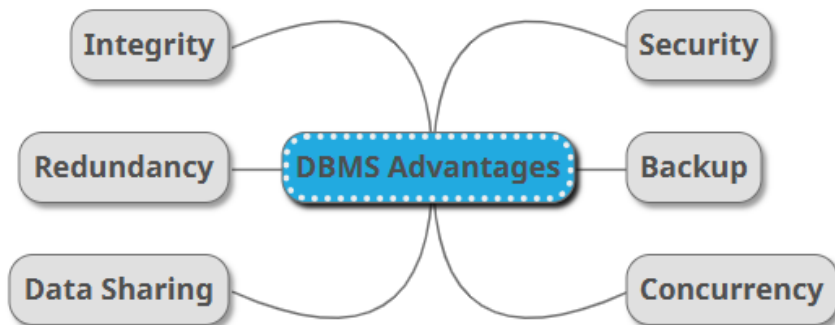





Database Search and Reporting




1. Comparison: Flat File Systems vs. Relational Databases

Feature	Flat File System	Relational Database
Structure	Simple files (e.g., CSV, TXT)	Tables with rows and columns
Data Redundancy	High redundancy, no constraints	Reduced redundancy via normalization
Relationships	No direct relationships	Relationships via keys (primary, foreign)
Example Usage	Small data logs, config files	Inventory, customer management, e-commerce
Drawbacks	Hard to maintain, not scalable, error-prone	Complex setup, requires DBMS knowledge

2. Mind Map: DBMS Advantages



-  **Security** – access control and permissions
-  **Integrity** – data validity and consistency
-  **Backup** – regular data backups and recovery

-  **Redundancy** – elimination of duplicate data
 -  **Concurrency** – supports multiple users
 -  **Data Sharing** – easy sharing among users or systems
-

3. Roles in a Database System

- **System Analyst:** Gathers business requirements and ensures database design meets organizational needs.
 - **Database Designer:** Plans the structure and relationships within the database.
 - **Database Developer:** Builds and codes the database structure and scripts.
 - **Database Administrator (DBA):** Maintains the database, handles backups, performance, and user permissions.
 - **Application Developer:** Integrates the database with software applications.
 - **BI Developer:** Extracts and analyzes data for business intelligence and reporting.
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4. Types of Databases

A. Relational vs. Non-Relational Databases

- **Relational:** Uses tables and SQL (e.g., MySQL, PostgreSQL)
- **Non-Relational:** Flexible formats like JSON, ideal for large or varied data (e.g., MongoDB, Cassandra)

B. Centralized vs. Distributed vs. Cloud

- **Centralized:** All data in one location. Example: traditional office database.
- **Distributed:** Spread across locations. Example: multinational companies.
- **Cloud:** Hosted on platforms like AWS, Azure. Example: Google Cloud Spanner.

Use Cases:

- Centralized: Small businesses
- Distributed: Banks, airlines
- Cloud: Scalable web applications, startups

5. Cloud Storage and Databases

What is Cloud Storage?

Cloud storage means saving data on remote servers accessed via the internet. It supports databases by providing:

- Scalability
- High availability
- Cost-efficiency

Cloud-Based DB Advantages

- No physical infrastructure
- Easy to scale
- Automatic updates and backups
- High accessibility from anywhere

Challenges

- Data security and compliance
- Internet dependency
- Cost management