

Project Development Phase

Sprint – II

Date	14 November 2022
Team id	PNT2022TMID51225
Project name	Signs with smart connectivity for better road safety

Sprint targets:

Sprint	Functional requirements	USN	User story/Task	Story points	Priority	Team members
Sprint-2	Safe Ride	USN-4	As a passanger, I should have a Safe journey	20	Medium	Rithiga Angelin Sneka

Wowki Simulation:

Wowki simulation- <https://wokwi.com/projects/348366856752464467>

The screenshot displays the Wokwi web-based development environment. On the left, the 'sketch.ino' file is open, showing C++ code for an ESP32 microcontroller. The code includes libraries for WiFi, MQTT, and the DHT11 sensor (though the hardware is a DHT22). It defines a DHTPIN of 5 and a DHTTYPE of DHT22. The code sets up an MQTT client with credentials for 'twhdrg' and publishes sensor data to the topic 'iot-2/evt/Data/fmt/json'. On the right, the 'Simulation' window shows a 3D model of the ESP32 board connected to a DHT22 sensor module. The console output shows the sensor data being published: 'temp:37.40, humidity:86.00, North:0, South:0, East:0, West:0'. The status bar at the top right indicates a connection to 'final_iot' and a battery level of 81%.

IoT Device in IoT Platform:

Device ID: 4054, Status: Disconnected, Device Type: Sample_one, Class ID: Device, Date Added: Nov 7, 2022 10:15 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
event_1	{"temperature":40,"humidity":38}	json	a few seconds ago
event_1	{"temperature":21,"humidity":72}	json	a few seconds ago
event_1	{"temperature":28,"humidity":74}	json	a few seconds ago
event_1	{"temperature":15,"humidity":32}	json	a few seconds ago
event_1	{"temperature":47,"humidity":26}	json	a few seconds ago

1 Simulation running

Node red:

Node-RED interface showing a flow diagram. The flow starts with an 'IBM IoT' node connected to a 'msg.payload' node. The payload is then split into two paths: one leading to a 'Shortest Lane Calculation' node and another to a 'Density' node. The 'Shortest Lane Calculation' node outputs to an 'Optimal Lane display' node, which then outputs to another 'msg.payload' node. The 'Density' node also outputs to a 'msg.payload' node. The right sidebar shows the debug console with logs for the 'Shortest Lane Calculation' node.

```
graph LR
    IoT[IBM IoT] --> MP1[msg.payload]
    MP1 --> SLC[Shortest Lane Calculation]
    MP1 --> D[Density]
    SLC --> OLD[Optimal Lane display]
    OLD --> MP2[msg.payload]
    D --> MP3[msg.payload]
```

debug console logs:

```
iot-2typeedge-device-
1/d0001/evtrnd_number/rtrn/json : msg.payload :
string[6]
" Lane 4"
11/6/2022, 10:35:25 PM node: 3c1761734e5abaf6
iot-2typeedge-device-
1/d0001/evtrnd_number/rtrn/json : msg.payload :
Object
{ Lane_1: 59, Lane_2: 59, Lane_3:
94, Lane_4: 69 }
11/6/2022, 10:35:26 PM node: a7c38659961e460
iot-2typeedge-device-
1/d0001/evtrnd_number/rtrn/json : msg.payload :
string[6]
" Lane 1"
11/6/2022, 10:35:27 PM node: 3c1761734e5abaf6
iot-2typeedge-device-
1/d0001/evtrnd_number/rtrn/json : msg.payload :
Object
{ Lane_1: 5, Lane_2: 83, Lane_3:
30, Lane_4: 79 }
11/6/2022, 10:35:28 PM node: a7c38659961e460
iot-2typeedge-device-
1/d0001/evtrnd_number/rtrn/json : msg.payload :
string[6]
" Lane 1"
```

Edit function node

Delete

Cancel

Done

⚙️ Properties

⚙️

📄

🖨️

🔑 Name

Shortest Lane Calculation

📄

⚙️ Setup

On Start

On Message

On Stop

1 var l1 = msg.payload.Lane_1;

2 var l2 = msg.payload.Lane_2;

3 var l3 = msg.payload.Lane_3;

4 var l4 = msg.payload.Lane_4;

5

6 mini = Math.min(l1,l2,l3,l4);

7

8 res = "-";

9

10 switch(mini) {

11 case l1: res = "Lane 1"; break;

12 case l2: res = "Lane 2"; break;

13 case l3: res = "Lane 3"; break;

14 case l4: res = "Lane 4"; break;

15 }

16

17 msg.payload = res;

18


19 return msg;

Node Red Web UI

Home

Speed Limit

Speed Limit



71.1

Environment Data

Temperature
16.1

Humidity
76.5

High Priority Vehicle Direction

High Priority
Towards North

Lane Density

Optimal Lane
Lane 1

Density
5 | 83 | 30 | 79