

## PROJECT DEVELOPMENT PHASE - SPRINT 3

Date	17NOVEMBER2022
Team ID	PNT2022TMID45586
Project Name	Smart Solutions for railways

### SPRINT 3– Train Tracking

At the time of the journey, the user could able to track their train location by selecting the particular train. Once the train is selected ,the live location of the train can easily be tracked by the user.

#### NODE-RED FLOW FOR TRAIN TRACKING:

The screenshot displays the Node-RED web interface in a browser. The main workspace shows a flow with the following components:

- dropdown** node: Labeled "NILAGIRI EXP | NILAGIRI EXP".
- function** node: Connected to the dropdown.
- msg.payload** node: Connected to the function node.
- IBM IoT** node: Connected to the msg.payload node.
- msg.payload** node: Connected to the IBM IoT node.
- worldmap** node: Connected to the msg.payload node.

The debug console on the right shows the following JSON data:

```
{
  "name": "Train1",
  "lat": 13.083048196827296,
  "lon": 80.28102165002566
}
```

```
{
  "name": "Train1",
  "lat": 12.702867131125656,
  "lon": 79.98439878342466
}
```

```
{
  "name": "Train1",
  "lat": 12.042904967393984,
  "lon": 79.52845815513051
}
```

```
{
  "command": "CHERAN SUPER FAST EXP"
}
```

**CODE:**

```
import wiotp.sdk.device
import time
import random

myConfig = {
    "identity": {
        "orgId": "j96451",
        "typeId": "Railwaysdevice",
        "deviceId": "123456"
    },
    "auth": {
        "token": "Menu@270901"
    }
}

def myCommandCallback (cmd):
    print ("Message received from IBM IoT Platform: %s" % cmd.data['command'])
    m=cmd.data['command']

client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()

def pub (data):
    client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0,
onPublish=None)
    print ("Published data Successfully: %s", myData)
    while True:
        myData={'name': 'NILAGIRI EXP', 'lat': 13.083048196827296, 'lon':
80.28102165002566}
        pub (myData)
        time.sleep (2)
        myData={'name': 'NILAGIRI EXP', 'lat': 12.702867131125656,
'lon':79.98439078342466}
```

```
pub (myData)
time.sleep (2)
myData={'name': 'NILAGIRI EXP', 'lat': 12.042904967393984,
'lon':79.52845815513051}
pub(myData)
time.sleep(2)
myData={'name': 'NILAGIRI EXP', 'lat': 11.81717546843628,
'lon':79.38563588602632}
pub (myData)
time.sleep (2)
myData={'name': 'NILAGIRI EXP', 'lat': 11.591259751090618,
'lon':78.73194934666482}
pub (myData)
time.sleep (2)
myData={'name': 'NILAGIRI EXP', 'lat': 11.580497272057597,
'lon':78.75392200345009}
pub (myData)
time.sleep (2)
myData={'name': 'NILAGIRI EXP', 'lat': 11.51534247291403,
'lon':77.94873197618158}
pub (myData)
time.sleep (2)
myData={'name': 'NILAGIRI EXP', 'lat': 11.208368689552955, 'lon':
77.53125149726162}
pub (myData)
time.sleep (5)
myData={'name': 'NILAGIRI EXP', 'lat': 11.035888995239656,
'lon':76.94348292825593}
pub (myData)
client.commandCallback = myCommandCallback
client.disconnect ()
```

## PYTHON CODE FOR TRACKING LIVE LOCATION:

```
train_tracking.py - C:\Users\ARTHY\OneDrive\Desktop\IBM\CODE\train_tracking.py (3.9.6)*
File Edit Format Run Options Window Help

import wiotp.sdk.device
import time
myConfig = {
    "identity": {
        "orgId": "j96451",
        "typeId": "Railwaysdevice",
        "deviceId": "123456"
    },
    "auth": {
        "token": "Aarby9270901"
    }
}

def myCommandCallback(cmd):
    print ("Message received from IBM IoT Platform: %s" % cmd.data['command'])
    m=cmd.data['command']

client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandler=None)
client.connect()

def pub (data):
    client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
    print ("Published data Successfully: %s" % myData)

while True:
    myData={'name': 'NILAGIRI EXP', 'lat': 13.083048196827296, 'lon': 80.28102165002566}
    pub (myData)
    time.sleep (2)
    myData={'name': 'NILAGIRI EXP', 'lat': 12.702867131125656, 'lon': 79.98439078342466}
    pub (myData)
    time.sleep (2)
    myData={'name': 'NILAGIRI EXP', 'lat': 12.042904967393984, 'lon': 79.52845815513051}
    pub (myData)
    time.sleep (2)
    myData={'name': 'NILAGIRI EXP', 'lat': 11.81717546843628, 'lon': 79.38563588602632}
    pub (myData)
    time.sleep (2)
    myData={'name': 'NILAGIRI EXP', 'lat': 11.591259751090618, 'lon': 78.73194934666482}
    pub (myData)
    time.sleep (2)
    myData={'name': 'NILAGIRI EXP', 'lat': 11.580497272057597, 'lon': 78.75392200345009}
    pub (myData)
    time.sleep (2)
    myData={'name': 'NILAGIRI EXP', 'lat': 11.51534247291403, 'lon': 77.94873197618158}
    pub (myData)
    time.sleep (2)
    myData={'name': 'NILAGIRI EXP', 'lat': 11.208368689552955, 'lon': 77.53125149726162}
    pub (myData)
    time.sleep (3)
    myData={'name': 'NILAGIRI EXP', 'lat': 11.035888995239656, 'lon': 76.94348292825593}
    pub (myData)
    client.commandCallback = myCommandCallback
    client.disconnect ()
```

## OUTPUT:

```
"IDLE Shell 3.9.6"
File Edit Shell Debug Options Window Help

Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/ARTHY/OneDrive/Desktop/IBM/CODE/train_tracking.py =====
2022-11-15 11:22:55,255 wiotp.sdk.device.client.DeviceClient INFO Connected successfully: d:j96451:Railw
aysdevice:123456
Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 13.083048196827296, 'lon': 80.28102165002566}
Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 12.702867131125656, 'lon': 79.98439078342466}
Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 12.042904967393984, 'lon': 79.52845815513051}
Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 11.81717546843628, 'lon': 79.38563588602632}
Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 11.591259751090618, 'lon': 78.73194934666482}
Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 11.580497272057597, 'lon': 78.75392200345009}
Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 11.51534247291403, 'lon': 77.94873197618158}
Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 11.208368689552955, 'lon': 77.53125149726162}
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Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 11.81717546843628, 'lon': 79.38563588602632}
Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 11.591259751090618, 'lon': 78.73194934666482}
Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 11.580497272057597, 'lon': 78.75392200345009}
Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 11.51534247291403, 'lon': 77.94873197618158}
Published data Successfully: %s {'name': 'NILAGIRI EXP', 'lat': 11.208368689552955, 'lon': 77.53125149726162}
```

## WATSON IBM CLOUD:

The screenshot displays the IBM Watson IoT Platform dashboard. The top navigation bar includes tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. A sidebar on the left contains icons for various IoT functions. The main content area shows the details for a device named 'Railwaysdevice' (ID: 123456), which is 'Connected'. The 'Recent Events' tab is selected, showing a table of events.

Event	Value	Format	Last Received
status	{"name": "NILAGIRI EXP", "lat": 11.20836868955...	json	a few seconds ago
status	{"name": "NILAGIRI EXP", "lat": 11.51534247291...	json	a few seconds ago
status	{"name": "NILAGIRI EXP", "lat": 11.58049727205...	json	a few seconds ago
status	{"name": "NILAGIRI EXP", "lat": 11.59125975109...	json	a few seconds ago
status	{"name": "NILAGIRI EXP", "lat": 11.81717546843...	json	a few seconds ago

## USER INTERFACE FOR TRAIN TRACKING:

The screenshot shows a web application titled 'Train Tracking'. It features a map of India with a red pin indicating the current location of the train. The map is centered on the southern part of India, showing states like Karnataka, Andhra Pradesh, and Tamil Nadu. The train's name, 'NILAGIRI EXP', is displayed at the top of the map area. The interface includes a sidebar with a menu icon and a search bar. The bottom of the screen shows a Windows taskbar with various application icons and system information.