

Assignment - 4

Wowki & IBM Cloud

Assignment Date	13 November 2022
Student Name	Madhumitha M
Student Roll Number	723619106501
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") ;
}

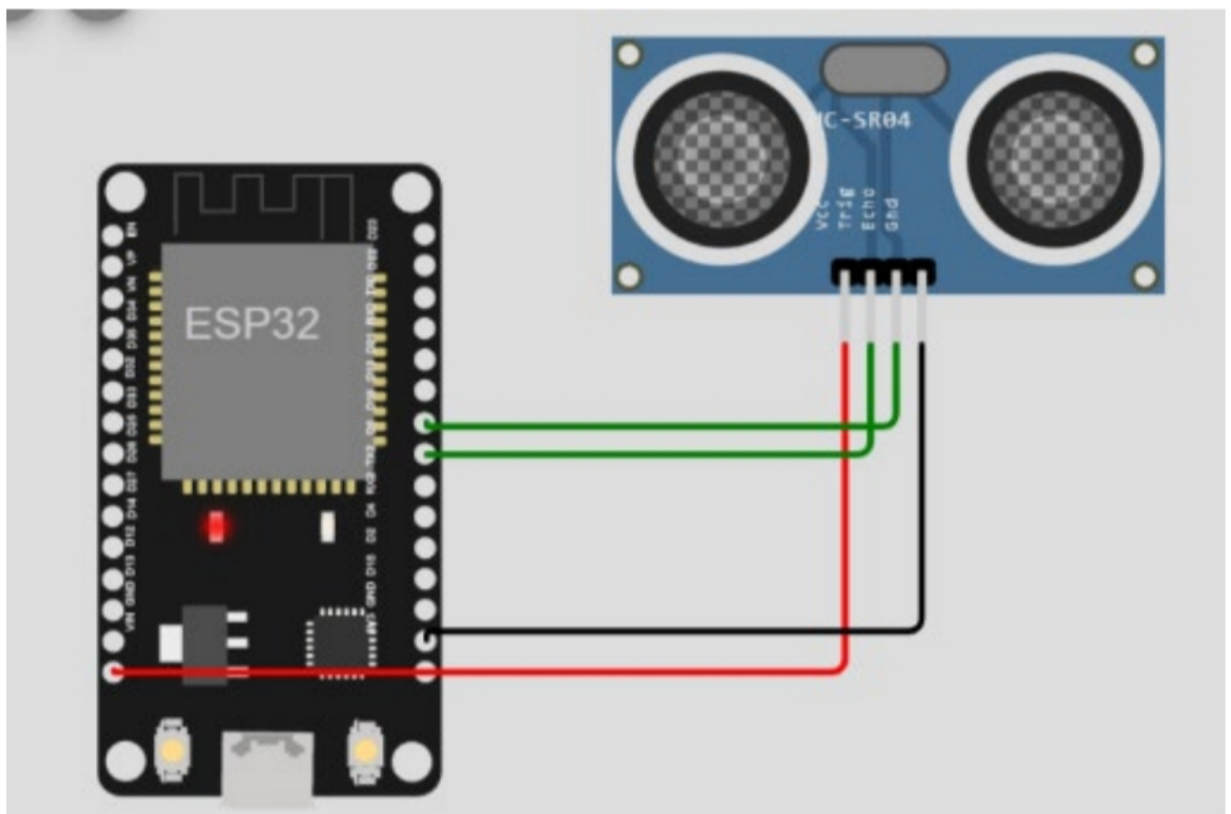
```

```

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 ♥

sketch.ino diagram.json libraries.txt Library Manager

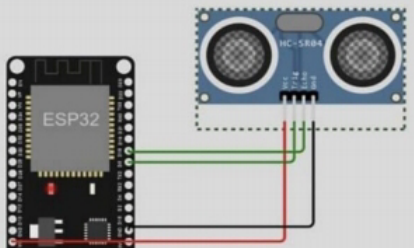
```

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)0ra544f)fdjv8VS"
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[] = "d:" 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 00:36.677 10

Editing Ultrasonic Distance Sensor
Distance: 0.00m 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

oa3490.internetofthings.ibmcloud.com/dashboard/devices/browse

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

Activate Windows
Go to Settings to activate Windows.