

Database Management System (DBMS)

Presenter: Jiya Mandal

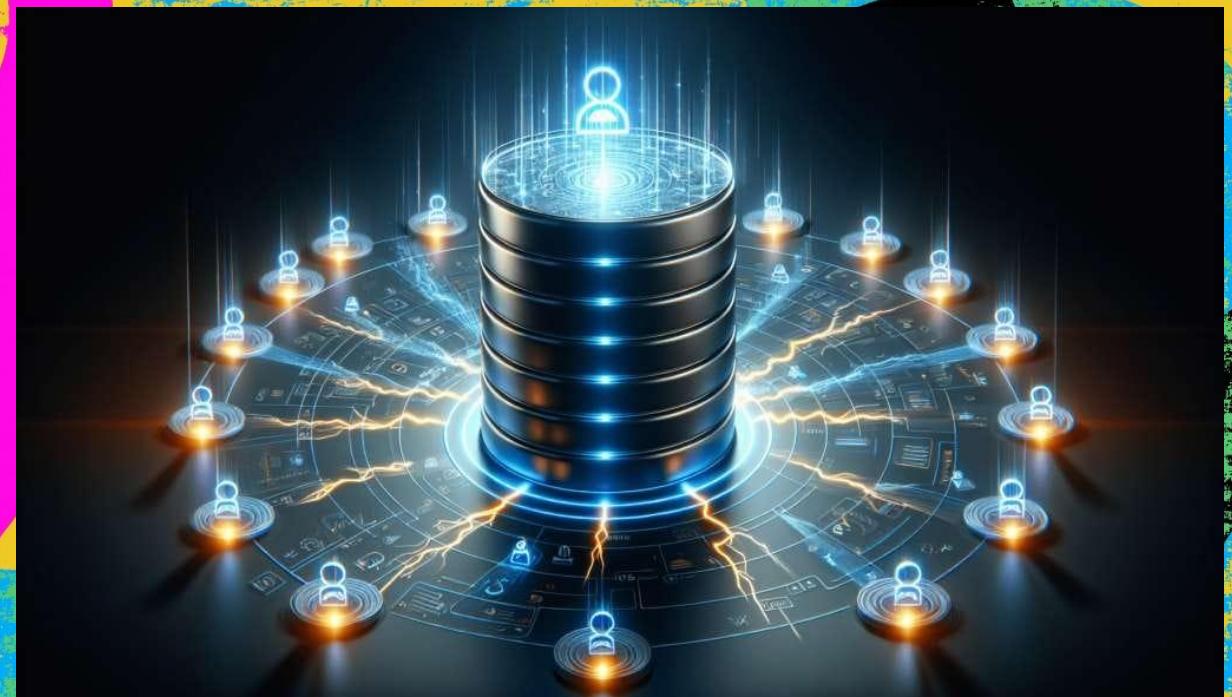


Table of contents

1. Acknowledgement
2. Abbreviation
3. Data and Information
4. What is Database Management System?
5. History of DBMS...
6. Types of data base
7. About Structured Query Language(SQL)
8. **Characteristics of DBMS**
9. **Advantages of DBMS**
10. **Disadvantages of DBMS**
11. **Conclusion**
12. **References**

Acknowledgement

❖ I would like to thank my Professor Mr.Govinda Neupane for providing me this golden opportunity. I would also like to thank my family and friends for helping me throughout this project.

Abbreviation

- ❖ A simple database management system (DBMS) definition is middleware that allows programmers, database administrators (DBAs), software application, and end users to store, organize, access, query, and manipulate data in a database. DBMSs are important because they provide efficient and reliable mechanisms for organizing, managing, and using vast amounts of data while also ensuring data integrity and providing other data management benefits.

Data and Information

The core of any database management system is the data itself. Another important aspect regarding DBMS is the difference between data and information.

- ❖ **Data:** It is the unorganised facts which need to be compiled to form meaningful information.

Ex: 28, Hari, Sanothimi Campus

- ❖ **Information:** Once the data is processed and made into a structured context, it is called information.

Ex: 28 year old Hari goes to Sanothimi Campus.

What is Database Management System?

- ❖ A collection of information which is managed such that it can be updated and easily accessed is called a **database**.
- ❖ A software package which can be used to manipulate, validate and retrieve this database is called a **Database Management System**.
- ❖ For example, Airlines use this software package to book tickets and confirm reservations which are then managed to keep a track of the schedule.

Relational Model in DBMS

Student Table (Relation)		
<u>Roll Number</u>	Name	CGPA
001	Vaibhav	9.1
002	Neha	9.5
003	Harsh	8.5
004	Shreya	9.3

Primary Key →

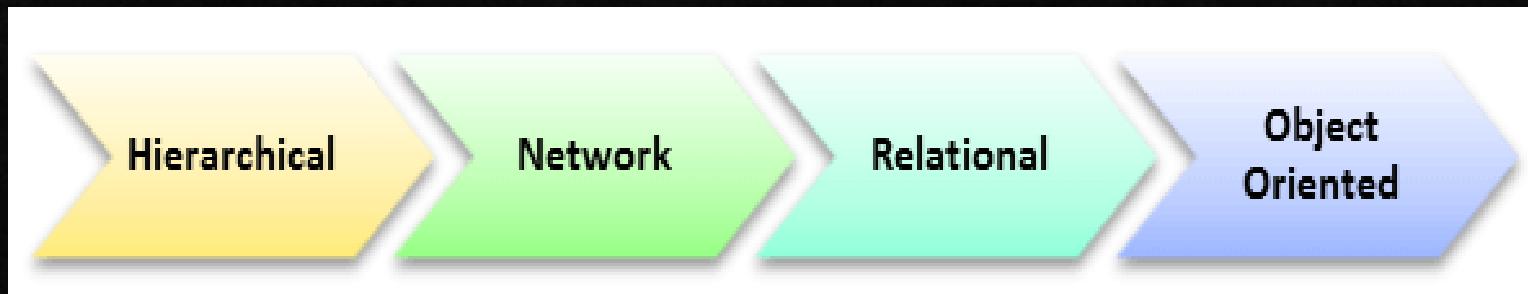
↑
Columns
(Attributes)

→ Tuples
(Rows)

Types of data base:

There are majorly four types of database:

- ❖ Network Database
- ❖ Hierarchical Database
- ❖ Relational Database
- ❖ Object-oriented Database



Hierarchical DBMS

Network DBMS

Relational DBMS

Object-Oriented DBMS

Hierarchical Database:

- When the data stored in the form of records and is connected to each other through links is called hierarchical database. Each record comprises fields and each field comprises only one value.

Network Database:

- When the details of multiple members can be linked to the files of multiple owners and vice versa, it is called a network database.

Relational Database:

- When the data is organised as a set of tables comprising rows and columns with a pre-defined relationship with one another, it is called a relational database.

Object-oriented Database :

- When the information is represented as objects, with different types of relationships possible between two or more objects. Such databases use an object-oriented programming language for development.

About Structured Query Language(SQL)

What is SQL?

SQL

is a standard language used for storing, manipulating and retrieving data from relational databases.



Some examples of DBMS



Characteristics of DBMS

Here are the characteristics and properties of a Database Management System:

- ❖ Provides security and removes redundancy
- ❖ Sharing of data and multiuser transaction processing
- ❖ Database Management Software allows entities and relations among them to form tables.
- ❖ It follows the ACID concept (Atomicity, Consistency, Isolation, and Durability).

Advantages of DBMS

- ❖ DBMS offers a variety of techniques to store & retrieve data
- ❖ DBMS serves as an efficient handler to balance the needs of multiple applications using the same data
- ❖ Offers Data Integrity and Security
- ❖ A DBMS schedules concurrent access to the data in such a manner that only one user can access the same data at a time
- ❖ Reduced Application Development Time

Disadvantage of DBMS

DBMS may offer plenty of advantages, but it has certain flaws-

- ❖ The cost of Hardware and Software of a DBMS is quite high, which increases the budget of your organization.
- ❖ Most database management systems are often complex, so training users to use the DBMS is required.
- ❖ Using the same program at a time by multiple users sometimes leads to data loss.
- ❖ DBMS can't perform sophisticated calculations

Conclusion

- ❖ In conclusion the DBMS is the vital tool for storing and managing data effectively. Whether you're a business or an individual, a DBMS provides a reliable, efficient, and secure way to manage your data. By understanding the characteristics, advantages, and disadvantages of DBMS, you can make informed decisions about implementing a DBMS solution for your data management needs.

References

1. <https://www.techopedia.com/definition/24361/database-management-systems-dbms>
2. [Database Management System - Components, Types & Advantages](#)
3. [DBMS Tutorial – Learn Database Management System - GeeksforGeeks](#)