Development and Realization of Web - Based Tourism Service Platform

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Abstract. The rapid development of the Internet and other new technologies has obviously caused a fatal blow to the traditional tourism model, the original tourism model and service platform can no longer attract the attention of the customers without active transformation. On the other hand, new tourism service platforms such as Meituan, ctrip and tuniu, which mainly rely on new Internet technologies, are developing rapidly. Against this background, more and more Internet technologies favor APP development software focusing on individual consumers, while web-based travel service platforms are increasingly weak. The main purpose of this paper is to develop a web-based tourism service platform to meet the consumption and interaction needs of a larger consumer group. In terms of methods, this article selects the Mysql as the database storage platform, graphical interface with Myeclipse as development tools, the construction of the site focus on combining Hibernate + Spring + Struts assembly technology, in terms of the choice of architectural patterns, in this paper, using the MVC pattern is more convenience, Tomcat6.0 version, server mode is used in order to ease the pressure on the server. The experimental results show that the tourism service platform designed in this paper has strong operability and convenience, which greatly improves the efficiency of tourism information transmission, saves the cost of publicity and improves the work efficiency.

Keywords: Web Technology, Tourism Service Platform, New Internet Technologies, Tourism Information Transmission

1. Introduction

With the rapid development of economy, people's living standards have been significantly improved. People's pursuit of spiritual life is improving, and tourism, as a benchmark industry of spiritual consumption, has been pursued by people. In recent years, both domestic tourism and international travel routes have been pursued by a variety of consumers. In this process, various tourism information publishing apps and ticketing booking platforms are all competing to provide new tourism services for consumers with the help of Internet technology. The rapid development of companies such as Meituan, ctrip and tuniu has got rid of various restrictions of traditional tourism and transferred the freedom of consumption to consumers themselves. However, because the development...
platform is based on Android rather than the Web, their current business inevitably focuses on assisting individual consumers to make consumption decisions, while relatively lacking in the practical functions of group customers and interaction between customers.

In the research process of tourism service platform design, some American scholars proposed the concept of tourism functional system in 1989, pointing out that the core of the system should be in the direction of information guidance [1-2]. This scholar believes that with the increase of user groups, diversified and personalized demands are the core of tourism service platform design, and the purpose of system design is to help users obtain better tourism experience [3-4]. Some researchers in Canada proposed the application of WebGIS into the tourism information system, so as to help customers obtain a visual overview of tourism space, and even assist customers to complete a tourism plan, so as to make tourism more convenient and entertaining [5]. Generally speaking, there are three development modes of foreign tourism information system. The second is the regional organization structure, which coordinates the development of regional tourism resources. The third is a central organizational structure based on national tourism resources [6-7]. These beneficial studies abroad have realized the sharing of tourism resources in different regions to varying degrees, and have been applied and promoted in practice [8]. It can be found from the search data that the research on China's tourism service informatization service mainly focuses on tourism marketing, and the research on the construction of tourism platform and system is still lacking in breadth and depth [9]. As the main promoter of digital economy and tertiary industry, the government has done a lot of development mobilization work [10]. For example, develop the national tourism resources administration website to show users travel policies, news, etc. Based on this, some domestic scholars have proposed that China's tourism industry has entered the stage of mass tourism, and the tourism service platform based on Internet technology is ushering in a golden opportunity period [11-12].

The research in this paper is committed to combining the advantages of the Web with the shortcomings of the tourism service platform in the lack of bulk customer service resources and communication and interaction [13]. The web-dominated HTML hypertext is used to optimize the interface, and CSS is used to realize the man-machine interaction function of Web page style [14]. In the system functions, through the secondary development of baidu map API as a platform, users can achieve a simple registration to view the latest tourism resources. In particular, the group interaction module is added to support individuals to mark their favorite attractions as promotion, so as to better realize the interaction and communication between user groups [15]. In the selection of development language, C++ is adopted as the deep development language, which can use a three-layer architecture to build a combination of text and text, which can give full play to the advantages of the Web more comprehensively and facilitate the retrieval of tourism resources. In the process of platform implementation, this paper also finally integrates the development results of multimedia into the platform construction, and strives to deliver the shocking scenes and sounds to users in a more realistic way. This kind of application can combine the information of the scenic spot with the spatial map to produce propaganda animation, which is also conducive to achieving better publicity effect.

2. Method

2.1 Key Technologies

2.1.1 Spring Framework Technology The Spring framework is a featherweight AOP container framework, which means lightweight DI packages, and the entire Spring framework can be packaged into a JAR compression package of about 2.6M in size, with very little power consumption associated with maximum processing power. More importantly, the Spring framework is non-invasive, meaning that classes developed using the Spring framework do not have dependencies on the objects being developed, and the scope is much wider.

The spring framework is also a container that contains the lifecycle configuration of application objects and is free to be composed into more complex applications. Spring also provides a number of
basic features, such as persistence layer integration and transaction management integration, which greatly improves development efficiency.

2.1.2 MVC Pattern The MVC pattern is applied to separate the data model from the user interface implementation to maintain the independence of the graphical interface and the ability to deeply optimize performance. In MVC mode, M is the data model, V is the graphical user interface, and C is the parameter controller. By separating M and V, the same program can achieve different levels of development and utilization for different purposes. MVC can be logically divided into parameter controller component and visual view component, in which the parameter controller component is divided into back-end controller component and front-end controller component.

2.1.3 HTML Hypertext Protocol HTML protocol is a dynamic web page technology with the same name as JSP and PHP, which has become the standard parameter of dynamic web page technology. HTML is in the original JSP code inserted class tags and C++ code, for the user to visit the Web dynamic Web pages to provide a new way to establish the interface and transfer. When a user accesses an HTML file, the server automatically performs dynamic operations in the JSP code and then converts the HTML file to respond to the user's access device.

2.1.4 Mysql Database Mysql is a small relational database with the advantages of small size, low cost, short response time and open source code. Mysql for C++, Java and other assembly languages to provide API interface services, but also support multithreading, thus reducing the CPU footprint.

Mysql USES the international standard SQL language format, and the query algorithm has also been optimized, with high query efficiency. Mysql's application scenarios are a significant weakness, but on small development projects, Mysql is much lighter and more efficient than large databases.

2.2 Structural System The MVC architecture pattern of the service platform is the product of integrating B/S framework and C/S framework into Web technology. MVC architecture pattern simplifies the client software, takes the simple browser construction as the running support of the client, and puts the development and maintenance middle layer of the traditional C/S framework into the application layer. The management and maintenance of the database is under the consideration of stability and placed in the server of the database, thus forming a three-tier architectural pattern of client, Web network and database services, as shown in figure 1 below.

![Figure 1. Web three-tier architecture](image-url)

Under this three-tier architecture, no matter the client is loaded on any platform, as long as the Web browser is loaded conditionally, the client can successfully access the server without worrying about the compatibility between data and the device, thus greatly improving the success rate of the user.
3. Experiment

3.1 Feasibility Analysis
This web-based tourism service platform USES HTML+Tomat 6.0+Mysql module framework to complete the system module selection. Such a ride can give users a faster browsing experience, and keep the shocking visual effects of travel websites, so that tourists can maintain their browsing enthusiasm for a long time. The specific research contents of system feasibility are as follows:

3.1.1 Technical Feasibility The MVC architecture adopted by the system has more advantages than the traditional C/S structure pattern and B/S structure pattern. First, the MVC pattern only requires a Web browser to access the website system without downloading and installing the client software. The MVC pattern, because of its individual features, does not affect user access during the upgrade and maintenance process, and therefore can receive better user reviews.

3.1.2 Economic Feasibility The web-based tourism service platform has obvious economic advantages. First of all, it can concentrate the tourism resources of customers to provide better service to develop itself without or with little investment in the corresponding cost; The web-based tourism service platform is a software deployment realized by means of the Internet. Therefore, in the commercial operation, there is no need for offline physical stores or business outlets, thus saving a lot of labor costs.

3.2 Module Design
Four core modules are designed for the tourism service platform, namely route module, user module, communication module and background management module.

3.2.1 Route Module The route module is a high-quality travel route uploaded by the customer, which can be viewed by all customers after the successful upload. When interested in the route, you can also ask the publisher for the contact information, so as to better understand the route details.

3.2.2 User Module The user module is mainly a module for improving and managing users' personal information. It mainly consists of basic functions such as user registration, user name, contact information and release route.

3.2.3 Communication Module Communication module highlights the platform design to achieve the advantages of user communication, which fully takes into account the need for companion travel between customers, so that travel is no longer lonely.

3.2.4 Background Management Module Background management module is the system administrator to improve and maintain the system necessary components of the module, mainly including the deletion of members, route information, release of announcements and other functional components.

4. Discuss

4.1 Realization of Core Functions of the System
The specific implementation of the system platform will eventually affect the user's final experience and urge the website to be further improved. In particular, the implementation of core functional components should be more targeted to achieve.

4.1.1 Realization of Route Release Route release and companion travel are the characteristic and core function modules of the system, so they are the most important part of the whole system. When the user publishes the route information, the system must receive the information entered by the user, such as whether the input of route name automatically retrieves conforms to the specification, whether the
reserved contact information conforms to the international standard code, whether the budget expenditure conflicts with the platform quota, and so on. When these functions are deployed and implemented, the system verifies them according to the matching value stored by the browser in the Mysql database. When the database receives the write instruction, it will further verify it and confirm that it meets the requirements before sending it back to the Button Button for response operation.

4.1.2 Realization of Information Maintenance Function The accuracy and perfection of user information is the basic function of the system to expand the user group. When users edit and modify their personal information, the website will validate the characters entered by users. When the user changes the password and other sensitive operations, the whole process of data transmission is encrypted. The encryption algorithm USES the combination of public key and private key. The server background USES the private key to decrypt the password.

4.2 System Test
The purpose of testing is to find the shortcomings and shortcomings after the initial implementation of the system. A good system design must be fully tested before it can be put into commercial use, which also helps to reduce the probability of failure in the future and reduce maintenance costs. For the test of this system, this paper adopts the test from unit to whole.

4.2.1 Unit Testing Unit test is the test that verifies the minimum functional unit of the system, and it is the test that separates each functional component of the system independently. It is also the most basic and effective test method in software testing. The unit test in this paper mainly carried out unit tests on the registration, login, password modification, user name modification, publishing and deletion route of the system user module. The results of unit tests are shown in Table 1 below.

| Test points      | Testing path                                      | Test times | Successful execution times | Test result |
|------------------|---------------------------------------------------|------------|----------------------------|-------------|
| User registration| Try registering a new user                        | 200        | 198                        | PASS        |
| User login       | Attempt to perform user login                     | 1000       | 994                        | PASS        |
| Change the password| Try changing the user login password              | 400        | 398                        | PASS        |
| Change user name | Try changing the user ID                          | 200        | 199                        | PASS        |
| Release route    | Users try to post travel recommendations           | 500        | 497                        | PASS        |
| Delete the route | Delete information posted by users                | 500        | 499                        | PASS        |

The results of unit test show that the system can successfully complete the user's operating instructions, and the sub-modules of the system are intact in operation.

4.2.2 Overall Test The whole test is also called the organization test, is for each major functional modules of the centralized test. Because of the large number of test functions, the whole test is often carried out by grasping the running log and finding out the global errors. In this paper, logs were extracted and tested for each of the four functional modules of the system. When the P value of the successful execution rate was less than or equal to 0.05, the test results were statistically significant, as shown in figure 2 below.
The results of the overall test show that the four functional modules of the system have good coordination ability, and there is no system crash caused by the BUG of a sub-module. Therefore, the system has good performance and meets the commercial quality standard.

5. Conclusion
After exploring the frontier Web technology and combining the development status of tourism service platform, this paper finally realizes the design of tourism service platform based on Web. In the design process of the system, according to the needs of tourism services, the technology of delayed loading and static separation was adopted to effectively improve the website loading speed. In the future design optimization, we can further make beneficial attempts in the application of big data, strengthen the security level of the system, and take more standardized steps to complete the system development.

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