THE SINGLE-USER SEQUENTIAL TRANSACTION CONTROL MODEL TO MANAGE THE DISTRIBUTED DATABASE FOR BIG DATA SERVER IN BANK

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Abstract

The Transaction control is important in single-user and multiplayer DBMs, where transactions may be concurrent. In the latter case, they speak of a continuator of transactions. Under sequential parallel transactions prepare a plan for their execution, in which the total result of transaction processing is equal to the result of their successive executions. By performing a combination of transactions, conflicts can occur (locks), which is the resolution of the DBMS operation. If such cases are detected, a "rollback" is usually performed by undoing the changes made by one or more transactions. In this paper a single user sequential transaction control model was proposed to manage the distributed database in bank computers. The reliability of data storage in the database is ensured in the presence of DBMS hardware failures and failures in the database to maintain, as well as errors in the software. Changes in the database In order to effectively implement the function of creating a record, it is necessary to ensure the reliability of storage and maintenance in the working state of the journal. Sometimes there are multiple copies of the magazine on the computer.

Keywords:

Transaction, Control, Single-User, Execution, Bank, Reliability, Database, Big-Data

1. INTRODUCTION

An example of a transaction control is a transaction activity with an account in a bank computer. Here you need at least a two-way process [1]. First remove money from one account and then add it to another account. If at least one of the operations is not successful, the result of the operation will turn out to be incorrect, the balance between the accounts will be broken [2]. Since DBMS is a comprehensive system for creating and storing information, it requires various components to support its operation: a computing engine, data definition, manipulation system, application creation system, and management system [3-4]. Performs actions requested from the database management system, accesses and manages information in the database, and can represent stored data [5]. A data definition system is a data definition that creates dictionaries of stored information, and allows information to be organized into files. Manipulation system allows you to change important manipulation system information, i.e., edit, delete or replace it from the database [6]. This is the first contact the user has because the first contact to use the information is located here [7].

There are many different types of database management systems, with different characteristics and functions, which ultimately allow the creation of information store [8]. Microsoft SQL Server is a data management system that is included in the Windows operating system and thus is a tool that Microsoft already offers as a service [9]. Its code language to act as a platform is Transact-SQL, an organized search language that allows an order for the construction of the system [10]. SQL Server is not complicated to use because it uses a visual medium to show the operation performed by the computer and the database [11]. Also, due to its connection with Windows, it allows to expand the operating system and protect the information used. SQL Server management system stores and delivers quality information without errors or interruptions [12]. In case of an error, it allows you to reset data and options to handle any problem. Postgre SQL is an open-source data management system, which means the database can be modified to optimize it. Its orientation is towards that object, that is, the non-real object which helps to follow the real; the information here is visual. Due to its open source, it allows the use of various amounts of information without slowing down the system. Its programming language is different and thanks to its high development, it uses a versatile control, which optimizes the server better. Because of its large size, it must use a machine that processes all the information and, in addition, organizes everything it processes. It allows languages to be used in binary and hexadecimal notation so that the program is not limited. It is a very frugal code that allows anyone to use and work with it. In addition, it allows working with various platforms or database editing systems, very easy to use.

MySQL is one of the most complete and easy-to-use data management systems, as it adapts to human needs. Being easy to control, the user can create a perfect database for their web applications, allowing individuals to manage and enter data without any problem or difficulty. MySQL replaces almost all coding languages, allowing for better structure of the database system. Since the system is optimized, different data can be used or edited at the same time.

2. RELATED WORKS

Buffers are areas of RAM that are intended to speed up transfers between external and RAM. Buffers temporarily store database chunks, which are data to be used when accessing DBMs or scheduled to be recorded in the database after processing [1]. DBMS Log is a special database or part of the main database that is not directly accessible to the user and is used to record information about all changes in the database [2]. In various DBMS, records can be recorded corresponding to changes in DBMs at different levels: from the minimal internal operation of changing the external memory page to the logical operation of the database change (for example, registration, deletion of a program, value in the change field) and even transactions [3].

There are built-in programs, or firmware programs, "sewn" into digital electronic devices. In some cases (for example, the BIOS of IBM-PC compatible computers) is part of the operating system stored in non-volatile memory [4]. In very simple devices, the entire operating system is built-in. Many modern computers have their own "firmware" to control and communicate with these devices [6]. The programs designed to solve a narrow circle of auxiliary tasks. Sometimes applications refer to a class of service

software [7]. Applications are used to monitor sensors and equipment performance indicators (for example, processor temperature or video adapter monitoring), control of equipment parameters (to control the maximum speed of the disk drive rotation; to change the rotation speed of the fans), control of indicators (checks reference integrity; data recording is correct), expansion opportunities (formatting or disk reorganization with data storage, deletion without recovery) [10].

3. PROPOSED MODEL

A proposed model is used in DBMs to maintain the integrity of the data in the database. A transaction is called some indivisible sequence of database data, which tracks DBMs from inception. If for any reason (equipment malfunctions and failures, software configuration errors including usage) the transaction is not completed, it is cancelled. The type of Model Accepted are shown in Fig.1:

- **Hierarchy**: the relationship between database objects forms an inverted tree, i.e. An array has only one element attached above each base element.
- **Network**: Communication between data objects can be established in any order
- **Relational**: Each unit of data in the database is unique by a unique Table.name, record identifier and field name
- **Object-Oriented**: Contains object-oriented mechanisms for creating data structures in the form of language extensions and software addresses.

The object-oriented based on a combination of three principles: relational model, objects and standards for the interpretation of principles.

A database management system is a set of different programs or software designed to efficiently create or manipulate the various data that make up a bank or database. Databases are stores of information about everything that is created by a user or computer.

- **File Server**: each client computer and data access is carried out through the local network.
- **Client Server**: Ensure delimitation of access between user and network and machines.
- **Built-in**: represents a software library. Data access occurs by calling library functions from the SQL language or application

In general, they have tools that support their use, make it possible for the user to have reports if there is an error, in addition, it indicates the information by visual means. The advantage of these tools is the excellent ability to enter for various users, who have no problem entering the system. In turn, all information contained on these sites is strictly confidential, avoiding any intrusion by third parties. The operational (requesting and receiving information and receiving information and information) and data warehouses (occupies a significant amount of time because of a very large number of sites) A DBMS performs the following functions are shown in Fig.3:

- **Data Navigation, Data Dictionary Management**: The DBMS uses a data dictionary to search for the required data

structures and their relationships, helping to encode such complex relationships in each program.

- **Data Storage Management**: DBMS creates complex structures for storing data, freeing programming from identification and programming.
- **Data Transformation and Presentation of Data**: DBMs are tasked with structuring input data, transforming them into a format, convenient for storage. By providing data independence, the DBMS converts logical requests into commands that determine their physical location and retrieval
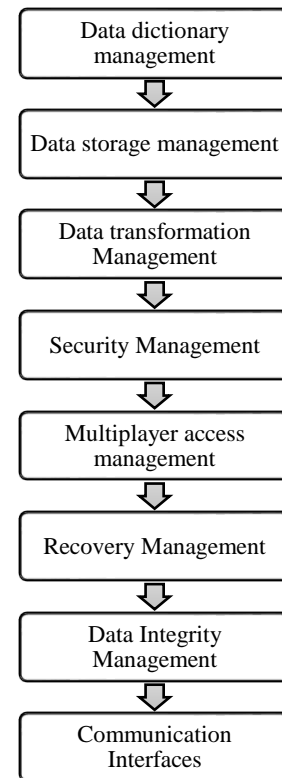

| Data dictionary management |
| Data storage management |
| Data transformation Management |
| Security Management |
| Multiplayer access management |
| Recovery Management |
| Data Integrity Management |
| Communication Interfaces |

Fig.1. Proposed big data management system

- **Security Management**: DBMS creates a security system that provides user security and data confidentiality within the database
- **Multiplayer Access Management**: DBMS creates complex structures that provide access to multiple users at the same time
- **Backup and Recovery Management** – DBMS backup and data recovery procedures have data recovery procedures that ensure their security and integrity.
- **Data Integrity Management**: DBMS provides rules that ensure data integrity, which allows reducing data redundancy and ensuring their consistency.
- **Support for Data Access Languages and Subroutine programming**: DBMS query language (necrotic language, i.e. it provides the user with the ability to determine how the user should specify to do it) provides data access.
- **Database Communication Interfaces**: The current generation of DBMs provides specialized communication

programs designed to ensure that the database is able to handle user requests in a networked environment.

Search for misregistered or damaged various files and disk sectors and their subsequent deletion for efficient use of disk space. Disks can have different file systems that logically divide disks and are perceived by the operating system as different disks.

- **Assemblers**: computer programs that convert a program in the form of source text into machine commands into machine commands in the form of an object code;
- **Translators**: programs or technical means that enable program broadcasting;
- **Compilers**: programs that convert the text of a high-level program into a machine language equivalent. The priorities of source files are computer programs that receive data as input, and data defined for the purpose of input to another program, such as a compiler;
- **Interpreter**: programs (sometimes hardware), must analyze commands or program operators and execute them immediately;
- **Linkers**: systems creation programs are taken one or more material blocks as input and collect executable blocks according to them;
- **Debuggers**: individual programs designed to search for errors in development environment modules or programs;
- **Text Editors**: computer programs designed to create and convert text files, as well as view on the screen, output to print, search for text fragments, etc.;
- **Specialized Source Compilers**: text editors to create and edit the source code of programs. A special source editor can be a standalone application or built-in

Database systems are rich in their excellent functionality. They consume a lot of RAM and storage memory, which is why it is recommended to use memories with dual processing and extensive memory. This system can be stored on NAS, DAS and SAN. NAS storage is a system that stores all information on a network, DAS is hard disk storage, and SAN is a storage made up of software architectures, designed to store everything on a computer.

4. RESULTS AND DISCUSSION

The proposed sequential transaction control model (STCM) was compared with the existing Multimedia Automation Access Control (MAAC), Boosting-SVM Algorithm (BSVM), Q-learning algorithm (QLA) and integrated structured cabling system (ISCS)

4.1 INTEGRITY MANAGEMENT

It is a necessary condition for the successful operation of a database, especially for the use of databases in networks. The mystery of the database is that there is a database property, that is, a complete, consistent, and sufficiently reflective object contains information. Maintaining the integrity of the database involves integrity in detecting inconsistencies in the database and its recovery. The complete status of the database is described in Table.1.

Table.1. Evaluation of Integrity management

Transactions	MAAC	BSVM	QLA	ISCS	STCM
1000	69.53	57.49	78.94	85.73	92.68
2000	68.24	56.74	74.32	82.33	92.58
3000	68.49	56.77	74.32	82.69	92.51
4000	68.62	57.59	74.79	83.88	92.47
5000	68.54	57.68	74.99	83.75	92.43
6000	68.55	57.81	75.25	83.73	92.40
7000	68.90	58.23	75.88	84.16	92.38

4.2 INTERMEDIATE CONSTRAINTS

These are in the form of conditions to be satisfied with the data stored in the database. An example of such conditions is the limitations of the possibilities of object attributes, stored in the database, or information about not retrieving records in the relational database table. The appointment of particular software is formally conditioned and depends on the agreements used in a particular environment. As a rule, computer software includes operating systems, applications, programming systems, database management systems, and a broad class of binder software. This was shown in Table.2.

Table.2. Evaluation of Intermediate constraints

Transactions	MAAC	BSVM	QLA	ISCS	STCM
1000	76.96	47.90	80.12	81.25	94.69
2000	78.62	53.76	73.28	87.43	94.58
3000	79.07	52.62	71.99	88.92	94.52
4000	74.38	53.76	69.85	92.16	94.47
5000	73.99	54.64	71.42	91.44	94.43
6000	74.15	55.84	73.04	91.31	94.40
7000	74.89	57.49	74.84	92.58	94.38

4.3 SECURITY MANAGEMENT

This is achieved in DBMS encryption of application programs, data, password protection, support for database access levels, and separable objects (tables, forms, reports, etc.). Systemic does not solve specific practical tasks, but only confirms the work of other programs, which are the abstraction of the computing system and the abstract objects of the software operation, managing the hardware resources of computer systems. This was shown in Table.3.

Table.3: Evaluation of Security management

Transactions	MAAC	BSVM	QLA	ISCS	STCM
1000	73.02	52.36	64.87	81.83	95.69
2000	73.73	55.12	65.08	84.87	95.58
3000	73.66	54.14	63.82	85.41	95.52
4000	71.05	55.06	62.63	87.71	95.47
5000	71.32	56.06	64.21	87.77	95.43

| 6000 | 71.54 | 56.85 | 65.46 | 87.81 | 95.40 |
| 7000 | 71.60 | 57.38 | 66.37 | 88.22 | 95.38 |

An application generator system allows the generation of programs as the application generator system uses programming codes and data interfaces, i.e., it allows the complete development of an entire application. Administrative system is from here all the information in the data system is handled, it gives the user an opportunity to give complaints or recover some information if lost. The applications that serve as the foundation for building rough shops allow the person to edit and use all the information they want. Changes to data stores can also be given in the programming language for a complete change. DBMS is perfect for recovering lost information, if it has been deleted by accident or if a virus has damaged part of the system.

5. CONCLUSION

A database is a collection of related data, organized according to certain rules that provide general principles for describing, storing, and manipulating them. It was designed for long-term storage in application programs external memory computer, constant updating and use. In most cases, the database can be considered as an information model of some real organization, for example, the book fund of a library, the staff of an organization, the educational process in a school, and so on. This system is called the subject area database and the information system that it includes. Classification divides the database by data storage into centralized and distributed. All information and centralized database are stored in one computer. This can be a stand-alone PC or a network server that can be accessed by client users. Distributed databases are used in local and global computer networks. In the latter case, different parts of the database are stored on different computers.

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