

**ASSIGNMENT 4**  
**WOKWI PROGRAM**

Assignment Date	23 OCT 2022
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Maximum Marks	2 Marks

**ID Team:** PNT2022TMID31725

**PROGRAM**

**Smart Waste Management System for Metropolitan Cities**

**ASSIGNMENT 4:**

Write code and connections in wokwi for ultrasonic sensors. Whenever distance is less than 100 cms send "alert" to ibm cloud and display in device recent events. Uplode document with wokwi share link and images of ibm cloud.

**CODE:**

```
#include <WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;

String data3;

#define ORG "ztcz45"

#define DEVICE_TYPE "Adarsh"

#define DEVICE_ID "Adarsh123"

#define TOKEN "123456789"

#define speed 0.034

#define led 14

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";

char publishTopic[] = "iot-2/evt/Data/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);
```

```
void publishData();
```

```
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);
```

```
    ...
```

```
[10:32 pm, 23/10/2022] Gogul B.E CSE: }
```

```
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 = "{ \"Normal 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>101 && dist<111){
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("Warning crosses 110cm -- it automaticaly of the loop");
    digitalWrite(led,HIGH);
}else {
    Serial.println("Publish 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++){
dist += (char)payload[i];
}
Serial.println("data:"+ data3);
if(data3=="lighton"){
Serial.println(data3);
}
}

```

```

digitalWrite(led,HIGH);
}

data3="";
}

```

out put:

The screenshot displays two side-by-side windows. The left window is the Wokwi IoT simulator, showing a code editor with an Arduino sketch and a simulation window. The sketch includes comments for pin configurations and MQTT settings. The simulation window shows an ESP32 board with an ultrasonic sensor and an LED. The right window is the IBM Watson IoT Platform interface, showing the 'Recent Events' tab for a device named 'naveen123'. The events table shows a series of distance readings in JSON format.

**Wokwi IoT Simulator Code:**

```

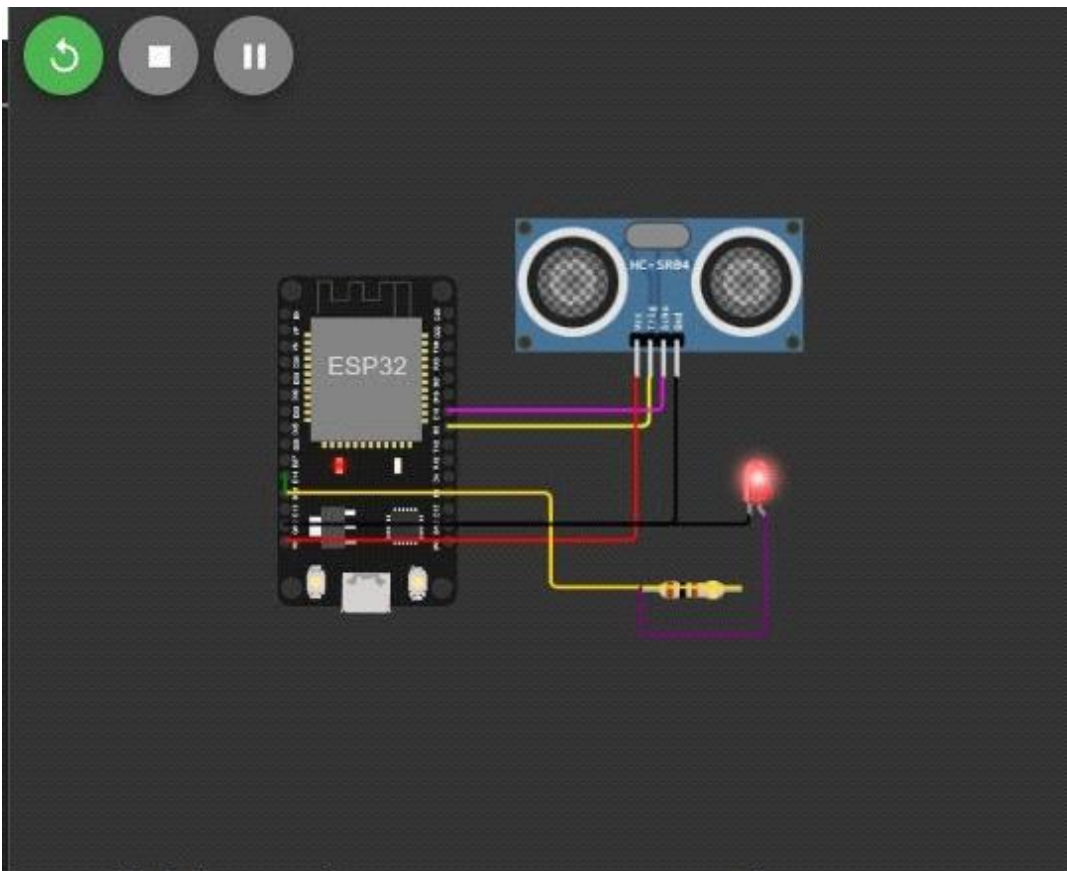
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wifiClient;
4 String data;
5 #define ONE_SECOND 1000
6 #define DEVICE_TYPE "naveen"
7 #define DEVICE_ID "naveen123"
8 #define TOKEN "E2B856789"
9 #define SPEED 0.014
10 #define led 14
11 char server[] = "mqtt.messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/Data/rm/json";
13 char topic[] = "iot-2/cmd/homeTest/string";
14 char authMethod[] = "use-token-auth";
15 char token[] = TOKEN;
16 char clientId[] = "id-00000000000000000000000000000000";
17 PubSubClient client(server, 1883, wifiClient);
18 void publishData();
19
20
21 const int triggerPin=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   pinMode(led, OUTPUT);
35   pinMode(triggerPin, OUTPUT);
36   pinMode(echopin, INPUT);
37   wifiConnect();
38   mqttConnect();
39
40 }
41
42 void loop() {
43   bool isNearby = dist < 100;
44   digitalWrite(led, isNearby);

```

**IBM Watson IoT Platform Recent Events:**

Event	Value	Format	Last threshold
Data	{"Alert distance":110.94}	json	a few second
Data	{"Alert distance":110.96}	json	a few second
Data	{"Alert distance":110.98}	json	a few second
Data	{"Alert distance":110.98}	json	a few second
Data	{"Alert distance":110.98}	json	a few second

1.When distance under 100 cm it wil show normal distance.



Publish OK

Sending payload: {"Normal Distance":89.95}

Publish OK

Sending payload: {"Normal Distance":89.95}

Publish OK

Sending payload: {"Normal Distance":89.95}

Publish OK

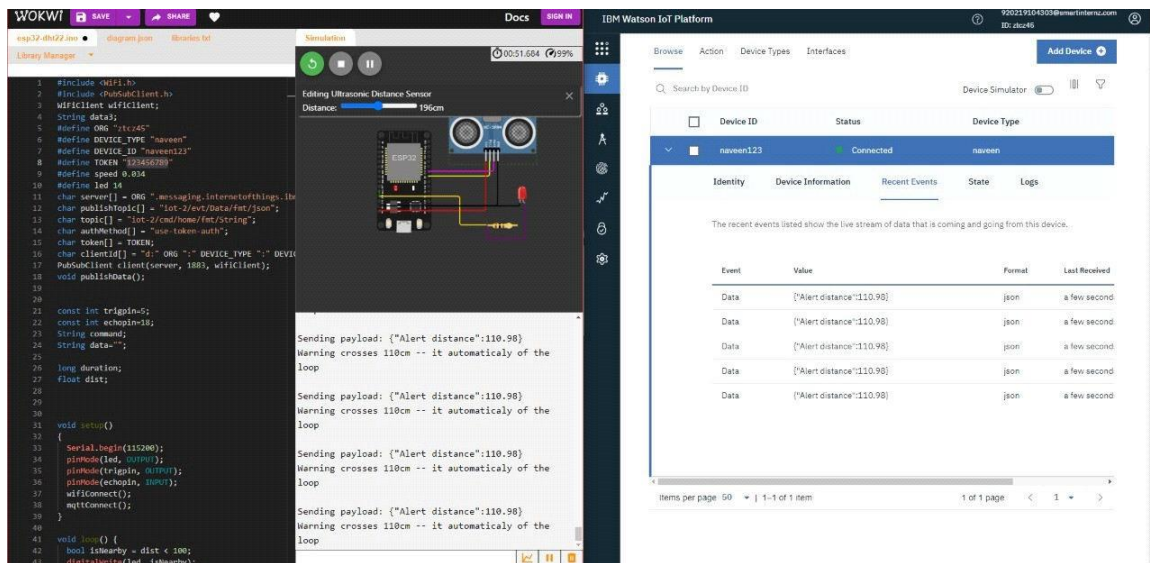
Sending payload: {"Normal Distance":89.95}

Publish OK

Sending payload: {"Normal Distance":89.95}

Publish OK

## 2. When distance cross 100 cm it wil show ALERT warning message distance



## 3. When it cross above 110 cm it today move to iff state once it reduce to 110 it on again

### Connection information:

Basic conntection information about this device.

Organization ID : ztcz45

Device Type : Adarsh

Device ID : Adarsh123

Authentication Method : use-token-auth

Authentication Token : 123456789

▼

naveen123

Connected

naveen

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	{"Normal Distance":89.95}	json	a few second:
Data	{"Normal Distance":89.95}	json	a few second:
Data	{"Normal Distance":89.95}	json	a few second:
Data	{"Normal Distance":89.95}	json	a few second:
Data	{"Normal Distance":89.95}	json	a few second:

LINCK:

<https://wokwi.com/projects/346329704680129106>