

Assignment -4

Assignment Date	31 October 2022
Student Name	Lokesh S
Student Roll Number	611219106042
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: wokwi.com/projects/347113278507319890

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 "54zv1e"//IBM ORGANITION ID
18 #define DEVICE_TYPE "Lokesh"//Device type mentioned in ibm watson IOT Platform
19 #define DEVICE_ID "Lokesh123"//Device ID mentioned in ibm watson IOT Platform
20 #define TOKEN "Lokesh1234" //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
28 char subscribetopic[] = "iot-2/cmd/test/fmt/String";// cmd REPRESENT command
29 char authMethod[] = "use-token-auth";// authentication method
30 char token[] = TOKEN;
```

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 'Sketch.ino - Wokwi Arduino and', 'Service Details - IBM Cloud', 'IBM Watson IoT Platform', and 'Verify your identity - 2k19ece042'. The browser address bar shows the URL '54zv1e.internetofthings.ibmcloud.com/dashboard/devices/browse'. The dashboard header shows the user '2k19ece042@kiot.ac.in' with ID '54zv1e'. The main content area is titled 'Browse' and shows a table of devices. The first device listed is 'Lokesh123', which is 'Connected' and has a 'Device Type' of 'Lokesh'. Below the device list, a modal window titled 'Recent Events' is open, showing a stream of data events. The events are all 'Data' type, with a value of '{"Distance in Centimeter":99.94}' or '{"Distance in Centimeter":99.98}', in 'json' format, and were received 'a few seconds ago'.

Device ID	Status	Device Type	Class ID	Date Added
Lokesh123	Connected	Lokesh	Device	Nov 1, 2022 2:16 PM

Event	Value	Format	Last Received
Data	{"Distance in Centimeter":99.94}	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":99.94}	json	a few seconds ago