

**Project Development Phase**  
**Sprint-3: MIT App Design and Testing**

Date	16/11/2022
Team ID	PNT2022TMID54446
Project Name	Project - Signs with Smart Connectivity for Better Road Safety
Maximum Marks	8 Marks

## Wokwi Simulation:

The screenshot displays the Wokwi simulation environment. On the left, the 'sketch.ino' file is open, showing the following code:

```
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 connect
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/evt/Data/fmt/json"; // topic name and type of event perform a
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
```

The right pane shows the 'Simulation' window. It features a visual representation of the ESP32 microcontroller and the DHT22 sensor. The ESP32 is connected to the DHT22 via a breadboard. The DHT22 is labeled 'DHT22' and has a red 'ON' switch. The terminal output at the bottom of the simulation window shows the following data:

```
{"temp":37.40,"humidity":86.00,"North":0,"South":0,"East":0,"West":0}
Publish ok
temp:37.40
humidity:86.00
Sending payload:
{"temp":37.40,"humidity":86.00,"North":0,"South":0,"East":0,"West":0}
```

At the bottom of the simulation window, there is a status bar indicating 'meet.google.com is sharing your screen.' and buttons for 'Stop sharing' and 'Hide'.

IoT Device - IoT Platform

Browse

Action

Device Types

Interfaces

device id

status

device type

class id

date added

descriptive location

0001

Disconnected

edge-device-1

Device

Nov 5, 2022 8:56 PM

...

Identity

Device Information

Recent Events

State

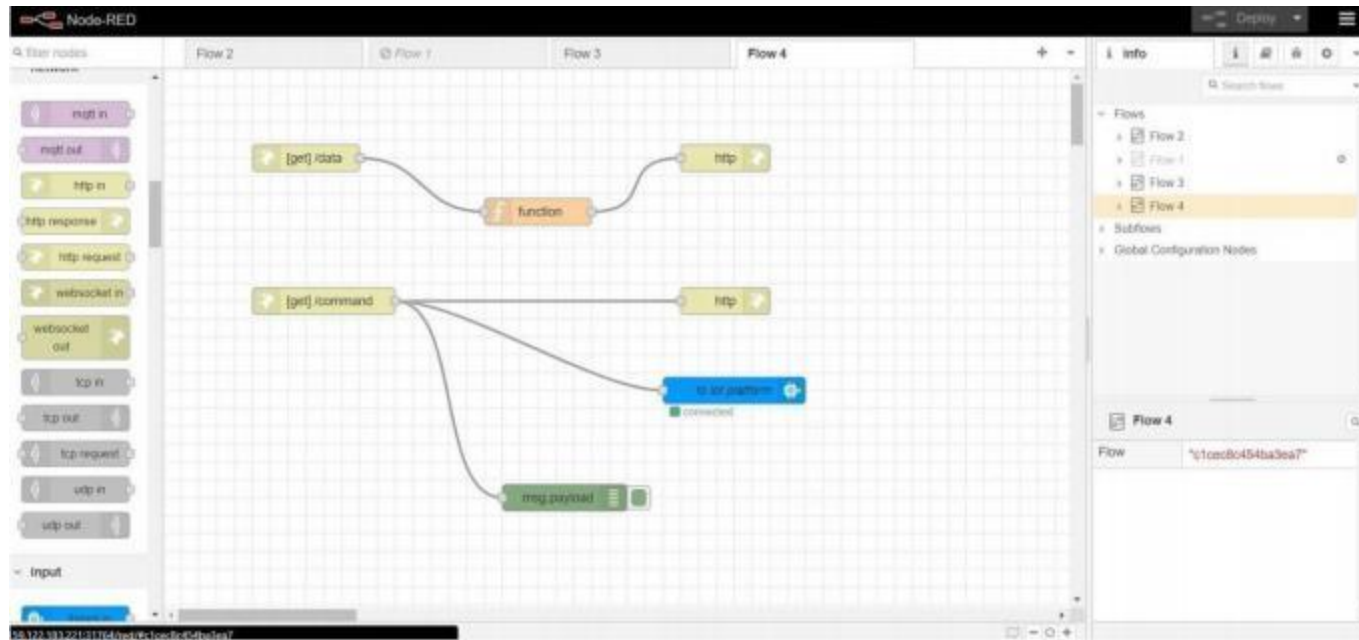
Logs

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

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

1 Simulation running

## Node Red - Connect with MIT AppInventor



Edit function node

Delete

Cancel

☐ Properties



'g• Name

Name



☐ Setup

On Start

On Message

On Stop

```
• msg.payload = {  
2   "temp":global.get("temp"),  
3   "humid":global.get("humid"),  
p  "speed":global.get("speed"),  
s   "n":global.get("n"),  
6   "s":global.get("s"),  
7   "e":global.get("e"),  
8   "w":global.get("w"),  
g   "res":global.get("res"),  
16  "11":global.get("11"),  
tt  "12":global.get("12"),  
12  "13":global.get("13"),
```

```
13      "14":glOba1.get("14"),
t4      "optimal lane":global.get("opt inal Jane")
15
16' };
17
ig return msg;
```

Output from Node red:

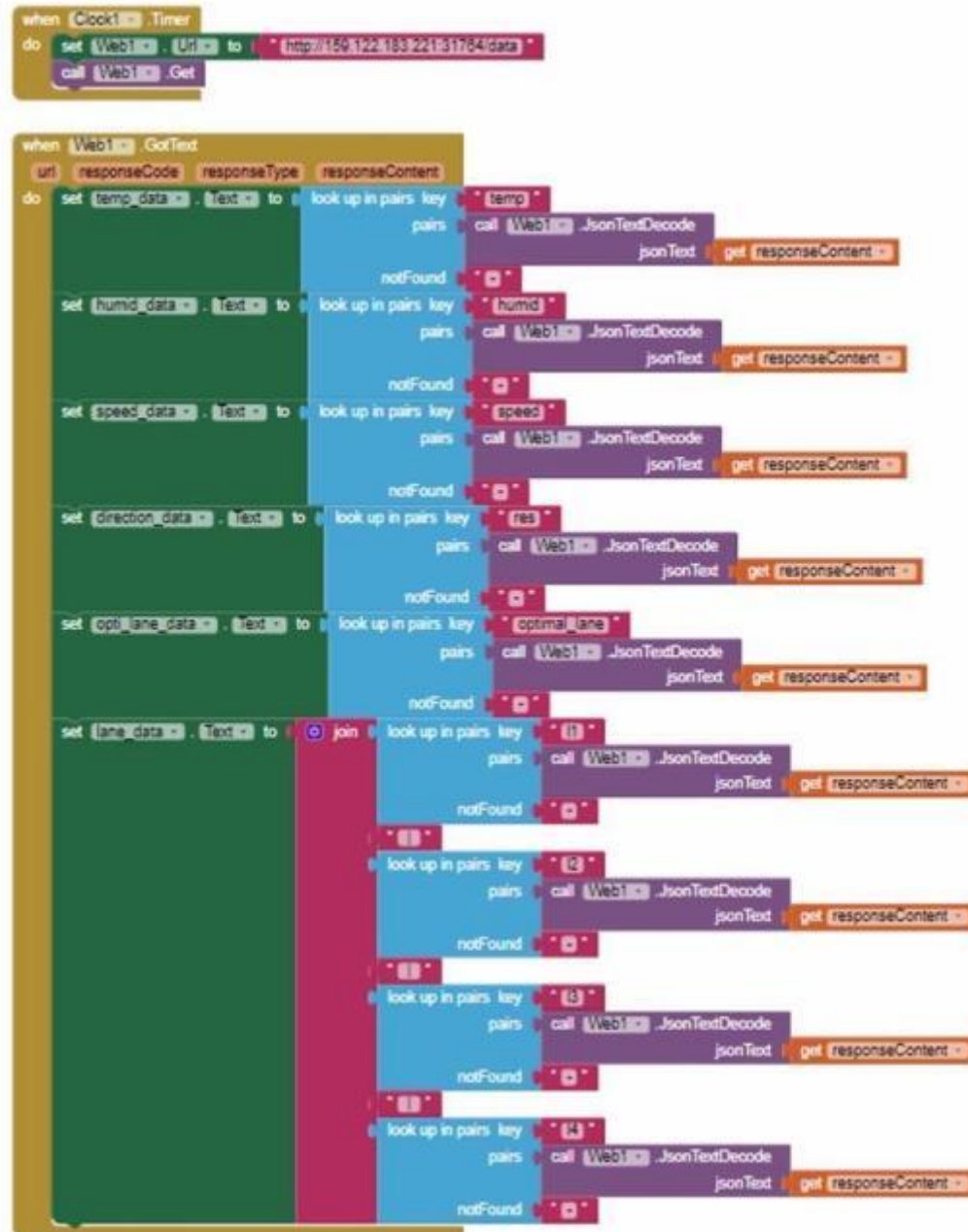
```
← → ↻ ⚠ Not secure | 159.122.183.221:31764/data
Google YouTube MATLAB Document... LaTeX Base | Online... ECE Notes Seniors' Download - Knowl... see eSim Sanskrit Word List...

{"temp":14.9,"humid":86,"speed":80,"n":0,"s":0,"m":0,"w":1,"res":"Mest","11":69,"12":99,"13":19,"14":40,"optimal_lane":"Lane 3"}
```

MIT App Inventor UI design:



## MIT App Inventor Backend design:





**Sprint 3 delivery:**

**(OUTPUT) Display from MIT App:**

