Project Development phase
SPRINT 3

Date	12 November 2022
Team ID	PNT2022TMID03704
Project Name	Project – Smart Waste Management for Metropolitan cities
Maximum Marks	2 Marks

In this Phase, I will explain about the flow of our project.

- As we mentioned in the Data flow graph, we are first using online simulation tool to send the level of the dustbin with the help of ultrasonic sensor using WOKWI platform and we also send the required data such as location, bin name etc...
- This data is being sent to the IBM Watson IOT platform and which the help of IBM Watson IOT node we can get the data in node red.
- We designed few flows to make the data to be in a required format like maps, tables, gauge.
- Here we store the Admin, Co admin, Truck driver details in the database (Cloudant DB)
- We also store the Timings of the BIN which is being filled for future calculations.
- We have also created a python script to generate random BIN values which can also be used instead of WOKWI to send data to the IBM Watson IOT platform.
- I've also added few Screenshots of the things we have done.
- And In Bin database, we also delete the data from the database when the number of elements is above 11 for making use of the space effectively.
- We used world map node for displaying the latitude and longitude in the Map.

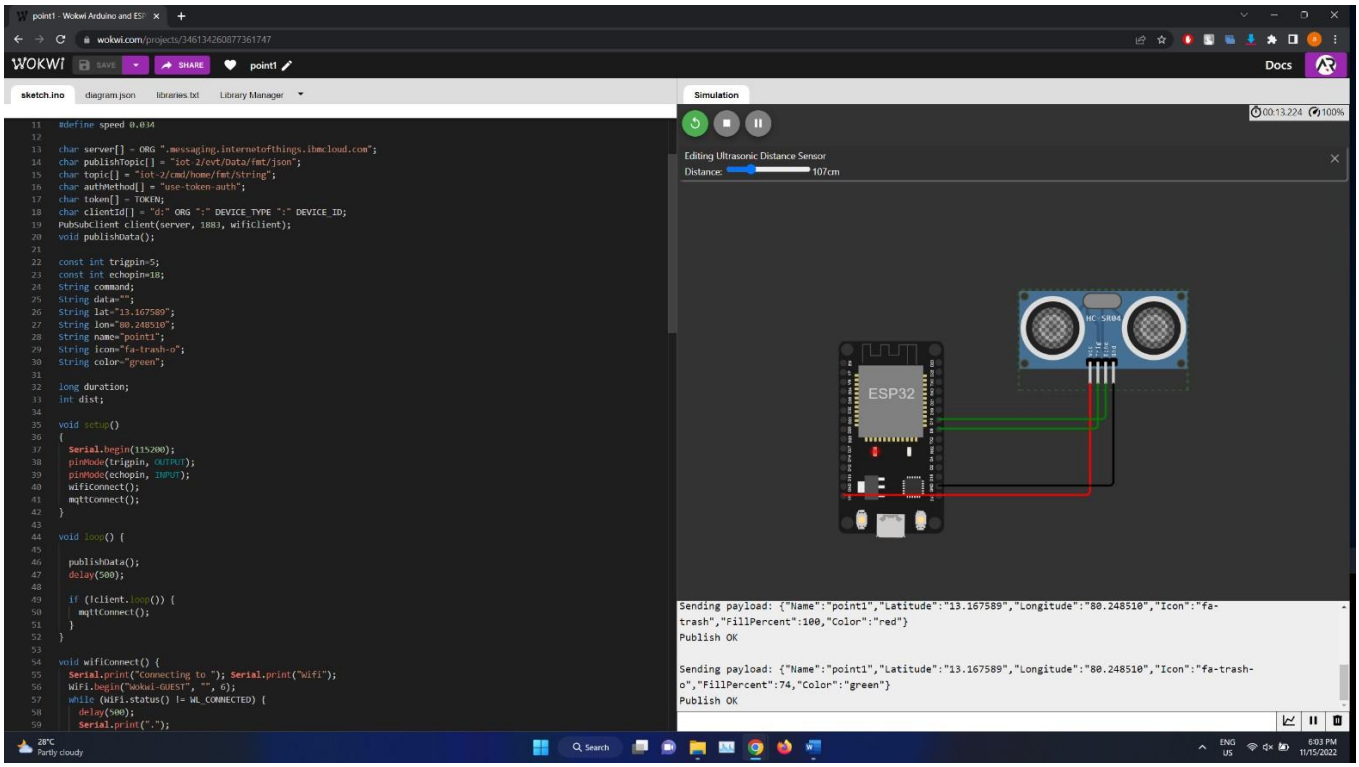
These are the things we have done in our project in Sprint Phase 3

SCREENSHOTS:

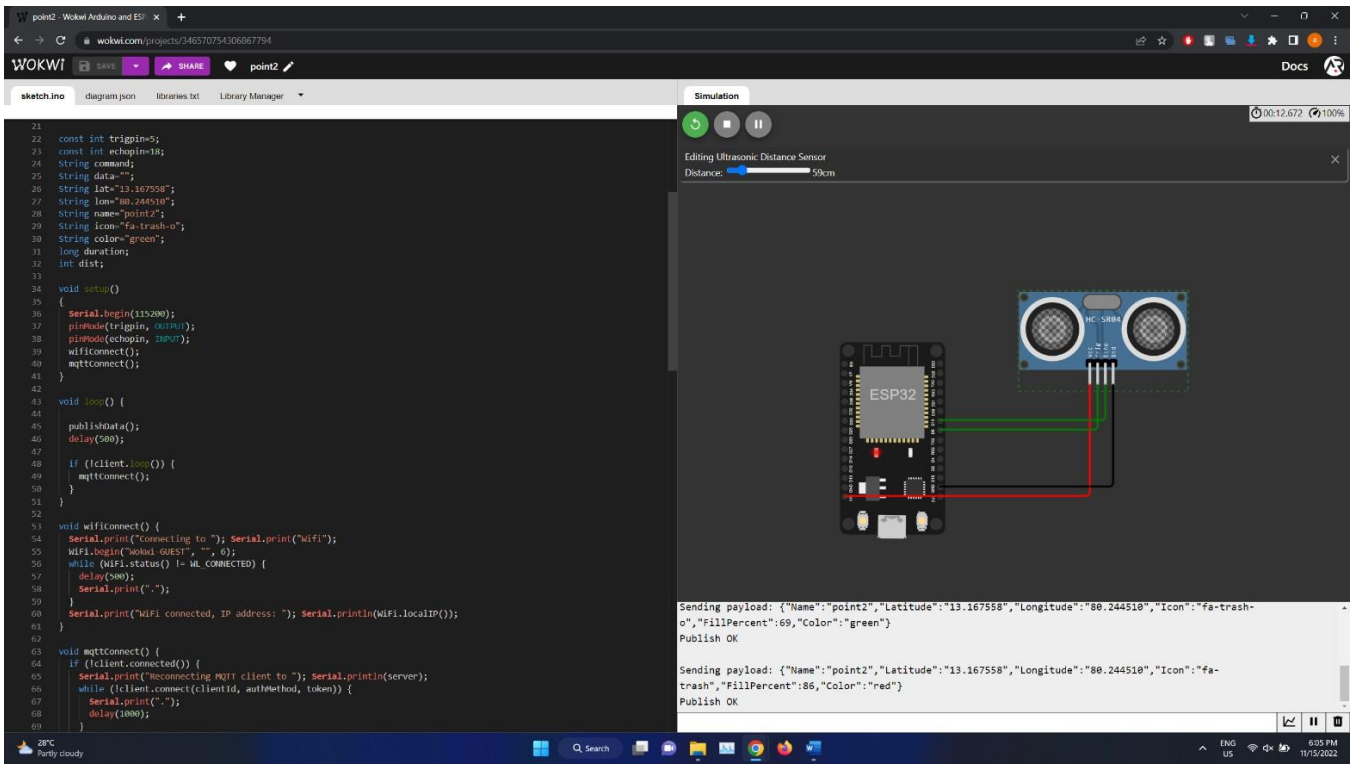
1) WOKWI Platform:

As we move the slider of the ultrasonic sensor. The value of the bin get changed

For **BIN 1**:



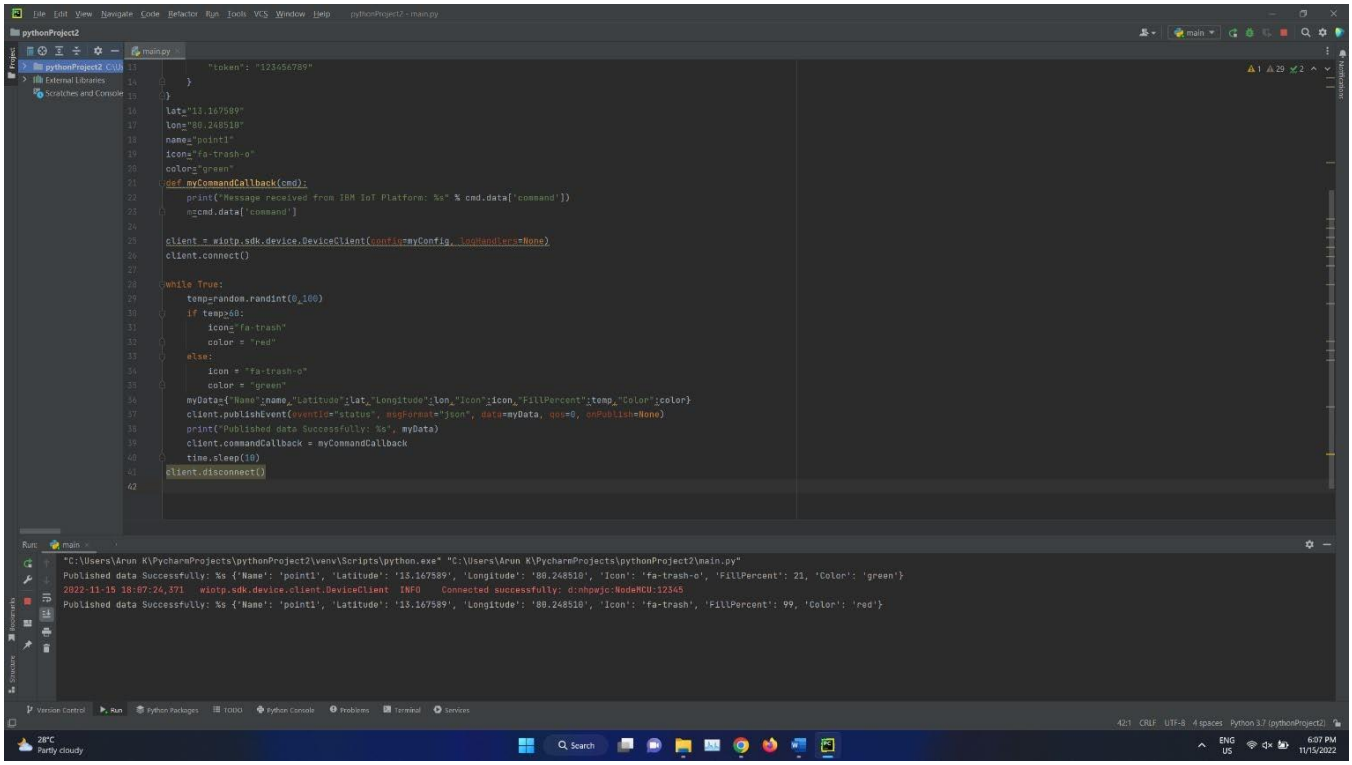
For **BIN 2**:



2) Python Code:

Here we can see the Python Code which is used to connect with IBM Watson IOT platform.

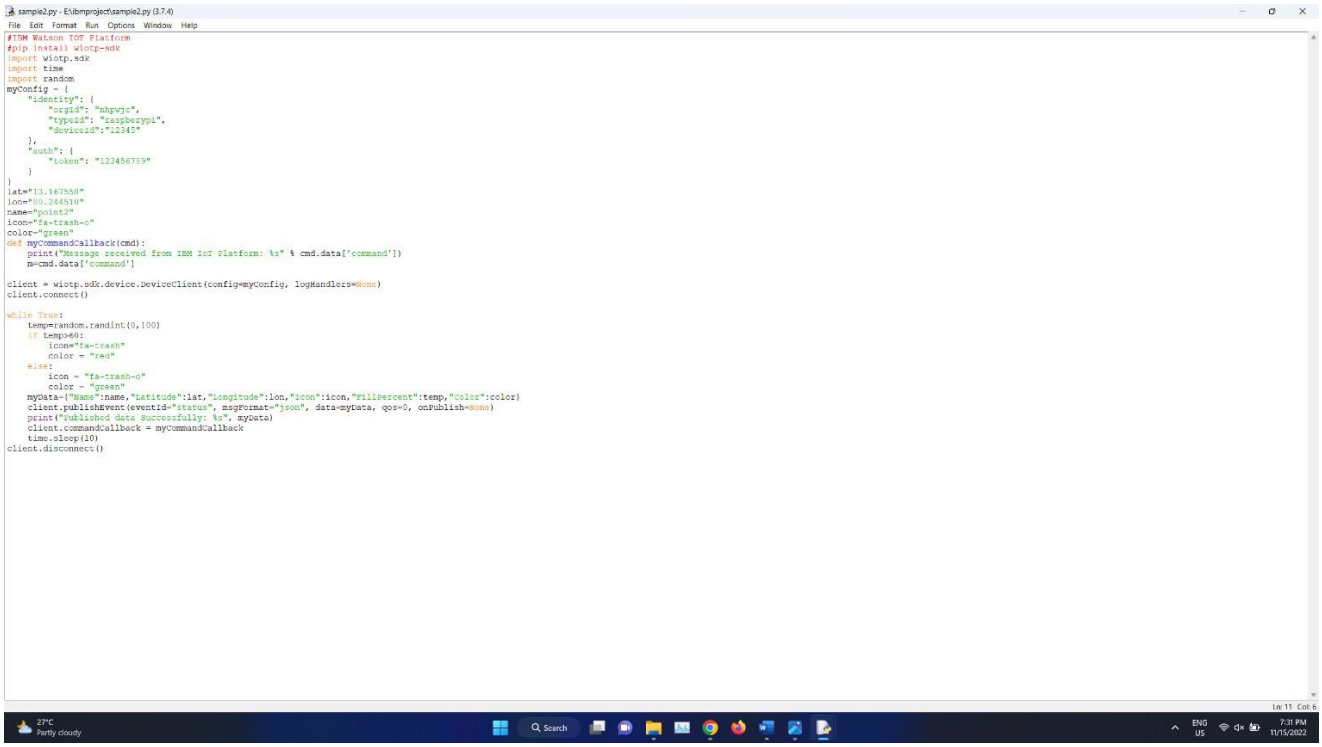
For BIN 1:



```
        "token": "123456789"
    }
}
lat="13.167589"
lon="80.248510"
name="point1"
icon="fa-trash-o"
color="green"
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()

while True:
    temp=random.randint(0,100)
    if temp>60:
        icon="fa-trash"
        color = "red"
    else:
        icon = "fa-trash-o"
        color = "green"
    myData={"Name":name,"Latitude":lat,"Longitude":lon,"Icon":icon,"FillPercent":temp,"Color":color}
    client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
    print("Published data Successfully: %s", myData)
    client.commandCallback = myCommandCallback
    time.sleep(10)
client.disconnect()
```

```
"C:\Users\Arun K\PycharmProjects\pythonProject2\venv\Scripts\python.exe" "C:\Users\Arun K\PycharmProjects\pythonProject2\main.py"
Published data Successfully: %s {'Name': 'point1', 'Latitude': '13.167589', 'Longitude': '80.248510', 'Icon': 'fa-trash-o', 'FillPercent': 21, 'Color': 'green'}
2022-11-15 18:07:24,371   wiotp.sdk.device.client.DeviceClient  INFO    Connected successfully: d:nhpwjc:NodeMCU:12345
Published data Successfully: %s {'Name': 'point1', 'Latitude': '13.167589', 'Longitude': '80.248510', 'Icon': 'fa-trash', 'FillPercent': 99, 'Color': 'red'}
```

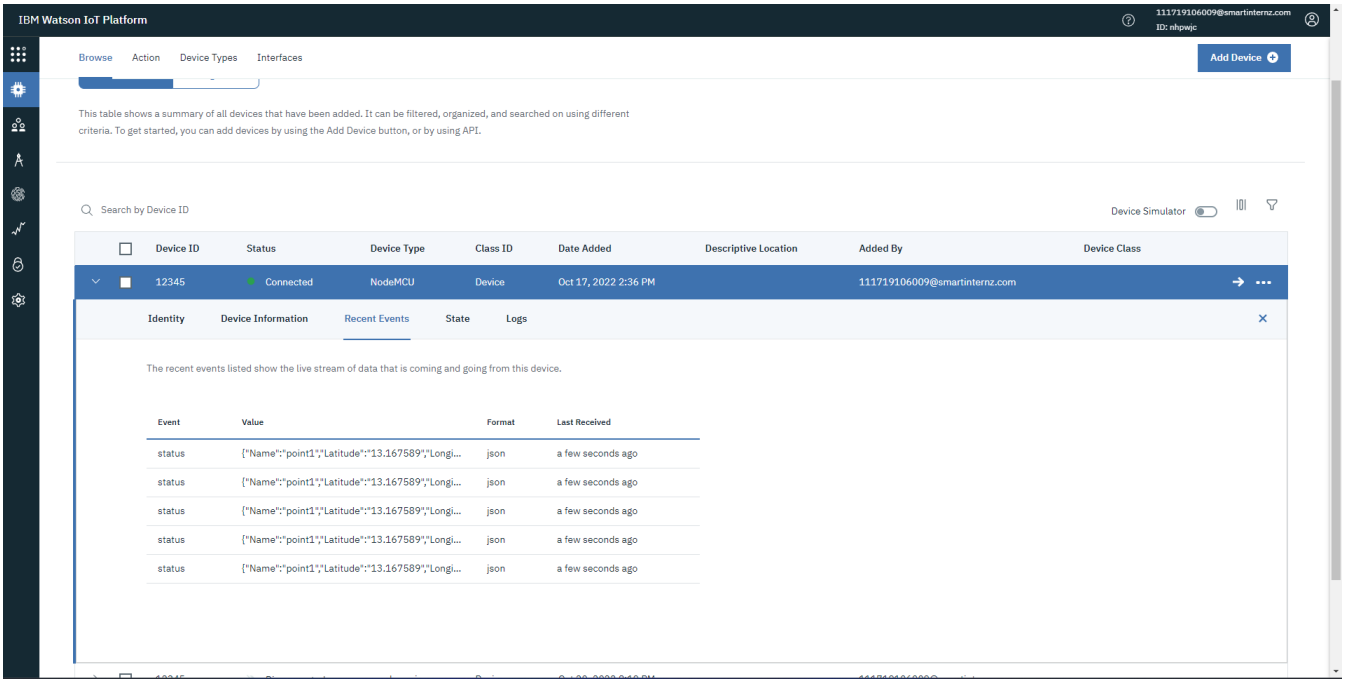
For BIN 2:



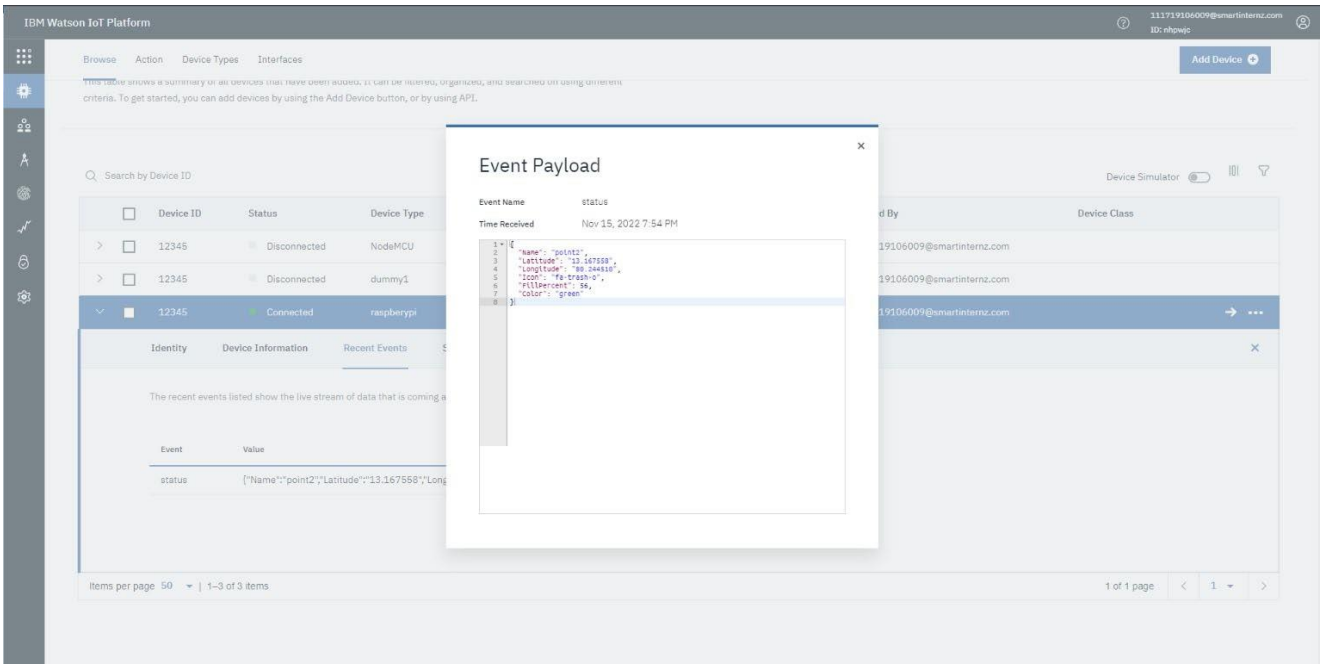
```
#IBM Watson IOT Platform
#pip install wiotp-sdk
import wiotp.sdk
import time
import random
myConfig = {
    "identity": {
        "orgId": "nhpwjc",
        "typeId": "raspberrypi",
        "deviceId":"12345"
    },
    "auth": {
        "token": "123456789"
    }
}
lat="13.167550"
lon="80.246510"
name="point2"
icon="fa-trash-o"
color="green"
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()

while True:
    temp=random.randint(0,100)
    if temp>60:
        icon="fa-trash"
        color = "red"
    else:
        icon = "fa-trash-o"
        color = "green"
    myData={"Name":name,"Latitude":lat,"Longitude":lon,"Icon":icon,"FillPercent":temp,"Color":color}
    client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
    print("Published data Successfully: %s", myData)
    client.commandCallback = myCommandCallback
    time.sleep(10)
client.disconnect()
```

3) IBM Watson IOT platform:

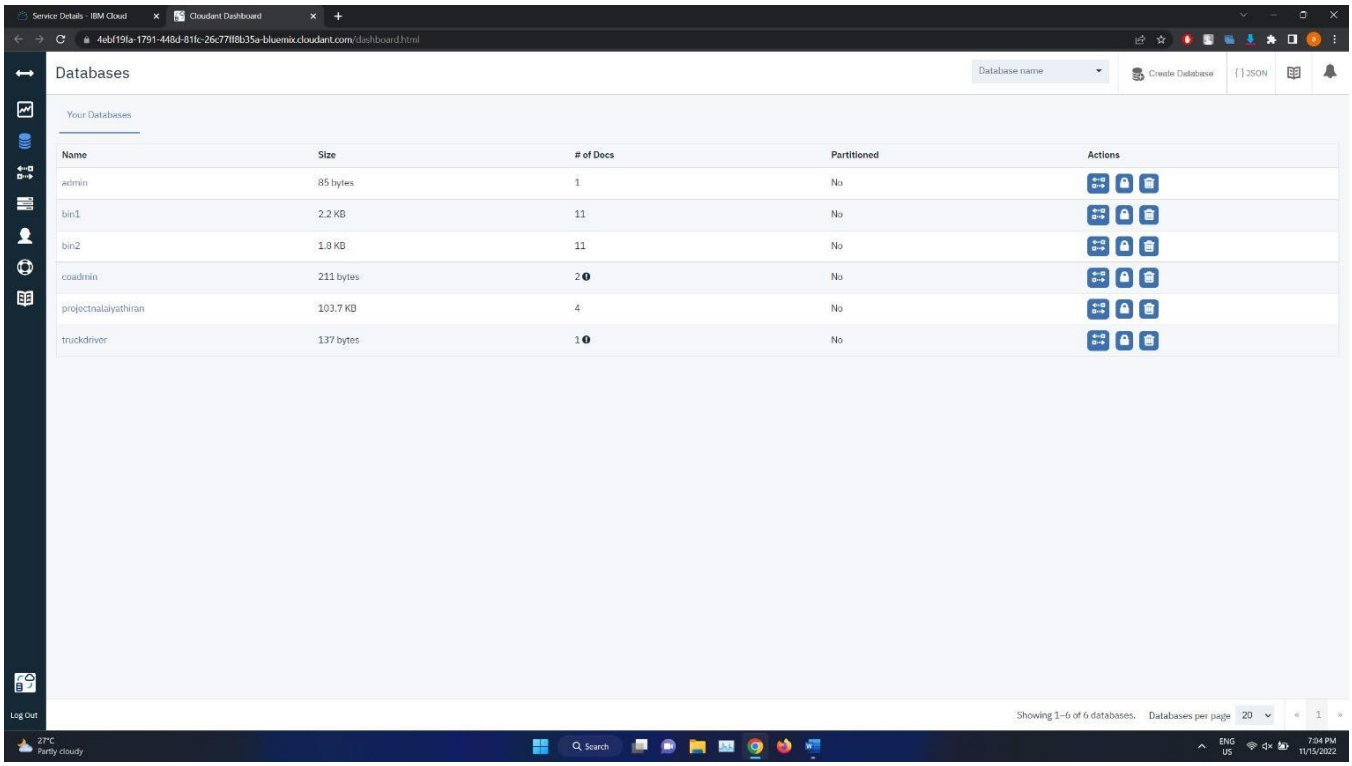
Here we can see the output which has been passed from WOKWI Platform or Python Script to IBM Watson IOT platform.



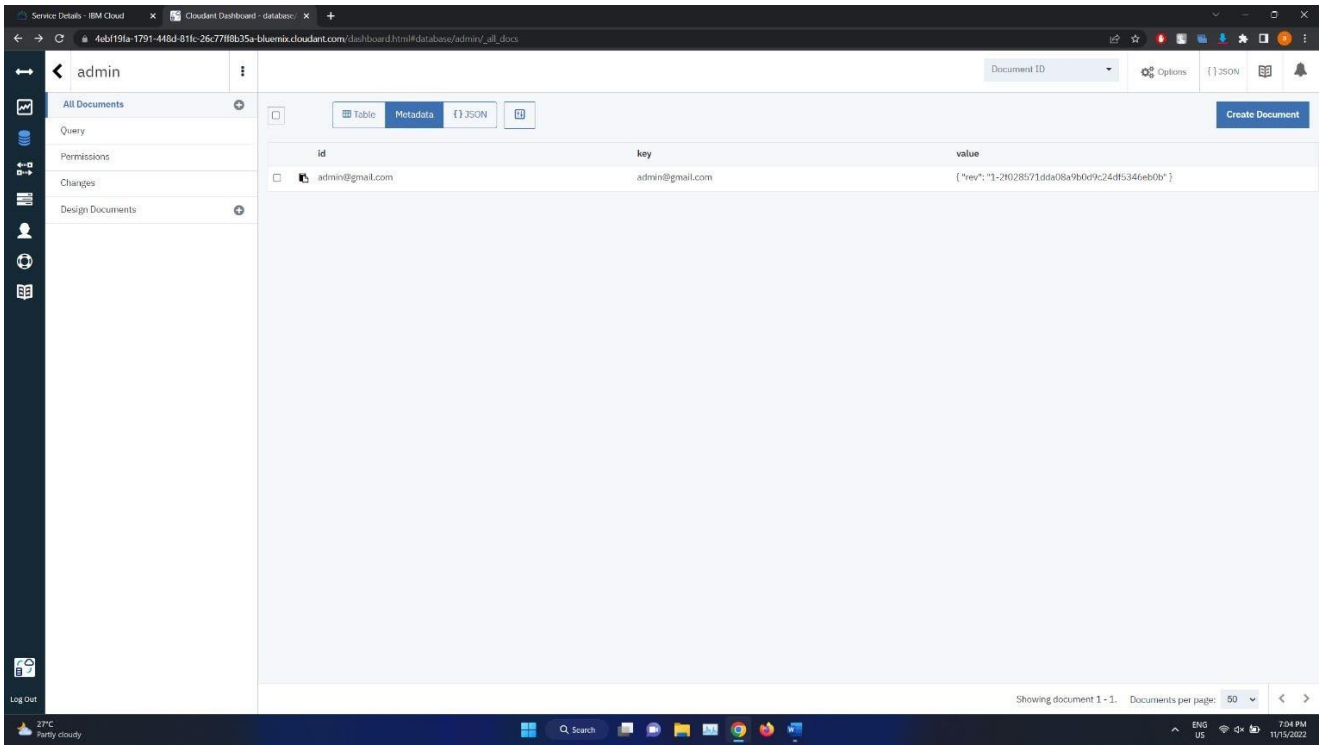
The Value which is passed is shown here.



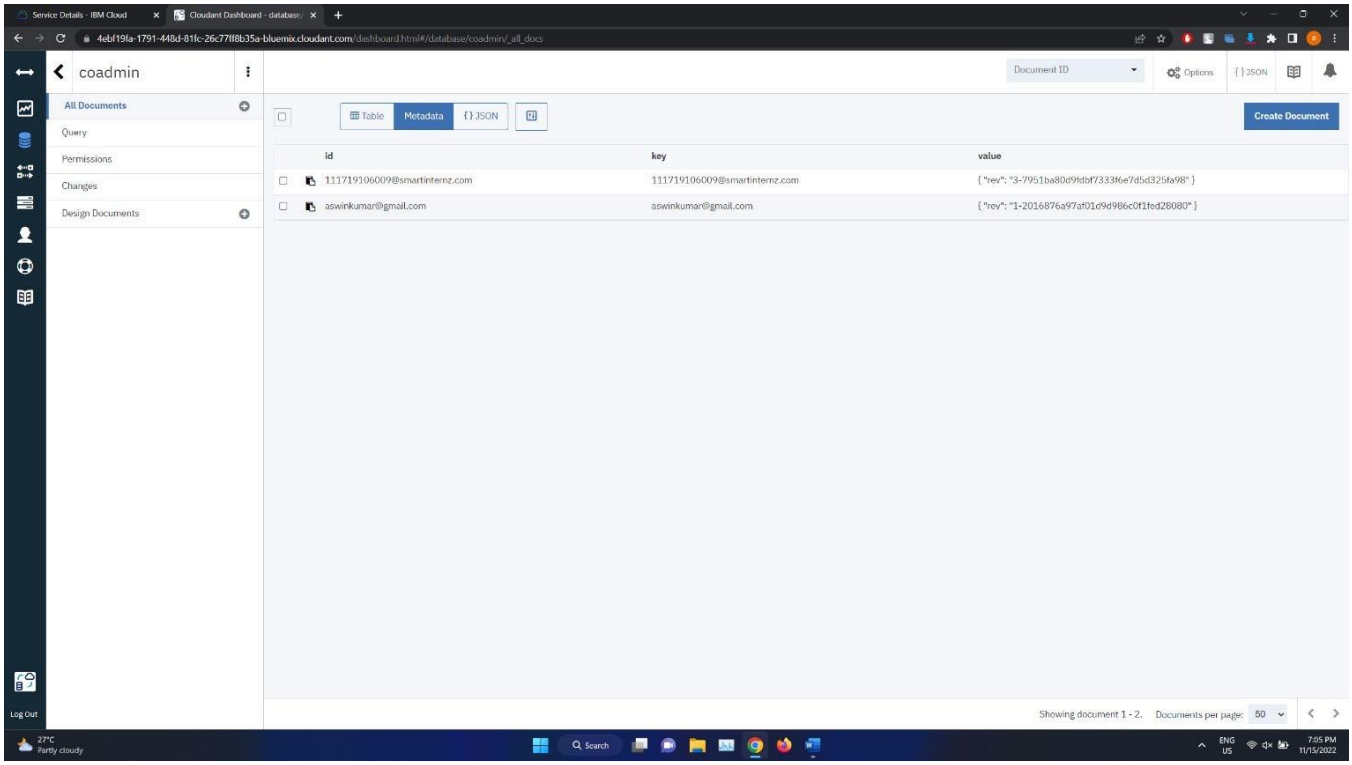
4) Cloudant DB:



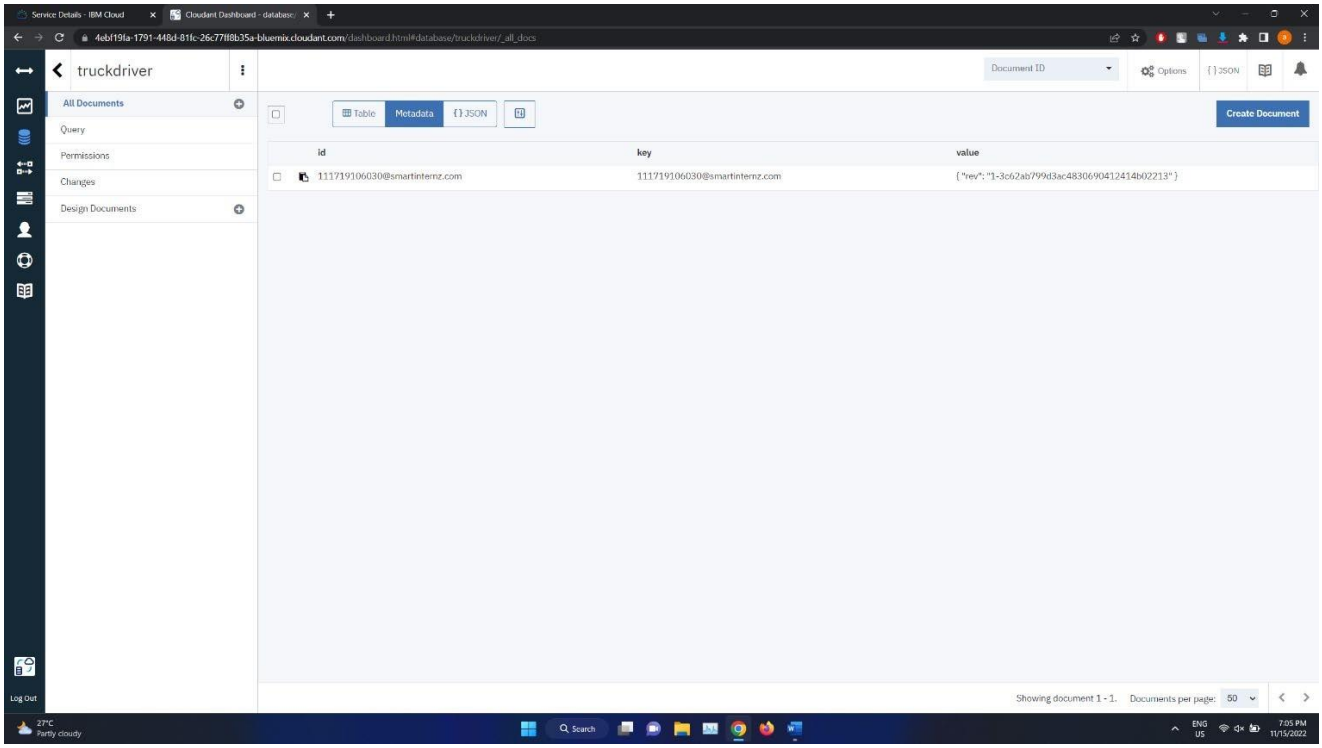
Admin Database:



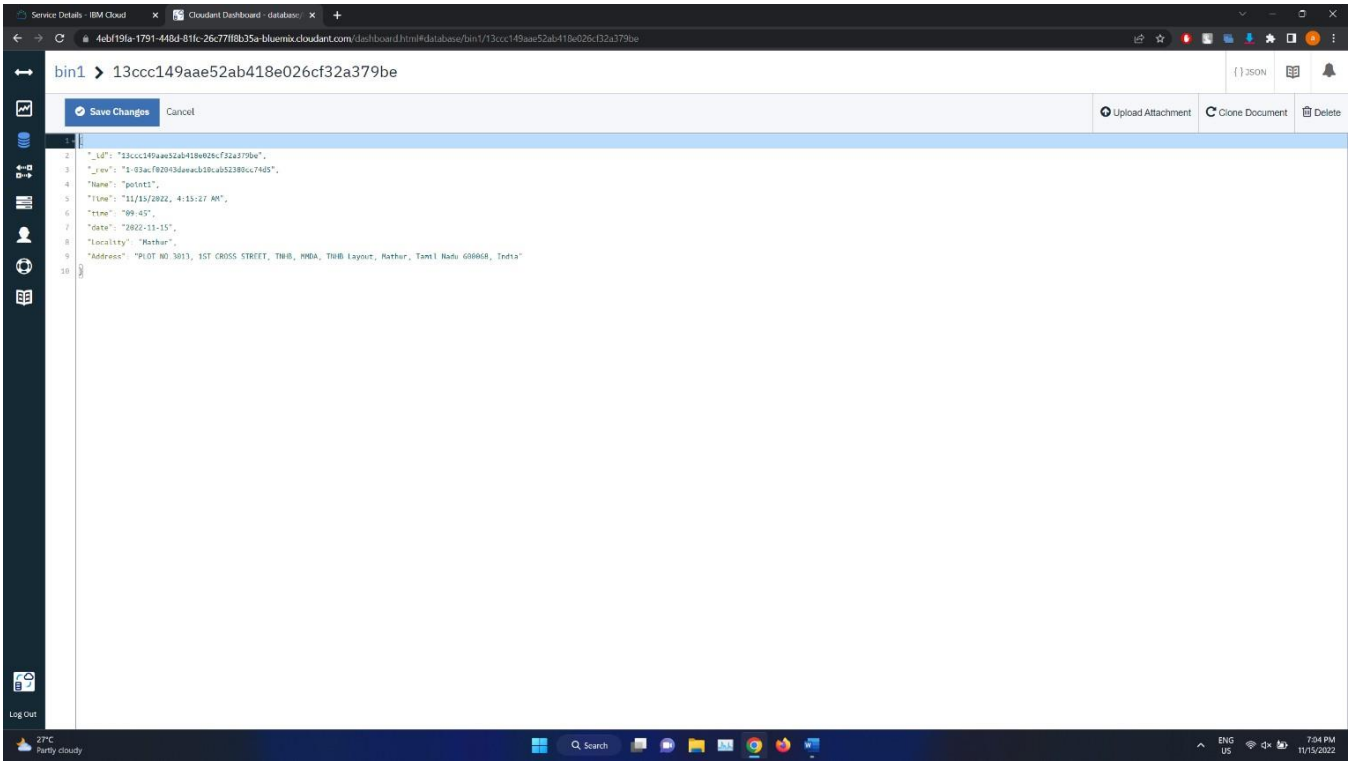
Co-admin Database:



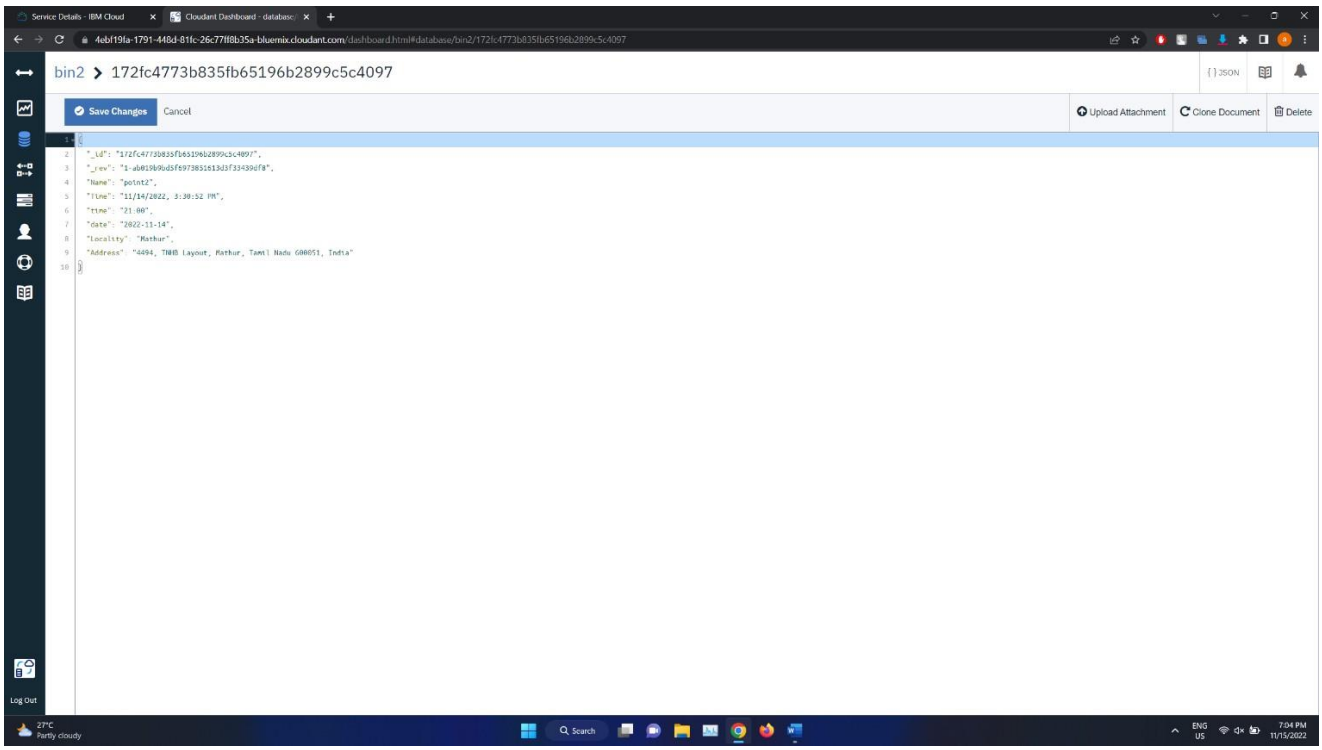
Truck Driver Database:



BIN 1 Database

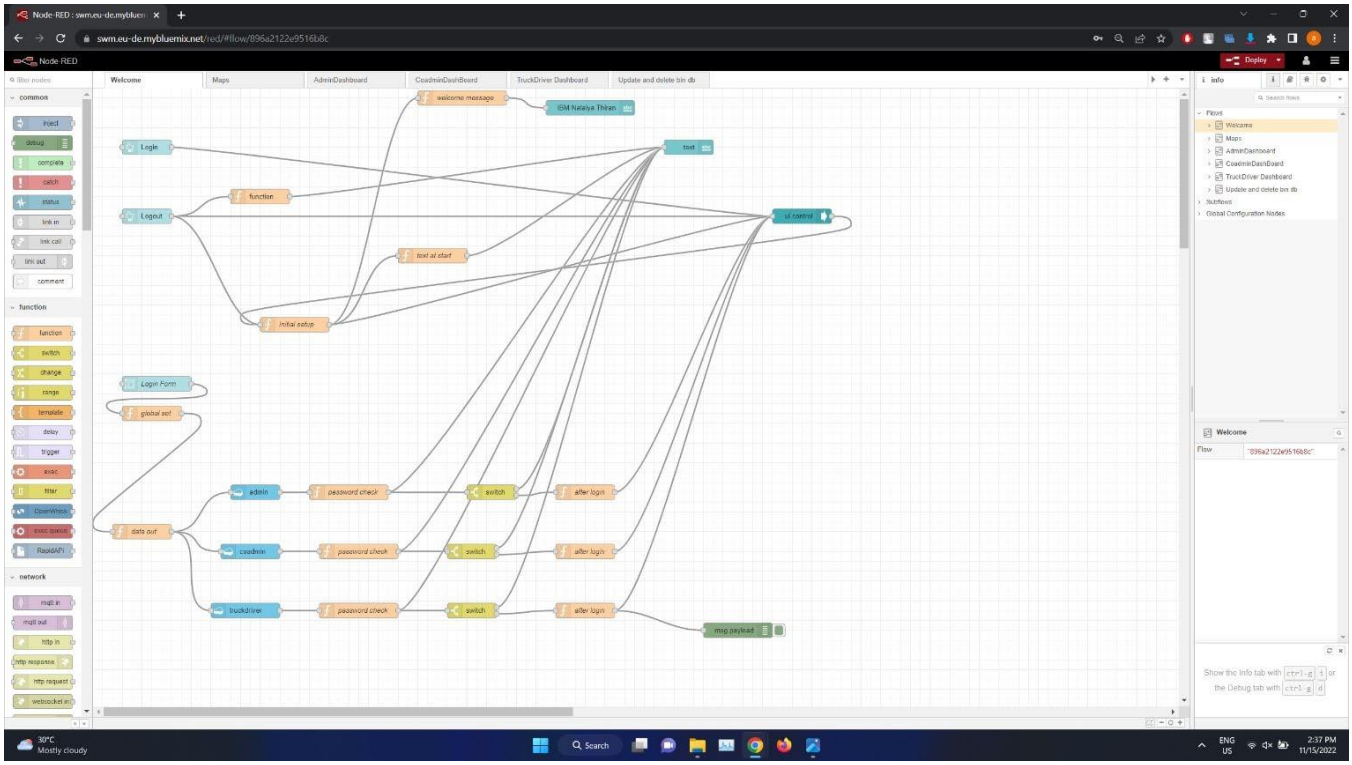


BIN 2 Database

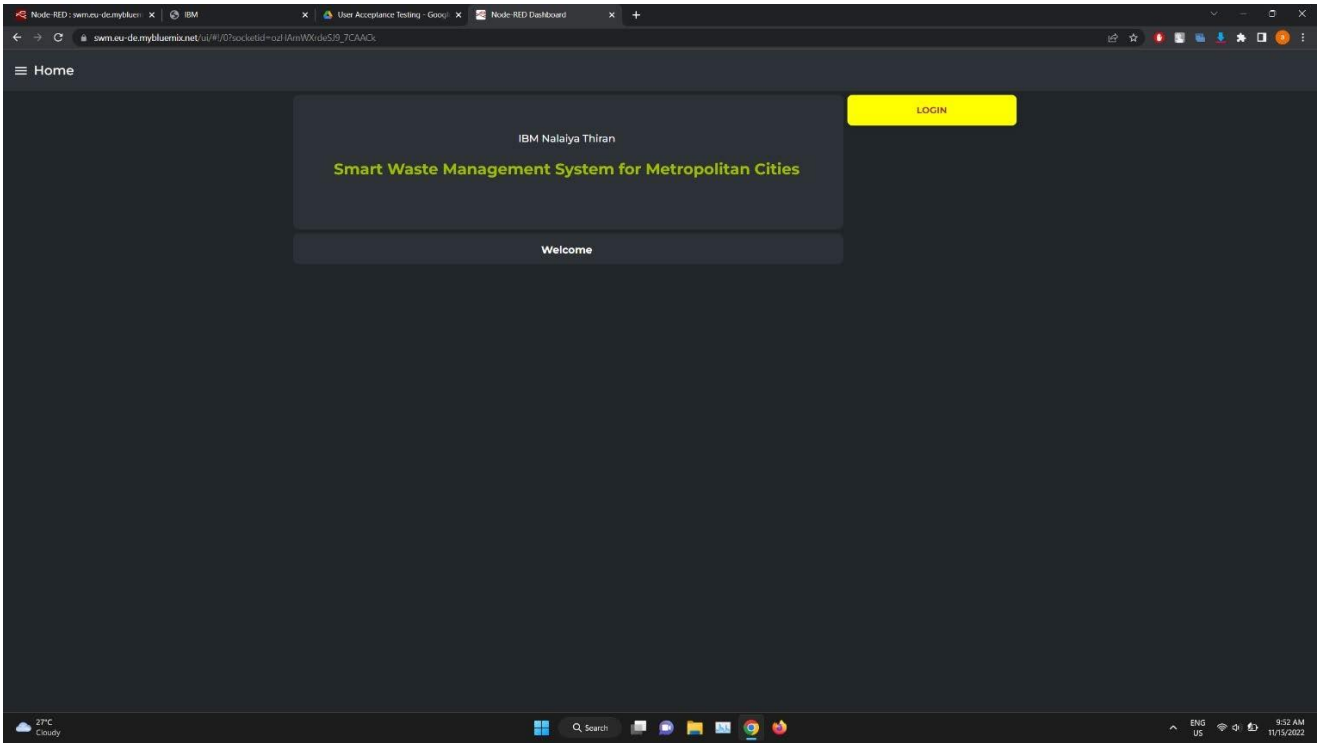


5) Node RED flow

Login/Logout (Home Page) Flow:

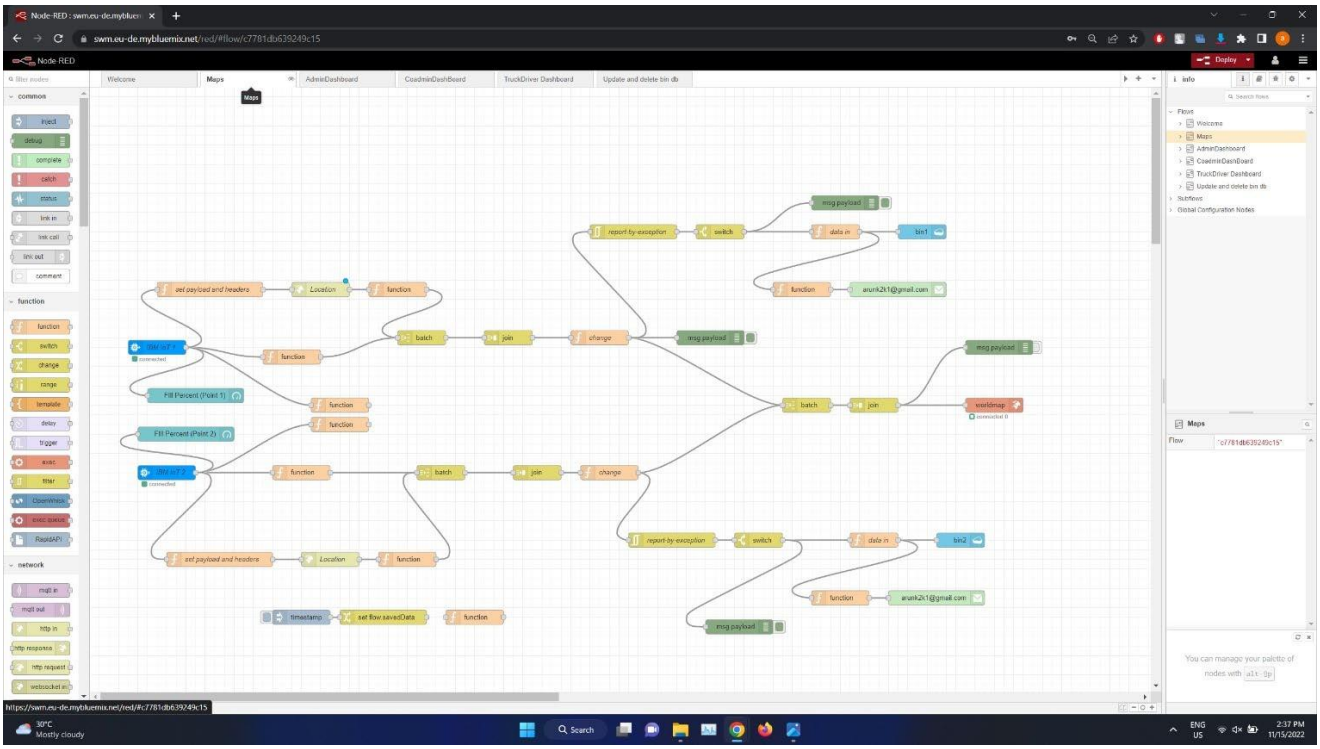


Home Page:

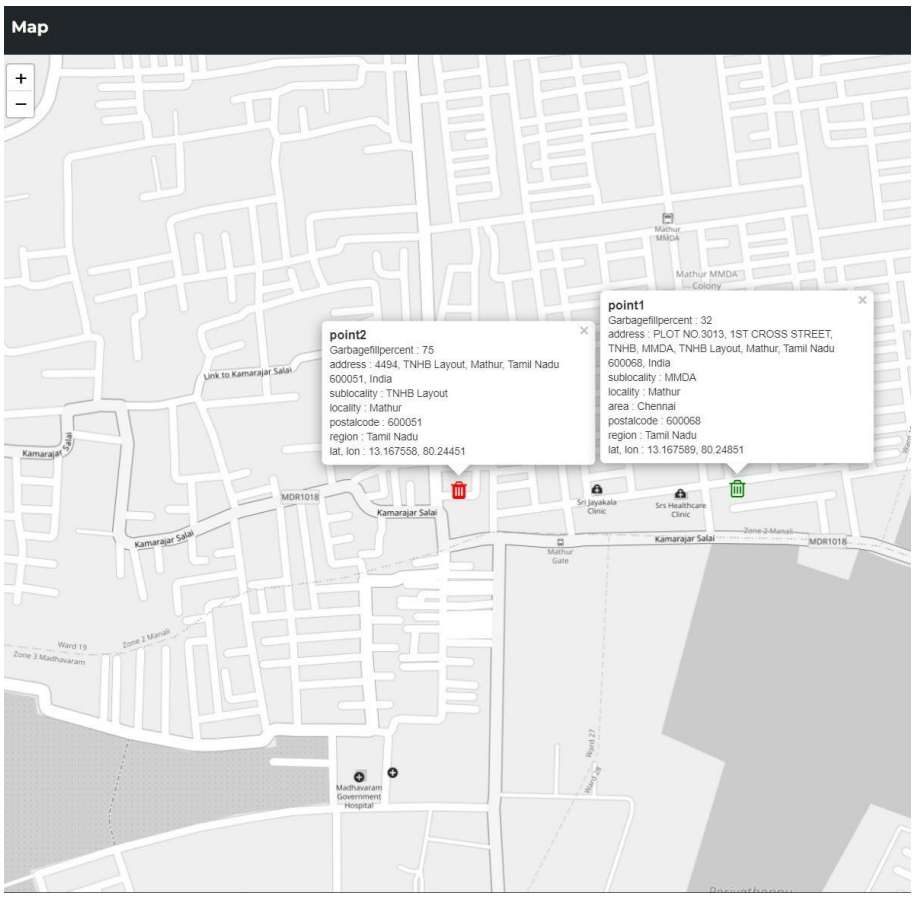


Map Flow:

It is used to push bin values got from the IBM Watson IOT platform and push them into Database

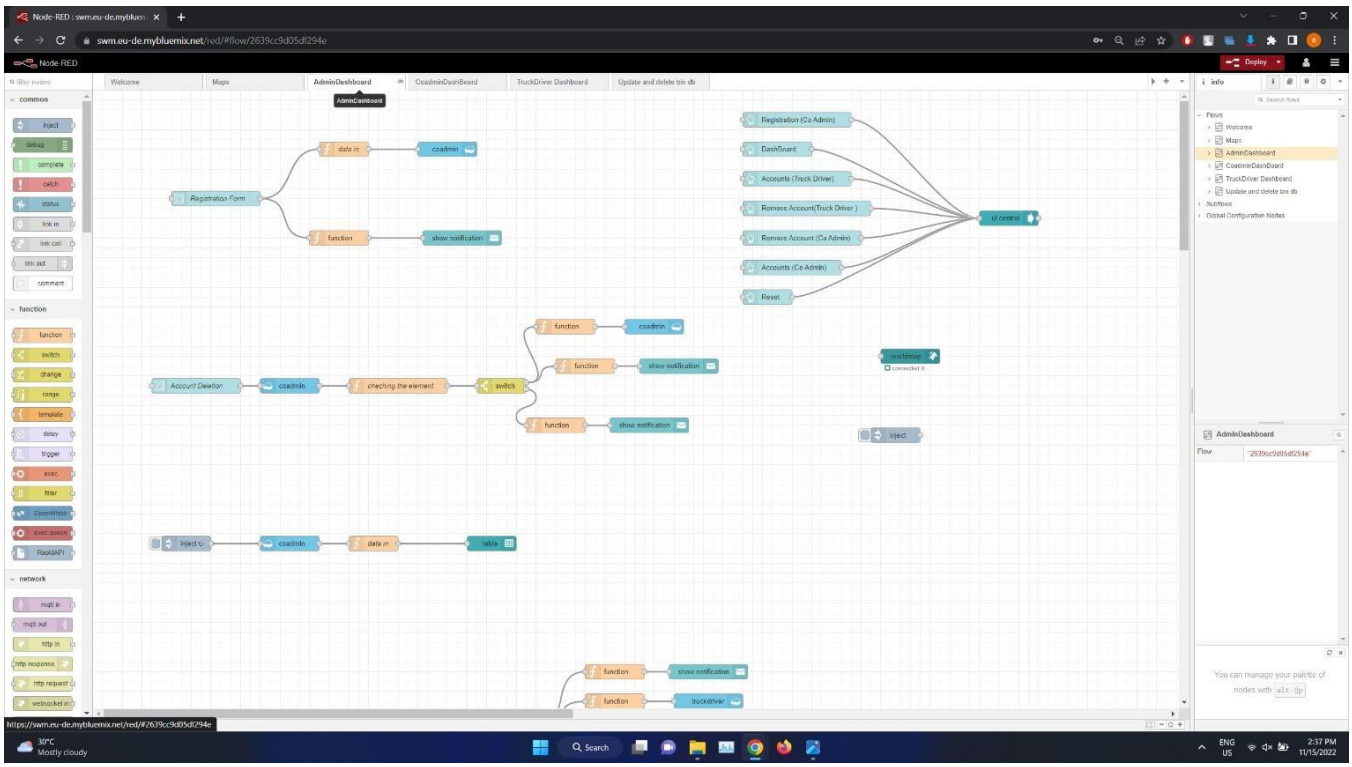


Map Output page:

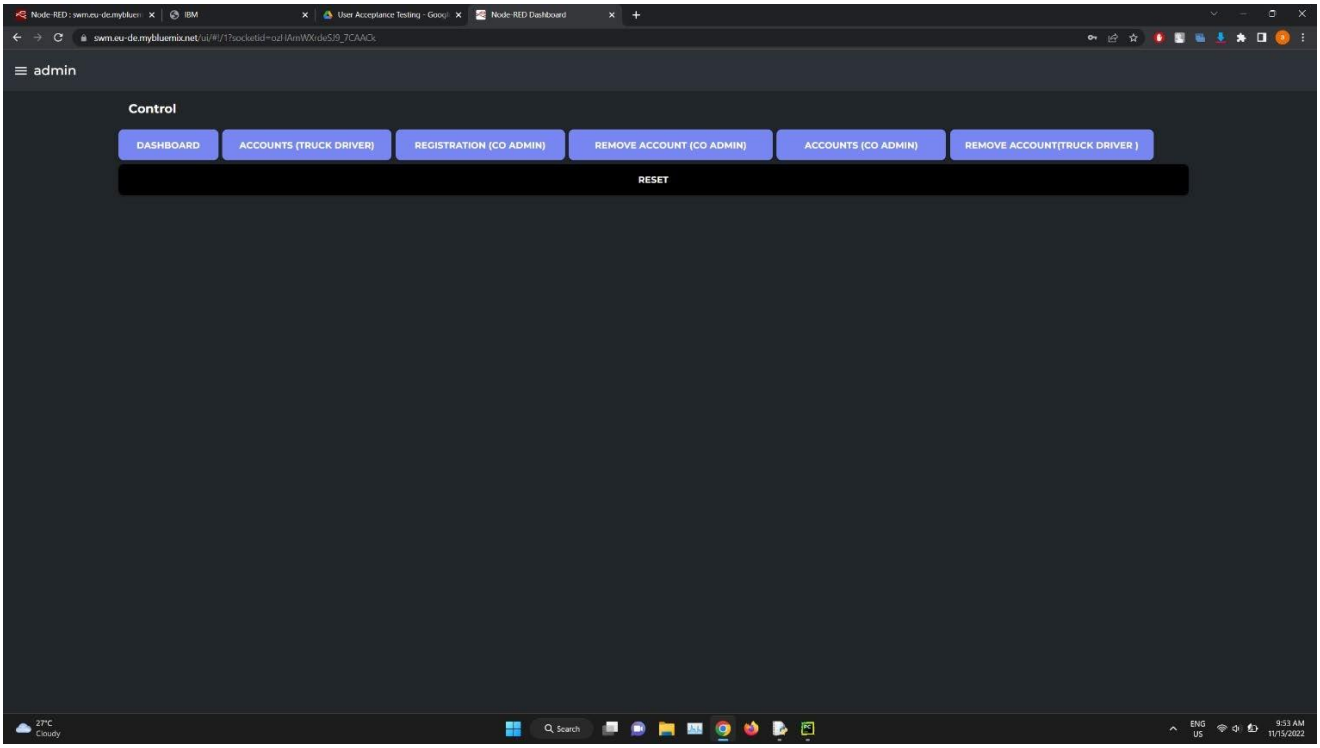


Admin Flow:

This flow helps to create all the buttons and UI for Admin page

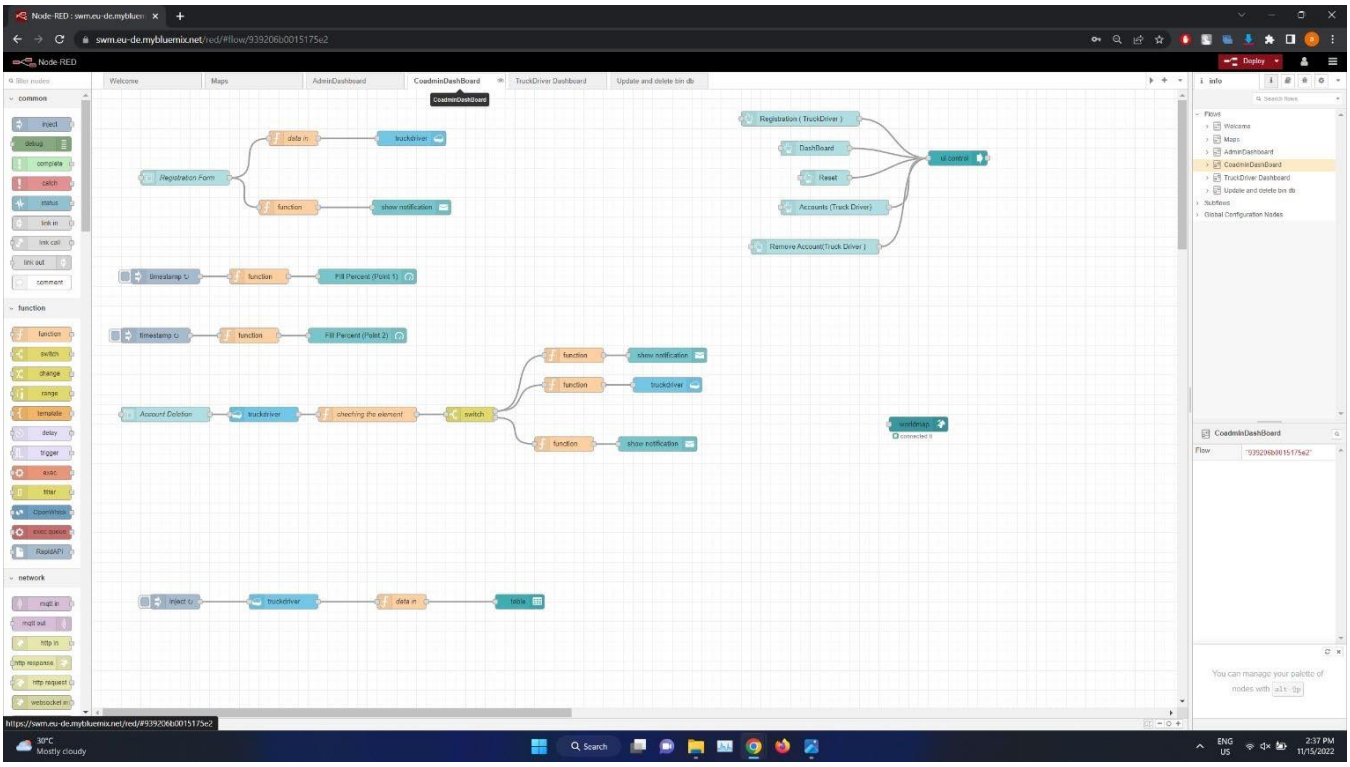


Admin Page:

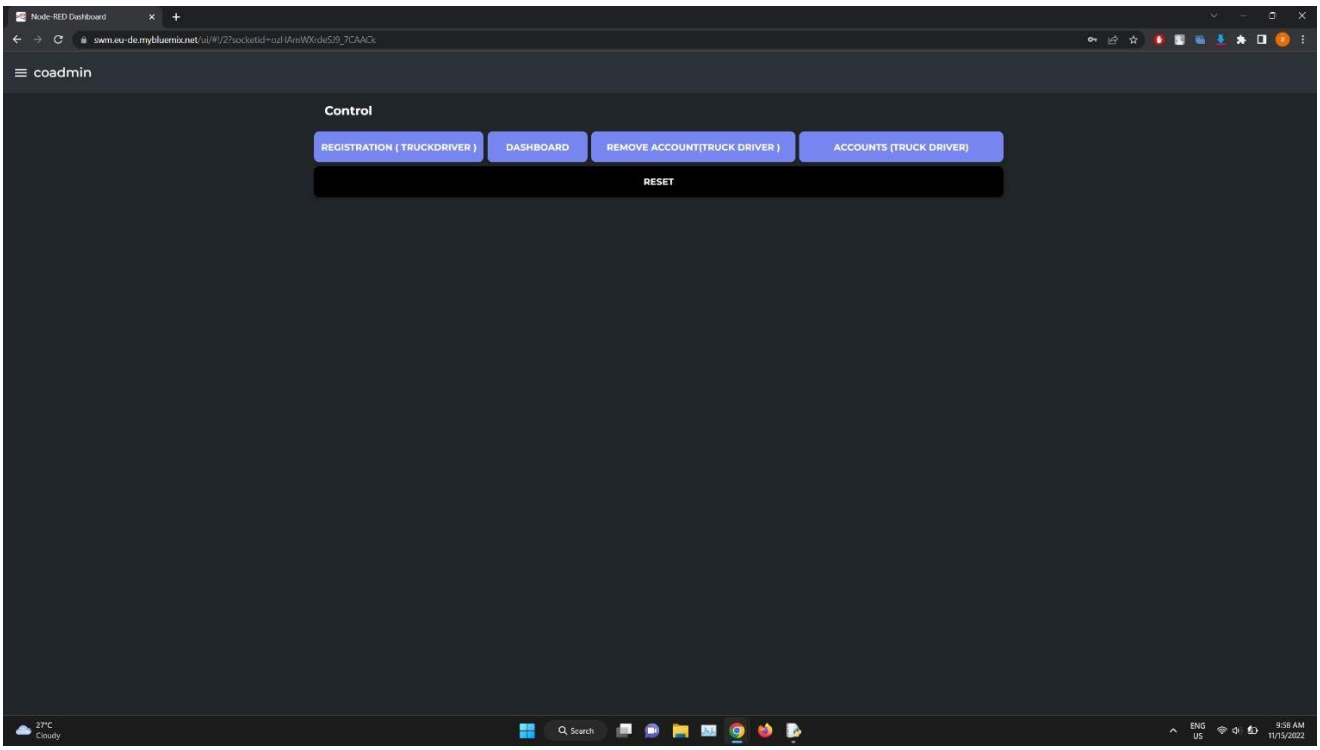


Co-Admin Flow:

Here we can see all the UI based functions used for Co-admin page.

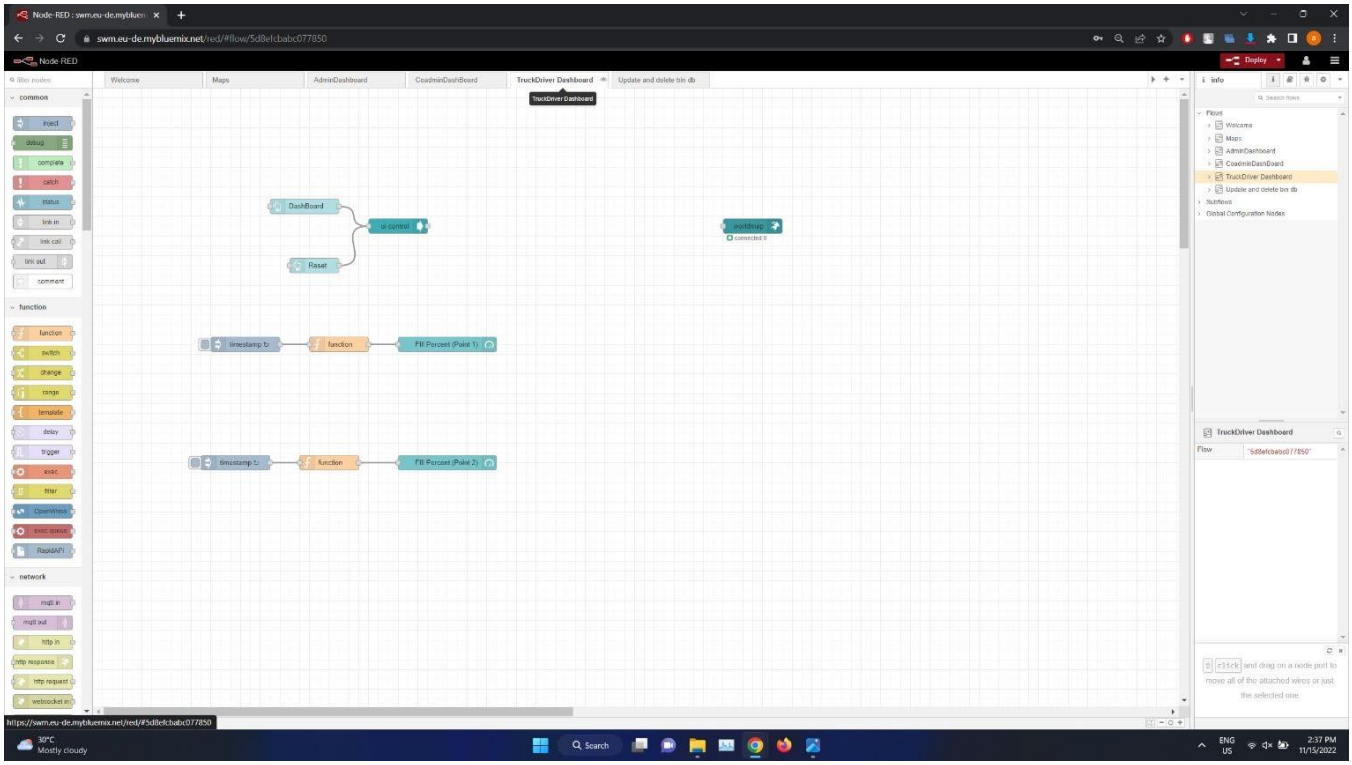


Co-Admin Output page:

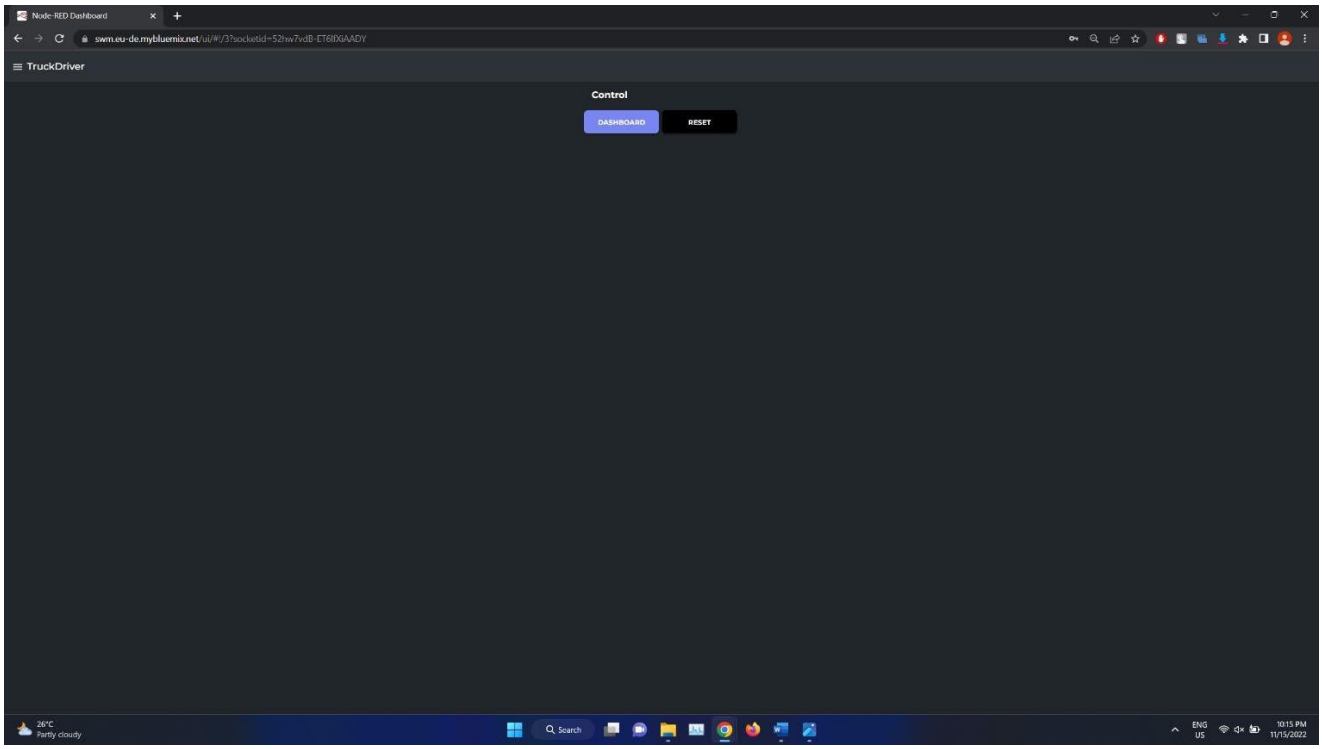


Truck Driver Flow:

Here we can see all the UI based functions used for Truck Driver page.

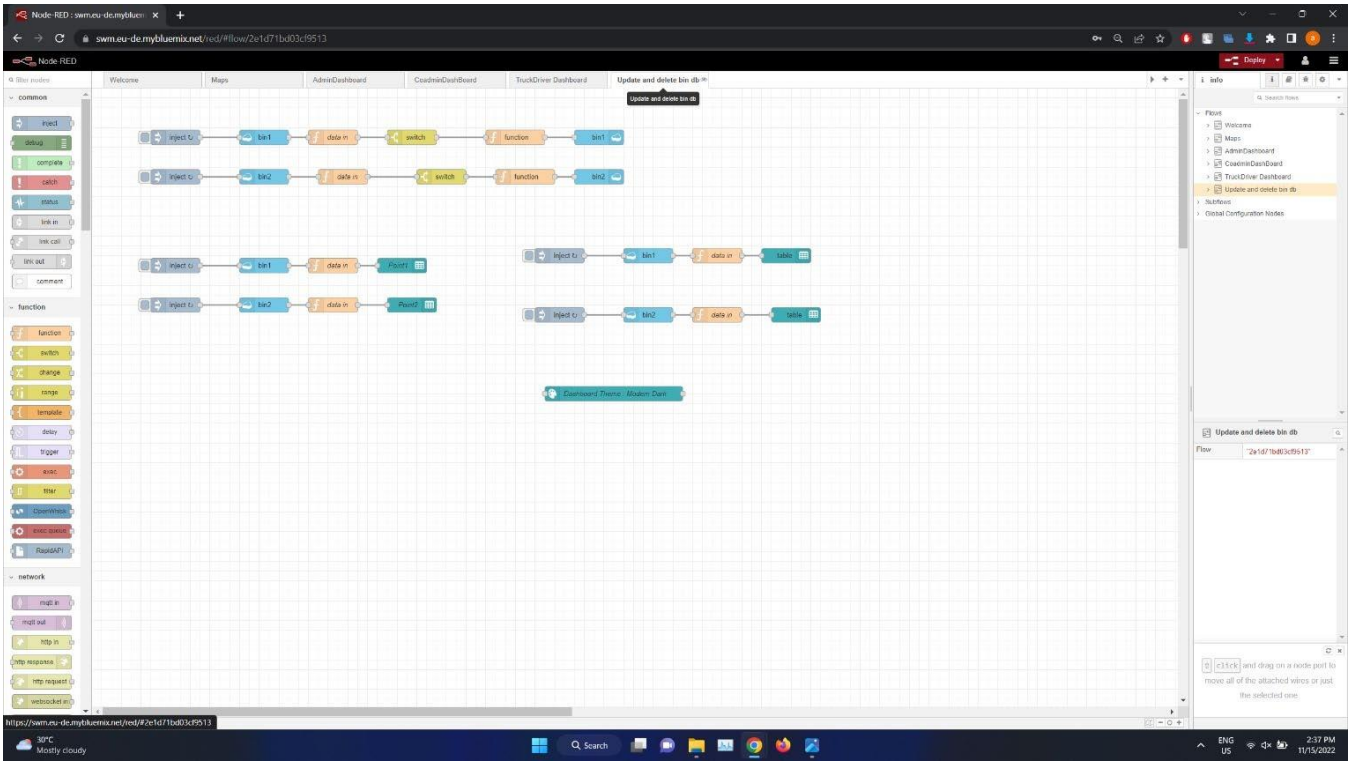


Truck Driver Output page:



Bin table Flow:

This flow used retrieve the data from the Database and push them into the Table.



Output:

Table

Name	Time	Date	Locality	Address
point1	09:45	2022-11-15	Mathur	PLOT NO.3013, 1ST CROSS STREET, TNHB, MMDA, TNHB Layout, Mathur, Tamil Nadu 600068, India
point1	09:34	2022-11-15	Mathur	PLOT NO.3013, 1ST CROSS STREET, TNHB, MMDA, TNHB Layout, Mathur, Tamil Nadu 600068, India
point1	09:33	2022-11-15	Mathur	PLOT NO.3013, 1ST CROSS STREET, TNHB, MMDA, TNHB Layout, Mathur, Tamil Nadu 600068, India
point1	21:33	2022-11-14	Mathur	PLOT NO.3013, 1ST CROSS STREET, TNHB, MMDA, TNHB Layout, Mathur, Tamil Nadu 600068, India
point1	21:30	2022-11-14	Mathur	PLOT NO.3013, 1ST CROSS STREET, TNHB, MMDA, TNHB Layout, Mathur, Tamil Nadu 600068, India
point1	21:00	2022-11-14	Mathur	PLOT NO.3013, 1ST CROSS STREET, TNHB, MMDA, TNHB Layout, Mathur, Tamil Nadu 600068, India
point1	20:59	2022-11-14	Mathur	PLOT NO.3013, 1ST CROSS STREET, TNHB, MMDA, TNHB Layout, Mathur, Tamil Nadu 600068, India
point1	20:58	2022-11-14	Mathur	PLOT NO.3013, 1ST CROSS STREET, TNHB, MMDA, TNHB Layout, Mathur, Tamil Nadu 600068, India
point1	20:58	2022-11-14	Mathur	PLOT NO.3013, 1ST CROSS STREET, TNHB, MMDA, TNHB Layout, Mathur, Tamil Nadu 600068, India
point1	20:58	2022-11-14	Mathur	PLOT NO.3013, 1ST CROSS STREET, TNHB, MMDA, TNHB Layout, Mathur, Tamil Nadu 600068, India

Name	Time	Date	Locality	Address
point2	10:24	2022-11-15	Mathur	4494, TNHB Layout, Mathur, Tamil Nadu 600051, India
point2	21:02	2022-11-14	Mathur	4494, TNHB Layout, Mathur, Tamil Nadu 600051, India
point2	21:00	2022-11-14	Mathur	4494, TNHB Layout, Mathur, Tamil Nadu 600051, India
point2	20:59	2022-11-14	Mathur	4494, TNHB Layout, Mathur, Tamil Nadu 600051, India
point2	20:59	2022-11-14	Mathur	4494, TNHB Layout, Mathur, Tamil Nadu 600051, India
point2	20:59	2022-11-14	Mathur	4494, TNHB Layout, Mathur, Tamil Nadu 600051, India
point2	20:58	2022-11-14	Mathur	4494, TNHB Layout, Mathur, Tamil Nadu 600051, India
point2	20:58	2022-11-14	Mathur	4494, TNHB Layout, Mathur, Tamil Nadu 600051, India
point2	20:57	2022-11-14	Mathur	4494, TNHB Layout, Mathur, Tamil Nadu 600051, India
point2	20:57	2022-11-14	Mathur	4494, TNHB Layout, Mathur, Tamil Nadu 600051, India