

Team ID: PNT2022TMID10962:

```
#include
<time.h>

#include <WiFi.h>
#include <PubSubClient.h>

#define ORG "wt19pm"
#define DEVICE_TYPE "NodeMCU"
#define DEVICE_ID "12345"
#define TOKEN "12345678"

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/data/fmt/json";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

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

float temperature = 0;
int gas = 0;
int flame = 0;

String flame_status = "";
String Gas_status = "";
String exhaust_fan_status = "";
String sprinkler_status = "";

void setup() {
    Serial.begin(999000);
    wifiConnect();
    mqttConnect();
}
```

```

void loop() {

    srand(time(0));

    //initial variables and random generated data

    temperature = random(-20,125);
    gas = random(0,1000);
    int flamereading = random(200,1024);
    flame = map(flamereading,200,1024,0,2);

    //set a flame status

    switch (flame) {
    case 0:
        flame_status = "No Fire";
        break;
    case 1:
        flame_status = "Fire is Detected";
        break;
    }

    //send the sprinkler status

    if(flame==1){
        sprinkler_status = "Working";
    }
    else{
        sprinkler_status = "Not Working";
    }

    //toggle the fan according to gas reading

    if(gas > 100){

```

```

        Gas_status = "Gas Leakage is Detected";
        exhaust_fan_status = "Working";

    }
    else{
        Gas_status = "No Gas Leakage is Detected";
        exhaust_fan_status = "Not Working";
    }

//json format for IBM Watson

String payload = "{";
payload+="\"gas\":";
payload+=gas;
payload+=",";
payload+="\"temperature\":";
payload+=(int)temperature;
payload+=",";
payload+="\"flame\":";
payload+=flamereading;
payload+=",";
payload+="\"fire_status\":"+"\""+flame_status+"\"",";
payload+="\"sprinkler_status\":"+"\""+sprinkler_status+"\"",";
payload+="\"Gas_status\":"+"\""+Gas_status+"\"",";
payload+="\"exhaust_fan_status\":"+"\""+exhaust_fan_status+"\""}";

if(client.publish(publishTopic, (char*) payload.c_str()))
{
    Serial.println("Publish OK");
}
else{
    Serial.println("Publish failed");
}
delay(1000);

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);
        }

        Serial.println();
    }
}
```