

## NALAIYA THIRAN

### ASSIGNMENT-4

**USER CASE: PERSONAL ASSISTANCE FOR SENIORS WHO ARE SELF RELIANT BY  
TEAM LEAD: TEAM MEMBER 2(HARI PPRIYA V)**

**Write a code and connection in wokwi for the Ultrasonic sensor. Whenever the distance is less than 100cm send an “Alert” to the IBM cloud and display in the device recent events.**

#### **CODE:**

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "3eqctu"
#define DEVICE_TYPE "ESP32"
#define DEVICE_ID "0000"
#define TOKEN "123456789"
#define speed 0.034 #define
led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/shreedharen/fmt/json"; char
topic[] = "iot-2/cmd/led/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("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");  
}  
}}
```

**OUTPUT:**

**LINK:** <https://wokwi.com/projects/348038026125902419>

Chat with mentor

Node-RED: node-12

IoT-B3-3M5E (Evenin

IBM-Project-42199-1

sketch.ino - Wokwi A

IBM Watson IoT Plat

Service Details - IBM

https://wokwi.com/projects/348038026125902419

WOKWI

SAVE

SHARE

sketch.ino

Docs

sketch.ino

diagram.json

libraries.txt

Library Manager

Simulation

00:15.486 100%

Publish OK

Sending payload:{"Distance":399.94}

Publish OK

Sending payload:{"Distance":399.96}

Publish OK

```

1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wificlient;
4 String data3;
5 #define ORG "3eqctu"
6 #define DEVICE_TYPE "ESP32"
7 #define DEVICE_ID "0000"
8 #define TOKEN "123456789"
9 #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/shreedharen/fmt/json";
13 char topic[] = "iot-2/cmd/led/fmt/String";
14 char authMethod[] = "use-token-auth";
15 char token[] = TOKEN;
16 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
17 PubSubClient client(server, 1883, wificlient);
18 const int trigpin=5;
19 const int echopin=18;
20 String command;
21 String data="";
22 long duration;
23 float dist;
24 void setup()
25 {
26   Serial.begin(115200);
27   pinMode(led, OUTPUT);
28   pinMode(trigpin,
29   OUTPUT);
30   pinMode(echopin, INPUT);
31   wifiConnect();
32   mqttConnect();
33 }
34 void loop() {
35   bool isNearby = dist < 100;

```

Browse

Action

Device Types

Interfaces

Add Device

Search by Device ID

Device Simulator

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
0000	Connected	ESP32	Device	Nov 12, 2022 6:40 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
shreedharen	{"Distance":399.96}	json	a few seconds ago
shreedharen	{"Distance":399.96}	json	a few seconds ago
shreedharen	{"Distance":399.94}	json	a few seconds ago
shreedharen	{"Distance":399.94}	json	a few seconds ago
shreedharen	{"Distance":399.96}	json	a few seconds ago