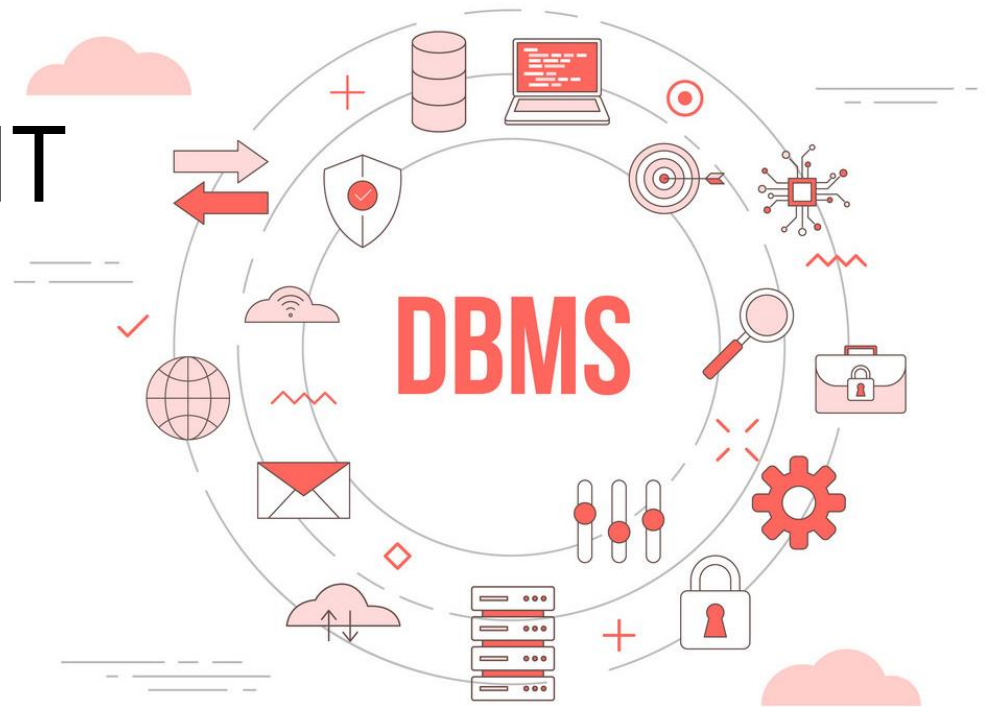


# DATABASE MANAGEMENT SYSTEMS

Introduction

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## Data & Information

- ***What is Data?***
  - Raw facts, unprocessed facts
  - Refers to what is actually stored
- ***What is information?***
  - Result of processing raw data
  - Refers to meaning of the data, understood by the user

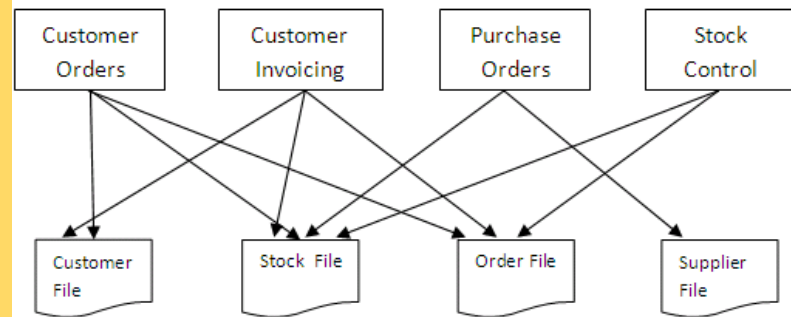
**Data** is the basic material that every computer machine can process. For example, employee name, product name, student name, student marks, mobile number, image, and so on.

Data that has been turned into a more useful or intelligent form is referred to as **information**. For instance: report card.

**Data management** focuses on the generation, storage & retrieval of data.

## Limitations of File-Processing Systems

- Redundancy problem
- Repetitive data
- Data-inconsistency problem
- Incorrectness of data
- Lack of data integration
- Complex and time consuming



# Database

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A collection of interrelated data.

Database—shared, integrated computer structure that stores: –  
End user data (raw facts) – Metadata (data about data)

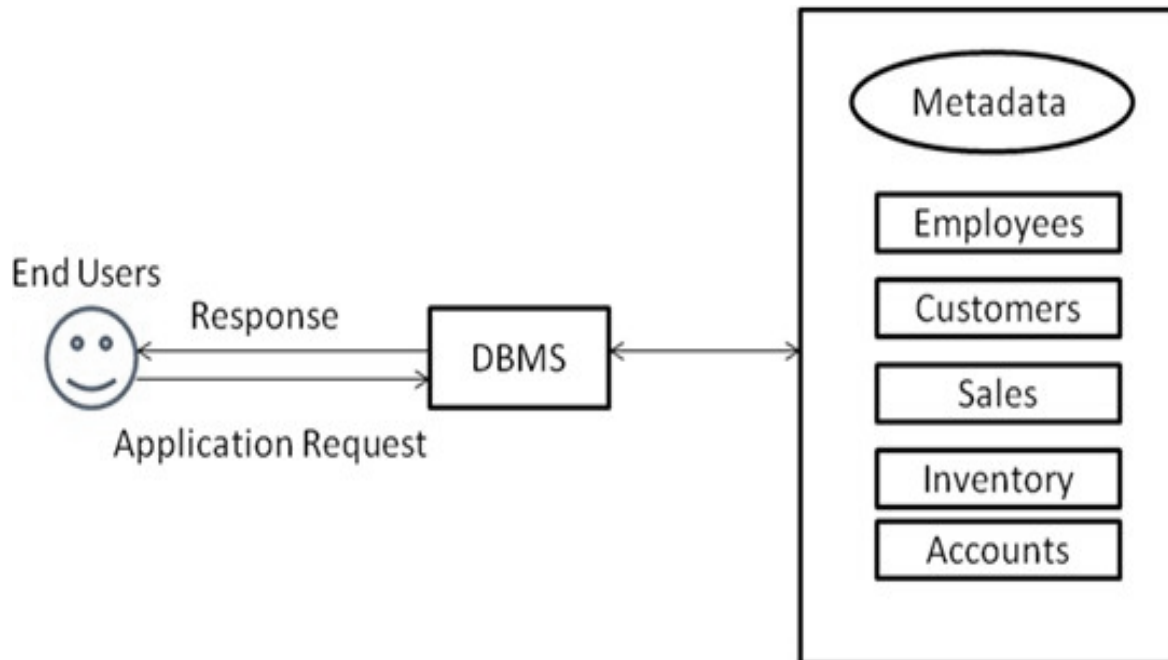
- **End- user data:** raw facts of interest to the end-user
- **Meta data:** through which the end-user data are integrated & managed. The metadata provides a description of the data characteristics and the set of relationships that link the data found within the database.



# Database Management Systems

## DBMS (Database management system): –

- Collection of programs that manages database structure and controls access to data
- Possible to share data among multiple applications or users
- Makes data management more efficient and effective



# Types of Databases

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Depending on the number of users accessing the database, a database system may be classified as:

**Single-user database system:** It supports only one user at a time. When a single-user database runs on a personal computer, it is also called a desktop database system

**Multi-user database system:** It supports multiple users at the same time. When a multi-user database supports a relatively small number of users, it is called as a workgroup database system. If the database is used by many users across globe, it is known as enterprise database system.

# Cont...

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Depending on the location of the database, a database system may be classified as:

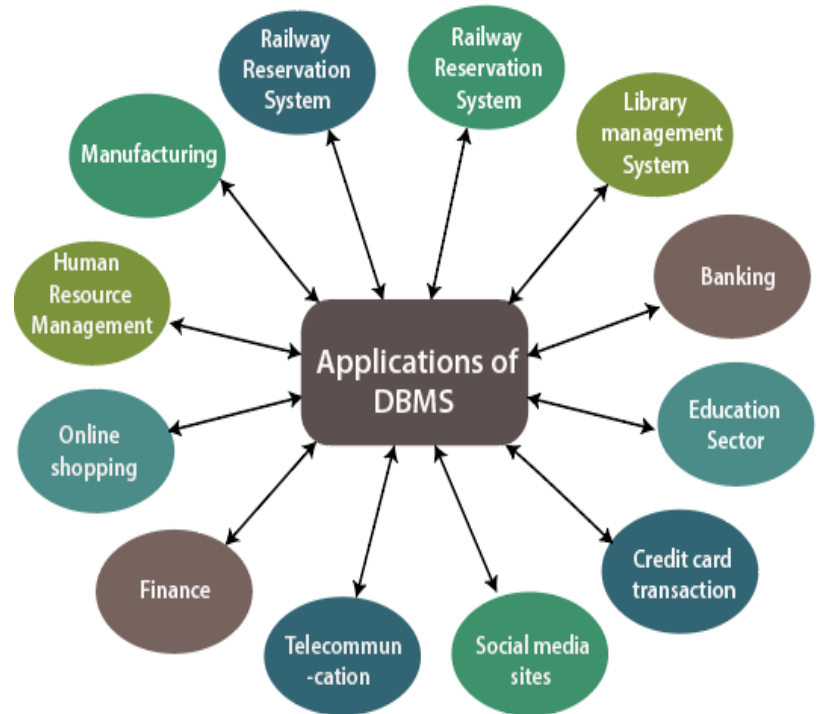
**Centralized database system:** It supports data located at a single site or single place.

**Distributed database system:** It supports data distributed across several different sites. Here, the same database can be replicated and stored in another computer so that whenever the original server goes down; the data can be available to the user from the replicated data from other servers.

# Applications of Database System

## Database Applications:

- Banking: transactions
- Airlines: reservations, schedules
- Universities: registration, grades
- Sales: customers, products, purchases
- Online Shopping
- Finance
- Human Resources





# Advantages of Database Management Systems

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End users have better access to more and better-managed data

- Promotes integrated view of organization's operations
- Probability of data inconsistency is greatly reduced
- Possible to produce quick answers to ad hoc queries

A database system is comprised of a database, DBMS software and appropriate hardware.

- Controlling Redundancy & Inconsistency
- Allows Data Sharing
- Restricting Unauthorized Access
- Providing Storage Structures for efficient query processing