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# Development of Processors, Computer Memory, Computer Storage and Computer Networks of Database

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## Introduction

A database is a logical collection of data that is electronically stored and accessed in computing. While large databases are hosted on computer clusters or cloud storage, smaller databases can be stored on a file system. Data modeling, efficient data representation and storage, query languages, security and privacy of sensitive data, distributed computing issues, such as supporting concurrent access and fault tolerance, are just some of the formal and practical aspects of the design of databases. The software that captures and analyzes data interacts with end users, applications and the database itself through a Database Management System (DBMS). Additionally included in the DBMS software are the fundamental administration tools for the database [1].

## Description

A database system is a collection of the database, DBMS and applications that are associated with it. Any of the DBMS, the database system or an application associated with the database is frequently referred to as a database in a loose sense. Database management systems can be categorized by computer scientists based on the database models they support. In the 1980's, relational databases gained popularity [2]. The vast majorities of these write and query data using SQL, modelling data as rows and columns in a series of tables. Because they use different query languages, non-relational databases, which are collectively referred to as NoSQL, gained popularity in the 2000's. Formally, a "database" is a collection of related data and its organization. Most of the time, a "Database Management System" (DBMS) is what gives users access to this data [3]. A DBMS is an integrated set of computer software that allows users to interact with one or more databases and gives them access to all of the data in the database (though there may be restrictions that limit access to specific data). The DBMS has a number of features that let you enter, store and retrieve large amounts of data, as well as ways to control how that data is organized. The term database is frequently used casually to refer to both a database and the DBMS used to manipulate it due to their close relationship. The term "base" is frequently used to refer to any collection of related data outside of professional information technology, such as a spread sheet or a card index, as the size and usage requirements typically necessitate the use of a database management system. There are four main functional groups of existing DBMSs that provide various functions for managing a database and its data [4].

Definitions of the data's organization are created, modified and deleted in data definition. Update is the actual data's addition, deletion and modification. Retrieval is the process of getting information into a form that can be used right away or processed by other applications. The data that is retrieved can be made available in a format that is nearly identical to the one that is stored in the database or it can be made available in a new format by modifying or combining data that is already in the database. Users are registered and monitored, data security is enforced, performance is monitored, data integrity is maintained, concurrency control is handled and information that has been corrupted by an event like an unexpected system failure is recovered in administration. The fundamentals of a specific database model are adhered to by both a database and its DBMS. The database, database management system and database model are all included in the database system [5]. Database servers are dedicated computers that only run the DBMS and related software and hold the actual databases. Most database servers are multiprocessor machines with plenty of memory and stable storage provided by RAID disk arrays. Large-scale transaction processing environments also make use of hardware database accelerators that are connected to one or more servers through a high-speed channel. Most database applications rely on DBMSs for their core functionality. Modern DBMSs typically rely on a standard operating system to provide these functions, despite the fact that DBMSs may be constructed around a custom multitasking kernel with integrated networking support [6].

## Conclusion

Computer and storage manufacturers frequently incorporate DBMS requirements into their own development plans due to their significant market share. The database model(s) that they support (such as relational or XML), the type of computer they run on (such as a server cluster to a mobile phone), the query

language (s) used to access the database (such as SQL or XQuery) and their internal engineering, which has an impact on performance, scalability, resilience and security, are all factors that can be used to classify databases and DBMSs. Database Management Systems (DBMSs) have grown in size, capabilities and performance by orders of magnitude. The development of processors, computer memory, computer storage and computer networks enabled these performance enhancements. Direct access storage media like magnetic disks, which became widely available in the middle of the 1960's, made the idea of a database possible. Data was sequentially stored on magnetic tape in earlier systems. Based on the data model or structure, the subsequent development of database technology can be divided into three eras: SQL/relational, post-relational and navigational. The CODASYL model, also known as the network model and the hierarchical model were the two primary early navigational data models. The use of pointers, often physical disk addresses, to follow relationships between records made these unique. By insisting that applications search for data by content rather than by following links, the relational model, which was first proposed in 1970 by Edgar F. Codd, broke with this tradition. Sets of ledger-style tables, each for a different kind of entity, are used in the relational model. Relational systems (DBMSs and applications) could not be widely implemented until the middle of the 1980's, when computing hardware became powerful enough to do so. However, relational systems dominated all large scale data processing applications by the beginning of the 1990's and as of 2018, they continue to do so: The most frequently searched Database Management Systems (DBMSs) are IBM Db2, Oracle, MySQL and Microsoft SQL Server. The dominant database language, standardized SQL for the relational model, has influenced database languages for other data models. In the 1980's, object databases were created to solve the problem of object relational impedance mismatch. The term "post-relational" was created and hybrid object relational databases were also created. In the late 2000's, the next generation of post-relational databases, known as NoSQL databases, introduced document-oriented databases and fast key value stores. NewSQL databases, a competing "next generation," attempted new implementations that maintained the relational/SQL model while attempting to match the high performance of NoSQL in comparison to relational DBMSs that are commercially available.

## References

1. Sutherland JC, Monteleone DC, Sutherland BM (1997) Computer network for data acquisition, storage and analysis. J Photochem Photobiol B, Biol 40:14-22
2. Morgan HL, Levin KD (1977) Optimal program and data locations in computer networks. Communications ACM 20:315-322
3. Metcalfe RM, Boggs DR (1976) Ethernet: Distributed packet switching for local computer networks. Commun ACM 19:395-404
4. Kant K (2009) Data center evolution: A tutorial on state of the art, issues, and challenges. Computer Networks 53:2939-2965
5. Bilal K, Khalid O, Erbad A, Khan SU (2018) Potentials, trends and prospects in edge technologies: Fog, cloudlet, mobile edge and micro data centers. Comput Netw 130:94-120
6. Amza C, Cox AL, Dwarkadas S, Keleher P, Lu H, et al. (1996) Treadmarks: Shared memory computing on networks of workstations. Computer 29:18-28