

Assignment 4

ESP32 Program

Assignment Date	01 November 2022
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Maximum Marks	2 Marks

Question-1:

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.

The screenshot displays the Wokwi simulation environment. On the left, the code editor shows the following C++ code for an ESP32:

```
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 "fleg7e"//IBM ORGANIZATION ID
18 #define DEVICE_TYPE "ultrasonic"//Device type mentioned in ibm watson IOT Platform
19 #define DEVICE_ID "shud_2"//Device ID mentioned in ibm watson IOT Platform
20 #define TOKEN "CVzAxfQUG7sa_7wKz" //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 perform
28 char subscribetopic[] = "iot-2/cmd/test/fmt/string";// cmd REPRESENT command type AND CO
29 char authMethod[] = "use-token-auth";// authentication method
30 char token[] = TOKEN;
31 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id
32
33 WiFiClient wifiClient; // creating the instance for wifiClient
34 PubSubClient client(server, 1883, callback ,wifiClient);
35
```

On the right, the simulation window shows a circuit diagram with an ESP32 microcontroller connected to an HC-SR04 ultrasonic sensor. The sensor's VCC pin is connected to the ESP32's 5V pin, GND to GND, and the trig and echo pins to digital pins 5 and 18 respectively. The simulation status bar at the top right shows a timer at 01:37.753 and 99% battery. The console output at the bottom shows the following log:

```
Publish ok
Distance (cm): 216.94
Distance (inch): 85.41
Sending payload: {"Distance (cm)":216.94}
Publish ok
Reconnecting client to fleg7e.messaging.internetofthings.ibmcloud.com
..
```

