

ASSIGNMENT-IV

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.

Code:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "ezz2d7"
#define DEVICE_TYPE "Siddiq1502"
#define DEVICE_ID "311419106001"
#define TOKEN "VG?OW)NNBM6pbe&!+Q"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/data/fmt/json";
char topic[] = "iot-2/cmd/command/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);

const int trigpin=5;
const int echopin=18;
String command;
String data="";
long duration;
float dist;

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

void loop() {
```

```

bool isNearby = dist < 100;
    digitalWrite(led, isNearby);
    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(500);
        }
        initManagedDevice();
        Serial.println();
    }
}

void initManagedDevice() {
    if (client.subscribe(topic)) {
        // Serial.println(client.subscribe(topic));
        Serial.println("IBM 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){
String payload = "{\"Alert Distance\":\"";
payload += dist;

payload += "}";

Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish OK");
}
}
if(dist>100){
String payload = "{\"Distance\":\"";
payload += dist;
payload += "}";

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");
}

}

}

```

WOKWI SAVE SHARE Docs

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

```

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16 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
17 PubSubClient client(server, 1883, wifiClient);
18
19 const int trigpin=5;
20 const int echopin=18;
21 String command;
22 String data="";
23 long duration;
24 float dist;
25
26 void setup()
27 {
28   Serial.begin(115200);
29   pinMode(led, OUTPUT);
30   pinMode(trigpin, OUTPUT);

```

Simulation

01:12.478 84%

Publish OK

Sending payload: {"Distance":399.96}

Publish OK

Sending payload: {"Distance":399.92}

Publish OK

Service Details - IBM Cloud x IBM Watson IoT Platform x (no subject) - abubakarsiddi x sketch.ino - Wokwi Arduino x sketch.ino - Wokwi Arduino x

← → eez2d7.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform abubakarsiddi4693@gmail.com ID: eez2d7

Browse Action Device Types Interfaces Add Device

311419106001 Disconnected siddiq1502 Device Nov 12, 2022 4:35 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	{"Distance":67}	json	a few seconds ago
event_1	{"Distance":391}	json	a few seconds ago
event_1	{"Distance":126}	json	a few seconds ago
event_1	{"Distance":157}	json	a few seconds ago
event_1	{"Distance":164}	json	a few seconds ago

1 Simulation running

Wokwi link: <https://wokwi.com/projects/348660394682745428>