

Project Development Phase
Sprint -4

Date	19 November 2022
Team ID	PNT2022TMID43719
Project Name	Real-Time River water quality monitoring and control system
Maximum Marks	4 Marks

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
    e(D0,
    LOW);
}
data = "";
}

void publishData()
{
    int a = 10;
    Serial.print("Sam
    ple Value: ");
    Serial.println(a);

    String payload =
    "{\"d\":{\"data\":\"";
    payload += a;
    payload += "\"}";

    Serial.print("\n");
    Serial.print("Sendin
    g payload: ");
    Serial.println(payload
    d);

    if (client.publish(publishTopic, (char*)

```

```
payload.c_str())) { Serial.println("Publish  
OK");  
} else {  
  Serial.println("Publish FAILED");  
}  
}
```