

## Project Development Phase

### SPRINT 3

Date	12 November 2022
Team ID	PNT2022TMID35759
Project Name	Gas leakage monitoring and alerting system

#### Data Transfer:

As a system, it should send the data of sensor values along with latitudes and longitudes to the IBM cloud

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

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

```
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);
```

```
//-----credentials of IBM Accounts-----
```

```
#define ORG "ohyeah"//IBM ORGANITION ID
```

```
#define DEVICE_TYPE "NODEMCU"//Device type mentioned in ibm watson IOT Platform
```

```
#define DEVICE_ID "ASHFAQ1824"//Device ID mentioned in ibm watson IOT Platform
```

```
#define TOKEN "ashlord" //Token
```

```
String data3;
```

```
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
```

```
char publishTopic[] = "iot-2/evt/Gas/fmt/json";
```

```
char publishTopic2[] = "iot-2/evt/Loc/fmt/json";
```

```
char subscribetopic[] = "iot-2/cmd/home/fmt/String";
```

```
char authMethod[] = "use-token-auth";
```

```
char token[] = TOKEN;
```

```
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
```

```
WiFiClient wifiClient;
```

```
PubSubClient client(server, 1883, callback ,wifiClient);
```

```
const int gasSensor = A0;
```

```
#define SOUND_SPEED 0.034
```

```
int gasValue = 0;
```

```
String latitude = "0.000000";
```

```
String longitude = "0.000000";
```

```
void setup()
```

```
{
```

```

Serial.begin(115200);
wificonnect();
mqttconnect();
}
void loop()
{
gasValue = random(600,750);
Serial.print("Gas Value: ");
Serial.println(gasValue);
delay(1000);
PublishData(gasValue);
delay(1000);
if(gasValue > 700)
{
latitude = "13.148760";
longitude = "80.229100";
PublishString(latitude, longitude);
}
if (!client.loop())
{
mqttconnect();
}
Serial.println();
Serial.println("-----");
Serial.println();
delay(3000);
}
void PublishData(int gas)
{
mqttconnect();
String payload = "{\"Gas Value\":\"";
payload += gas;
payload += "\"}";
Serial.print("Sending payload Gas: ");

```

```

Serial.println(payload);

if (client.publish(publishTopic, (char*) payload.c_str()))
{
    Serial.println("Gas is Published");
}
else
{
    Serial.println("Gas is not Published");
}
}

void PublishString(String lat, String lon)
{
    mqttconnect();
    String payload2 = "{\"d\":{\"Latitude\":";
    payload2 += lat;
    payload2 += "\",\"Longitude\":";
    payload2 += lon;
    payload2 += "\"}"}";
    Serial.print("Sending Payload Location: ");
    Serial.println(payload2);
    if (client.publish(publishTopic2, (char*) payload2.c_str()))
    {
        Serial.println("Location is Published");
    }
    else
    {
        Serial.println("Location is not Published");
    }
}

void mqttconnect()
{
    if (!client.connected())
    {
        Serial.print("Reconnecting client to ");
    }
}

```

```

Serial.println(server);

while (!client.connect(clientId, authMethod, token))

{
Serial.print(".");
delay(500);
}

initManagedDevice();
Serial.println();
}

}

void wificonnect()
{
Serial.println();

Serial.print("Connecting to ");

WiFi.begin("Wokwi-GUEST", "", 6);

while (WiFi.status() != WL_CONNECTED)

{
delay(500);
Serial.print(".");
}

Serial.println("");

Serial.println("WiFi connected");

Serial.println("IP address: ");

Serial.println(WiFi.localIP());
}

void initManagedDevice()
{
if (client.subscribe(subscribetopic))

{
Serial.println((subscribetopic));

Serial.println("subscribe to cmd OK");
}

else

{

```

```

Serial.println("subscribe to cmd FAILED");
}
}

void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
{
Serial.print("callback invoked for topic: ");
Serial.println(subscribetopic);
for (int i = 0; i < payloadLength; i++)
{
//Serial.print((char)payload[i]);
data3 += (char)payload[i];
}
Serial.println("data: "+ data3);
data3="";
}

```

```

Connecting to ...
WiFi connected
IP address:
10.10.0.2
Reconnecting client to oqhi1j.messaging.internetofthings.ibmcloud.com
iot-2/cmd/home/fmt/String
subscribe to cmd OK

Gas Value: 645
Sending payload Gas: {"Gas Value":645}
Gas is Published

-----

Gas Value: 672
Sending payload Gas: {"Gas Value":672}
Gas is Published

-----

Gas Value: 619
Sending payload Gas: {"Gas Value":619}
Gas is Published

```

Gas Value:631

```
Sending payload Gas: {"Gas Value":631}
```

Gas is Published

Gas Value:720

```
Sending payload Gas: {"Gas Value":720}
```

Gas is Published

```
Sending Payload Location:{"d":{"Latitude":13.148760,"Longitude":80.229100}}
```

Location is Published

Browse
Action
Device Types
Interfaces

EW-E-I

---

Identity
Device Information
Recent Events
State
Logs

X

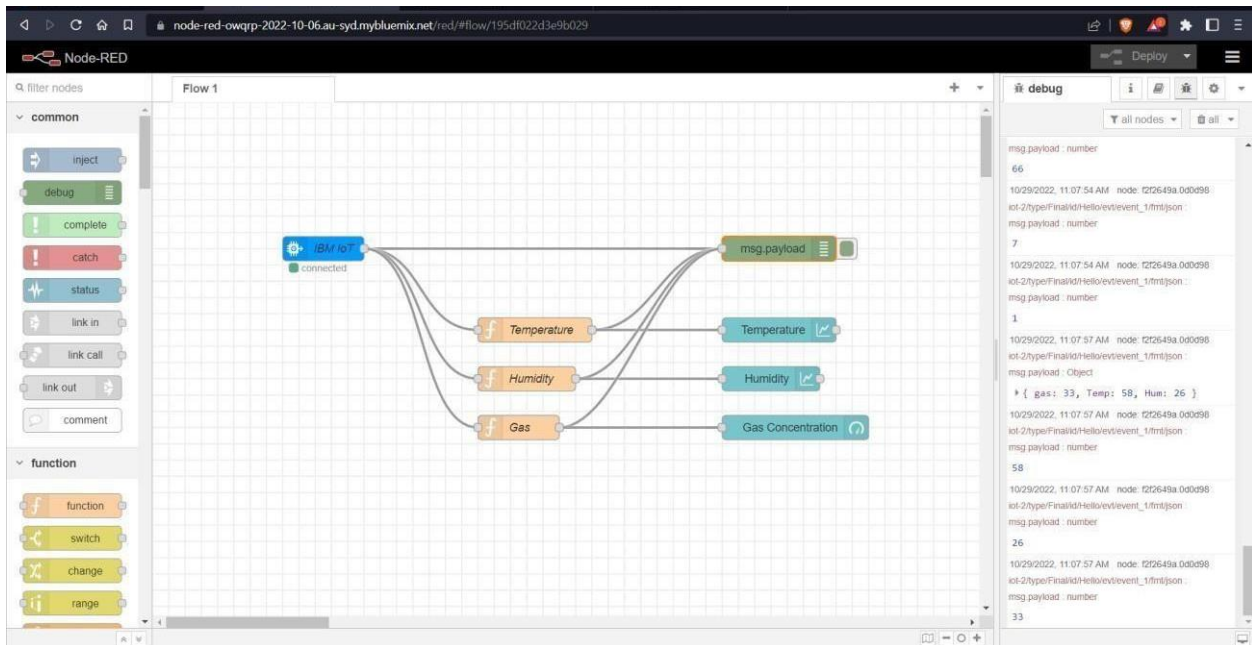
The recent events listed show the live stream of data that is coming and going from this device.

Loc	[{"d":{"Latitude":13.14876,"Longitude":80.2291}]	json	a few seconds ago
Gas	{"Gas Value":720}	json	a few seconds ago
Gas	{"GasValue":631}	json	a few seconds ago
Gas	{"Gas Value":658}	json	a few seconds ago
Gas	{"Gas Value":688}	json	a few seconds ago

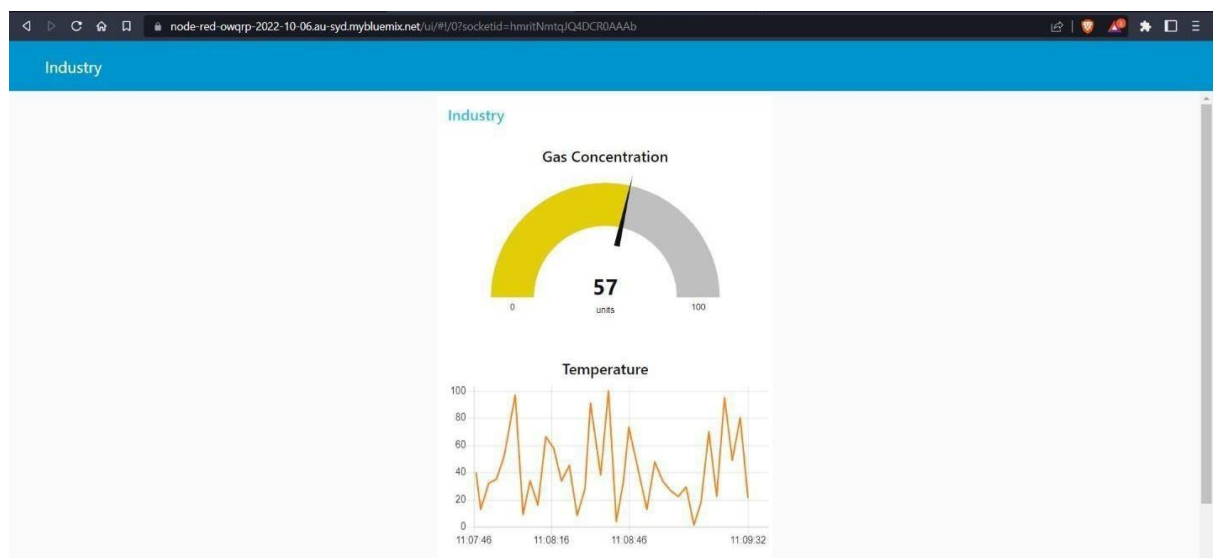
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As a cloud system, the IBM cloud should send the data to NodeRed As a system, it should collect the data from the NodeRed and give it to the backend of the mit app.

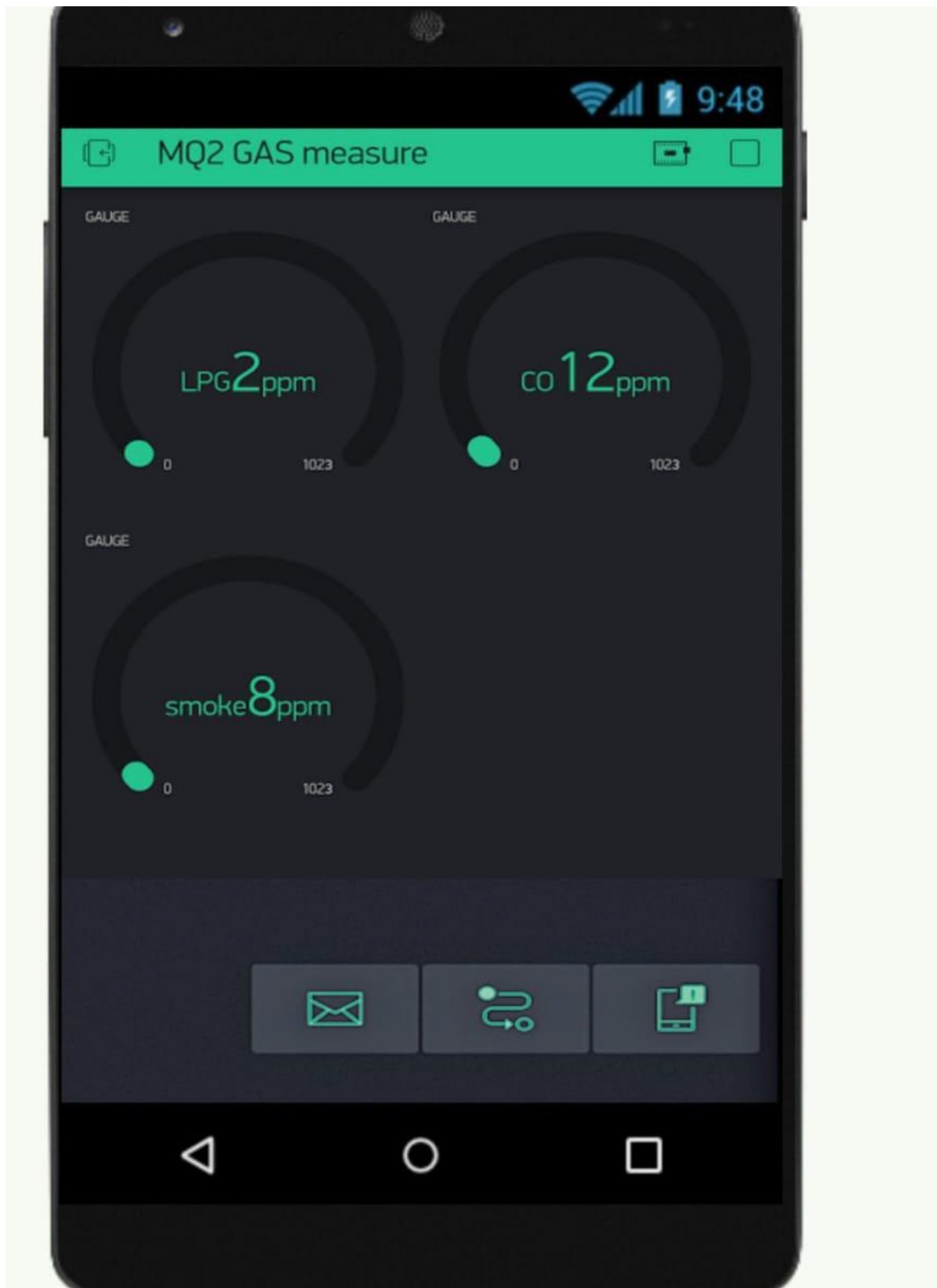
## Data is brought to Node-RED



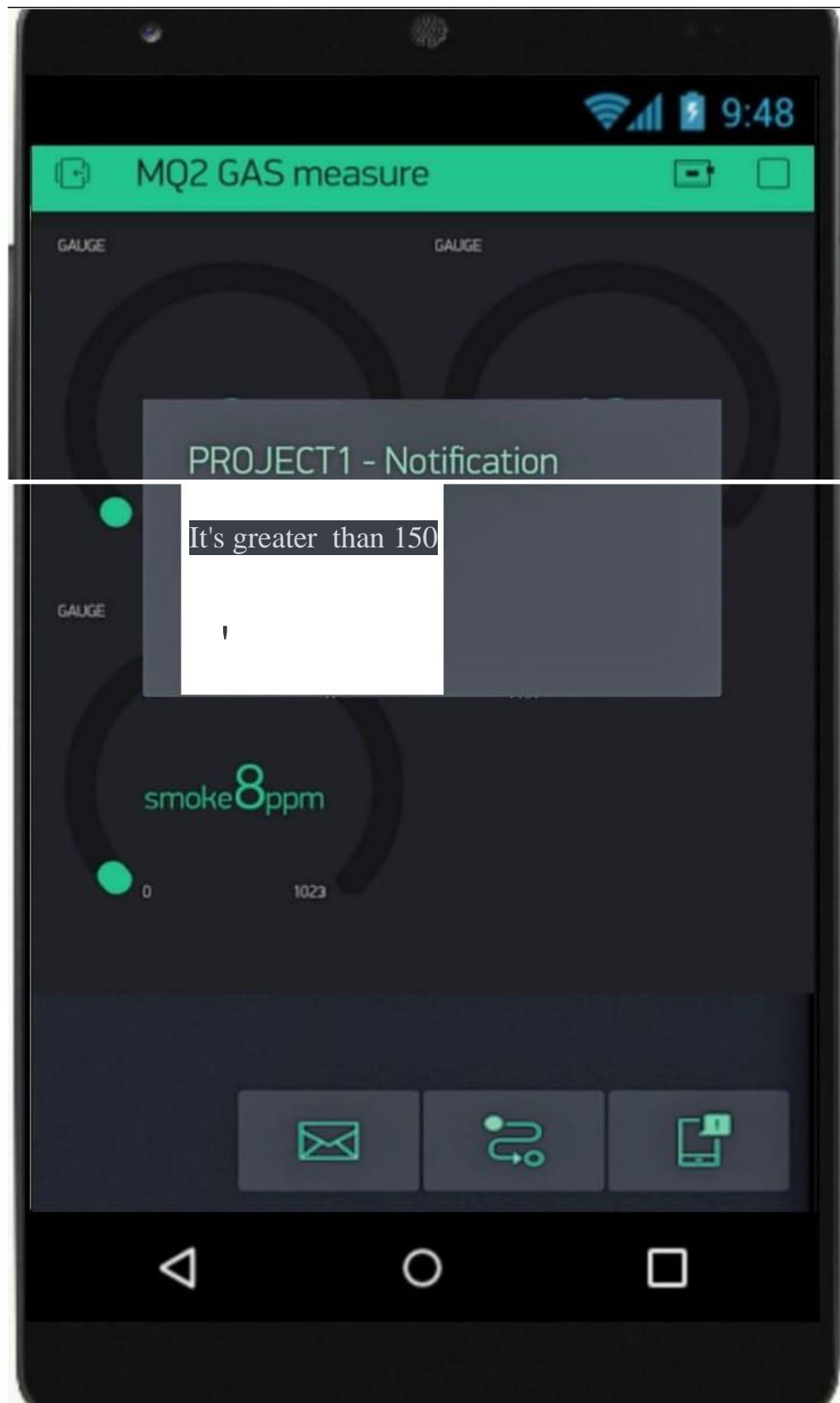
## Data is displayed in Dashboard



As an application, it should display the details of the gas level and other details to the user through the frontend of the mit app.







9:48



GPS TRACKER



LATITUDE

V1: 19.876585

LONGITUDE

V2: 75.349854

SATELLITE

V4: 0

SPEED

V3: 0.06

DIRECTION

V5: ENE

