

# Database approach

Tags: Data, Database approach, Database, Data Management System (DBSM), bit, byte, Field, Record, File,

## Data Management

- Without data and the ability to process it, An organization **could not** successfully complete most business activities
- Data must be **organized** in a meaningful way to transform it into useful information.

## Database

*an organized collection of data.*

- is a well-designed, organized, and carefully managed collection of data.

## Database Management System (DBMS)

is a group of programs that:

- Manipulate the database
- Provide an efficient way of **creation, reading, updating** and **deletion** of data in the database.
- Provide an **interface** between the database and its users and other application programs.

## The Hierarchy of Data

- A **bit (binary digit)** represents a circuit that is either on or off
- A **byte** is made up of eight bits (Each byte represents a character)
- Field:** a name, number, or combination of characters that describes an aspect of a business object or activity.
- Record:** a collection of related data fields
- File:** a collection of related records
- Database:** a collection of integrated and related files

Example of Hierarchy of Data ExcaliDraw

## Data as a File

Some of the **issues**:

- Search with the given criteria
- Adding data to a file (to the end or according to the sorting rule?)
- Making it available to everyone
- What if different people use different terms while adding data?
- Shall we keep everything in one file or split them into several files
- Updating the same file **simultaneously** by different users.
- What if we need to restore some deleted information?

## The Database Approach

**Traditional approach** to data management:

- Each **distinct** information system used data files dedicated to that system.

**Database approach** to data management:

- Information systems share a **pool of related data**.

Database Approach to Data Management ExcaliDraw