Gas Leakage Monitoring And Alerting System

Develop the Web Application using Node-RED

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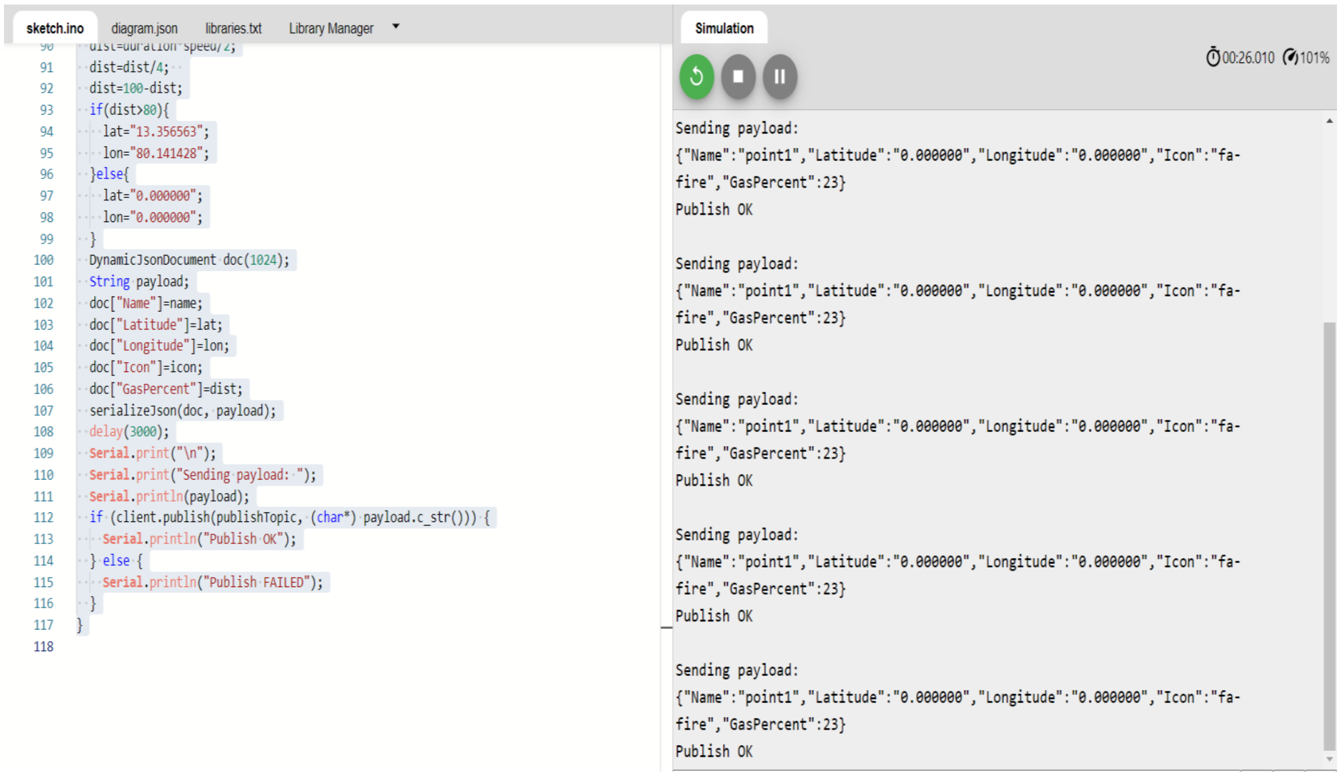
Features of Web UI:

1. Firstly, connect to the IBM IOT platform to get the location data of the gas leakage.
2. Display the location on the map in the Node-RED UI
3. Send the e-mail to the user with the alert message.

Step 1:

Find the location of the gas leakage.

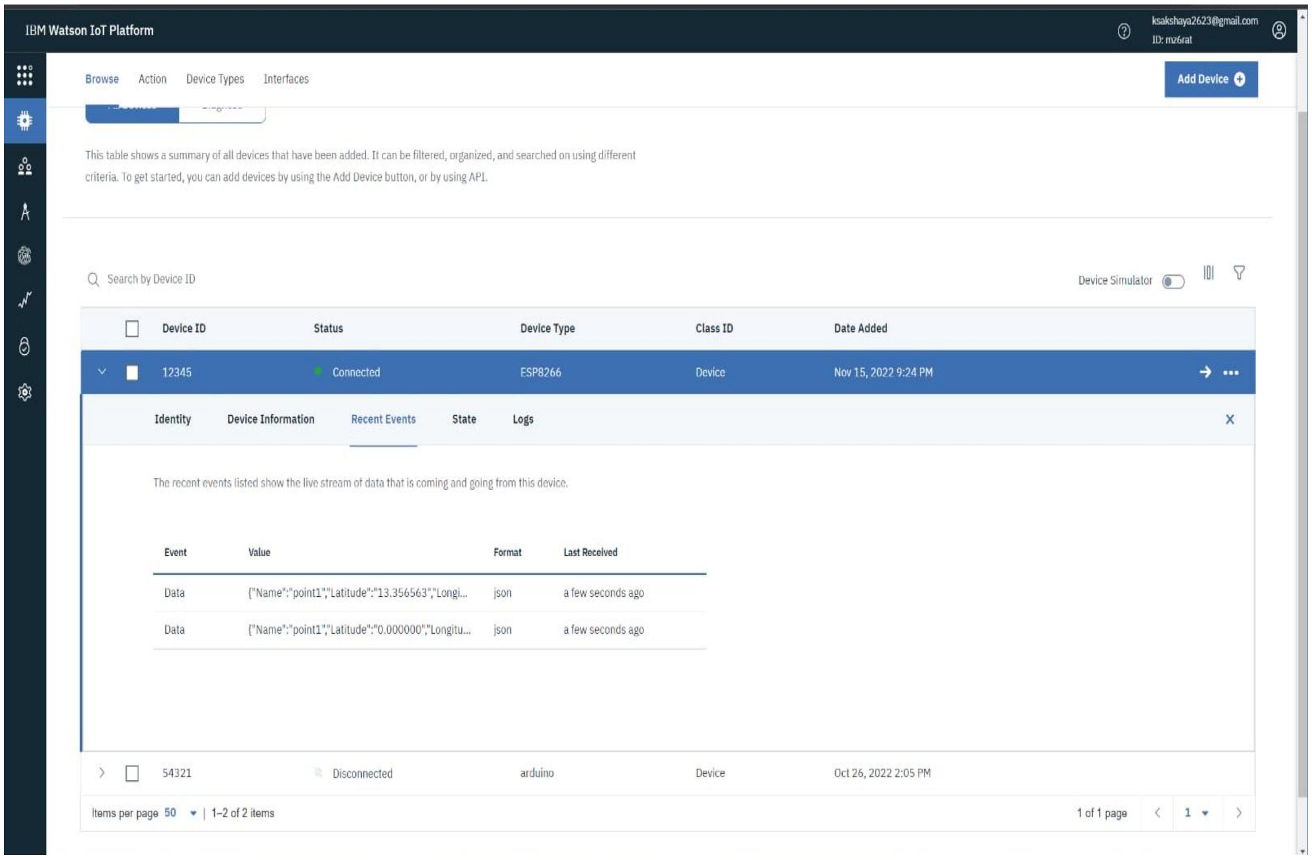


```
  dist=duration*speed/2;
  dist=dist/4;
  dist=100-dist;
  if(dist>80){
    lat="13.356563";
    lon="80.141428";
  }else{
    lat="0.000000";
    lon="0.000000";
  }
  DynamicJsonDocument doc(1024);
  String payload;
  doc["Name"]=name;
  doc["Latitude"]=lat;
  doc["Longitude"]=lon;
  doc["Icon"]=icon;
  doc["GasPercent"]=dist;
  serializeJson(doc, payload);
  delay(3000);
  Serial.print("\n");
  Serial.print("Sending payload: ");
  Serial.println(payload);
  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish OK");
  } else {
    Serial.println("Publish FAILED");
  }
}
```

```
Sending payload:
{"Name":"point1","Latitude":"0.000000","Longitude":"0.000000","Icon":"fa-
fire","GasPercent":23}
Publish OK

Sending payload:
{"Name":"point1","Latitude":"0.000000","Longitude":"0.000000","Icon":"fa-
fire","GasPercent":23}
Publish OK

Sending payload:
{"Name":"point1","Latitude":"0.000000","Longitude":"0.000000","Icon":"fa-
fire","GasPercent":23}
Publish OK

Sending payload:
{"Name":"point1","Latitude":"0.000000","Longitude":"0.000000","Icon":"fa-
fire","GasPercent":23}
Publish OK

Sending payload:
{"Name":"point1","Latitude":"0.000000","Longitude":"0.000000","Icon":"fa-
fire","GasPercent":23}
Publish OK
```

Step 2:

Output shown on the IBM IOT platform.



IBM Watson IoT Platform

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Browse Action Device Types Interfaces Add Device

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID

Device Simulator

Device ID	Status	Device Type	Class ID	Date Added
12345	● Connected	ESP8266	Device	Nov 15, 2022 9:24 PM
54321	Disconnected	arduino	Device	Oct 26, 2022 2:05 PM

Identity Device Information Recent Events State Logs

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

Event	Value	Format	Last Received
Data	{"Name":"point1","Latitude":"13.356563","Longi...	json	a few seconds ago
Data	{"Name":"point1","Latitude":"0.000000","Longitu...	json	a few seconds ago

Items per page 50 | 1–2 of 2 items

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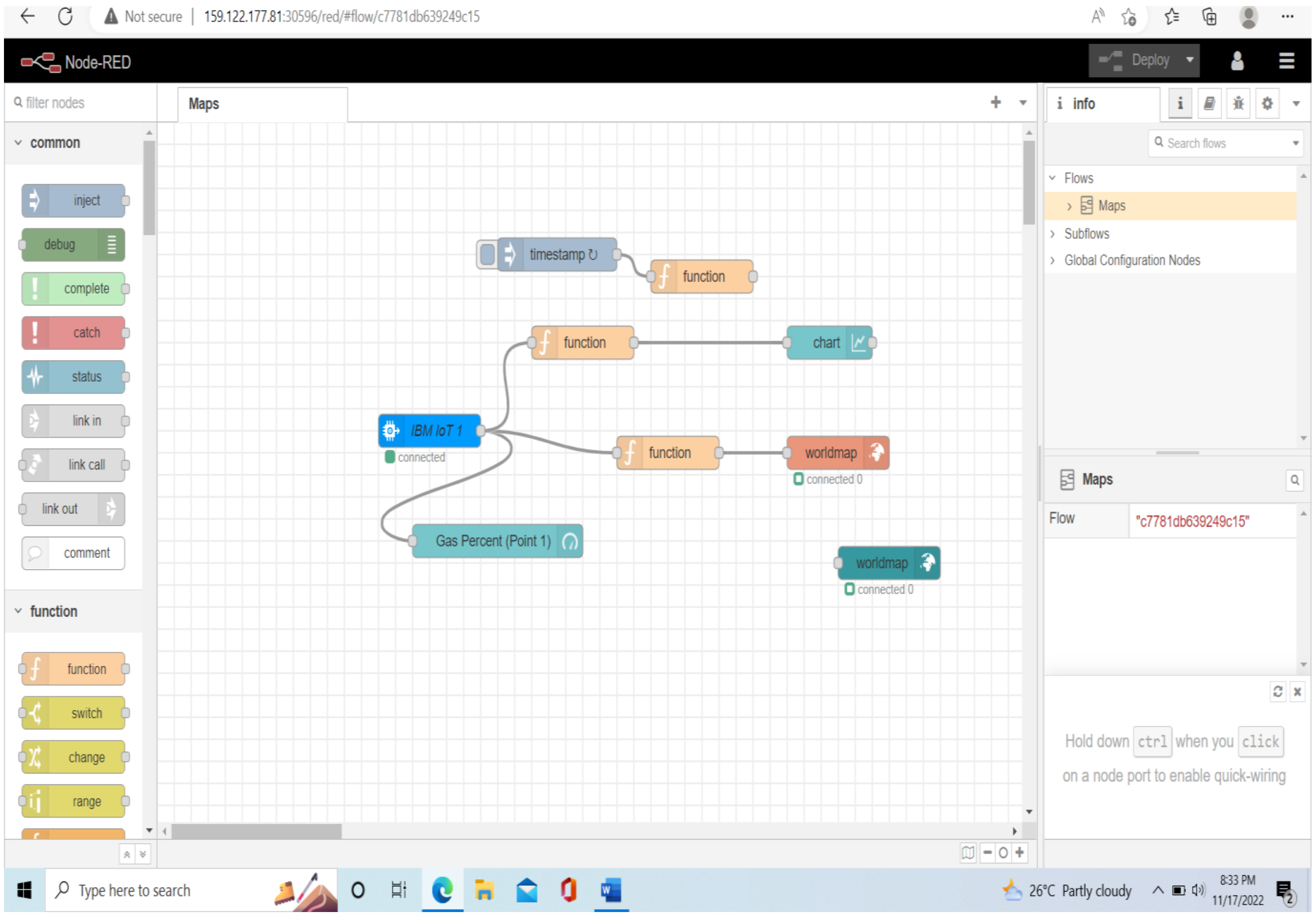
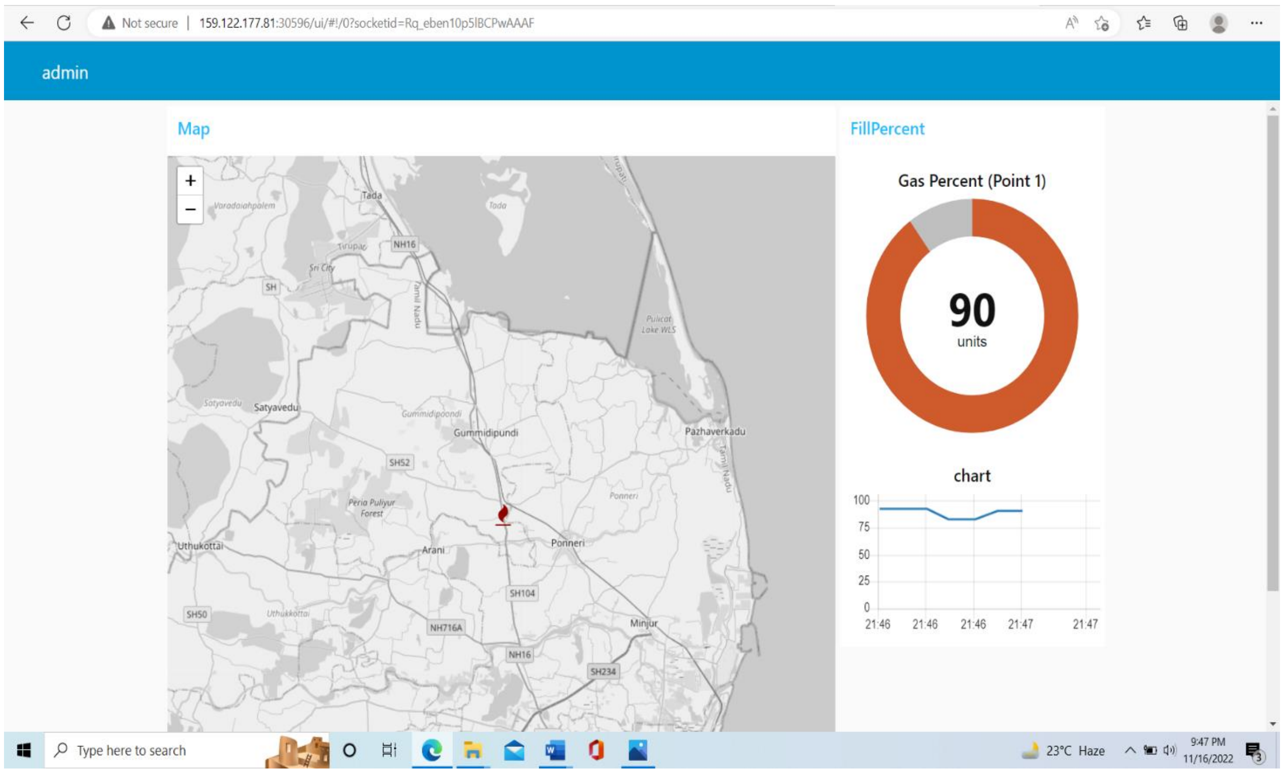
Step 3:

In this flow we use the IBM IoT node for getting data from IBM Watson IOT platform and changing them into the required format with the help of the function node and passing the values to the Gauge node (UI node) and to the World Map node.



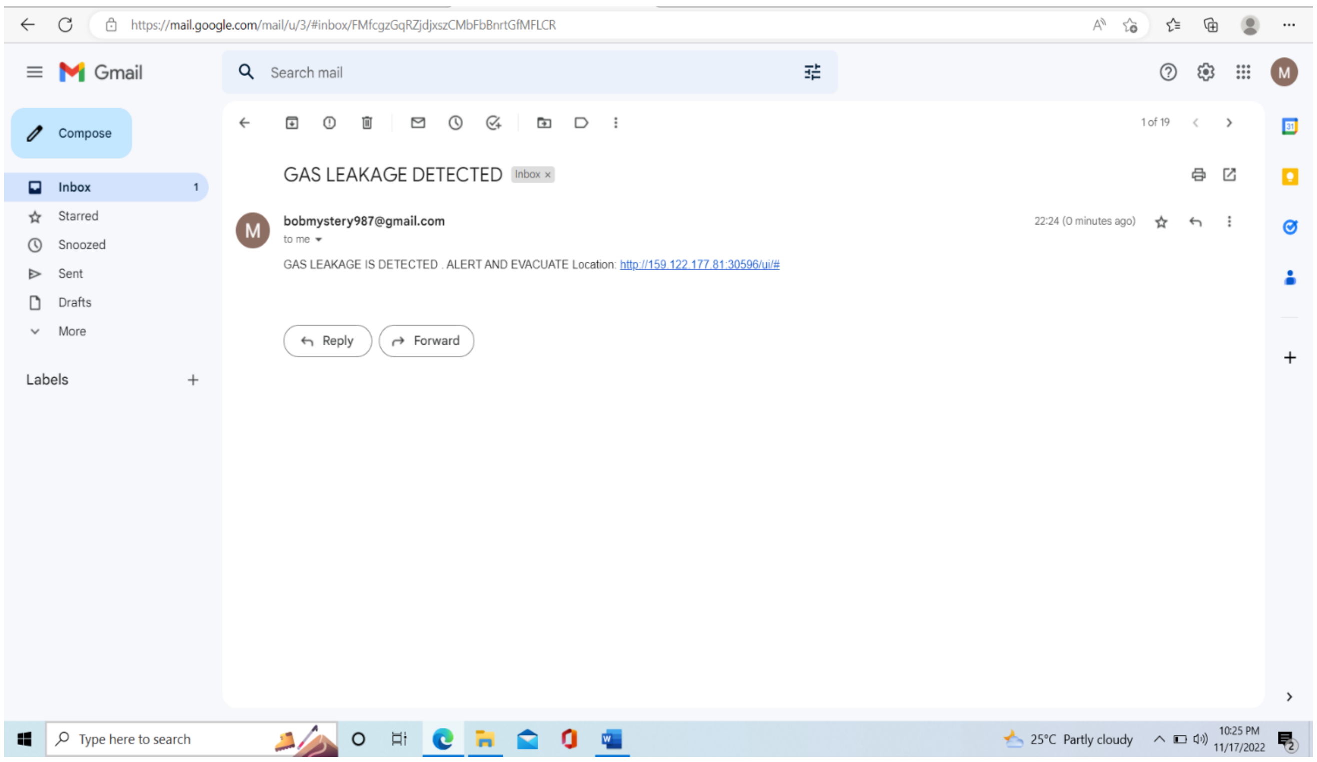
Step 4:

The below figure shows the location along with the gas percentage and it denotes that the leakage is more.



Step 5:

Mail come to the user along with the Alert Message. The mail also contains the location and gas percentage.



GAS LEAKAGE DETECTED Inbox ×

bobmystery987@gmail.com
to me
22:24 (0 minutes ago)

GAS LEAKAGE IS DETECTED . ALERT AND EVACUATE Location: http://159.122.177.81:30596/ui/#