

SPRINT-2

PROJECT	INDUSTRY-SPECIFIC INTELLIGENT FIRE MANAGEMENT SYSTEM
TEAM ID	PNT2022TMID15035

PYTHON CODE:

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

#define ORG "ksgtfi"
#define DEVICE_TYPE "123"
#define DEVICE_ID "123_1"
#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(99900);
    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))

```

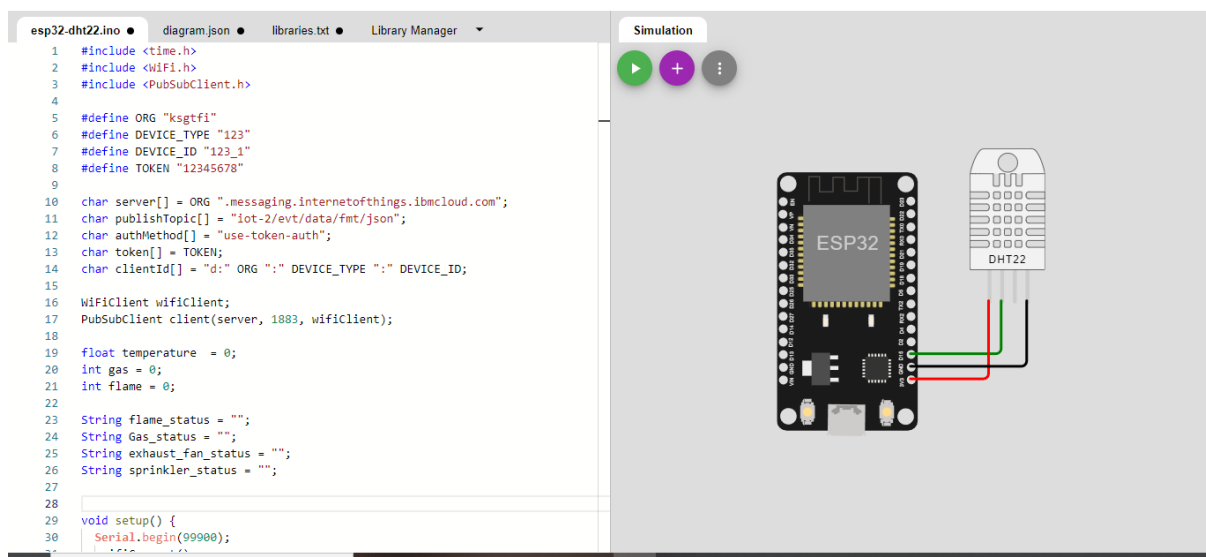
```

    {
        Serial.print(".");
        delay(500);
    }

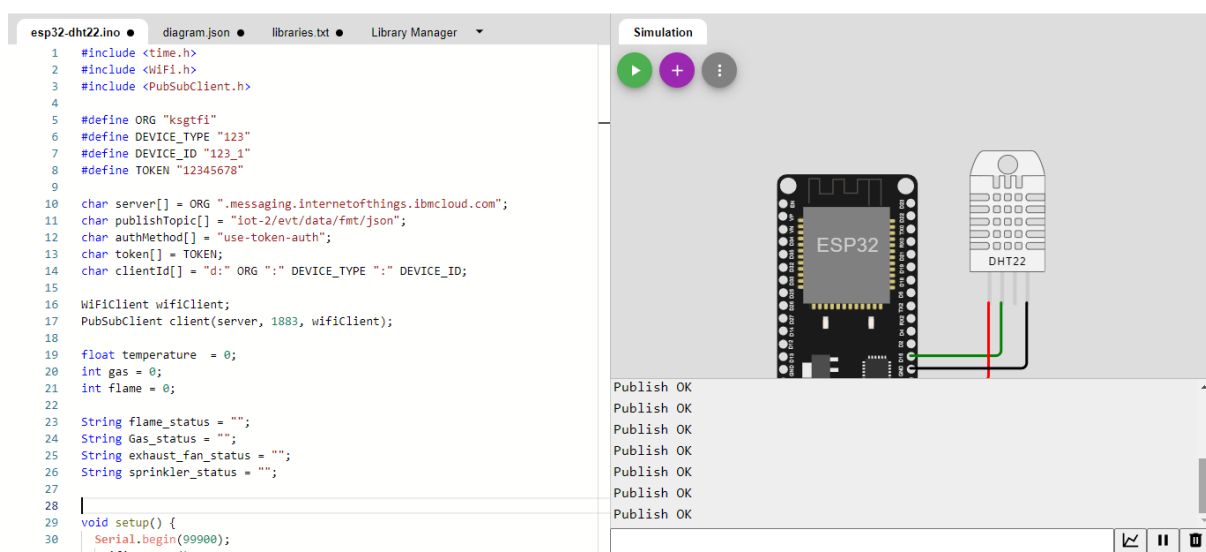
    Serial.println();
}
}

```

WOKWI CONNECTION:



WOKWI OUTPUT:



WATSON IOT PLATFORM:

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Browse Devices

All Devices Diagnose

This table shows a summary of all devices that have been added. It can be filtered, organized, criteria. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID

Device ID	Status	Device Type
123456	Disconnected	123
123_1	Connected	123

Device Type: 123

Events 1 New event type +

Event type name eventtest Send

Schedule 2 Every Minute

Payload Specify the event payload in the editor window or by uploading a CSV file.

```
{
  "gas": "random(200, 1000)",
  "temp": "random(100, 800)",
  "flame": "random(200, 800)",
  "firestatus": "No Fire",
  "sprinklerstatus": "Not Working",
  "gasstatus": "Working",
  "exhaustfanstatus": "Gas Leakage is Detected"
}
```

Cancel Save

OUTPUT:

← Back

Device Drilldown - 123_1

Connection Information

Recent Events

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
eventtest	{"gas":725,"temp":453,"flame":264,"firestatus":..."	json	a few seconds ago
eventtest	{"gas":791,"temp":427,"flame":577,"firestatus":..."	json	a few seconds ago
eventtest	{"gas":580,"temp":110,"flame":796,"firestatus":..."	json	a minute ago
eventtest	{"gas":339,"temp":409,"flame":228,"firestatus":..."	json	a minute ago
eventtest	{"gas":293,"temp":748,"flame":665,"firestatus":..."	json	2 minutes ago

5 Simulations running

[← Back](#)

Device Drilldown - 123_1

	Property	Value	Type	Event	Last Received
Connection Information	gas	791	Number	eventtest	a few seconds ago
Recent Events	temp	427	Number	eventtest	a few seconds ago
State	flame	577	Number	eventtest	a few seconds ago
Device Information	firestatus	No Fire	String	eventtest	a few seconds ago
Metadata	sprinklerstatus	Not Working	String	eventtest	a few seconds ago
Diagnostics	gasstatus	Working	String	eventtest	a few seconds ago
Connection Logs	exhaustfanstatus	Gas Leakage is Detected	String	eventtest	a few seconds ago
Device Actions					

5 Simulations running