

Design and Implementation of Centralized Audit and Analysis System Based on Data Mining Technology

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Abstract: with the development of modern science and technology, it is a trend of continuous improvement. After entering the 21st century, China's audit work can provide effective supervision for China's economic activities, audit can improve China's social and economic benefits, and can maintain the stability of socialism and other aspects. Based on a lot of analysis, this paper studies the audit analysis system by using Java technology, and designs a centralized audit and analysis system. This system uses the software to realize the design of dynamic page to operate the database, which makes the audit work more efficient and concise. This system has a very important practical significance in the intelligent audit work, which can provide a favorable guarantee for the development of enterprises, and also provide a favorable support for the development of social economy.

1. Introduction

Due to the continuous improvement of China's social system, science, technology and economy have taken off in recent decades. Many enterprises and institutions need to update the workflow and technology of centralized audit and analysis, closely following the pace of social development. Centralized audit and analysis system plays a role of supervision on the free economic market, which will play a role of supervision and restriction on the audited institutions, and maintain the safe and orderly operation of the national economic system. With the increasing of data, there is an urgent need to apply data mining technology to the centralized audit technology, but there are also two major problems to be solved: on the one hand, how to use data mining technology to collect suspicious or valuable information found in the centralized audit; on the other hand, with the development of enterprises and institutions, there are more and more data, how to use this technology to process business data quickly and efficiently. The design of centralized audit and analysis system can show the overall operation of the system, and can find out the problems in the centralized audit and analysis system in time to avoid the occurrence of dangerous events, and the centralized audit and analysis system can also analyze a large amount of data to predict the trend or trend of some future events. The modern centralized audit and analysis system is mainly managed from the following aspects:

- (1) Ensure the accuracy of centralized audit and analysis. Auditors no longer rely on paper and labor. The computer is used to analyze, count and summarize the data to avoid the error rate.
- (2) Audit staff can reduce the labor load of management staff by querying information on the Internet. Greatly improve the efficiency of work and reasonably reduce the company's

expenditure in this regard.

(3) Promote the rational allocation of centralized audit and analysis.

Due to the continuous development of China's economy and science and technology, the rise of many multinational enterprises from China makes the demand of enterprises shift to large-scale multinational companies, so the service object of centralized audit and analysis system has also undergone significant changes. At present, the research methods and direction of centralized audit and analysis system are constantly undergoing major changes, which also makes the theory of centralized audit and analysis system in China begin to show the trend of mathematicization and globalization.

This paper studies the design of the centralized audit and analysis system in detail, and combines with the highlights and advantages of the existing centralized audit system at home and abroad, takes these as the basis of the system, uses the advanced system to sort out and study the centralized audit management system, achieves the requirements of the system, and finally realizes the enterprise and business unit through object-oriented Centralized audit management, using software for testing.

2. Systems Analysis

The first task of centralized audit and analysis system design is to understand the requirements, which is also a crucial part. Only by understanding the needs of customers, can we design solutions that meet the needs of users.

(1) Technical feasibility

The centralized audit and analysis system uses the three-tier data structure, which is commonly used nowadays. The client improves the user interface. The server will feed back the message request sent by the client, and analyze and process the business logic in the computer. The three-tier data structure is improved on the basis of the two-tier data structure. There are some problems: payment is not secure and the expansion performance of the system is poor, but the three-tier data structure can make up for these problems of the two-tier data structure, so this is also the reason why this paper adopts the three-tier data structure, and also increases the server and data processing process; it processes the user interface and business logic separately, which is very important. This kind of layering can make the functions of each layer relatively independent, and can provide data interface for use through the layers. This kind of independence increases the reusability of the system, and also greatly reduces the development cycle and the maintenance cost.

The server uses the computer to establish a server, using the mode is: B / S mode, the advantage of this mode is that it can give full play to the client's data processing ability, improve the server's reaction speed, but also reduce the cost of system communication, and the server and client are completed through the internal protocol, which is a good guarantee. This paper introduces the security of data in transmission, but it also has some disadvantages, but the disadvantages and advantages of B / S mode are negligible.

(2) Functional requirements

The management of centralized audit and analysis system is the administrator of users. The administrator of centralized audit system is called system administrator. This module is mainly to create user name and password, and assign them corresponding roles. User management system is a very important part of the system at the beginning. In the enterprise, the levels of users are different, and the information and interface that different levels of users can access are different, so that the permissions and operations that different levels of users can perform on the system will be different. User management system can greatly improve the organization and security of the whole centralized audit system. The functional requirements of the system management module are described as follows:

(1) Authority role management: during the initialization of the centralized audit and analysis system, the corresponding roles need to be established, and the operating system permissions need to be assigned to them.

(2) User management: in the centralized audit and analysis system, the system administrator can change the roles of the system. The roles are mainly divided into four categories: system administrator, project auditor, auditor and business administrator.

(3) Password management: in the centralized audit and analysis system, each user's role needs to modify its own login password and user name.

(4) Maintenance of centralized audit and analysis method: the administrator of centralized audit and analysis system can understand the situation in the area of centralized audit under his jurisdiction, and use dynamic methods to carry out user-defined maintenance of centralized audit method. According to the area under his jurisdiction, the data in the audit field can be well updated.

(5) Audit result management: it mainly refers to the information that users verify their login name and password in the centralized audit and analysis system. When users enter their user name and password, they verify whether the user exists in the database. If the user exists and the password is verified correctly, the centralized audit system prompts the user to log in successfully. If the user does not exist, the centralized audit system The unified Commission put forward that there was an error in the user name or password and requested to input it again.

3. Design and Implementation of Centralized Audit and Analysis System

The framework adopted by the centralized audit and analysis system is the mainstream framework of B / S mode, which meets the relevant standards. Before the centralized audit and analysis system is used, the work that needs to be done is the initialization processing. The implementation of the system is the interactive relationship between the multi-level components, which determines the development environment of the software and hardware of the centralized audit system, and also determines the development technology of the centralized audit system.

Presentation layer: this layer is mainly to realize the correct display of user interface and complete the interaction with user information.

Business logic layer: this layer is mainly to achieve business logic needs, its work is to access information through the database, but also in accordance with business requirements for data processing.

Data access layer: this layer is the closest layer to the database, which is responsible for providing the access method of the database and ensuring the correct processing of the data in the business logic layer.

(1) System user management audit

The flow chart of user management of centralized audit and analysis system is shown in Figure 1. It can be seen from the figure that the main module of user management includes two functions: browsing user information and modifying information. The following is a detailed analysis of this function.

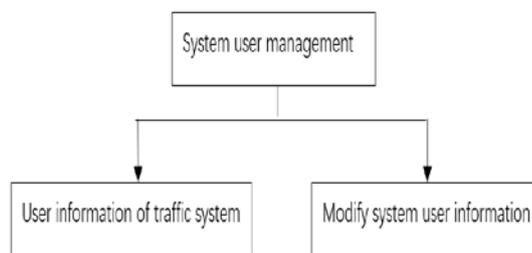


Fig.1 User Management Module of Centralized Audit and Analysis System

The centralized audit and analysis system administrator can query the user information of the system, including the user's name, age, position, etc., but if it is not the centralized audit administrator, log in to the system, you can only query personal information, and other user information is not authorized to see.

Modify the user role of centralized audit system. The user role of centralized audit system is mainly composed of four parts: system administrator, business administrator, auditor and auditor. After the completion of the system, the system administrator needs to be set by admin. After logging in to the system, the system administrator can query, add and delete the user information of the system. If the system administrator wants to delete personal information, the superior needs to judge whether he is the only administrator. If not, he cannot delete personal information.

(2) System database design

In a system design, the database design is its foundation and core, the quality of database design directly affects the quality of the whole system. Data is the foundation of all systems. If there is no good foundation, there will be a lot of problems in the building, and so will the database design. Some problems may not appear at the beginning, but they will bring us a lot of trouble in the development process or later maintenance. Therefore, the construction of data table is an important part of the project. A well-designed database can not only reduce the development cost of the project team, but also improve the performance of the system. This system uses Oracle database, and the structure of data table is shown in Figure 2.

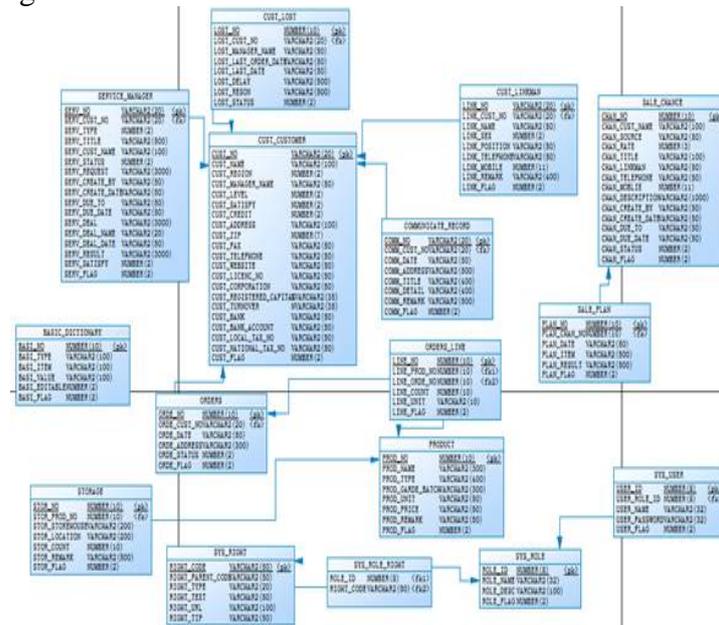


Fig.2 Data Table Structure

4. Implementation of Centralized Audit and Analysis System

Firstly, two windows server 2012 R2 servers are built on vmware workstation, and the server names are dc-01 and srv-01 respectively. The domain server is dc-01test.com And add srv-01 to the domain, and then use the performance counter on dc-01 to monitor and audit the data of srv-01.

The performance monitor of dc-01 server can connect to the server under its jurisdiction. By inputting the domain name of srv-01, it can monitor its performance, audit the data of this server, and add it to the counter interface.

Through the monitoring of srv-01 server data by dc-01, the data of srv-01 server can be monitored and audited. This method is technically feasible and can realize the centralized audit system. Through the monitoring of srv-01 server, the data of srv-01 server can be continuously transmitted to form a report, and the data can be displayed on dc-01 server. This method realizes the data audit well, It provides a very favorable technical help and support for the analysis and development of centralized audit and analysis system.

5. System Test

For a system, the test link is very important. By testing the modules one by one, the problems existing in the test can be solved, so that the system can run stably.

The first step is to test the function of centralized audit system. Using the method of black box test, this paper tests the functions of the centralized audit system, mainly testing the common functions of the centralized audit system. Some test functions are as follows:

(1) System login function. Login only when the account and password are correct, otherwise a prompt will be given.

(2) User management function. The function of adding, deleting, modifying and querying. During the test, the deletion function is abnormal, and the data has been deleted, but the data can still be displayed. After checking and modifying, the function is perfect.

(3) Management function. Add, delete, modify and check the development plan.

(4) The function tests of other modules are similar.

The second step is to test the system logic. The white box test method is used to test the internal logic of the system, mainly for the accuracy of the data. Part of the test logic is as follows:

(1) For delete operation. Delete user 111, enter the system again, the data is not displayed, view the database, the status changes, the data still exists.

(2) For the process operation of service management module.

Table 1 System Login Test Table

| System module | Function point | Case number | Use case description | Input content | Expected results | test result |
|---------------|----------------|-------------|--|---------------|------------------|-------------|
| System login | Sign in | 1 | The test account number is wrong and the password is correct | 123/123 | fail | fail |
| | | 2 | The test account number is correct and the password is wrong | Gao Wei / 111 | fail | fail |
| | | 3 | The test account and password are correct | Gao Wei / 123 | success | success |

Table 2 Permission Management Test Table

| System module | Function point | Use | | Expected | | |
|-------------------------|-----------------------|----------------|---------------------|--|---------|-------------|
| | | Case number | case description | operation | results | test result |
| Authority management | Switch permissions | 1 | tester authority | Change Only administrative rights | success | success |
| | | 2 | role information | Change Add role 123 | success | success |
| | | 3 | authority module | Assign to permissions 123 | success | success |
| | | 4 | delete button | Test Delete role 123 | success | success |

In Audit and analysis system unit testing, centralized testing, and did not find any problems in the centralized audit system, basically can meet the needs of the market centralized audit system, the overall system is still feasible, in the follow-up research and design, also need to add more modules to run and improve the whole system, to provide more convenience for users.

6. Summary

The main idea of centralized audit and analysis system is to use the Internet and computer technology to choose the centralized audit and analysis system management on the Internet. Through this way of centralized audit, we can achieve the efficiency of workflow and the accuracy of data centralized audit, so that enterprises can analyze the market more comprehensively and better understand the needs of consumers. Auditors can conduct effective and accurate centralized audit and analysis based on their own specialty, which improves work efficiency, reduces the waste of time consumed by traditional audit, and makes rational and effective use of resources.

The design of centralized audit system provides a more efficient centralized audit system, provides a more environmental protection scheme, and lays a certain foundation for the follow-up research in this area. However, due to personal level, there are still some problems in the process of system design and some functions need to be optimized. In the future research, we will continue to optimize the system.

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