DBMS Basics

1. What is DBMS
2. Need of DBMS. File System vs DBMS
    - Redundancy
    - Integrity
    - Security
    - Concurrency
    - Crash Recovery

3. **Types Of DBMS**

    1. Relational Database Management System (RDBMS)
    Examples: MySQL, Oracle, Microsoft SQL Server and PostgreSQL.

    2. NoSQL DBMS
    NoSQL systems are designed to handle large-scale data and provide high performance for scenarios where relational models might be restrictive. They store data in various non-relational formats, such as key-value pairs, documents, graphs, or columns.

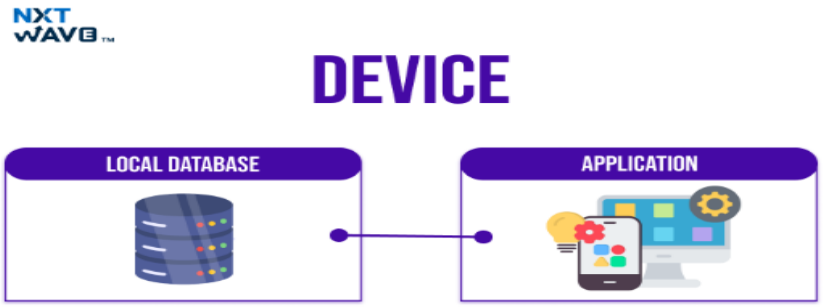
    Examples: MongoDB, Cassandra, DynamoDB and Redis.

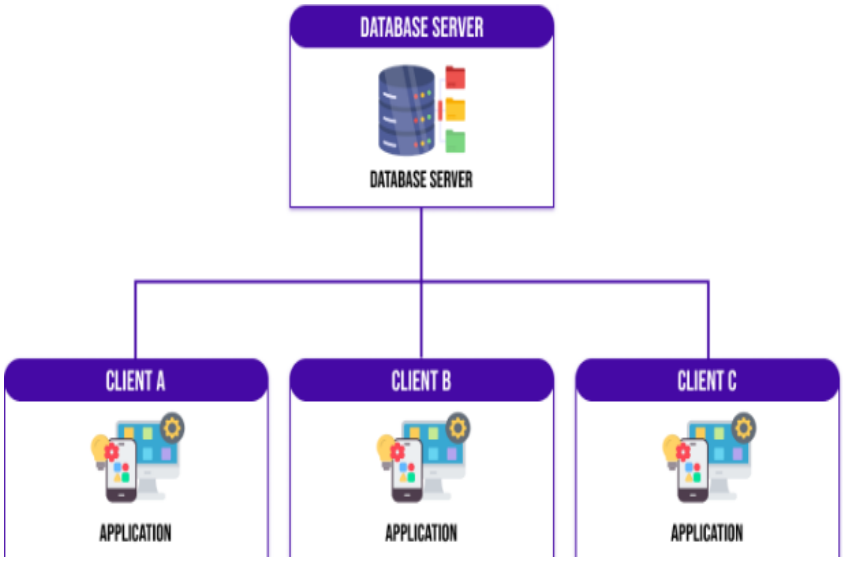
    3. Object-Oriented DBMS (OODBMS)
    OODBMS integrates object-oriented programming concepts into the database environment, allowing data to be stored as objects. This approach supports complex data types and relationships, making it ideal for applications requiring advanced data modeling and real-world simulations.

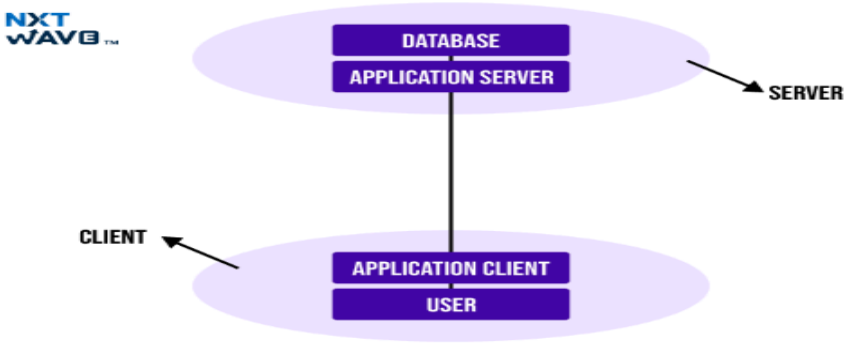
    Examples: ObjectDB, db4o.

    - When should use RDBMS or NoSQL

4. Types Of DBMS Architecture - 1 tier, 2 tier, 3 tier architecture





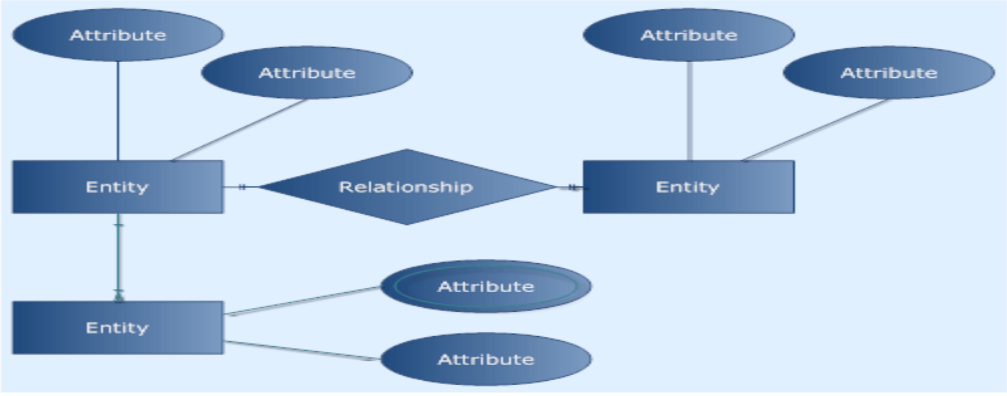


Types of Relationships

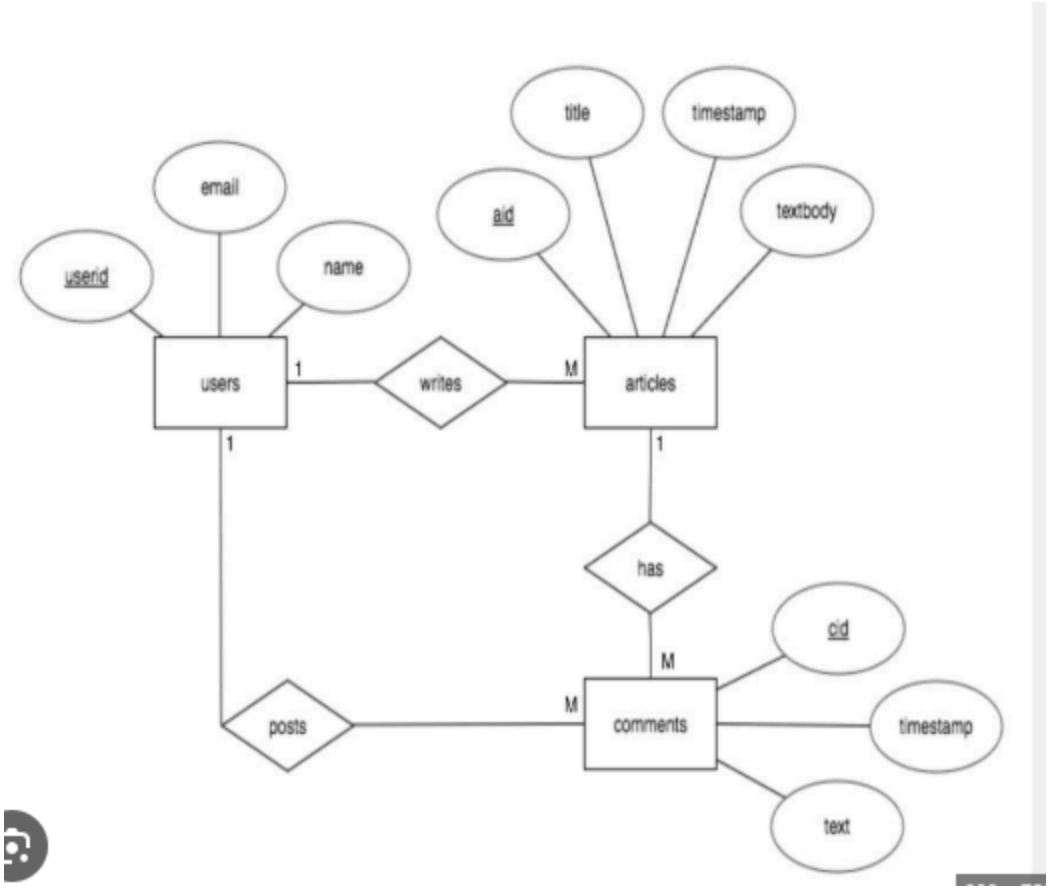
Relationship Type	Real-Life Example
One-to-One	Person – Passport
One-to-Many	User – Posts
Many-to-Many	Students – Courses

ER Model

1. What is ER Model - Conceptual model for designing databases
2. Entity, Attribute, Relationship
3. ER Diagram



4. Create a ER diagram for user, blog, post, comment app



Relational Model

ER diagrams focus on the conceptual model of the database, showing entities, attributes, and relationships, while relational diagrams represent the physical implementation using tables, columns, and constraints

Convert ER diagram to Relational model

Types of keys

student_id	name	phone	age
1	Akon	9876723452	17
2	Akon	9991165674	19
3	Bkon	7898756543	18
4	Ckon	8987867898	19
5	Dkon	9990080080	17

Super Key, Candidate Key, Primary Key, Alternate Key, Foreign Key, Composite Key, Unique Key