

Date	16/11/2022
Team ID	PNT2022TMID06065
Project Name	Real-Time Water Quality Monitoring And Control System

CODING:

```
#include <ESP8266WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;

//Enter your network credentials below in ssid and password

const char* ssid = " ";

const char* password = " ";

//Provide your IBM IOT Platform credentials

#define ORG ""

#define DEVICE_TYPE ""

#define DEVICE_ID ""

#define TOKEN ""

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
```

```
char publishTopic[] = "iot-2/evt/Data/fmt/json";
```

```
char topic[] = "iot-2/cmd/home/fmt/String"; // cmd REPRESENT command type AND COMMAND IS  
TEST OF FORMAT STRING
```

```
char authMethod[] = "use-token-auth";
```

```
char token[] = TOKEN;
```

```
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
```

```
void callback(char* topic, byte* payload, unsigned int payloadLength);
```

```
PubSubClient client(server, 1883, callback, wifiClient);
```

```
int publishInterval = 5000; // 30 seconds
```

```
long lastPublishMillis;
```

```
String data;
```

```
void setup()
```

```
{
```

```
    Serial.begin(9600);
```

```
    pinMode(D0, OUTPUT);
```

```
    wifiConnect();
```

```
    mqttConnect();
```

```
}
```

```
void loop() {
```

```
    if (millis() - lastPublishMillis > publishInterval)
```

```
    {
```

```
        publishData();
```

```
        lastPublishMillis = millis();
```

```
}
```

```
if (!client.loop()) {
```

```
    mqttConnect();
```

```
}
```

```
}
```

```
void wifiConnect() {
```

```
    Serial.print("Connecting to "); Serial.print(ssid);
```

```
    WiFi.begin(ssid, password);
```

```
    while (WiFi.status() != WL_CONNECTED) {
```

```
        delay(500);
```

```
        Serial.print(".");
```

```
    }
```

```
    Serial.print("\nWiFi 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("subscribe to cmd OK");  
    } else {  
        Serial.println("subscribe to cmd FAILED");  
    }  
}
```

```
void callback(char* topic, byte* payload, unsigned int payloadLength) {
```

```
    Serial.print("callback invoked for topic: ");  
    Serial.println(topic);
```

```
    for (int i = 0; i < payloadLength; i++) {  
        //Serial.print((char)payload[i]);  
        data += (char)payload[i];  
    }
```

```
    Serial.println("Data: " + data );  
    if (data == "lon") {  
        digitalWrite(D0, HIGH);  
    }
```

```
else if (data == "loff") {  
    digitalWrite(D0, LOW);  
}  
data = "";  
}  
void publishData()  
{  
    int a = 10;  
    Serial.print("Sample Value: ");  
    Serial.println(a);  
  
    String payload = "{\"d\":{\"data\":";  
    payload += a;  
    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");  
    }  
}
```