

Database Management Systems

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Introduction

- Purpose of Database Systems
- View of Data
- Data Models
- Data Definition Language
- Data Manipulation Language

Data vs. Information

- Data:
 - Raw facts; building blocks of information
 - Unprocessed information
- Information:
 - Data processed to reveal meaning
- Accurate, relevant, and timely information is key for good decision making
- Good decision making is the key for survival in a global environment

Transforming Raw Data into Information

a) Initial Survey Screen

Dominican U. - School of Business Services - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Business Computer Lab Satisfaction Survey

**College of Business
Computer Lab**

This survey is designed to obtain student feedback regarding the services provided by the Business Computer Lab and identify areas in which we need to improve. Please answer each question as accurately as possible.

Using the Lab:

What is your academic classification?

Freshman Sophomore Junior Senior Graduate Student Other

Do you own a computer?

Yes No

How often do you use the Business Computer Lab?

Five or more times / week
 Three or four times / week
 Once or twice / week
 Once / month or less

What do you primarily use the Business Computer Lab for?

You may check more than one.

Internet (i.e. Web Browsing, Chat)
 Email Access
 Word Processing (i.e. MS Word)
 Spreadsheets (i.e. MS Excel)

Presentations (i.e. MS PowerPoint)
 Academic Programs (i.e., Minitab, Cobol, MS Visio, etc.)
 Games
 Other: _____

What do you like **MOST** about the Business Computer Lab?

You may check more than one.

Email
 24 Hour schedule
 Availability of computers

Up to date software
 Laser printers
 Scanners

Done Internet

Transforming Raw Data into Information (continued)

b) Raw Data

	A	B	C	D	E	F	G	H	I	J
	AcadClass	OwnComputer	HowOftenIsItUsed	Primary1	Primary2	Primary3	Primary4	Primary5	Primary6	Primary7
2	Gra	N	5W	0	1	1	1	1	1	1
3	Sen	Y	5W	1	0	0	0	1	1	1
4	Sen	Y	1W	0	0	0	1	0	0	0
5	Sen	Y	1W	1	0	0	0	1	0	0
6	Sen	Y	3W	0	0	0	0	1	0	0
7	Gra	N	5W	0	0	0	0	1	1	1
8	Sen	Y	1W	1	0	0	0	1	0	0
9	Sen	Y	3W	1	0	1	0	1	1	0
10	Sen	Y	1W	0	0	0	1	0	1	0
11	Sen	Y	5W	0	1	0	0	0	0	0
12	Jun	Y	1W	1	0	0	0	1	0	1
13	Sen	N	5W	1	0	0	1	1	1	1
14	Jun	Y	1W	0	0	0	1	0	0	0
15	Sen	Y	5W	0	0	0	1	0	0	0
16	Jun	Y	1M	0	1	0	0	0	0	1
17	Sen	Y	1W	0	0	1	0	0	0	0
18	Sen	Y	1W	0	0	1	1	0	0	0
19	Gra	N	5W	1	0	0	1	0	1	1
20	Gra	Y	1M	0	1	0	0	0	0	0
21	Gra	Y	5W	0	0	1	1	1	1	1
22	Sen	N	3W	0	0	1	1	1	1	0
23	Jun	Y	1W	1	0	0	0	0	0	0
24	Sen	Y	3W	1	1	0	1	1	1	0
25	Jun	Y	1W	1	0	0	0	1	0	0
26	Jun	Y	1W	1	0	0	0	0	1	1
27	Sen	Y	1M	1	0	0	0	0	1	0
28	Sen	Y	5W	0	0	0	0	1	0	1
29	Gra	Y	1M	0	0	0	1	0	0	1
30	Gra	Y	5W	1	1	0	0	1	1	1
31	Jun	N	5W	1	0	0	1	1	1	1
32	Jun	Y	3W	1	0	0	1	0	0	0
33	Gra	Y	5W	0	1	0	1	0	1	1

Transforming Raw Data into Information (continued)

c) Information in Summary Format

Screenshot of Microsoft Internet Explorer showing the Jennings A. Jones College of Business Survey results.

The title bar reads: Jennings A. Jones College of Business Survey - Microsoft Internet Explorer.

The menu bar includes: File, Edit, View, Favorites, Tools, Help.

The main title is: Jennings A. Jones College of Business Survey.

Sub-navigation: Responses > Business Computer Lab Satisfaction Survey > Summary.

Buttons: Summary, Details, Export.

Summary: Business Computer Lab Satisfaction Survey.

Pages: 1 to 1 of 1 (Next). Filter: None. Options: Show Open Ended Questions, Show Full Text.

Total Responses: 192 Report Time: 2/18/2005 12:04:58 PM.

Apply to All: Print, Mail, Email, Copy, Paste, Print.

What is your academic classification?

Response	Response Count	Percentage
Freshman	5	2.73%
Sophomore	42	6.56%
Junior	46	24.59%
Senior	97	53.09%
Graduate Student	11	11.48%
Other	1	1.04%
Total:	192	

Do you own a computer?

Response	Response Count	Percentage
Yes	136	70.19%
No	56	18.81%
Total:	192	

Internet icon.

Transforming Raw Data into Information (continued)

d) Information in Graphic Format



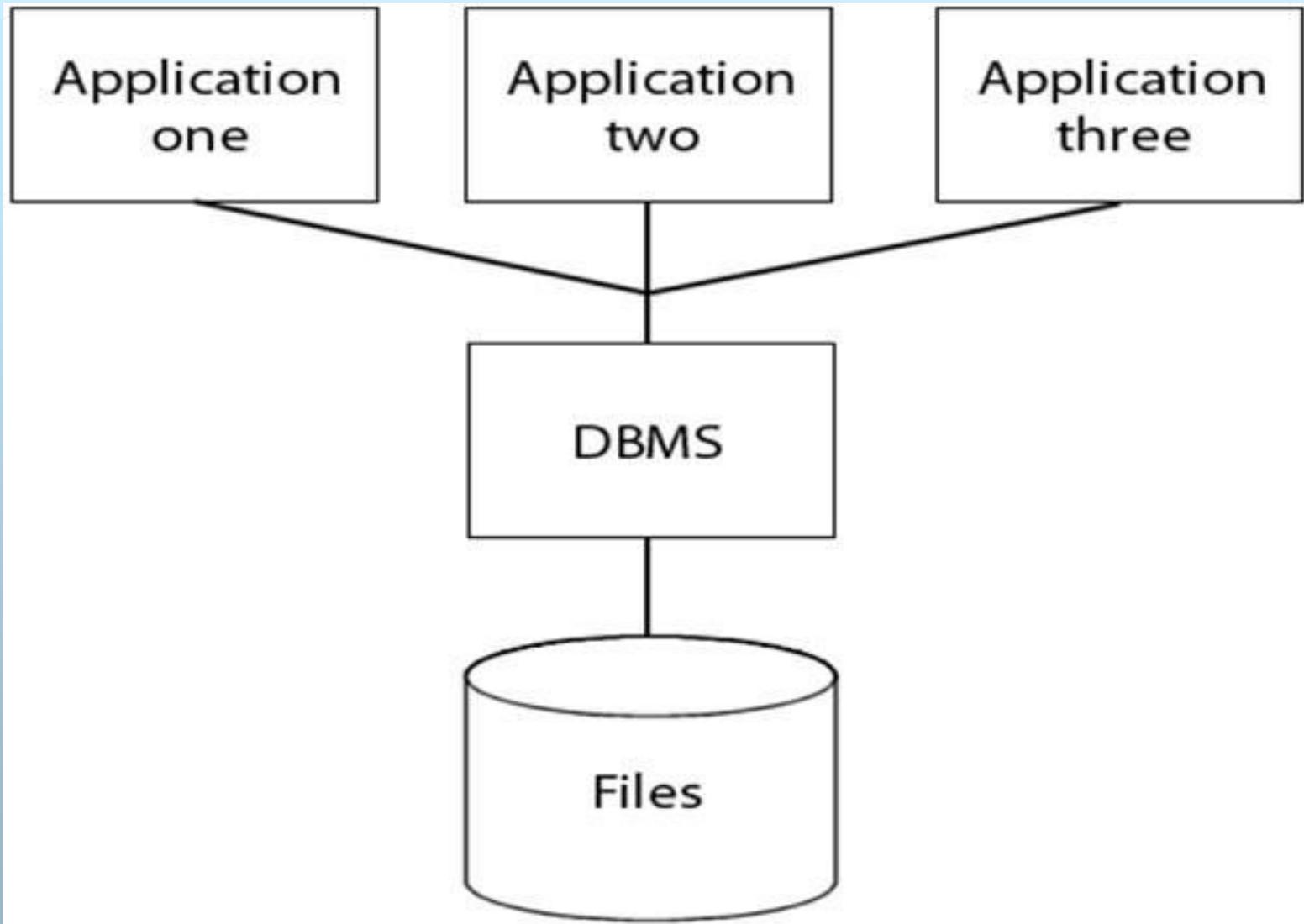
Introducing the Database and the DBMS

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

Introducing the Database and the DBMS (continued)

- 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

Role and Advantages of the DBMS (continued)



Database Management System (DBMS)

- Database Applications:
 - Banking: all transactions
 - Airlines: reservations, schedules
 - Universities: registration, grades
 - Sales: customers, products, purchases
 - Manufacturing: production, inventory, orders, supply chain
 - Human resources: employee records, salaries, tax deductions
- Databases touch all aspects of our lives

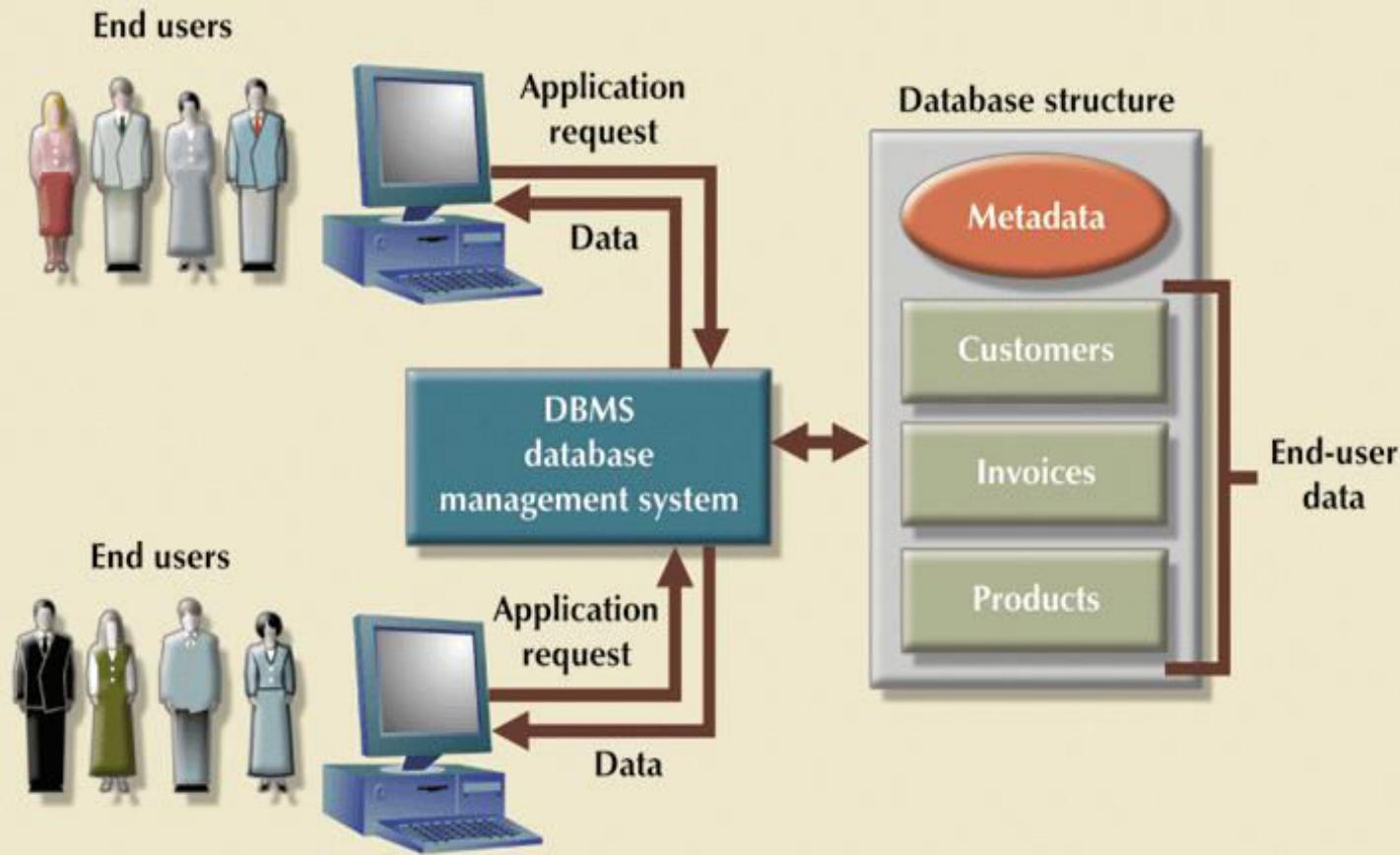
Role and Advantages of the DBMS (continued)

- 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

Role and Advantages of the DBMS (continued)

FIGURE
1.2

The DBMS manages the interaction between the end user and the database



Types of Databases

- Single-user:
 - Supports only one user at a time
- Desktop:
 - Single-user database running on a personal computer
- Multi-user:
 - Supports multiple users at the same time

Types of Databases (continued)

- Workgroup:

- Multi-user database that supports a small group of users or a single department

- Enterprise:

- Multi-user database that supports a large group of users or an entire organization

Types of Databases (continued)

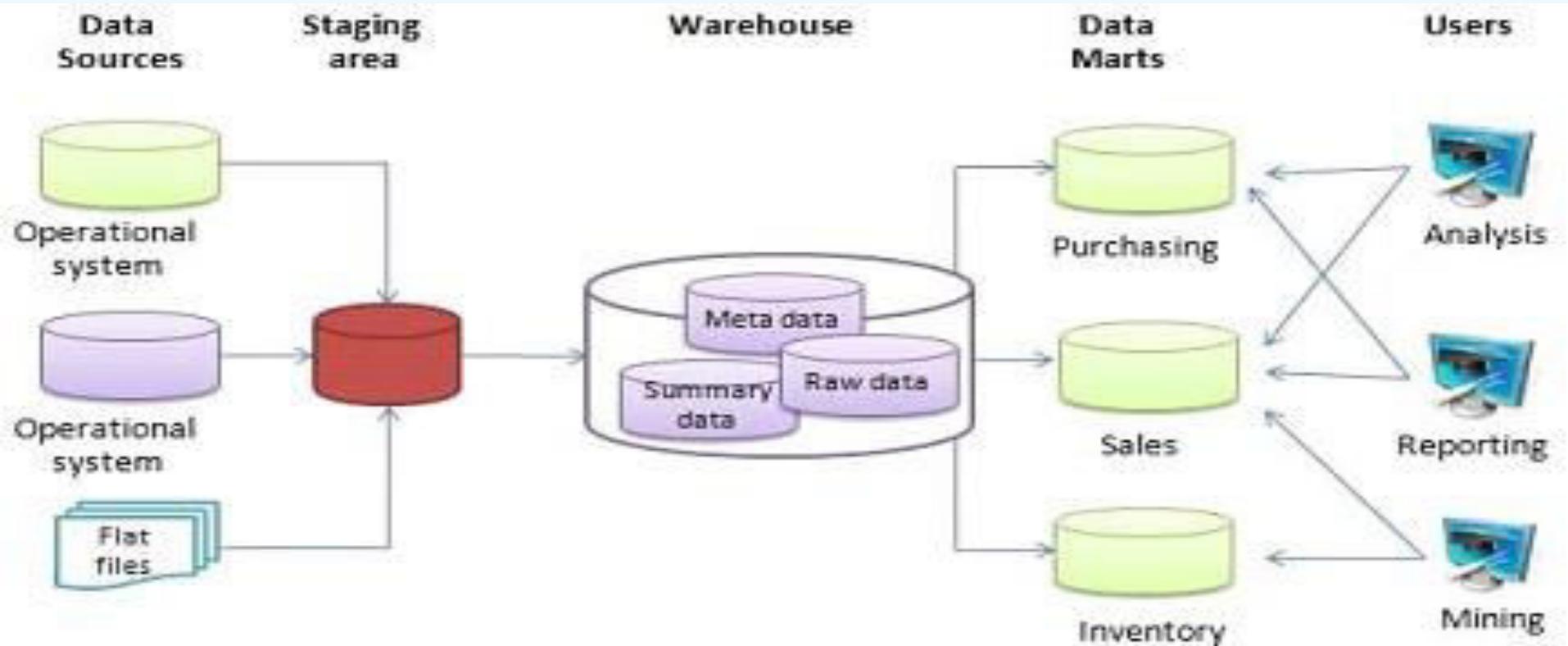
Can be classified by location:

- Centralized:
 - Supports data located at a single site
- Distributed:
 - Supports data distributed across several sites

Types of Databases (continued)

Can be classified by use:

- Transactional (or production):
 - Supports a company's day-to-day operations
- Data warehouse:
 - Stores data used to generate information required to make tactical or strategic decisions
 - Often used to store historical data
 - Structure is quite different

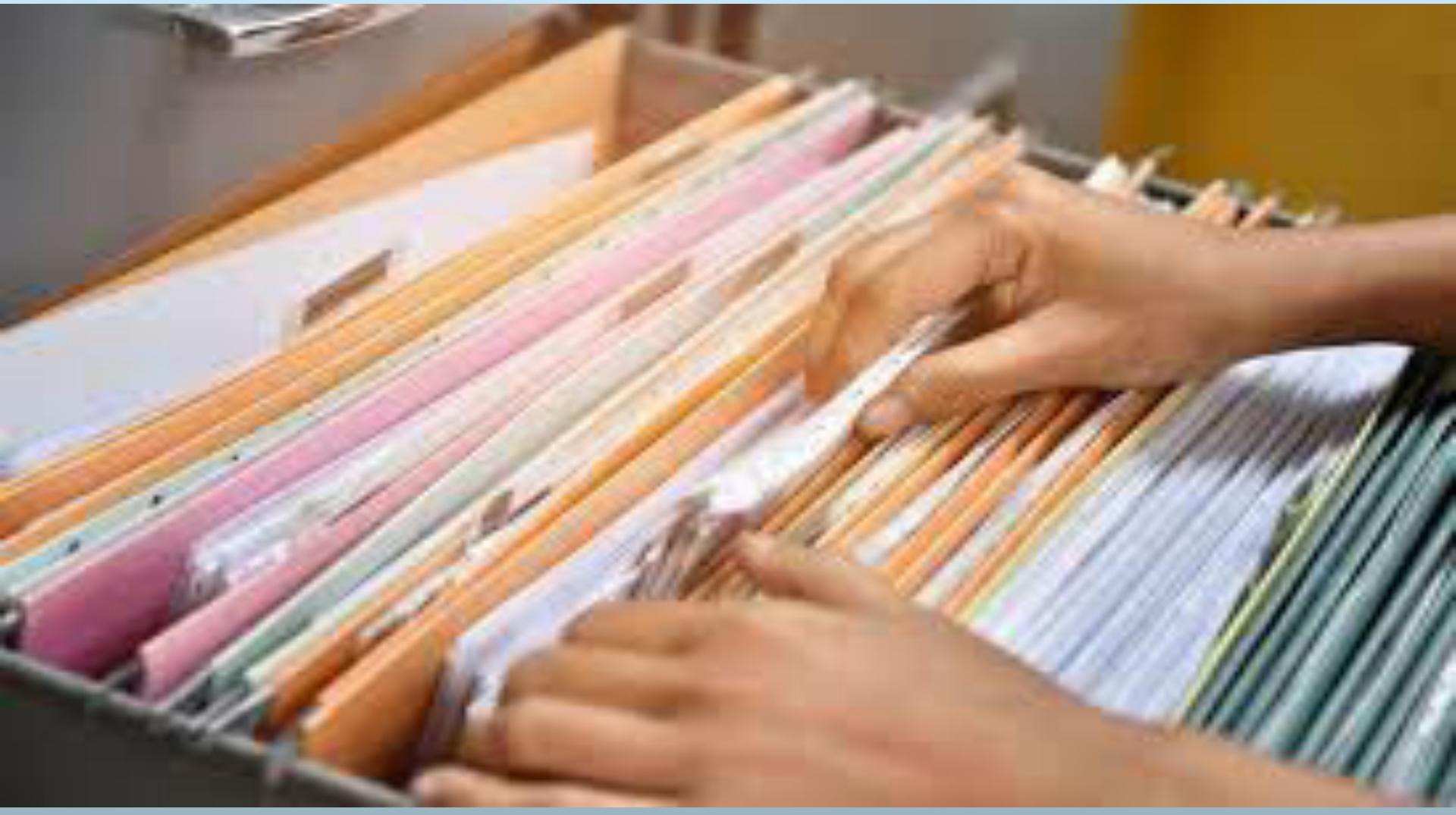


The basic architecture of a data warehouse

Extract, transform, load (ETL)
Extract, load, transform (E-LT)

Purpose of Database System

- Office Records or File Systems



Why Database Design is Important

- Defines the database's expected use
- Different approach needed for different types of databases
- Avoid redundant data
- Poorly designed database generates errors → leads to bad decisions → can lead to failure of organization

Purpose of Database System

- In the early days, database applications were built on top of file systems