DATABASE MANAGEMENT SYSTEM

Chapter 1

Introduction to DBMS

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DBMS Buzz Words (Terminologies):

- **Data**:

  Data is the raw material (fact) that can be processed for any computing machine.

  Example: Name of the student, Marks of the student, Mobile no., Image etc.

- **Information**:

  Information is the data that has been converted into more useful or intelligent form. Example: Report card sheet.

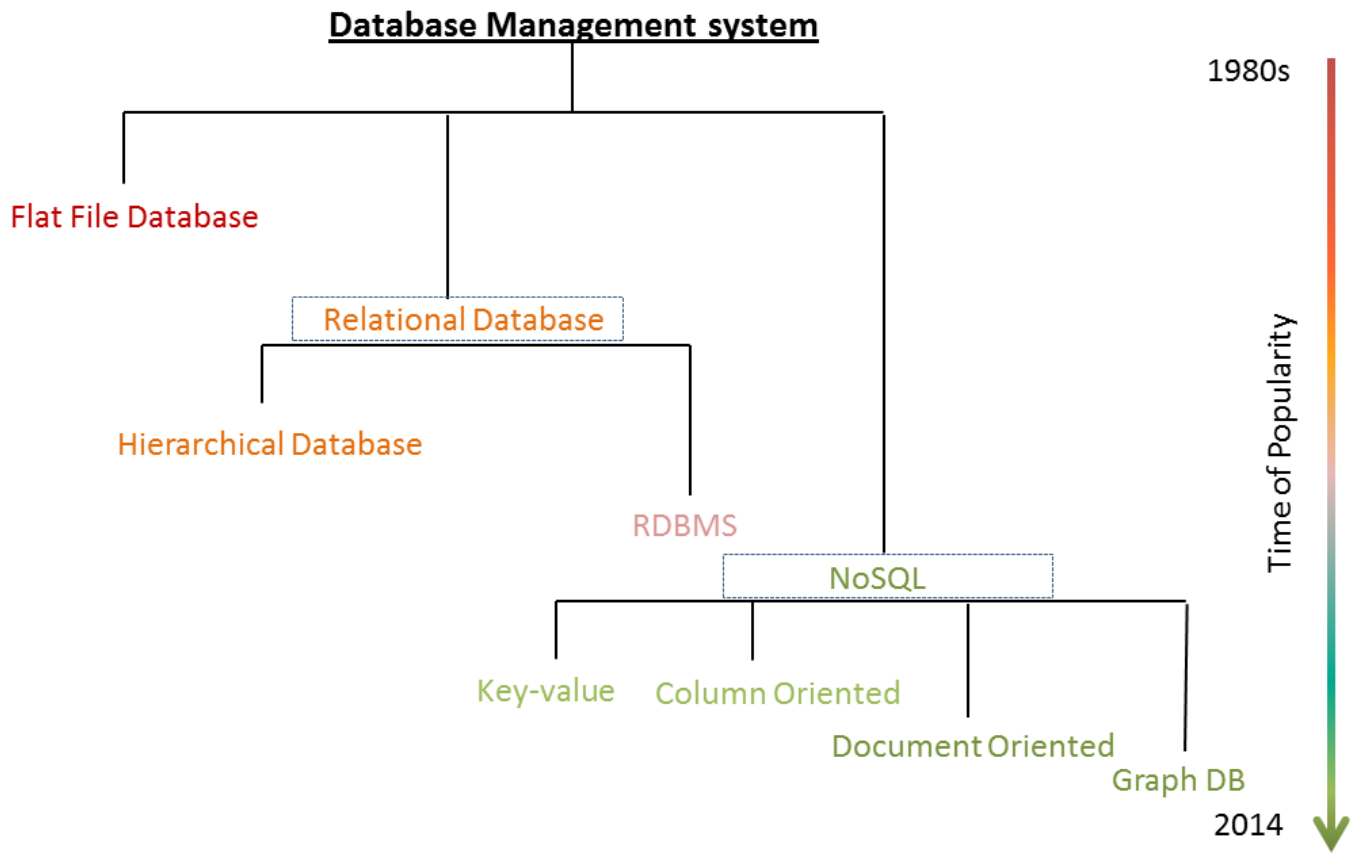
- **Database**:
  - The database is a collection of inter-related data which is used to retrieve, insert and delete the data efficiently. It is also used to organize the data in the form of a table, schema, views, and reports, etc.
- **Database Management System**:

  A Database Management System (DBMS) is a software system that allows users to create, organize, and manage data stored in a database.

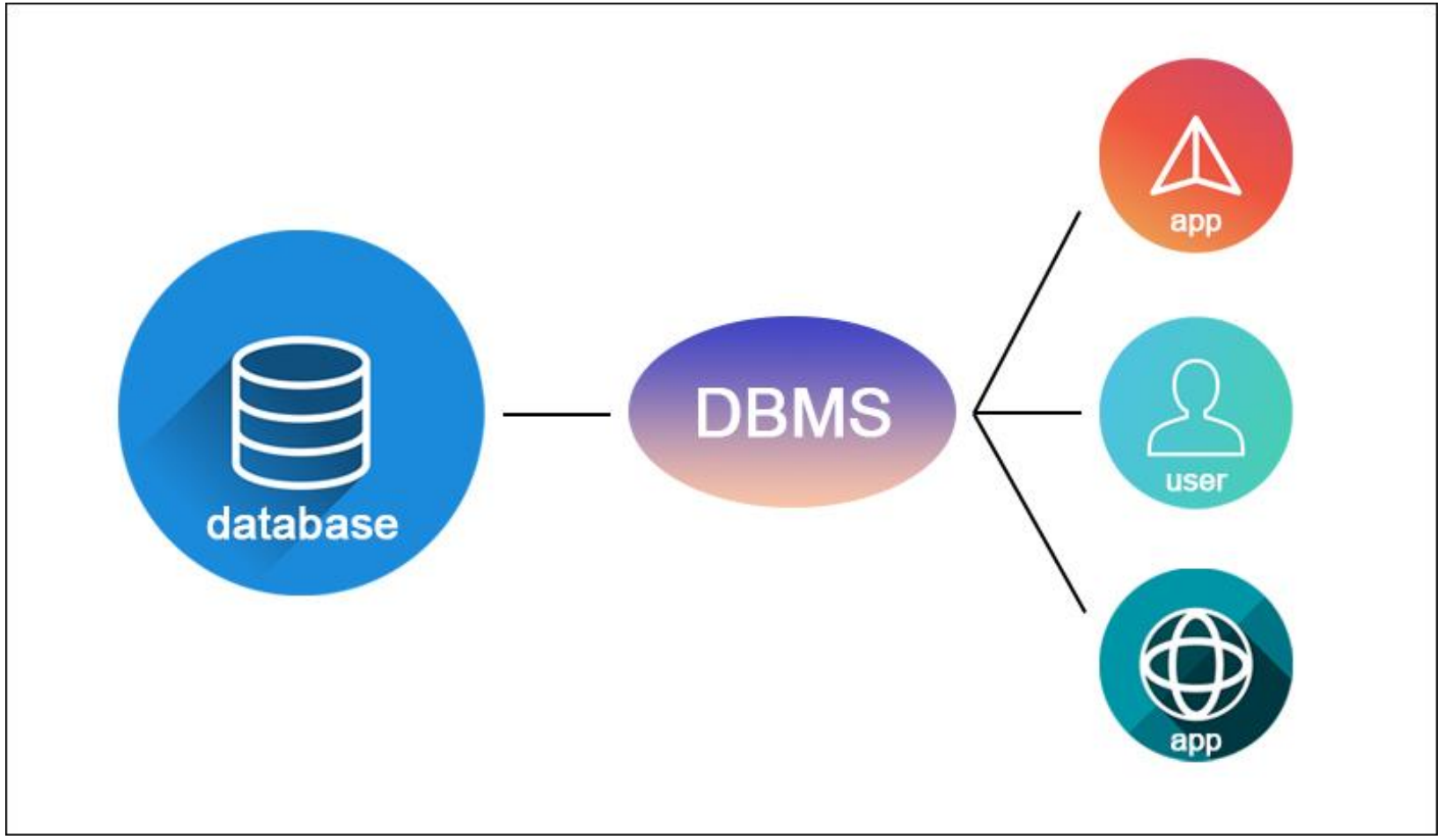
What is Database Management System?

- A Database Management System (DBMS) is a software system that allows users to create, organize, and manage data stored in a database. A database is a collection of data that is organized in a way that allows for efficient retrieval, updating, and management of the data.
- Some popular DBMSs include MySQL, Oracle, Microsoft SQL Server, PostgreSQL, MongoDB, and Cassandra.
- The choice of DBMS depends on the specific needs of an organization or individual, as each DBMS has its own strengths and weaknesses.

Evolution of Database Management System



Database Management System



Types Of DBMS

There are several types of DBMS (database management system) available, including:

1. Relational DBMS (RDBMS)
2. Object-Oriented DBMS (OODBMS)
3. Hierarchical DBMS
4. Network DBMS
5. NoSQL DBMS
6. Graph DBMS
7. Columnar DBMS
8. Document DBMS

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Relational DBMS (RDBMS)

- This is the most common type of DBMS and is based on the relational model.
- Examples of RDBMS include:
  - MySQL,
  - Oracle, and
  - SQL Server.

Object-Oriented DBMS (OODBMS)

- This type of DBMS is based on the object-oriented programming paradigm and is designed to handle complex data structures.
- Examples of OODBMS include:
  - Gemstone and
  - ObjectStore.

Hierarchical DBMS

- This type of DBMS organizes data in a tree-like structure, where each record has one parent and one or more children.
- Examples of hierarchical DBMS include:
  - IBM's Information Management System (IMS) and
  - Raima's RDM Embedded.

Network DBMS

- This type of DBMS organizes data in a more complex manner than hierarchical DBMS by allowing each record to have multiple parent and child records.
- Examples of network DBMS include:
  - Integrated Data Store (IDS) and
  - UniData.

NoSQL DBMS

- This type of DBMS is designed to handle unstructured or semi-structured data, and provides a flexible schema.
- Examples of NoSQL DBMS include:
  - MongoDB and
  - Cassandra.

Graph DBMS:

- This type of DBMS is designed to manage data that consists of nodes and edges, and is used for data that has complex relationships.
- Examples of graph DBMS include:
  - Neo4j and
  - OrientDB.

Columnar DBMS

- This type of DBMS stores data in columns instead of rows, which makes it more efficient for analytical queries.
- Examples of columnar DBMS include:
  - Apache Cassandra and
  - Google Bigtable.

Document DBMS:

- This type of DBMS is designed to store data in a document format, such as JSON or XML.
- Examples of document DBMS include:
  - Couchbase and
  - RavenDB.

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