

Assignment - 4

Wowki & IBM Cloud

Assignment Date	30 October 2022
Student Name	DHARSHINI S
Student Roll Number	713119106003
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";
  }

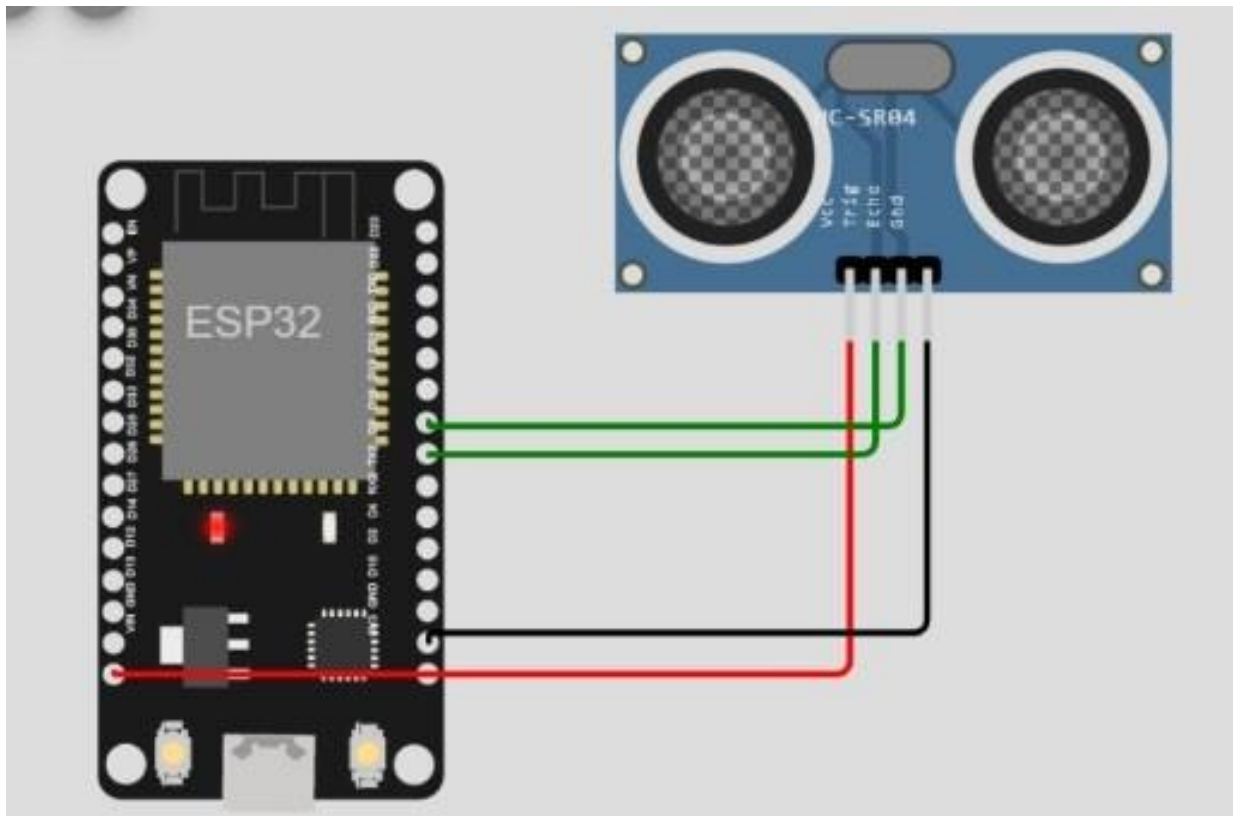
  DynamicJsonDocument doc(1024) ;
  String payload; doc["Name"]=
  name; doc["Latitude"]= lat;
  doc["Longitude"]= lon;
  doc["Icon"]= icon;
  doc["FillPercent"]= dist;
  serializeJson(doc, payload);
  delay(3000) ;
  Serial.print("\n") ;
}

```

```
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)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 00:36.677 10

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

310819106044@smartinternz.com
ID: oa3490

Browse Action Device Types Interfaces

Device ID Status Device Type Class ID Date Added Descriptive Location

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
12345	Disconnected	TestDeviceType	Device	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.