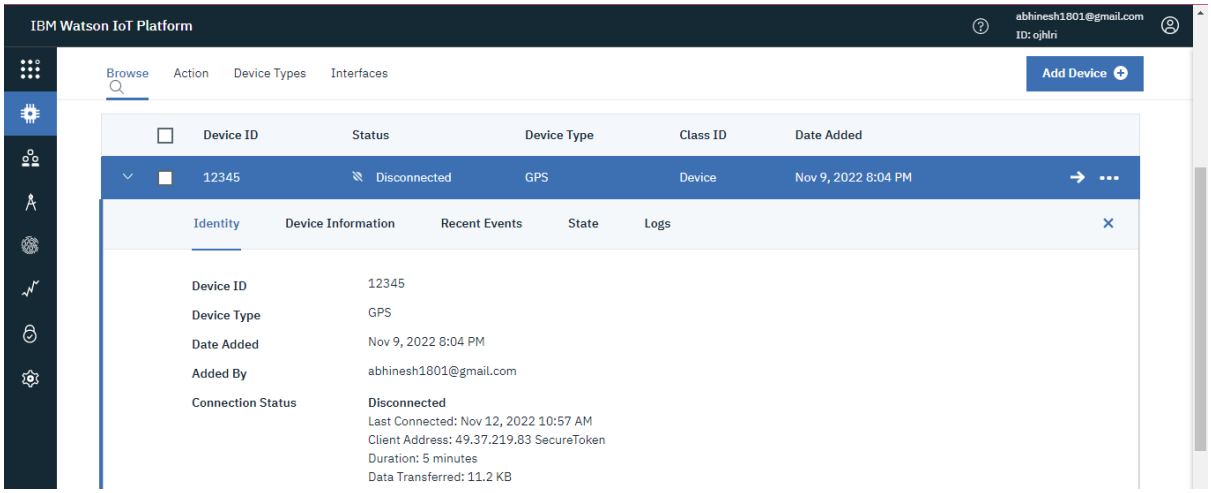
SPRINT-4

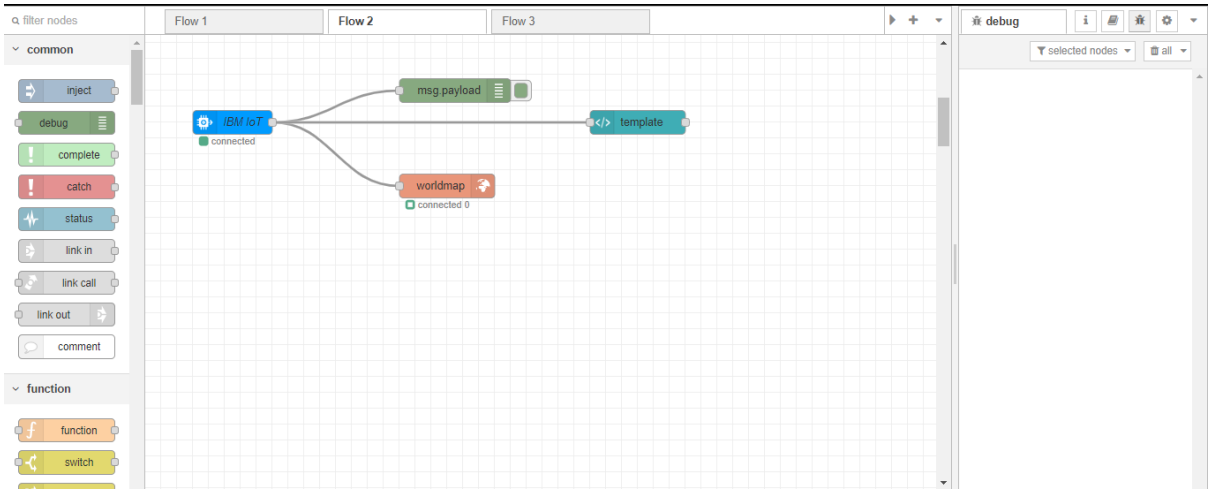
Date	**10 November 2022**
Team ID	**PNT2022TMID00940**
Project Name	**SMART SOLUTIONS FOR RAILWAYS**

WEB APP CREATON AND TESTING

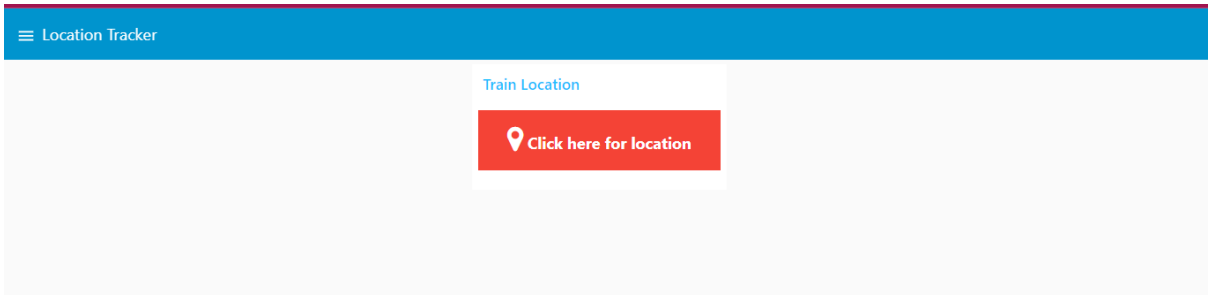
An IOT device “GPS” is created at IBM Watson:



Creating a Node-Red Connection using the IBM IOT (connected with GPS(IBM Watson device)) for tracking the location of the train:



Creating a WEB UI with Node-Red to see the location:



Link:

https://node-red-gitmx-2022-11-08.eu-gb.mybluemix.net/ui/

Connecting the GPS Device with our Python Code to stimulate the locations:

code.py - C:\Users\ABINESH\AppData\Local\Programs\Python\Python37\smart solutions for railways\code.py (3.7.0b4)

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```
import wiotp.sdk.device
import time
import random
myConfig = {
        "identity": {
                "orgId": "ojhlri",
                "typeId": "GPS",
                "deviceId":"12345"
        },
        "auth": {
                "token": "12345678"
        }
}

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': 'Train1', 'lat': 17.6387448, 'lon': 78.4754336}
        pub (myData)
        time.sleep (3)
```

After linking ,the python code is made to run at python IDE:

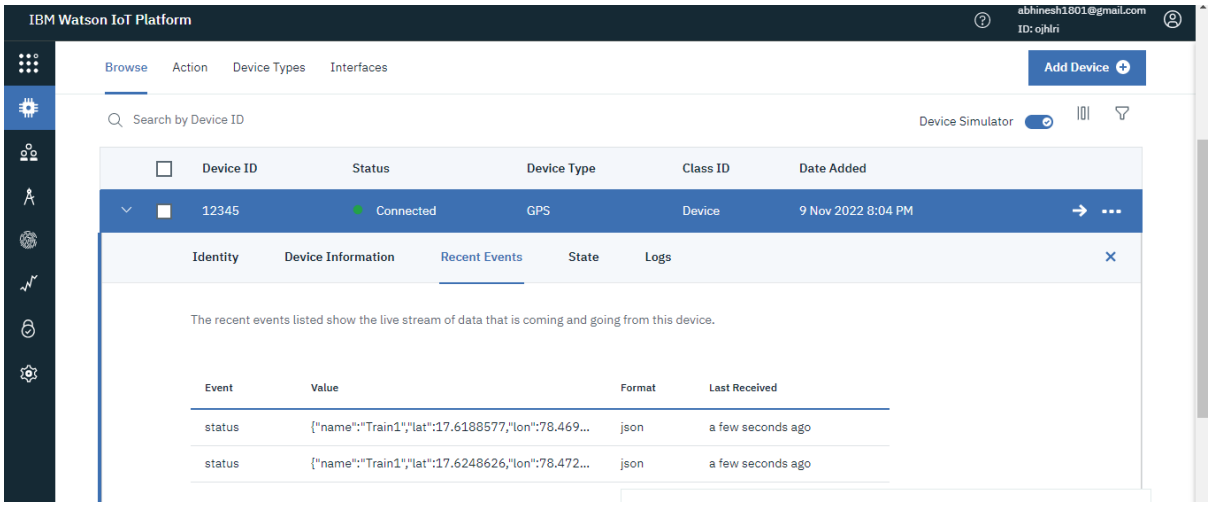
Python 3.7.0b4 Shell

File Edit Shell Debug Options Window Help

```
Python 3.7.0b4 (v3.7.0b4:eb96c37699, May  2 2018, 19:02:22) [MSC v.1913 64 bit (
AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
 RESTART: C:\Users\ABINESH\AppData\Local\Programs\Python\Python37\smart solution
s for railways\code.py
2022-11-12 14:49:30,375   wiotp.sdk.device.client.DeviceClient  INFO    Connecte
d successfully: d:ojhlri:GPS:12345Published data Successfully: %s
 {'name': 'Train1', 'lat': 17.6387448, 'lon': 78.4754336}
Published data Successfully: %s {'name': 'Train1', 'lat': 17.6341908, 'lon': 78.
4744722}
Published data Successfully: %s {'name': 'Train1', 'lat': 17.6340889, 'lon': 78.
4745052}
Published data Successfully: %s {'name': 'Train1', 'lat': 17.6248626, 'lon': 78.
4720259}
```

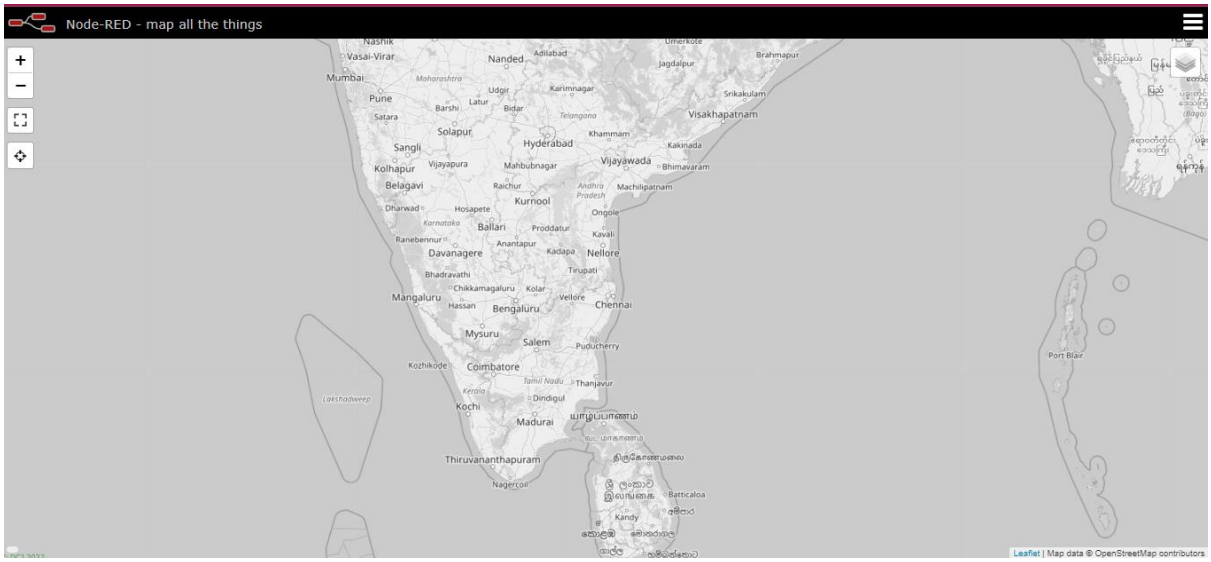
The IOT Device is conneted and the locations are Received as output.

Watson Output:

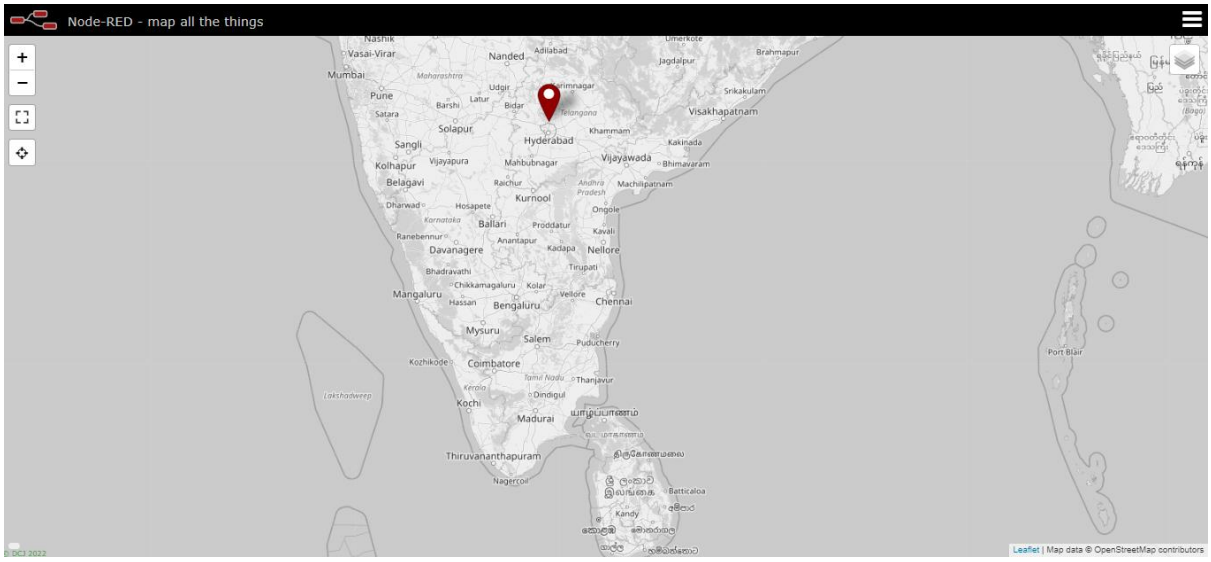


Initially before the execution of python program:

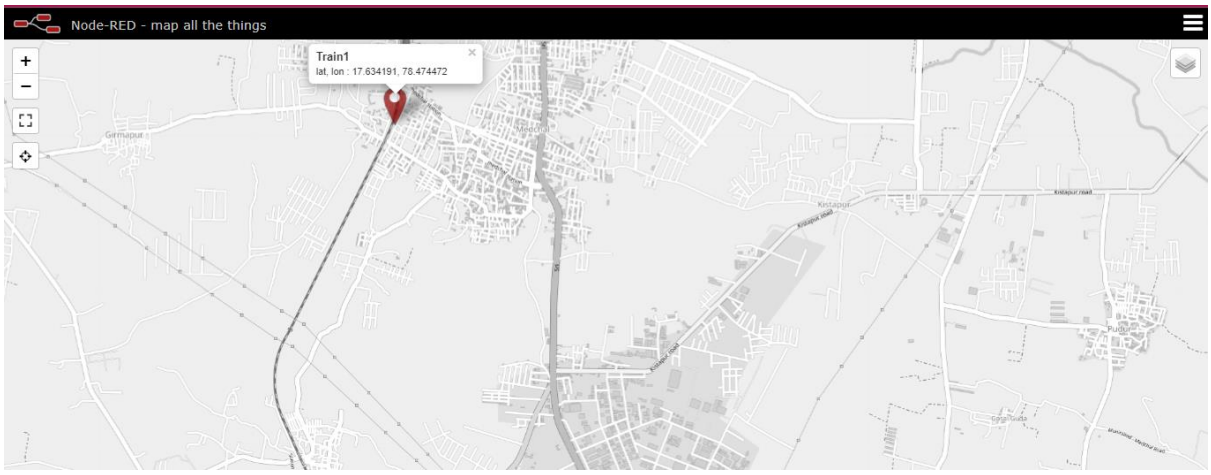
No location found,

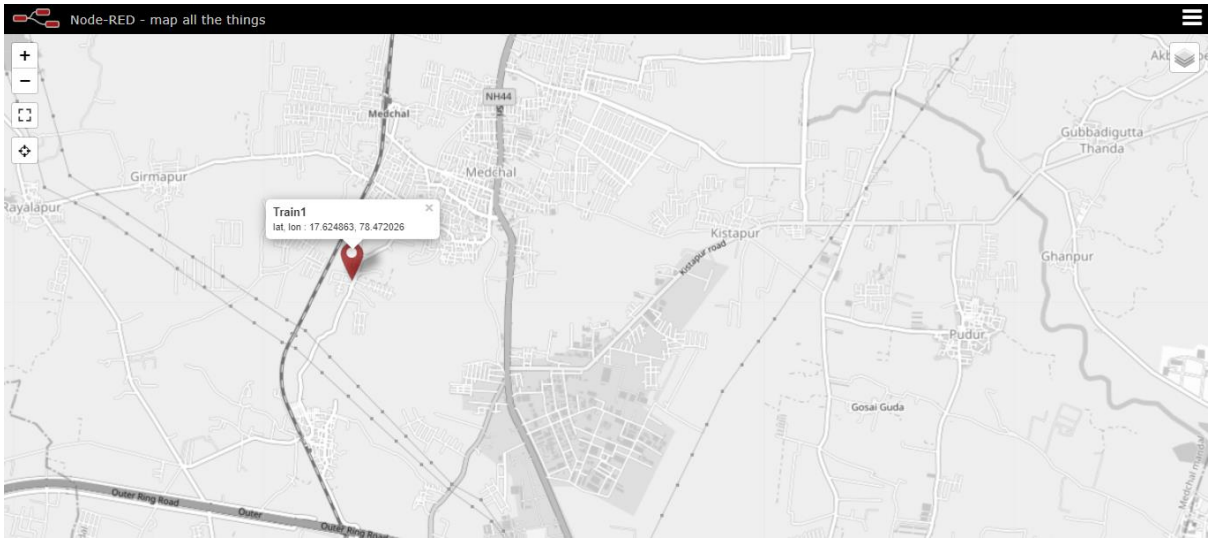


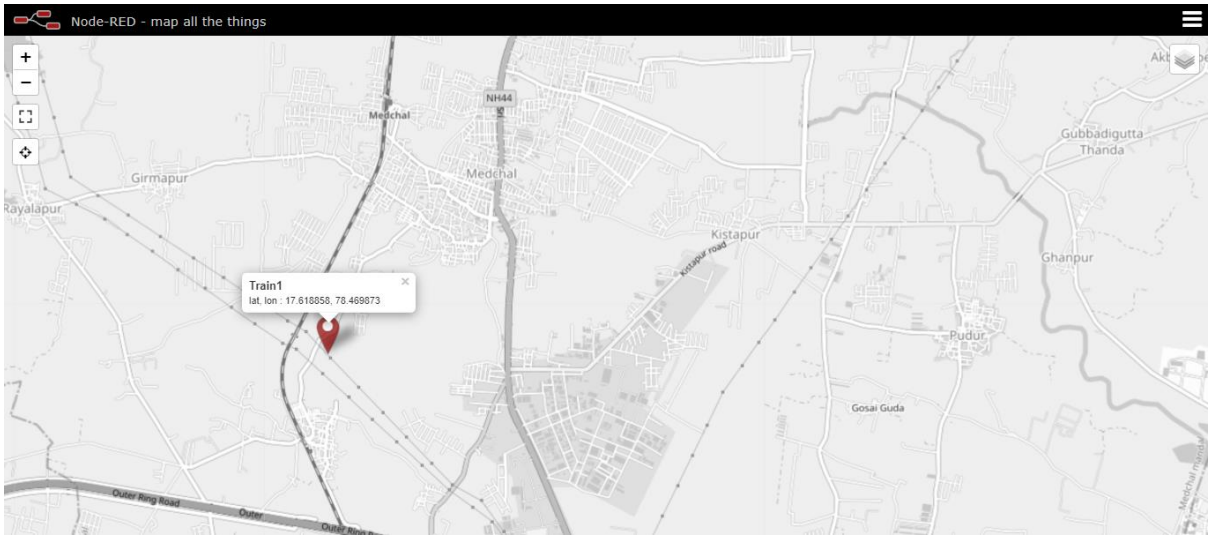
After execution,

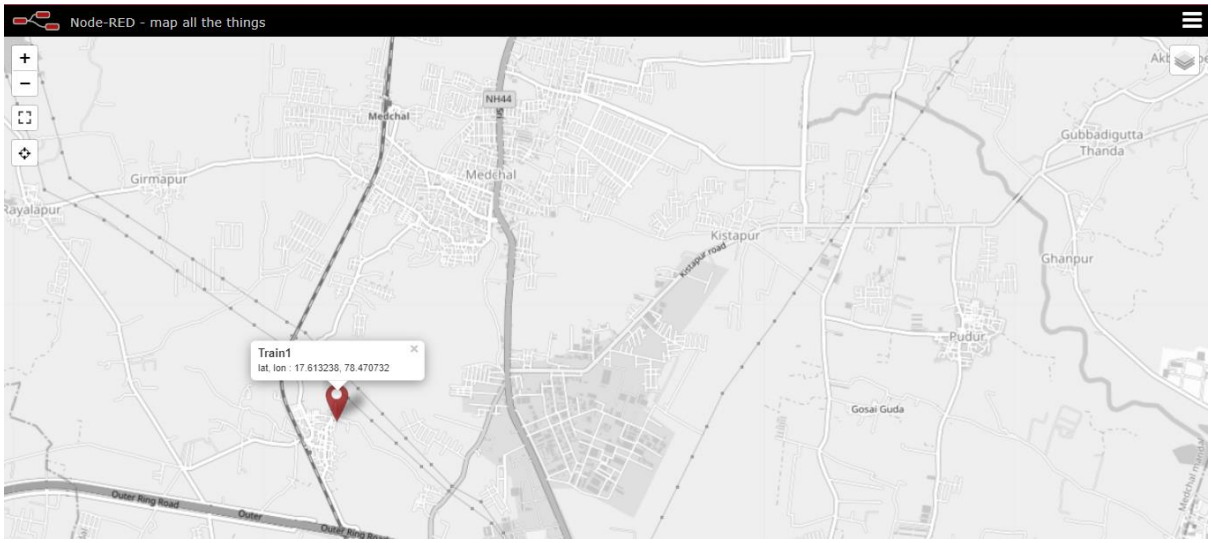


Below Four images of map show the movement of the train:







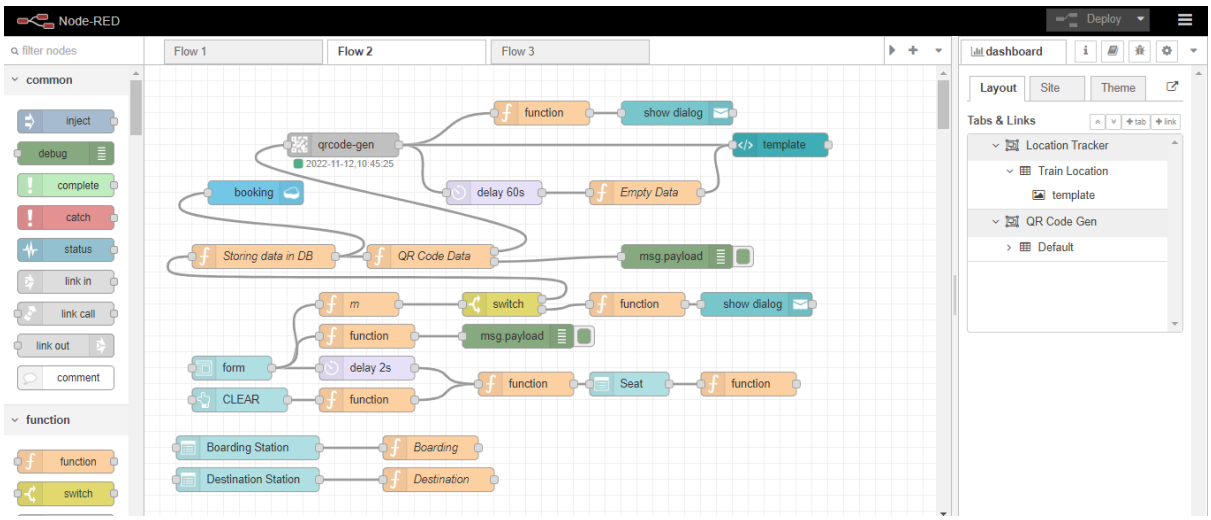


LINK FOR THE MAP VIEW:

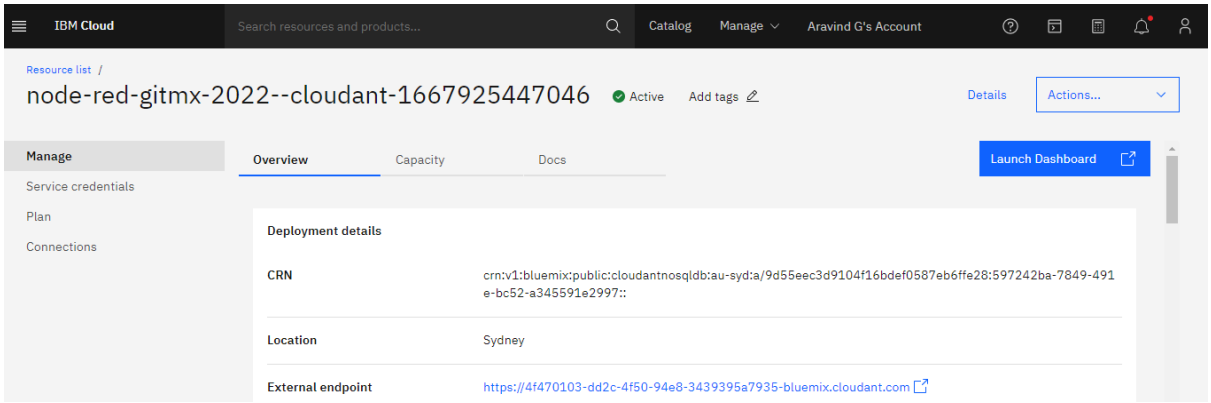
https://node-red-gitmx-2022-11-08.eu-gb.mybluemix.net/worldmap/

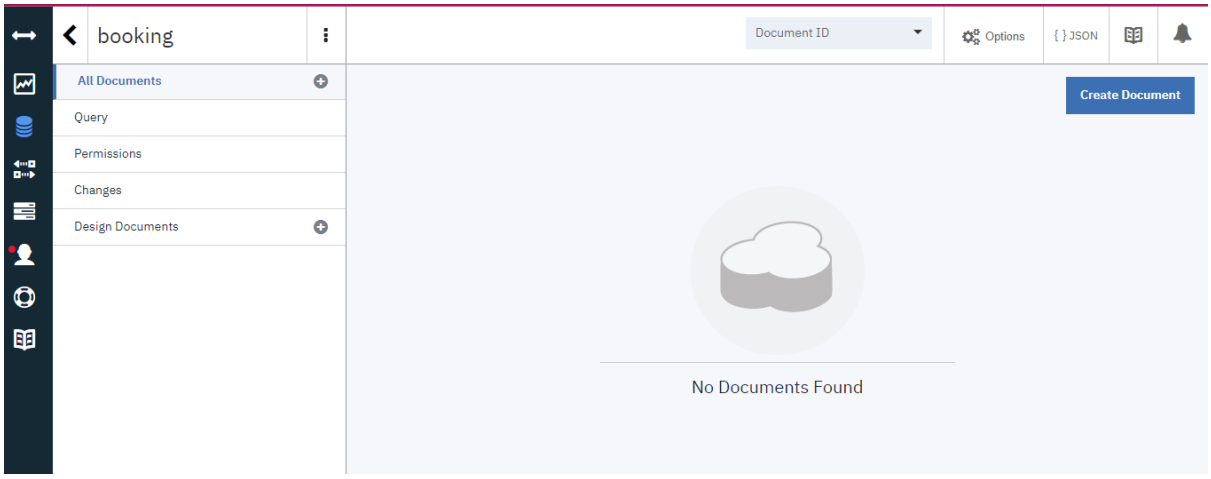
WEB UI for Ticket Booking and QR Code Generation

Node-Red Connection for Ticket Booking and QR Generation:

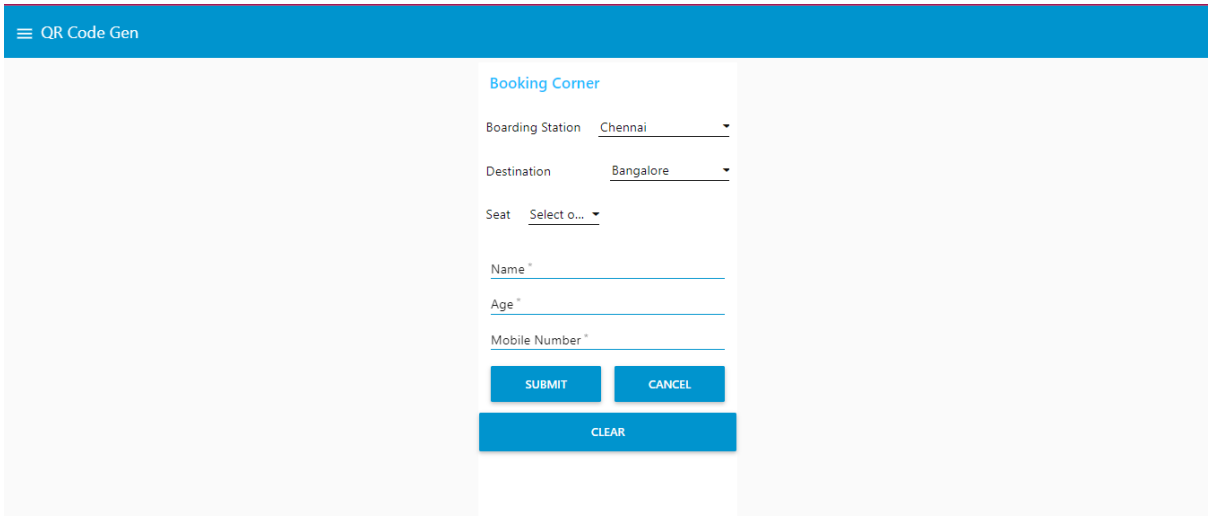


Creation of Cloudant Database Named “Booking” to store Customer details:





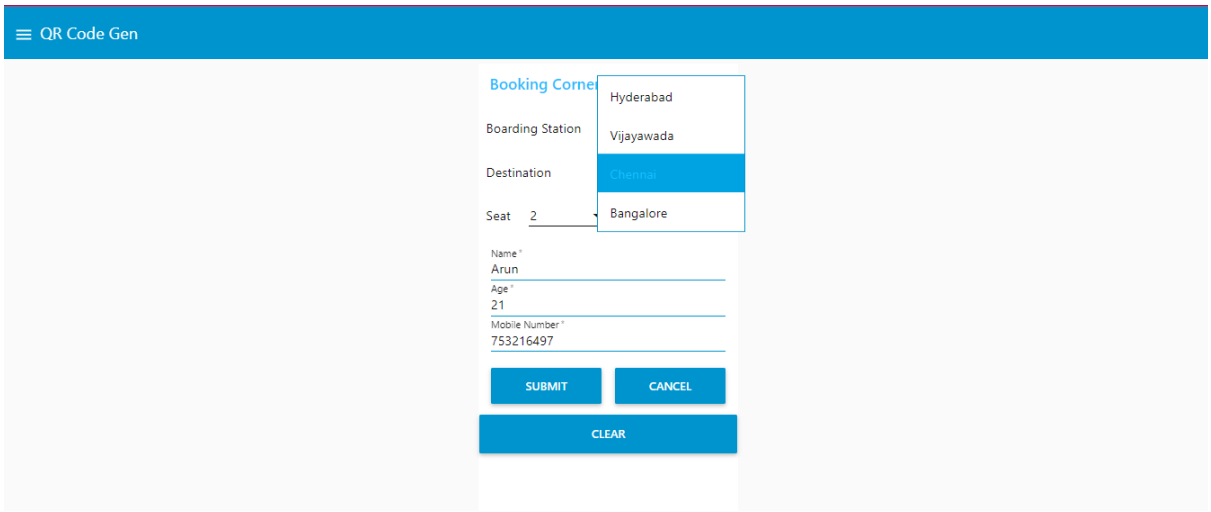
WEB Application created from Node-Red:

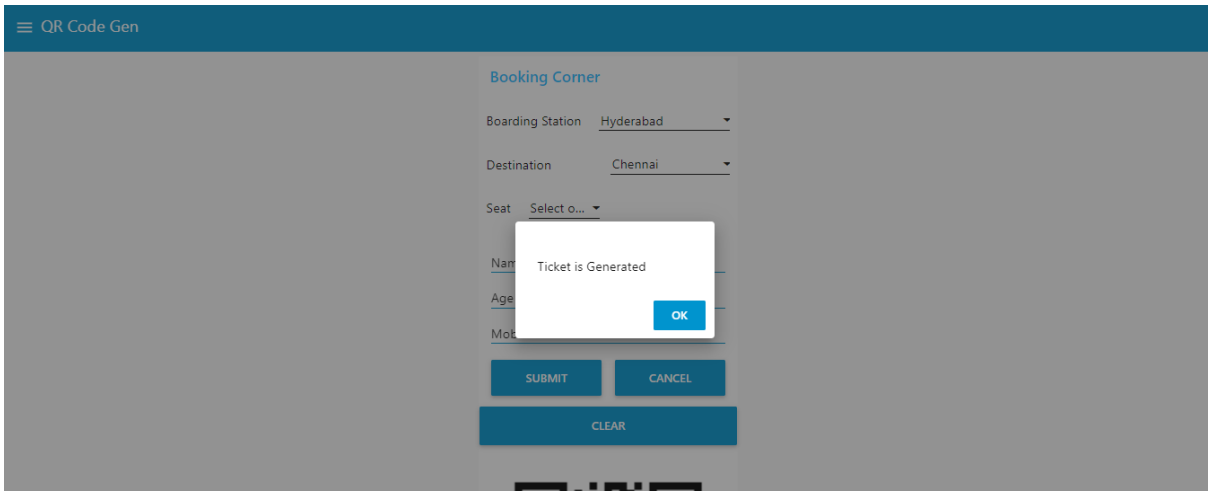


LINK FOR Booking Corner:

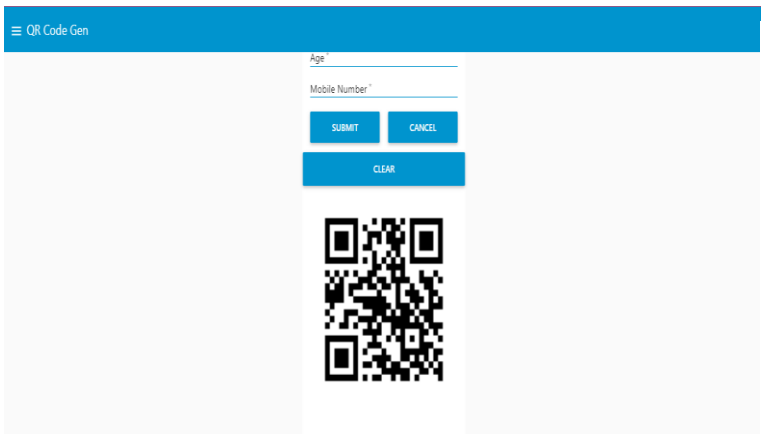
https://node-red-gitmx-2022-11-08.eu-gb.mybluemix.net/ui/

Booking Happens :

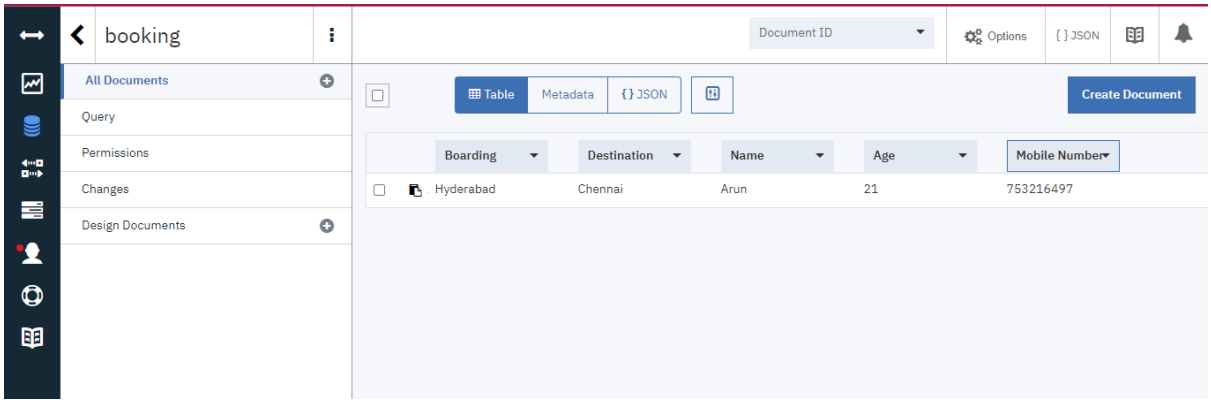


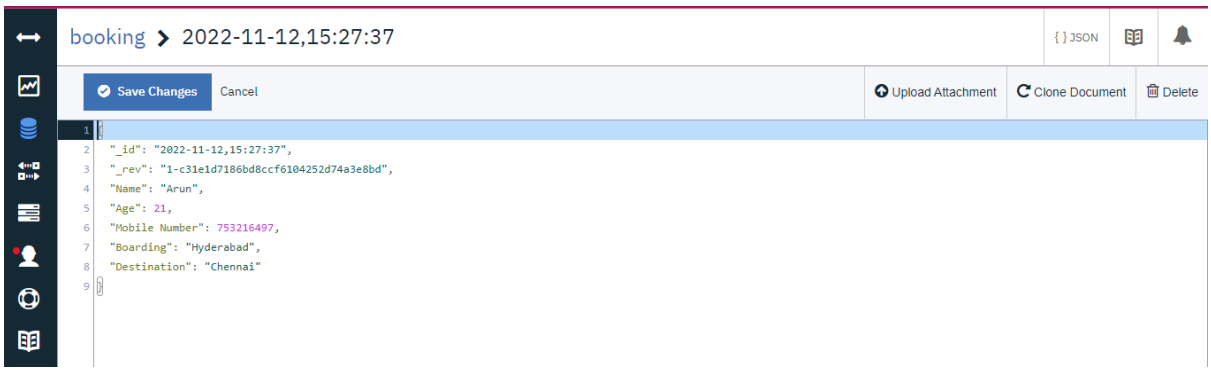


QR Generation:



Details will be stored at Cloudant Database:





Building a python code for the Ticket Collector to scan the QR and get details from Cloud:

QR_Scanner.py - C:\Users\ABINESH\AppData\Local\Programs\Python\Python37\smart solutions for railways\QR_Scanner.py (3.7.0b4)

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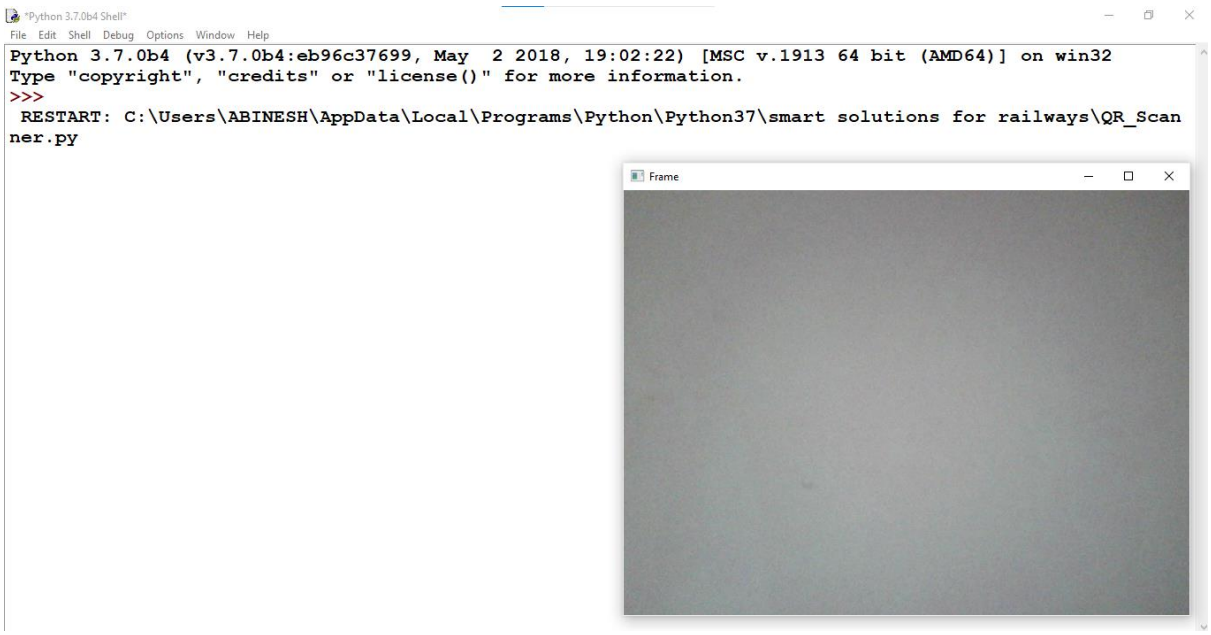
```
import cv2
import numpy as np
import time
import pyzbar.pyzbar as pyzbar
from ibmcloudant.cloudant_v1 import CloudantV1
from ibmcloudant import CouchDbSessionAuthenticator
from ibm_cloud_sdk_core.authenticators import BasicAuthenticator

authenticator = BasicAuthenticator('apikey-267fe83f32ec443b804f3c76d688d2e3', 'b1456cbe3c712c2d555623fe
service = CloudantV1(authenticator=authenticator)

service.set_service_url('https://4f470103-dd2c-4f50-94e8-3439395a7935-bluemix.cloudant.com')

cap= cv2.VideoCapture(0)
font = cv2.FONT_HERSHEY_PLAIN

while True:
        _, frame = cap.read()
        decodedObjects = pyzbar.decode (frame)
        for obj in decodedObjects:
                #print ("Data", obj.data)
                a=obj.data.decode('UTF-8')
                cv2.putText(frame, "Ticket", (50, 50), font, 2, (255, 0, 0), 3)

                #print (a)
                try:
                        response = service.get_document(
                                db='booking',
                                doc id = a
```

TESTING:

Executing the program:

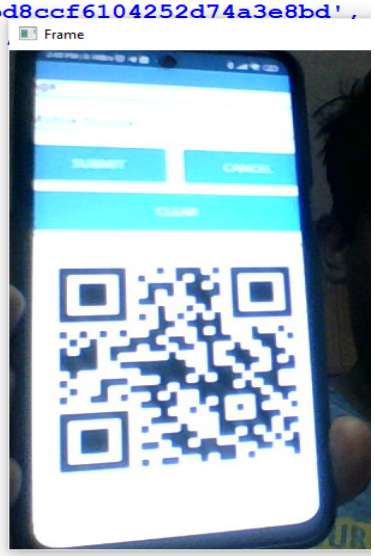
Scanner Opens :



QR is shown:

Data Fetched from Cloud by scanning the QR:

```
*Python 3.7.0b4 Shell*
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.0b4 (v3.7.0b4:eb96c37699, May  2 2018, 19:02:22) [MSC v.1913 64 bi
Type "copyright", "credits" or "license()" for more information.
>>>
 RESTART: C:\Users\ABINESH\AppData\Local\Programs\Python\Python37\smart solut
ner.py
{'_id': '2022-11-12,15:27:37', '_rev': '1-c31e1d7186bd8ccf6104252d74a3e8bd',
, 'Mobile Number': 753216497, 'Boarding': 'Hyderabad',
```




```
*Python 3.7.0b4 Shell*
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.0b4 (v3.7.0b4:eb96c37699, May  2 2018, 19:02:22) [MSC v.1913 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
 RESTART: C:\Users\ABINESH\AppData\Local\Programs\Python\Python37\smart solutions for railways\QR_Scan
ner.py
{'_id': '2022-11-12,15:27:37', '_rev': '1-c31e1d7186bd8ccf6104252d74a3e8bd', 'Name': 'Arun', 'Age': 21
, 'Mobile Number': 753216497, 'Boarding': 'Hyderabad', 'Destination': 'Chennai'}
```

Showing a Random Qr From Google:

Output: (Shows “Not a Valid Ticket”)

```
*Python 3.7.0b4 Shell*
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.0b4 (v3.7.0b4:eb96c37699, May  2 2018, 19:02:22) [MSC v.1913 64 b
Type "copyright", "credits" or "license()" for more information.
>>>
 RESTART: C:\Users\ABINESH\AppData\Local\Programs\Python\Python37\smart solu
ner.py
{'_id': '2022-11-12,15:27:37', '_rev': '1-c31e1d7186bd8ccf6104252d74a3e8bd',
, 'Mobile Number': 753216497, 'Boarding': 'Hyderabad',
Not a Valid Ticket
```

Frame

```
*Python 3.7.0b4 Shell*
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.0b4 (v3.7.0b4:eb96c37699, May  2 2018, 19:02:22) [MSC v.1913 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
 RESTART: C:\Users\ABINESH\AppData\Local\Programs\Python\Python37\smart solutions for railways\QR_Scan
ner.py
{'_id': '2022-11-12,15:27:37', '_rev': '1-c31e1d7186bd8ccf6104252d74a3e8bd', 'Name': 'Arun', 'Age': 21
, 'Mobile Number': 753216497, 'Boarding': 'Hyderabad', 'Destination': 'Chennai'}
Not a Valid Ticket
```