Project Development Phase

SPRINT 3

Date	12 November 2022
Team ID	PNT2022TMID53586
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 "SHRI1824"//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: ");
```

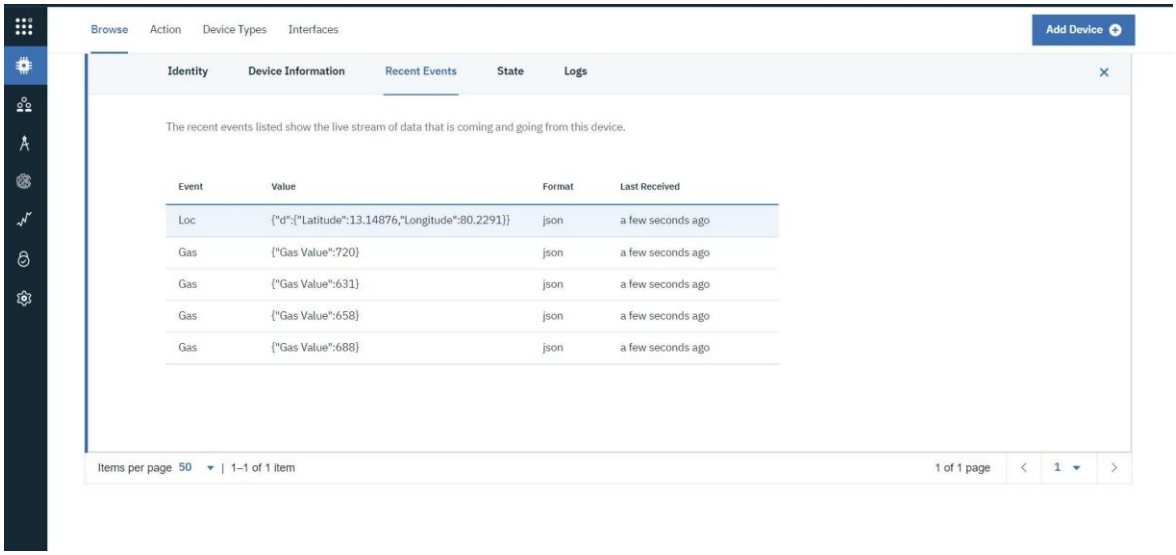
```
Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str()))
{
Serial.println("Gas is Published");
}
else
{
Serial.println("Gas is not Published");
}
}
void PublishString(String lat, String lon)
{
mqttconnect();
String payload2 = "{\"d\":{\"Latitude\":";
payload2 += lat;
payload2 += ","\"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="";
}
```

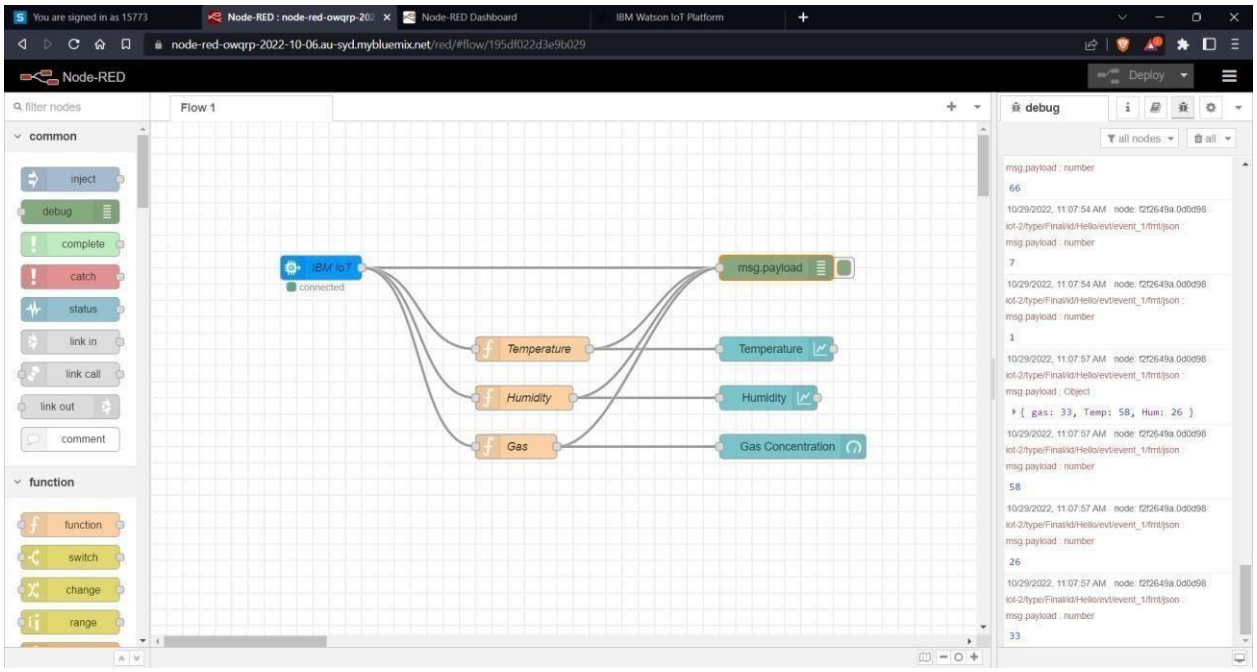
```
Connecting to ...
WiFi connected
IP address:
10.10.0.2
Reconnecting client to oqhi1j.messaging.internetofthings.ibmcloud.com
iot-2/cmd/home/fmt/String
subscribe to cmd OK

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

------------------------------------------------------------------------
```

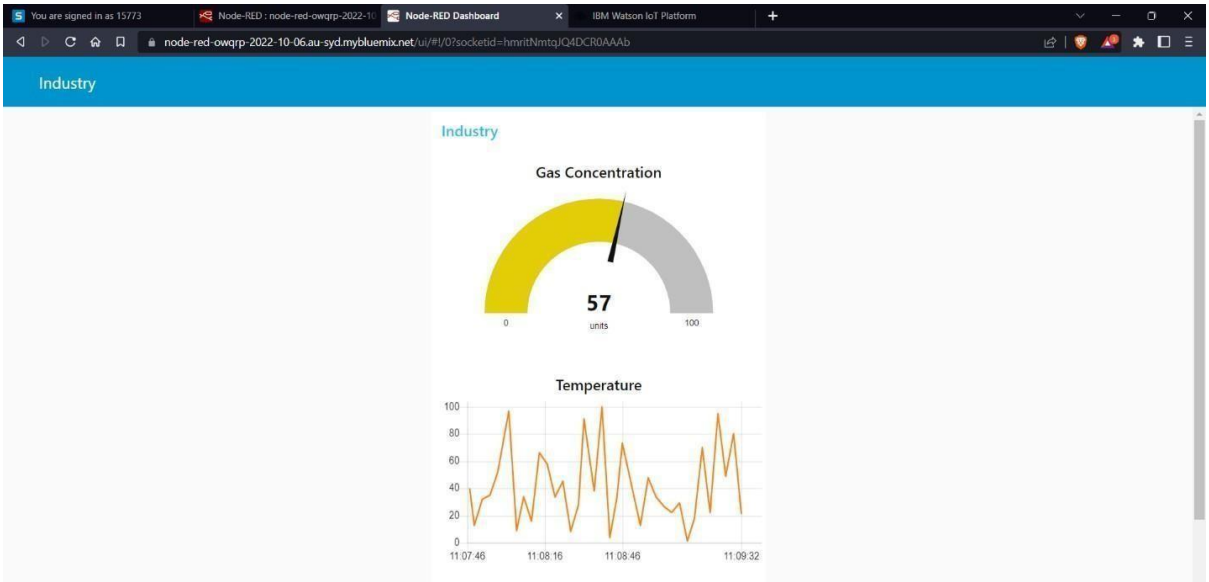


As a cloud system, the IBM cloud should send the data to NodeRed As a system, it should collect the data from the NodeRed and give it to the backend of the mit app.

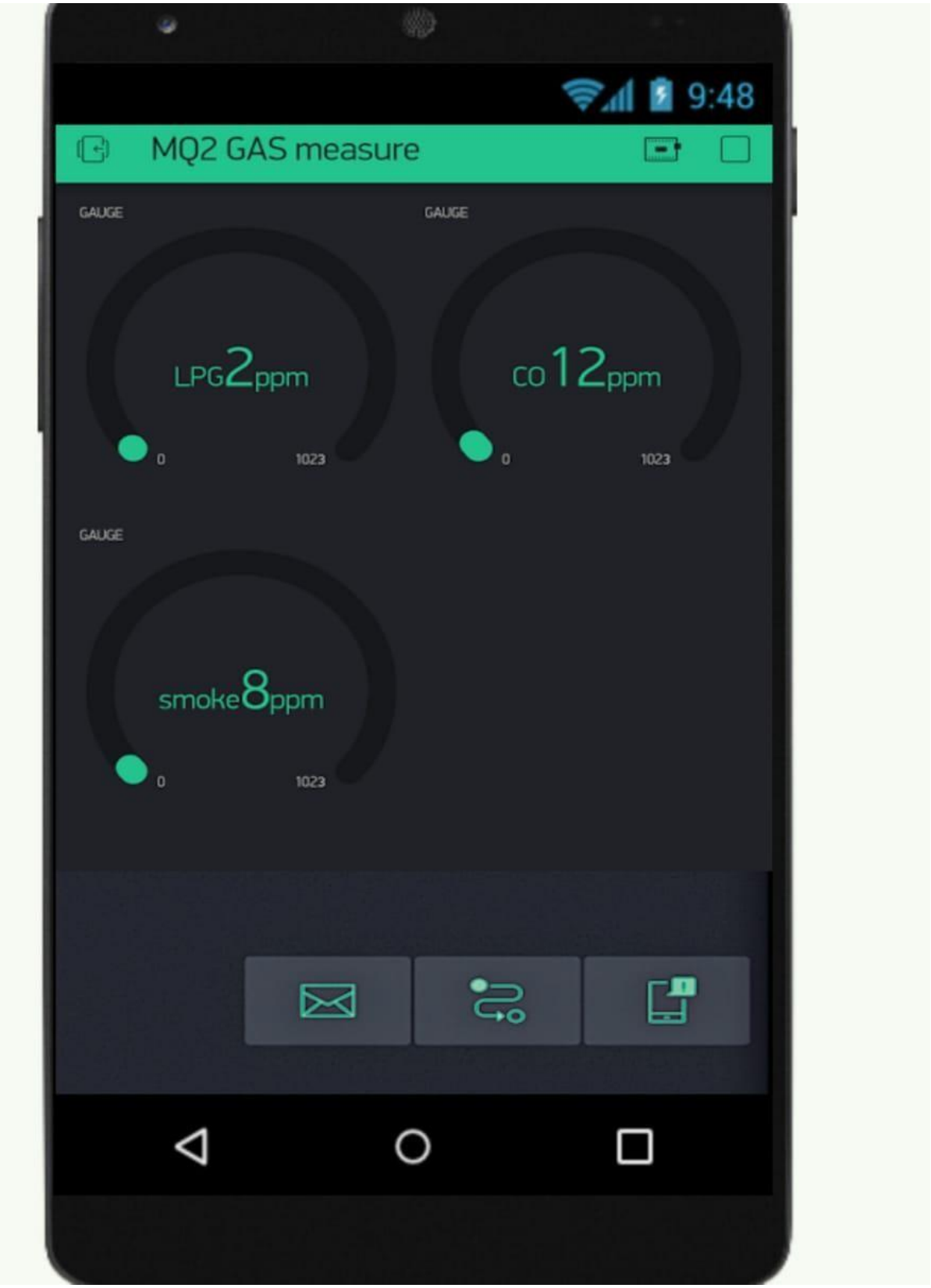
Data is brought to Node-RED

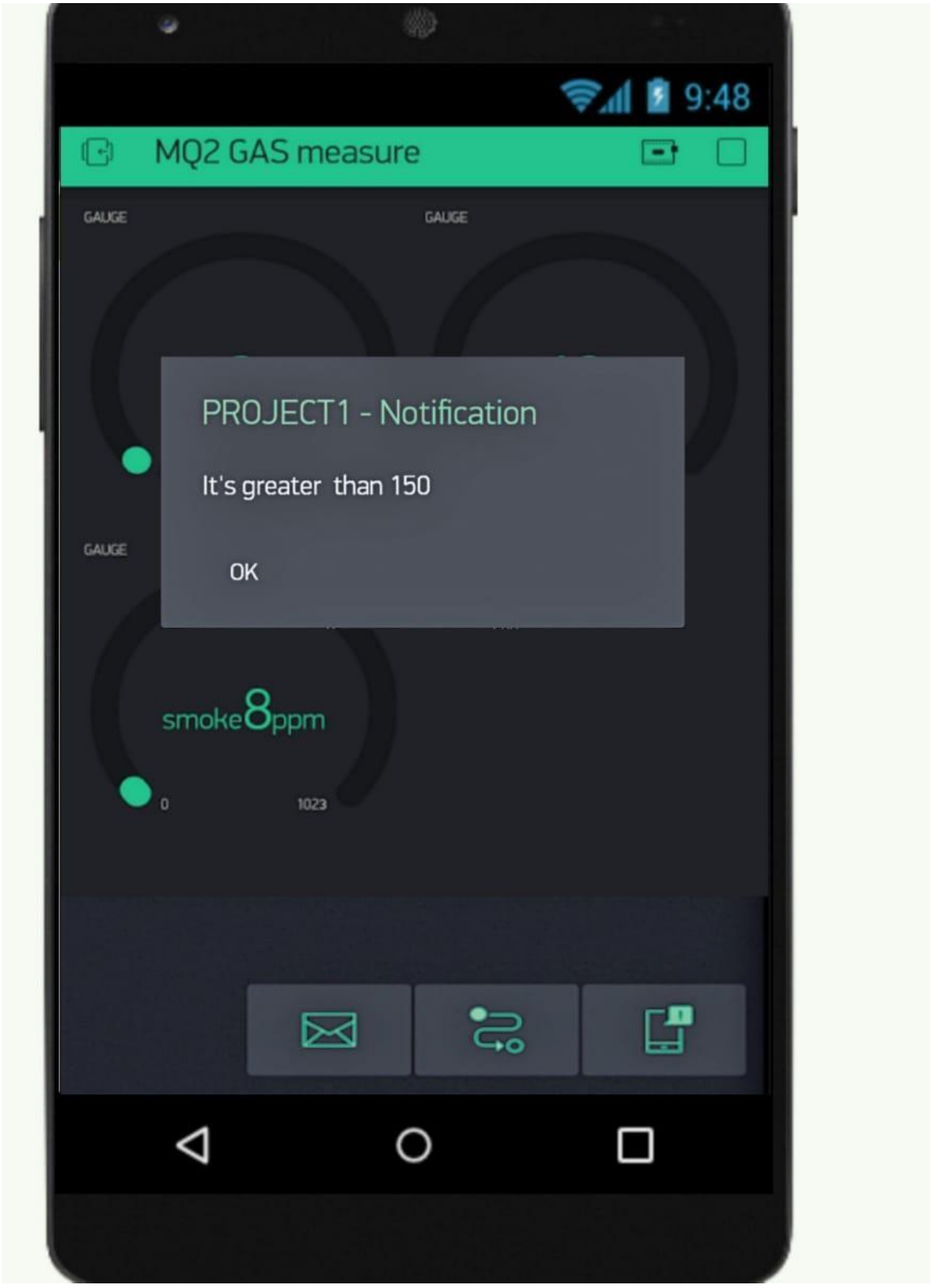


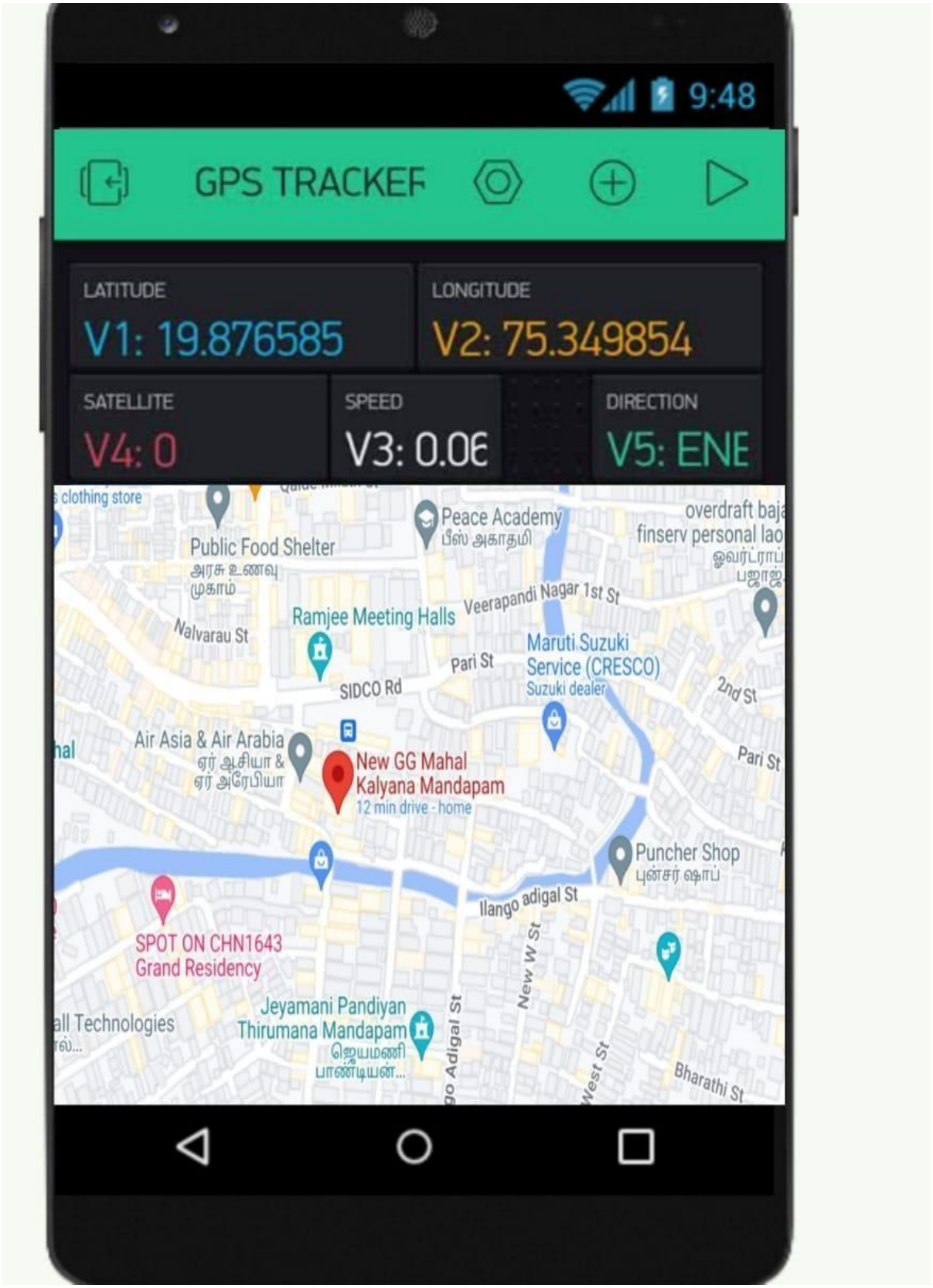
Data is displayed in Dashboard



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
MQ2 GAS measure
GAUGE
GAUGE
GAUGE
PROJECT1 - Notification
It's greater than 150
OK
smoke8ppm
0
1023


9:48
GPS TRACKER
LATITUDE
V1: 19.876585
LONGITUDE
V2: 75.349854
SATELLITE
V4: 0
SPEED
V3: 0.06
DIRECTION
V5: ENE
clothing store
Public Food Shelter
அரசு உணவு முகாம்
Peace Academy
பீஸ் அகாதமி
overdraft baja
finserv personal lao
ஓவர்ட்ராப்
பஜாஜ்
Veerapandi Nagar 1st St
Ramjee Meeting Halls
Nalvarau St
Pari St
Maruti Suzuki Service (CRESCO)
Suzuki dealer
SIDCO Rd
2nd St
Air Asia & Air Arabia
ஏர் ஆசியா & ஏர் அரேபியா
New GG Mahal Kalyana Mandapam
12 min drive - home
Pari St
Puncher Shop
புன்சர் ஷாப்
Ilango adigal St
SPOT ON CHN1643
Grand Residency
New W St
Jeyamani Pandiyan Thirumana Mandapam
ஜெயமணி பாண்டியன்...
Bharathi St