

## Assignment -4

Assignment Date	1 November 2022
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Maximum Marks	2 Marks

### Question:

Write 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. Upload document with wokwi share link and images of ibm cloud.

### Solution:

Wokwi link: <https://wokwi.com/projects/347025068950291027>

The image shows the Wokwi simulation interface. On the left, the code for `esp32-blink.ino` is displayed. The code includes necessary libraries, defines pin numbers and constants, and sets up an MQTT client to publish distance data to IBM Cloud IoT Platform. The right side of the interface shows a 3D simulation of the ESP32 board connected to an HC-SR04 ultrasonic sensor. Below the simulation, a console window shows the output of the program, including distance measurements in both centimeters and inches, and confirmation messages for publishing data to the cloud.

```
1 #include <WiFi.h>
2 #include <WiFiClient.h>
3 #include <PubSubClient.h>
4 const int trigPin = 5;
5 const int echoPin = 18;
6 //define sound speed in cm/us
7 #define SOUND_SPEED 0.034
8 #define CM_TO_INCH 0.393701
9 long duration;
10 float distanceCm;
11 float distanceInch;
12
13
14 void callback(char* subscribtopic, byte* payload, unsigned int payloadlength);
15 //-----credentials of IBM Accounts-----
16
17 #define ORG "0sqd61"//IBM ORGANITION ID
18 #define DEVICE_TYPE "team21ot"//Device type mentioned in ibm watson IOT Platform
19 #define DEVICE_ID "12"//Device ID mentioned in ibm watson IOT Platform
20 #define TOKEN "32fAo7G3H9GcnuM" //Token
21 String data3;
22
23
24
25 //----- Customise the above values -----
26 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name
27 char publishTopic[] = "iot-2/evt/data/fmt/json";// topic name and type of event perform and
28 char subscribtopic[] = "iot-2/cmd/test/fmt/String";// cmd REPRESENT command type AND CON
29 char authMethod[] = "use-token-auth";// authentication method
30 char token[] = TOKEN;
31 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id
32
33 WiFiClient wificlient; // creating the instance for wificlient
34 PubSubClient client(server, 1883, callback ,wificlient);
35
```

Simulation console output:

```
Publish ok
Distance (cm): 216.94
Distance (inch): 85.41
Sending payload: {"Distance (cm)":216.94}
Publish ok
Reconnecting client to 0sqd61.messaging.internetofthings.ibmcloud.com
```

Images of ibm cloud:

