

Assignment -4

Assignment Date	31 October 2022
Student Name	Sri Vijay kumar RM
Student Roll Number	611219106074
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/347104223617352274>

The screenshot shows the Wokwi IDE interface. On the left, the 'PROJECT CODE.ino' tab displays 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 {
16     //-----credentials of IBM Accounts-----
17     #define ORG "x6nbso"//IBM ORGANITION ID
18     #define DEVICE_TYPE "vijay"//Device type mentioned in ibm watson IOT Platform
19     #define DEVICE_ID "vijay123"//Device ID mentioned in ibm watson IOT Platform
20     #define TOKEN "vijay1234" //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' tab shows a visual representation of the ESP32 microcontroller connected to an 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
```

The bottom status bar indicates the system temperature is 28°C, mostly cloudy, and the date is 01-11-2022.

Images of ibm cloud:

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. The main content area shows the details for a device named 'vijay123', which is currently 'Disconnected'. The device's state is 'vijay' and it was last updated on 'Nov 1, 2022 11:54 AM'. Below this, there are tabs for 'Identity', 'Device Information', 'Recent Events', 'State', and 'Logs'. The 'Recent Events' tab is selected, showing a list of events with columns for 'Event', 'Value', 'Format', and 'Last Received'. The events listed are all 'Data' events with JSON values representing distance in centimeters, received 'a few seconds ago'.

Event	Value	Format	Last Received
Data	{"Distance in Centimeter":100.01}	json	a few seconds ago
Data	{"Distance in Centimeter":100.03}	json	a few seconds ago
Data	{"Distance in Centimeter":98.94}	json	a few seconds ago
Data	{"Distance in Centimeter":96.97}	json	a few seconds ago
Data	{"Distance in Centimeter":103.97}	json	a few seconds ago