

Assignment - 4

Wowki & IBM Cloud

Assignment Date	30 October 2022
Student Name	SNEHA R
Student Roll Number	713119205009
Maximum Marks	2 Marks

Question-1:

Write code and connections in wowki for the ultrasonic sensor. Whenever the distance is less than 100cms sent "alert" to IBM cloud and display in device recent events.

Code:

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>

WiFiClient wifiClient;

#define ORG "oa3490"
#define DEVICE_TYPE "TestDeviceType"
#define DEVICE_ID "12345"
#define TOKEN "-A)0raS44f)fdjYBVS"
#define speed 0.034

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/abcd_1/fmt/json"; char topic[]
= "iot-2/cmd/home/fmt/String"; char authMethod[] = "use-token-
auth"; char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient); void
publishData();
```

```

const int trigpin=5;
const int echopin=18;
String command;

String data="";

String lat="14.167589";
String lon="80.248510";
String name="point2";
String icon="";

long duration;
int dist;

void setup()
{
  Serial.begin(115200) ;
  pinMode(trigpin,
    OUTPUT) ;
  pinMode(echopin, INPUT) ;
  wifiConnect();
  mqttConnect();
}

void loop()  {

  publishData();
  delay(500) ;

  if (!client.loop()) {
    mqttConnect();
  }
}

void wifiConnect() {
  Serial.print("Connecting to ");
  Serial.print("Wifi") ; WiFi.begin("Wokwi-GUEST", "",
6) ; while ( WiFi.status() != WL_CONNECTED)  {
    delay(500) ;
    Serial.print(".") ;
  }
  Serial.print("WiFi connected, IP address: ") ;
  Serial.println( WiFi.localIP());
}

```

```

void mqttConnect() {
    if (! client.connected()) {
        Serial.print("Reconnecting MQTT client to ") ;
        Serial.println( server); while (!client.connect(clientId,
            authMethod, token)) { Serial.print(".") ;
            delay(1000) ;
        }
        initManagedDevice();
        Serial.println() ;
    }
}

void initManagedDevice() {
    if ( client.subscribe(topic)) {
        Serial.println( client.subscribe(topic));
        Serial.println("subscribe to cmd OK") ;
    } else {
        Serial.println("subscribe to cmd FAILED") ;
    } } void
publishData()
{ digitalWrite(trigpin,LOW) ;
  digitalWrite(trigpin,HIGH) ;
  delayMicroseconds(10) ;
  digitalWrite(trigpin,LOW) ;
  duration=pulseIn(echopin,HIGH)
  ; dist=duration*speed/2;

  if(dist<100){
      dist=100- dist; icon="fa-
      trash";
  }else{ dist=0;
      icon="fa-trash-
      o";
  }

  DynamicJsonDocument doc(1024) ;
  String payload; doc["Name"]=
  name; doc["Latitude"]= lat;
  doc["Longitude"]= lon;
  doc["Icon"]= icon;
  doc["FillPercent"]= dist;
  serializeJson(doc, payload);
  delay(3000) ;
  Serial.print("\n") ;
}

```

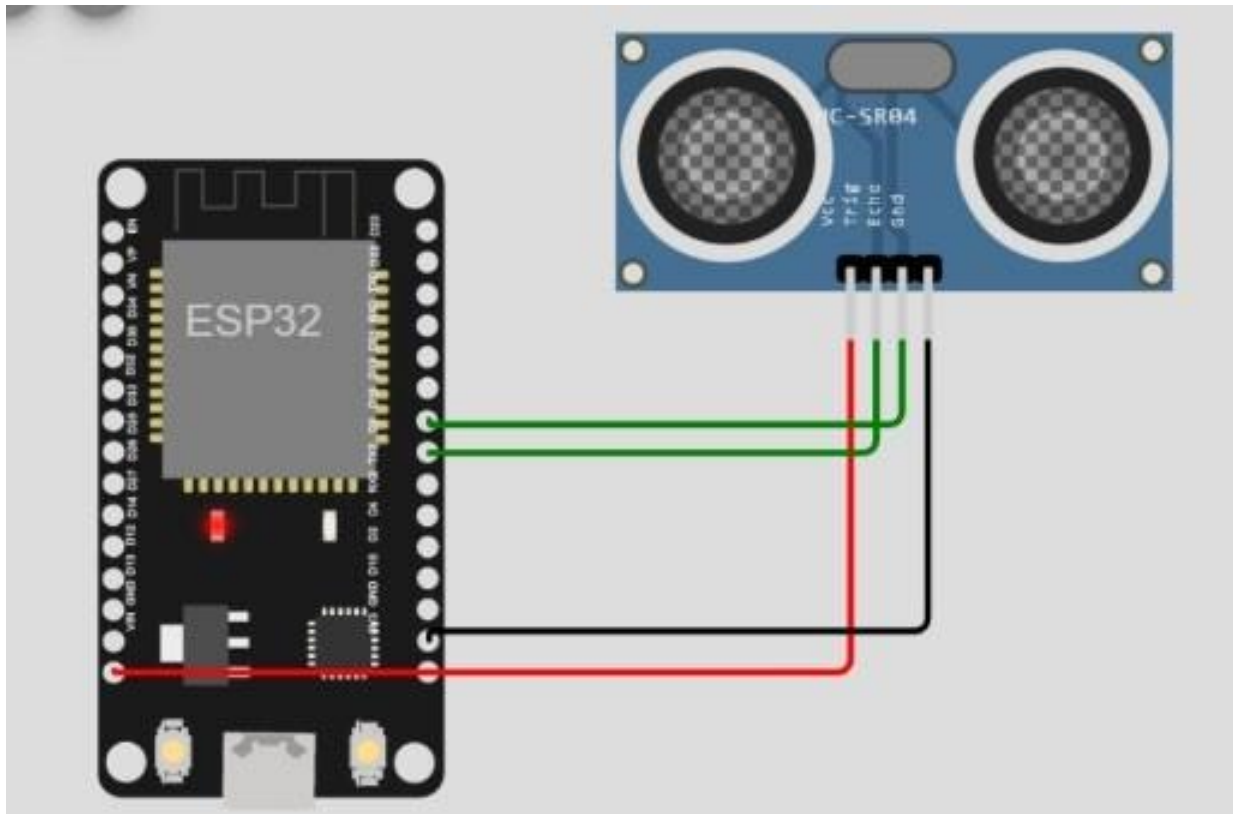
```

Serial.print("Sending payload: ") ;
Serial.println( payload);

if (client.publish(publishTopic, (char*) payload.c_str()))
{ Serial.println("Publish OK") ;
} else {
    Serial.println("Publish FAILED") ;
}
}

```

Connections:



Output:

WOKWI | **SAVE** | **SHARE** | **Docs** | **SIGN**

sketch.ino | diagram.json | libraries.txt | Library Manager

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 #include <ArduinoJson.h>
4
5 WiFiClient wificlient;
6
7 #define ORG "oa3490"
8 #define DEVICE_TYPE "TestDeviceType"
9 #define DEVICE_ID "12345"
10 #define TOKEN "-A)0raS44f)fdjYBVS"
11 #define speed 0.034
12
13 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
14 char publishTopic[] = "iot-2/evt/abcd_1/fmt/json";
15 char topic[] = "iot-2/cmd/home/fmt/String";
16 char authMethod[] = "use-token-auth";
17 char token[] = TOKEN;
18 char clientId[] = "ds:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
19 PubSubClient client(server, 1883, wificlient);
20 void publishData();
21
22 const int trigpin=5;
23 const int echopin=18;
24 String command;
25 String data="";
26 String lat="14.167589";
27 String lon="80.248510";
28 String name="point2";
29 String icon="";
30
31 long duration;
32 int dist;
33
34 void setup()
35 {
```

Simulation

Editing Ultrasonic Distance Sensor
Distance: 94cm

trash", "FillPercent":6}
Publish OK

Sending payload:
{ "Name": "point2", "Latitude": "14.167589", "Longitude": "80.248510", "Icon": "fa-trash", "FillPercent":6}
Publish OK

Output :(IBM Cloud)

IBM Watson IoT Platform | 310619106044@smartintenz.com | ID: oa3490

Browse | Action | Device Types | Interfaces

Device ID: 12345 | Status: Disconnected | Device Type: TestDeviceType | Class ID: Device | Date Added: Oct 25, 2022 12:17 PM

Recent Events

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
event_1	{"Alert Distance":8}	json	a few seconds ago
event_1	{"Alert Distance":81}	json	a few seconds ago
event_1	{"Alert Distance":56}	json	a few seconds ago
event_1	{"Alert Distance":98}	json	a few seconds ago
event_1	{"Alert Distance":72}	json	a few seconds ago

1 Simulation running