

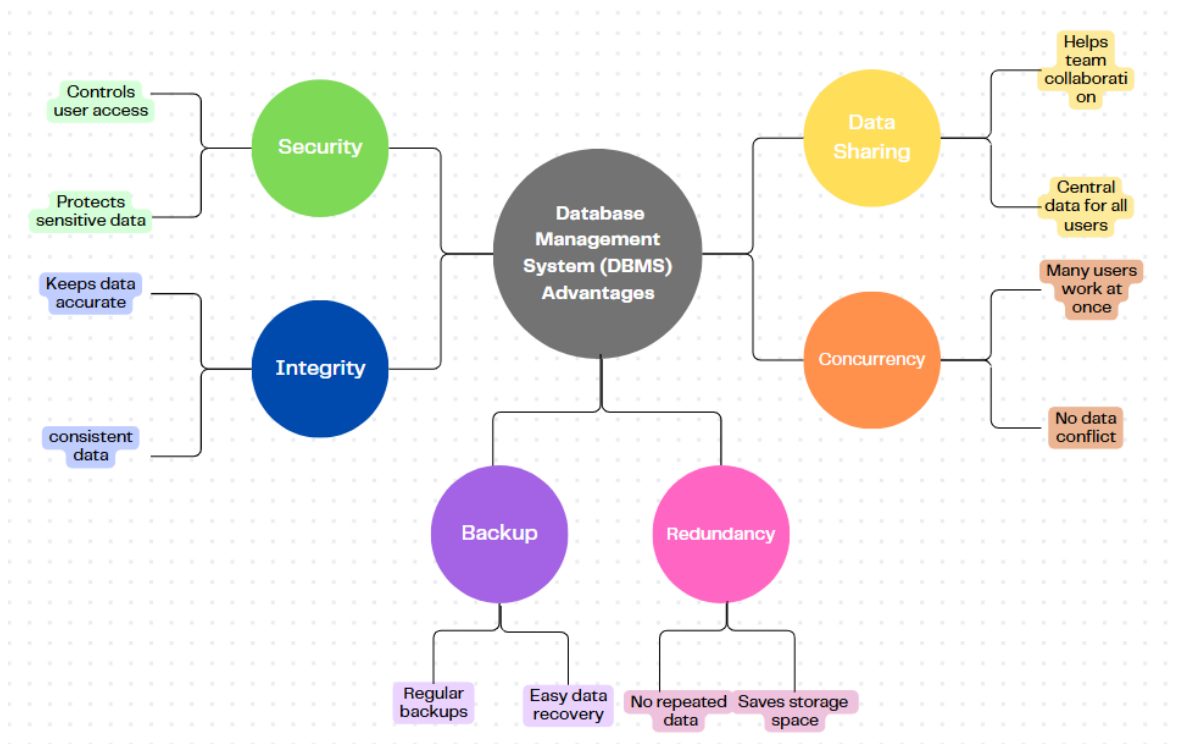
# **Report 1**

## **Database Search and Reporting**

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

FEATURE	FLAT FILE SYSTEMS	RELATIONAL DATABASES
<b>STRUCTURE</b>	Simple files like .txt or .csv	Tables with rows and columns (SQL)
<b>DATA REDUNDANCY</b>	High - data may be repeated	Low - data is normalized and related
<b>RELATIONSHIPS</b>	No relationships between files	Supports relationships using keys
<b>EXAMPLE USAGE</b>	Storing contact list in a .csv file	Managing inventory in a retail system
<b>DRAWBACKS</b>	Hard to search and update; no structure	More complex setup and management

## 2. Mind Map – Advantages of DBMS



3. Roles in a Database System

ROLE	RESPONSIBILITY
System Analyst	Understands business needs and defines system requirements.
Database Designer	Designs the database structure (tables, relationships).
Database Developer	Writes SQL queries and builds database logic.
Database Administrator (DbA)	Manages database performance, security, and backups.
Application Developer	Create apps that connect to the database.
Bi Developer	Uses data to build reports, dashboards, and analytics.

4. Types of Databases

Relational vs. non-relational

- **Relational DB:** Organized in tables (e.g., MySQL, PostgreSQL).
  - *Use Case:* Banking systems, school databases.
- **Non-Relational DB:** Stores data as JSON, documents, key-value (e.g., MongoDB, Cassandra).
  - *Use Case:* Social media apps, real-time analytics.

Centralized, Distributed, and Cloud

Type	Description	Use Case Example
Centralized	One single location	Local hospital database
Distributed	Stored across many locations	Multinational company data
Cloud	Managed online in the cloud	E-commerce website using Amazon RDS

## **5. Cloud Storage & Databases**

### **What is Cloud Storage?**

Cloud storage is saving data on internet-based servers. It helps support databases by offering:

- Fast access
- Automatic backups
- Scalability

### **Advantages of Cloud Databases**

- No need to manage hardware
- Easy to scale up/down
- Reliable backup and uptime

### **Disadvantages/Challenges**

- Dependent on internet
- Higher long-term cost
- Security risks if not managed well