QUERY ROUTES

PROJECT PROPOSAL

Description of Data Stored in the Database:

The dataset titled "Public Transportation Service" hosted on Kaggle contains information about the public transportation system of São Paulo, a major Brazilian city. The data is provided in a format called GTFS (General Transit Feed Specification), which is specifically designed to model transportation schedules and geographic data.

GTFS consists of two main parts: GTFS Schedule and GTFS Realtime.

- **GTFS Schedule** contains information about routes, schedules, fares, and geographic transit details, and it is presented in simple text files. This straightforward format allows for easy creation and maintenance without relying on complex or proprietary software.

- **GTFS Realtime** contains trip updates, vehicle positions, and service alerts. It is based on Protocol Buffers, which are a language (and platform) neutral mechanism for serializing structured data.

The dataset includes various details such as route information, trip types, itinerary paths, and more. The data is managed by SPTrans, a company owned by the prefecture that manages the bus services in São Paulo's complex transportation system. The data is updated daily on their website, but it's not updated regularly on Kaggle.

This dataset can be used for various purposes such as practicing geospatial analysis, map visualization, and network analysis. The rich set of attributes in each table allows for detailed analysis of the public transportation system in São Paulo.

FUNCTIONS OF WEB APPLICATION:

Our Project is: Query Routes. Our database stores data related to public transportation in São Paulo, including agency information, trip details, routes, stops, and fares. In our website, the user can do three different functionalities:

1. User Registration and Authentication

- Users can create accounts with email and password for personalized features.

- Features include saving favorite trips and routes.

- Also, providing feedback, reporting issues, or seeking assistance related to the public transportation system.

- Secure login-in/sign-in user authentication to ensure user privacy.

2. Trip Planner

- Users can plan their journeys by specifying their origin and destination.

- Our website will provide multi-step optimal routes, estimated travel times, fare estimation, and transfer points.

3. Statistics

- The website provides insights into popular trips, routes and busy stations based on our data.

CREATIVE COMPONENT:

- Our creative component is making suggestions to the user on places to visit/eat/hotels/tourism-locations. The user can ask about a specific recommendation in their destination place, and we provide suggestions for their query.

- Since we have the exact coordinates of the destination, implementing this idea is plausible using ChatGPT API or an API for Google map for example.

PROJECT TITLE: QUERY ROUTES

PROJECT SUMMARY:

The Query Routes project is a web application designed to simplify the travel process for users. It integrates detailed information from various transportation agencies to provide comprehensive solutions for commuters. The application offers a range of features, including real-time transit updates, journey planners, price estimates, service alerts, and user account functionalities.

One of the standout features of this application is its commitment to providing efficient and sustainable transportation solutions for the city of São Paulo. Additionally, it displays nearby tourist spots and hospitals at each stop, adding an extra layer of convenience for users.

We also plan to incorporate visualizations depicting the availability of transportation facilities in rural areas. This feature not only provides insights into rural transit options but also serves as a valuable statistic for improving local rides.

DESCRIPTION:

We are in the process of developing a web application designed to identify the shortest routes and optimize transit schedules. One of the key issues we aim to address is the lack of analytics and visualization in current systems, which can make it difficult for both consumers and users to comprehend the information presented.

Our application will feature recommended safe ride times, which are determined based on periods when crime rates are lowest. This feature is particularly beneficial for international visitors or tourists, as it enhances their safety by eliminating the need to inquire locally. Users can trust the app and venture out without any concerns.

Unlike most existing applications that merely display schedule disruptions without providing notifications, our application will proactively alert consumers about delays. This feature allows users to stay informed about potential delays without needing to constantly check the application.

In terms of customer feedback, we have opted for a centralized approach. All feedback will be stored in a single database, accessible to all support staff. This eliminates the need for dedicated customer support links and ensures that feedback can be addressed in a timely manner by any available staff member.

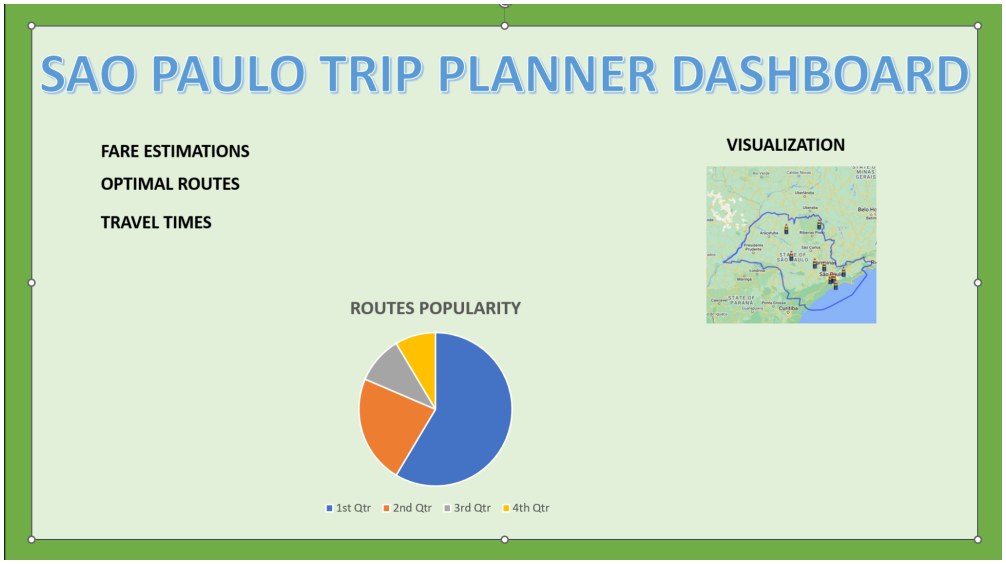
USEFULNESS:

As an international student, I've noticed that many of the applications I use lack features that cater to our specific needs. For instance, they don't provide information about optimal travel times or address safety concerns. Additionally, these applications lack a notification system to alert us about transit delays, which means we constantly have to check whether the timings are accurate.

One feature that could be beneficial is the integration of points of interest near each stop. This would allow users to quickly find tourist spots or emergency facilities. Furthermore, incorporating rural areas into the application would be advantageous. By displaying transportation facilities in these areas, users would gain a clearer understanding of rural transportation systems. This could be particularly useful for those who are unfamiliar with the area or are planning a visit.

UI MOCKUP:

These are initial designs for a baseline to establish the functionality and subjected to change in the future.
We will have a sign and login form so that users can create accounts and login to view the personalized dashboard accordingly.
We also have a feedback submission form that users have to input their opinions so that we can continually improve the user experience by taking them into consideration.
The dashboard will contain all types of functionalities implemented like trip planner, popular routes, places recommender system etc. and have map & statistical visualization that would make the user life easier.



PROJECT WORK DISTRIBUTION:

User Interface Design and Frontend Development:Sriharsha Banda

Backend System Development: Ajay Satish Kumar

Database Design and Management: Kinjalk Parth

User Authentication and Account Management: Sriharsha Banda

Trip Planning and Fare Estimation Algorithms: Ajay Satish Kumar, Kinjalk Parth

Tourist Places Suggestions Functionality: Mohammed Alsaad