IOT (Internet Of Things)

Project: FLEET TRACKING AND MONITORING SYSTEM

by

ECE_D02

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1.INTRODUCTION:

1.1 Overview

Fleet monitoring is a way to track the activity of a company's mobile assets, normally using a GPS tracking unit fitted to the vehicle or equipment being tracked. The GPS unit regularly transmits the equipment or vehicle location using a built-in cellular or satellite connection. Most vehicle units will transmit in near real time - every two minutes but it can be more frequent, if required.

Data picked up by the device is transmitted to an internet server, where the information can then be processed and displayed to fleet managers via a secure website.

The GPS location data is accurate to within approximately one meter, but it can be affected by underground interference or problems with signal accuracy, such as urban canyoning. In these cases, a vehicle location can be approximated based on the direction, speed and road taken by the vehicle.

1.2 Purpose

Fleet tracking uses satellite and cellular technology to allow fleet managers to locate vehicles and other assets in real-time.

2. LITERATURE SURVEY:

2.1 Existing Problem

- Operations are time consuming
- You can't optimise your routing
- Your vehicles suffer unsustainable amounts of wear and tear
- You are dealing with the reality (or the risk) of vehicle theft

2.2 Proposed Solution

The proposed system consists of some phases:

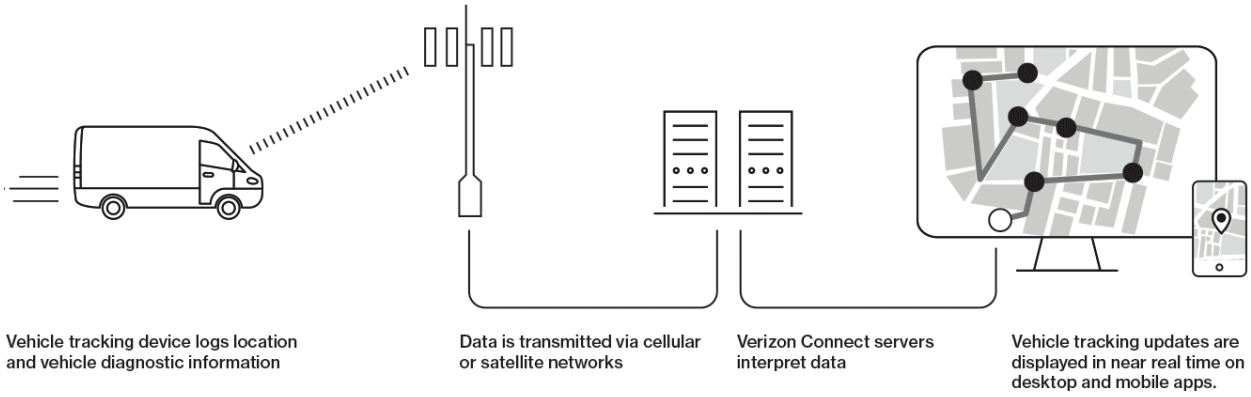
1.Linking Of Connected Vehicles & GPS With Tracking System.

2.Real-Time Tracking Of Connected Vehicles Using GPS.

- Helps to reduce insurance costs.
- Helps them to locate their vehicles at any given time.
- Helps to minimize operating expenses.
- GPS fleet tracking has helped to improve safety.
- Has helped these companies to manage maintenance
- Has helped companies earn the trust of customers.

3.THEORITICAL ANALYSIS :

3.1 Block Diagram



3.2 Hardware/Software designing :

Software Designing:

The software used for smart parking system is:

a. Python

b. IOT Cloud Platform

c. IOT Communication Technologies

d. IOT Communication Protocols

4.EXPERIMENTAL INVESTIGATION :

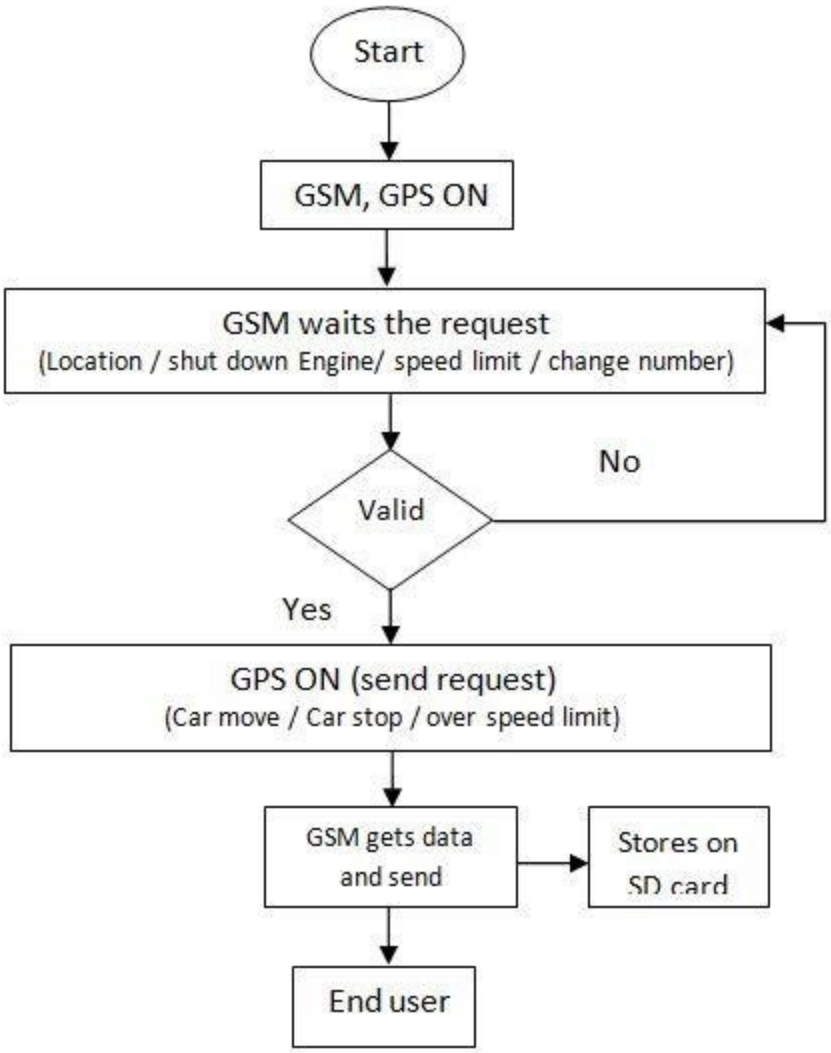
The Internet of things (IoT) is a system of interrelated computing devices, mechanical and digital machines provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. The

definition of the Internet of things has evolved due to the convergence of multiple technologies, real-time analytics, machine learning, commodity sensors, and embedded systems.

The IoT can assist in the integration of communications, control, and information processing across various transportation systems. Application of the IoT extends to all aspects of transportation systems (i.e. the vehicle, the infrastructure, and the driver or user). Dynamic interaction between these components of a transport system enables inter- and intra-vehicular communication, smart traffic control, smart parking, electronic toll collection systems, vehicle control, safety, and road assistance. For example, an IoT platform can continuously monitor the location and vacancies of spaces in parking.

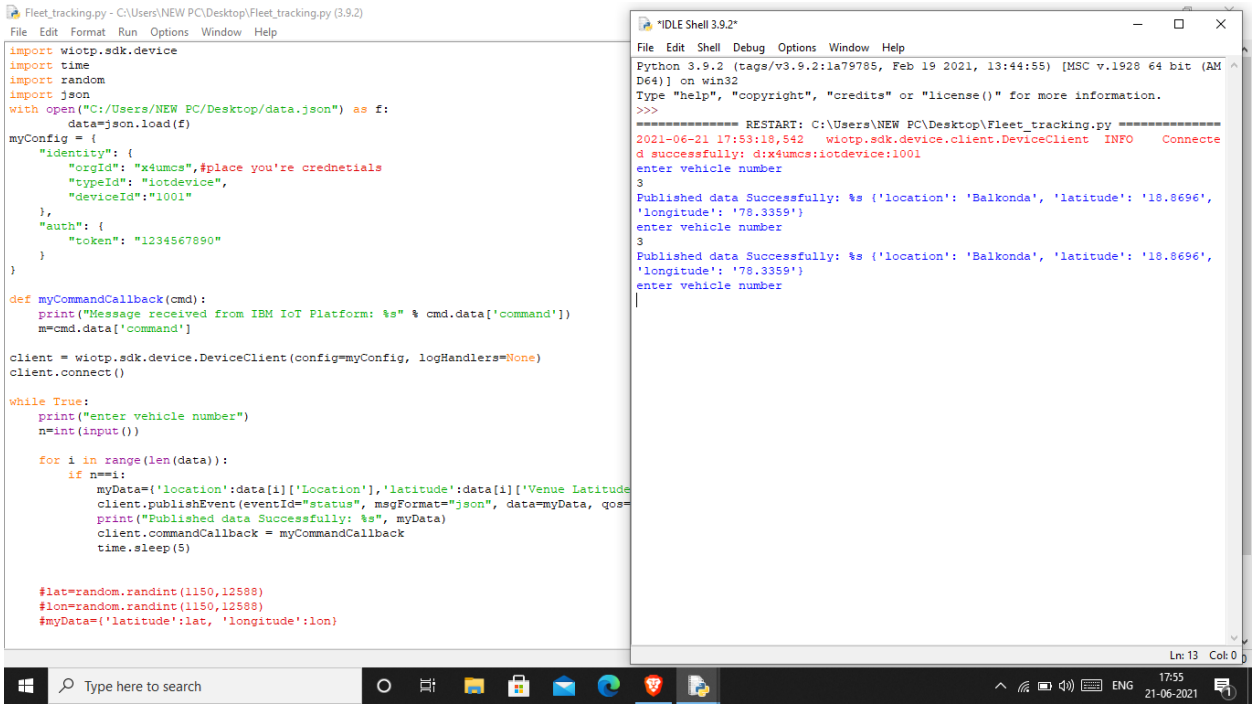
This can only be possible with the IoT and its seamless connectivity among devices. Sensors such as GPS, Humidity, and Temperature send data to the IoT platform and then the data is ANALYSED and then sent to the users. This way, users can track the real-time status of vehicles and can make appropriate decisions. The smart parking system is an IOT based device which is capable of automatic sensing of vehicles. ALSO, the data of sensors will be displayed in graphical form on.

5. FLOWCHART:

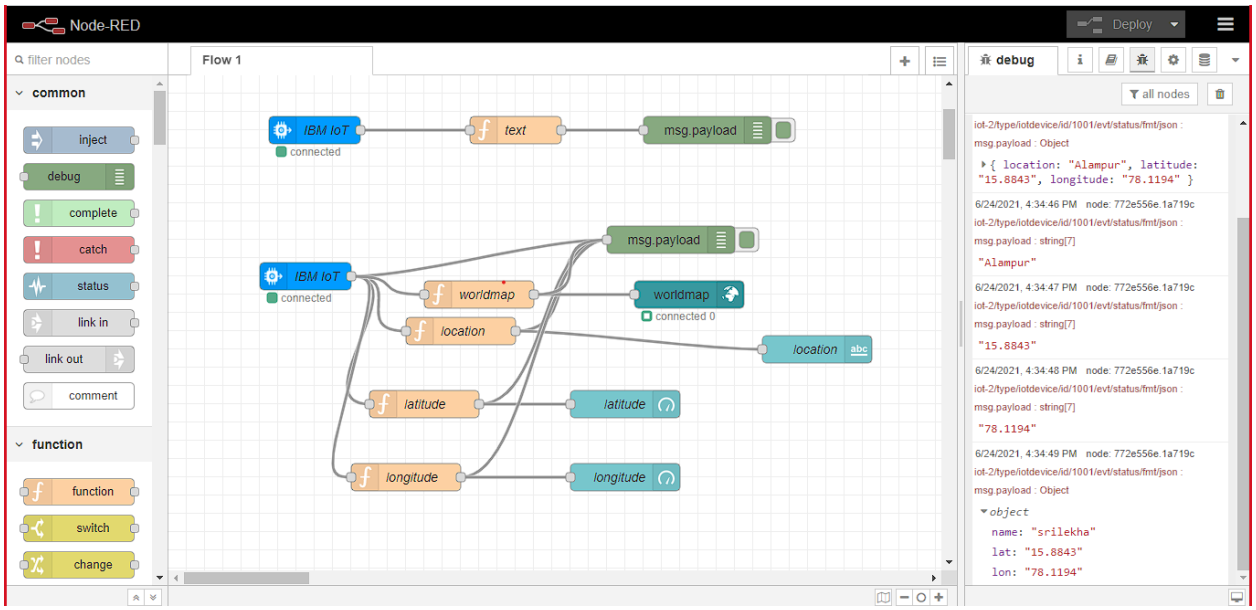


6.RESULT :

Python code:



Node-red:



7.ADVANTAGES AND DISADVANTAGES :

Advantages of Fleet Management:

➨It improves productivity by saving delivery time due to use of advance route information, traffic alerts etc.

➨It helps to reduce cost of fuel.

➨It ensures safety of vehicles, drivers and goods.

➨It provides real time location of fleets and serves the customers in better way.

➨It helps in saving of maintenance costs by maintaining fleet effectively.

➨It reduces risk of theft and road accident chances. Hence it decreases insurance cost.

Disadvantages of Fleet Management:

Following are the drawbacks or disadvantages of Fleet Management:

➨Active tracking based fleet management requires monthly subscription charges and data usage charges.

➨It is difficult to manage and maintain fleet management system due to use of multiple technologies such as cloud servers, cellular wireless systems, fleet management software etc.

➨It requires skilled resources to maintain such system. This increases maintenance costs.

➨GPS device used in fleet management is power hungry which drains battery faster.

➨GPS signal does not pierce through the walls, solid structures, underwater or dense trees. Hence it is difficult to track the fleet when they are in such regions or behind such locations.

8. APPLICATIONS:

- Asset tracking
- Field Service Management
- Field Sales
- Trailer Tracking and Surveillance
- Cold Storage Monitoring

9. CONCLUSION:

Fleet management is essential to a smooth operating fleet of vehicles, no matter the size. Tracking the location and condition of the vehicles, maintenance schedules, and fuel usage helps manage costs and keeps the equipment working longer.

Likewise, tracking the behaviors and habits of drivers ensures the vehicles are operated safely and efficiently which helps keep costs low.

10. FUTURE SCOPE:

The GPS industry is moving REALLY fast these days. With AT&T shutting down their 2G antennas in the United States leaving T-Mobile as sole 2G provider, tracking device technology is quickly moving to keep up with changes from the data network providers. 3G technology is now the “norm” in the industry with 4G devices rising in demand to keep up with the amount of data transfer from new “smart” vehicles.

11. BIBLIOGRAPHY :

https://cloud.ibm.com/

https://cloud.ibm.com/catalog#services

https://node-red-olidm-2021-06-19.eu-gb.mybluemix.net/red/#flow/2c4ebe52.47b2f2

https://node-red-olidm-2021-06-19.eu-gb.mybluemix.net/ui/#!/0?socketid=nH8JV1jo8mJ8lINIAAAH

https://wlius.com/applications/fleet-vehicle-tracking/

12.APPENDIX:

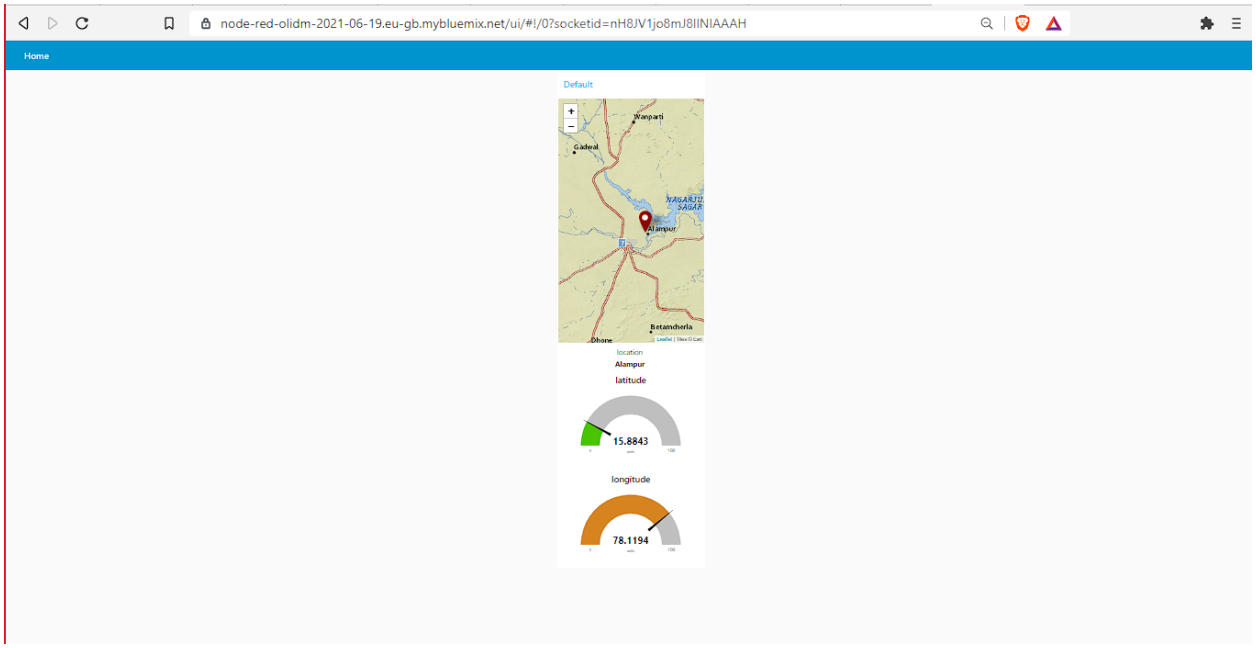
12.1.Source Code

```
import wiotp.sdk.device
import time
import random
import json
with open("C:/Users/NEW PC/Desktop/data.json") as f:
        data=json.load(f)
```

```
myConfig = {
    "identity": {
        "orgId": "x4umcs",
        "typeId": "iotdevice",
        "deviceId":"1001"
    },
    "auth": {
        "token": "1234567890"
    }
}

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:
    print("enter vehicle number")
    n=int(input())
    for i in range(len(data)):
        if n==i:
            myData={'location':data[i]['Location'],'latitude':data[i]['Venue Latitude'],
'longitude':data[i]['Venue Longitude']}
            client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0,
onPublish=None)
            print("Published data Successfully: %s", myData)
            client.commandCallback = myCommandCallback
            time.sleep(5)
client.disconnect()
```

12.2 UI Output:


node-red-olidm-2021-06-19.eu-gb.mybluemix.net/ui/#!/0?socketid=nH8JV1jo8mJ8lINIAAAH
Home
Default
Wanparti
Gadwal
Alampur
Ghone
Betamcherla
location
Alampur
latitude
15.8843
longitude
78.1194