Development and Implementation of WEB-based Online Hotel Reservation System

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Abstract—**The Internet accelerates the communication and understandings between people, which make information unprecedented important. Furthermore, it changes the way that people book rooms, which makes rooms-booking diversified, convenient, and individualized. Out of the demand of modern hotels and based on the B/S model, this paper analyzes and designs the hotel booking operation, and achieves the functions of register, login-in, reservation, customer management, and reservation management, and etc., in order to improve the efficiency of hotel reservation.**

Keywords-hotel management system, online booking, information management system, B/S model

I. INTRODUCTION

Internet has become the world's largest information network which has the richest information resource. The roles of Internet and Intranet should be taken full advantage of in informatizing the hotel industry. The roles of the network should be taken full advantage of in researching and developing of systems such as room reservation, hotel management, Internet advisory, and etc. All these can have a strong radiating capacity in promoting resource sharing and providing the most advanced information services, greatly improve work efficiency and reduce business costs[1]-[3].

The hotel industry, first and foremost, should realize the intelligentization of internal management, and achieve the full automatization of reservation, rooming, accommodation, discharge, guest market analysis, financial planning. The determination of the target market, competition in the market of guest sources are all guaranteed by high-tech information technology. In order to market the hotel through a variety of channels, expand the market share, and gain a firm foothold in the international market, it is necessary to participate in the international information network, and collect the information of international tourism market.

Secondly the hotel network should be vigorously developed. The internal business links should have mutual networking, and be linked with tourism management departments, public security, travel agents, and etc., especially between different hotels so as to realize online booking. Therefore, the subject of system development of a WEB-based online hotel room reservation system is proposed.

II. PLATFORM AND TOOLS OF THE SYSTEM DEVELOPMENT

The system is developed with the B/S three-layer architecture. Its biggest advantage is that maintenance is simple, flexible, and easy to operate. B/S structure simplifies the Client, the user sends requests via the Web browser, and the rest work such as data request, processing, sending results back, generating dynamic Web pages can be done by the Web Server[4]、[6]. This structure not only frees the Client from heavy burden and the requirement of constantly improving the performance, but also frees the personnel of technical maintenance from heavy maintenance upgrade work. Lays in three-layer structure are independent between each other; the change of any layer will not affect other layers' functions.

In addition, based on the knowledge that we have acquired and the software that we are familiar with, the operating system of the Server is Windows 2000 Server, and the database management system is Microsoft SQL Server 2000. SQL Server 2000 is one of a few mainstream database management systems at the present. Web application server is IIS5.0, and uses Dreamweaver 2004 MX as the application software development platform[7]-[9]. Dreamweaver 2004 MX is a wysiwyg page editor launched by the Macromedia Company which combines Web page making and website management. It combines visual layout tools, application development function and code editing support as a powerful tool, which is easy and convenient to operate; thus, developers and designers at any level can use it, quickly create an attractive interface on the basis of the standard site and applications. Moreover, ASP can be used to deal with the presentation layer, that is, a part of the HTML page[10]-[12].

III. DATABASE STRUCTURE DESIGN

In the system design, the online hotel room reservation system database that is needed to build up mainly involves seven basic data subset, including:

A. Room Information Table: describes the types of rooms, fee standards and its application.

B. Customer Information Table: describes the customers' basic information.

C. Reservation Table: records the necessary relevant information of customer reservation and customers' personal data and special requirements.

D. Consumption Sheet: records in one complete check-in course, the detailed information of customers' total costs and the whole consumption.

E. Customers' Black List: records the information of customers who do not abide by the hotel regulation and network hackers.

F. Employee Information Table: records the basic information of the hotel staff and the position information.

Table 1 Room Information

Number	Chinese Name	Field Identification	Type	Length	Decimal	Key Word
DI18	Room Number	RCategoryId	Char	4		YES
DI19	Room Kind	Kind	Char	2		
DI20	Bed Number	BedNum	Char	2		
DI21	Room Price	Price	Num	10	2	
DI22	Room Status	RStatus	Char	2		

Table 2 Customer Information

Number	Chinese Name	Field Identification	Type	Length	Decimal	Key Word
DI01	Customer Name	CName	Char	20		YES
DI02	Password	CPassword	Char	16		
DI03	Identity Card Number	CIdentityId	Char	18		YES
DI04	Email	CEmail	Char	25		
DI05	Telephone	CTel	Char	20		
DI06	Home Address	CAddress	Char	40		
DI07	Nationality	CCountry	Char	20		
DI08	Customer Type	CType	Char	2		
DI09	Payment Type	CPayform	Char	2		
DI18	Room Number	RCategoryId	Char	4		
DI19	Room Kind	Kind	Char	2		
DI23	Customer Status	CStatus	Char	2		

Table 3 Reservation

Number	Chinese Name	Field Identification	Type	Length	Decimal	Key Word
DI29	Reservation Number	ReservationNum	Char	10		YES
DI24	Reservation Time	ReserveTime	Date	20		
DI01	Customer Name	CName	Char	20		YES
DI03	Identity Card Number	CIdentityId	Char	18		YES
DI04	Email	CEmail	Char	25		
DI05	Telephone	CTel	Char	20		
DI06	Home Address	CAddress	Char	40		
DI07	Nationality	CCountry	Char	20		
DI08	Customer Type	CType	Char	2		
DI09	Payment Type	CPayform	Char	2		
DI25	Check-in Time	BeginTime	Date	20		
DI26	Check-out Time	EndTime	Date	20		
DI19	Room Kind	Kind	Char	2		
DI21	Room Price	Price	Num	10	2	
DI27	Quantity	Quantity	Num	2		
DI32	Days	Days	Num	2		
DI28	Remark	Remark	Char	500		

Table 4 Consumption

Number	Chinese Name	Field Identification	Type	Length	Decimal	Key Word
DI30	Bill Number	ConsumeNum	Char	10		YES
DI01	Customer Name	CName	Char	20		YES
DI08	Customer Type	CType	Char	2		
DI09	Payment Type	CPayform	Char	2		
DI18	Room Number	RCategoryId	Char	4		YES
DI19	Kind	Kind	Char	2		
DI21	Price	Price	Num	10	2	
DI25	Check-in Time	BeginTime	Date	20		
DI26	Check-out Time	EndTime	Date	20		
DI32	Days	Days	Num	2		
DI31	Other Consumption	OtherConsume	Char	500		

Table 5 Customers' Black List

Number	Chinese Name	Field Identification	Type	Length	Decimal	Key Word
DI01	Customer Name	CName	Char	20		YES
DI03	Identity Card Number	CIdentityId	Char	18		YES
DI04	Email Address	CEmail	Char	25		
DI05	Telephone	CTel	Char	20		
DI06	Home Address	CAddress	Char	40		
DI07	Nationality	CCountry	Char	20		

Table 6 Employee Information

Number	Chinese Name	Field Identification	Type	Length	Decimal	Key Word
DI10	Employee Name	Name	Char	20		YES
DI11	Gender	Gender	Char	2		
DI12	Password	Password	Char	12		YES
DI13	Employee Identity Number	UserId	Char	10		YES
DI14	Department Identity Number	DepartmentId	Char	10		
DI15	Email Address	Email	Char	25		
DI16	Telephone	Telephone	Char	20		
DI17	User Type	Type	Char	2		

IV. THE REALIZATION OF THE SYSTEM FUNCTION STRUCTURE

A. The Customer Interface Structure

On the one hand, the customer interface is the unified image of the hotel to publicize the image for the hotel itself and to release information on the Internet; on the other hand, the customer interface is responsible for providing the unified interface for the customer to realize online hotel room reservation. The customer interface is the overall frame structure of the hotel website as shown in Figure 1.
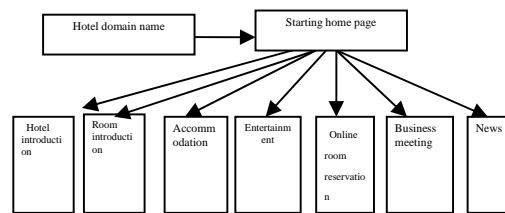

Figure 1 Website Overall Structure

B. The Hotel Reception Management Interface Structure

Reception management is the interface of handling customers' orders. Hotel staffs manage the customers' orders by logining the reception management interface, including order confirmation, query and other functions. The figure below is the interface structure of system reception management.
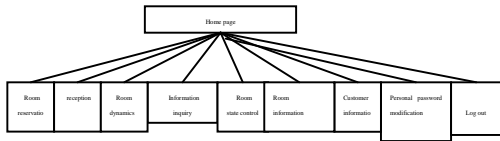
Figure 2 Reception Management System Interface Structure

C. The Realized Function of the Login Interface

If the customer wants to reserve a hotel, he can click "Room Reservation" in the middle of the web or "Online Reservation" at the top, and then he can enter the page of filling in the order, as shown in Figure 3 and Figure 4.

Figure 3 Online Reservation Interface

Figure 4 Filling-in-the-Order Interface

After filling in the required content, the customer clicks "Submit", then the reservation succeeds, and the system will automatically generate and save the order into the database. Otherwise, the system will prompt that "Your reservation has a mistake. You need to reserve again or fill in the reservation information again". Or the customer can click "Enter Again" and fill in the relevant booking information again. After a successful reservation, there is a returning page, as shown in Figure 5.
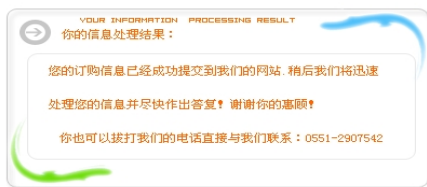

Figure 5 The Interface of Submission of Order

Confirmations

D. Background Management

After clicking the login module on the front page, inputting correctly the administrator user name and password, then clicking "Login" button, the administrator can enter the management module of administrator management subsystem. When the administrator clicks "Reset" button, the filled items will be emptied. This is shown in Figure 6. System administrators can view the order details, including the booker name, contact information, and a detailed booking information, etc., and he can also delete the user's order to facilitate the management of the website data. This is shown in Figure 7.

Figure 6 Background Management Login Interface

Figure 7 Reception Dynamic Interface of Rooms

V. CONCLUSION

The development of science and technology and the progress of the society gradually have changed people's life style. The combination of the hotel industry and the Internet is the inevitable trend of hotel development, and the network mode of sales will become the leading and the pillar of hotels. Online hotel room reservation as an important way of expanding the market for the hotel has a very significant influence on the development of the hotel. The hotel without online hotel room reservation will be forgotten and abandoned by the market.

The analysis and the design of this system are to adapt to this trend, and reflect the e-commerce's influence on the hotel. Besides analyzing the basic needs of guest room reservation, the analysis and the design of this system makes a comprehensive analysis of customers' individual needs from the point of view to customers, which shows another characteristics of e-commerce — individual needs. E-commerce brings people more goods and services to meet the personalized needs. In the future society, people may be able to buy their desired goods and services at home.

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