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DATA BASE MANAGEMENT SYSTEMS: ITS OPPORTUNITIES AND DENOUNCEMENTS FOR ACCOUNTING PROCESSING

The development of technology, related to the storage and data-processing, caused the apperience of the specialised software in the 60-70`s years of the twentieth century. It is called database management system.

Database Management Systems (DBMS) are made for structuring, systemizing and organising data for their computer storage (usually in tables), processing and output. This software is designed for creating a common database for many programs, maintain it in its current state, centralized data management and easy access to users.

Database management systems are the fundament for any information system (picture 1).
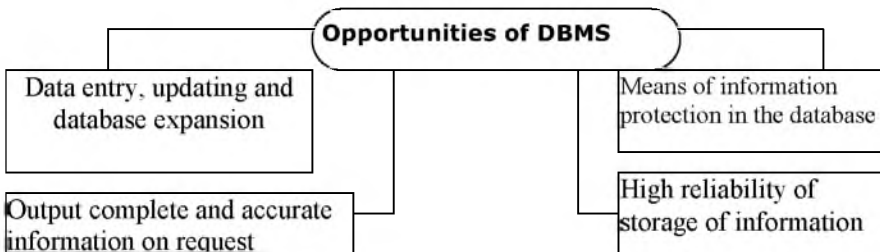
Picture 1. Opportunities of DBMS

The user does not write information in the database directly, but through the DBMS. The information is placed and structured in the DBMS; it is saved and still stored in the current state and subjected to other users` manipulations. In this case, the DBMS provides the parallel work of several users from different software products. User applications do not depend on data, it means that changing the data does not require the need to make changes to the program and backwards.

The totality of users has different level of access to data, depending on their authority. The DBMS is doing the search for data, protecting it and maintaining user requires. The DBMS provides data integrity, updates and removing.

The DBMS has such properties like:

– support of logical file consistent set;
– restoration of information after various kinds of failures;
– provision of several users` parallel work;
– support of database languages (use of special languages for query creation).

There are some advantages of using the DBMS. For instance:

1. *Control of data abundance*. Unlike to traditional file systems, by using the DBMS it limits data overload and uploads by file integration to avoid multiple copies of the same files.

2. *Data inconsistency.* The control of data redundancy allows reducing the risk of conflicting states. Since an item is stored in the system in a single instance, only one update operation is required to change its value. Moreover, the updated value will be immediately available to all database users.

3. *Data sharing.* The database belongs to the entire company as a whole. Employees of all registered departments can use it. Under such an organisation, more users can work with a larger amount of information. It is possible to create new applications based on the current database, which allows you to create new data in the database.

4. *Data integrity support.* DBMS ensures that database data is correct and consistent. Typically, integrity is described by constraints - rules of support for correctness. Limits are applied to data elements within a single record or to links between records. For example, it is legally set to limit the minimum wage of 1600 UAH per month or UAH 9.59 per hour. Or, for example, the total duration of annual basic and additional vacations can not exceed 59 calendar days. The DBMS monitors compliance with the specified restrictions and informs the user when they are violated;

5. *Improved safety*. It protects database from unauthorized access. Without proper security measures, integrated data becomes more vulnerable than the file system. The security system can be implemented in the form of accounts and passwords for identifying users, limiting access to data.

6. *Improved efficiency with higher system scale.* Combining all work data in one database and creating a set of applications that work with one data source, you can achieve significant money savings. For example, information about employees is used not only by the personnel department but also by the accounting department (for the payment of wages), production departments (for the accounting of labor). Characteristics of finished products are required not only for the production department, but also for the sales department, storekeepers.In this case, there is no

duplication of information, but there are saving time and money for its creation and support in the current state.

7. *Increased availability of data and its readiness to work*. Consiquently the integration, the data goes beyond the divisions and becomes available to users. This allows them to better meet their requests. For example, users with the help of embedded query languages or reporting tools can independently and without the help of programmers formulate previously unpredictable requests and receive information almost immediately on their terminal.

8. *Performance improvement.* The basic DBMS level provides all low-level procedures with handling files that are usually executed by programs. The presence of these procedures allows the programmer to focus on the development of more special, user-required functions without worrying about the details of their implementation at a lower level.

9. *Simplify maintenance of the system through the independence of the data.* In DBMS, unlike file systems, data descriptions are separated from applications, and therefore, programs are protected from changes in data descriptions. This greatly simplifies the maintenance and support of applications that work with the database.

10. *Improved parallel work management.* In file systems, while simultaneously accessing the same files of two users, there may be a conflict between two requests, which may eventually lead to loss of information or integrity. DBMS provides the possibility of parallel access to the database and guaranteed absence of such problems

11. *Advanced Backup and Restore Services*. In file systems, the responsibility for protecting data from hardware and software failures lies on the user. Modern DBMS provides means for reducing losses from potential failures.

However, it has some disadvantages as well. For example,

−   *Complexity*. Increasing the functionality of the database leads to the complication of design and software DBMS, as well as understanding the principles of the system, all employees of the enterprise.

−   *Additional hardware costs*. The complexity and variety of DBMS functionality make it an extremely complex software product. For its efficient work, powerful computers, lots of disk space and large volumes of RAM are needed. You may also need additional storage devices and network communications.

−   *The price of the database*. The high functionality of modern DBMS often leads to their high cost. In addition, the cost of maintaining the system is quit high, what makes a percentage of its value.

- _Productivity_. Usually a file system is created for specialised applications, so its performance is very high. DBMS are designed to solve more general tasks and service several applications, which entails a decrease in productivity.
- _Significant consequences when the system fails_. Centralizing resources increases the vulnerability of the system. Failure of one of its components can lead to a stop of the whole enterprise.

On the software market DBMS is represented with different designation, complexity and functional filling. All of their totality can be divided into three groups:

- Databases for online transactions (Online transaction processing, OLTP). They are used in a variety of economic information systems (ERP, CRM, SCM, etc.) in real time, which involves high demands on productivity, reliability, security and scalability. Such products are provided by CA, IBM, Microsoft, Oracle, Software AG and Sybase;
- Databases focused on business analytics tasks, including in decision making. The corresponding toolkit is represented by solutions from the above manufacturers like IBM, Microsoft, Oracle, Ingres, as well as more specialized products from companies such as Greenplum, Netezza, Sybase and Teradata;
- Specialised databases needed to solve specific tasks related to the use of, for example, mobile devices, XML applications, etc. Similar DBMSs are often used as embedded components. They are issued by the "big three" (Oracle Database, IBM DB2, Microsoft SQL Server), and smaller developers, such as Mark Logic, Progress, Software AG.

References

1. Adamyk O., Adamyk B., Khorunzhak N. Auditing of the Software of Computer Accounting System // CEUR-WS, 2018. – 2018. – Paper 181

2. Panasyuk V., Chereshnyuk,O., Sachenko S., Banasik A., Golyash I. Fuzzy-multiple Approach in Choosing the Optimal Term for Implementing the Innovative Project // Proceedings of 8th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications, Bucharest, Romania, 2017

3. Zhuravlyova I. V. Informatyvno-romunikatsiyne zabespechennya finansovoyi diyalnoti : navchalnyy posibnyk dlya studentiv napryamu pidgotovky 6. 030508 "Finansy ta kredyt" / I. V, Zhuravlyova, I. L. Latysheva, O. B. Lebid` - Kh. : Vyd. Kneu im. S. Kuznyetsova 2014 – 424 s. (on Ukrainian)