Database Management (DBM) in a Changing Environment

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Abstract *The views of this paper expressed the management of the database system that enhances the importance usage of computer network to ascertain the task. This describes a serious research to enabling profound solutions on the solved keywords. Universal Database is a relational database management system that supports a variety of client and server platforms and communications protocols. Database management is made up of several administration tools such as the control center and the command center, which simplify the task of managing your environments and data. The basic elements used by universal database objects, data integrity, system catalog tables, directories, storage objects, recovery objects, and configuration files. Database provides several system management facilities to help manage very large data-base and large networks. Those facilities includes being able to perform many administration management tasks while users are still connected to the database, allowing client code to be shared to simplify configuration, and a governor to assist you define how applications behave. Database management program files are physically stored in one location on a particular machine, and created instant point back to the location, and can have several related database located within a single instance.*

Introduction

Database (db) have been in use since the earliest days of electronic computing, it is a programming software package. Database management can simply cover the keywords structures such as Network, Event monitoring, Security, Backup, and Computation. Through its clients to meet the needs from database administration client, database Run-Time clients, and database application development client. Database client software could be acquired by using the database management software client pack CD-ROM which is included with Database Workgroup and Enterprise server editions. The latest database client software can be download from the IBM data management web site. If you need your server to also act as a client, you do not need to install the database client software separately on the server. The database client software is already built into each database product to act as a client by the server. You need to install this software only on a remote system that is to act as a client. Installing the client as it showed, is by using the typical and custom installation types. After the client software is installed. Configuration assistant could beused to find your database on the network.

The data base management also ensuring data security, that is to say, it's set up your database so that data is protected against unauthorized use. On security, there are three (3) security levels control access to database universal database data and functions. The first level of security checking is authentication, where the operation system verifies a user through a user ID and password. Once authenticated by the operating system, authorization is the next level of security where the user must be identified to database code using SQL authorization name or authid. The authid can also be the same as the user ID and is normally used for identifying users to maintain the database and instances. Unlike other software packages and modern systems which can be applied to widely different database and needs. The vast majority of older systems were linked to the custom of databases in order to gain speed at the expense of flexibility. DBMS were found only in large organizations which the computer hardware needed to support large data sets. In the mid- of 1960s, number of general-purpose database systems emerged, as computers grew in speed and capability and there were number of such systems in commercial use. Interest in a standard began to grow, and a man called Charles Bachman, author of "integrated data store"(IDS), founded the database task group within CODASYL, the group responsible for the creation and standardization of COBOL, in 1971, they delivered their standard which generally became known as the "codasyl approach" and soon a number of commercial products based on this approach were made available .

The codasyl approach was based on the "manual" navigation of a linked data set which was formed into a large network. When the database was first opened, the program was handed back a link to the first record in the database, which also contained pointers to other pieces of data. To find any particular record the programmer had to step through these pointers one at a time until the require record was returned. Simply queries like "find all the people in India" required the program to walk the entire data set and collect the matching result one by one. There was essentially, no concept of "find" or Search" this may sound like a serious limitation today, but in an area where most data was stored on magnetic tape such operations were expensive to contemplate any way, anywhere.

A database management system as software programs, which controls the organization, stored, management and retrieval of data in a database. It's said to be categorized according to their structure or types. DBM –accepts the requests for data from an application program and instructs the operating system to transfer the appropriate data. The queries and responses must be submitted and received according to a format that conforms to one or more applicable protocols. Database management system (DBMS) when it is in used, intimation systems can be changed more easily as the organization intimation requirements change. New categories of data can be added to the database without disruption to the existing system.

Data

The word "data refers to qualitative or quantitative attributes of a variable or set of variables. Data (phiral of "datum") are typically the results of measurement and can be the basis of graphs, images or observations of a set of variables. Data are often viewed as the lowest level of abstraction from which information and then knowledge are derived. data is also known as row data and unprocessed information, refers to a collection of numbers, characters, images to convert from row to meaningful and readable information or to convert physical quantitative into symbols.

Management

Management is the process of controlling and organizing a business and organizational activities or act of getting people together or instruments to accomplish desired goals and objectives using available resources efficiently and effectively. Management comprises planning, organizing, staffing. Leading or directing, and controlling an organization (a group of one or more people or entities) or effort for the purpose of accomplishing a goal. Resourcing encompasses the deployment and manipulating of human resource, financial resources, technological resources and natural resources. Since organization can be view as system management, can also be defined as human action, and design to facilitate the production of useful outcome from a system. This view opens the opportunity to "manage" one self, a pre-requisite to attempting to manage others.

Trends of DBM

In 1998 database management was in need of a new style of database to solve current database management problems. Researchers realized that the old trends of database management were becoming too complex and there was need for automated configuration and management. Gerhard Weikum, Michael stone braker and surajit chaudhuri were the pioneers that dramatically affected the thought of database management. They believed that database management needed a more modular approach and there were too many development processes of specifications needed for users. This new development process of database management is more possibilities to access. Database management is no longer limited to "monolithic entities'. Many solutions have been developed to satisfy the individual needs of users. The development of database options has created flexibility in database management.

There are several ways database management (DBM) has affected the field technology. Because organizations demand for directory services which have grown as they expand in size, business use directory services that provide prompted searches for company information. Mobile devices are able to store more than just the contact information of users, and can discover (cache) and display a large amount of information on smaller displays. Search engine queries are able to locate data within the world wide web (www). Retailers have also benefited from the development with data ware-housing, recording, recording customer transactions.   Online transactions have become tremendously popular for e-business. Consumers and businessess are able to make payments secondly through some company-websites.

Five Key Words to Describe DBM

DBM systems are designed to use these keywords structure to provide simplistic access to information to the user.
The keyword structures are:
1) Network
2) Event monitoring
3) Security
4) Backup
5) Computation

Networking: The networking consists of more complex relationships; it can relate to many records and accesses them by following one of several paths. In other words, this structure allows and enable the user to be connected and has link relationships to work together for online effective Communication. This is done through the help of database management programming.

Event monitoring: An event monitoring allows you to collect information about transient events that would be difficult to monitor through snapshot, such as deadlocks, transaction completion, and completion information that includes how long a transaction has take place. Monitoring a database manager event results in information being returned when that event occurs. The information provides a good summary of the activities of a particular event.

Security: For security reason, it is desirable to limit who can see or change specific attributes or graphs of attribute. This may be managed directly on an individual basis, or by the assignment of individuals and privileges to groups, or in the most elaborate models, through the assignment of individuals and groups to roles which are then granted entitlements. There are three (3) security levels control access to universal database management data and functions. The first of security checking is authentication, when the operating system verifies through a user ID and password. Once authentication by the operating system authorization is the next level of security where the user must be identified to Database management by using what is called SQL authorizations name in other word "Authid". Similarly, this is what "American's security agency used to trapped down Osama bi-ladi in his hide-out". The authid can also be the same as the user ID and is normally used for proper identification at any moments in the surroundings and searching view. In essence, privileges are rights granted to users to work with objects within a database, such as a view object or search light.

Back-Up: Copies of attribute need to be made regular in case primary disk or the equipment fails. A period copy of attributes may also be created for a distant organization that cannot readily access the original. Database management systems usually provide utilities to facilitate the process of extracting and disseminating attribute sets. When data is replicated between databases servers, so that the information

remains consistent throughout the database system and users cannot tell or even know which server in the DBMS they are using, the system is said to exhibit replication transparency.

Computation: Common computations requested on attributed are counting, summing, averaging, sorting, grouping, cross-referencing, and so on. Rather than to have each computer application implements that from scratch, which they rely on the DBMS to supply such calculations.

These given Database management optional structures depend on the natural organization of the applications data, and on the application's requirements, which include transaction rate, reliability, maintainability, scalability and cost. Database in the cause of system management, provide many facilities in addition to the control centre to aid in the management of a large, diverse database system. You can administer database client from one central location, perform database client from one central location, and perform database administration tasks remotely from a client workstation unite banks for fund transfer, monitor database activity, spread databases across multiple file systems, force users on the system, and diagnose problems.

 A number of database administration management tasks can be performed while the database is still operations, "while users are still connected". This provides for greater availability of data to users. Some management tasks that can be done online include loading data, backing up data, reorganization of data, creating table spaces, and altering tables or table spaces.

Managing Data in Table Space

Database that are very large, contain large objects such as photos, or require high performance, you need to use advance method to store your data. Database provides table spaces, containers, and buffer pools for you to define how data is store on your system. Databases are logically organized into table spaces consist of physical storage devices called containers. A single table space can span many containers. A buffer pool is an allocation in memory used to discover (cache) table and to index data pages as they are being read from disk or being modified. You aren't required to create a table space, container, or buffer pool to create table in a database you can accept the defaults for each when you create a database and a table in a database. By default when a database is created in database, there default table spaces are created as follows:

Temp-space: This is a table space made temporary used to sort or reorganized tables, create indexes, and join tables

User-space: This is a regulation space used to store the tables data and indexes.

Syscat-space: A regular table space used to store the system catalog tables. Using table spaces to store your data gives you the flexibility to assign portions of a table such as data, indexes and long field data to different table spaces. This gives you the opportunity to assign different storage devices depending on the content of each table space. Table spaces can also be backed up and restored as a unit. If you separate into spaces according to back-up the table space containing the more frequently updated data more often.

Steps to Create Table

1) Start the control center
2) Expand the folders until you see the CDLIB database.
3) Right-click the table spaces folder.
4) Select create/table space using wizard from the pop-up menu.
5) The create table space wizard appears.

Data Recovery Manager and Bank-up (wizard)

Data can develop problems caused by media and storage, power interruptions, and application failures. In the cause of managing the data file, the restore manager i.e. 'database wizard' helps deal with the basic database recovery. If you find out that, you have more complex problems to deal with, use the information covered later on the restore manager which is the database wizard to restore your data. Database recovering manager automatically recovers from system crashes. If your database crashes to a software problem or power failure. Database automatically restores your database to the state just after the last committed transaction, using a set of logs that recorded every transaction that had not been saved to the hard drive. All committed units of work not written to disk will be redone when the system comes back and the first application connects to a database managing recovering memory or when a database is restarted.

The restore data wizard helps you restore a database to the point in turn of the last database backup or the completed transaction occasionally, you may need to undo something that had happened to your database. For example, if an errant application program has damaged your data, you would want to put the database back to the usual point before that application will run against it. To do this, use the database wizard to perform at full database restore, but in the last step, specify a date and time to which you want to roll forward your database by using the logs. Database backup is one of the importance's to consider the database logs. If a database needs to be restored to a beyond the last back "either full or incremental" logs are required to roll the data forward to a point of consistency. Database allocates primary and secondary log files to each log created to support recovery operations. Primary log files establish a fixed, reallocated amount of storage to the recovery log files. Enough disk space for the primary log files must be allocated before the database the database is connected to secondary log files are used when the primary log files become full and are at a time when required.

Two Ways of Configuring Logging for Database Management

1) Circular logging
2) Archive logging

Circular logging: it is said to be only full, offline backups of the database are allowed to recognize. The database must be offline i.e. inaccessible to users "when full backup is taken. As the name suggests, circular logging uses a ring" of a online logs to crashes. The logs are used and retained only to the point of ensuring the integrity of current transactions only crash recovery and version recovery are supported using this type of logging.

Archive logging: is the support recoverable database by archiving logs after they have been written to that is to say, log files are not reused. Archive logging is used specifically for roll – forward recovering. This enable the log retain and/ or the use-exit database configuration parameter results in archiving logging. To archive logs, you can choose to have database leave the log files in the active path and then manually archive them, or you can install a user exit program to automate the archiving. Archived logs are logs that were active but are no longer required for crash recovery.

Log files can be characterized as one of the following Active-the log files written by DBM, supported crash recovery. They certain there in the files, information related to the units of works that have not yet been committed "or rolled back". Archive-the log files that been written DBMS are no longer needed to support crash recovery. Online archive log files reside in the active log path directory. Offline archive log files do not reside in the active log path directory. They can be more manually or by an external storage management product.

The configure database logging wizard allows you to specify which logging scheme you want for each database. You can develop a user exit program to automate log file archiving and retrieval. Sample users are

provided for all supported platforms. When a user exit program is involved, the database manager passes control to the executable files, the user exit sample programs for operating systems are found in the sqzzi/sample/c subdirectory. Although the samples provided are coded in c, your user exit program can be written in a different programming language.

Components

Database and its Products

If your organization has data spread across multiple database, remote relational access can represent an important advantage in the way data can designed, managed, and used database makes it possible for organizations to distribute and access data across a network of systems.

Users can query, delete, or update data in remote database, letting your focus on the design of your database and the problems to be solved rather than on the complexities of gaining access to the data.

Data is requested at one location and provided by another. The database seeming the request maintains authorizations for remote requests in the same way as for local requests. To understand how data is distributed, you must understand the components that make up such an environment. The key components include a database server and one or more database clients. The server controls one or more database and handles requests from clients that want to access these databases.

Database has its different server editions, such as workgroup server edition, enterprise server edition, personal edition, and express edition. The database engine in each version is identical. The engine is a full-function, robust database management system that includes optimized SQL support based on actual database usage and tools to help manage the data. The difference between these products is the capability to support remote clients, the licensing consideration, and the number of database partition support. The workgroup server and enterprise edition include the functions that allows database to be accessed by local and remote clients. Remote clients must have the database run-time client component installed to access a database server. The workgroup server and enterprise server edition also include the database engine and the administration client that provides tools for performing administration tasks, as well as the database run-time client component for access to remote database servers. The personal edition includes the database engine plus the administration client that provides the tools for administrative task such as configuring the system, replicating data, timing performance, backing up and recovering the system, and managing media and the database is run-time client component for access to remote servers.

This environment is ideal if you want a simple stand alone system or if you perform database administration tasks and need to have local database to prototype applications. If you want to use an application development environment, you should consider the data base developers editions. To accepting requests from remote clients, the enterprise server edition has the DRDA application server features built in. it accepts requests from z/OS, OS/400, VM, and the other DRDA clients (data request developers application).

The database partitioning feature provides the capability of partitioning the database across multiple, independent computers by a LAN (local area network). It is available to use with database enterprise server edition, can handle extremely large database, and can improve performance by adding more processing power to a given database operation. Database management (DBM), as well as providing a relational database to store your data, it lets you administer request to query, update, insert, or delete data from local or remote client applications. Database includes management and administration client provider, that provides graphical tools for you to time performance, access remote servers, manage all servers from a single site, develop powerful applications, and process SQL queries. These tools are described later in the area section called "Database (DB) tools for administering Database when a network is operational and protocols are functional on the workstations, LAN-to-LAN connections between the servers and clients

require no additional software. For example, if you want to have a dedicated database administrator (DBA) system, which allows you to administer remote database, you can use the DB administration client or the personal edition in a windows workstation that connected to a LAN in Montreal and another sever on a Linux workstation which connected to a LAN located to direction. As long as a connection exists between two LANS, clients on either network can access either server.

Within a single transaction, database on both servers are accessed and updated, and integrity of the data on both servers is maintained. This commonly known as one bank account to another is a classic example of when two-phase commit is important. It is critical that the both debit from one account and the credit to the second account be completed as a single transaction.

You can also perform database administration task locally or remotely with a database administration tools provided with the client. The general administration tools folder contains the control centre, journal, replication center, and task centre to help you administer the servers. These tools are described in the providing section called "Managing Databases Control Centre".

Types of Network

There are two types of networks: local area network (LAN) and wide area network (WAN). Local area network (LAN): this is a local area network that has number of computers connected to each other by a short distance cable in a single location. Usually a single floor of a building or sometimes connecting all the computers within the federal college of education (technical), Omoku campus for the purpose of sharing resources. LAN is usually owned and operated by one organization and as such may not be constrained by the need to conform to international standards. The proximity of computers in a local area network provides for greater speed of transmission and low error rate. Wide area network (WAN): as its implies this network "WAN" connects lots of computers within and outside the environment. It goes worldwide in communications through the server to link the user in operation.

WAN is very important in our dealings, it help running an academic programs from a distance, fund transactions, administration, employment and so many others. Its enable an application system to utilize several computers networks simultaneously thereby increasing the performance of the database management system in terms of output, and response time. WAN is also reliable in DBM, which the effects of a breakdown of one or more components can be reduced by connecting several computers in a network and therefore, cannot feel much the input of the other breakdown component.

Database Server in a Network

In database management what facilitate the information network is "server", this convene information and performing special tasks in support of other computers on the network to get the desired direction. Balance is the peripheral servers which can be used to ascertain data information. Message servers: this server provide message services in a wide variety of communication methods that go beyond simple file farm. With message services, data can take the farm of graphics, digitized video or audio, and text. Print services: print servers message and control printing on a network, multiple and simultaneous access to printing facilities. The network operating system achieves this by using printing management quells. When a computer prints to a quell it actually functions is though nit were printing to the printer.

The printed job is simply stored in the management quell and then forwarded to the printer when the printer has finished the job scheduled ahead of it. File servers: file servers other services that allow the network users to share files. File services are the network application that store, retrieve, and move data. This type of service is probably the most important reason why companies invest in a network. Data servers: this provides network powerful capabilities that are available for use on relatively weak pcs. It also transforms data through the computer to readable mean full information. Application servers: this servers allow client

PCs to access and use extra computing power and expensive software application that on a shared computer.

Conclusion

With the help of Database management one can control the environment and profound solution to develop satisfactory individual needs in the net. This reviewed several ways in which it cannot be too complex in handling the software program to tackle a problem in your environment.
Database management keep secret and also discovers secrets through a searching code, depends how the user wants it.

Recommendation

Looking at the important of Database management, there is need for enterprises, educations, companies, individuals, etc to adapt the use of data base management in there computer systems for the purpose of security and analysis.

1. In education sector: The administrative department, exams and records should use DBM for admission of students, computation of students result, employment of staff through the online processing where there will be no maneuvering and bribing to any one.
2. Security: It's recommended to use DB security in all organizations for checking un-authorize entrance permit and dangerous intruder, if it happened can easily locate the scene of the action.
3. Information: The major activity of the DBM is information compiler, it relates information from different sources to carry out a given task ie why is important to be used in the office.

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