

LEC-1: Introduction to DBMS

1. What is Data?

- a. Data is a collection of raw, unorganized facts and details like text, observations, figures, symbols, and descriptions of things etc.
In other words, **data does not carry any specific purpose and has no significance by itself.**
Moreover, data is measured in terms of bits and bytes – which are basic units of information in the context of computer storage and processing.
- b. Data can be recorded and doesn't have any meaning unless processed.

2. Types of Data

- a. **Quantitative**
 - i. Numerical form
 - ii. Weight, volume, cost of an item.
- b. **Qualitative**
 - i. Descriptive, but not numerical.
 - ii. Name, gender, hair color of a person.

3. What is Information?

- a. Info. Is **processed, organized, and structured data.**
- b. It provides **context of the data and enables decision making.**
- c. Processed data that make **sense** to us.
- d. Information is extracted from the data, by **analyzing and interpreting** pieces of data.
- e. E.g., you have data of all the people living in your locality, its Data, when you analyze and interpret the data and come to some conclusion that:
 - i. There are 100 senior citizens.
 - ii. The sex ratio is 1.1.
 - iii. Newborn babies are 100.These are information.

4. Data vs Information

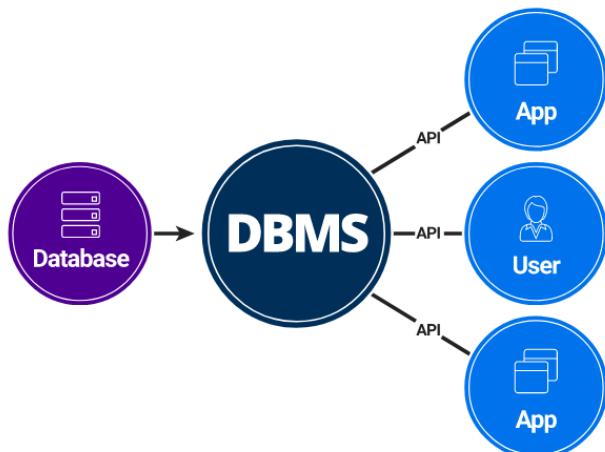
- a. Data is a collection of facts, while information puts those facts into context.
- b. While data is raw and unorganized, information is organized.
- c. Data points are individual and sometimes unrelated. Information maps out that data to provide a big-picture view of how it all fits together.
- d. Data, on its own, is meaningless. When it's analyzed and interpreted, it becomes meaningful information.
- e. Data does not depend on information; however, information depends on data.
- f. Data typically comes in the form of graphs, numbers, figures, or statistics. Information is typically presented through words, language, thoughts, and ideas.
- g. Data isn't sufficient for **decision-making**, but you can make decisions based on information.

5. What is Database?

- a. Database is an electronic place/system where data is stored in a way that it can be **easily accessed, managed, and updated.**
- b. To make real use Data, we need **Database management systems. (DBMS)**

6. What is DBMS?

- a. A database-management system (DBMS) is a collection of **interrelated data and a set of programs to access those data.** 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.
- b. A DBMS is the database itself, along with all the software and functionality. It is used to perform different operations, like **addition, access, updating, and deletion** of the data.



7.

8. DBMS vs File Systems

- a. **File-processing systems** has major **disadvantages**.
 - i. Data Redundancy and inconsistency
 - ii. Difficulty in accessing data
 - iii. Data isolation
 - iv. Integrity problems
 - v. Atomicity problems
 - vi. Concurrent-access anomalies
 - vii. Security problems
- b. Above 7 are also the **Advantages of DBMS** (answer to "Why to use DBMS?")