Cababa: A Cab Booking System

Akanksha Singal (2021008), Ananya Goyal (2021011)

1.1 Project Scope

This project aims to build a cab booking system that solves the problem of finding a mode of transportation. The user's location can be automatically detected (given they have allowed location sharing on their device) or manually chosen. Further, based on their preference, they will be able to select their preferred mode of transportation based on the prices and convenience. Prices will be fixed on a per-kilometre basis, depending on the distance between the pickup location and the user's destination. The driver will be allotted to the user based on their availability from a pre-existing database. The user will be notified, and the driver's details will be shown to the user. During the trip, the user will be displayed the best possible route to the destination. The transactions involved would be made through cash.

To execute this, a database of the users will be created (a new user will have to sign up, and an existing user will log in to their account) using MySQL. We plan to have entities for users, drivers, and vehicles. The project will have a pre-existing database of the drivers where all the drivers would be available by default unless they are on another trip with a passenger. The *Driver* and *Mode of Transportation* entities would have a one-to-one relationship set in the database. Upon booking a trip, a new entry would be added to the relationship between the user, driver, and vehicle. Location tracking would be done using the Google Maps API. The application's front end would be created using HTML, CSS, JavaScript and ReactJS. The application's backend would be developed using Python, MySQL and Django.

1.2 Tech Stack

1. MySQL
2. Python
3. Django
4. HTML
5. CSS
6. ReactJS
7. Google Maps API
8. JavaScript

1.3 Functional Requirements

1. User Management
    a. Login - *The credentials should exactly match the credentials the user provided while signing up*
    b. Signup - *Creating a new account while ensuring that one email address will be linked to only one account*
    c. Profile settings
        i. The user can change their name
        ii. The user can change their profile picture
        iii. The user can change the email address linked to their profile
    d. Sign Out
    e. Book a cab
        i. Enter pickup location
        ii. Enter drop-off location
        iii. Select vehicle type
        iv. Schedule a trip for future
        v. Ride History
2. Transport Management
    a. Driver vehicle type - *A driver with the user's preference of the vehicle will be allotted*
    b. Driver availability - *A driver cannot be assigned to more than one user at a time*
    c. Driver rating and feedback
    d. Optimising routes to find the shortest distance to the desired destination
    e. Automatically selecting the closest available driver to minimise the user's wait time
3. Fare Calculation
    a. Calculated based on distance (Rs x per kilometre)
4. Route Management
    a. Real-time route tracking
    b. Pickup and drop off location selection
5. Web Interface
    a. User-friendly and interactive user interface to ease booking and tracking of rides

Note: The text in Italics represents constraints