

## Assignment -4

Assignment Date	31 October 2022
Student Name	Vijay Adhars Raj S
Student Roll Number	620119104113
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/347013031284179538>

The screenshot displays the Wokwi IDE interface. On the left, the code for 'esp32-blink.ino' is shown, which includes necessary libraries, defines pin numbers (trigPin = 5, echoPin = 18), and sets up the connection to IBM Cloud IoT Platform. The code uses the 'use-token-auth' method for authentication. The right side of the interface shows a simulation of the ESP32 board connected to an HC-SR04 ultrasonic sensor. Below the simulation, a log window displays the sensor's output and the data being sent to the cloud. The log shows the distance in inches and centimeters, and the JSON payload being sent 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* subscribetopic, byte* payload, unsigned int payloadLength)
15 //-----credentials of IBM Accounts-----
16
17 #define ORG "hztfg"//IBM ORGANITION ID
18 #define DEVICE_TYPE "Assignment4"//Device type mentioned in ibm watson IOT Pla
19 #define DEVICE_ID "assignment4"//Device ID mentioned in ibm watson IOT Platfor
20 #define TOKEN "cNxXipKfzQI0UbJ0TT" //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 even
28 char subscribetopic[] = "iot-2/cmd/test/fmt/String";// cmd REPRESENT command
29 char authMethod[] = "use-token-auth";// authentication method
30 char token[] = TOKEN;
```

Simulation Log:

```
Distance (inch): 85.44
Sending payload: {"Distance (cm)":217.01}
Publish ok
Distance (cm): 217.38
Distance (inch): 85.58
Sending payload: {"Distance (cm)":217.38}
Publish ok
```

## Images of ibm cloud:

The screenshot displays the IBM Watson IoT Platform dashboard. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. A sidebar on the left contains icons for various platform features. The main content area shows a list of devices, with 'assignment4' selected. Below the device list, a modal window titled 'Recent Events' is open, displaying a table of live data events.

Device List:

Device	Status	Device Type	Device	Last Seen
Deviceid1	Disconnected	DeviceType1	Device	Oct 27, 2022 12:15 PM
assignment4	Connected	Assignment4	Device	Oct 31, 2022 11:30 AM

Recent Events:

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data	{"Distance (cm)":216.99}	json	a few seconds ago
Data	{"Distance (cm)":216.94}	json	a few seconds ago
Data	{"Distance (cm)":216.97}	json	a few seconds ago
Data	{"Distance (cm)":217.38}	json	a few seconds ago
Data	{"Distance (cm)":217.01}	json	a few seconds ago

0 Simulations running