

## Assignment - 4

### WOKWI STIMULATOR

Assignment Date	25 October 2022
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Project	REAL-TIME RIVER WATER QUALITY MONITORING AND CONTROL SYSTEM

#### QUESTION:

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send "alert" to ibm cloud and display in device recent events. Upload document with wokwishare link and images of ibm cloud.

#### CODE:

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

WiFiClient wifiClient;

#define ORG "cpqtkh"
#define DEVICE_TYPE "raspberrypi"
#define DEVICE_ID "12345"
#define TOKEN "12345678"
#define speed 0.034

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/raspberrypi_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();
    }
}

```

```

}

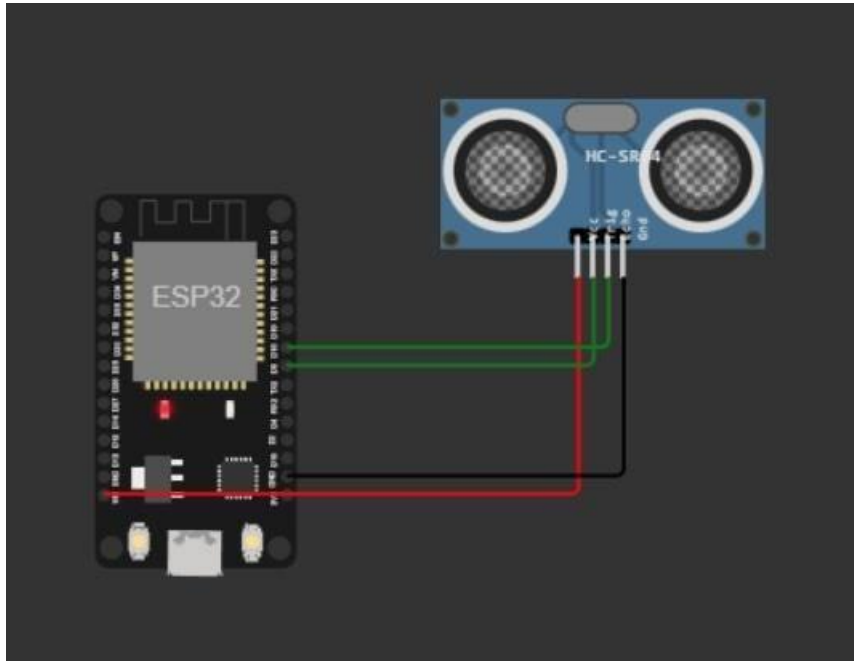
void initManagedDevice() {
    if (client.subscribe(topic)) {
        Serial.println(client.subscribe(topic));
        Serial.println("subscribe to cmd OK");
    } else {
        Serial.println("subscribe to cmd FAILED");
    }
}

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:



## WOKWI LINK:

<https://wokwi.com/projects/346558362836533842>

# OUTPUT:

WOKWI

SAVE

SHARE

Docs

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 "cpqtkh"
8 #define DEVICE_TYPE "raspberrypi"
9 #define DEVICE_ID "12345"
10 #define TOKEN "12345678"
11 #define speed 0.034
12
13 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
14 char publishTopic[] = "iot-2/evt/raspberrypi_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

00:17.916 99%

ESP32

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

IBM Watson IoT Platform

412719104039@smartinternz.com  
ID: cpqtkh

Boards

Devices

Members

Apps

Access

Usage

Security

Settings

Browse

Action

Device Types

Interfaces

Add Device

	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
>	12345	Connected	raspberrypi	Device	26 Oct 2022 11:17	
▼	raspberrypi_2	Connected	raspberrypi	Device	26 Oct 2022 12:37	→ ...

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
eventbatch11	{"Alert distance":45}	json	a few seconds ago
eventbatch11	{"Alert distance":92}	json	a few seconds ago
eventbatch11	{"Alert distance":44}	json	a few seconds ago
eventbatch11	{"Alert distance":44}	json	a few seconds ago
eventbatch11	{"Alert distance":46}	json	a few seconds ago

3 Simulations running