

Assignment -4

Assignment Date	31 October 2022
Student Name	Boobalan R
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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: <https://wokwi.com/projects/347020481393590867>

The screenshot displays the Wokwi web-based IDE. On the left, the code for an ESP32 is shown, which includes the necessary libraries and defines the pins for the ultrasonic sensor. It also sets up the IBM Cloud IoT Platform credentials and the topic for sending distance data. The main loop reads the distance from the sensor and publishes it to the cloud if it's less than 100 cm. On the right, the simulation window shows the physical components: an ESP32 microcontroller and an HC-SR04 ultrasonic sensor. The sensor's output is displayed in the console, showing the distance in inches and centimeters. The console also shows the JSON payload being sent to the cloud and the successful publication status.

```
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* topic, byte* payload, unsigned int payloadLength)
15 //-----credentials of IBM Accounts-----
16
17 #define ORG "ghq3wv"//IBM ORGANITION ID
18 #define DEVICE_TYPE "Boobalan1"//Device type mentioned in ibm watson IOT Platf
19 #define DEVICE_ID "2001"//Device ID mentioned in ibm watson IOT Platform
20 #define TOKEN "hyT84+@H8rmM(SULM" //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 subscribTopic[] = "iot-2/cmd/test/fmt/String";// cmd REPRESENT command
29 char authMethod[] = "use-token-auth";// authentication method
```

Simulation window output:

```
Distance (inch): 85.41
Sending payload: {"Distance (cm)":216.94}
Publish ok
Distance (cm): 216.94
Distance (inch): 85.41
Sending payload: {"Distance (cm)":216.94}
Publish ok
```

Images of ibm cloud:

