

## ASSIGNMENT-4

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CODE :

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "aoy5no"
#define DEVICE_TYPE "naram"
#define DEVICE_ID "123"
#define TOKEN "123456789"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/naram/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="";
```

```
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("Warning crosses 110cm -- it automatically of the loop");
digitalWrite(led,HIGH);
}
}
if(dist>101 && dist<111){
String payload = "{\"Normal Distance\":";
payload += dist;
payload += "}";

Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
}
}

void callback(char* subscribeTopic, byte* payload, unsigned int payloadLength){
Serial.print("callback invoked for topic:");
Serial.println(subscribeTopic);
for(int i=0; i<payloadLength; i++){
dist += (char)payload[i];
}
Serial.println("data:" + data3);
if(data3=="lighton"){
Serial.println(data3);
digitalWrite(led,HIGH);
}
data3="";
}

```

esp32-dht22.ino

diagram.json

libraries.txt

Library Manager

```

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2  #include <PubSubClient.h>
3  WiFiClient wifiClient;
4  String data3;
5  #define ORG "aoy5no"
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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 void publishData();
19
20
21 const int trigpin=5;
22 const int echopin=18;
23 String command;
24 String data="";
25
26 long duration;
27 float dist;
28
29
30
31 void setup()

```

Simulation

00:39.654 80%

Editing Ultrasonic Distance Sensor

Distance: 28cm

Warning crosses 110cm -- it automatically of the loop  
  
Sending payload: {"Alert Distance":27.95}  
Warning crosses 110cm -- it automatically of the loop  
  
Sending payload: {"Alert Distance":27.98}  
Warning crosses 110cm -- it automatically of the loop

## CLOUD OUTPUT:

123

Connected

naram

Device

29 Oct 2022 14:32

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
naram	{"Alert Distance":27.95}	json	a few seconds ago
naram	{"Alert Distance":27.95}	json	a few seconds ago
naram	{"Alert Distance":27.98}	json	a few seconds ago
naram	{"Alert Distance":27.95}	json	a few seconds ago
naram	{"Alert Distance":27.95}	json	a few seconds ago