

Sprint - 3

Date	17 November 2022
Team ID	PNT2022TMID29259
Project Name	Project - Industry-specific intelligent fire management system

US-1 Configure the connection security and create API keys that are used in the Node-RED service for accessing the IBM IoT Platform.

US-2 Create a Node-RED service.

WEB UI LINK : <https://node-red-dashboard059.eu-gb.mybluemix.net/fire>

LINK: <https://wokwi.com/projects/348816699284259410>

Results:

Wokwi.com interface showing a simulation of an ESP32 microcontroller connected to a DHT22 sensor and an LED. The code is written in C++ and includes libraries for WiFi, MQTT, and DHT. The simulation shows the ESP32 sending data to an IBM Watson IoT Platform and triggering an alarm (LED) when the temperature increases.

```
1 #include <WiFi.h> //library for wifi
2 #include <PubSubClient.h> //library for MQTT
3 #include "DHT.h" // Library for dht sensor
4 #define DHTPIN 15 // what pin we're connected to
5 #define DHTTYPE DHT22 // define type of sensor DHT 22
6 #define LED 14
7
8 DHT dht (DHTPIN, DHTTYPE); // creating the instance by passing pin and type of dht connect
9
10 void callback(char* topic, byte* payload, unsigned int payloadLength);
11
12 //-----credentials of IBM Accounts-----
13
14 #define ORG "RHH54S" // IBM ORGANIZATION ID
15 #define DEVICE_ID "iot_device" // Device type mentioned in IBM Watson IoT Platform
16 #define DEVICE_ID "wokwi_us" // Device ID mentioned in IBM Watson IoT Platform
17 #define TOKEN "1{u1YYO}NmK9sk(k" // Token
18 String data3;
19 float h, t;
20 const float BETA = 3950; // should match the Beta coefficient of the thermistor
21
22 //----- Customise the above values -----
23
24 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // Server Name
25 char publishTopic[] = "iot-2/evt/Data/Int/json"; // topic name and type of event perform
26 char subscribeTopic[] = "iot-2/cmd/test/Int/String"; // cmd REPRESENT command type AND C
27 char authMethod[] = "use-token-auth"; // authentication method
28 char token[] = TOKEN;
29 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; // client id
30
31
32 //-----
33 WiFiClient wifiClient; // creating the instance for wifiClient
34 PubSubClient client(server, 1883, callback, wifiClient); // calling the predefined client
35
```

Simulation controls: Play, Stop, Pause. Timer: 00:12.999. Battery: 98%.

Alert..! Temperature: 36.40
Humidity: 46.50
Sending payload: {"Data":{"temperature":36.40,"humidity":46.50}}
Publish ok
If Temperature increased, the alarm and alert light would indicate.
Temperature: 36.40 °C
Alert..!

25°C
Mostly clear

Node-RED

Deploy

chart

Flow 1

Flow 2

dashboard

button

dropdown

switch

slider

numeric

text input

colour picker

text

gauge

chart

audio out

notification

IBM IoT

Temperature

Gas

Flame

Fire Status

Sprinkler Status

Gas Status

Exhaust Fan Status

msg.payload

temperature

Gas

Flame

debug

all nodes

all

msg.payload : number

204

11/11/2022, 9:59:58 pm node: b10e99673e92c44a

iot-2/type/NodeMCU/id/12345/evt/data/fmt/json :

msg.payload : number

784

11/11/2022, 9:59:59 pm node: b10e99673e92c44a

iot-2/type/NodeMCU/id/12345/evt/data/fmt/json :

msg.payload : string[16]

"Fire is Detected"

11/11/2022, 10:00:00 pm node: b10e99673e92c44a

iot-2/type/NodeMCU/id/12345/evt/data/fmt/json :

msg.payload : string[7]

"Working"

11/11/2022, 10:00:01 pm node: b10e99673e92c44a

iot-2/type/NodeMCU/id/12345/evt/data/fmt/json :

msg.payload : string[23]

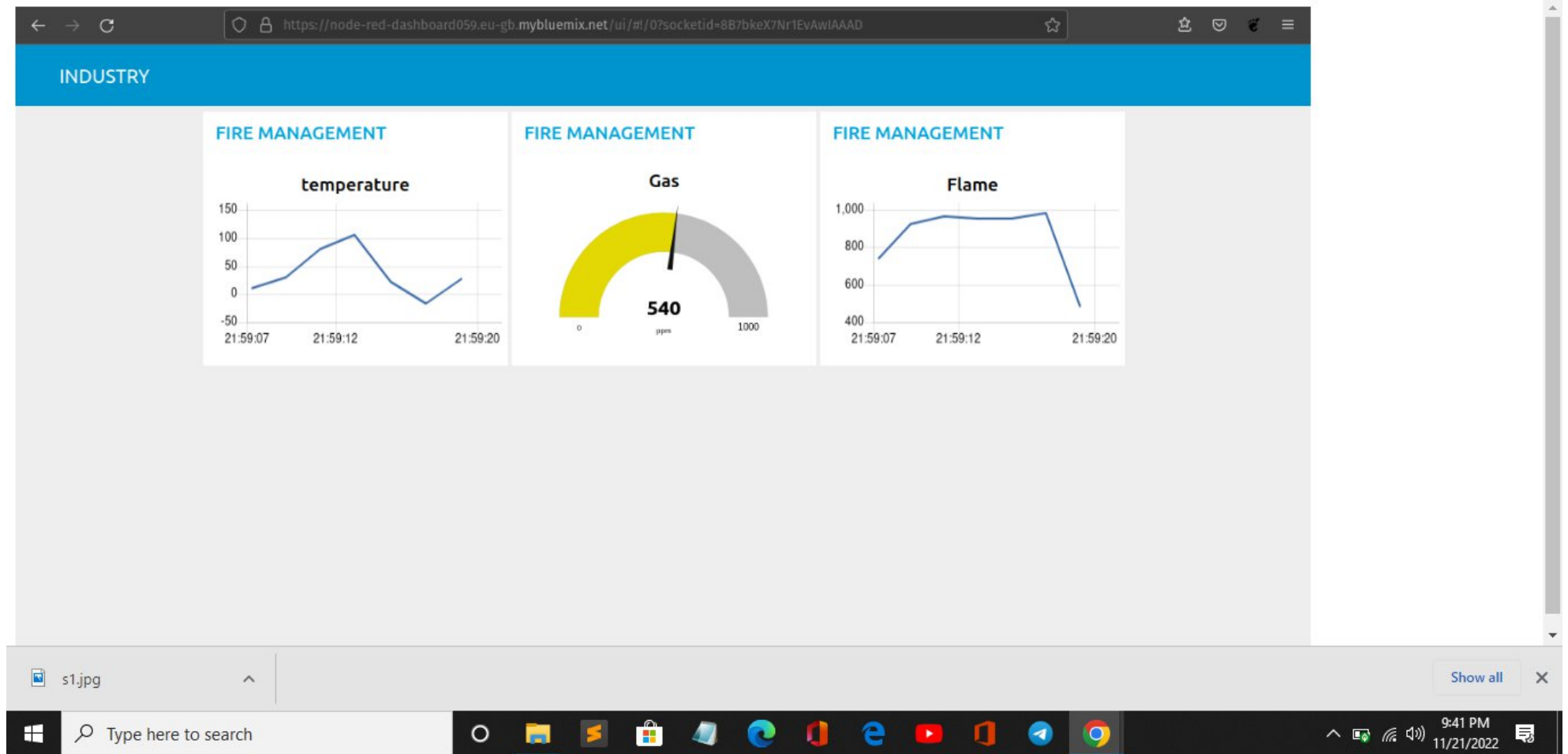
"Gas Leakage is Detected"

11/11/2022, 10:00:02 pm node: b10e99673e92c44a

iot-2/type/NodeMCU/id/12345/evt/data/fmt/json :

msg.payload : string[7]

"Working"



IBM-Project-4 x 201489470-6 x 201393150-3 x 201392999-7 x 201396941-8 x Word online x FIRE MANAN x Download file x

user-images.githubusercontent.com/71424761/201489470-6e8e8016-8649-44a6-a741-e8ab096b1468.png

Gmail YouTube Maps Translate News

Node-RED

filter nodes

Flow 1 Flow 2

common

- inject
- debug
- complete
- catch
- status
- link in
- link call
- link out
- comment

function

- function
- function

Flow 1

Flow 2

config

all unused

On all flows

6 hidden

websocket-client

ws://node-red-dashb 0

websocket-listener

/ws/simple 0

Flow 1

Flow 2

1 hidden

s1.jpg

Type here to search

9:43 PM 11/21/2022

DESKTOP:


IBM-Projec x 201395630 x 201489470 x 201393150 x 201392990 x 201396941 x Word online x FIRE MAN x Download x +

user-images.githubusercontent.com/71424761/201395630-e2bb620e-3a51-437a-a185-5c1e72f3f3bd.png


Gmail YouTube Maps Translate News

https://node-red-dashboard059.eu-gb.mybluemix.net/fire


FIRE MANAGEMENT SYSTEM




TEMPERATURE : 56



GAS : 721



FLAME : 299




FIRE STATUS : No Fire
SPRINKLER STATUS: Not Working
GAS STATUS : Gas Leakage is Detected
EXHAUST FAN STATUS : Working

s1.jpg


Show all

Type here to search




9:43 PM
11/21/2022


FIRE MANAGEMENT SYSTEM




TEMPERATURE : 12.1



GAS : 0



FLAME : 0.0



EXHAUST FAN STATUS : Not Working
GAS STATUS : No Gas Leakage is Detected
SPRINKLER STATUS : Working
FIRE STATUS : Fire is Detected

CLOUDANT:

↔

db

⋮

All Documents

+

Query

Permissions

Changes

Design Documents

+

Log Out

Document ID

Options












{ } JSON

Table

Metadata

{ } JSON

Create Document

	id	key	value
<input type="checkbox"/>	 657846f21e0cb8ead462fd89321d28...	657846f21e0cb8ead462fd89321d28...	{ "rev": "1-1c9683229f242d4133b7f...
<input type="checkbox"/>	 657846f21e0cb8ead462fd89321dd3...	657846f21e0cb8ead462fd89321dd3...	{ "rev": "1-8aeed9d453a632f539ee9c...
<input type="checkbox"/>	 657846f21e0cb8ead462fd8932201e...	657846f21e0cb8ead462fd8932201e...	{ "rev": "1-7b6df30912cf9de43ca8b...
<input type="checkbox"/>	 657846f21e0cb8ead462fd8932203d...	657846f21e0cb8ead462fd8932203d...	{ "rev": "1-a9bec25d7f94ccc71ce692...
<input type="checkbox"/>	 70ea2e4bb2a9c635be3ce2603a25a...	70ea2e4bb2a9c635be3ce2603a25a...	{ "rev": "1-b567b4cce122c31e1666fc...
<input type="checkbox"/>	 70ea2e4bb2a9c635be3ce2603a268...	70ea2e4bb2a9c635be3ce2603a268...	{ "rev": "1-217497b95c16c3d228800...
<input type="checkbox"/>	 70ea2e4bb2a9c635be3ce2603a272...	70ea2e4bb2a9c635be3ce2603a272...	{ "rev": "1-a01738b27517a2bb4b93b...
<input type="checkbox"/>	 70ea2e4bb2a9c635be3ce2603a273...	70ea2e4bb2a9c635be3ce2603a273...	{ "rev": "1-13230a9f364a021a02422...
<input type="checkbox"/>	 7170def319e06e12e85b74c728897...	7170def319e06e12e85b74c728897...	{ "rev": "1-4bdfcbf4dbbf888784fc24d...
<input type="checkbox"/>	 7170def319e06e12e85b74c7288b7...	7170def319e06e12e85b74c7288b7...	{ "rev": "1-5b1a46d23a6c259bd5b97...
<input type="checkbox"/>	 7170def319e06e12e85b74c7288c2...	7170def319e06e12e85b74c7288c2...	{ "rev": "1-782ab5b4a98aed22641a1...

Showing document 1 - 20. Documents per page: 20 < >

{ } JSON

 Upload Attachment
 Clone Document
 Delete

11

Log Out