

## Project Development Phase Sprint II

Date	05 November 2022
Team ID	PNT2022TMID07704
Project Name	Signs with Smart Connectivity for better road safety

### Sprint Targets

Sprint-2	Safe Ride	USN-4	As a <u>traveller</u> , I <u>Shoud</u> have a <u>hustie</u> free journey	20	Medium	<u>Rameshkumar</u> , <u>Abirami</u> , <u>Arulkumar.A</u> , <u>Dharanidharan</u> , <u>Priya.N</u>
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Wokwi Simulation: <https://wokwi.com/projects/347494122536305235>

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```

1 #include <WiFi.h> //library for wifi
2 #include <PubSubClient.h> //library for MQTT
3 #include "DHT.h" // Library for dht11
4 #define DHTPIN 5 // what pin we're connected to
5 #define DHTTYPE DHT22 // define type of sensor DHT 11
6
7 DHT dht (DHTPIN, DHTTYPE); // creating the instance by passing pin and type of dht connecte
8
9 void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);
10
11 //-----credentials of IBM Accounts-----
12
13 #define ORG "psh4py" //IBM ORGANITION ID
14 #define DEVICE_TYPE "alert-device" //Device type mentioned in ibm watson IOT Platform
15 #define DEVICE_ID "4571" //Device ID mentioned in ibm watson IOT Platform
16 #define TOKEN "12345678" //Token
17 String data3;
18 float h, t;
19
20
21 //----- Customise the above values -----
22 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // Server Name
23 char publishTopic[] = "iot-2/ev/Data/fmt/json"; // topic name and type of event perform an
24 char subscribetopic[] = "iot-2/cmd/command/fmt/String"; // cmd. REPRESENT command type AND
25 char authMethod[] = "use-token-auth"; // authentication method
26 char token[] = TOKEN;
27 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; //client id
28
29 //-----
30
31 WiFiClient wificlient; // creating the instance for wificlient
32 PubSubClient client(server, 1883, callback, wificlient); //calling the predefined client
33
34
35 void setup() // configuring the ESP32

```

Simulation
+
⋮

```

{"temp":16.10,"humidity":76.50,"North":1,"South":0,"East":0,"West":0}
Publish ok
temp:16.10
humidity:76.50
Sending payload:
{"temp":16.10,"humidity":76.50,"North":1,"South":0,"East":0,"West":0}
Publish ok

```

## IoT Device – IoT Platform

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. A sidebar on the left contains various icons for navigation. The main content area shows details for a device with ID '0001', which is 'Disconnected' and of type 'edge-device-1'. The 'Recent Events' tab is selected, showing a table of events.

Event	Value	Format	Last Received
rnd_number	{"Lane_1":5,"Lane_2":83,"Lane_3":30,"Lane_4":...	json	a few seconds ago
rnd_number	{"Lane_1":59,"Lane_2":59,"Lane_3":94,"Lane_4":...	json	a few seconds ago
rnd_number	{"Lane_1":93,"Lane_2":88,"Lane_3":49,"Lane_4":...	json	a few seconds ago
rnd_number	{"Lane_1":2,"Lane_2":61,"Lane_3":21,"Lane_4":...	json	a few seconds ago
rnd_number	{"Lane_1":70,"Lane_2":11,"Lane_3":69,"Lane_4":...	json	a few seconds ago

1 Simulation running

## Node Red

The screenshot shows the Node-RED interface with a flow named 'Flow 2'. The flow starts with an 'IBM IoT' node (connected), which branches into three paths: one to 'msg.payload', one to 'Shortest Lane Calculation', and one to 'Density'. The 'Shortest Lane Calculation' node outputs to 'Optimal Lane display' and 'msg.payload'. The 'Density' node outputs to 'msg.payload'. The right sidebar shows the debug console with logs for the 'IBM IoT' node, displaying JSON payloads for lane data.

```
log
iot-2/type/edge-device-1/id/0001/ev/rnd_number/rm/json : msg payload : string[6]
"Lane 4"
11/6/2022, 10:35:25 PM node: 3c1761734e6abaf
iot-2/type/edge-device-1/id/0001/ev/rnd_number/rm/json : msg payload : Object
{ Lane_1: 59, Lane_2: 59, Lane_3: 94, Lane_4: 69 }
11/6/2022, 10:35:26 PM node: a7c3f665f961e460
iot-2/type/edge-device-1/id/0001/ev/rnd_number/rm/json : msg payload : string[6]
"Lane 1"
11/6/2022, 10:35:27 PM node: 3c1761734e6abaf
iot-2/type/edge-device-1/id/0001/ev/rnd_number/rm/json : msg payload : Object
{ Lane_1: 5, Lane_2: 83, Lane_3: 30, Lane_4: 79 }
11/6/2022, 10:35:28 PM node: a7c3f665f961e460
iot-2/type/edge-device-1/id/0001/ev/rnd_number/rm/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

