Database Course Documentation

Suhaila Saud

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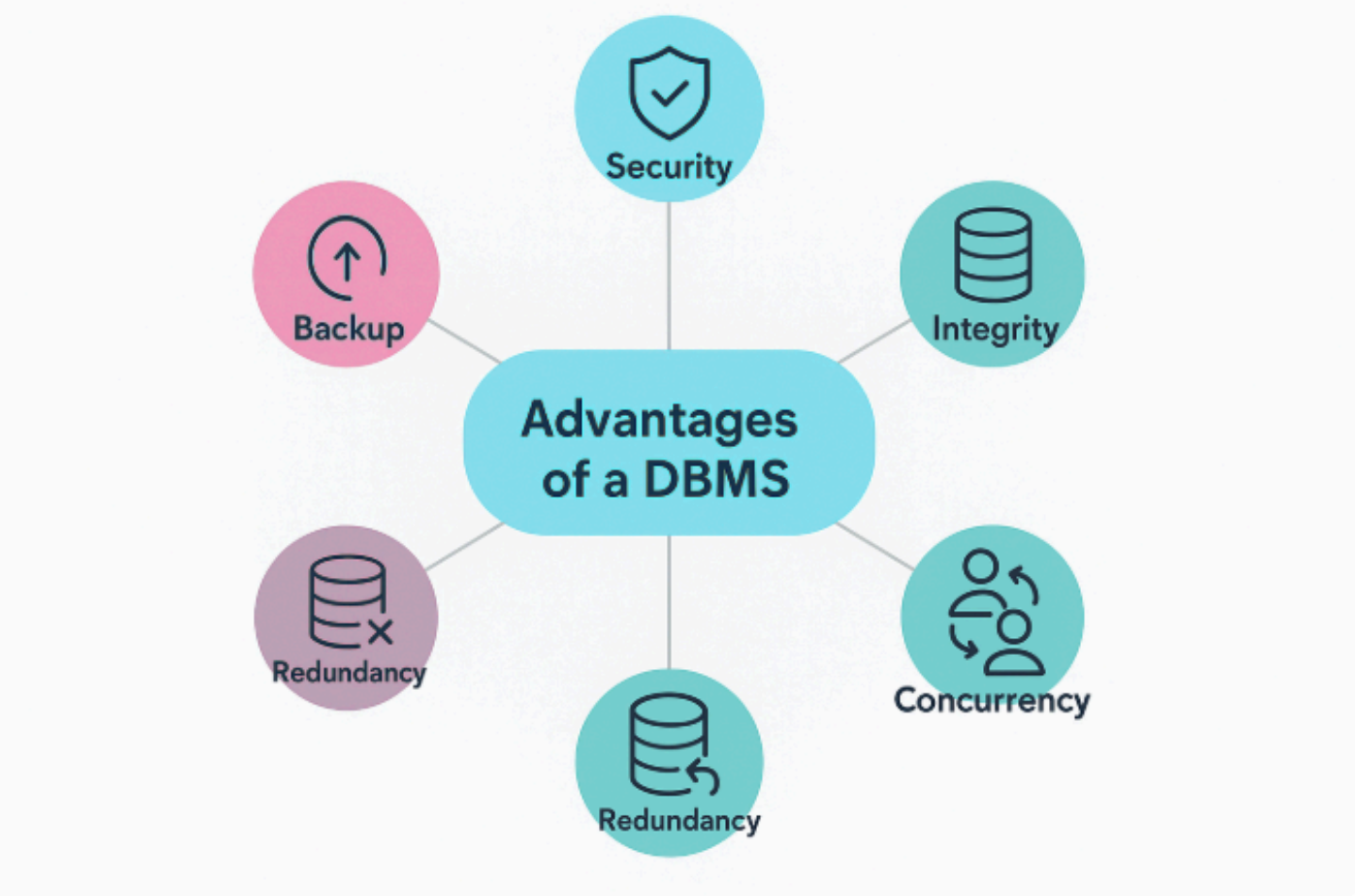
This project focuses on building research and reporting skills by exploring key database concepts, documented in a well-organized GitHub repository titled Database Course Documentation. The report includes all required tasks, presented clearly with structured sections and visual aids to enhance understanding.

1. Comparison Assignment: Flat File Systems vs. Relational Databases

Use the following table to compare both systems:

Feature	Flat File System	Relational Database
Structure	Single, plain text or spreadsheet files	Structured with tables, rows, and columns
Data Redundancy	High – data may be repeated	Low – normalization minimizes redundancy
Relationships	Not supported – no link between files	Tables can be linked using keys
Example Usage	Simple log files, CSV exports	Web apps, ERP systems, customer databases
Drawbacks	Inefficient querying, no relationships	Requires more setup and management

2. DBMS Advantages – Mind Map



3. Roles in a Database System

Briefly describe each of the following roles:

Role	Description
System Analyst	Gathers requirements, defines project scope, and aligns with business needs
Database Designer	Designs the structure, relationships, and schema of the database
Database Developer	Builds the database using SQL and tools
Database Administrator (DBA)	Manages performance, security, and backup of databases
Application Developer	Integrates database with applications via backend code
BI Developer	Uses data analysis tools to generate reports and dashboards

4. Types of Databases

Explain the following types:

- **Relational vs. Non-Relational**
  - *Examples: MongoDB, Cassandra*
  - Relational: Structured tables; Non-Relational: Key-Value, Document-based
- **Centralized vs. Distributed vs. Cloud**
  - Centralized: All data in one location
  - Distributed: Data across multiple servers
  - Cloud: Managed by cloud services like AWS, GCP, Azure

Include use-case examples for each.

5. Cloud Storage and Databases

Discuss the link between **Cloud Storage** and **Databases**:

Topic	Explanation
What is Cloud Storage?	Online data storage managed by third-party providers
Support for DBs	Hosts and scales databases over the internet
Advantages	Scalable, cost-effective, accessible from anywhere
Examples	Azure SQL, Amazon RDS, Google Cloud Spanner
Disadvantages	Dependency on internet, potential security concerns, vendor lock-in