SQL

SQL- is a structured query language. which used to communicate or interact and manipulate the data base.

Why SQL- 1. sql is faster than Excel.

2. sql can handle large data sets more efficiently

3. sql is user-friendly

What can sql do?

1 sql can create a new table in a database.

2 sql can insert records in a database.

3 sql can update records in a database.

4 sql can retrieve data from a database.

5 sql can delete records from a database.

6 sql can create views in a database.

So, all this operation takes place in a database then what actually is a database

Data: is a raw fact which describes the property of an object.

Example: phone stand -- 1 brand

2 colour

3 capacity

Database : is A database is an organized collection of structured information, or data, typically stored electronically in a computer system.

Database Management System (DBMS):

- DBMS stands for **Database Management System**.
- It is a software system that allows users to create, maintain, and manage databases.
- DBMS provides many operations such as creating a database, storing data in the database, updating an existing database, and deleting data from the database.
- It is a system that enables you to store, modify and retrieve data in an organized way.
- It also provides security to the database.

Types of DBMS

1. **Hierarchical databases**: This type of database follows a parent-child relationship, where data is categorized based on a common point of linkage. It is not easily scalable and requires a lengthy traversal through the database to add data elements.
2. **Network databases**: This type of database is similar to hierarchical databases, but with a major tweak. The child records are given the freedom to associate with multiple parent records. As a result, a network or net of database files linked with multiple threads is observed.
3. **Object-oriented databases**: This type of database is based on the Object-Oriented Programming paradigm. It is capable of representing complex relationships and is more flexible than hierarchical and network databases.
4. **Relational databases**: This type of database is based on the relational model and is the most widely used type of database. It stores data in tables with rows and columns and uses SQL (Structured Query Language) to manipulate the data.
5. **Cloud databases**: This type of database is hosted on a cloud computing platform and provides scalability, flexibility, and cost-effectiveness.
6. **NoSQL databases**: This type of database is non-relational and is designed to handle large volumes of unstructured data. It is highly scalable and provides high performance.

Data type: is used to specify the type of data that will be stored in a particular memory allocation.

Data type and size depends on the Database: MySQL, Oracle, MySQL Server

Refer: SQL Data Types for MySQL, SQL Server, and MS Access (w3schools.com)

Constraints:

In SQL, constraints are rules that you can imply on the data in a table. They allow you to restrict only specific data that meets the regulations to go to a table. Constraints can be column level or table level. Column level constraints apply to a column, and table level constraints apply to the whole table[12345].

Here are some commonly used constraints in SQL:

- **NOT NULL**: Ensures that a column cannot have a NULL value.
- **UNIQUE**: Ensures that all values in a column are different.
- **PRIMARY KEY**: A combination of a NOT NULL and UNIQUE. Uniquely identifies each row in a table.
- **FOREIGN KEY**: Prevents actions that would destroy links between tables.
- **CHECK:** Ensures that the values in a column satisfy a specific condition.

SQL Commands: