Car Rental System Project

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Car Rental System Project Report

Abstract

This project, **Car Rental System**, is a web-based application designed to simplify the process of renting vehicles. It allows users to register, book vehicles, view booking history, manage their profiles, and submit inquiries. Administrators can manage vehicles, users, bookings, brands, and user inquiries efficiently. The system implements secure authentication, authorization, session management, and a master layout for consistency. It also supports CRUD operations for all major entities, ensuring easy data management. This project demonstrates a practical approach to web development, database management, and user access control.

Objectives

The primary objectives of this project are:

1. **User Management:** Allow users to register, login, update profiles, and manage bookings.
2. **Admin Control:** Enable administrators to manage vehicles, brands, bookings, inquiries, and subscribers.
3. **Secure Access:** Implement authentication and authorization to prevent unauthorized access.
4. **Session Management:** Keep users logged in securely across pages and support proper logout functionality.
5. **CRUD Operations:** Provide full Create, Read, Update, Delete functionality for vehicles, brands, inquiries, and bookings.
6. **Master Layout Implementation:** Ensure consistent UI across all pages with header, footer, and navigation bar.
7. **User-Friendly Interface:** Build an intuitive interface using Bootstrap for responsive design.

Introduction

The Car Rental System is developed to automate vehicle rental processes and reduce manual work. Traditionally, car rental businesses rely on physical records, which can lead to errors, slow processing, and poor management. This system provides a **digital solution** where both customers and administrators can interact efficiently.

Users can register, browse vehicles, make bookings, and track their reservations. Administrators have complete control over the system and can manage all aspects, including vehicle details, user information, booking status, and inquiries. The project emphasizes **security, usability, and functionality**, ensuring a smooth experience for all users.

Methodology

1. **Technology Stack**
    - **Frontend:** HTML, CSS, Bootstrap, JavaScript
    - **Backend:** PHP
    - **Database:** MySQL
2. **System Design**
    - **Master Layout:** Created using `header.php` and `footer.php` for consistent navigation and page layout.
    - **Database Design:** Tables created for `users`, `vehicles`, `brands`, `bookings`, `inquiries`, and `subscribers`.
    - **Session Management:** Implemented using `$_SESSION` in PHP to track logged-in users.
    - **Authentication & Authorization:**
        - Users login through `login.php`.
        - Admins login through `admin_login.php`.
        - Access control implemented to restrict pages based on roles.
    - **CRUD Operations:** Implemented on all entities:
        - Users can update profile.
        - Admins can add/edit/delete vehicles, brands, and manage bookings and inquiries.
3. **Workflow**
    - **User Registration/Login:** Secure registration with password hashing.
    - **Booking System:** Users select vehicles, choose dates, and book cars.
    - **Admin Dashboard:** Admin can manage all data efficiently with modals for editing and buttons for deleting.
    - **Inquiry Management:** Users submit inquiries; admin replies and updates statuses.

Results

The Car Rental System has been successfully implemented with the following results:

- Users can **register, login, update profiles, and book vehicles**.
- Admins can **manage vehicles, brands, bookings, inquiries, and subscribers** efficiently.
- **Session management** ensures secure login and logout.

- **Authentication and authorization** prevent unauthorized access to admin or user pages.
- **CRUD operations** are fully functional for all entities.
- **Responsive UI** using Bootstrap ensures the system works on different devices.
- **Error handling and alerts** guide users during invalid operations (like duplicate emails during registration).

Screenshots (if required) can include:

- Admin Dashboard
- User Dashboard
- Booking Table
- Vehicle Management Page
- Inquiry Management Page

Future Work

Possible improvements for future versions of the project:

1. **Online Payment Integration:** Allow users to pay online when booking vehicles.
2. **Advanced Search & Filtering:** Enable filtering vehicles by price, brand, and availability.
3. **Notifications System:** Email or SMS notifications for booking confirmation, cancellation, or admin replies.
4. **Reporting & Analytics:** Generate reports for admins on bookings, revenue, and popular vehicles.
5. **Mobile Application:** Develop a mobile app version for better accessibility.
6. **Enhanced Security:** Implement two-factor authentication and input validation for stronger security.

Conclusion

The Car Rental System project successfully demonstrates the development of a **secure, functional, and user-friendly web application**. It effectively automates the car rental process, allowing users to book vehicles and administrators to manage operations efficiently. The system incorporates essential web development concepts such as **master layout, session management, authentication, authorization, and CRUD operations**. With future enhancements like online payments and notifications, this system can become a fully-featured, modern car rental platform.
