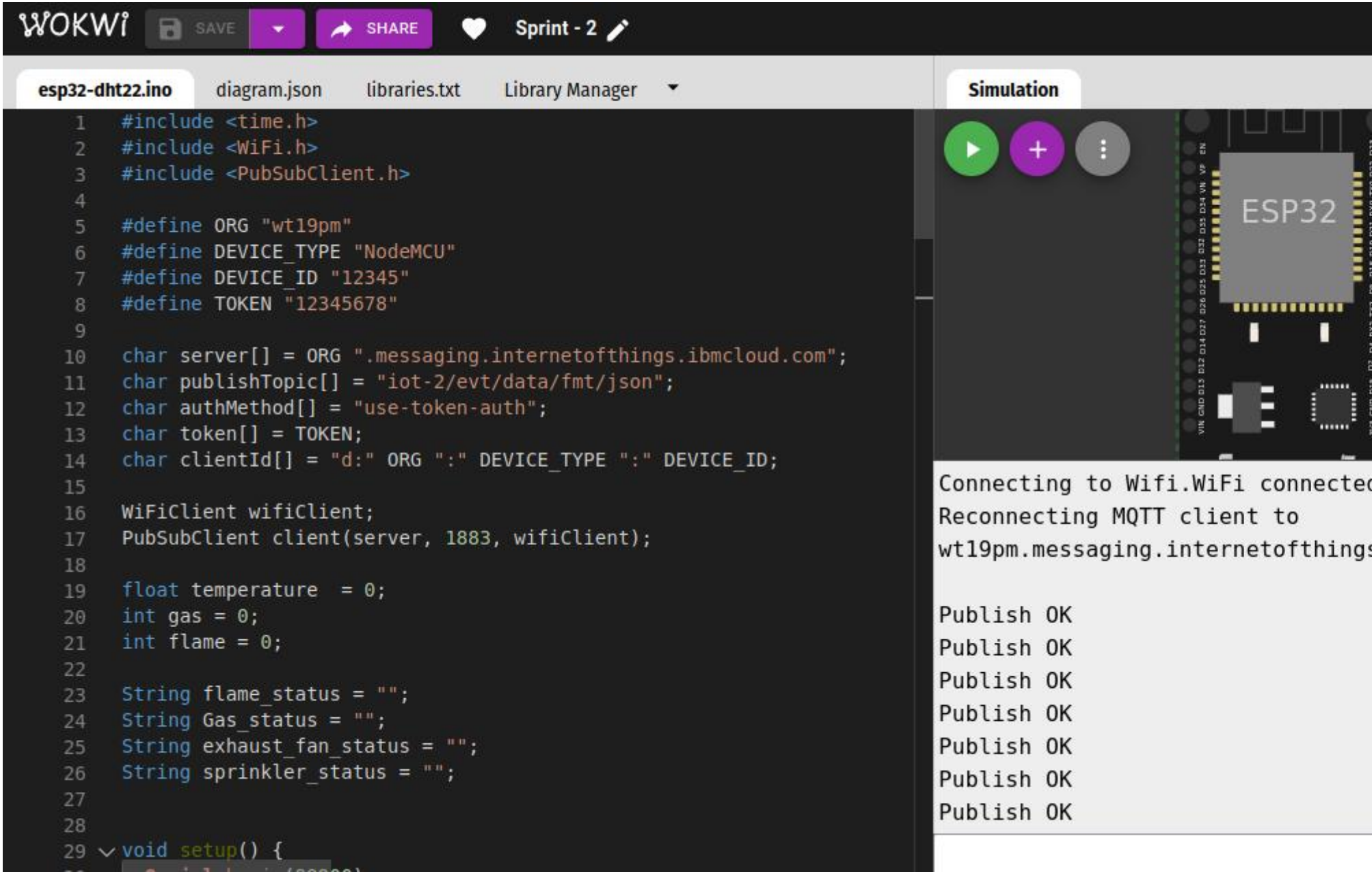
Project Development Phase

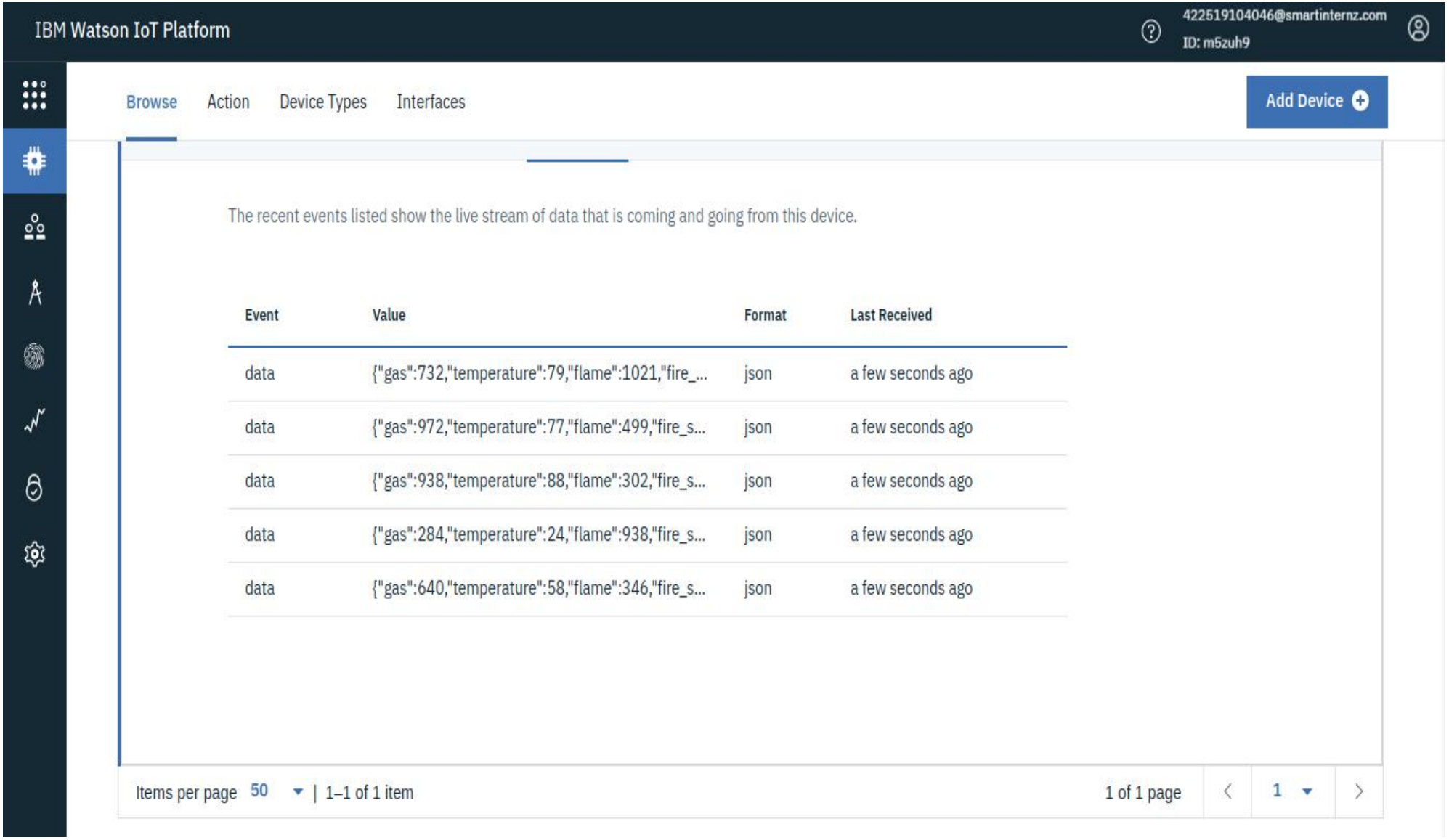
Sprint - II

Team ID	PNT2022TMID29259
Project Name	Project - Industry Specific Intelligent Fire Management System

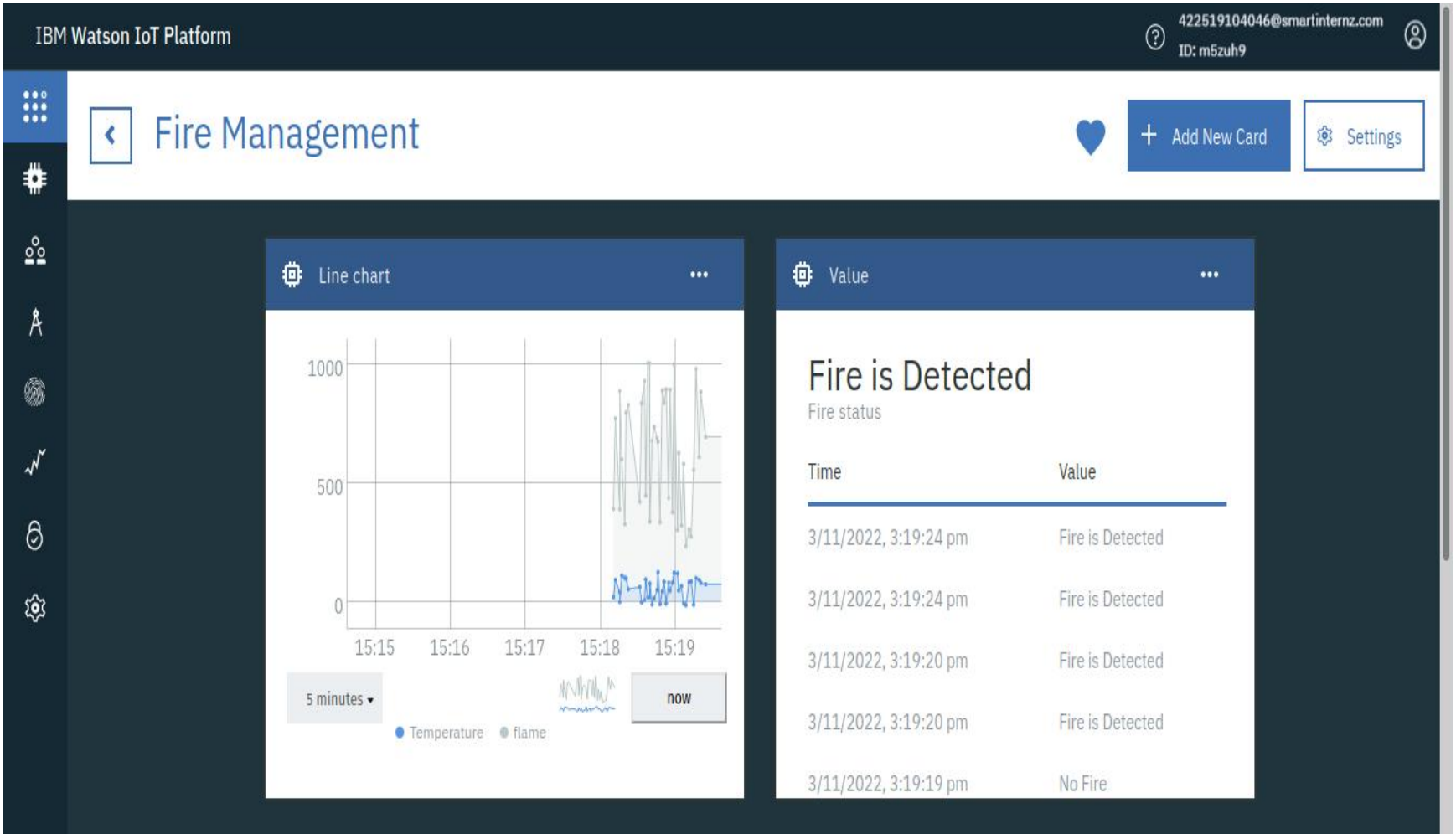
Result

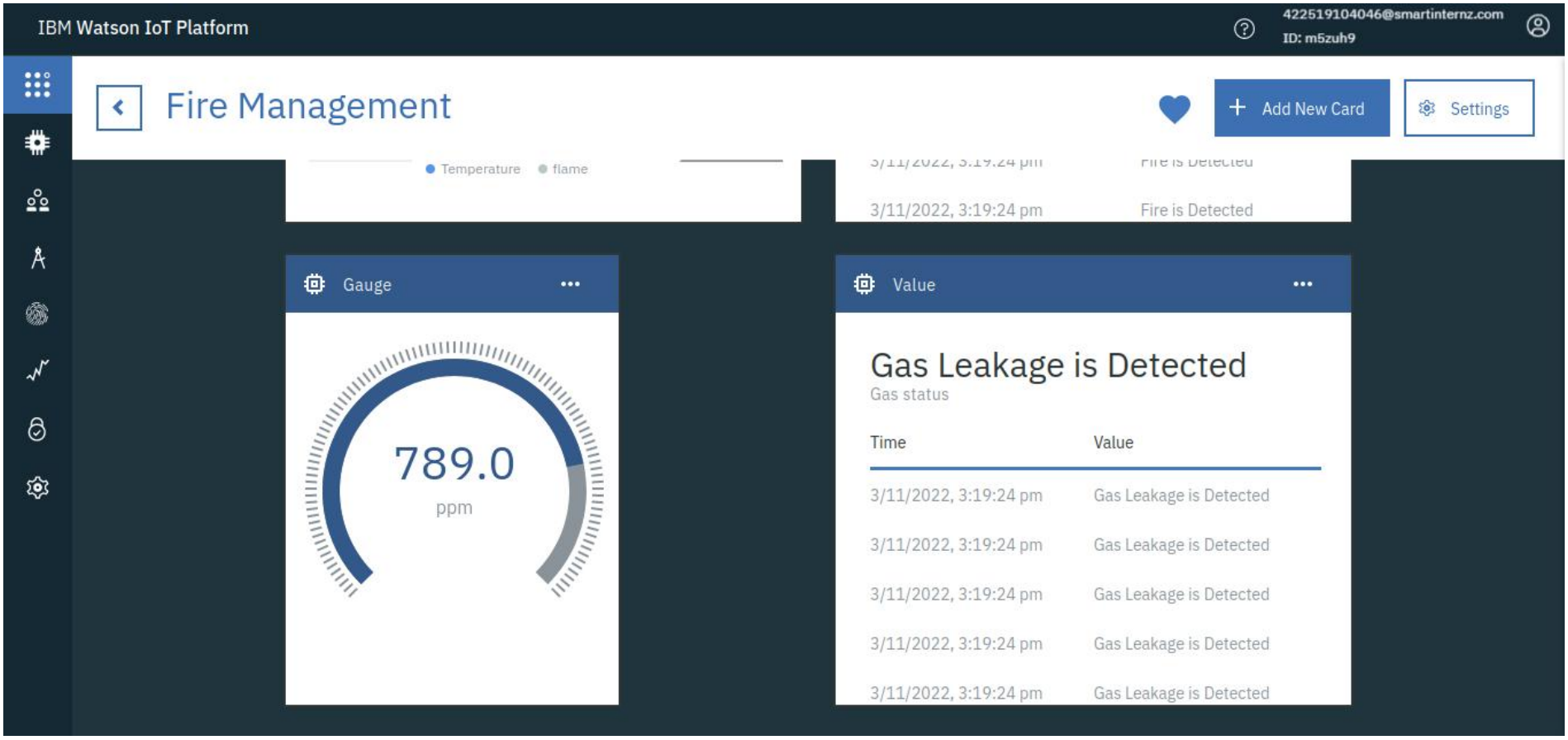

WOKWI
SAVE
SHARE
Sprint - 2
esp32-dht22.ino
diagram.json
libraries.txt
Library Manager
Simulation
ESP32
#include <time.h>
#include <WiFi.h>
#include <PubSubClient.h>
#define ORG "wt19pm"
#define DEVICE_TYPE "NodeMCU"
#define DEVICE_ID "12345"
#define TOKEN "12345678"
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
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() {
Connecting to Wifi.WiFi connected
Reconnecting MQTT client to
wt19pm.messaging.internetofthings
Publish OK
Publish OK
Publish OK
Publish OK
Publish OK
Publish OK
Publish OK

IBM WATSON


IBM Watson IoT Platform
422519104046@smartinternz.com
ID: m5zuh9
Browse
Action
Device Types
Interfaces
Add Device
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
data
{"gas":732,"temperature":79,"flame":1021,"fire_...
json
a few seconds ago
data
{"gas":972,"temperature":77,"flame":499,"fire_s...
json
a few seconds ago
data
{"gas":938,"temperature":88,"flame":302,"fire_s...
json
a few seconds ago
data
{"gas":284,"temperature":24,"flame":938,"fire_s...
json
a few seconds ago
data
{"gas":640,"temperature":58,"flame":346,"fire_s...
json
a few seconds ago
Items per page 50
1–1 of 1 item
1 of 1 page
1

IBM WATSON DASHBOARD




IBM Watson IoT Platform
422519104046@smartinternz.com
ID: m5zuh9
Fire Management
Add New Card
Settings
Temperature
flame
3/11/2022, 3:19:24 pm
Fire is Detected
Gauge
789.0
ppm
Value
Gas Leakage is Detected
Gas status
Time
Value
3/11/2022, 3:19:24 pm
Gas Leakage is Detected
3/11/2022, 3:19:24 pm
Gas Leakage is Detected
3/11/2022, 3:19:24 pm
Gas Leakage is Detected
3/11/2022, 3:19:24 pm
Gas Leakage is Detected
3/11/2022, 3:19:24 pm
Gas Leakage is Detected

CODE:

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

#define ORG "wt19pm"
#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();
  }
}
```