

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.

CODING:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "8talap"
#define DEVICE_TYPE "KaranKeswani09"
#define DEVICE_ID "KaranKeswaniece"
#define TOKEN "RlbANiQCRC)2c7d!hJ"
#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 - Wokwi Arduino and IoT IDE

https://wokwi.com/projects/348657975224697427

WOKWI SAVE SHARE

Docs

sketch.ino diagram.json libraries.txt Library Manager

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17 PubSubClient client(server, 1883, wifiClient);
18
19 const int trigpin=5;
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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);
```

Simulation

00:05.873 92%

HC-SR04

ESP32

Publish OK

Sending payload: {"Distance":399.96}

Publish OK

Sending payload: {"Distance":399.96}

Publish OK

29°C Haze 15:23 18-11-2022

IBM Watson IoT Platform

ogkaraneswani@gmail.com
ID: 8talap

Browse Action Device Types Interfaces Add Device

Device ID	Status	Device Type	Class ID	Date Added
KaranKeswani09	Disconnected	KaranKeswani09	Device	Nov 18, 2022 11:01 AM

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":108}	json	a few seconds ago
event_1	{"distance":280}	json	a few seconds ago
event_1	{"distance":284}	json	a few seconds ago
event_1	{"distance":189}	json	a few seconds ago
event_1	{"distance":398}		

1 Simulation running

WOKWI LINK:-<https://wokwi.com/projects/348657975224697427>