

Assignment - 4

ESP 32 – Ultrasonic Sensor

Assignment Date	31 October 2022
Student Name	Haripriya S
Student Roll Number	611219106027
Maximum Marks	2 Marks

Question-1:

Write code and Connection in wokwi for ultrasonic sensor

Solution:

Wokwi Simulation:

The image shows the Wokwi simulation environment. On the left, the code editor displays the following code:

```
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 CML_TO_INCH 0.393701
9 long duration;
10 float distancecm;
11 float distanceInch;
12
13 void callback(char* topic, byte* payload, unsigned int payloadLength);
14 //-----credentials of IBM Accounts-----
15
16 #define ORG "8cz1ls"//IBM ORGANIZATION ID
17 #define DEVICE_TYPE "assign4"//Device type mentioned in IBM Watson IoT Platform
18 #define DEVICE_ID "assign4"//Device ID mentioned in IBM Watson IoT Platform
19 #define TOKEN "ScPMWdGdyo@_nGc" //Token
20 String data;
21
22 //----- Customise the above values -----
23
24 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // Server Name
25 char publishTopic[] = "iot-2/evt/data/fmt/json"; // topic name and type of event perform a
26 char subscribeTopic[] = "iot-2/cmd/test/mqtt/string"; // cmd REPRESENT command type AND CO
27 char authMethod[] = "use-token-auth"; // authentication method
28 char token[] = TOKEN;
29 char clientId[] = "ds-ORG-": DEVICE_ID; //client id
30
31 WiFiClient wifiClient; // creating the instance for wifiClient
32 PubSubClient client(server, 1883, callback, wifiClient);
```

On the right, the simulation window shows a circuit diagram of 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 Trig to pin 5, Echo to pin 18. The simulation output shows the following data:

```
Distance (inch): 85.41
Sending payload: {"Distance (cm)":216.94}
Publish ok
Distance (cm): 216.95
Distance (inch): 85.42
Sending payload: {"Distance (cm)":216.95}
Publish ok
```

IoT Watson Platform:

The image shows the IBM Watson IoT Platform interface. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. The main content area displays a table of devices with the following columns: Device ID, Status, Device Type, Class ID, Date Added, and Descriptive Location. The device 'assign4' is shown with a status of 'Connected'. Below the table, the 'Recent Events' tab is selected, showing a list of events with columns: Event, Value, Format, and Last Received. The events are as follows:

Event	Value	Format	Last Received
Data	{"Distance (cm)":216.94}	json	a few seconds ago
Data	{"Distance (cm)":216.95}	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

Wokwi Project Link: <https://wokwi.com/projects/347026268483486290>