

#### Assignment - 4

Assignment Date	4 November 2022
Student Name	K.R.Shalini
Student Roll Number	910619104074
Maximum Marks	2 Marks

Sketch.ino:

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

WiFiClient wifiClient;

#define ORG "kr9fjo"
#define DEVICE_TYPE "TestDeviceType"
#define DEVICE_ID "12345"
#define TOKEN "VJsSC148dk1dCN3UqS"
#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");
}
}

```

Diagram.json:

```

{
  "version": 1,
  "author": "Kishore Annadh S",
  "editor": "wokwi",
  "parts": [
    { "type": "wokwi-esp32-devkit-v1", "id": "esp", "top": -4, "left": -104.67, "attrs": {} },
    { "type": "wokwi-hc-sr04", "id": "ultrasonic1", "top": -40.7, "left": 53.83, "attrs": {} }
  ],
  "connections": [
    [ "esp:TX0", "$serialMonitor:RX", "", [] ],

```

```

[ "esp:RX0", "$serialMonitor:TX", "", [] ],
[ "ultrasonic1:VCC", "esp:VIN", "red", [ "v101.24", "h-228.44" ] ],
[ "ultrasonic1:TRIG", "esp:D5", "green", [ "v33.9", "h-138.33" ] ],
[ "ultrasonic1:ECHO", "esp:D18", "green", [ "v25.24", "h-145.56" ] ],
[ "ultrasonic1:GND", "esp:GND.1", "black", [ "v88.57", "h-152.78" ] ]
]
}

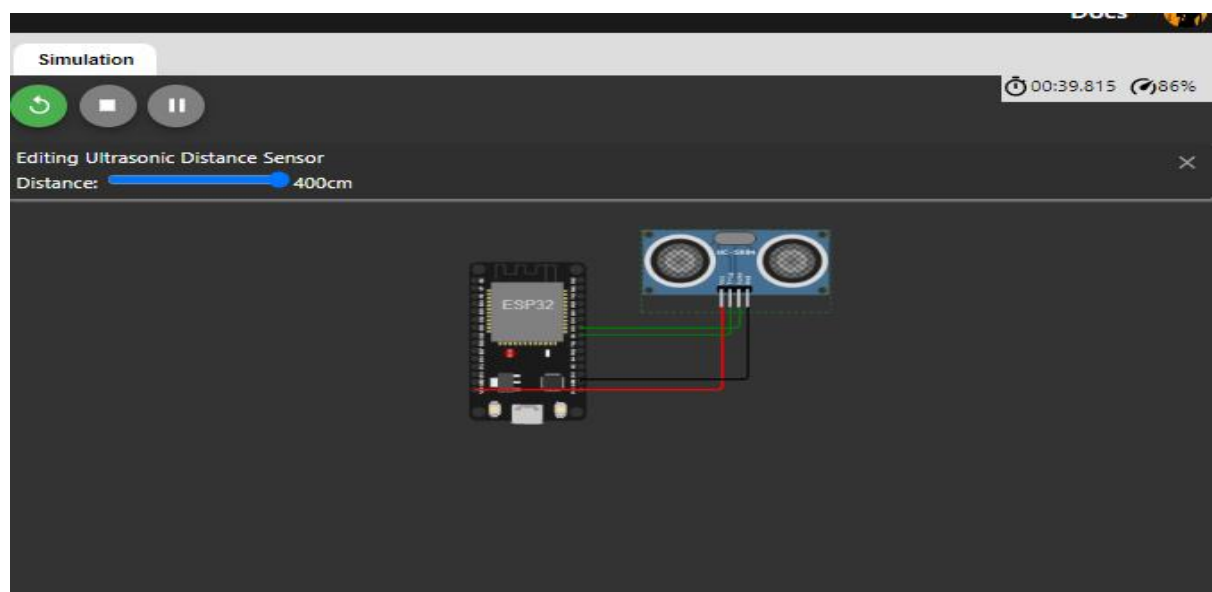
```

Libraries.txt:

```

{
  "version": 1,
  "author": "Kishore Annadh S",
  "editor": "wokwi",
  "parts": [
    { "type": "wokwi-esp32-devkit-v1", "id": "esp", "top": -4, "left": -104.67, "attrs": {} },
    { "type": "wokwi-hc-sr04", "id": "ultrasonic1", "top": -40.7, "left": 53.83, "attrs": {} }
  ],
  "connections": [
    [ "esp:TX0", "$serialMonitor:RX", "", [] ],
    [ "esp:RX0", "$serialMonitor:TX", "", [] ],
    [ "ultrasonic1:VCC", "esp:VIN", "red", [ "v101.24", "h-228.44" ] ],
    [ "ultrasonic1:TRIG", "esp:D5", "green", [ "v33.9", "h-138.33" ] ],
    [ "ultrasonic1:ECHO", "esp:D18", "green", [ "v25.24", "h-145.56" ] ],
    [ "ultrasonic1:GND", "esp:GND.1", "black", [ "v88.57", "h-152.78" ] ]
  ]
}

```



```
Connecting to Wifi..Wifi connected, IP address: 10.10.0.2
Reconnecting MQTT client to kr9fjo.messaging.internetofthings.ibmcloud.com
1
subscribe to cmd OK

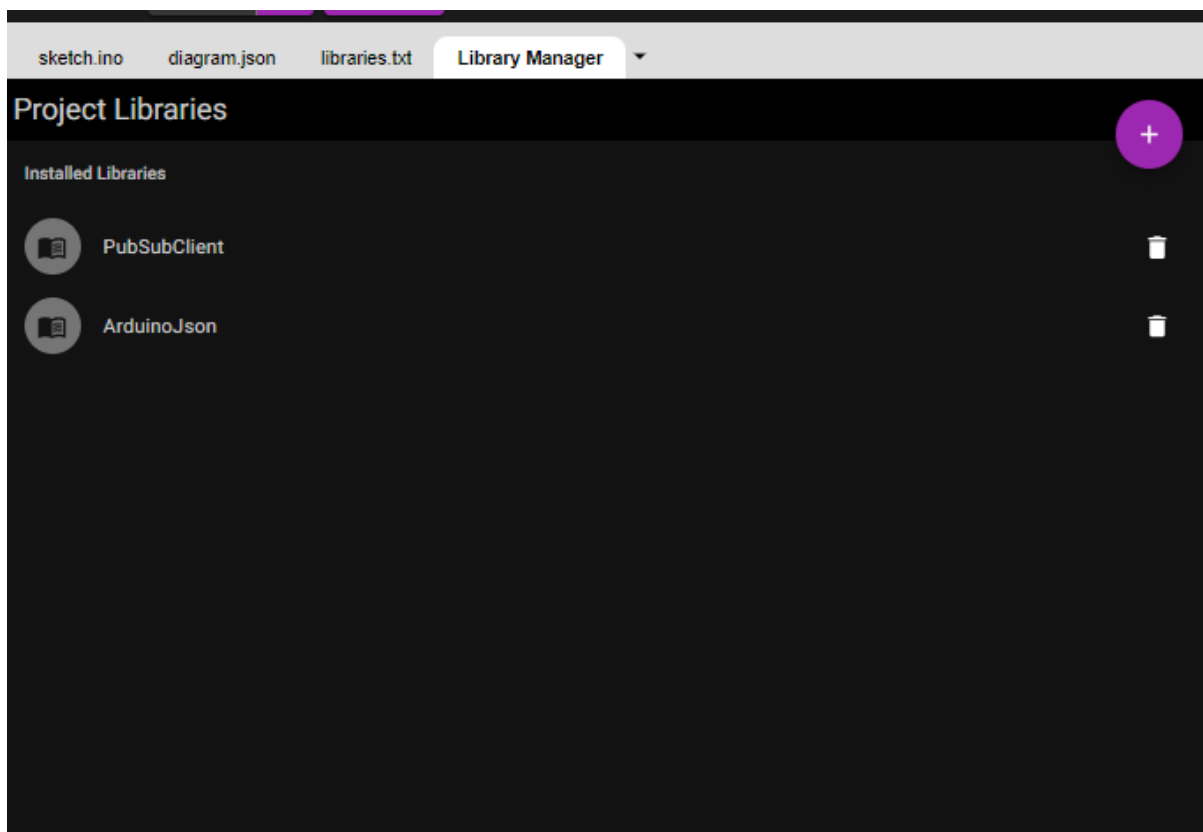
Sending payload: {"Name":"point2","Latitude":"14.167589","Longitude":"80.248510","Icon":"fa-trash-o","FillPercent":0}
Publish OK

Sending payload: {"Name":"point2","Latitude":"14.167589","Longitude":"80.248510","Icon":"fa-trash-o","FillPercent":0}
Publish OK

Sending payload: {"Name":"point2","Latitude":"14.167589","Longitude":"80.248510","Icon":"fa-trash-o","FillPercent":0}
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Publish OK

Sending payload: {"Name":"point2","Latitude":"14.167589","Longitude":"80.248510","Icon":"fa-trash-o","FillPercent":0}
Publish OK
```



Reference Link:

<https://wokwi.com/projects/347103179645649492>