

Research of Database System under Network Environment

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Abstract. Research and Implementation of the network environment the target spatial database application system is to achieve its goal of digital management applications. In this paper, the relevant scientific research on the theory and technology under the network environment the target spatial database application system has been studied, and system implementation.

Introduction

In recent years, there have been many people in the target data collection, the management, and construction of the target database has been a lot of work and made a series of achievements. Technically, it has basically achieved the goal of integrated storage management information database. However, in terms of large scale mapping information security, target dynamic, three-dimensional spatial information management and decision support and network transmission, etc., there are still insufficient, and the urgent need to address these problems. The use of spatial database technology, network communication technology, virtual reality technology and geographic information systems technology, can solve this problem. Support of this thesis topic SOADS is also in such a background. Network Environment target spatial database application system as an integral part of the subject, focusing on the use of spatial database technology and network communications technology to achieve the target map, the target three-dimensional visual data, the target attribute information and multimedia data management and network integration transmission, the terrain simulation platform (or called visual simulation platform) to provide data management, network data transmission and the underlying support.

History and Present Introduction of Database Technology

Research on how to organize and store the data of science, how to efficiently retrieve and process data, the study of database technology, information technology has become an important field of current research. In just thirty years of development, the database has experienced from the 1960s level/network database to a relational database developed in the 1970s, and then to produce the late 1980s characterized by object-oriented database system. Facts have proved that database technology is undergoing rapid changes. Currently, the database technology is more integrated with other relevant technologies from a single commercial oriented database technology, to the development of client/server technology combined with client/server architecture of the database technology, distributed technology combined distributed database technology, and parallel technology combines parallel database technology, and multimedia technology combines multimedia database technology and object-oriented technology and database technology combines object-oriented database technology.

Currently, object-oriented database system is characterized by the current database research has become a hot technology. This is because both the spatial information system (GIS), computer-aided manufacturing (CAM), computer-aided software engineering (CASE), image processing, computer-aided design (CAD) and other new areas of application, or in the management information system (MIS), office automation (OA) and other traditional applications, are faced with major projects complex data management problems. Traditional relational database systems have been gradually exposed its support for the object type (storage type) simple, object manipulation function is weak and other shortcomings, could not do the management of large and

complex data. Therefore, the advanced object-oriented technology and database technology combine to form a new generation of object-oriented database system has become an inevitable product of the information society.

In both object-oriented database technology is not very mature stage, people think of a third way, is the application of object-oriented programming language, database application software development based on relational databases. From the database user's perspective, it can be called object-oriented relational database. It is the object in question in front of a relational database and compared in theory is completely different. It uses object-oriented technology and relational database technology combine to provide support for certain complex types (such as binary large) use the database to achieve a number of complex data such as store text, images, sounds and other dynamic variable-length data entity, and on this basis, the use of object-oriented programming languages (such as C++) database application software development, database user to provide an object-oriented data storage, management and retrieval functions to achieve. It is advantageous in that: allows for multiple physical databases and file systems behave as a logical, object-oriented database that provides database independence, access speed, the use of more flexible. The disadvantage is that: a physical document management system may require additional tools, the need for object-oriented programmers skilled database administrator and retraining, poor security and network transmission difficulties. Currently, object-oriented relational database is usually in some areas of expertise for a particular purpose in the general basis of the relational database application development and the formation of highly specialized, and therefore in some kind of database fields of expertise is very practical.

Database Network Transmission Strategy

Database system environment two C/S structure (Two a Tier) and three-tier C/S structure. Compare the two transmission network hierarchy, the three-tier C/S structure has great advantages in the application. Mainly in the following aspects:

In a Two Tier architecture, have established a separate channel at each of the front-end user is connected to the database, that is, a Colmection. Front-end user, the more and more Cormeetion between front and rear ends, and each time Connection will establish the database server has complicated preparations, the current number of end users increases, the memory-intensive database server resource, and then drag collapse of the whole system operating efficiency. This is particularly evident in the front end of many more concurrent users connect to the backend database. Technically, the server will continue to carry out DiskSwap action. In addition, concurrent connection to the database is limited, it is impossible to support a very large number of customers of concurrent requests.

Two in a Tie: Under the framework, both the thin client/fat server or thick client/thin server, data processing generally focused on a single machine, for some large amount of data or complex algorithm, it will significantly reducing the efficiency of data utilization.

Two in a Tie: Under the framework, often only a single database server if the database server crashes, all operations must cease.

In a Two Tier architecture is server-centric database client and the database server is directly connected to any minor changes to the database server, may lead to update all client applications. This multiple users to use the system is undoubtedly a tedious work, reducing the stability of the system.

In a Two Tier architecture, by controlling access to the customer database resources, you can implement different user rights assignment, which controls the access to database objects.

sQLServer having a distributed network capabilities, provides client/server model. Therefore, network capabilities sQLserver2000 database applications, usually there are two solutions: First, the use of internal database network capabilities; the second is the programmer within the application programming network.

Our ultimate goal is to achieve network transmission target spatial data visualization and client queries based on this and other operations. The target spatial data visualization is the first object of

the transmission network, so from the perspective of human perception to discuss the objectives spatial database network transmission strategy is necessary.

Let's take a look at people in the natural environment perception and behavior of feedback systems. People in the natural environment, the first on the surrounding environment has been perceived that understanding which the temporal position (identified flying ere & When), and then present around the person or object be perceived (Who & recognition fly at), spontaneous experiences from rough fine to gradually discern objects in the process, after which they can naturally and others to communicate and collaborate on the surrounding objects to control and manipulate.

Due to limitations of network bandwidth, network transmission of data, some of the large amount of data must be some pre-processing of data. Typically, there are two pre-treatment ideas: First, reduce the quality of the data, the second is the use of efficient compression algorithms. For the target spatial database, data generally have a higher security classification, data quality and reduce the amount of information means that data loss is clearly inappropriate. Therefore, the data compression can greatly reduce the amount of network transmission, thereby improving system performance.

Retrieval of spatial data, may return a large set of records, reaching hundreds of thousands or even one million records. For example, the query National River, there are large and small rivers. Retrieved record set how to deliver it to the client? If a client needs the whole set of records of all accepted, it will greatly consume system resources. And transmission of the data takes a long time, the client needs to wait for a long time. Asynchronous transfer technology and client-side caching, can solve this problem.

The Target Spatial Database Application System under the Network Environment

Target spatial database application system simulation platform is as the basis for topographic data support member, should provide secure and reliable data management for the client to provide accurate and detailed information on the basis of spatial query object information. Space-based environment, providing spatial positioning, targeting, maneuvering targets, trends and other development trend of decision-making behavior on the data requirements of the system to meet the needs of decision support functions. In order to achieve long-range goals of information sharing and timely delivery, the target spatial database application system should provide multi-user access and remote invocation mechanism, the network also functions to achieve the target spatial database application system is an important component.

Normative. Target spatial database application system is an integral part of SOADS, which requires programmers to follow the system development process is not only to develop their own standards, but also to follow SOADS large system of uniform standards and norms, including data, protocols, and other documents aspects, to ensure the various stages of development between the various subsystems and organic convergence and integration.

Scalability. In database technology and network transmission technology, should adopt advanced standards, hardware and software platform used should have better scalability and easy upgrade.

Advanced. The so-called advanced, means making the overall design, detailed design using advanced design methods and techniques, advanced data management technology and advanced software development tools, while the exemplary system scalability, interoperability, integration and so it has a high level, to lay the technical foundation for the next phase of development.

Safety Includes data storage security, data security and data security applications. Application of mature database management software and network transmission technology, will effectively increase data security.

System Frame Structure and Function of the Outline Design

Application on the server application to communicate with SQLServer database system uses ADO database access technology, and communications between the application server and database

server using SQLServer itself has a distributed network transmission function, without further development between them network communication software. Therefore, if the program on the application server running on a database server, then the three C/S database application system will become a two-tier C/S database applications.

According to the physical distribution system development division, as well as the overall design of the system, the system is divided into three relatively independent modules: "The database server database management component AimDBManger.exe", "application server and service parts AlmDBService.exe" Customer end data application part AimDBClient.dll".

Conclusion

In this paper, the implementation of the following work:

OOSDM proposed data model, to achieve the integration of multi-source data stored in the database. He proposed a "Elements of the tiered index," data management "grid index" and "LOD technology" combining effectively meet the transmission network and visualization of spatial data needs on data storage structure. From the theoretical model is proposed based on perceptual data network transport policy, and client-side caching and data compression technology to achieve the goal of spatial data transmission network. Application Software Engineering work on the software design and development carried out based on the target spatial database application system network environment.

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