

Auto Taxi Management System

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Abstract:

The Auto Taxi Management System is an online program created to manage reservations, drivers, and passengers effectively in order to optimize the performance of taxi services. This project, which was created with PHP and MySQL, attempts to improve the rider and driver experience by offering a smooth interface for scheduling and managing rides. The system's primary functions include ride tracking, real-time fare calculation, user registration and login, and a driver management module that enables administrators to efficiently monitor and distribute trips. Because of the system's adaptable design, users may book a cab anytime, anywhere, and it is available on a variety of devices. This project integrates safety elements like ride history and emergency contact choices in addition to addressing common issues that traditional taxi services encounter, like inefficient dispatch and opaque operations. The Auto Taxi Management System seeks to raise the bar for taxi services by utilizing cutting-edge online technologies, which will enhance customer happiness and service delivery.

Introduction:

The last few years have seen a dramatic change in the transportation sector, mostly due to the development of new technologies and the growing need for quick and economical travel options. With ride-hailing services now available as alternatives to traditional taxi services, the way people commute has changed. There is an increasing demand for an effective taxi management system due to the growth of urban populations. The Auto Taxi Management System is a web-based program created with MySQL and PHP to solve the operational issues that taxi services encounter. This system provides an all-inclusive framework for handling the complexities of driver assignments, taxi bookings, and customer relations. The project is to improve the efficiency and transparency of taxi operations by utilizing contemporary online technologies, which will facilitate drivers' ride management and consumers' access to services.

Requirements Gathering and Analysis:

Methodology:

To guarantee a thorough and effective approach to system design, development, and implementation, the Auto Taxi Management System is developed using a systematic methodology. The steps that comprise the technique used for this project are as follows:

Gathering and Analyzing needs:

Gathering and analyzing needs from stakeholders, such as drivers, passengers, and taxi operators, is the first phase. This entails figuring out the necessary functions, like ride booking, fare calculation, user registration, and real-time tracking. To ascertain user requirements and expectations, surveys, interviews, and evaluations of the current system are carried out.

System Design:

A thorough system design is produced based on the requirements that have been acquired. Both high-level architecture and intricate component designs are included in this. The database administration, backend logic, and user interface are the three modules that make up the system. To ensure a user-friendly experience, wireframes and flowcharts are designed to depict system processes and user interactions.

Choosing Technology:

MySQL is used for database management and PHP is used for server-side scripting in the project's construction. Front-end development makes use of HTML, CSS, and JavaScript to provide an interactive and responsive user interface. To speed up development, extra libraries and frameworks are included, like jQuery for more functionality and Bootstrap for design.

Development:

The phase of development employs an iterative methodology that facilitates gradual advancement and ongoing input. Based on user input and test results, each module is created, tested, and improved.

Testing:

To make sure the system satisfies quality requirements and performs as intended, extensive testing is carried out. A variety of testing techniques are used, such as system testing for overall functioning, integration testing for module interactions, and unit testing for specific component functionality. Stakeholders participate in user acceptance testing (UAT), which verifies the system's compliance with the requirements.

Deployment:

The system is put into use on a web server when testing and improvement are completed successfully. Performance optimization, guaranteeing database connectivity, and server environment configuration are all included in this. In order to facilitate a seamless transfer from the old system, user training sessions are held to familiarize drivers and customers with the new system.

Maintenance and Support:

After deployment, the system moves into a maintenance phase, during which time it receives continuous support to deal with any problems that may come up. Based on user input and changing needs, regular updates are planned to add new features and advancements. Monitoring tools are implemented to track system performance and user interactions.

Module:

User Management:

Module Registration and Login: Enables users to create accounts, log in, and take control of their personal information (drivers and customers).Profile management allows users to check ride histories, adjust payment methods, and update personal data.

Booking Module:

Arrangement Customers can book rides using ModuleRide Booking by selecting ride kinds, specifying pickup and drop-off locations, and confirming their reservations.

Charge Estimation:

Provides users with transparency by estimating a charge based on time and distance.

Booking History:

For the purpose of keeping records, users can view previous reservations and receipts.

Driver Management:

Module Driver Registration:

Enables drivers to register their vehicles and provide the necessary paperwork

Verification of Driver Profiles:

The administrator checks and validates driver profiles to make sure they adhere to safety and legal requirements.

Driver Dashboard:

Gives drivers access to performance analytics, an earnings summary, and ride requests.

Module for Administration and Management:

Dashboard:

An extensive dashboard that allows managers to keep an eye on user activity, ride statistics, and system performance.

User and Driver Management:

Gives administrators the ability to oversee driver applications, maintain user accounts, and make necessary updates to profiles. Admin has the ability to establish and alter fare structures, which include surge pricing and reductions.

Ride Management Module:

Real-time Ride Tracking:

Enables drivers and passengers to use GPS to monitor the status of rides.

Ride Assignment:

Based on availability and location, this system automatically distributes rides to drivers in the vicinity.

Cancellation and comments:

Following a ride, users have the option to cancel and provide drivers comments or ratings.

Payment Module:

Payment Integration:

Accepts cash, digital wallets, credit/debit cards, and other payment methods.Transaction

History:

Riders are able to examine their past payments and transaction receipts.

EXSISTING SYSTEM:

The existing taxi management systems typically rely on manual processes or outdated software that lacks real-time capabilities. These systems often involve phone calls or in-person bookings, leading to inefficiencies, longer wait times, and miscommunication between drivers and passengers. Additionally, many existing systems do not provide real-time tracking, making it difficult for users to know their taxi's location or estimated arrival time. Payment methods are often limited to cash transactions, which can be inconvenient and less secure. Furthermore, there is often minimal data analytics available, limiting the ability to assess performance metrics or user preferences. Overall, these shortcomings hinder the overall user experience and operational efficiency, highlighting the need for a more automated and integrated solution like the proposed Automated Taxi Management System.

PROPOSED SYSTEM:

The proposed Automated Taxi Management System (ATMS) is designed to revolutionize the way taxi services operate by integrating advanced technology with user-centric features. Developed using PHP, the system aims to provide a seamless experience for both drivers and passengers through functionalities such as user registration, intuitive booking interfaces, real-time GPS tracking, and secure payment processing. By employing a three-tier architecture that separates the presentation, logic, and database layers, the system ensures robust performance and scalability. Key components include a user-friendly interface for easy navigation, automated fare calculation based on distance, and live tracking through the integration of Google Maps API, enhancing transparency and reliability. The payment system leverages secure APIs to facilitate safe transactions, adhering to industry standards for security. The project follows an agile methodology, allowing for continuous feedback and iterative improvements, ensuring the final product meets the ultimate needs of users. Rigorous testing phases, including unit, integration, and user acceptance testing, confirm the system's reliability and efficiency. Ultimately, the ATMS not only streamlines taxi operations but also enhances customer satisfaction by providing a modern, efficient, and secure platform for urban transportation.

ER DIAGRAM



Figure 2 ER Diagram of Taxi Booking System

Conclusion:

The Auto Taxi Management System (ATMS) represents a significant advancement in the way taxi services operate, integrating modern technology to enhance efficiency and user experience. By providing robust features such as real-time tracking, seamless booking processes, and secure payment options, ATMS addresses the needs of both passengers and drivers effectively.

The implementation of this system leads to improved service quality, increased customer satisfaction, and greater operational efficiency. With data-driven insights, taxi services can make informed decisions that foster growth and adaptability in a competitive market. Additionally, the scalability of ATMS allows for future enhancements, ensuring it remains relevant and effective as the industry evolves.

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