

Project Development Phase

Sprint – I

Date	14 November 2022
Team id	PNT2022TMID08723
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-1	Speed limit	USN-1	As a passanger, I should know speed limit	10	High	Sabarivasan Sudeendra Arun Vignesh
Sprint-1	Vehicle's priority	USN-2	Simulating the circuits	2	Low	Sabarivasan Sudeendra
Sprint-1	Weather speed limit	USN-3	As a user, I should know the weather conditions	8	Medium	Arun Vignesh

Wowki Simulation:

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

The screenshot displays the Wokwi simulation interface. On the left, the 'sketch.ino' file contains 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
8
9 void callback(char* topic, byte* payload, unsigned int payloadLength)
10
11 //-----credentials of IBM Accounts-----
12
13 #define ORG "twndrq" //IBM ORGANITION ID
14 #define DEVICE_TYPE "Sample_one" //Device type mentioned in ibm watson IOT Plat
15 #define DEVICE_ID "4054" //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 even
24 char subscribeTopic[] = "iot-2/cmd/command/fmt/String"; // cmd REPRESENT comm
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 //-----
```

The simulation window on the right shows the hardware setup with an ESP32 microcontroller and a DHT22 sensor. The output console displays 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}
Publish ok
temp:37.40
```

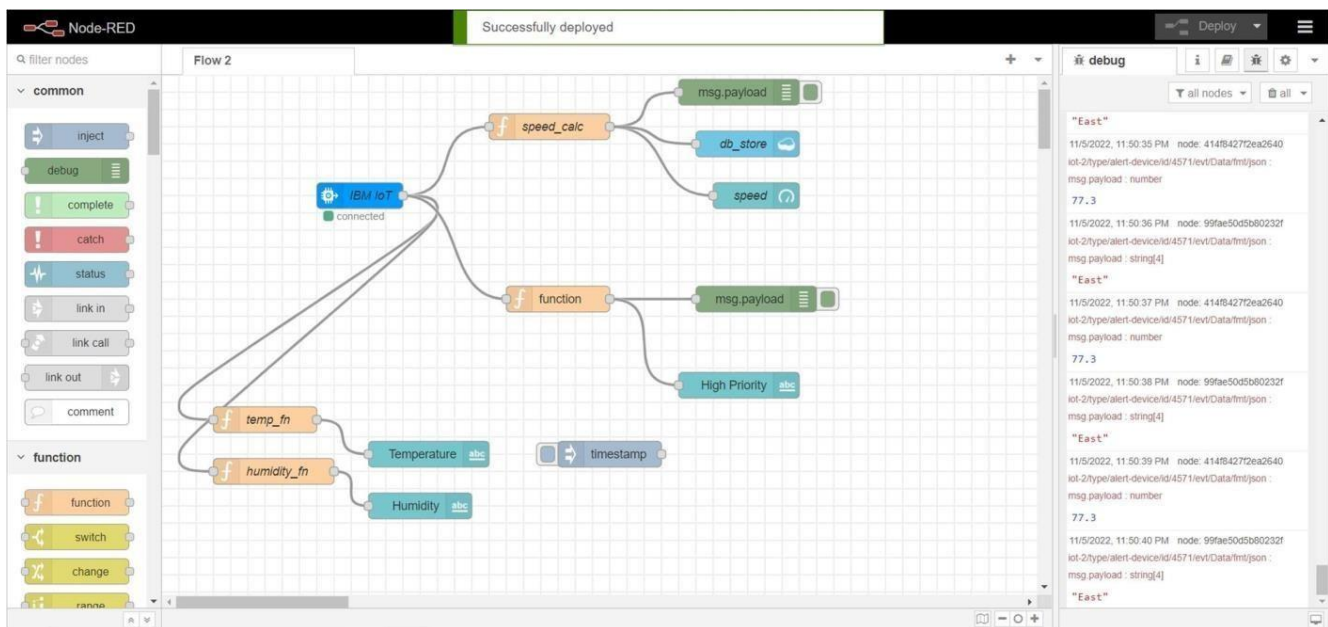
IoT Device in IoT Platform:

The screenshot shows an IoT Platform interface with a sidebar on the left containing icons for various functions. The main area displays details for a device with ID 4054, which is currently 'Disconnected'. The device is of type 'Sample_one' and has a 'Class ID' of 'Device'. It was added on 'Nov 7, 2022 10:15 PM'. Below this, there are tabs for 'Identity', 'Device Information', 'Recent Events', 'State', and 'Logs'. The 'Recent Events' tab is selected, showing a table of recent events. A message states: '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

At the bottom, it indicates '1 Simulation running'.

Node red:



Home

Speed Limit

Speed Limit

69.7

0100km/h

Environment Data

Temperature

14.7

Humidity

88

High Priority Vehicle Direction

High Priority

Towards East

WOKWI

SAVE

SHARE

final_iot.ino

SIGN UP

sketch.ino

Simulation

01:32.632 96%

diagram.json

libraries.txt

Library Manager

Editing DHT22

Temperature: 14.7°C

Humidity: 88.0%

ON

12345678

DHT22

ESP32

```
1 #include <DHT.h>
2 #include <WiFi.h>
3 #include <WebServer.h>
4 #define DHTPIN 4
5 #define DHTTYPE DHT22
6 DHT dht(DHTPIN, DHTTYPE);
7 WiFiServer server(80);
8 WebServer server(80);
9 void setup() {
10   dht.begin();
11   server.begin();
12 }
13 void loop() {
14   // Get temperature and humidity
15   float temp = dht.temperature();
16   float hum = dht.humidity();
17   String payload = "{\"temp\":" + String(temp) + \",\"humidity\":" + String(hum) + \",\"North\":0,\"South\":0,\"East\":1,\"West\":0}";
18   // Send data to the cloud
19   server.send(200, "application/json", payload);
20   // Publish to MQTT
21   temp = 14.70;
22   hum = 88.00;
23   Sending payload:
24   {"temp":14.70,"humidity":88.00,"North":0,"South":0,"East":1,"West":0}
25   Publish ok
26 }
27 
```

Cloudant Database:

data_iot

All Documents

Query

Permissions

Changes

Design Documents

Log Out

Document ID

Options

JSON

Create Document

Table

Metadata

JSON

_id	payload
060cc88d44faf11288e9cdfd7d8de45a	35
060cc88d44faf11288e9cdfd7d904e58	60
060cc88d44faf11288e9cdfd7d90c3f9	45.5
060cc88d44faf11288e9cdfd7d92a313	60
2314e7571ab5925365e082f191bb2c9c	52.5
26939bb99e5c84bed4f6a20342a22ab2	35
26939bb99e5c84bed4f6a20342a7ccd5	44
3ffa1240575d0cd0d7f848833802e389	55
48a3afbcf5f840466e09ed279d3c3451	53
48a3afbcf5f840466e09ed279d3c5b7c	53
48a3afbcf5f840466e09ed279d3c9545	53
52730057f2d5fde2d21d5aaabc10dc8	55

Showing 2 of 3 columns. Show all columns.

Showing document 1 - 20. Documents per page: 20