

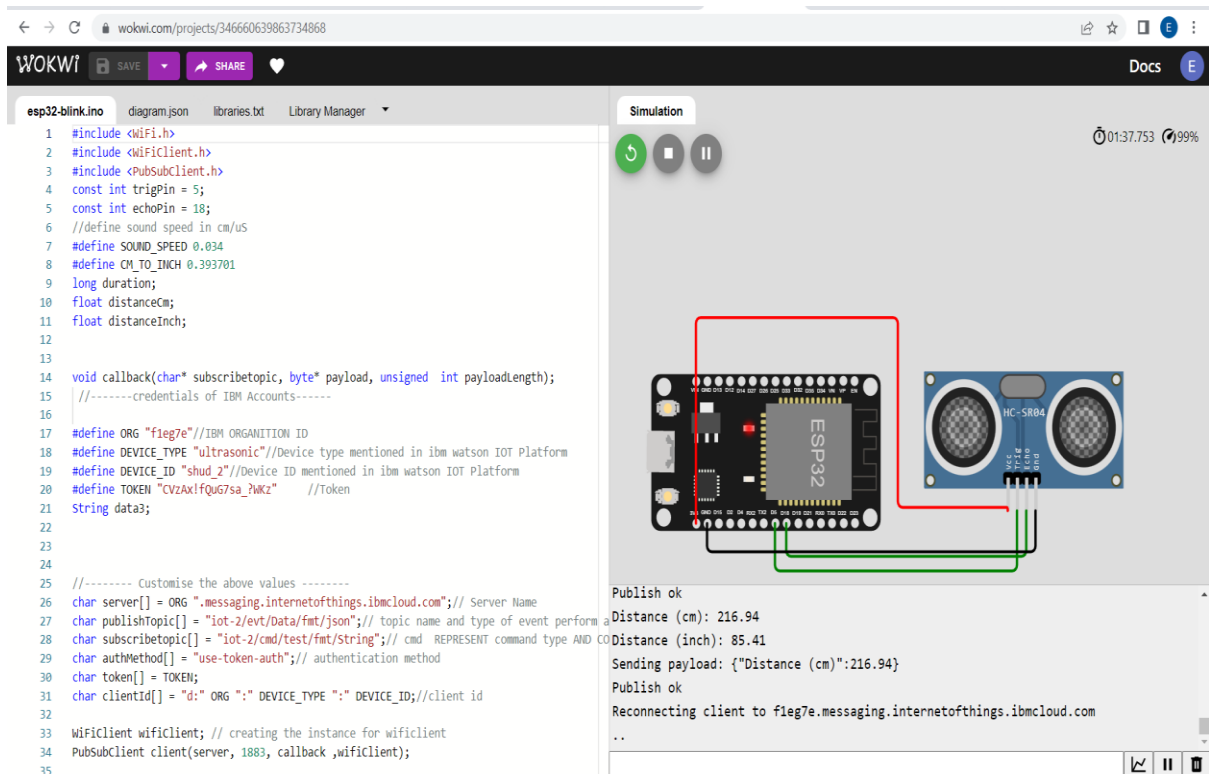
Assignment 4

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 IDE interface. On the left, the code for `esp32-blink.ino` is shown, which includes libraries for WiFi, WiFiClient, and PubSubClient. It defines constants for the trigPin, echoPin, and sound speed. The code sets up the sensor and configures it to send distance data to IBM Watson IoT Cloud. The right side shows the simulation of the ESP32 and HC-SR04 sensor. The console output indicates the sensor is publishing distance data 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 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 ORGANITION 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 "CV2AxlfQuG7sa_?hKz" //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 a
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

```

Simulation Output:

```

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
..

```

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<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
<input checked="" type="checkbox"/>	shud_2	Disconnected	ultrasonic	Device	Oct 27, 2022 1:52 PM	

Identity	Device Information	Recent Events	State	Logs
The recent events listed show the live stream of data that is coming and going from this device.				
Event	Value	Format	Last Received	
Data	{"Distance (cm)":216.94}	json	a few seconds ago	
Data	{"Distance (cm)":216.97}	json	a few seconds ago	
Data	{"Distance (cm)":216.94}	json	a few seconds ago	
Data	{"Distance (cm)":216.94}	json	a few seconds ago	
Data	{"Distance (cm)":216.94}	json	a few seconds ago	