"MODERN DATABASE MANAGEMENT METHODS "

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Abstract

The article describes the main concepts of databases and database management systems. Studied classification databases, identified the advantages and disadvantages of data models. Covers modern database management system.

Key words: Database, database management system, object, management Systems,

In modern life, one cannot do without effective management. An important category is the information processing system, on which the efficiency of any enterprise or institution largely depends. Modern database management systems are mainly "Windows" applications, since this environment allows you to use the capabilities of a personal computer more fully than the DOS environment. The reduction in the cost of high-performance PCs caused not only a broad transition to a "Windows" environment where a software developer can care less about distribution resources, but also made the Personal computer software in general and the DBMS in particular less critical to computer hardware resources.

Today, database management systems are the most well-established area of information technology and the problem of database protection is relevant recently.

Thus, it can be argued that modern databases store not only data, but also information, thereby ensuring the protection of information and the choice of methods and methods of information protection can reduce data loss, prevent unauthorized access to classified information and ensure data integrity.

Therefore, a DBMS is a software shell that extends the functions of the operating system, which controls access to databases and provides functions for the user, it is important to ensure the protection of databases and its resources.

The database is an essential corporate resource that must be protected by appropriate controls. There are such dangers as:

1) Theft and falsification of data;
2) Confidentiality;
3) Inviolability of personal data;
4) Lack of integrity;
5) Loss of availability.

Data protection issues are often considered together with data integrity issues, although in fact they are completely different concepts. The term protection refers to the security of data from unauthorized access, modification or intentional destruction, and integrity refers to the accuracy or reliability of data.

Data protection means preventing access by unauthorized users. Data integrity support means preventing their destruction when accessed by unauthorized users.

In other words, data protection is getting guarantees that users are allowed to perform the actions they are trying to perform, and integrity support is getting guarantees that the actions that users are trying to perform will be permissible.

There is some similarity between the concepts, since both when ensuring data protection and when maintaining their integrity, the system is forced to check whether certain established restrictions are violated during user actions. These restrictions are in some suitable language and are stored in the system directory. Moreover, in both cases, the DBMS should somehow track all the actions performed by the user and check their compliance with the established restrictions.

One of the downsides of computer information technology is the problem of information security. Computer-generated data concentrates huge amounts of information in a physically local and small volume, unauthorized access that can bring destruction. The possibility of fast, in many cases almost instantaneous, and without traces of copying huge amounts of data in computer form, additionally provoke attackers to unauthorized access to information, its unauthorized editing or deletion. At the same time, the theoretical study of information security issues and their practical implementation for a long time lagged behind the level of development of the DBMS software industry and data security tools began to appear in commercial products only in the 90s.

Currently, information security technologies .The main security threats:

1. Disclosure of confidential information
2. Compromising information

The database is focused on a specific area and is organized on the basis of some subset of data. Database capabilities are useful in areas related to long-term information management, such as digital libraries and data warehouses.

The scientific work considers: The main methods and methods of protection DBMS, data management methods that are stored in external memory; management of data loaded into RAM using disk cache; logging of events and changes, backup and recovery of the database after failures. Relational DBMS and SQL language, database management system and DBMS structure have been studied.

A data model is a set of data structures and operations for their processing.

There are data models of the following types:

1. The hierarchical data model is based on the principle of a hierarchy of object types, that is, one type of object is the main one, and the rest, located at the lower levels of the hierarchy, are subordinate. A one-to-many relationship is established between the main and subordinate objects.

Advantages of the hierarchical data model:

-simplicity;

-minimum memory consumption

Disadvantages of the hierarchical model:

-not universality

2. Network. In a network data model, any object can be either a master or a subordinate. The same object can simultaneously act as both an owner and a member of a set. This means that each object can participate in any number of relationships.

Advantages of the network data model:

-versatility;

- the ability to access data through the values of several relationships.

Disadvantages of the network data model:

-complexity

3. A relational database is a set of relationships. The set of relations and operations on them forms a relational algebra. The list of operations contains projection, selection, union, intersection, subtraction, join and division.

Advantages of the relational approach:

-simplicity;

-data independence

Disadvantages of the relational model:

-low speed when performing the connection operation;

-large memory consumption to represent a relational database

Modern DBMS

The most common representatives of modern database management systems include: Microsoft Access, PostgreSQL, MySQL, DB2, Firebird, MySQL, Microsoft SQL Server, Oracle Database and many others. All of them are divided according to the method of access to the database, into three types: file-server, client-server and embedded DBMS.

The principle of organization: the database server stores a centralized Database and processing procedures. The client sends a request, it is processed by the server, and the data received on the request is transmitted to the client. Examples:

Oracle database,Firebird, Interbase, IBM DB2, MS SQL Server, PostgreSQL, MySQL.

File-server DBMS

The principle of organization: one machine is allocated as a central one (file server), a centralized database is stored on it. Other cars networks perform the functions of workstations. Database files in accordance with user requests of workstations are transferred to these stations and processed there. Examples: Microsoft Access, Paradox.

Embedded DBMS

The principle of organization: a library that allows you to store large amounts of data on a local machine in a unified way. Data can be accessed via SQL or through special DBMS functions. Examples: OpenEdge, BerkeleyDB, Microsoft SQL Server Compact.

Below is the popularity rating of modern DBMS. The rating is compiled by the DB-Engine publication. According to the method of calculating the DBMS rating It is based on the popularity of queries in search engines, the number of results in search results, the volume of discussions on popular discussion platforms and social networks. The position of leaders in the rating is occupied by Oracle, MySQL and Microsoft SQL Server DBMS.

By far the largest manufacturers of server DBMS are three corporations: Oracle, Microsoft and IBM. Let's take a closer look at their products.

A family of IBM server DBMS, known as DB2 Universal Database (DB2 UDB), first appeared in 1996 and was intended for UNIX, OS/2 and Microsoft Windows NT platforms. The features include advanced means of self-recovery and automatic execution of operations related to database support (such as creating backups and data defragmentation). Of the data access mechanisms, DB2 UDB supports ODBC, JDBC,

ADO/OLE DB, ADO .NET.

The main disadvantages of this DBMS is the relative complexity of administration.

Oracle Database

Oracle, which appeared in 1979, was the first commercial relational DBMS that supported the SQL language. Currently, the latest version is Oracle 12c. Among the main properties of the DBMS

Oracle should note such as:

-highest reliability;

-the ability to split large databases into sections (large database partition);

-availability of universal means of information protection;

-bitmap indexing;

-parallelization of operations in the request;

-availability of a wide range of development, monitoring and administration tools;
- orientation to Internet technologies.

The comparison of three modern DBMS demonstrates that all three DBMS have their pros and cons. It is difficult to answer the question of which one is the best, so the DBMS should be selected based on the requirements of a specific project, and not guided by abstract performance and efficiency indicators. The conclusion of this article is the understanding that databases are an integral part of the modern information world, they underlie the work of many modern organizations and will be used even more extensively.

REFERENCES

1. Бедняк С.Г., Тихонова А.А. ВИРТУАЛИЗАЦИЯ В ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЯХ Научные труды SWorld. - 2014. - Т. 5. № 1. - С. 27-29.

2. Кириллов В.В., Громов Г.Ю. Введение в реляционные базы данных. – Издательство: БХВ-Петербург, 2009

3. Елманова Н. Системы управления базами данных ведущих производителей [Электронный ресурс] // КомпьютерПресс. - 2005. - №7. - URL: http://compress.ru/article.aspx?id=11399 (Дата обращения: 20.08.2017)

4. Персональные и профессиональные СУБД. Сравнительные характеристики СУБД [Электронный ресурс]. - URL: http://shpora.net/index.cgi?act=view&id=30970. (Дата обращения: 22.08.2017)

5. Базы данных. В 2-х кн.Кн. 1. Локальные базы данных: учебник / В.П. Агальцов. - 2-е изд., перераб. - М.: ИД ФОРУМ: ИНФРА-М, 2012. - 352 с.

6. Базы данных : учебник / Л.И. Шустова, О.В. Тараканов. — М. : ИНФРАМ, 2018. — 304 с.

7. СУБД для программиста. Базы данных изнутри: Практическое пособие / Тарасов С.В. - М.:СОЛОН-Пр., 2015:

8.Проектирование информационных систем и баз данных/СтасышинВ.М. - Новосиб.: НГТУ, 2012. - 100 с.