Project development phase

Sprint - III

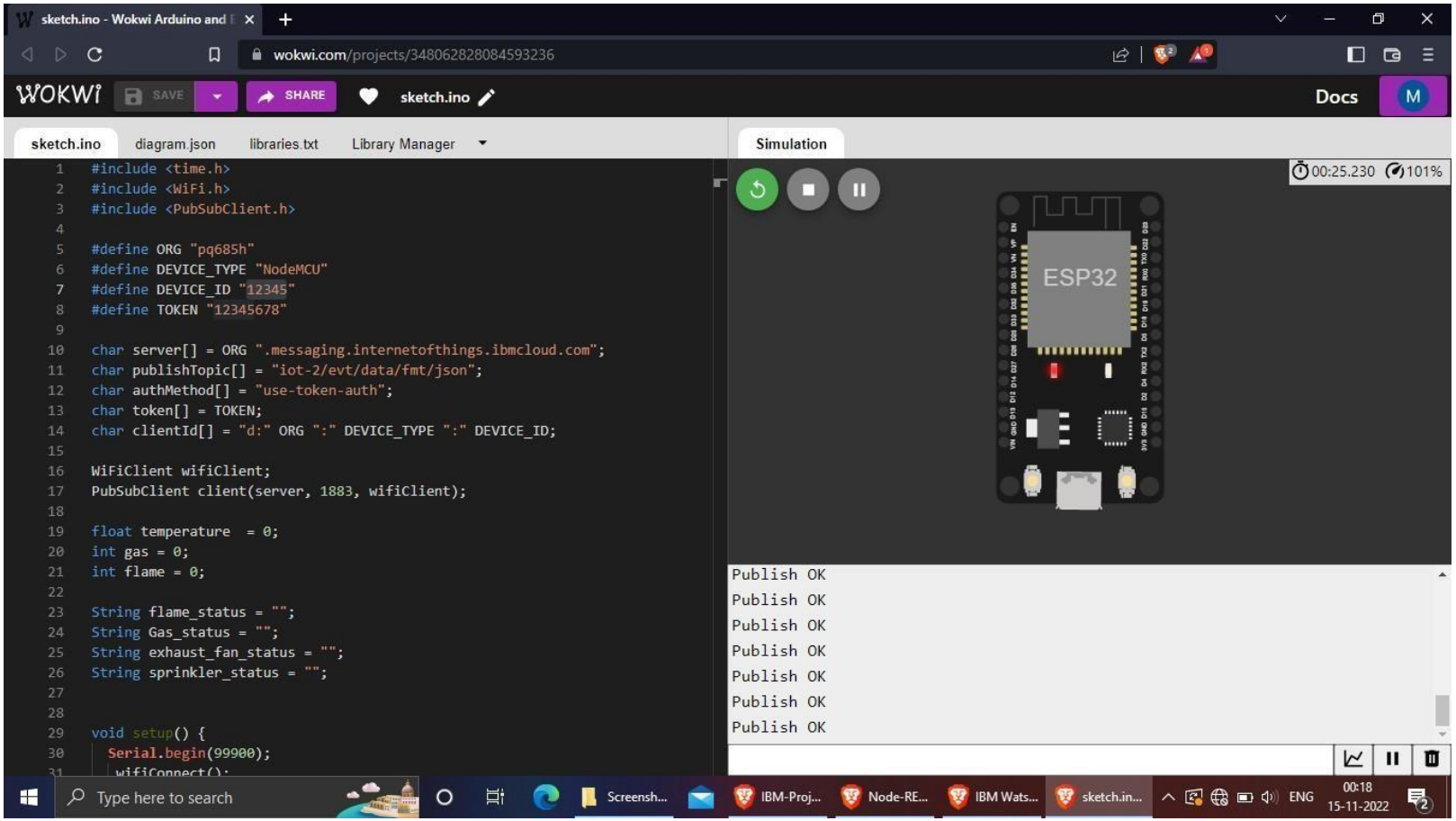
Date	11 November 2022
Team ID	PNT2022TMID19483
Project Name	Project - Industry-specific intelligent fire management system

LINK: https://wokwi.com/projects/348062828084593236

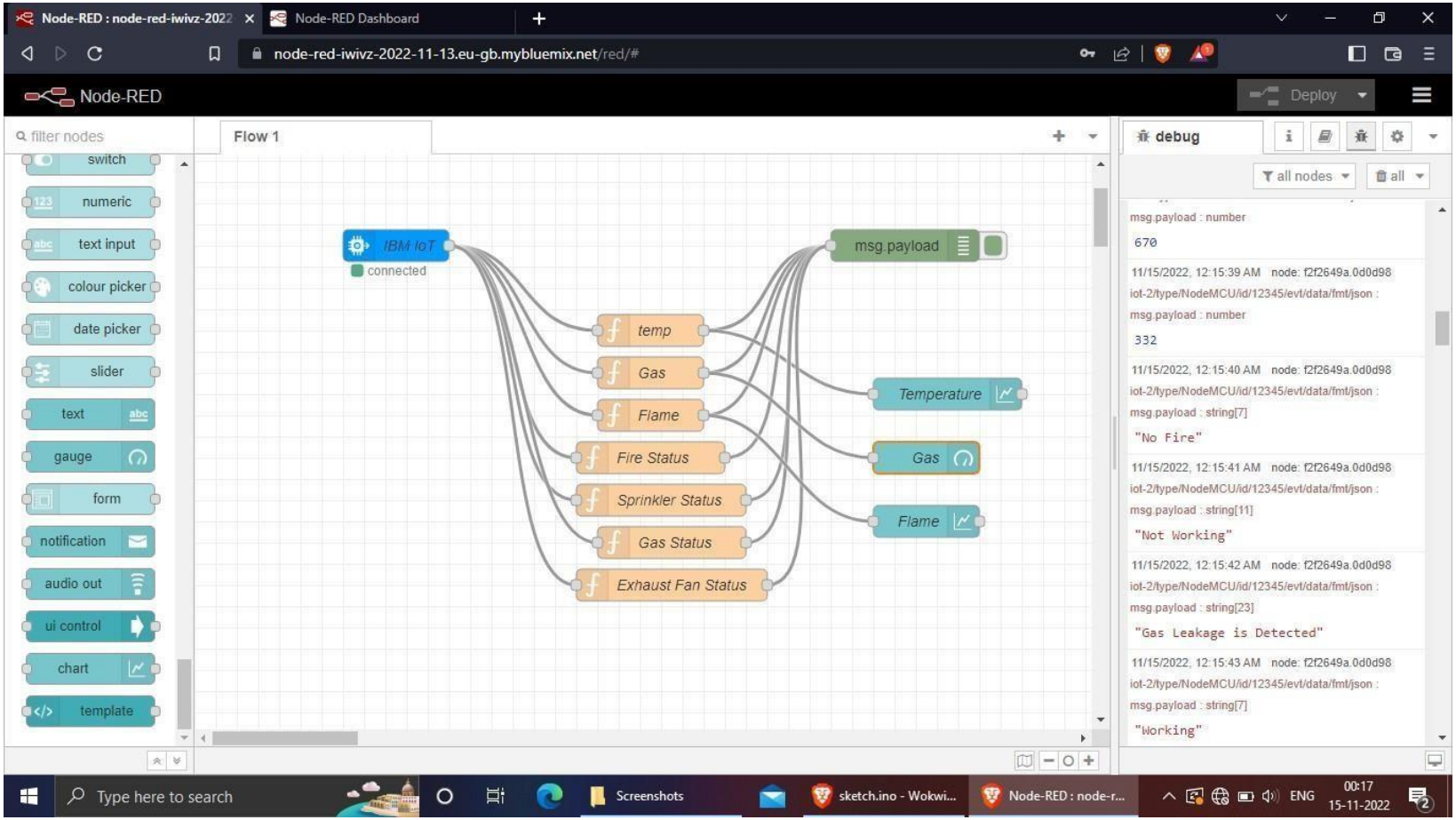
NODE-RED DASHBOARD UILINK:
https://node-red-iwivz-2022-11-13.eu-gb.mybluemix.net/ui/#!/0?socketid=RNNTsORzKbrlp-UqAAAu

OUTPUT:

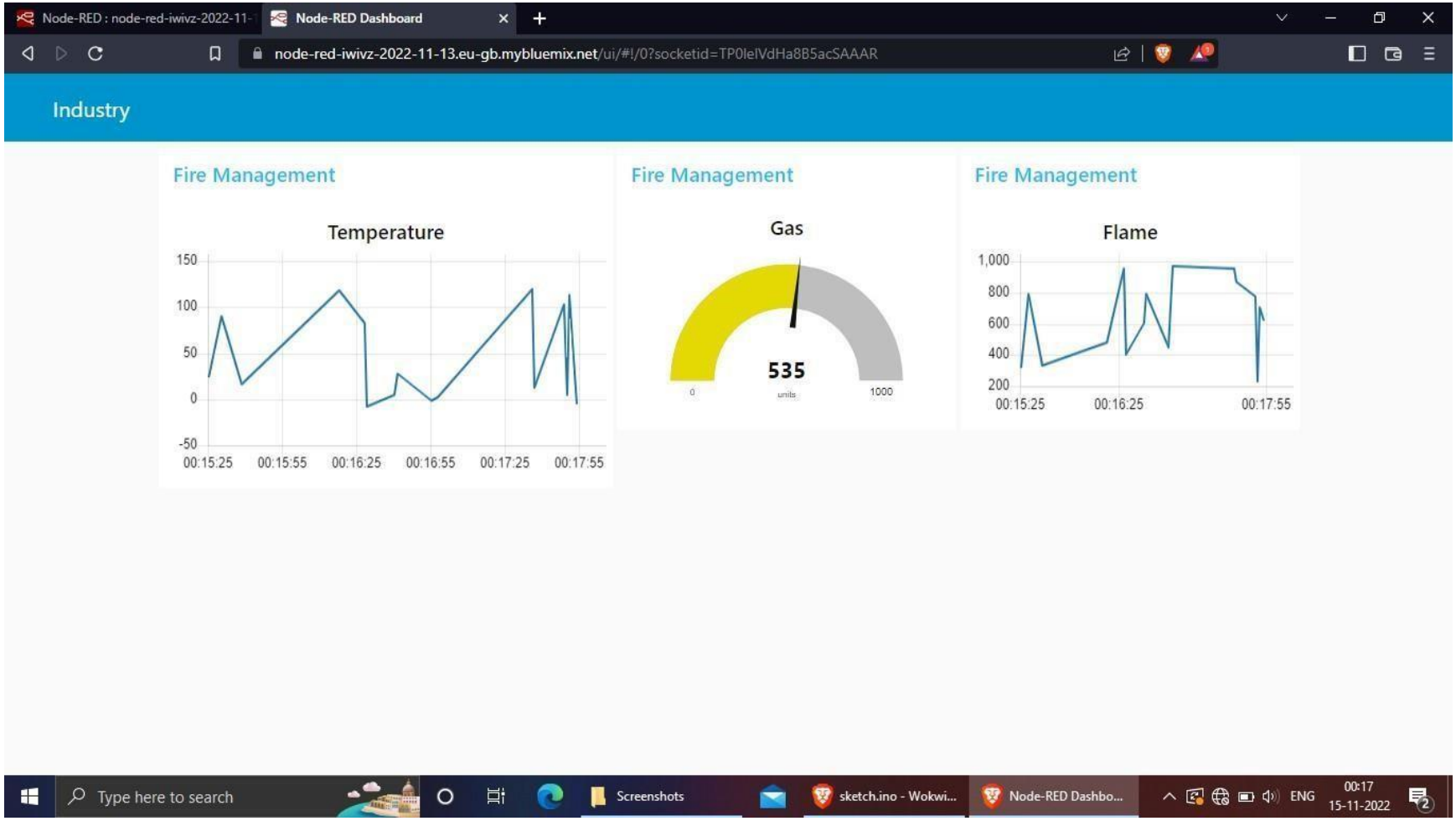
WOKWI SIMULATOR



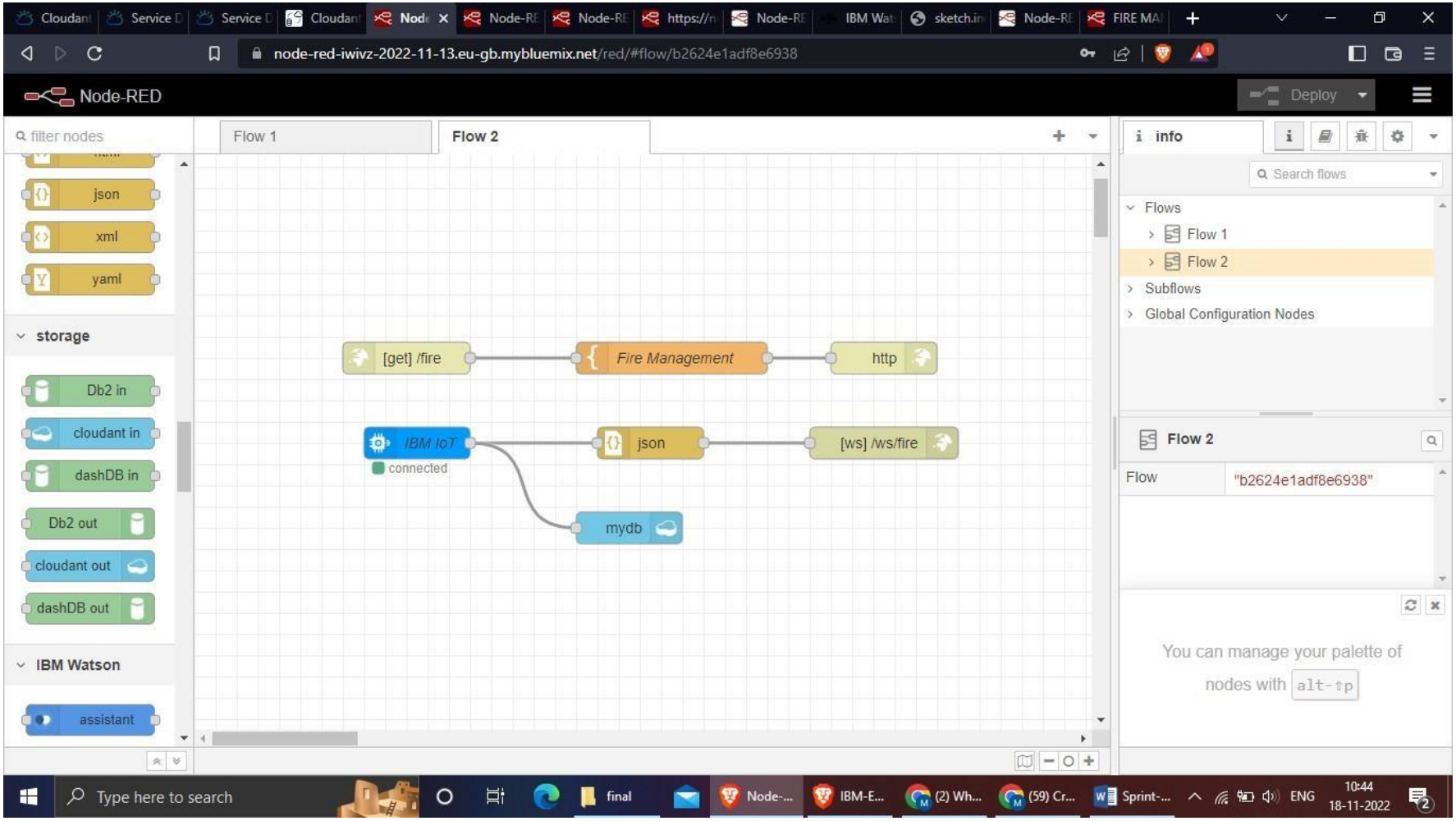
TRANSFERRING DATA FROM IBM WATSON INTO NODE-RED



NODE DASHBOARD

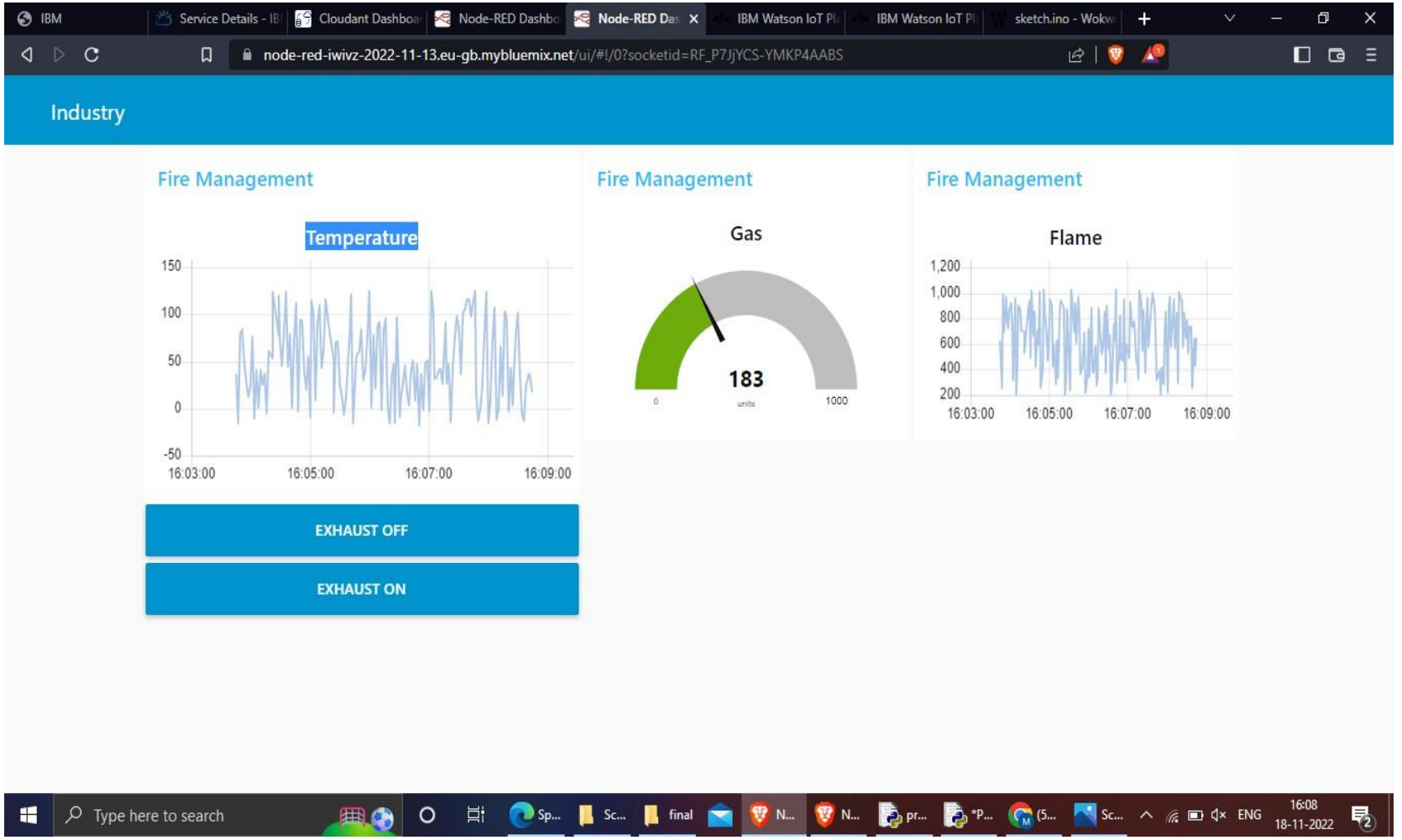


TRANSFERRING DATA FROM NODE-RED INTO WEB UI

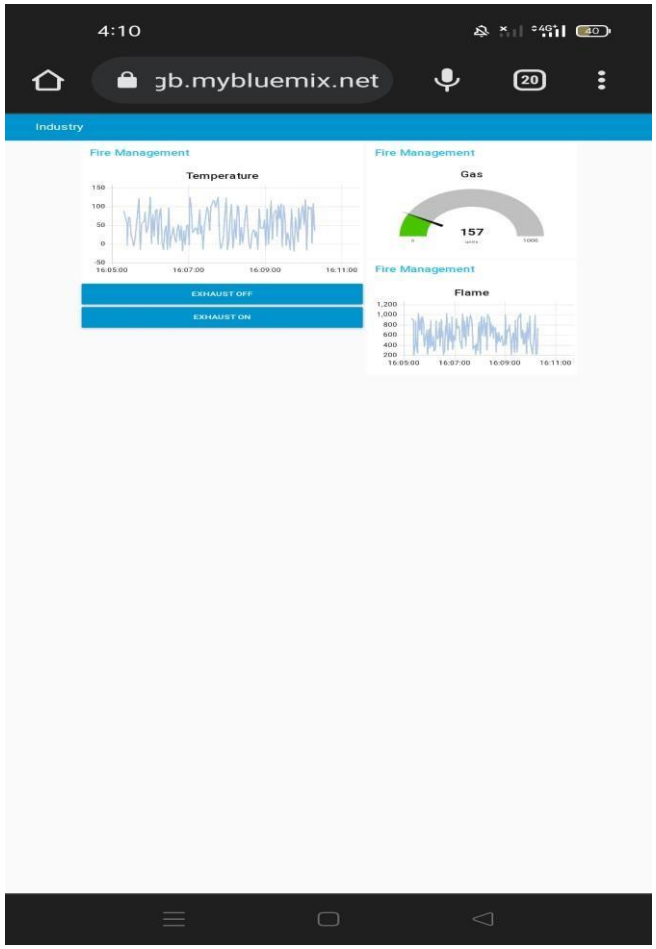


WEB UI

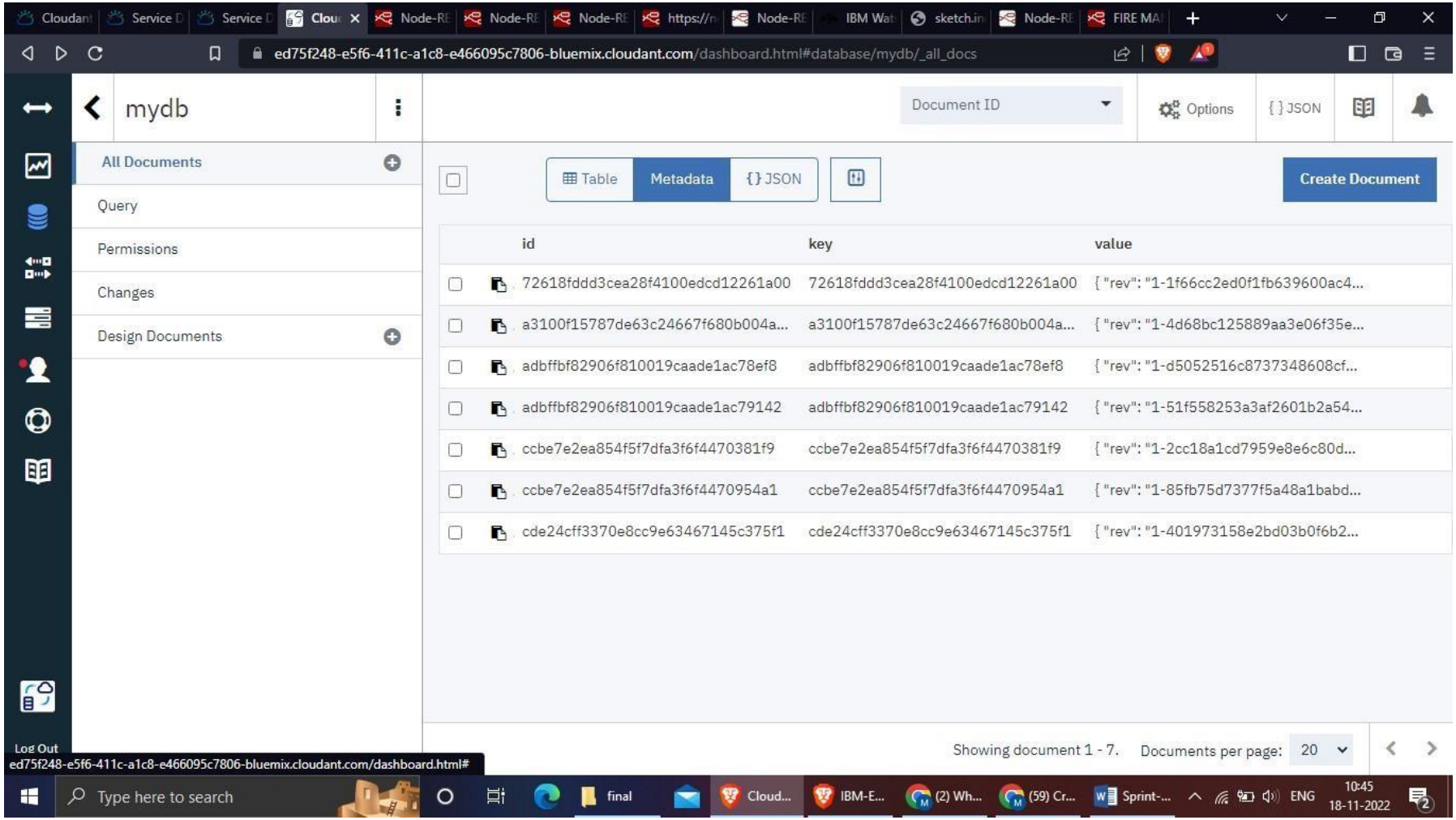
DESKTOP VIEW :

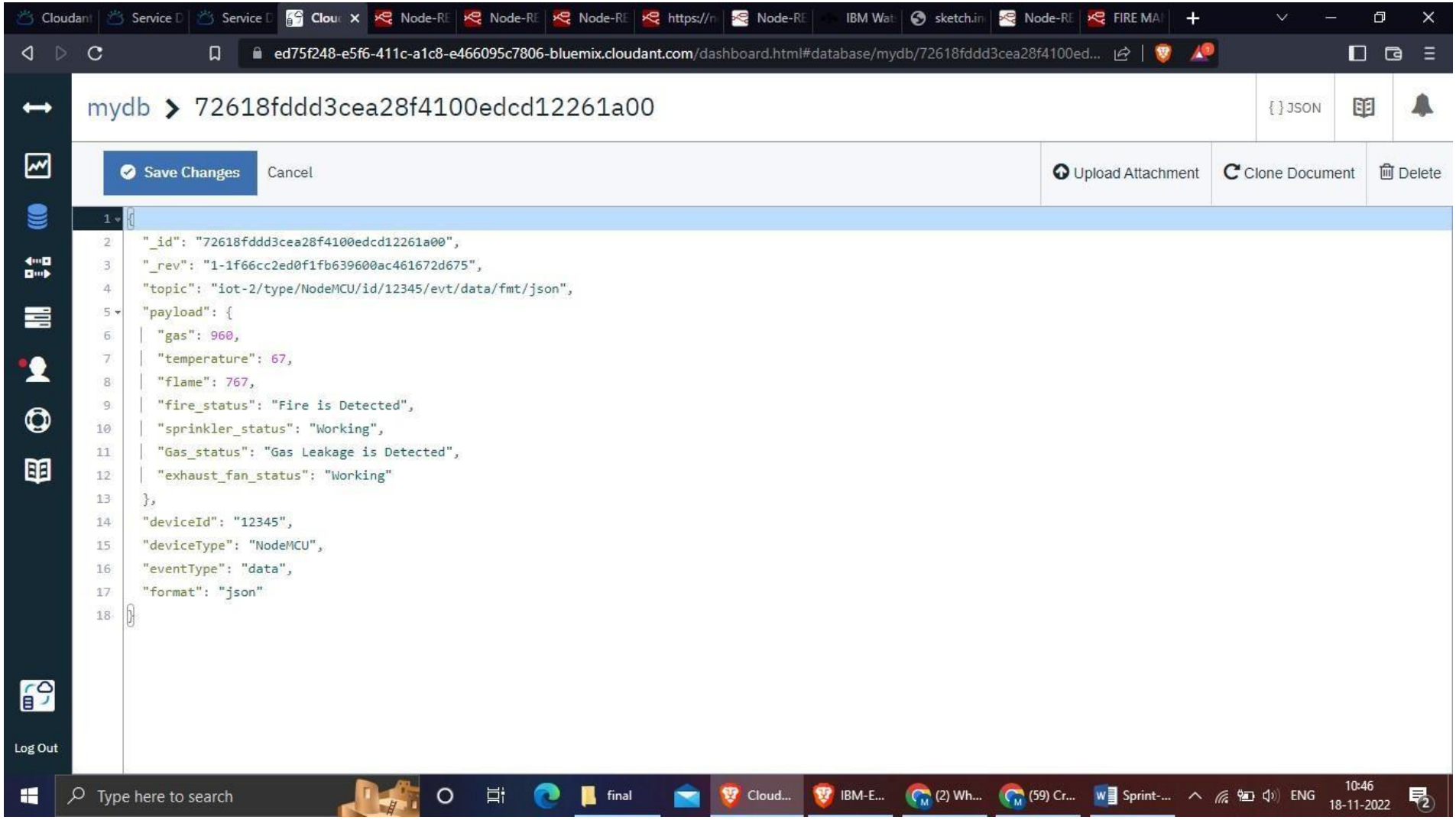


MOBILE VIEW


4:10
gb.mybluemix.net
20
Industry
Fire Management
Temperature
150
100
50
0
-50
16:05:00
16:07:00
16:09:00
16:11:00
EXHAUST OFF
EXHAUST ON
Fire Management
Gas
157
0
1000
Fire Management
Flame
1,200
1,000
800
600
400
200
16:05:00
16:07:00
16:09:00
16:11:00

CLOUDANT:


ed75f248-e5f6-411c-a1c8-e466095c7806-bluemix.cloudant.com/dashboard.html#database/mydb/_all_docs
mydb
Document ID
Options
{ } JSON
All Documents
Query
Permissions
Changes
Design Documents
Table
Metadata
{ } JSON
Create Document
id
key
value
72618fddd3cea28f4100edcd12261a00
72618fddd3cea28f4100edcd12261a00
{ "rev": "1-1f66cc2ed0f1fb639600ac4...
a3100f15787de63c24667f680b004a...
a3100f15787de63c24667f680b004a...
{ "rev": "1-4d68bc125889aa3e06f35e...
adbffbf82906f810019caade1ac78ef8
adbffbf82906f810019caade1ac78ef8
{ "rev": "1-d5052516c8737348608cf...
adbffbf82906f810019caade1ac79142
adbffbf82906f810019caade1ac79142
{ "rev": "1-51f558253a3af2601b2a54...
ccbe7e2ea854f5f7dfa3f6f4470381f9
ccbe7e2ea854f5f7dfa3f6f4470381f9
{ "rev": "1-2cc18a1cd7959e8e6c80d...
ccbe7e2ea854f5f7dfa3f6f4470954a1
ccbe7e2ea854f5f7dfa3f6f4470954a1
{ "rev": "1-85fb75d7377f5a48a1babd...
cde24cff3370e8cc9e63467145c375f1
cde24cff3370e8cc9e63467145c375f1
{ "rev": "1-401973158e2bd03b0f6b2...
Log Out
Showing document 1 - 7.
Documents per page:
20
Type here to search
ENG
10:45
18-11-2022


ed75f248-e5f6-411c-a1c8-e466095c7806-bluemix.cloudant.com/dashboard.html#database/mydb/72618fddd3cea28f4100ed...
mydb > 72618fddd3cea28f4100edcd12261a00
{ } JSON
Save Changes
Cancel
Upload Attachment
Clone Document
Delete
{
"_id": "72618fddd3cea28f4100edcd12261a00",
"_rev": "1-1f66cc2ed0f1fb639600ac461672d675",
"topic": "iot-2/type/NodeMCU/id/12345/evt/data/fmt/json",
"payload": {
"gas": 960,
"temperature": 67,
"flame": 767,
"fire_status": "Fire is Detected",
"sprinkler_status": "Working",
"Gas_status": "Gas Leakage is Detected",
"exhaust_fan_status": "Working"
},
"deviceId": "12345",
"deviceType": "NodeMCU",
"eventType": "data",
"format": "json"
}
Log Out
Type here to search
final
Cloud...
IBM-E...
(2) Wh...
(59) Cr...
Sprint-...
ENG
10:46
18-11-2022

CODE:

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

#define ORG "pq685h"
#define DEVICE_TYPE "NodeMCU"
#define DEVICE_ID "12345"
#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();
  }
}
```