



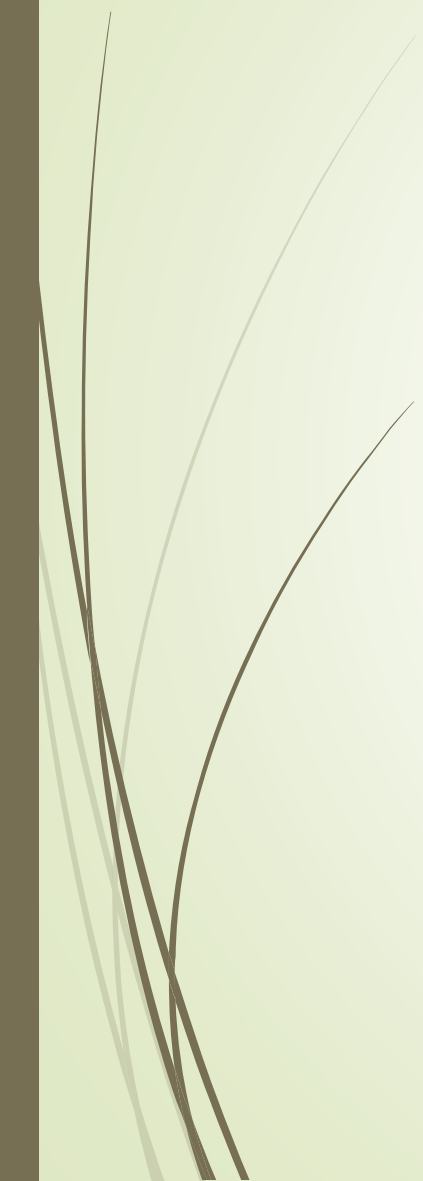
Architecture of a Database Management System (DBMS)

➤ Components and Functions.

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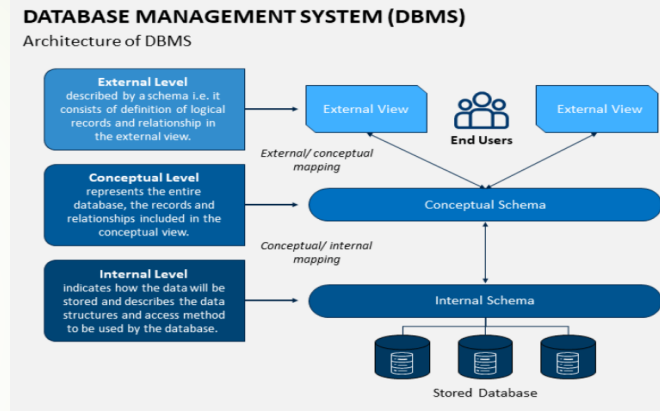


Introduction to DBMS.

- A DBMS is software that manages data, databases, and users.
 - Provides a systematic and organized way of storing, retrieving, and managing data.
 - Ensures security, consistency, integrity, and performance.
 - Follows a layered architecture to simplify data management.
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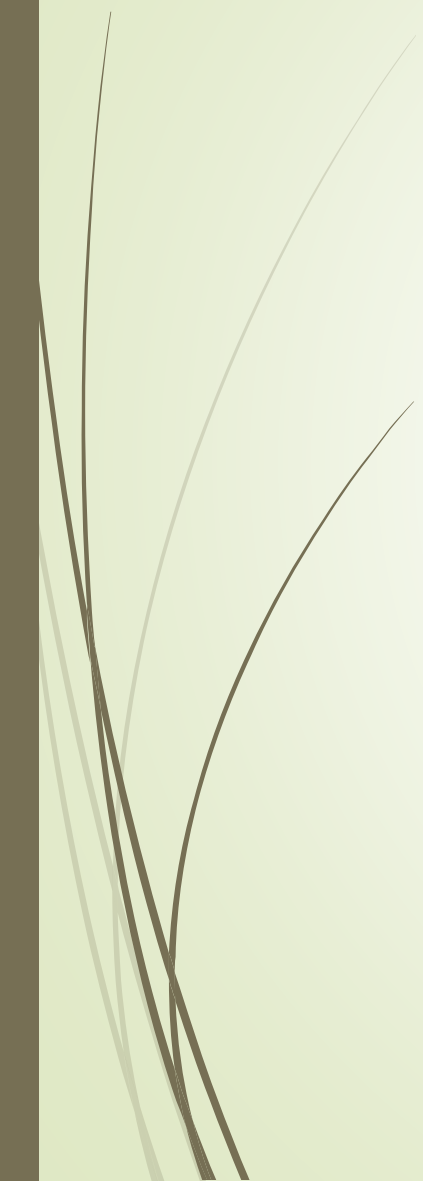
DBMS Architecture Overview

- Three main levels of DBMS architecture:
 - 1. External Level (View Level)
 - 2. Conceptual Level (Logical Level)
 - 3. Internal Level (Physical Level)
- This is known as the Three-Schema Architecture.



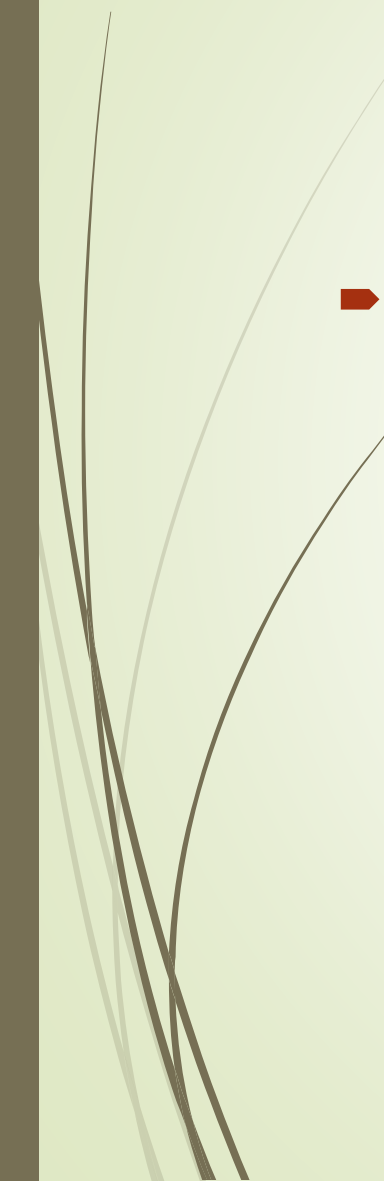


External Level (View Level)

- Provides different user views of the same database.
 - Ensures security by restricting access to specific data.
 - Each user interacts only with the data they need.
 - Hides internal complexity.
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Conceptual Level (Logical Level)

- Represents the entire database structure.
 - Defines entities, relationships, constraints, and data types.
 - Independent of physical storage.
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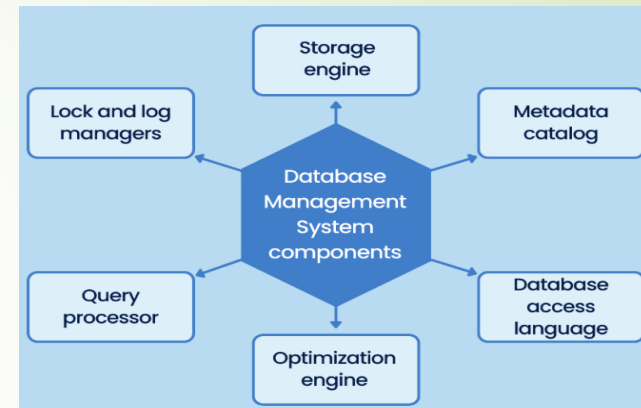


Internal Level (Physical Level)

- Deals with how data is actually stored in memory/disks.
 - Includes file structures, indexes, hashing, data compression.
 - Focuses on performance and efficiency.

Major Components of DBMS

- Query Processor
 - Storage Manager
 - Lock and log manager
 - Buffer Manager
 - Metadata Catalog
 - Authorization & Security Module





Functions of DBMS

- Data Storage, Retrieval & Update
 - Transaction Management (ACID properties)
 - Concurrency Control
 - Backup & Recovery
 - Security & Authorization
 - Data Integrity Enforcement
 - Data Independence
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Summary

- DBMS architecture consists of three levels: external, conceptual, internal.
 - Components work together to ensure: efficient data storage, secure access, high performance, reliability and data integrity.
 - DBMS is essential for modern applications requiring structured data management.



THANK YOU