Problem Statement

GPS TOLL BASED SYSTEM SIMULATION USING PYTHON

GPS Tracking Using Python

A GPS tracker is a device designed to calculate precise and accurate locations generally by receiving data from satellite sources and computing the exact coordinates of the desired location. To achieve this, we will utilize the requests library in Python, along with some other necessary libraries. We are also going to use folium, a Python library help us build the map that we are going to display at the end to the user.

Unique Idea Brief (Solution)

GPS tracker are widely used in the personal safety and security sector.They have built in accelerometer and can alert drivers and managers to patterns of poor driving behaviour.
This can be used companies that transport high value goods, as it allows them to monitor their cargo throughout the entire shipping process.
This can reduce the risk of theft or loss of vehicle’s.

The capability of GPS tracking to furnish real-time location data can be especially useful for fleet management, as it allows for the visualization of the precise location of vehicles at any given moment. This can help you to optimize routes, vehicle utilization and reduce fuel costs, as well as improving the efficiency and productivity of your fleet.

Features Offered

- Track your device online in real time;
- Record and review tracks, generate reports;
- Configure various kinds of events and notifications;
- Assign or schedule various tasks and delivery times;
- Communicate with the person at the other end using built-in chat function;
- Make photos and upload to user account with current location;
- Possibility to change tracking interval;
- If Internet is lost, application will save locations and upload them later;
- Possibility to control application via web browser using commands;
- Password protection;
- Application runs in background.

Process flow

Step 1: Install Necessary Libraries/Packages

In this step, we will install all the necessary packages or libraries required to create a GPS tracker in Python.

Step 2: Import Libraries

In this step, we will import all necessary libraries that are required in this project.

Step 3: Creating a method to get the user coordinates.

In this step, we will request for users **Ip address** info. This will return us a **json file**. Through this **json file**, we will extract user latitude, longitude, city and state.

Step 4: Creating the object of the necessary library

In this step we will define a method **“gps_locator()”** with no parameter. Then, we will create a folium map object under

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Step 5: Fetching Coordinates, City and State and Map Generation

In this step, we will fetch coordinates from our created method i.e. **locationCoordinates().** From this coordinates, we will generate a map pointing to our exact location with the help of folium library. We will consider doing all this work under try block to avoid any undesirable errors.

Step 6: Creation of main method and displaying the map.

In this method, we will create a a main method. Under this main method, we will call **gps_locator()** method. This method will return a file location. Through this file location, we will open that in our chrome browser. We are also closing our browser with 30 seconds, in case user do not close it manually.

Technologies used

Python

Team member

Nayana K

Conclusion

Overall, GPS tracking is a powerful technology that has a wide range of applications. It allows you to track the location of devices and vehicles in real-time, and it can be useful for fleet management, asset tracking, and personal tracking. It can help prevent theft, optimize routes, reduce costs and improve productivity. Whether you are a business owner, a fleet
manager, or simply someone who wants to keep track of loved ones, GPS tracking can provide valuable insights and help you to stay connected and informed.