

SPRINT 2

Program

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

const char* ssid = "Wokwi-GUEST";
const char* password = "";

#define ORG "oenq7r"
#define DEVICE_TYPE "DeviceType"
#define DEVICE_ID "123456"
#define TOKEN "Ch!y&Xu6G(OJiwg08B"

#define led 14
#define buzzer 15
#define pir 2

int sensor_value=0;
int pirState=LOW;
int val=0;

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char pubTopic[] = "iot-2/evt/status1/fmt/json";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

WiFiClient wifiClient;
PubSubClient client(server, 1883, NULL, wifiClient);
void setup()
{
    Serial.begin(115200);
    pinMode(led, OUTPUT);
    pinMode(buzzer, OUTPUT);
    pinMode(pir, INPUT);
    Serial.print("Connecting to ");
    Serial.print(ssid);
    WiFi.begin(ssid, password);
    while (WiFi.status() != WL_CONNECTED)
    {
        delay(500);
        Serial.print(".");
    }
}
```

```

}
Serial.println("");

Serial.print("WiFi connected, IP address: ");
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("Bluemix connected");
}
}

void loop()
{
    sensor_value=random(300,10000);

    String payload = "{\"d\":{\"Name\":\"" DEVICE_ID "\"";
    payload += "\",\"GasValue\":";
    payload += sensor_value;
    payload += "ppm";
    payload += "}}";

    if(sensor_value>1000)
    {
        digitalWrite(led, HIGH);
        delay(500);
        tone(buzzer,1000);
        delay(1000);
        payload += "High";
        val = digitalRead(pir);
        if (val == HIGH)
        {
            if (pirState == LOW)
            {
                Serial.println("Motion detected! Evacuate NOW!!!");
            }
        }
    }
}

```

```

Serial.print("Sending value: ");
Serial.println(payload);
if (client.publish(pubTopic, (char*) payload.c_str()))
{
    Serial.println("Publish Success");
}
else
{
    Serial.println("Publish Failed");
}
delay(100);
}

```

Output

The screenshot shows the Wokwi IoT simulation environment. At the top, there's a browser window with the URL `wokwi.com/projects/348553157099389523`. Below the browser, the Wokwi interface includes a 'Simulation' tab, a 'Restart the simulation' button, and a 'Docs' link. The central area displays a 3D model of an ESP32 board with a sensor and an antenna connected. The console at the bottom shows the following output:

```

1 Bluemix connected
1 Sending value: {"d":{"Name":"123456","GasValue":698ppm}}
1 Publish Success
1 Sending value: {"d":{"Name":"123456","GasValue":2460ppm}}High
2 Publish Success
2 Sending value: {"d":{"Name":"123456","GasValue":311ppm}}
2 Publish Success

```

The Windows taskbar at the bottom shows the system time as 10:42 PM on 11/16/2022, with a temperature of 27°C and a 'Haze' weather condition.

Event Payload:

```
{
  "deviceTypes": [
    {
      "id": "DeviceType",
      "running": true,
      "events": [
        {
          "id": "event_1",
          "frequency": {
            "repeat": "1",
            "every": "minute"
          },
          "json": "{\n  \"type\":\n  \"Buffer\", \n  \"data\": [\n    123, \n    23, \n    24, \n    25] \n} \n"
        }
      ],
      "devices": [
        {
          "id": "123456",
          "generated": false
        }
      ],
      "managed": {
        "enabled": false
      }
    }
  ],
  "APIKey": "a-oenq7r-gjxcbhqjmn"
}
```

IBM Watson IoT Platform

oemq7r.internetofthings.ibmcloud.com/dashboard/devices/browse

harenmurthi204@gmail.com
ID: oemq7r

Browse Action Device Types Interfaces Add Device +

| Event | Value | Format | Last Received |
|---------|---|--------|---------------------|
| event_1 | {"type":"Buffer","data":[123,23,24,25]} | json | a few seconds ago |
| event_1 | {"type":"Buffer","data":[123,23,24,25]} | json | a minute ago |
| event_1 | {"type":"Buffer","data":[123,23,24,25]} | json | 2 minutes ago |
| event_1 | {"type":"Buffer","data":[123,23,24,25]} | json | 3 minutes ago |
| event_1 | {"type":"Buffer","data":[123,23,24,25]} | json | 4 min 3 minutes ago |

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1 Simulation running

simulator (1).json simulator.json Sprint 4.pdf

Type here to search

29°C 11:31 PM 11/16/2022

Link:

<https://wokwi.com/projects/348553157099389523>