

SPRINT-2

PROJECT	INDUSTRY-SPECIFIC INTELLIGENT FIRE MANAGEMENT SYSTEM
TEAM ID	PNT2022TMID34516

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))

```

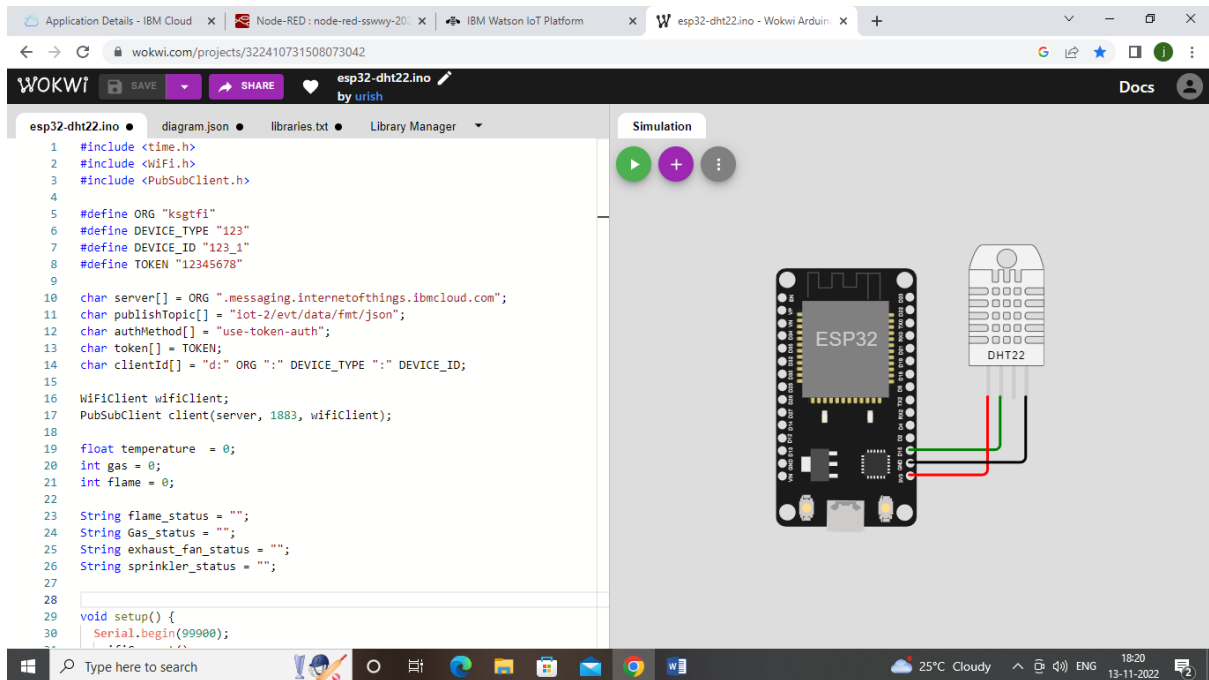
```

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

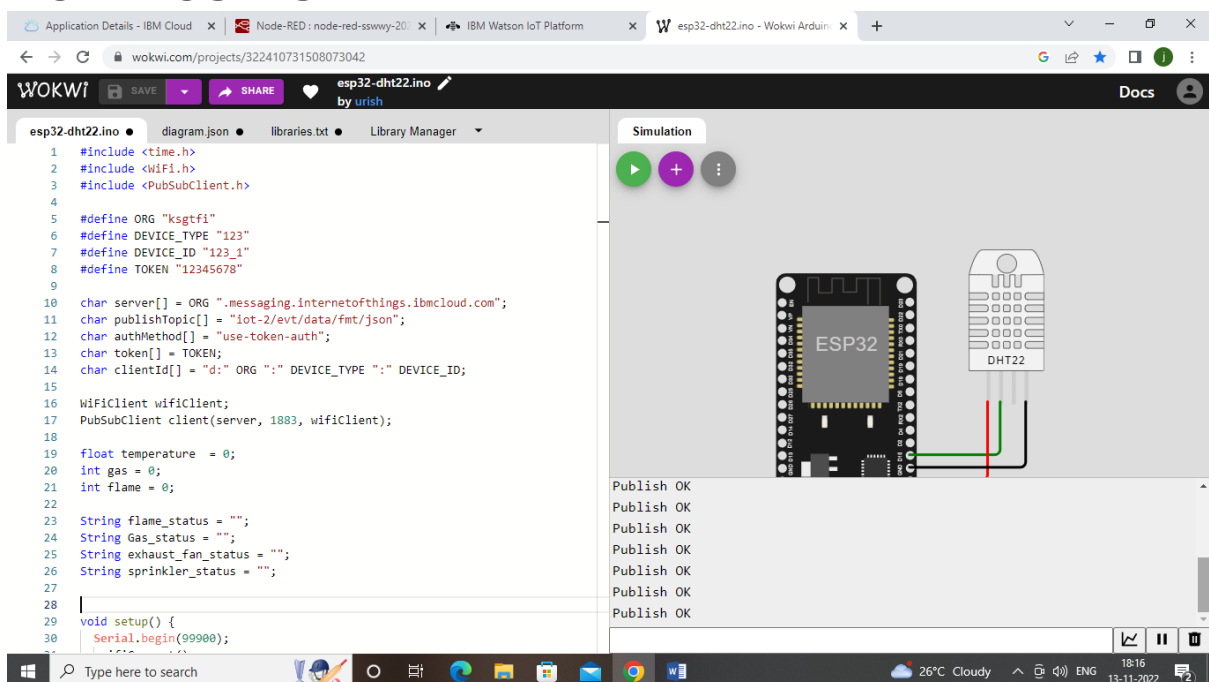
    Serial.println();
}
}

```

WOKWI CONNECTION:



WOKWI OUTPUT:



WATSON IOT PLATFORM:

The screenshot shows the IBM Watson IoT Platform interface. The main page is titled 'Browse Devices' and lists a table of devices. A modal window is open for creating a new event type named 'eventtest'.

Device Table:

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

Event Type Modal:

- Event type name: eventtest
- Schedule: 2 Every Minute
- Payload (JSON):

```
{  "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"}
```

OUTPUT:

The screenshot shows the 'Device Drilldown - 123_1' page. It displays a list of recent events for the device.

Recent Events Table:

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

IBM CloudNode-RED : nodNode-RED DashIBM Watson IoTIBM-Project-450Wokowi - OnlineWesp32-dht22.ino

ksgtfti.internetofthings.ibmcloud.com/dashboard/devices/drilldown/123:123_1?returnTo=/devices/browse

961819106025@smartinternz.comID: ksgtfti

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Device Drilldown - 123_1

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Property	Value	Type	Event	Last Received
gas	791	Number	eventtest	a few seconds ago
temp	427	Number	eventtest	a few seconds ago
flame	577	Number	eventtest	a few seconds ago
firestatus	No Fire	String	eventtest	a few seconds ago
sprinklerstatus	Not Working	String	eventtest	a few seconds ago
gasstatus	Working	String	eventtest	a few seconds ago
exhaustfanstatus	Gas Leakage is Detected	String	eventtest	a few seconds ago

5 Simulations running

Type here to search

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