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Development and Design of Tourist Attraction Ticketing Management System

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Abstract: This topic conducts a series of research focusing on the scenic spot management of tourism ticket sales. The backend is developed based on the SSM framework, the frontend adopts the Bootstrap framework, and MySQL database is used for data storage. In the development process, the theoretical methods of software engineering are applied to carry out system requirement analysis, outline design and detailed design. The development and coding specifications are strictly followed, with emphasis on the readability and maintainability of the code as well as the testability of the system.

Keywords: SSM Framework; mysql ; tourism ticketing ; scenic spot comments ; Bootstrap Framework

1. INTRODUCTION

According to the characteristics of scenic spot ticket sales management, tourists can purchase tickets through two ways: online booking and traditional offline ticketing when they plan to visit a scenic spot. The scenic spot ticket sales system facilitates users to inquire about ticket prices, tourist reviews and popularity, thereby assisting users in making ticket-purchasing decisions. Nowadays, with the advent of the information society, computer application systems have penetrated into all aspects of the tourism industry. Therefore, establishing a comprehensive and multi-level tourism information management system has become an important task for tourist attractions. Meanwhile, ticket access management as well as the review and evaluation function of the system are indispensable parts of information-based management.

2. SYSTEM ARCHITECTURE DESIGN

Based on the SSM framework, this system is developed and implemented using the SpringMVC architecture pattern, with its core design goal being simplicity and ease of use, as well as convenient operation. In the development of the View interface, mainstream front-end technologies are introduced to construct a visual graphical interface. The Echarts statistical chart tool provides rich and intuitive data visualization displays and supports dynamic real-time data updates, effectively enhancing the user interaction experience. This tourist attraction ticket purchase and review system is developed in the form of a Web page, without occupying user terminal storage space. Users can open the webpage through a browser in a networked state to complete ticket purchase, reviews, and other related operations; however, it has certain limitations, as users cannot access the system and use related functions in a network-free environment.The MVC architecture pattern boasts a clear system structure and low coupling advantages, with its three major modules—Model, View, and Controller—being independent and having distinct responsibilities. When any of these modules is modified or optimized, it does not directly affect the other two modules. This not only significantly enhances the system's scalability but also greatly improves its maintainability, facilitating subsequent system iteration and upgrades. As shown in Figure 1

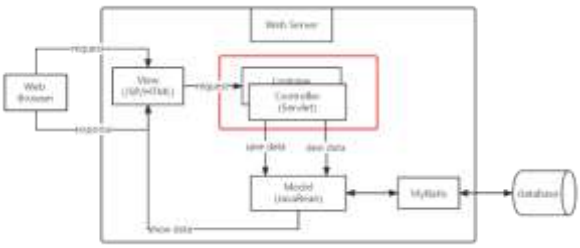

Figure 1. System architecture diagram

3. DATABASE DESIGN

3.1 Conceptual design

In the ticketing system of tourist attractions, there are four entities designed: user, attraction, comment, and order.User attributes: user ID, address, phone number, name, gender, age, password, permissions, email, ID number, including basic user informationScenic spot attributes: scenic spot number, scenic spot name, province where the scenic spot is located, city where the scenic spot is located, scenic spot picture, official earliest opening time, scenic spot description, opening hours, ticket price, scenic spot theme, total number of reviews, and number of tickets sold, including basic information of the scenic spot. Comment attributes: comment number, comment time, comment attraction number, comment user number, and comment content, including the basic information of a comment, which specific attraction is commented on by a specific userOrder attributes: order number, order time, transaction amount, order user ID, order attraction ID, order notes, order status, order start time, order end time. This includes basic information about an order, specifying which specific attraction was ordered by a specific user

3.2 Entity-relationship design

A user can write multiple reviews for a single attraction, but each review can only be written by one user. The relationship between users and reviews can be described as the relationship between the reviewer and the reviewed. This relationship can be merged with the n-terminal corresponding relationship schema. A user can have multiple orders, but an order can only be placed by one user. The relationship between users and

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orders can be described as buyer and seller, and this relationship can be combined with the n-terminal corresponding relationship model. A comment can have multiple images, but an image can only belong to one comment.

The relationship between comments and images can be described as inclusion and inclusion. This relationship can be merged with the n-terminal corresponding relationship model.

4. DETAILED DESIGN AND IMPLEMENTATION

The architecture pattern employed in the data processing segment is the proxy pattern, where MyBatis implements the SQL statements required by JDBC through a proxy. The definition of the proxy pattern is: for certain reasons, it is necessary to provide a proxy for an object to control access to it. In this case, when accessing the object is not suitable or direct reference to the target object is not possible, the proxy object serves as an intermediary between the accessing object and the target object. As shown in Figure 2

Figure 2 Proxy Pattern Diagram

4.1 User registration module

The user registration module is designed for users. Users enter their phone number, verify it by entering a text message verification code, then enter a password and confirm it. Clicking "Register" initiates the matching process between the front-end account password and the database data. By identifying the identity of different visitors, the page will redirect to the user navigation page. During the user registration process, the user login form is validated on the front-end script. If either the username or password field is left blank or filled incorrectly, the browser will prompt the user with relevant information, ensuring interactive friendliness

4.2 User ticket purchasing module

On the ticket purchase page, select the time, add order notes if desired, and click "Purchase". A success message will be displayed indicating the purchase has been completed. If the purchase fails, a corresponding message will also be displayed. On the order browsing interface, you can view the details of the order you just placed.

4.3 Refund application module

Users can apply for a refund in "My Orders" or delete this order. To apply for a refund, click on "Refund". Only orders in the "Pending Use" or "Rejected" status can be refunded. Otherwise, no refund can be issued. Click "Confirm" to modify the order status, and the order status will be updated.

4.4 Agree to refund module

After logging in to the account, the attraction staff can browse through the refund messages and view all refund messages related to the attraction. They can choose to approve or reject the order refund application. The attraction staff will be notified that the refund has been approved successfully, and the order status will be displayed as "approved" on the user interface.

4.5 Add attractions module

When visitors enter the homepage, they click on "apply for attraction", fill in the attraction information, upload pictures of the attraction, and click the "add" button. After the addition is completed, the administrator approves the addition of this attraction. After approval, the administrator can browse all the detailed information of the attractions in the system content and see the information of the attraction just added.

5. CONCLUSION

This paper utilizes the bootstrap front-end framework and many plugins of JavaScript and jQuery to enhance the interface, making it more visually appealing, convenient, and practical. For example, the jQuery dataTables plugin not only displays tables but also enables fuzzy search and pagination of data directly without having to make requests to the backend. Secondly, regarding information security assurance, I also utilized the SMS verification technology provided by SMS Treasure, where entering SMS verification to send a text message to the phone for password recovery. Additionally, I learned to utilize the API of Baidu Map, which, once mastered, can also enhance the page's visual appeal and functionality.

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