

Design of Archives Management System in Private Colleges and Universities

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Abstract: This paper is based on the research status of college archives management system and is supported by related topics. In the design process, the design experience of the previous file management system was fully borrowed and based on the analysis of the functional requirements of the file management system. From the three levels of functional architecture design, logical architecture design and physical architecture design, the design scheme of the archive management system of private colleges is proposed.

1. Introduction

The archives of private colleges and universities is a historical record directly formed by various activities such as teaching and management in private universities, and has great value and significance for the sustainable development of schools. File management is the management of all kinds of data, and it has a high degree of compatibility with modern information management systems. Therefore, the promotion and application of the archives management system of private universities has become a major trend. At present, the file management system has been widely used in enterprises, institutions and universities. It adopts advanced storage equipment, uses database principle, and realizes information management of files through image scanning technology and internet technology. It allows users to query, read and transfer file information through terminal devices and networks. The file management system facilitates the access, management, maintenance and storage of files and improves the utilization of files. Its application in private colleges and universities is the basic guarantee for school construction, and it also provides reference for leadership decision-making, teaching management and scientific research. Therefore, the research on the archives management design of private colleges has certain practical significance.

2. Research status at home and abroad

The file management system originated from the research on the information library management system, and its development is based on the information management system. In the 1980s, the United States first developed a standardized file management machine-readable catalog format. In the 1990s, the National Archives Information Navigation System was formally established, and in 2002 a new file management system, ARC [1], was launched. In addition, the archives management informationization construction in Singapore, Japan, the United Kingdom and other countries is also at the world's leading level.

Although China's archives management informationization business started late, it has developed rapidly. The Central Archives established an automatic file retrieval system in 1985. The Archives of the Chinese People's Liberation Army established a file management system in 1987. In order to standardize the processing of archives information, China has issued dozens of national standards for archival data exchange since 1992 [2].

The construction of archives management system in colleges and universities in China has also achieved certain achievements. Zhang Kun designed the university file management system under the network environment [3]. Wang Daoqian proposed the design method of college archives management system based on AJAX [4]. Hou Shubao applied large-scale database management technology, multimedia technology and network technology to the design of university file

management system [5]. Wang Linqi designed the file management system based on .NET technology and B/S mode [6]. The research and application of these scholars provide a rich experience reference for the research of this paper, and also make the file management system designed in this paper more scientific and can meet the actual needs of archives management in private universities.

3. Functional requirements analysis of the file management system

Participants in the archives management information system of private universities mainly include students, teachers, school administrators and system administrators. Different users have different requirements for the functions of the system.

3.1 Analysis of the functional requirements of the student system

Students are the main participants in the private file management system. The file management system can provide inquiries about the teaching plan, and obtain information such as the corresponding teaching plan and teaching location. It can provide query and statistics functions for academic performance, so that students can get timely information on test scores, credits, etc., and arrange study plans reasonably. The employment situation of graduates of this major and other majors can be obtained through the system to guide their study at school.

3.2 Analysis of the functional requirements of the teacher system

Teachers mainly use the file management system to obtain information related to student work and teaching work. This requires the system to provide the following functions: basic maintenance of student files, arrangement and management of teaching courses, adjustment of teaching plans according to actual needs and real-time updating, and query and statistics of student information in various ways. There is also a need to be able to publish shared resources or public information through the system.

3.3 Analysis of the functional needs of school administrators

The school administrator is mainly the decision-making manager of the school. The decision-making layer hopes to obtain the following information through the file management system: student basic information, overall statistical analysis information of student achievement, query and statistics of student classification information, and access to graduate data. After the intelligent mining process results information to assist the school's decision-making.

3.4 Analysis of the functional requirements of the administrator system

The file management system administrator is mainly responsible for managing the operating parameters, database connections, users, and permissions of the system. Its purpose is to ensure that the system works properly and efficiently. Administrators mainly need to provide three functions. First, the setting function of the running parameters, on the one hand, is persisted to the database, and on the other hand, the operating state of the system is adjusted according to the parameters. The second is to configure the user rights, and use the way to set user roles to clarify the usage rights of users in different roles. The third is the management function of the user, through the system to achieve the management of the distributed database platform.

4. Design analysis of file management information system

Based on the actual functional requirements of the above-mentioned private college archive management information system, the overall design of the student archive management information system mainly includes three aspects: functional architecture design, logical architecture design and physical architecture design.

4.1 System functional architecture design

The system functional architecture design is mainly based on functional requirements analysis. The file management system of private universities has many user roles and system functions. Through the research and induction of the main functions of the system, the functional architecture design of the file management system includes five subsystems:

(1) Basic data management subsystem. This subsystem is mainly to enter and manage the basic materials of students. The system returns different operation interfaces according to the identity of the logged-in user, and realizes verification and persistent storage of the input data. File managers have the right to read and write, and teachers and students generally have only the right to view.

(2) Learning achievement management subsystem. The functions of this subsystem include the entry, update and query of academic achievements. It not only provides local students' enquiries, but also provides enrollment of the whole school students' grades. It can specify the time range and subject range of the enquiries, and has intelligent processing functions for students' grades.

(3) Student course management subsystem. The subsystem has many functional modules, including the formulation, update and release of teaching plans, the uploading and publishing of teaching shared resources, and the online self-selection of students.

(4) Graduate management information system. The function of this subsystem is to collect, organize and process graduate data. Mainly through the intelligent processing algorithm to achieve the auxiliary support function for school decision-making.

(5) System management subsystem. The subsystem mainly includes setting the operating parameters of the system, setting the relevant parameters of the system data service, and providing data support for the application of other systems in the campus network. It also includes management of users and permissions. The most important is that it provides the ability to configure and manage distributed databases.

The student file management information system is also related to many other subsystems, such as the financial management subsystem and the administrative organization management subsystem. These subsystems primarily provide support for normal student file management business processes. Generally, they exist as a relatively independent management information system, and exchange data with the functional modules of the student file management system through the network.

4.2 System logic architecture design

The system functional architecture design scheme discusses the main functions of the system from the user's point of view, while the system logic architecture design is from the perspective of program development, to achieve scalability, maintainability and reliability indicators in performance requirements analysis. The logical architecture design scheme of the student file management system is shown in Figure 1. It adopts a layered architecture model, which mainly includes the interface layer, control layer, business logic layer and data access layer.

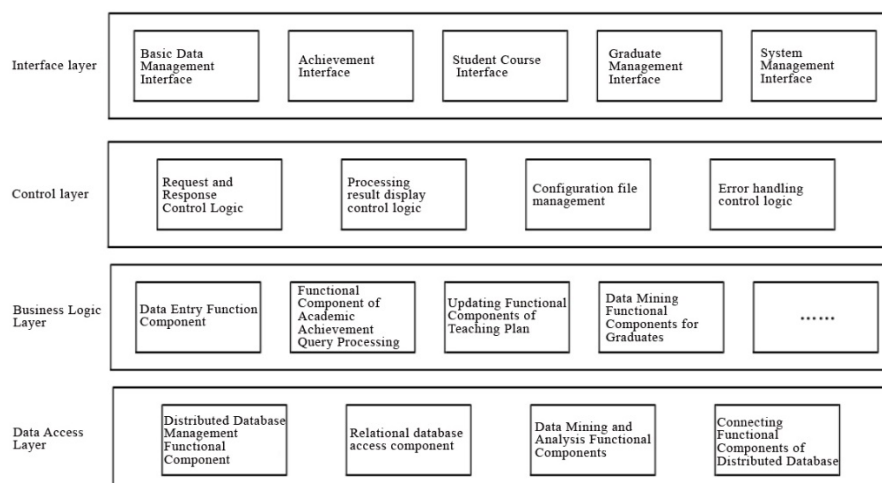


Figure 1 System logic architecture design

(1) Interface layer. The software components in this layer mainly perform two functions: one is to accept the instructions and input data sent by the user, and the other is to present the results of the system processing to the user in various ways. This layer includes the user interface of each subsystem designed in the system functional architecture. The system uses the Struts open source architecture in the interface layer, implements the MVC mode, and cooperates with the controller to associate the interface request with the actual processing logic component.

(2) Control layer. This layer separates the interface layer from the business layer to maintain a loosely coupled relationship between the two. In the traditional software design, the interface layer directly invokes the business layer function, or the interface layer element variable appears in the business layer method. This is not conducive to the reuse of business logic components and the updating of the system interface, and the control layer solves this problem. By establishing a relationship between the two through the configuration file, the software components of the upper and lower layers can be kept relatively independent.

(3) Business logic layer. This layer is the deployment layer of the system business logic components, and the business logic components complete relatively independent system functions. The relatively large-scale functions are completed by calling and collaborating between different components. The independence of components in the business logic layer guarantees its reusability. The same functional component can be used in different modules in the same software system or in different systems.

(4) Data access layer. This layer is the component that the business logic components of the system call when they need to use the data information in the database. It mainly includes data query and access processing. The components in this layer both establish a connection with the database and provide a call interface for the logical layer, and use the Hibernate framework to implement object-oriented data operations.

4.3 System physical architecture design

The physical architecture of the system is also the deployment architecture of the system, mainly designing the architecture of the system from the perspective of the network topology of the system deployment. The application scenario of the archives management system of private colleges is a comprehensive college with multiple departments and specialties. The physical architecture topology design is shown in Figure 2. Each campus deploys a service library server to store data that is closely related to the business logic application of the campus. Multiple database servers are connected to each other through a network and built into a distributed database network. The business function logic component of the student file management system is deployed in the application server of the school center computer room and accessed through the service address. The student file management information system is developed and deployed in the form of a website. The web server is deployed in the central computer room of the school, and users access the functions through the campus network. The Internet is used as the basis for data transmission between different campuses, and the VPN private line is built based on the Internet, which not only ensures data communication but also improves system security.

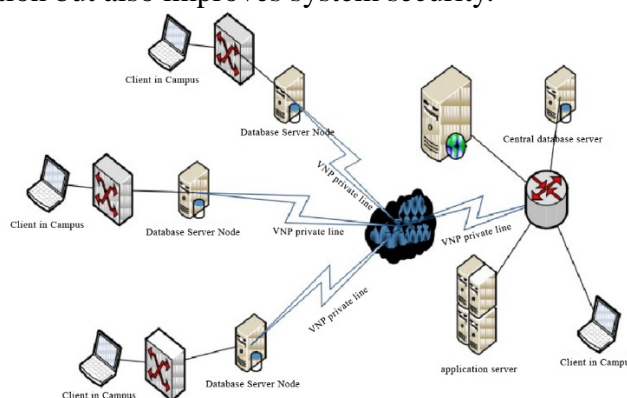


Figure 2 System physical architecture design

5. Conclusion

At present, the design of archives management information system for private colleges and universities has been rich and mature technical support, and many cases can provide reference. The focus of the design process is the actual needs of the archives management of private universities, and comprehensive consideration of the security, scalability, reliability and maintainability of the system, and finally design a file management information system with comprehensive functions and excellent performance.

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