

Design and Implementation of Vehicle Rental Information Management System

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Abstract

With the development of society, there are more and more people renting cars, and the management tasks of car rental business are getting bigger and bigger, so the car rental information management system came into being. The system uses ThinkPHP5 framework, uses PHP language and MySQL database for design and development. The system page is simple, easy to operate, and has functional modules such as user login and registration, view cars and place orders, as well as modify orders and personal information. This system enables users to quickly find the car they want, and the company's management of the car is also more convenient, which improves the efficiency of car rental.

Keywords

Car Rental Information Management; PHP Technology; MySQL Database; B/S Structure; VS Code.

1. Introduction

With the development of society, people's lives are more and more diverse, and more and more people rent cars. At the same time, various companies will rent all kinds of cars when holding activities or receiving guests, which requires leasing cars from leasing companies. Nowadays, with the rapid development of science and technology, people prefer to work online, so the car rental system came into being. It is more convenient and faster than offline car rental. At the same time, customers can always know the real-time information of car rental, and can more intuitively understand the information of various models. While saving time, they can also rent their most satisfactory models and enjoy a safe and comfortable trip.

2. Summary

2.1. Research Background and Significance

With the rapid development of science and technology, cars are no longer just luxury goods. The continuous improvement of technology makes the price more people-friendly, and more and more people can afford cars. However, many people do not have a great demand for cars because of their work, living environment and business needs. They prefer to rent cars, which is not only convenient to use, but also do not need to maintain cars. At the same time, they can rent different vehicles according to their own needs. The traditional car rental requires me to go to the venue to see the car in person, and I may not be able to quickly find the car I want, thus wasting my time. In the fast-paced era of the 21st century, this way of car rental is obviously not suitable for modern young people, so we use this graduation project to develop an online car rental system. The system enables users to more intuitively understand the vehicle information and real-time news of car rental, and can place an order for vehicle rental online without worrying that the desired vehicle will be rented by others. The seller can also prepare the vehicle in advance according to the customer's needs, which can be faster when the

user picks up the vehicle. At the same time, it can display the vehicle information in data, which can count the remaining vehicles in time, reduce the time wasted in inspection and improve efficiency.

Under the leadership of the party, people's lives are becoming richer and richer, and those who have conditions have bought cars, but this has also caused road congestion and environmental pollution. Car rental can not only provide convenience for people in urgent need of cars, but also reduce the pressure of transportation and damage to the environment.

2.2. Introduction to Relevant Technologies

2.2.1. Thinkphp5 Framework

Thinkphp5 is an object-oriented lightweight development framework. More new PHP features have been introduced to optimize its core, reduce dependency, and realize real lazy loading. It is the best choice for developing web and API.

2.2.2. B/S Mode

Mobile phone browser / computer server. Browser includes browser and computer web page, and embedded software in APP and WeChat official account.

3. System Analysis and Design

3.1. Demand Analysis

According to the investigation and analysis of traditional car rental companies, offline car rental now has great defects. For example, I don't know whether there is a model I need, no other renters can discuss, and car rental is time-consuming and has no goals to refer to. It often takes a long time, but you don't rent the car you want, and finally you rush it. The online car rental system can improve this situation. Users can search the model they want on the website, or search the previous user's evaluation after leasing to judge whether they want to rent the vehicle. At the same time, users can also learn the latest car rental information and preferential activities on the website, and place orders and book the vehicles they want online without wasting time to check on site. The administrator can edit and upload their own vehicles, release the latest preferential activities and vehicle updates, and manage users and orders.

3.2. Feasibility Analysis

3.2.1. Technical Feasibility

The system uses php and vs Code as the development platform, and the database uses MySQL and web server Apache with greater compatibility to build the required development environment. The background uses thinkphp5 framework for secondary development, which shortens the development time and looks more concise. The foreground uses HTML for compilation and uses php compilation interface to link with the background. Because the website is a small website, PHP compilation is easier for later operation and maintenance, so it is technically feasible.

3.2.2. Economic Feasibility

In today's e-commerce, young people prefer to order and view strategies online. The online car rental integrates the car information for people to view, and the comments and the latest car rental news after others rent a car provide people with a certain reference value, save people's purchase time, and rent a car more in line with their own. For car rental companies, they can save a lot of manpower and be more standardized. Provide vehicles more quickly, so as to increase sales and reduce costs.

3.2.3. Operational Feasibility

In order to facilitate the use of customers and administrators, the system adopts menu type, the system page is simple, users only need to be familiar with the business process, and the background data is a visual view, which can intuitively understand the user's information without mastering the relevant knowledge of the database. The system is simple and easy to operate, so it is feasible to operate.

3.3. Function Module Design

The operation objects of the system are users and administrators respectively. Users only need to register once to complete the shopping payment operation, and click return when returning the car. The administrator can manage the main functions such as vehicle information, user information management and customer order processing, as well as some secondary functions such as comment management.

The user registration login function allows the user to browse the website without logging in, but the member must log in before placing an order. If the user does not register, he can register first and then log in to pay for the order.

With the function of vehicle browsing and query, users can find the vehicle they want according to the general classification, or search the name of the vehicle they want.

Purchase vehicle function. You can purchase a vehicle in login status. If you are not logged in, you will be reminded not to log in and jump to the login interface. The purchased vehicles will be added to the shopping cart, and finally the payment and settlement will be carried out in the shopping cart interface.

Personal center and order function. After logging in, users can modify other information except their name in their personal information, and can also view their own orders and shopping carts.

Administrator function, manage cars, articles and user information, view user orders and confirm delivery, and delete malicious and vulgar comments.

4. Database Design

4.1. System Conceptual Structure Design

Through demand analysis, we can fully understand the needs of users, and to connect these needs, we need to draw entity connection diagram, that is, E-R diagram (structural conceptual design). Conceptual structure design uses the form of graphic transformation to change the relationship between various entities in the database, and transforms the real objects and objects from a simple and abstract to a mathematical model, which is convenient for us to understand and master the various relationships between objects and other entities in the database.

4.2. Database Table Design

The online car rental system uses Navicat premium as the database management tool to meet the requirements of data storage, minimize the redundancy in the data table, and add keywords to maintain the integrity and consistency of the data. In order to better manage information, we should not only consider the integrity of information storage, but also consider the relationship between various tables when creating tables, so that we can find information accurately and speed up the search in the future.

5. Design and Implementation of Main Functional Modules of the System

The online car rental system uses front-end and back-end interaction to update the data in time. The front desk uses HTML to compile and realize the functions of login, registration, order settlement, etc. the background uses thinkphp5 framework to realize the management of users, car information, news, comments, etc.

5.1. Front Desk Function

5.1.1. Login and Registration

In order to facilitate users to browse the web, there is no need to log in without renting a vehicle. Users can rent after logging in. When logging in, verify the user name and password, and those who are not registered will be reminded to register. After registering, the user will jump to the login interface for login. Introduction to this function page: in login registration, you need to obtain the member name and password, submit the forms member / login and member / register, call the function to compare and store the data in the database, in the member / login function, if the verification is successful, the login is successful, and jump to the main interface. If the login fails, you will remind the reason and refresh the login interface. In the member / register function, if there is no such user in the database, the registration is successful. If there is the same user name, jump to the main interface for re registration. In order to make the user and administrator have the same user name and password, which leads to abnormal login, I write the user login interface and administrator login separately. Although it increases the storage of data, it makes the system more standardized and safe.

5.1.2. Personal Center

After logging in, users can enter the personal center to view their orders and shopping carts, or modify their personal information. The information of the order and shopping cart is obtained through the member / ordersubmit function, and the delivery status is determined through the ORDERLIST function. After renting the car, the user can return the car by clicking return. After clicking return, the information is transmitted to the background through jQuery, and the returned car will be displayed in the background and foreground.

5.1.3. User Interface Introduction

The user interface mainly allows users to view the detailed information of search cars to find their own cars. At the same time, they can also view news and other users' comments to provide some help for finding cars. You can also search for specific articles, check them quickly and have more time left, or call the hotline to ask the staff to quickly find their favorite vehicle. The main interface is divided into two modules: header and index. In the display of vehicle information and news pages, the database information is obtained through the index / index function in common. In the header, use if to judge whether a user logs in. If so, the personal center and exit will be displayed; otherwise, the login and registration will be displayed. In the website announcement, the first few Automobile News and announcements in the database are sorted and displayed according to the storage time through the find() function. When the user views the car details, the popular car on the right also uses the find() function to extract and display the data.

5.2. Background Functions

5.2.1. Vehicle Classification

There are many kinds of cars. In order to facilitate the management of car information, the types of cars are classified.

When creating a vehicle classification, click OK to call the category / set () function to create new data in the TP category table of the database. After successful creation, return to the vehicle classification interface, obtain the data in the TP category table through the function category /

index (), create the array variables \$list and \$condition, and use the foreach function loop in the vehicle classification interface to display all vehicle classifications and creation time.

5.2.2. Vehicle Information Management

So that customers can more intuitively understand the situation of the car. It is necessary to display the name, classification, number of seats, pictures, transmission, etc. At the same time, the administrator can also modify the car information and add new car information to update his company's vehicles in real time, so that customers can know the latest car details.

When adding car information, you should first jump to the information addition page, fill in the car information, click OK, use the post method to obtain the form, store the filled data in the array variable \$row, and call the goods / set() function to store the data of variable \$row in the database TP goods table. After adding the car information, judge through the if statement, and then redirect (index) jumps to the car information management interface. Get the information in the form through the function goods / index () and store it in the array variables \$list and \$condition. Use the foreach function loop on the car information management page to display the details of all cars. After a user purchases a vehicle, the number of leases per vehicle will be counted into the database TP_ In the goods table, but it will not be displayed in the administrator interface and customer interface. You can call the data from the database during annual statistics to provide data for the annual report.

5.2.3. User Information Management

Users may forget their user account and password. They can clearly see the user's account, password and other basic information in the user information classification. Users can provide some keywords to the administrator for retrieval, quickly find their own account, or ask the administrator to help modify their basic information.

On the user information management page, the data in the database member table is retrieved through the function member / index (), and the data is transferred to the array variables of each information. The foreach function is used for cyclic display in the user information management interface. When searching for users according to keywords, use default to judge the variables passed in by the member / index() function. If there is any, it will be displayed, and if there is no, it will be blank. There is no need to rewrite a select function for search judgment, which can not only ensure the function, but also reduce the code redundancy.

5.2.4. Comment Information Management

In order to provide users with better reference standards, comments have been set up, but some people will always slander the company and make some malicious and vulgar comments. Administrators can view the users of these comments and comments and warn and delete them. The data display method is the same as the above functions. They all call functions to obtain information from the database and display it circularly. After clicking delete, the administrator will transfer the parameter ID and call the comment / del() function to delete. After the corresponding ID value in the TP comment table in the database is deleted, the administrator will judge if and jump to the comment information management page after the deletion is successful.

6. System Test

Before the program is released, a series of tests need to be carried out to see whether the program meets the needs of users and administrators, whether these functions can run normally, and their compatibility in various running environments. At the same time, it is also to find bugs in the program, repair and debug these bugs. It can give users and administrators a better experience after publishing.

The main method of this test is system function test. The purpose of the test is to ensure the system quality. Function test mainly includes login test and information management test. The login test is mainly to test whether the operation of the system is affected under the illegal account; The purpose of information management test is to test whether the illegal information system can be identified normally.

7. Summary

The project has been successfully developed. The system has basically completed the needs of users and administrators, rectified the redundant code, and the current program code is more standardized. Because of the tight time, the thinkphp5 framework is adopted, which can develop the required functions faster, and the program interface will be more beautiful without adding a large number of plug-ins. The system is mainly simple and convenient during development. Therefore, the easy-to-use system can be used by more people, and the administrator does not need to understand MySQL knowledge, but only needs to know the basic operation. During the test, all functions of the system can operate normally, and some error operations can also be prompted and reported. However, the system also has many shortcomings. Due to technical reasons, the function of returning the car is not very rigorous, so it can not be returned after identifying the location information. At the same time, there are redundant fields created in the database. This system is just the beginning. In the future, we will continue to improve it so that it can be used by more people.

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