshot displays the IBM Watson IoT Platform interface. At the top, the browser address bar shows the URL: `https://j141ur.internetofthings.ibmcloud.com/dashboard/devices/browse`. The page header includes the IBM Watson IoT Platform logo and a user profile for `exshavn@gmail.com` with ID `j141ur`.

The main navigation bar contains tabs: **Browse**, **Action**, **Device Types**, and **Interfaces**. An **Add Device** button is located on the right.

The device list shows a single device with ID `1234`, status `Disconnected`, name `abcd`, and a last update time of `May 18, 2023 8:54 PM`. The **Recent Events** tab is selected, showing a table of events:

Event	Value	Format	Last Received
Data	<code>{"Distance":66.95,"ALERT!!":"Distance less than ...</code>	json	a few seconds ago
Data	<code>{"Distance":66.95,"ALERT!!":"Distance less than ...</code>	json	a few seconds ago
Data	<code>{"Distance":66.98,"ALERT!!":"Distance less than ...</code>	json	a few seconds ago

At the bottom, the status bar indicates `0 Simulations running` and `Items per page 50 | 1-1 of 1 item`.

