

Development and design of integrated digital archive management platform

Rui Wei

Intelligent Science & Information Engineering College, Xi'an Peihua University, Xi'an710125, China

107285984@qq.com

Keywords: Electronic archives; Management system; Heterogeneous data; Unified maintenance; Backup and recovery

Abstract: With the continuous development of science and technology, Informationization has become more and more popular. In this context, for users who do file management, a more user-friendly interface and a more convenient management method have become their goal. This study takes the actual needs of electronic archive users as the main line, and discusses the common problems in file management in detail, and solves the problem of unified maintenance and management of heterogeneous databases and backup and recovery of archives with large data volume.

Archives refer to various texts, charts, and images of past and present state institutions, social organizations, and individuals who are directly involved in political, military, economic, scientific, technological, cultural, and religious activities and have preservation values for the country and society. And other forms of history. In recent years, computer technology and multimedia technology have developed rapidly. Local archives have gradually realized the automatic management of business and information. The data of multiple types of archive objects are stored in different databases. With the passage of time and the change of technology, the archives system not only accumulated a large amount of heterogeneous archive object information, but also generated new archive application requirements. In view of the above situation, this study takes the management and maintenance of multi-data source files in the digital archives as the main research object, to shield the multi-source database heterogeneous thinking, and enhance its multi-source data backup and recovery functions to achieve multi-vendor database management. The unified visual maintenance and management of the system forms an integrated data maintenance and management platform for the archives.

1. Research significance

The significance of this paper is to deeply analyze the current multi-source data maintenance management application, and to manage the difficulties caused by different data structures and database maintenance management methods of different vendors in the use, and the file object backup and recovery operation is complex, error-prone and efficient. Low cost, high resource consumption, etc., starting from practical problems, build a unified file maintenance management interface for managers to help administrators realize visual, comprehensive and efficient maintenance and management of various database data, without increasing maintenance costs for archives. Provide good data maintenance management and data security under the premise.

2. Design system overall framework and function of each module

2.1 System database conceptual model

All archive data and archive files of the archives are logically managed in units of files and physical storage of the warehouse. Logical files are divided into five levels according to the size of the file, which are divided into files, files, directories, and books. The case file is the core of file object storage, and it is also the core of file classification, sorting and query. The file may contain

one or more archive files or no files. In order to find the file in the file and the file, the file does not necessarily exist in a specific file. Therefore, in the conceptual design of the database, a correspondence between the file and the file is established to constrain the relationship between the file and the file.

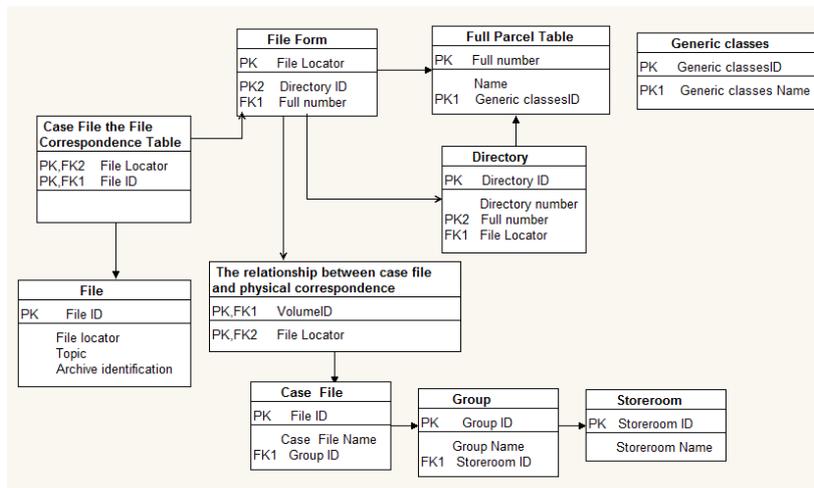


Fig.1 Conceptual model of the archives master database

2.2 System function modules

With the expansion of the scale of various enterprises and institutions, the specificization of work content, the standardization of business processes and the passage of time, more and more archive data objects will be generated. This pressure poses a challenge to traditional archive data management methods. At the same time, with the rapid development of social computer information, the use of computers to process and use archive information has gradually become a trend. The platform is based on three layers (representation layer, business layer, data layer) system design structure, using MySQL and PostgreSQL database, using PHP as a development technology, and implemented on the FreeBSD operating system. The platform manages archive objects based on file data, catalogues, and titles. The main functions include querying database operation information, supporting file database creation and deletion, and supporting database table query, addition, deletion, modification, import and export. It also provides the ability to create views and indexing to improve the query performance of the overall platform.

2.2.1 Data maintenance management module

The data maintenance management module includes two management rights: administrator and normal user. Ordinary users only have the right to query data, and the database administrator has all the rights to manage data, including Database Maintenance, Data Table Maintenance, Data Maintenance, View Maintenance, and Index Maintenance. Data maintenance is the core of the data maintenance management subsystem. To perform data maintenance, you need to select a database and select a data table. Or according to the data query module, directly enter the data table where the data is located.

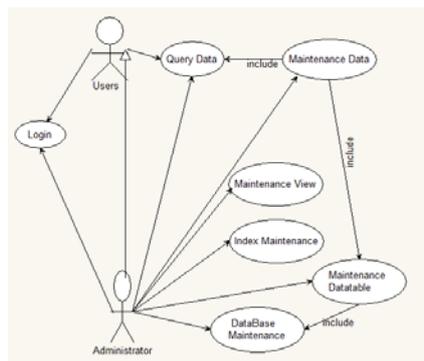


Fig.2 Data Maintenance Management Subsystem Use Case Diagram

2.2.2 Query and retrieval module

The most important function of file management is to carry out retrieval on the file on the Internet. Within the scope permitted by the user's permission, the original text of the file can be directly queried on the browser, and the download to the local machine is also convenient for the user to use. The search query module provides users with various functions such as searching, browsing, downloading, etc., and the user searches according to classification, file, topic words, etc., and can also perform retrieval by using a card that is more intuitive to the user. In addition, the administrator can perform a combined search on the user library and the log library, and print the search information as needed.

2.2.3 Backup recovery management system

The backup recovery subsystem consists of four submodules. The administrator can use the backup task to configure backup parameters and create backup tasks. In the configuration of the backup parameters, the administrator can set the application and configuration files, file image files, PostgreSQL database backup files, and MySQL database backup file parameters; when creating a backup task, the administrator can create tasks that need to be backed up. Set the name of the backup task, select the backup object to select the task real-time, backup mode, backup cycle, start time, task status, and remarks of the backup task. After filling in the above information, you can create a backup task.

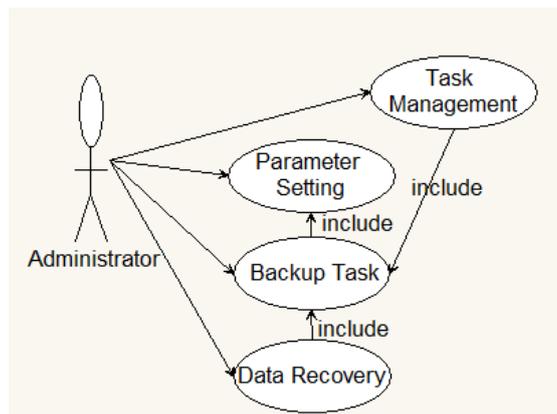


Fig.3 Backup recovery subsystem use case diagram

Backup and recovery management system: Provides a data backup and recovery platform. The subsystem includes four modules: backup parameter configuration, backup task creation, backup task management, and data recovery. It implements the modification of backup data storage location and the creation and management of backup data tasks. Finally, the recovery of backup data is achieved. The process for the administrator to perform backup recovery is that the backup parameters must be set first, which is a prerequisite for other backup recovery sub-functions. If the parameters are not set correctly, then all backup recovery functions will not be executed correctly. Only when the parameters are pre-set, can the backup task be configured. The configuration of the backup task is a prerequisite for data recovery. At the same time, the configuration of the backup task can be completed. At the same time, task management is also performed for backup tasks.

3. Conclusions

This paper designs and implements an integrated data maintenance management system for digital archives for the actual needs of the construction of a digital archives project in a province, shielding the differences between different database management systems at the bottom of the archives, so that data maintenance managers can With the support of the platform, with the help of a unified interface and tool support, the file database, database view, table structure, data content in the database, etc. are maintained and managed, and the database data is backed up/restored.

In summary, compared with the traditional paper file management mode, the electronic file

management system has the advantages of easy query, simple maintenance, friendly interface, complete functions, etc. It can effectively improve the efficiency of file management, and is an inevitable trend in the development of file management software in the future. This paper analyzes the needs of users for the electronic file management system in order to solve the problem of unified maintenance management of heterogeneous databases and the backup and recovery of archives information with large data volume. The architecture and functional modules of the electronic file management system are designed in detail for the purpose of each department. Better management of files makes an important contribution.

References

- [1] Yun bin Wang. Research on Diversified Allocation of State-owned Archives Information Resources[j]. Archives Communication. 2013(02).
- [2] Xiao sheng Yi Yi Yu. Development environment and website design implementation based on php[j]. Journal of Chongqing University of Technology (Natural Science Edition). 2011(03).
- [3] Yu Chen. Application of Informatization in Archives Work[j]. Science and Technology Information. 2010(27).
- [4] Bo. Yang Cong you Li. Hao Wu, Jian Qi Yi. Research on Access Control and Scheduling Strategy of SaaS in Cloud Computing Environment [J]. Computer Technology and Development, 2012.
- [5] Zi kai Li. Research on database anomaly transaction isolation and repair technology in distributed environment [d]. Nanjing University of Aeronautics and Astronautics, 2012.
- [6] Hai feng He. Research on the design and function realization of electronic file management system [j]. China Management Information, 2016.
- [7] Xin yao Yang. Design and implementation of a reusable electronic file management system [j]. Digital Technology and Applications, 2016, 13.