

PROJECT DEVELOPMENT PHASE

SPRINT 3

Date	12 November 2022
Project Title	Gas Leakage Monitoring and Alerting System
Team ID	PNT2022TMID15951
Team Members	Akshaya KS Barani G Ashwini R Abitha J

In Sprint 3, the sensor data will send to the IBM Cloud.

Along with the sensor value, it should send the latitude and longitude to IBM Cloud and Node Red.

CODE:

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

WiFiClient wifiClient;

#define ORG "mz6rat"
#define DEVICE_TYPE "ESP8266"
#define DEVICE_ID "12345"
#define TOKEN "123456789"
#define speed 0.034

char server[] = ORG
".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json";
char topic[] = "iot-2/cmd/home/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);
void publishData();
```

```
const int trigpin=5;
const int echopin=18;
String command;
String data="";
String lat="13.356563";
String lon="80.141428";
String name="point1";
String icon="fa-fire";

long duration;
int dist;

void setup()
{
    Serial.begin(115200);
    pinMode(trigpin, OUTPUT);
    pinMode(echopin, INPUT);
    wifiConnect();
    mqttConnect();
}

void loop() {

    publishData();
    delay(500);

    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(1000);
        }
        initManagedDevice();
        Serial.println();
    }
}

void initManagedDevice() {
    if (client.subscribe(topic)) {
        Serial.println(client.subscribe(topic));
        Serial.println("subscribe to cmd OK");
    } else {
        Serial.println("subscribe to cmd FAILED");
    }
}

void publishData()
{
    digitalWrite(trigpin, LOW);
    digitalWrite(trigpin, HIGH);
    delayMicroseconds(10);
    digitalWrite(trigpin, LOW);
    duration=pulseIn(echopin, HIGH);
    dist=duration*speed/2;
    dist=dist/4;
    dist=100-dist;
    if(dist>80){
        lat="13.356563";
        lon="80.141428";
    }else{

```

```
        lat="0.000000";
        lon="0.000000";
    }
    DynamicJsonDocument doc(1024);
    String payload;
    doc["Name"]=name;
    doc["Latitude"]=lat;
    doc["Longitude"]=lon;
    doc["Icon"]=icon;
    doc["GasPercent"]=dist;
    serializeJson(doc, payload);
    delay(3000);
    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if (client.publish(publishTopic, (char*) payload.c_str()))
    {
        Serial.println("Publish OK");
    } else {
        Serial.println("Publish FAILED");
    }
}
```

W Gas - Wokwi Arduino and ESP32 x Node-RED Dashboard

Docs SIGN IN

Simulation 00:26.010 101%

```
Sending payload:
{"Name": "point1", "Latitude": "0.000000", "Longitude": "0.000000", "Icon": "fa-fire", "GasPercent": 23}
Publish OK

Sending payload:
{"Name": "point1", "Latitude": "0.000000", "Longitude": "0.000000", "Icon": "fa-fire", "GasPercent": 23}
Publish OK

Sending payload:
{"Name": "point1", "Latitude": "0.000000", "Longitude": "0.000000", "Icon": "fa-fire", "GasPercent": 23}
Publish OK

Sending payload:
{"Name": "point1", "Latitude": "0.000000", "Longitude": "0.000000", "Icon": "fa-fire", "GasPercent": 23}
Publish OK

Sending payload:
{"Name": "point1", "Latitude": "0.000000", "Longitude": "0.000000", "Icon": "fa-fire", "GasPercent": 23}
Publish OK
```

IBM Watson IoT Platform

msf1at.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Add Device

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

Search by Device ID

Device Simulator

Device ID	Status	Device Type	Class ID	Date Added
12345	Connected	ESP8266	Device	Nov 15, 2022 9:24 PM

Identity Device Information Recent Events State Logs

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

Event	Value	Format	Last Received
Data	{"Name": "point1", "Latitude": "13.356563", "Longi...	json	a few seconds ago
Data	{"Name": "point1", "Latitude": "0.000000", "Longitu...	json	a few seconds ago

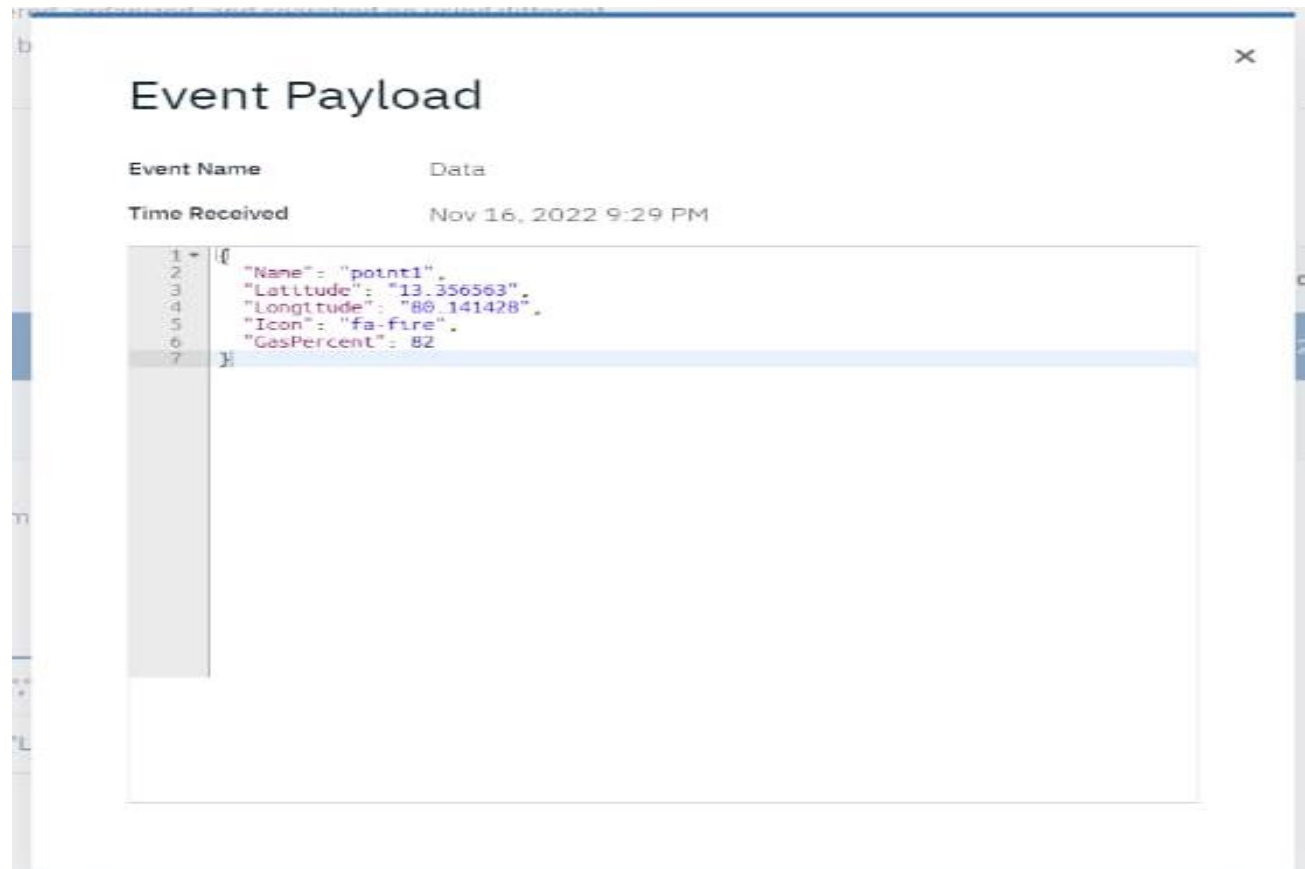
54321 Disconnected arduino Device Oct 26, 2022 2:05 PM

Items per page 50 | 1-2 of 2 items

1 of 1 page

26°C Mostly clear

ENG US 9:23 PM 11/6/2022



Thus Sprint 3 is successfully completed.