**Preface**

* A Car Rental Management System allow customer to book car online. Nowadays car is need of person in their day-to-day life style
* Reason behind we take this topic because there are many cars such as classic cars, muscle cars, sports car, etc. Which is not affordable by a person whose salary is less but they want to drive these cars.
* Many websites provide cars with very high cost but our aim is to provide cars at low cost so anyone can afford it who like these cars.
* The system is designed to benefit both rental companies and their customers:
* For companies, it enhances operational efficiency, improves fleet utilization, and reduces costs.
* For customers, it ensures a seamless experience by allowing them to browse, book, and manage rentals easily.
* This project integrates modern technology to provide a cohesive, user-friendly platform for managing all aspects of car rental services.
* The documentation serves as a guide for developers, stakeholders, and users to understand the system’s features, architecture, and development process.
* Making this project was a little bit fun. During this project many errors occurs and it help us to increase in our knowledge about the project as well as language which we use to build this project.

**Acknowledgment**

* We would like to express our gratitude to our college **Shree Adarsh BCA College** for providing the platform and support to successfully complete our project, "**Car-Rental-Management -System.**
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**Vatukiya Bhupat**

**Bavaliya Rahul**

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**Chepter 1(Introduction)**

**1.1 Background**

**1.2 Objectives**

**1.3 Purpose**

**1.4 Scope**

**1.5 Applicability**

**Introduction**

* The Car Rental Management System is a software solution designed to simplify and automate the operations of car rental services.
* It serves as a platform for rental companies to manage their fleets, bookings, customer data, and financial transactions efficiently.
* The system aims to replace manual processes with digital tools, ensuring accuracy, speed, and convenience in managing rental operations.
* The system covers various functionalities including vehicle management, customer management, booking management, payment processing, and reporting.
* This introduction provides an overview of the system's purpose, scope, and significance in transforming the car rental industry.

**1.1 Background**

* **Front-End Technology :**

|  |  |
| --- | --- |
| **Technology Name** | **Description** |
| **HTML** | Markup language for structuring web content. |
| **CSS** | Styling language for designing web pages. |
| **JAVASCRIPT** | Adds interactivity to websites. |

* **Back-End Technology :**

|  |  |
| --- | --- |
| **Technology Name** | **Description** |
| **PHP** | PHP is a general-purpose scripting language. |
| **MY-SQL** | MY-SQL for handle the data in Database. |

* **Overview of technology used :**

**Car Rental Management**

Back-End Technology

Front-End Technology

Database Technology

* **Front-End Technology :**
* **HTML**
* The Hypertext Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser.
* HTML used to structure web content. It defines elements like headings, paragraphs, images, and links, enabling the creation of well-organized web pages.
* **CSS**
* CSS (Cascading Style Sheets) is a styling language used to enhance the visual presentation of web pages. It controls layouts, colors, fonts, and responsive designs, making websites aesthetically pleasing and user-friendly.
* **JAVASCRIPT**
* JavaScript is a versatile programming language that powers the interactivity of web pages. It enables features like form validation, dynamic content updates, animations, and seamless user interactions.
* **BACK-END TECHNOLOGY**
* **PHP**



* PHP is a general-purpose scripting language geared towards web development.
* It was originally created by Danish-Canadian programmer Rasmus Lerdorf in 1993 and released in 1995
* The PHP reference implementation is now produced by the PHP Group.
* PHP was originally an abbreviation of Personal Home Page, but it now stands for: Hypertext Preprocessor.
* **HISTORY OF PHP**
* PHP development began in 1993 when Rasmus Lerdorf wrote several Common Gateway Interface (CGI) programs in C, which he used to maintain his personal homepage.

|  |  |
| --- | --- |
| **Designed by** | Rasmus Lerdorf |
| **Developer** | The PHP Development  Team, [Zend Technologies,](https://en.wikipedia.org/wiki/Zend_Technologies) PHP  Foundation |
| **First appeared** | 8 June 1995; 28 years ago |
| [**Stable release**](https://en.wikipedia.org/wiki/Software_release_life_cycle) | 8.3.2 / 18 January 2024; 5 days ago |
| [**Typing**](https://en.wikipedia.org/wiki/Type_system)  [**discipline**](https://en.wikipedia.org/wiki/Type_system) | [Dynamic,](https://en.wikipedia.org/wiki/Dynamic_typing) [weak,](https://en.wikipedia.org/wiki/Strong_and_weak_typing) gradual |
| **Implementation language** | [C](https://en.wikipedia.org/wiki/C_(programming_language)) (primarily; some components [C++)](https://en.wikipedia.org/wiki/C%2B%2B) |
| [**OS**](https://en.wikipedia.org/wiki/Operating_system) | [Unixlike,](https://en.wikipedia.org/wiki/Unix-like) [Windows,](https://en.wikipedia.org/wiki/Windows) [macOS,](https://en.wikipedia.org/wiki/MacOS) [IBM i,](https://en.wikipedia.org/wiki/IBM_i) [OpenVMS](https://en.wikipedia.org/wiki/OpenVMS) |

* **MY-SQL**
* MySQL is an open-source relational database management system (RDBMS). "SQL", the acronym for Structured Query Language.
* SQL is a language that programmers use to create, modify and extract data from the relational database, as well as control user access to the database.
* MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses
* MySQL is a component of the LAMP web application software stack (and others), which is an acronym for Linux, Apache, MySQL, Perl/PHP/Python.
* **HISTORY OF MY-SQL**
* MySQL was created by a Swedish company, MySQL AB, founded by Swedes David Axmark, Allan Larsson and Finnish Michael "Monty" Widenius.
* Original development of MySQL by Widenius and Axmark began in 1994. The first version of MySQL appeared on 23 May 1995.

**1.2 OBJECTIVE**

* **OBJECTIVE**

1. **Efficient Fleet Management**:

* Enable seamless management of vehicle inventory, including adding, updating, and tracking the availability of vehicles.

1. **Automated Booking Process**:

* Provide a user-friendly interface to allow customers to browse, book, and manage rentals online.

1. **Real-time Vehicle Tracking**:

* Incorporate GPS technology to monitor vehicle locations and ensure timely deliveries and returns.

1. **Customer Management**:

* Maintain a comprehensive customer database for efficient tracking of customer history, preferences, and feedback.

1. **Payment Integration**:

* Facilitate secure and multiple payment options, including credit cards, digital wallets, and cash transactions.

1. **Maintenance Scheduling**:

* Keep track of vehicle maintenance schedules to ensure the fleet is in optimal condition

1. **Dynamic Pricing Management**:

* Allow dynamic pricing adjustments based on demand, location, and availability.

1. **User Notifications and Alerts**:

* Notify customers about booking confirmations, payment reminders, vehicle due dates, and promotions.

1. **Enhanced Security and Verification**:

* Implement identity verification and fraud detection mechanisms to ensure secure transactions and vehicle safety.

**1.3 PURPOSE**

* **PURPOSE**

1. **Streamline Operations**:

* To automate and simplify the process of managing vehicle rentals, bookings, and returns, reducing manual effort and errors.

1. **Enhance Customer Experience**:

* To provide customers with a seamless and convenient platform to book vehicles, access information, and complete transactions.

1. **Enhance Efficiency**:

* To reduce operational delays by automating processes like billing, notifications, and maintenance tracking.

1. **Real-Time Availability:**

* **To Ensure that customers have access to real-time information about vehical availability,allowing for immediate booking and reducing the chances of overbooking.**

1. **Cost-Effectiveness:**

* To help rental companies reduce operational costs through automation, better resource management, and improved fleet utilization.

1. **Scalability**:

* To provide a flexible system that can grow with the business, accommodating an increasing number of vehicles, customers, and locations.

1. **Admin Control Panel for management:**

* An admin management the entire system, including adding new cars, managing user accounts, and other things.

**1.4 SCOPE**

* **SCOPE**

1. **Car Inventory Management**:

* Maintain a detailed database of all vehicles, including their availability, condition, and specifications.

1. **User Management**:

* Customers can register, log in, and view their rental history.

1. **Feedback and Review system:**

* Implement a mechanism for customers to provide feedback and reviews on their rental experience, aiding in service improvement.

1. **Payment Integration**:

* Support multiple payment options such as credit/debit cards, digital wallets, and cash-on-delivery for a seamless checkout process.

1. **Admin Dashboard** :

* Provide administrators with a centralized dashboard to monitor, manage, and control all aspects of the business.

1. **Dynamic Pricing Management**:

* Incorporate pricing adjustments based on factors like demand, vehicle type, location, and rental duration.

1. **Payment Integration**:

* Support multiple payment options such as credit/debit cards, digital wallets, and cash-on-delivery for a seamless checkout process.

1. **Online Booking System**:

* Allow customers to browse, select, and book vehicles through an intuitive web or mobile application.

1. **Search and Filter:**

* Customers car search for available cars based on parameters like car ,availability dates ,and price.

**1.5 APPLICABILITY**

* **APPLICABILITY**

1. **Car Rental Companies**:

* Designed for businesses offering vehicle rentals to streamline operations, manage fleets, and improve customer service.

1. **Travel Agencies**:

* Used by travel agencies to include car rental services as part of their travel packages and itineraries.

1. **Corporate Use**:

* Suitable for organizations managing employee transportation needs, such as short-term or long-term vehicle rentals for business trips.

1. **Tourist Destinations**:

* Applicable in tourist-heavy areas to cater to visitors looking for self-driven or chauffeur-driven vehicles.

1. **Educational Institutions**:

* Applicable for universities and colleges managing transportation for students or staff through rental services.

1. **Event Management Companies:**

* Beneficial for organizing transportation for events, ensuring timely vehicle availability for guests and participants.

1. **Self-Drive Car Rental Services:**

* Applicable for companies focusing on self-drive rentals, allowing customers to book and manage their rentals independently.

**Chepter 2(Requirement Analysis)**

2.1 Problem Definition

2.2 Requirement Specification

2.3 Hardware Software Requirement

2.4 Planning & Scheduling

**2.1 PROBLEM DEFINITION**

* **PROBLEM DEFINITION**

1. **Manual Operations**:

* Existing car rental processes often rely on manual record-keeping, leading to inefficiencies, errors, and delays in booking and fleet management.

1. **Lack of Online Accessibility**:

* Many traditional systems do not offer online booking options, limiting customer convenience and accessibility.

1. **Difficulty in Fleet Tracking**:

* Inadequate tools for real-time vehicle tracking can result in challenges in locating vehicles or ensuring their timely return.

1. **Inefficient Customer Management**:

* Manual handling of customer information makes it difficult to track preferences, booking history, and feedback effectively.

1. **Overbooking and Underutilization**:

* Poor inventory management can lead to overbooking, customer dissatisfaction, or underutilization of available vehicles.

1. **Delayed Maintenance Tracking**:

* Without a proper system, scheduling and tracking vehicle maintenance becomes challenging, potentially compromising safety.

1. **Limited Communication and Notifications**:

* Lack of automated notifications can lead to missed bookings, late returns, or poor customer engagement.

**2.2 REQUIREMENT SPECIFICATION DEFINITION**

The requirements for the car rental system can be categorized into functional and non-functional requirements.

**1.Functional Requirements**

**2.Non- Functional Requirements**

There are following functional and non-functional ewquirements.

**1.Funcational Requirements**

* **User Authentication and Management**:
* Allow users to register, log in, and manage their profiles securely.
* Provide role-based access for customers, administrators, and employees.
* **Vehicle Inventory Management**:
* Maintain a database of all vehicles with details such as make, model, condition, availability, and pricing.
* Update vehicle status (e.g., available, rented, under maintenance)
* Online **Booking and Reservations**:
* Enable customers to search for vehicles based on location, date, time, and vehicle type.
* Allow users to book vehicles online with real-time availability updates.
* **Dynamic Pricing**:
* Implement dynamic pricing based on factors like demand, season, vehicle type, and rental duration.
* **Payment Processing**:
* Integrate multiple payment gateways to support credit/debit cards, digital wallets, and cash transactions.
* Generate invoices and provide payment receipts.
* **Customer Management**:
* Store customer details, booking history, and preferences for personalized services.
* Enable loyalty programs or discounts for repeat customers.
* **Admin Dashboard**:
* Provide administrators with a centralized dashboard to manage bookings, monitor vehicles, and oversee system activities.
* **Search and Filter Options**:
* Enable users to filter vehicles by type, price, availability, and features.

**2.Non-Functional Requirements**

* Performance:
* The system should handle at least 500 concurrent users without performance degradation.
* Ensure that all operations (e.g., booking, payment processing) are completed within 2-3 seconds.
* **Scalability**:
* The system should be able to scale to support additional users, vehicles, and locations as the business grows.
* Availability:
* Ensure 99.9% uptime to guarantee continuous availability of the system for users.
* **Usability**:
* Provide a user-friendly and intuitive interface for both customers and administrators.
* Ensure mobile responsiveness for seamless access on smartphones and tablets.
* **Reliability**:
* Ensure the system operates consistently without crashes or failures during high-demand periods.
* Implement automated backups to recover data in case of failures.