



TRINITY COLLEGE FOR WOMEN NAMAKKAL

Department of Computer Science

RELATIONAL DATABASE MANAGEMENT SYSTEMS

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What is Management System?

A **database-management system (DBMS)** is a collection of interrelated data and a set of programs to access those data.

- This is a **collection of related data** with an implicit meaning and hence it is a database.
- The collection of data, usually referred to as the **database**, contains information relevant to an enterprise.
- The primary goal of a DBMS is to provide a way to **store and retrieve database information** that is both *convenient* and *efficient*.

Database Management System (DBMS) and Its Applications:

- Banking
- Airlines
- Universities
- Manufacturing and selling
- Human resources

Purpose of Database Systems

- Database systems arose in response to early methods of computerized management of commercial data.

Advantages of DBMS

Controlling of redundancy :

- Data redundancy refers to the duplication of data (i.e. storing same data multiple times).
- In a database system, by having a centralized database and centralized control of data by the DBA the unnecessary duplication of data is avoided.

Improved Data Sharing :

- DBMS allows a user to share the data in any number of application programs.

Data Integrity :

- Integrity means that the data in the database is accurate.
- Centralized control of the data helps in permitting the administrator to define integrity constraints to the data in the database.

Security :

- Having complete authority over the operational data, enables the DBA in ensuring that the only mean of access to the database is through proper channels.

Data Consistency :

- By eliminating data redundancy, we greatly reduce the opportunities for inconsistency. For example - customer address is stored only once, we cannot have disagreement on the stored values.

Efficient Data Access :

- In a database system, the data is managed by the DBMS and all access to the data is through the DBMS providing a key to effective data processing.

Data Independence :

- In a database system, the database management system provides the interface between the application programs and the data.

Reduced Application Development and Maintenance Time :

DBMS supports many important functions that are common to many applications, accessing data stored in the DBMS, which facilitates the quick development of application.

Disadvantages of DBMS

- It is bit complex.
- Since it supports multiple functionality to give the user the best, the underlying software has become complex.
- Because of its complexity and functionality, it uses large amount of memory.
- DBMS system works on the centralized system, i.e.; all the users from all over the world access this database. Hence any failure of the DBMS, will impact all the users.

- DBMS is generalized software, i.e.; it is written work on the entire systems rather specific one. Hence some of the application will run slow.

View of Data

- A database system is a collection of interrelated data and a set of programs that allow users to access and modify these data.
- A major purpose of a database system is to provide users with an *abstract* view of the data.
- That is, the system hides certain details of how the data are stored and maintained.

Data Abstraction

- For the system to be usable, it must retrieve data efficiently.
- The need for efficiency has led designers to use complex data structures to represent data in the database.

Physical level (or Internal View / Schema):

- The lowest level of abstraction describes *how* the data are actually stored.
- The physical level describes complex low-level data structures in detail.

Logical level (or Conceptual View / Schema):

- The next-higher level of abstraction describes *what* data are stored in the database, and what relationships exist among those data.

View level (or External View / Schema):

- The highest level of abstraction describes only part of the entire database.
- Even though the logical level uses simpler structures, complexity remains because of the variety of information stored in a large database.

THANK YOU

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