DEVELOPMENT CODE

Team ID	PNT2022TMID30534
Project Name	Real-Time River Water Quality Monitoring and Control System

Code:

```cpp
#include <ESP8266WiFi.h>
#include <WiFiClient.h>
#include <PubSubClient.h>
#include "DHT.h"

const char* ssid = "SMART-G";
const char* password = "10112019";

#define DHTPIN D6
#define G D0
#define DHTTYPE DHT11
DHT dht(DHTPIN, DHTTYPE);

#define ID "9u87rn"
#define DEVICE_TYPE "ESP8266"
#define DEVICE_ID "TEST"
#define TOKEN "TEST-12345"

char server[] = ID ".messaging.internetofthings.ibmcloud.com";
char publish_Topic1[] = "iot-2/evt/Data1/fmt/json";
char publish_Topic2[] = "iot-2/evt/Data2/fmt/json";
char publish_Topic3[] = "iot-2/evt/Data2/fmt/json";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ID ":" DEVICE_TYPE ":" DEVICE_ID;

WiFiClient wifiClient;
PubSubClient client(server, 1883, NULL, wifiClient);

void setup() {
 pinMode(D0,OUTPUT);
 digitalWrite(D0,HIGH);
  Serial.begin(115200);
  dht.begin();
  Serial.println();
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
   delay(500);
   Serial.print(".");
  }
  Serial.println("");
  Serial.println(WiFi.localIP());

  if (!client.connected()) {
    Serial.print("Reconnecting client to ");
    Serial.println(server);
    while (!client.connect(clientId, authMethod, token)) {
      Serial.print(".");
```

```
        delay(500);
      }
      Serial.println("Connected TO IBM IoT cloud!");
    }
}

long previous_message = 0;
void loop() {
   client.loop();
   long current = millis();
   if (current - previous_message > 3000) {
      previous_message = current;
       float hum = dht.readHumidity();
       float temp = dht.readTemperature();
       float MOI =  map(analogRead(A0), 0, 1023, 100, 0);
       if (isnan(hum) || isnan(temp)  ){
    Serial.println(F("Failed to read from DHT sensor!"));
    return;
   }

   Serial.print("Temperature: ");
   Serial.print(temp);
   Serial.print("°C");
   Serial.print(" Humidity: ");
   Serial.print(hum);
   Serial.print("%");
   Serial.print("WATER PH: ");
   Serial.print(MOI);
   if(MOI<=10)
   {
     digitalWrite(D0,LOW);
     delay(100);
     digitalWrite(D0,HIGH);
   }
    else
    {
     digitalWrite(D0,HIGH);
    }


      String payload = "{\"d\":{\"Name\":\"" DEVICE_ID "\"";
          payload += ",\"Temperature\":";
          payload += temp;
          payload += "}}";

       Serial.print("Sending payload: ");
       Serial.println(payload);

       if (client.publish(publish_Topic1, (char*) payload.c_str())) {
          Serial.println("Published successfully");
       } else {
          Serial.println("Failed");
       }
       String payload1 = "{\"d\":{\"Name\":\"" DEVICE_ID "\"";
           payload1 += ",\"Humidity\":";
           payload1 += hum;
           payload1 += "}}";
           Serial.print("Sending payload: ");
           Serial.println(payload1);
```

```cpp
      Serial.println('\n');

    if (client.publish(publish_Topic2, (char*) payload1.c_str())) {
      Serial.println("Published successfully");
    } else {
      Serial.println("Failed");
    }


    String payload3 = "{\"d\":{\"Name\":\"" DEVICE_ID "\"";
        payload3 += ",\"WATER PH\":";
        payload3 += MOI;
        payload3 += "}}";

    Serial.print("Sending payload: ");
    Serial.println(payload3);

    if (client.publish(publish_Topic3, (char*) payload3.c_str())) {
      Serial.println("Published successfully");
    } else {
      Serial.println("Failed");
    }

  }
}
```