

Subject: Introduction to DBMS

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UNIT-I, Part-I

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Outline

- Introduction to DBMS
- Why do we need DBMS?
- Characteristics of Database approach
- Users of DBMS

Introduction to DBMS

- DBMS stands for Database Management System
- DBMS = Database + Management System
- Database is a collection of data.
- Management System is a set of programs to store and retrieve those data.
- Database is a collection of inter-related data.
- Helps in efficient retrieval, insertion and deletion of data from database.
- organizes the data in the form of tables, views, schemas, reports.
- DBMS is a collection of inter-related data and set of programs to store & access those data in an easy and effective manner.

Why do we need DBMS?

- Database systems are basically developed for large amount of data.
- Two things that require optimization: Storage of data and retrieval of data.
- **Less Storage**

The data is stored in such a way that it acquires lot less space as the redundant data (duplicate data) has been removed before storage.
- **Fast Retrieval of data**

Database systems ensure that the data is retrieved as quickly as possible.

Characteristics of database approach

- **Real-world entity**
It uses the behaviour and attributes.
- **Relation-based tables**
Allows entities and relations among them to form tables.
- **Isolation of data and application**
A database is an active entity, whereas data is said to be passive, on which the database works and organizes. DBMS also stores metadata.
- **Less redundancy**
Normalization is a mathematically rich and scientific process that reduces data redundancy
- **Consistency**
Consistency is a state where every relation in a database remains consistent.
- **Query Language**
DBMS is equipped with query language, which makes it more efficient to retrieve and manipulate data.

Characteristics of database approach contd.

- **ACID Properties**

DBMS follows the concepts of Atomicity, Consistency, Isolation, and Durability

- **Multiuser and Concurrent Access**

DBMS supports multi-user environment and allows them to access and manipulate data in parallel.

- **Multiple views**

DBMS offers multiple views for different users.

- **Security**

Users are unable to access data of other users and departments

Users of DBMS

- **Administrators**

- Maintain the DBMS

- Responsible for administrating the database

- Responsible to look after its usage

- By whom it should be used.

- Create access profiles for users

- Apply limitations to maintain isolation and force security

- Look after DBMS resources like system license, required tools, and other software and hardware related maintenance

- **Designers**

- Work on the designing part of the database

- What data should be kept and in what format

- Identify and design the whole set of entities, relations, constraints, and views.

Users of DBMS contd.

- **End users**

Who actually reap the benefits of having a DBMS

End users can range from simple viewers who pay attention to the logs or market rates to sophisticated users such as business analysts.

References

- https://www.tutorialspoint.com/dbms/dbms_overview.htm
- <https://www.studytonight.com/dbms/database-model.php>