



COMP 312 GROUP PROJECT

PHASE 1

PROBLEM STATEMENT

GROUP MEMBERS

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1. Problem Statement for Autowheelrent

Imagine yourself as a busy urban resident, constantly juggling work, errands, and the occasional getaway. In the hustle and bustle of city life, reliable transportation is a must. However, existing vehicle rental services in our area have left much to be desired, causing ongoing inconveniences and inefficiencies. This includes high costs, limited vehicle availability, complex booking processes, and unpredictable vehicle quality. In this narrative, we'll explore these challenges from your perspective and introduce our vision for a sophisticated software system that's poised to transform your urban mobility experience.

Problem 1: The Plague of Underutilized Vehicles

One of the most frustrating issues in our city is the abundance of idle vehicles. Many vehicle owners leave their cars and bikes unused for extended periods, creating economic and environmental waste. This inactivity contributes to traffic congestion and increased pollution, making urban life even more chaotic. You're looking for a solution that not only reactivates these dormant assets but also offers owners a way to earn extra income while contributing to a more sustainable future.

Suggestion 1: Sub-Problem - Maximizing Vehicle Utilization

To tackle this issue, we plan to create a cutting-edge software system. This system will serve as a dynamic platform, allowing vehicle owners to easily rent their vehicles during idle periods. To make this happen, we need an ingenious solution that efficiently matches these idle vehicles with users' evolving needs. This will ensure optimal resource utilization and provide fair compensation to vehicle owners. The ultimate goal is to alleviate the problem of underutilized vehicles and promote sustainable resource sharing within our urban community.

Problem 2: The Frustration of Limited Vehicle Accessibility

Securing a rental vehicle in our bustling city is a time-consuming and frustrating task. You often find yourself bouncing between multiple physical rental locations or navigating a maze of websites and apps. The process involves selecting the right vehicle, comparing prices, and securing a booking, which can be an unnecessary headache.

Suggestion 2: Sub-Problem - Streamlining Vehicle Access

Our vision is to simplify this process through an innovative software system that centralizes the scattered landscape of vehicle rental services in our area. This solution will provide a unified, user-friendly platform, making it easy to find and book rental vehicles. To achieve this, we need to design an intuitive user interface and an effective search mechanism. The objective is to ensure a smooth and efficient experience for users, reshaping the way they access and book vehicles in our city.

Problem 3: The Abyss of Limited Geolocation Services

Navigating our city's intricate streets can be a significant challenge, particularly when using rental vehicles. The existing rental services often lack effective geolocation features, leaving users struggling in unfamiliar territories.

Suggestion 3: Sub-Problem - Geolocation Integration for Seamless Navigation

Our proposed software system aims to bridge this gap by integrating advanced geolocation services. This enhancement will empower users to locate their rental vehicles easily and confidently navigate even in unfamiliar areas. The key lies in the seamless integration of GPS functionality, transforming our software into a reliable navigation tool, thus elevating the overall experience to new heights.

Problem 4: The Quagmire of Confusing Pricing Structures

Navigating the complex pricing of vehicle rentals feels like wandering through a labyrinth of intricate fees, unclear surcharges, and puzzling terms. This makes budgeting for transportation a daunting task, with unexpected costs always looming.

Suggestion 4: Sub-Problem - Fostering Transparent and User-Friendly Pricing

Our mission is to simplify this intricate pricing landscape. We envision a software system with crystal-clear pricing structures, empowering users with a clear understanding of rental costs. This sub-problem entails creating a pricing model that is straightforward and transparent, ensuring that users can make well-informed decisions without fear of hidden expenses. Our ultimate goal is to transform the murky waters of pricing into a clear and navigable stream, offering a more predictable and satisfying experience for users.

In summary, Autowheelrent is poised to revolutionize the urban mobility experience for you, a busy urban dweller. It addresses the persistent challenges in existing vehicle rental services, offering solutions to high costs, limited availability, complicated booking procedures, and unreliable vehicle quality. We have identified four interconnected problems and proposed innovative solutions to reshape the landscape of urban transportation. These solutions aim to simplify the rental process, promote economic sustainability, offer seamless navigation, and provide transparent pricing, ultimately transforming the way urban residents interact with their transportation needs.

2. Goals, Requirements, and Analysis

a. Business Goals

In order to establish a clear connection between business goals and sub-goals, they can be effectively represented in a hierarchical diagram as follows:



- I. Primary Business Goal: Launch Autowheelrent as a dependable and user-friendly web application for vehicle rentals.
- II. Sub-Goals:
 - Establish an extensive and diverse fleet of vehicles.
 - Develop an intuitive and user-friendly interface.
 - Ensure a seamless booking and payment process.
 - Implement a robust user rating and review system.
 - Ensure data security and privacy for both customers and vehicle owners.
 - Achieve profitability and sustainability within the first two years.

- Expand the service to multiple cities/regions.

b. Enumerated Functional Requirements

Functional requirements, derived from the customer's narrative, are as follows:

1. User Registration:

Allow users to create accounts with their personal information.

Enable users to verify their email addresses.

Offer the option for users to sign up via social media.

2. Vehicle Listings:

Allow vehicle owners to list their vehicles, including details such as make, model, year, and rental price.

Provide users with the ability to search and filter vehicle listings by various criteria.

3. Booking and Reservations:

Allow users to reserve a vehicle for a specific time period.

The system should send notifications and confirmations for bookings.

4. Payment Processing:

Enable users to make secure payments for their reservations.

Support multiple payment methods (credit card, PayPal, etc.).

5. User Reviews and Ratings:

Allow users to leave reviews and ratings for their rental experiences.

Enable vehicle owners to respond to reviews.

6. User Support:

Provide a support system (e.g., chat or email) for users to resolve issues or get assistance.

7. User Dashboard:

Provide users with personalized dashboards to manage their profiles, reservations, and payment history.

c. Enumerated Nonfunctional Requirements (FURPS+)

Continuing from the functional requirements, the nonfunctional requirements are as follows:

1. Performance:

Ensure the system is responsive and efficient in handling concurrent users.

Keep page load times to a minimum.

2. Usability:

Design an intuitive and easily navigable user interface.

Meet accessibility standards to cater to all users.

3. Reliability:

Ensure the system is available 24/7 with minimal downtime.

Implement data backups and recovery mechanisms.

4. Privacy and Security:

Securely store and transmit user data, including personal and payment information.

Implement data protection measures in compliance with applicable laws (e.g., GDPR).

5. Scalability:

Ensure the system is scalable to accommodate growth in the number of users and vehicle listings.

6. Legal and Compliance:

Ensure compliance with local and international regulations related to vehicle rentals and online transactions.

d. User Interface Requirements

For user interface requirements, list and prioritize them, and if possible, include graphics for illustration:

1. Homepage Design: Create an attractive and informative homepage displaying vehicle listings and essential features.

2. Intuitive Navigation: Design an easy-to-navigate menu and layout with clear calls to action.
3. Vehicle Listing Page: Display vehicle details, high-quality images, and owner information.
4. Booking Process: Design a seamless booking process with a step-by-step guide.
5. User Dashboard: Create a user-friendly dashboard for users to manage their profile, reservations, and reviews.
6. Responsive Design: Ensure the website is responsive and accessible on various devices, including mobile and tablets.
7. Search and Filter: Implement a user-friendly search and filter system for easy vehicle discovery.
8. Payment Interface: Design a secure and user-friendly payment interface.
9. Review and Rating System: Create an intuitive system for users to leave reviews and ratings.