

## Assignment -4

Assignment Date	31 October 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: <http://wokwi.com/projects/347101973084897874>

The screenshot displays the Wokwi IDE interface. On the left, the 'sketch.ino' file contains the following code:

```
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 Speed 0.034
8 #define cm_to_inch 0.393701
9 long duration;
10 float distance;
11 float distanceInch;
12
13
14 void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
15 //-----credentials of IBM Accounts-----
16
17 #define ORG "bxhs9j"//IBM ORGANITION ID
18 #define DEVICE_TYPE "esp32-devicetype"//Device type mentioned in ibm watson IoT
19 #define DEVICE_ID "esp32-deviceid"//Device ID mentioned in ibm watson IoT Plat
20 #define TOKEN "poiuytre" //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
```

On the right, the 'Simulation' window shows a circuit diagram of an HC-SR04 sensor connected to an Arduino Uno. The sensor's VCC pin is connected to the Arduino's 5V pin, GND to GND, Trig to pin 5, and Echo to pin 18. Below the diagram, the 'Publish' logs show the following output:

```
Publish ok
Distance : 99.99
Sending payload: {"Distance in Centimeter":99.99}
Publish ok
Distance : 99.99
Sending payload: {"Distance in Centimeter":99.99}
Publish ok
```

## Images of ibm cloud:

The screenshot displays the IBM Watson IoT Platform dashboard. The top navigation bar includes tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. A search bar and an 'Add Device' button are also present. The main content area shows a list of devices, with one device selected and its details expanded. The device is named 'esp32-deviceid' and is in a 'Connected' state. The 'Recent Events' tab is active, showing a stream of data events. The events are listed in a table with columns for 'Event', 'Value', 'Format', and 'Last Received'. The events show distance measurements in centimeters, with values ranging from 99.98 to 114.99. The dashboard is viewed on a desktop browser, with the Windows taskbar visible at the bottom.

Event	Value	Format	Last Received
Data	{"Distance in Centimeter":99.98}	json	a few seconds ago
Data	{"Distance in Centimeter":99.98}	json	a few seconds ago
Data	{"Distance in Centimeter":99.98}	json	a few seconds ago
Data	{"Distance in Centimeter":100.95}	json	a few seconds ago
Data	{"Distance in Centimeter":114.99}	json	a few seconds ago