## SPRINT-4

| PROJECT | INDUSTRY-SPECIFIC INTELLIGENT FIRE MANAGEMENT SYSTEM |
|---|---|
| TEAM ID | PNT2022TMID10108 |

## 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[] =
"iot2/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\":\""+f
l ame_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();
  }
}
```