

# STRUCTURED QUERY LANGUAGE (SQL)

## Introduction to SQL

- What is SQL
- It's applications
- SQL v/s NoSQL
- Types of SQL Commands
- What is Database
- Excel v/s Database in SQL

What is SQL

SQL (Structured Query Language) is a programming language used to interact with database.



## SQL Application

Create Read Update Delete  
C R U D

CRUD is an acronym for CREATE, READ (SELECT), UPDATE, and DELETE statements in SQL.

SQL v/s NoSQL

Relational Database

SQL Database

Data stored in tables

These databases have fixed or static or predefined schema.

Low performance with huge volumes of data.

Eg: PostgreSQL, MySQL, MS SQL Server.

Non-Relational Database

NoSQL database.

Data stored are either key-value pairs, document-based, graph databases or wide-column stores.

They have dynamic schema.

Easily work with huge volumes of data.

Eg: MongoDB, Cassandra, etc.



## SQL Commands

There are mainly 3 types of SQL commands:

- DDL (Data Definition Language): create, alter and drop.
- DML (Data Manipulation Language): insert, update and delete.
- DQL (Data Query Language): select.

What is Database?

Database is a system that allow users to store and organise data.



## Excel v/s Database

### Excel

### Database

Easy to use - untrained person can work.

Trained person can work.

Data stored less data.

Stores large amount of data.

Good for one time analysis, quick charts.

Can automate tasks.

No data integrity due to manual operation.

High data integrity.

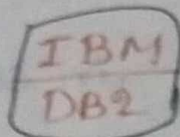
Low search / Filter capabilities

High search / Filter capabilities



# SQL Database

Teradata.

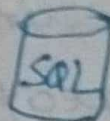


Microsoft  
SQL Server



Amazon RDS

ORACLE  
Database



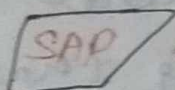
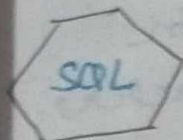
MySQL



Snowflake

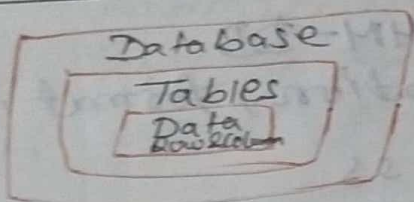


PostgreSQL



S/4 HANA

## SQL Structure



## Creating Database & Tables

Data types

Primary & Foreign Keys

Constraints

SQL Commands

↳ Create

↳ Insert

↳ Update

↳ Backup

↳ Delete

↳ Alter

↳ Drop, Truncate

## Data Types

- ① Data type of a column defines what value the column can store in table.
- ② Defined while creating tables in database.
- ③ Data types mainly classified into three categories + most used.

String: char, varchar, etc

Numeric: int, float, bool, etc

Date and time: date, datetime, etc

## Data Types

Commonly used data types in SQL:

- ① int: used for the integer value.
- ② float: used to specify a decimal point number.
- ③ bool: used to specify Boolean values true and false.
- ④ char: fixed length string that can contain numbers, letters and special characters.
- ⑤ varchar: variable length string that can contain numbers, letters, and special characters.
- ⑥ date: date format YYYY-MM-DD
- ⑦ datetime: date & time combination, format is YYYY-MM-DD hh:mm:ss