

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

Date	7 November 2022
PNT2022TMID00922	PNT2022TMID00922
Project Name	Project – Signs with Smart Connectivity for Better Road Safety
Maximum Marks	8 Marks

## Wokwi Simulation: <https://wokwi.com/projects/348216301620036179>

WOKWI

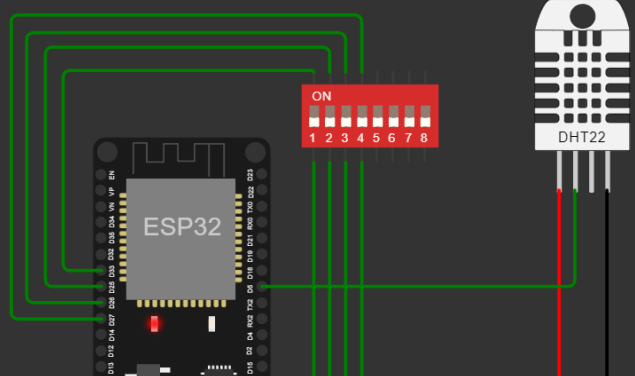
SAVE SHARE final\_iot.ino copy Docs

sketch.ino diagram.json libraries.txt Library Manager

```
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 ORGANIZATION 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 WiFiClient wificlient; // creating the instance for wificlient
31 PubSubClient client(server, 1883, callback, wificlient); //calling the predefined client
32
33
34
35 void setup() // configuring the ESP32
```

Simulation

00:49.005 93%



ON 1 2 3 4 5 6 7 8

DHT22

ESP32

```
{ "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 }
```

meet.google.com is sharing your screen. Stop sharing Hide

26°C Mostly cloudy

18:36 13-11-2022

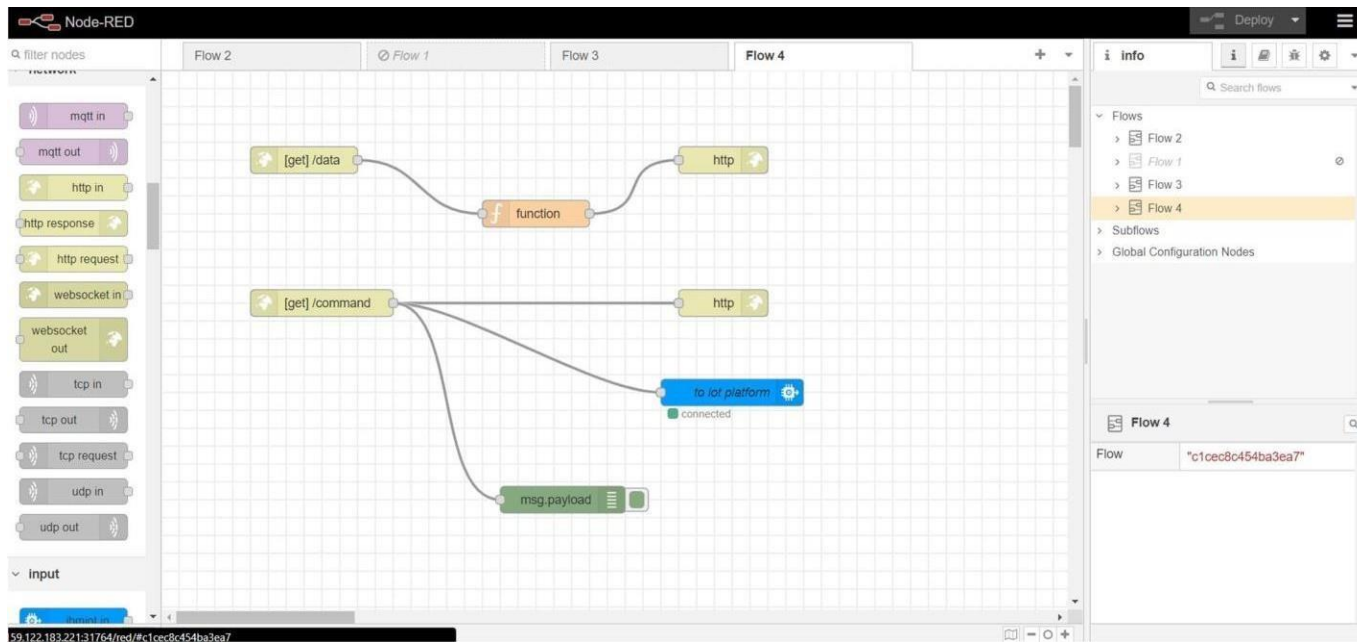
## IoT Device – IoT Platform

The screenshot displays an IoT Platform interface. On the left is a dark sidebar with navigation icons. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces', along with an 'Add Device' button. The main content area shows a device entry for '0001' with status 'Disconnected' and type 'edge-device-1'. Below this, a tabbed interface shows 'Recent Events' selected, displaying a table of live data streams. The table has columns for Event, Value, Format, and Last Received. The data shows five entries for 'rnd\_number' with JSON values representing lane data. At the bottom right, a status indicator shows '1 Simulation running'.

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 – Connect with MIT AppInventor



## Edit function node

Delete

Cancel

☐ Properties



'g' Name

Name



☐ Setup

On Start

On Message

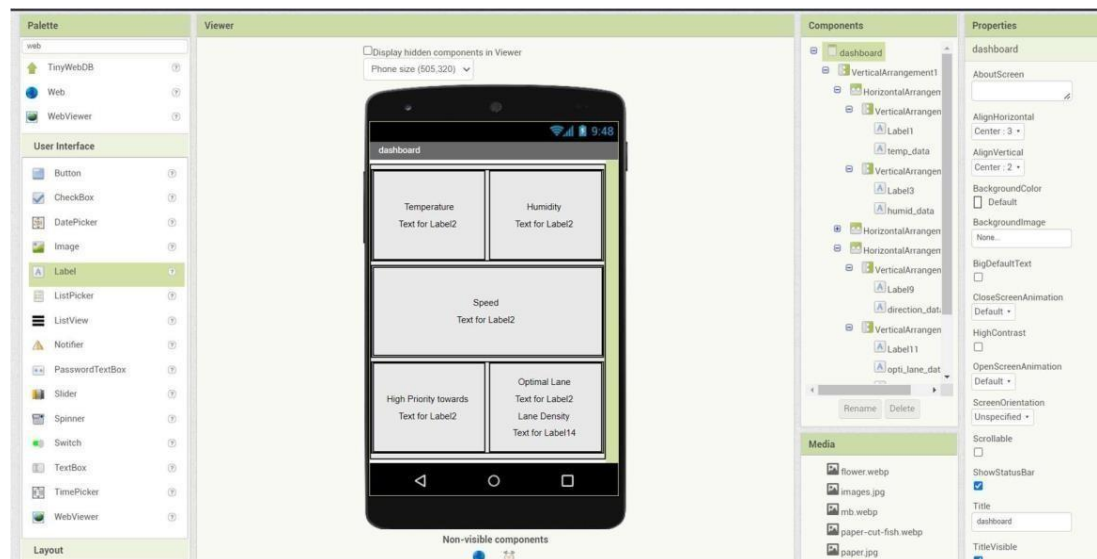
On Stop

```
• 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":global.get("14"),
t4  "optimal lane":global.get("optimal lane")
15
16' };
17
ig  return msg;
```

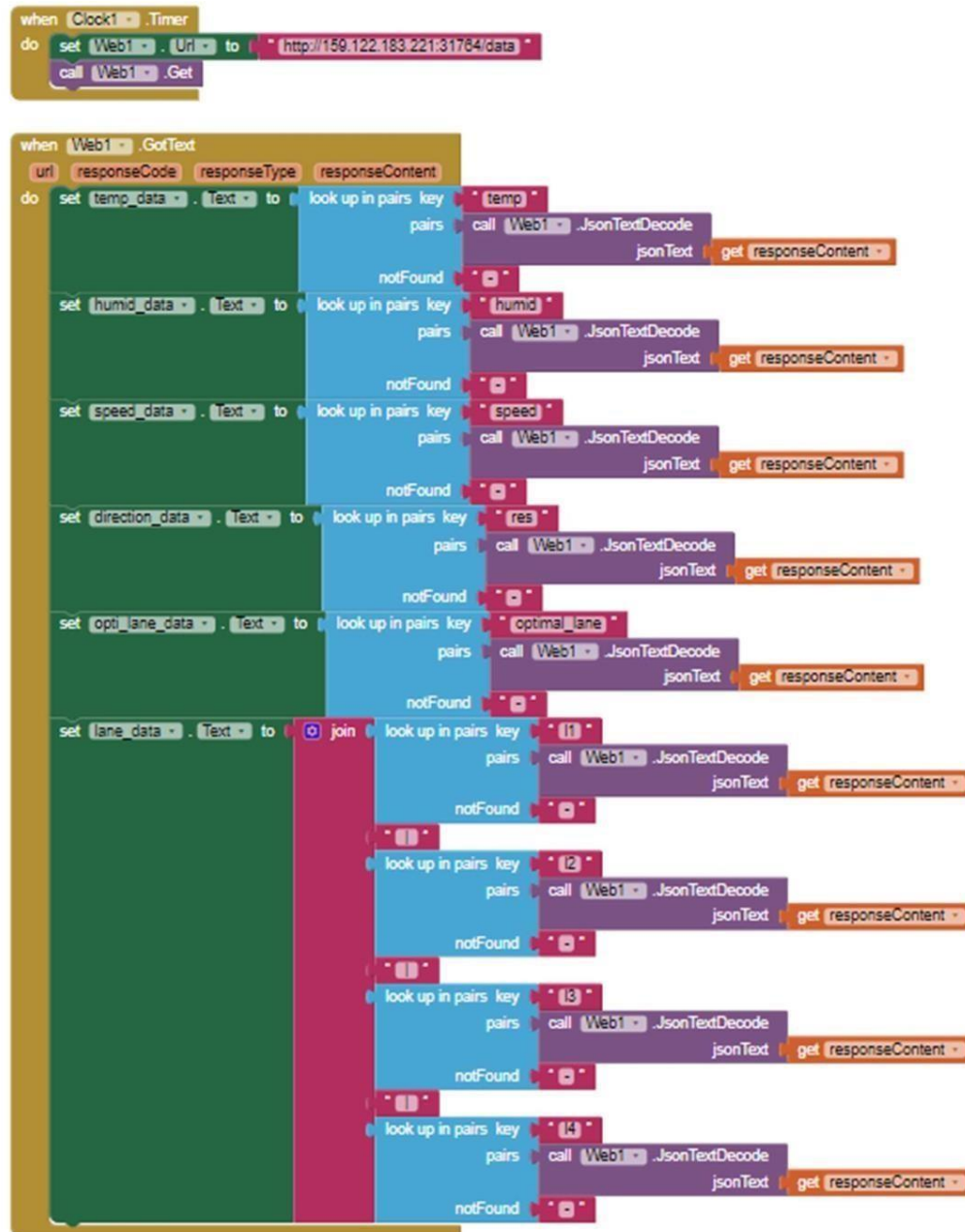
## Output from Node red:

```
← → ↻ Not secure | 159.122.183.221:31764/data  
Google YouTube MATLAB Document... LaTeX Base | Online... ECE Notes Seniors' Download - Know... see eSim Sanskrit Word List...  
{ "temp":14.9, "humid":86, "speed":80, "n":0, "s":0, "e":0, "w":1, "res": "West", "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:**

