

Assignment -4

Assignment Date	31 October2022
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Student Roll Number	620119104104
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/347020093114286676>

The screenshot displays the Wokwi web interface for an ESP32-based project. The code on the left includes the following key sections:

```
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* subscribetopic, byte* payload, unsigned int payloadLength)
15 //-----credentials of IBM Accounts-----
16
17 #define ORG "fbg9gu"//IBM ORGANITION ID
18 #define DEVICE_TYPE "gobinath4"//Device type mentioned in ibm watson IOT Platf
19 #define DEVICE_ID "GOBINATH4"//Device ID mentioned in ibm watson IOT Platform
20 #define TOKEN "yv8BmHDaXvklm727H" //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;
```

The simulation on the right shows the HC-SR04 sensor connected to the ESP32. The output console displays the following sequence of events:

```
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:

The screenshot displays the IBM Watson IoT Platform dashboard. The top navigation bar includes tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. A sidebar on the left contains icons for various IoT functions. The main content area shows a list of devices, with 'GOBINATH4' selected. Below the device list, a modal window titled 'Recent Events' is open, displaying a table of live data streams.

Device List:

Device ID	Status	Device Type	Device	Last Event
Deviceid1	Disconnected	Devicetype1	Device	Oct 27, 2022 3:08 PM
GOBINATH4	Disconnected	gobinath4	Device	Oct 31, 2022 12:30 PM

Recent Events for GOBINATH4:

Event	Value	Format	Last Received
Data	{"Distance (cm)":216.94}	json	a few seconds ago
Data	{"Distance (cm)":216.94}	json	a few seconds ago
Data	{"Distance (cm)":216.97}	json	a few seconds ago
Data	{"Distance (cm)":216.97}	json	a few seconds ago

The bottom of the image shows a Windows taskbar with the search bar, application icons, and system tray information including temperature (28°C) and time (12:35 PM, 31-10-2022).