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Design and application of new tourism enterprise management system

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ABSTRACT

In order to meet the different needs of growing enterprises, resolve differences exist in the structure of the enterprise, establish a management application system for their business development and management, this paper proposes a research of design and implementation of performance based on tourism enterprise management systems. Through the introduction of traditional enterprise management information system, this paper proposes a new design for tourism enterprise management system combining C / s structure and B / s structure. The structure system's performance is analyzed and a new type of enterprise management system is designed, and performance simulation test is also carried out on the system design. Simulation results show that: the system can effectively solve the issues of tourist online payment, order and inquiry, implement an easy style by using information instead of manual work. It has several advantages, such as simple, practical, rapid, and the wait time of reflecting is short.

KEYWORDS

Enterprise management system; Customer; Line; Module design.

INTRODUCTION

With the rapid development of domestic living standard and Internet information, the demand for tourism is also increasing. Existing tourist enterprise management systems are outdated in personnel structure, technology, information updating and other areas, which has been unable to meet the ever-changing new era. Tourism, automotive and oil industry are the world's three major industries, tourism is also called smokeless industry. Since the reform and development, domestic tourism developed with a fast speed, yet it still could meet the growing needs of economic development, can not meet the demand for improving living standards either. With rising living standards and on-going economic development, demand for travel is constantly rising. In a country, tourism is an important core of the entire national economy.

Due to the slow development of domestic tourism, there are shortcomings limiting its own development. For solving the current problem, domestic tourism industry persistently seeks to change the concept, to innovate. By way of information, they integrate resources across different industries. Through the information management of the tourism industry, the level and efficiency of tourism management have been improved, which simplifies procedures, reduces costs, improves the propagation velocity and quality, changes the mode of operation. By improving the benefits, the cost will be reduced, information quality and level of tourism improved, the tourism industry will develop rapidly and healthily, information management will be continuously improved and the resource optimization to be configured. Then achieve corporate chain, lead the development of the majority of enterprises; through the growth of foreign exchange, employment will continue to expand, to achieve a positive role in the economic development of the tourism industry.

Domestic tourism continues to develop. With the improvement of domestic living standards, domestic tourism continues to rise each year. Groups, mainly with family as cores, they travel frequently and they need diverse, safe, careful and comprehensive services through online travel management system. With the continuous economic development and improved living standards, the number of tourist gradually increased. Through the development of tourism, users' information can be achieved by multi-angle, providing tourist routes, reservation services and other sites. Through the establishment of tourist sites, the function of travel sites will be expanded. Through travel sites, clients can visit the main page to choose their travel routes or book hotel services. And they can also get information of train or plane they have chosen for travels. If these services do not meet needs of customers, or no satisfaction, customers can leave a message via BBS, the travel network will respond to customer as quickly as possible. Travel sites will give solutions based on customer's issues, which will facilitate the user's travel. So that customers will control the whole trip before starting, and it will greatly facilitate the customers to know the travel aspects in the first time for doing the preparatory work advanced.

While in foreign countries, from the point of foreign and domestic tourism electronic construction information, the development pace of foreign tourist electronic information is relatively faster, more convenient, more real-time and interactive than that of our country, and its usage rate for travel will be higher.

The tourism enterprise information management system is designed and built on the base of combing with more than two new systems, such as B / S. This system can reach the goal of on line payment and order and inquiry. It is a convenient system by working through online information instead of manual work.

TRADITIONAL TOURISM WEBSITE INFORMATION MANAGEMENT SYSTEM

There are functional defects exist in landing system of ordinary traditional tourism website management service, and the function mode is simplex so that the not the information needed by customers can not be gained in the first time. Tourism website management system's structure is shown in Figure 1.
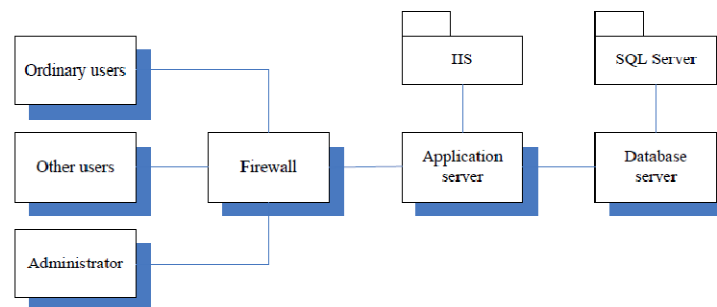

Figure 1: Tourism website's management system structure

Structure of tourism management information system refers to the relationship between the hardware, software and other various components of information systems. Correct choice of structure is the key to the development of managing the information systems. Different structures will require different implementation techniques. From the perspective of system applications, the structure of a typical management information system is constituted by an application layer, a presentation layer and a data layer. Where the application layer is responsible for data processing; presentation layer is directly facing the

tourism customers, mainly be responsible for processing the man-machine interface, unified human-computer interaction, which is what we usually call interface program. Data layer is naturally to manage the database, enabling modification, query, access, and security and integrity of data, providing convenience for travel customers and at the same time also reduces the workload for tourism business managers and improves work efficiency.

The traditional two-tier C / S structure is easily lead to overload for the client or the server. To overcome this defect, an intermediate layer, i.e. , the application server is added between the client and the server. In the management information system based on C / S structure, the data layer is on the server side, the presentation layer on the client side. The application layer can either be placed on the server side or on the client side, resulting in several different C / S structures: two-level C / S structure mainly based on the front-end, two-level C / S structure mainly based on the rear-end and the three-layer C / s structure. Here we mainly introduce the three-layer C / s structure, whose structural model is shown in Figure 2.
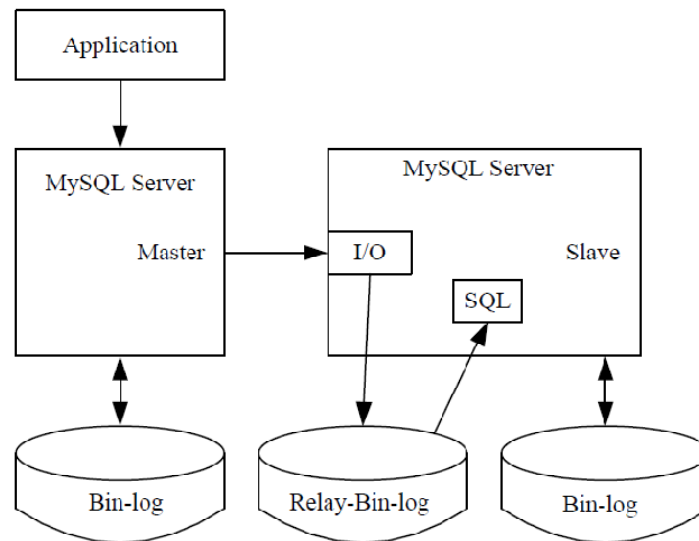

Figure 2: Three-layer c / s structure of tourism business management

From Figure 2, it can be seen that the three-layer C / S structure can more reasonably put the data layer, application layer and the presentation layer into order to achieve a high degree of load balancing. In this structure, functions such as data storage and management are performed by the database server, the functions of the application layer are performed by the application server, the client is responsible for the functions of the front-end presentation layer. Therefore, three C / S tourism management information system structure allows the client and server functions more specific to avoid overloading one end of the case. However, this structure of management information system based on the difficulty of development and development costs to be higher than the two-tier C / S structure.

Because there are defects like difficult development and high cost in the three-tier C / S structure, and in C / S structure, GUI which provides the presentation layer services on the client must be designed and implemented by the developers themselves. Its typical multi-document forms and single document form interface is like that of Windows. The resulted problem is that when the application layer functions of the system upgrade the GUI on all clients must be manually modified. This work is similar to the upgrade of Windows. Whenever Windows system upgrades, all computers installed Windows must be manually upgraded, one by one. With the continuous development of enterprise applications, updates and upgrades enterprise management information system more frequently, which also makes the system upgrade more arduous. On the other hand, due to the C / S structure is based on LAN technology, so it can only operate within a small space range, generally a blocks of building. When the user leaves the building where the system is located, you can not continue to access to the system.

In order to solve the existing defects of C / S structure, people raised browser / server (Browser / server) structure, referred to as B / s structure, as shown in Figure 3. Bzs structure is a system which with TCP / IP network protocol support and takes HTTP as the transport protocol, allowing the clients to get access to WEB server and back-end database connected to it through the browser. B / S structure is composed of a browser, a WEB server and database server. It is very similar to the three-layer C / S structure, the main difference between them is that the client interfaces of B / S structure are provided by third parties under the browser, rather than self-developed GUI. Replacing the browser with the traditional C / S structure's GUI can overcome the shortcomings of C / S structure's onerous system upgrading. Because in the B / S structure, not all of clients need to be updated when upgrading the system, while it just needs to upgrade the content on the WEB server. Also, because the B / S structure is based on TCP / IP protocol, so B / S structure's management information systems can run on Iniemet, making the system to overcome the spatial and geographical constraints and they can get access to the system at any place, anytime.
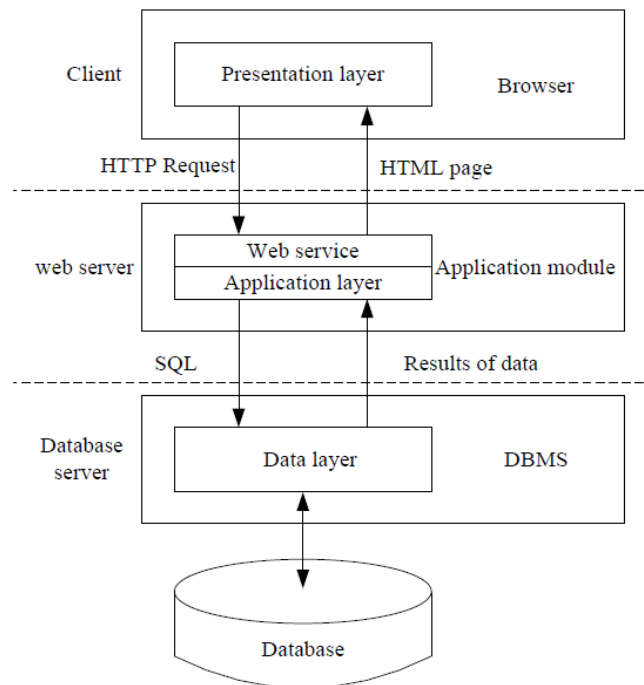
**Figure 3: B / S structure of tourism management systems**

But B / S structure also exists its own shortcomings, for its development tools are still relatively backward. Many development tools and development capability are still not perfect. Its interface design, organization of information, code maintenance and reuse are not mature enough either. For example, in ASP's development tool VisualInterDev, once ASP code is embedded in the HTML page, it is very difficult to modify the page again, and you can not re-use Macromedia, Frontpage and other tools to edit. At present, multi-layer B/S structure separates interface design and business logic, which can improve the efficiency of B/S structure's system development. However, multi-layer B/S structure's system development and organization are also very complicated for C / S structure.

NEW HYBRID MODEL STRUCTURE OF TOURISM BUSINESS MANAGEMENT

In summary it can be seen that, whether B / S structure or C / S structure, they both possess advantages, but there are also defects such as difficult development, high cost, complex structure, imperfect development tools, inadequate procedures design features, poor system performance, and so on. From the current status, B / S structure is more suitable for systems with little user interaction. For frequent updates and interactive applications, B / S structure is not necessarily a good choice. In fact, enterprise management information system using B / S structure does not require all applications in WEB, but to choose according to the actual situation. Therefore, in the application, B / S structure needs to combine with traditional C / S structure to give full play to their technical superiority, better serve for enterprise information management.

Figure 4 shows the hybrid structure based on C / S and B / S. This structure combines the B / S structure and the C / S structure together through a shared database. Client-side applications are mainly responsible for some applications that the Browser client can not complete or it does not fit the WEB; and the Browser completes functions such as information resource's query. Some simple business processes such as data entry, data deletion process can also be placed on the WEB server, and specific programs depend on the actual application requirements

From demand for development of tourism enterprise management information system, it is not difficult to find out that merely B / S structure or C / S structure is unable to solve the problem. If the systems all use C / S structure, then the business data of all branches can not be gathered in real-time, so that the enterprise itself can not understand its business running status and the customer can not get travel services at anytime, anywhere they want. If the systems all use B / S structure, it is bound to put all functions of the internal management on website, which is prone to cause security issues. And many complex statistical queries and specific data processing functions can not be achieved in the Browser, such as chart statistics, invoice printing, and so on. Therefore, tourism enterprise information management system should adopt a hybrid structure with C / S and B / S to reasonably distribute system function to Client and Browser, so as to effectively support all aspects of tourism enterprise's requirements.
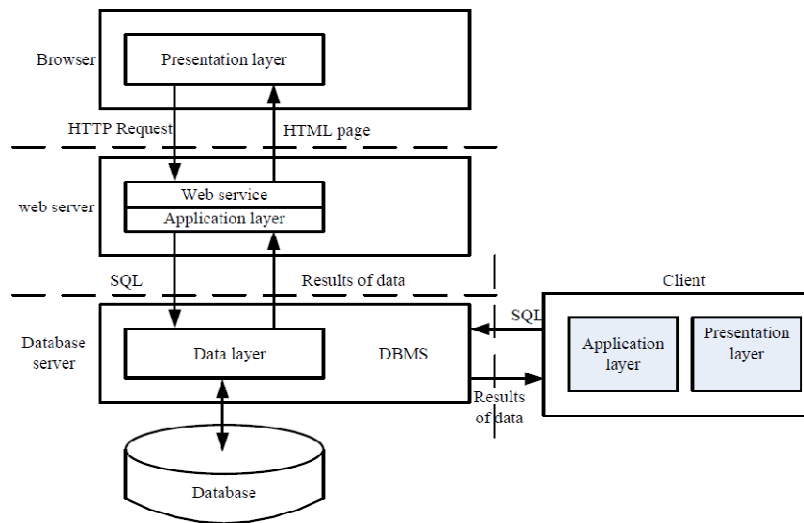
Figure 4: New system model of tourism business management

### FEATURES OF THE NEW MODEL OF TOURISM ENTERPRISE MANAGEMENT SYSTEM

(l) Customizable functions. Different users of TSS system can get different services provided by the system, to effectively meet various needs of users.

(2) Shared and real-time information. Individual processes of TSS system may distribute anywhere in the country and even around the world, but all processing is database-centric, so as to get integrated management, effectively solving the problems such as information opacity, time lag, and so on.

(3) High maintainability. It is very easy to maintain the B / S by WEB server, reducing the maintenance workload. On the other hand, through the management of C / S, the entire TSS system's shared data such as users, permissions, and other common data can be effectively managed, making it easy to upgrade the system.

(4) Friendly man-machine interface. B / S provides services to users in the form of WEB site, and the website fully takes the advantages of conventional tourism web interface, which is consistent with users' operation habits. In the reservation process, it not only fully considers the traditional book business's processes, but also takes the ASP features into account, making operations more convenient and order time is also greatly reduced. The C / S terminal interface makes full use of the advantages of C / S development tools, the query interface not only has a strong statistical function, but also can conduct analysis of running trend with several mean, such as histograms and graphs. While in terms of data entry, it changes the way in the past one by one record input, and allows the user to enter more than one VIP card information, greatly improving the efficiency of the user operation.

Data flow diagram is the core of tourism business management system's logic model, as shown in Figure 5. From data flow perspective, it describes the function of the system, input, output, and data storage. It focuses on data flow, does not rely on any physical content.
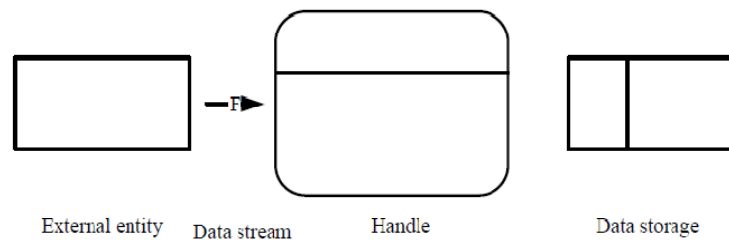
Figure 5: Tourism information system symbols

The system's predetermined line data flow diagram is shown in Figure 6. Customers can inquire and book the tour line, when the line inquiry is completed the system will automatically generate a available route for customer ordering. All system orders are managed by the administrator.
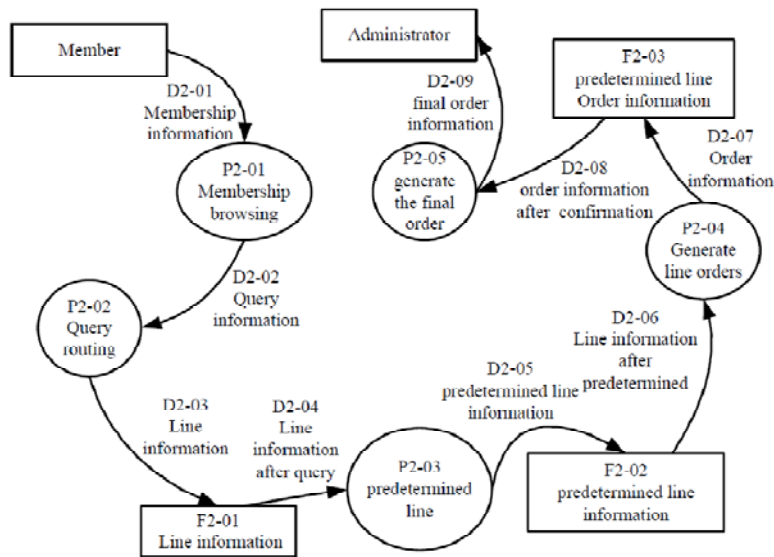
Figure 6: Data flow of reserved lines

Take reserved flight information as an example, each sub-process's input and output data flow and data storage directly inherits the data flow of "flight booking information management", to ensure logical analysis is consistent from top to bottom. Figures 7, 8 and 9 respectively show a flowchart of lower level data flow of the flight reservation information management data diagram.
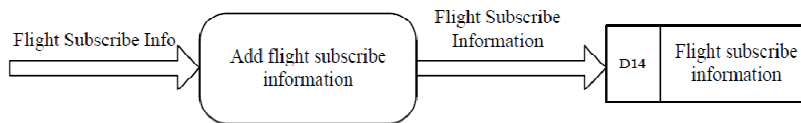

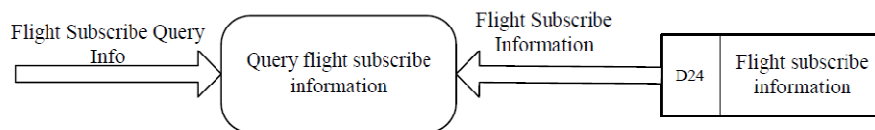**Figure 7: Data flow of adding flight information**

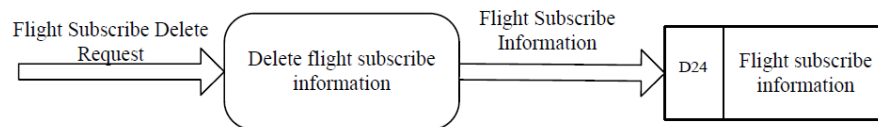**Figure 8: Data query flowchart of flight information**

Figure 9: Deletion flowchart of flight information data

THE NEW DESIGN OF TOURISM ENTERPRISE MANAGEMENT SYSTEM MODEL

The overall framework of the system

A perfect system should have good stability, reliability, security and scalability, and can efficiently run. Tourism enterprise information management system's hybrid model is based on WEB platform for applications, using hybrid architecture design patterns combining B / S structure with C / S. Through B / S structure, users can carry out some of transaction on the client, and the other parts of the transaction on the server. This B / S structure, constantly uses different browsers and different scripting languages combined and utilizes a buffer mechanism, to get access to backstage database through the API interface and kinds of system resources, making the client can obtain maintenance an development without being affected by the server. This reduces the development cost and provides easy maintenance and expansion quickly and conveniently. C / S structure system's MVC design pattern is composed of model, view and controller. For developers and

users, view is the home page where the system and the users communicate, saying that enterprise's data processing rule is model. The controller completes the basic works required by users through using the model and view. In the MVC design pattern, firstly users propose requirements, and the requirements are presented to the controller via the view, then users' requirements received by the controller are executed in a specific model. After the demands have been turned into model business as required, users' service data will be passed to the view. The results will be presented to users by way of the view. The system takes visiting the Web database as the core to get access to the Web server and the back-end database server via HTTP protocol client. As shown in Figure 10.
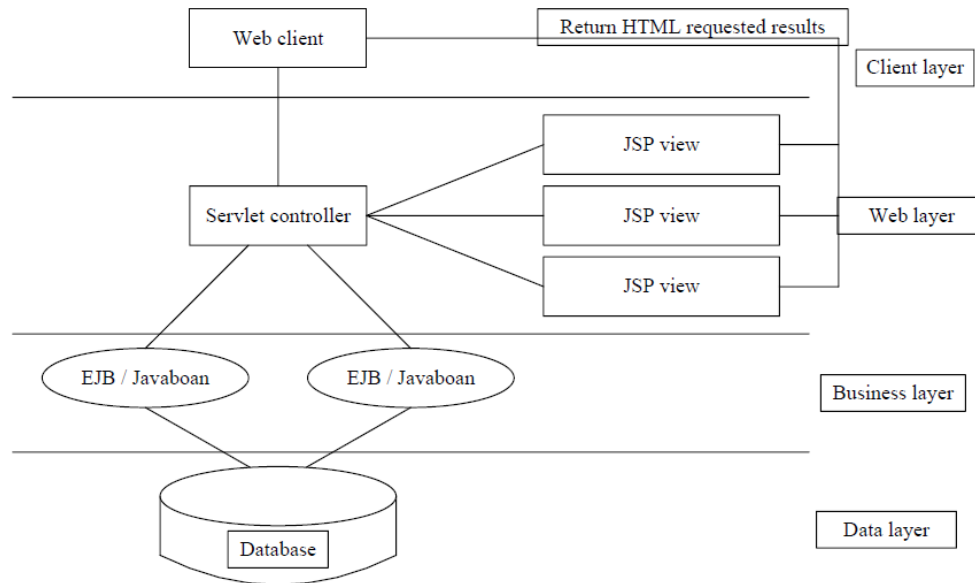

Figure 10: New system framework of tourism enterprise management

The overall structure and function of the system

Tourism business management structure's functionalization is achieved through module decomposition from the top to the bottom, firstly designing the overall module, then decomposing them layer by layer. Website system is divided into two systems, and they form a unified system with mutual cooperation, as shown in Figure 11.
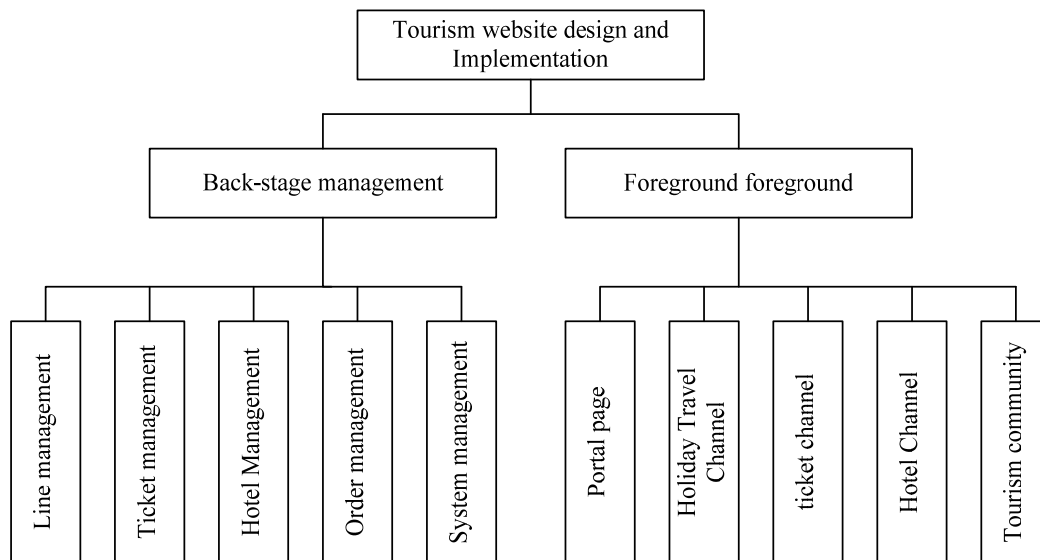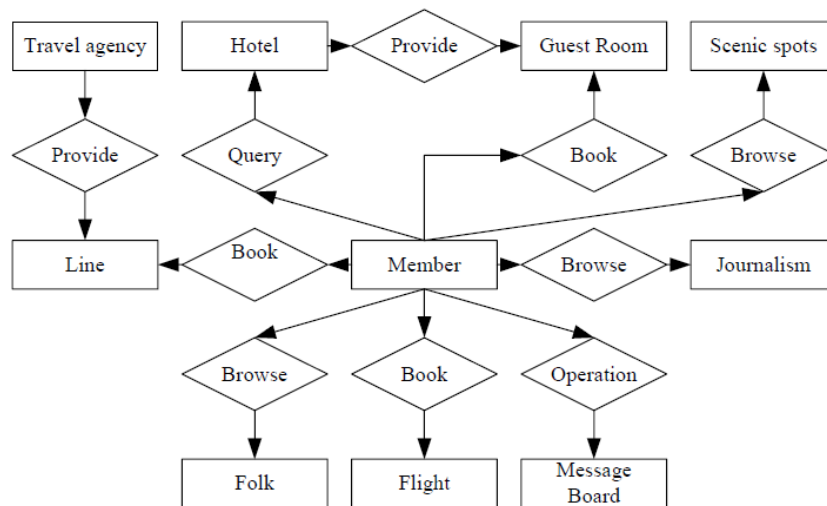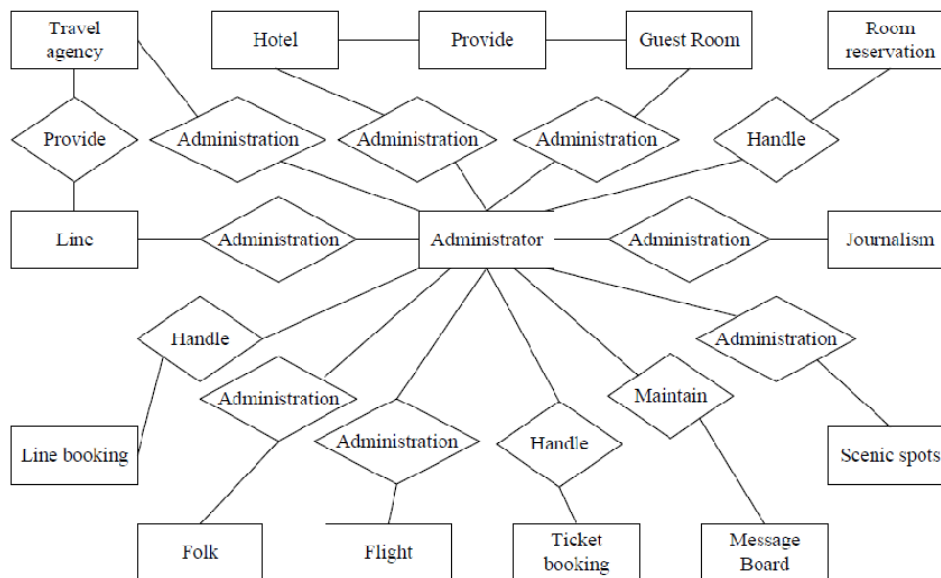

Figure 11: System model's function chart

Front design data E-P, shown in Figure 12.

Figure 12: Front design data E-P

Backstage system data E-P, shown in Figure 13.

Figure 13: Backstage system data E-P

Safety design of the system

     The design of the system model takes the security of users' information as the base. It uses a password system of operating authority to strengthen information security, and to achieve a one-way connection. As a tourist organizer, the backstage manager is a legal enterprise with relevant licenses such as business license and access to Alipay official certification. The system in the background forces users to enter some valid ID information at the beginning of usage. And at the same time, as a tourism system, the software completely keeps users' confidentiality information safe, it is open only to backstage manager. In the case of customers lost password, it can be got back for its services by using the server and the client with the help of JAVA, even under Windows XP.

     Users need to enter data in the 'secret question' and 'password answer', then click 'OK' button, next move is to check out the membership information by select HY_dlname from Travel_HY_Table, then after use if statement to judge if the information entered in 'secret question' and 'password answer' is the same as that from Travel_HY_Table. If the information matches, password change will be displayed on that page. Then the membership information changed by users will be stored back to the membership information table, realizing getting back the password. Flow chart of getting password back is shown in Figure 14.
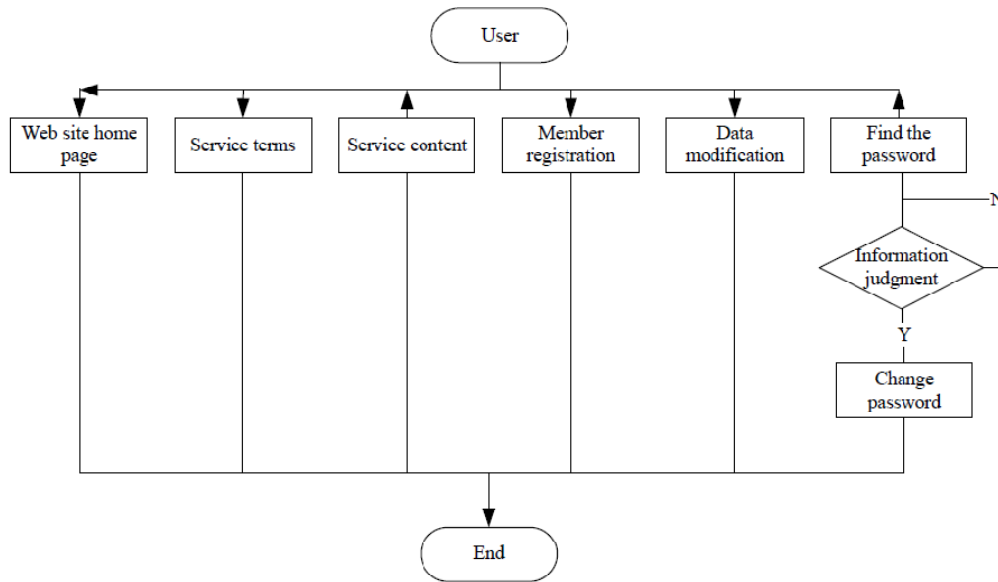
Figure 14: Flow chart of getting password back

PERFORMANCE TESTING OF NEW TOURISM ENTERPRISE MANAGEMENT SYSTEM

The server's responding time should be 7 seconds for data of 450 users. Performance test is carried out in areas such as network throughput and responding time of the new tourism enterprise management system. The test results are shown in TABLE 1 and TABLE 2 below.

TABLE 1: Test for system environment

Test name	Search test
Test run name	Report-search test-
test start time	Pm 11:50, 2013-4-20
test duration time	05:40
Test iterations	2,000

TABLE 2:Test results

Test types	Dynamic
Simultaneous browser connections	10
Preparation time (s)	15
test duration time	00:01:12:04
Test iterations	10,000
generated Detailed test results	Yes
Abstract	
Total number of requests	10,000
Total number of connections	10,000
The average number of requests per second	2.31

From the simulation test results in TABLE 1 and 2, it is obvious that, when the time reaches 15 seconds, the number of connections of the browser window reaches 10 and the number of test iterations is 10000, the average value of responding is 2.31. Responding time short, which greatly facilitates the customers, and it is also convenient for the management of tourism enterprises.

The running test result of network throughput under new hybrid system is shown in Figure 15.
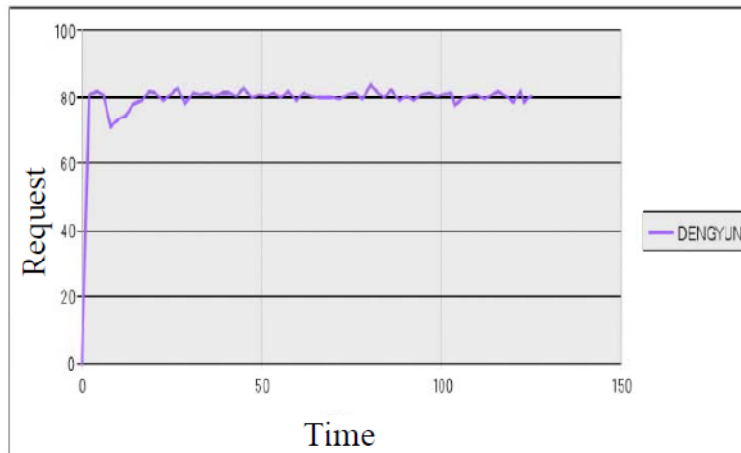
Figure 15: Diagram of network throughput

As can be seen from Figure 15, after the system testing of network throughput, the model system is capable of analyzing and verifying problems that may arise during the system testing. The system gets maintenance through the system test, making the operation of the system simple, stable and the system can be managed unitively. Explained by functional test, this system can meet the needs of users.

CONCLUSION

With improvement of people's living standards, the tourism industry develops rapidly in recent years. And seeking a convenient, simple management system with multifunction to meet the needs of customers has became one of key issues. For this, this paper proposes a new structure model based on hybrid structure of tourism enterprises. By comparing with the traditional model, this paper conducts performance tests for the major functional blocks of the new structure model, and the results show that: the new hybrid structure of the enterprise management system is simple and stable, and it is able to analyze and verify the problems that arise during running, meeting customer's needs and improving the work efficiency, and it has obvious advantages.

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