

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: <https://wokwi.com/projects/347013031284179538>

The screenshot displays the Wokwi web interface for a project titled "esp32-blink.ino". The code on the left includes headers for WiFi, WiFiClient, and PubSubClient, and defines constants for the trigPin (5) and echoPin (18). It also defines the sound speed (0.034 cm/uS) and the speed of sound (333.701 m/s). The code sets up the WiFi connection and the IBM Cloud IoT Platform credentials. The main loop reads the distance from the ultrasonic sensor and publishes it to the "iot-2/cmd/test/fmt/String" topic on the "iot-2/cmd/test/fmt/String" topic. The simulation output on the right shows the sensor detecting a distance of 85.44 inches and publishing a payload to the cloud.

```
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 CHL_TO_INCH 0.393701
9 long duration;
10 float distanceCm;
11 float distanceInch;
12
13
14 void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
15 //-----credentials of IBM Accounts-----
16
17 #define ORG "hztfg"//IBM ORGANITION ID
18 #define DEVICE_TYPE "Assignment4"//Device type mentioned in ibm watson IOT Pla
19 #define DEVICE_ID "assignment4"//Device ID mentioned in ibm watson IOT Platfor
20 #define TOKEN "cN0X1pKfZQI0Ub)0TT" //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
30 char token[] = TOKEN;
```

Simulation output:

```
Distance (inch): 85.44
Sending payload: {"Distance (cm)":217.01}
Publish ok
Distance (cm): 217.38
Distance (inch): 85.58
Sending payload: {"Distance (cm)":217.38}
Publish ok
```

Images of ibm cloud:

