

Assignment -4

Assignment Date	31 October 2022
Student Name	Keerthivasan R
Student Roll Number	611219106038
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/347107467545543250>

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* subscribtopic, byte* payload, unsigned int payloadLength);
15 //-----credentials of IBM Accounts-----
16
17 #define ORG "iicbg"//IBM ORGANITION ID
18 #define DEVICE_TYPE "keerthi"//Device type mentioned in ibm watson IOT Platform
19 #define DEVICE_ID "keerthi123"//Device ID mentioned in ibm watson IOT Platform
20 #define TOKEN "keerthi1234" //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
28 char subscribtopic[] = "iot-2/cmd/test/fmt/String";// cmd REPRESENT command type AND C
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);
```

On the right, the 'Simulation' window shows a visual representation of the ESP32 microcontroller connected to an HC-SR04 ultrasonic sensor. The console output shows the following sequence of events:

```
Publish ok
Distance : 99.98
Sending payload: {"Distance in Centimeter":99.98}
Publish ok
Distance : 99.98
Sending payload: {"Distance in Centimeter":99.98}
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 is present, and an 'Add Device' button is in the top right. The main content area shows a table of devices. The first device, 'keerthi123', is highlighted, and its details are expanded below. The details view includes tabs for 'Identity', 'Device Information', 'Recent Events', 'State', and 'Logs'. The 'Recent Events' tab is active, showing a list of events with columns for 'Event', 'Value', 'Format', and 'Last Received'.

Event	Value	Format	Last Received
Data	{"Distance in Centimeter":99.96}	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":99.98}	json	a few seconds ago
Data	{"Distance in Centimeter":99.98}	json	a few seconds ago