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Development of Distributed Remote Processing System Based on Net Remoting Technology

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Abstract: With the development of network technology, multimedia teaching has become an indispensable part of today's education, and remting is also a new type of remote processing server. The system is designed and implemented with java development framework and JS architecture. This topic mainly introduces the function modules such as management of simulation interactive single machine training center, database management and transaction logic engine based on net platform, and analyzes and explains them respectively. At the same time, the front-end page is designed and built in detail, including the scheme of web page layout and data access control and the application of related technologies. After that, this paper tests the operation and processing of the distributed remote processing system. The test results show that the IP address information is sent to the client through the serial port for interactive operation. At the same time, it can also receive the return command from the terminal device to support the normal 5-10S time control of the remote processing, and complete the analysis and test of the performance and function.

1. Introduction

With the development of network, remote processing technology is becoming more and more important in people's life. The Internet has become an indispensable part of human society. It is a new, efficient, safe and reliable computer application system [1-2]. Distributed programming, as one of the development modes of distributed online servers, is widely used in various fields. Concurrent access mechanism is one of its main features, which has also been widely recognized and paid attention to and achieved good results [3-4].

Many scholars have done some research on distributed remote processing. In foreign countries, the research of distributed remote processing system has made some achievements, but the domestic

research started relatively late, mainly focusing on the application level, such as: developing distributed remote services based on Web technology and network technology, establishing user centric, communication protocol and server interaction compatible infrastructure system, Great progress has been made in the realization of network management and resource integration and utilization, and gradually to a mature stage. The research of distributed remote processing system in China started relatively late, mainly in the 1970s. There are few domestic related technologies and applications in this field, so the development speed is slow [5-6]. At present, some related products have been put into use for testing and operation in this field, such as the development software of wireless LAN technology and multi hop network access technology (SBE) and distributed remote processing system based on Web / TEM structure. However, there are still many problems in the actual use of these software, such as unstable performance and easy interference [7-8]. Therefore, based on net and Remoting technology, this paper develops and researches the distributed remote processing system.

With the rapid development of Internet technology, it has become an indispensable part of people's work and life to realize the functions of remote office and online reservation based on network support. This paper mainly introduces a kind of remote processing system which is developed and installed on distributed server by using java web programming language. The system is developed based on MySQL as the database construction foundation and JSP + SQL as the front-end page design tool, and realizes the integration with the traditional conference service website. It provides a good interactive platform to support a variety of application software and can use different functional modules at the same time to meet user needs.

2. Discussion on the Development of Distributed Remote Processing System Based on Net Remoting Technology

2.1. NET Remoting

2.1.1. Principle

For distributed remote processing system, the server is mainly used to realize data storage, query and retrieval. Information management is performed by using SQL statements in the database. With the support of Web2.0 technology, the files uploaded by a large number of users can be managed in a unified way. The files uploaded to the server and the content to be accessed can be directly obtained from the network, and they can also be stored in the operation functions such as viewing or deleting for others to browse and find to meet various performance requirements and data requirements required by different application systems [9-10]. On the web server side, remting technology is used to realize cross platform data sharing. Users can use the resource library system created and managed by themselves to access and design the front-end pages, modify and set up relevant databases. When the client needs to be updated or upgraded, it only needs to complete the corresponding operation through the foreground browser or the network connection device on the background. The server is also directly controlled by the background configuration personnel, and the operating system can be run on any computer. In the web system, the front-end equipment refers to the server, and the client mainly includes the server, data center and other modules. The storage mode of database provides a virtualization technology for sqlserver. The development of web application needs to be accessed through the WEP connection browser. The second is to analyze and control the design and implementation process of the web page to determine whether the page is running correctly and complete the corresponding operations before starting to perform the

corresponding functions. Finally, there should be a reasonable and effective user management mechanism for the foreground interface, including system login, data backup and other contents [11-12]. Figure 1 is the architecture diagram of net remoting.

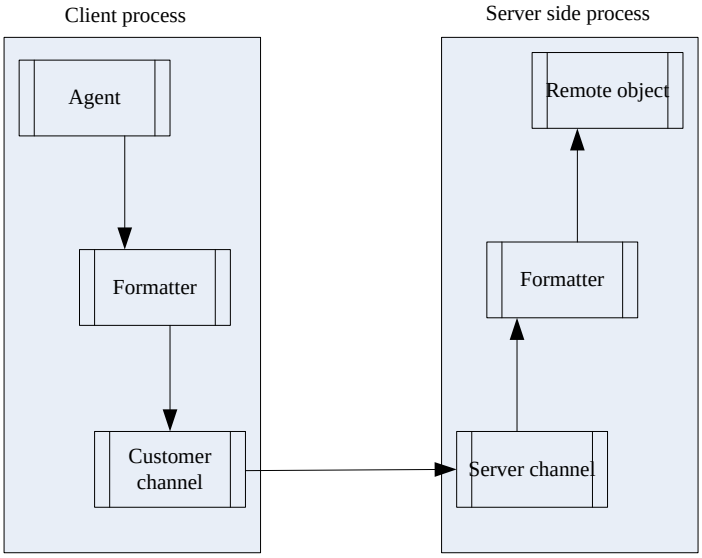

Figure 1. The NET remoting architecture

2.1.2. Characteristics

Net Remoting technology has the following characteristics: first, it has good compatibility and realizes cross platform network interaction. On the Internet, the browser can access all web pages, and users can obtain the information they need through the browser. Different from the traditional web page, it is dynamic, open and interactive. At the same time, the server will update and maintain the database and perform data query and other operations over time. In addition, the client also supports various application functions to provide solutions for users' problems when browsing the website. In addition, the client also has modules that can help administrators to achieve information release, management and other work tasks [13-14]. Second, it can connect to the server remotely, with high security. Data access can be completed only through the Internet. Third, no special authority. On the Internet, there are some specific information security measures such as accounts and passwords to prevent illegal users from malicious intrusion into the network. At the same time, there are also corresponding firewalls, anti-virus software and identity verification. These functional settings also provide a certain degree of protection to ensure that the computer system can operate normally to ensure that the server will not be damaged by illegal elements, so that the data access is not threatened or the loss is small.

2.2. Remote Processing

Under the environment of web server, the Wei client and SSH front-end system realize communication, data, file and other information exchange. The wireless network server adopts a three-tier architecture. The first is the host layer. An antenna shall be installed from the machine room, router and each terminal to access the network to transmit signals. Secondly, the application layer software package filter is used to filter unnecessary data packets and send them to the application program. The last layer is the communication between the server (web client) and the

web server. The bottom data acquisition module and the front-end database analysis module are used to receive the information sent by the user. In the process of distributed system development, the connection between the server and the network is TCP / IP protocol, which needs to access data. The transmission and reception of data are realized by different terminals. First, after the client sends the request file, it sends the information to the user through the communication link. Then, the server determines whether to issue the corresponding command for the responder to execute the next work content according to the received information. If so, it continues to return to the main control command to process the relevant operations or delete the corresponding results and display them on the current page [15-16]. If not, the system will automatically generate a new status to notify the customer. Based on the web system, the distributed remote processing technology is adopted. The method is to decompose the whole web application process and realize the corresponding functions according to each module. After the server visitor address, it can judge the data content and access rights of the client, and can also control the terminal device to obtain the required files. Because browsers are different and have certain independence, openness and multi-user common use characteristics, this technology can effectively solve the problems in traditional web applications and provide a good development environment and prospects. Figure 2 is a frame diagram of remote processing technology.

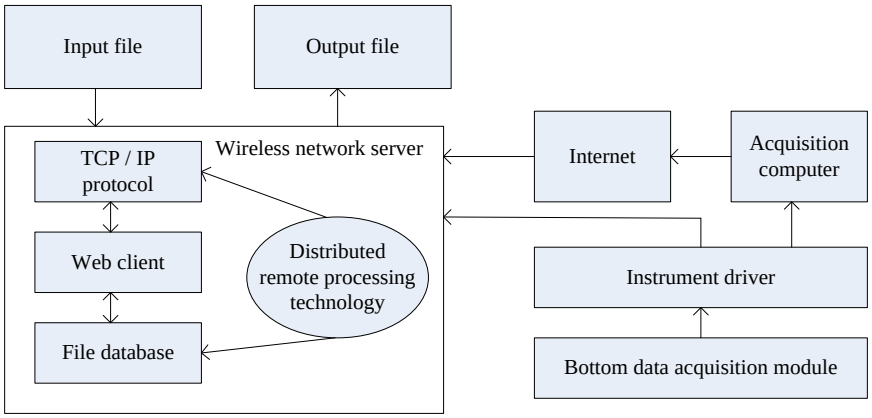

Figure 2. Remote processing technology

2.3. Distributed Remote Processing Technology

Distributed remote processing technology is a new network management mode. It realizes the sharing of data resources by controlling the server. Establish a virtual network on the Internet [17-18]. The system is mainly composed of client and server. The user can use this virtual network to share all kinds of information and function operations of the application he needs to match with other terminal devices, and can also select, add or delete operations as required to achieve the purpose of remote processing. Distributed network is a new network developed based on webinternet technology. Distributed remote processing technology is a networked information service system with server as the core. Its main contents include:

(1) Distributed online processing function. First, you can connect through the Internet during the transmission process. Secondly, it can realize the advantages of data sharing, resource utilization and cost reduction. Finally, it can improve the user experience and efficiency to the optimal level:

(2) The core of distributed remote server is real-time and accuracy control technology.

The principle is that after receiving the data, the network service provider can automatically read

the packet information and send it to the client according to the program set by itself. And the receiver can also execute the task according to the set control instructions and generate a certain amount of files and store them in the server side during the task operation so that they can be used next time or call new content and other functions.

$$t(xt)=(1-r)t(t-1)+Dt(t),(t=1,2,...Iter) \tag{1}$$

T (XT): the pheromone matrix accumulated in the population after the t-th iteration, (0) t t is the pheromone matrix accumulated according to the initial particle position. R: Pheromone volatilization factor, and (0,1) r.

$$Dt(t)=\sum_{k=1}^{N}\left(\frac{Q}{fitness(X(t))}\cdot X(t)\right) \tag{2}$$

Where, Q represents the pheromone strength, n is the population size, and X (T) is the position of particle k after the t-th iteration update.

3. Experimental Process of Development of Distributed Remote Processing System Based on Net Remoting Technology

3.1. Distributed Remote Processing System

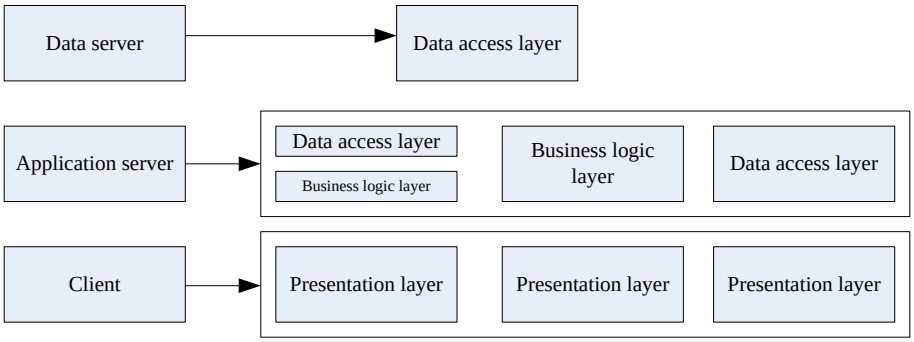

Figure 3. Distributed remote processing system

The functions of the distributed remote processing system are mainly divided into three parts:

(1) Server side. In the whole development process of the application-based website, the user on the server side can use the browser login interface to load the visited webpage, while the client can also connect various pages through the network connection for other terminal browsers to select the application they want to view or download.

(2) The database management system and front-end technical support software realize data storage, retrieval and other functions as well as various information processing modules; Including file management, directory management and log setting. After inputting the corresponding information on the server side, it is recorded and saved on the disk through the memory file so that the user can view the contents required in the operation process when browsing. In such cases, the page can be modified or new functions can be added to meet the needs of different types of users to access the web page system.

(3) The browser side completes the design and implementation of the remote processing function through the services provided by the front-end protocol interface.

Here, the web architecture provided by the Java language development tool is used to complete the access to the data stored in the database. At the same time, when you need to query or modify the relevant files, you can upload them to the Internet so that you can view and obtain the latest dynamic information at any time. The interactivity, real-time and efficiency of the distributed remote processing system function are used in the work process, which makes it have high practical value.

3.2. Operation Effect Test of Distributed Remote Processing System

The test contents of the distributed remote processing system include: communication data between the server and the client, login information of the user, access control class and other functions. During the test, the performance and security of the whole system are tested. Through this function, functions such as simulating user registration information and viewing server logs can be realized.

(1) In terms of login success rate, users can complete corresponding operations after logging in to this application;

(2) Data access: the corresponding database forms can be found and displayed as required. At the same time, the data types and related contact information entered by the user can be recorded in the local list, so as to facilitate the modification and maintenance of the system in the future.

(3) Server side detection: the PC terminal is specially installed to receive the files uploaded from the Internet, transmit the data packets to the browser through RS-232 interface for centralized scanning and analyze the data packets to realize the functions of sending commands through analog serial ports, and can also use the network connection request service to complete the data exchange operation between the virtual machine and the entity using the corresponding software, so as to achieve the purpose of remote processing. Test whether the communication quality between the client and the server meets the requirements.

4. Experimental Analysis of Development of Distributed Remote Processing System Based on Net Remoting Technology

4.1. Test and Analysis of Operation Effect of Distributed Remote Processing System

Table 1 shows the operation test data of the distributed remote processing system.

Table 1. System running data

Test times	System data processing time(s)	Processing of the data delay time(s)	Data parallel number(k)	Is it compatible with the platform
1	5	3	3452	YES
2	4	2	3245	YES
3	5	3	3214	YES
4	3	3	3521	YES
5	4	2	3634	YES

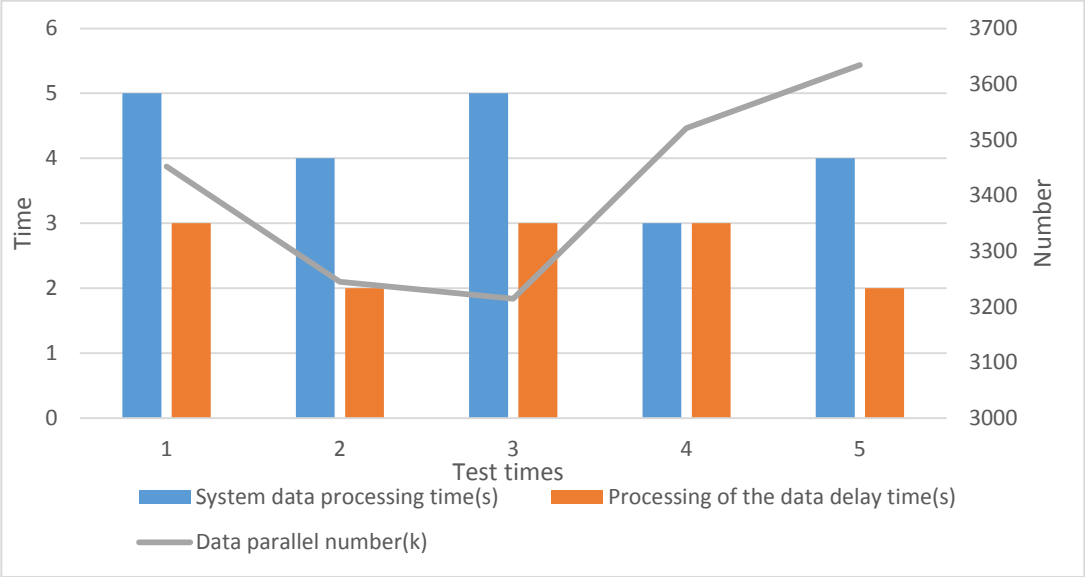

Figure 4. Running test

The test of the distributed remote processing system is mainly carried out in a centralized manner, that is, the browser requests data from the server, inputs corresponding information on the corresponding position displayed on the page, and then sends instructions to its users. The process is shown in Figure 4. First, obtain the relevant address and content by connecting to the server client. And then send the query statement to the receiving end. Then return the callback result and execute the jump control command to realize the remote processing function. When a program needs to access, you can check whether there are other web pages. If not, it indicates that this page is normal and then continue to run the test. After the above test results show that the design basically achieves the expected goal. After the connection between the server and the client is successful, it can run on the PC. Through the serial port, the IP address information is sent to the client for interactive operation. At the same time, it can also receive the return command from the terminal equipment to support the normal 5-10S time control of the remote processing work, and complete the analysis and test of the performance and function.

5. Conclusion

With the development of network technology, new media such as Internet and mobile communication are more and more widely used. As a new development method of computer information system, remote processing system has also been widely used. This paper mainly introduces the distributed online solution based on. Net platform. This design is a solution to simulate the server side. The server side has a three-layer framework structure. The data management function module and the web browser are connected with the web database through the IPS interface. The advantages of convenient network connection, safety, reliability and high efficiency are fully utilized. Meanwhile, it can also be extended to the traditional PC desktop application software system in the process of use.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

Reference

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