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Batch : Data Engineering Batch-1

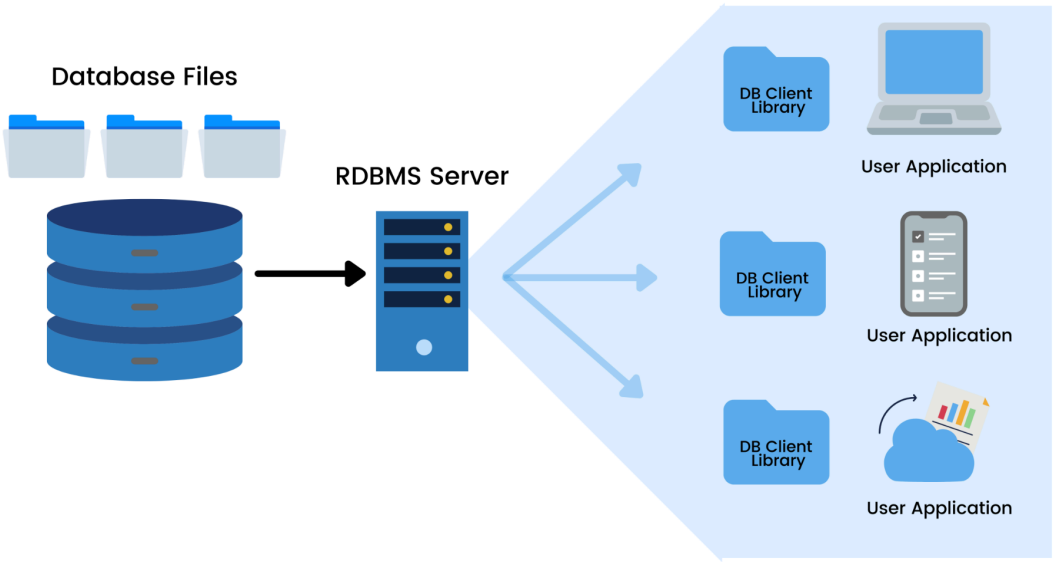
RDBMS, Data Warehousing, OLTP, OLAT, SQL

RDBMS :

A database management system (DBMS) defines, creates, and maintains a database.

RDBMS data is structured in database tables, fields and records.

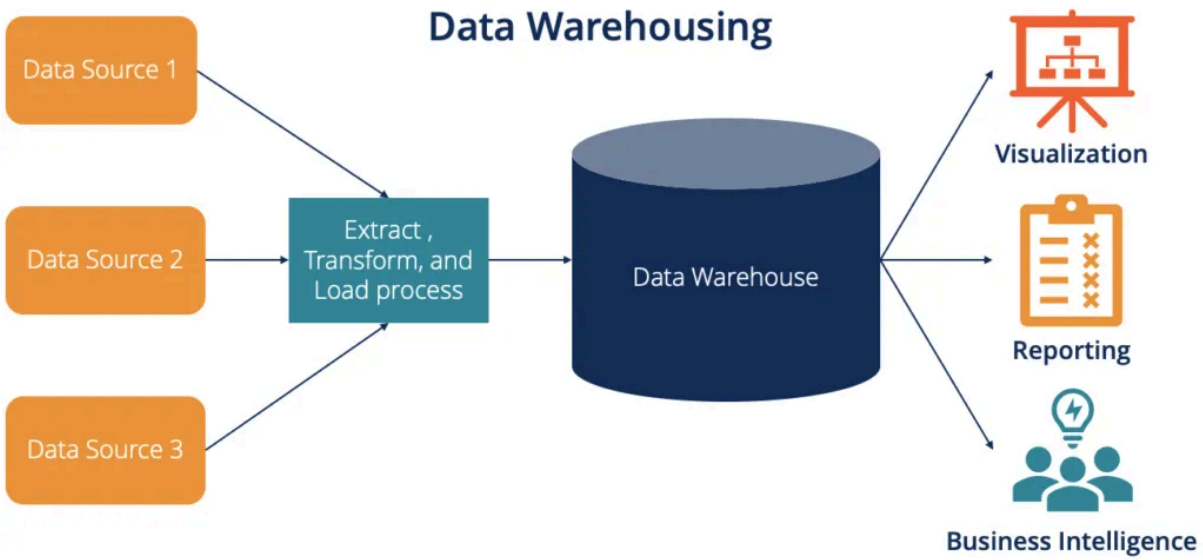
RDBMS is a type of database management system that organises data into tables, which are related to each other based on common fields.



Data Warehousing :

It is a collection of data designed to support management decision making by presenting a coherent picture of business conditions at a single point of time.

Data warehousing plays a crucial role in enabling organisations to leverage their data for strategic decision-making. It provides a unified and historical view of data, empowering business users with the information they need to understand trends, patterns, and insights. While there are challenges, the benefits of having a well-designed data warehouse make it a fundamental component of modern data infrastructure.



OLTP (Online Transaction Processing):

-Purpose:
OLTP systems are designed for transaction-oriented processing. They handle day-to-day, routine operations such as data entry, updating, and retrieval of small amounts of data in real-time.

-Database Structure:
OLTP databases are normalised, meaning they are designed to minimise redundancy and maintain data consistency. This structure is suitable for frequent updates and inserts.

-Volume of Data:
OLTP systems deal with a large number of short, simple transactions. The volume of data processed is typically high, but the individual transactions are relatively small.

-Queries:
OLTP queries are simple and focused on retrieving specific records. The goal is to support efficient and rapid transaction processing.

-Example:
Examples of OLTP applications include online banking systems, point-of-sale systems, order processing systems, and airline reservation systems.

OLAP (Online Analytical Processing):

-Purpose:
OLAP systems are designed for complex, read-intensive queries and data analysis. They support decision-making and business intelligence activities.

-Database Structure:
OLAP databases are typically denormalized or partially denormalized. This structure is optimised for querying and reporting, allowing for faster analytical processing.

-Volume of Data:
OLAP systems deal with a large volume of historical and aggregated data. These systems are optimised for complex analytical queries that involve aggregations and comparisons.

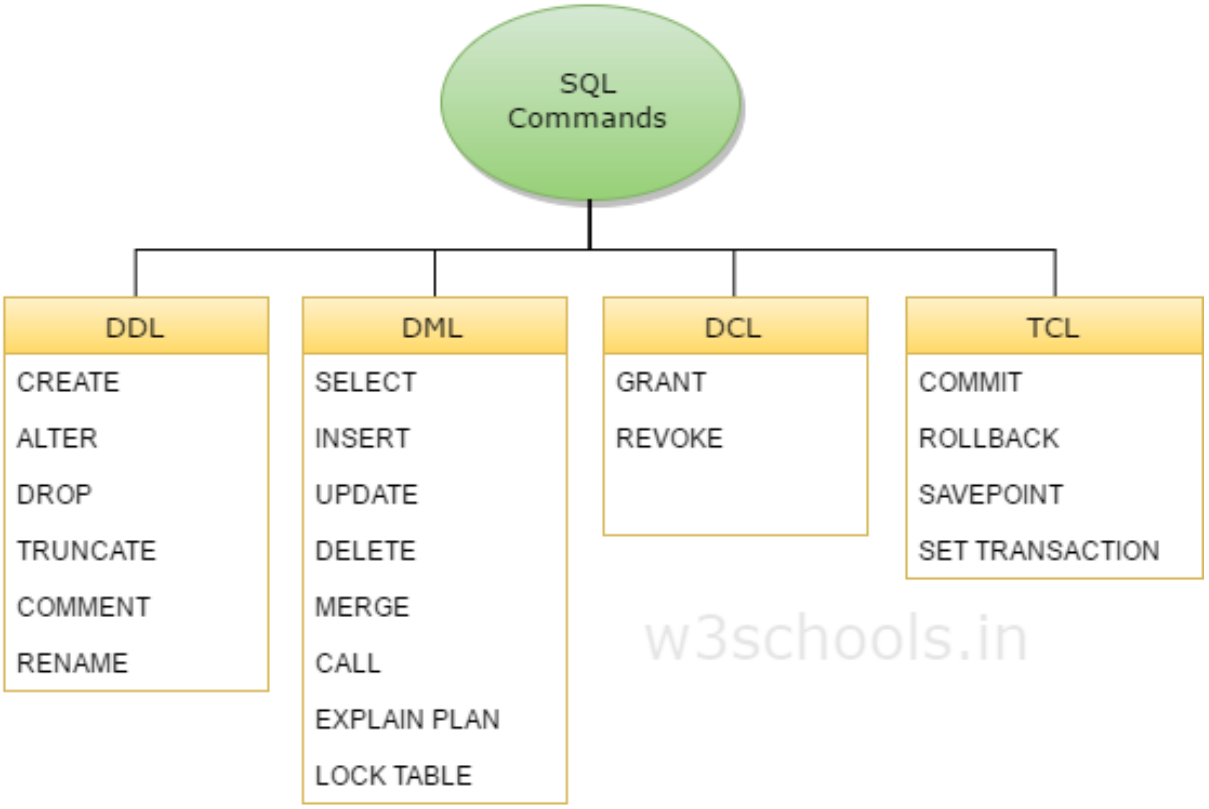
-Queries:
OLAP queries are complex and involve aggregations, grouping, and data slicing. The goal is to provide insights into trends, patterns, and relationships within the data.

-Response Time:
While OLAP systems aim for reasonable response times, the emphasis is more on providing in-depth analysis, even if it takes longer than OLTP systems.

-Example:
Examples of OLAP applications include data warehouses, executive information systems, and business intelligence tools used for strategic decision-making.

SQL :

SQL (Structured Query Language) is a domain-specific programming language designed for managing and manipulating relational database systems. It serves as the standard language for communicating with and managing the data stored in a relational database management system (RDBMS). SQL allows users to perform a range of operations, including querying data to retrieve specific information, inserting new records, updating existing records, and deleting data. Its syntax is designed to be easily understood and consists of various commands such as SELECT, INSERT, UPDATE, DELETE, and others. SQL enables users to define the structure of databases, create tables, establish relationships between tables, and enforce data integrity through constraints. It plays a crucial role in database management, providing a powerful and standardised way to interact with and manipulate relational databases.



Features of MySQL :

-MySQL is written in C and C++ and its SQL parser is written in yacc(Yet Another Compiler Compiler).

-MySQL uses only just under 1 MB of RAM on your laptop while Oracle 9i installation uses 128 MB

-MySQL is great for database enabled websites while Oracle is made for enterprises.

-MySQL is portable.

-MySQL default port number is 3306.