

# Database Management Systems

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**Abstract:** A database management system is a software system designed to create a common database on a computer for many applications, to keep it up-to-date, and to ensure that users can use the information in it effectively within the authority given to them. A database is equally necessary to create and maintain a database of an information system.

**Keywords:** Databases, relational databases, hierarchical models, information retrieval, database management systems.

## Introduction

At the global level, databases are divided into two classes: general-purpose databases (DBMS ON) and special-purpose DMS (SpDBMS). Database is a collection of inter-related data which helps in efficient retrieval, insertion and deletion of data from database and organizes the data in the form of tables, views, schemas, reports etc. For Example, university database organizes the data about students, faculty, and admin staff etc. which helps in efficient retrieval, insertion and deletion of data from it. DDL is short name of Data Definition Language, which deals with database schemas and descriptions, of how the data should reside in the database. The data on the computer is stored in a database, which is managed using special software database management systems (DBMS). A database (DB) is a collection of data stored in a computer's long-term memory that provides specific ways to work with it. Database dictionary is used to work with databases, ensuring the operation of software components-DBMS and applications. The dictionary contains information about the organization of the database, its content and structure, description of the data: presentation formats, structure, access methods, methods of organizing data in memory, and more. The structure and presentation of stored data, their location-memory area, and the input methods used are called storage schemes. Storage schemes work by object types.

## Research methodology

The elements that make up a database can take many forms. The most common and widely used data files are text files. Because text files can represent a variety of information and store it in computer memory. One of the forms of computer-based IT is a database. Unlike ordinary files, a database (MB) is able to search and sort information stored in computer memory. Databases can store a variety of information. Examples include, for example, train, airplane, bus schedules, store or database product availability, student, faculty and staff information, book information, and more. 'la gets. You do not have to use a personal computer to create and use the database. For example, the patient file in the doctor's office can be considered as MO. (Files can be made using paper or cardboard.) The simplest and most common form of database is a tabular view. This type of database (MO) is called a relational system. Relational databases have a certain number of columns, all of which have names. For example, some of the information about the students in the group can be described as follows.

## Discussion

It is often used on the computer to create text files (as the experiment progresses, it begins to use files of different shapes and functions instead of text files. Different letters, abstracts, poems, etc.). begins to use files of various shapes and functions. For example, by entering different numeric characters in a text file, you can create tables, file sheets, phone numbers, and so on. can be used as a database. Such databases are used by the user to describe and place information.

Let's take a concrete example of how to place information in text files. For example, it is possible to create a card index (in text files) of major specialists born in Uzbekistan and working in the field of fundamental sciences (physics, mathematics, biological chemistry, etc.) called "Science Expert Base". It is very convenient to use such a card index.

The most important thing is the ease of use of the data created for the purpose of creating the database. Firstly, it is easy to sort the information according to different characteristics, and secondly, it is easy to sort it according to arbitrary characteristics. Text files, on the other hand, cannot organize data in this way.

Tabular data is a convenient way to process information. The software included in the computer's software "recognized" the tables in memory. Files that are stored in computer memory as tables are usually files with the extension dbf (Data Base File). Special programs are created to use the database, and such programs are called database management systems (DBMS). The information in the database is stored mainly in the form of text and numbers.

The functions of a database management system may include the following features of database management:

- access to the database: responsive to the user's request in a convenient way, regardless of the type of information;
- data modification: change of the given information according to the user's requirements;
- level of reliability: the ability to restore the database in case of accidental shutdown of devices;
- data protection: limited unauthorized access to the database;
- Network access to the database: the use of data by several people at the same time (without interfering with each other).

The information that is processed on the computer receives all the information that is used in their daily lives. Different professionals work with the information they need. The most important of these data are numerical (numerical) and symbolic (textual) information. Typically, these two types of information are sufficient to create any information system, as all the information that is intended to be conveyed to the user consists of numbers or words.

Types of data: Definite data, numerical data, logical data (for example, "light on" (TRUE) or "lamp off" (FALSE)).

Data can be expressed in three ways: hierarchical, networked, and relational (tabular).

The hierarchical system consists of tables in which the process of searching for information is "considered" in a predetermined order.

The tree-like arrangement of data is called a hierarchical data model. A database that is unique to a hierarchical data model is called a hierarchical database.

## Results

It is known that DBMS consists of a set of software and language tools that can be used to create, maintain, edit and perform other tasks. With such a system, the capabilities of the operating system to manage data are expanded.

The functions of DBMS can be divided into three groups:

- file management; that is, open, copy, rename, recreate, restore, report, hide, etc. ;
- record management, ie reading, inserting, sorting, deleting records, etc. ;
- record field management.

It should be noted that DBMS is not responsible for entering, calculating, replicating, displaying or printing data using a string of letters. These tasks are performed using applications. Such programs are created using DBMS 's special programming languages. The above set of tasks requires the DBMS to have three types of programs: a control program, a processing (translator) program, and a service program. When the DBMS is started, the main controller is loaded into the program memory. Other programs will be launched accordingly.

The classification of DBMS is based on a logical structure. That is why there are branch, step and relational DBMS s. Relational DBMSs are common, including dBase III Plus, FoxBase, Fox Pro, Clipper, dBase IV, Paradox, and others. DBMS can work in two modes: interpreter and compiler.

In the interpreter mode, the commands of the programs are executed step by step, one after the other. In it, each command is controlled, then translated into machine language and executed. After completing the appropriate actions, they are erased from memory, the system goes to the processing stage and begins to execute the next command. In the compiler order, the commands are not executed directly, but they are written to the "exe" file. The process of creating an exe file consists of two steps: control the initial program and convert it to obj type; convert the program to an exe file using a text editor. DBMS is not required to execute the exe file, DBMS running in Interpreter mode includes dBase III Plus, FoxBase and Karat, Clipper in compiler mode and Clario in panel mode. DBMS participates as a program that provides communication between the user and the database. Its functions are displayed in the form of menus and applications.

### Conclusion

In conclusion, a database is a far more efficient mechanism to store and organize data than spreadsheets; it allows for a centralized facility that can easily be modified and quickly shared among multiple users. The programs in the DBMS consist of a set of corresponding commands. Depending on the complexity of the problem to be solved, programs can have a simple or complex structure. In programs with a simple structure, the commands are placed sequentially. In programs with a complex structure, the commands are in the form of modules, that is, the main module and a set of subroutines. It is convenient and efficient to use the modular principle when creating a database.

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