4.SQL Commands & Data Types

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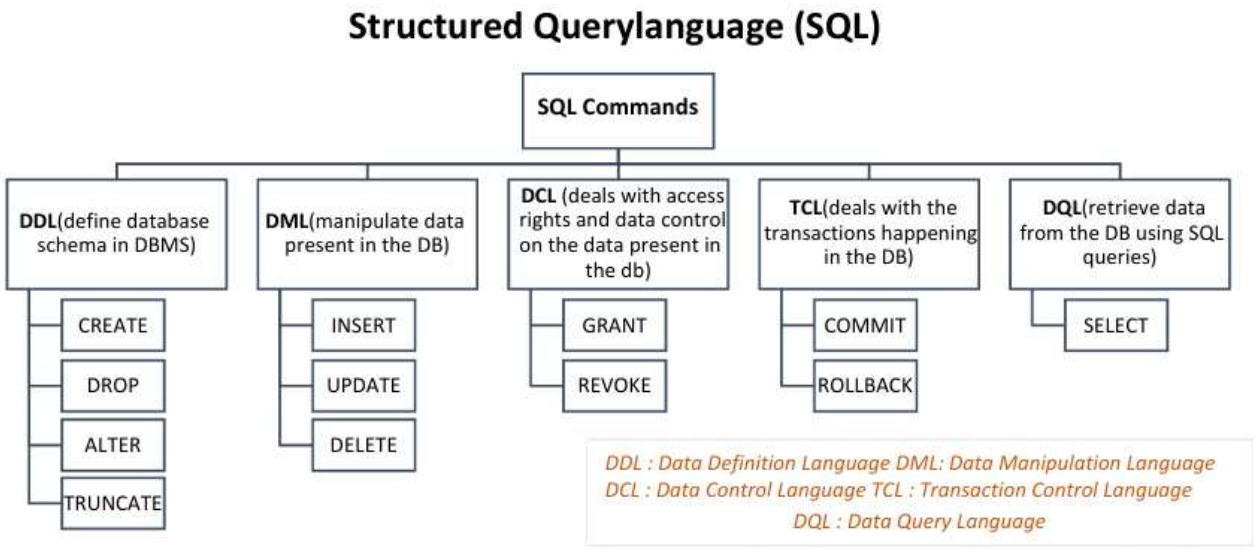

Data Type	What It Stores	Example Literal Values (How They Look When Inserted)
INT	Whole numbers (no decimals)	`10`, `0`, `-25`, `2000`
CHAR⑤	Fixed-length text (pads with spaces)	`'ABC '`, `'HELLO'`, `'MN '`
VARCHAR (20)	Variable-length text	`'John'`, `'Alexander'`, `'MN'`
DATE	Date only (YYYY-MM-DD)	`'2024-01-15'`, `'1999-12-31'`
TIME	Time only (HH:MM:SS)	`'14:30:00'`, `'09:15:45'`
DATETIME	Date + time together	`'2024-01-15 14:30:00'`, `'2023-05-10 09:00:00'`

DDL Commands for Database:

1. **Create the database**

CREATE DATABASE MYDB;

2. **Select the database**
   USE MYDB;
3. **Force single-user mode (required before dropping)**
   ALTER DATABASE MYDB SET SINGLE_USER WITH ROLLBACK IMMEDIATE;
4. **Drop the database**
   DROP DATABASE MYDB;

DDL Commands for Tables:

1. Table Creation

Command:

CREATE TABLE EMP(EID INT, ENAME VARCHAR(50), SALARY DECIMAL(10,2), DOB DATE);

Notes:

- Creates a new table named EMP.
- EID stores integer employee IDs.
- ENAME stores names up to 50 characters.
- SALARY stores numeric values with 2 decimal places.
- DOB stores date values.

2. Viewing Table Structure

Command:

EXEC SP_HELP 'EMP';

Notes:

- Displays full table metadata.
- Shows column names, data types, nullability, constraints, indexes, etc.
- Useful for checking table structure after creation or modification

3. Altering Table Structure

a) Modify Column

Command:

ALTER TABLE EMP ALTER COLUMN ENAME CHAR(25);

Notes:

- Changes ENAME from VARCHAR(50) to CHAR(25).
- CHAR(25) stores fixed-length text (always 25 characters).
- Useful when all values have similar length.

b) Add Column

Command:

ALTER TABLE EMP ADD DEPTNO INT;

Notes:

- Adds a new column DEPTNO to the EMP table.
- DEPTNO stores integer department numbers.

c) Drop Column

Command:

ALTER TABLE EMP DROP COLUMN DEPTNO;

Notes:

- Removes the DEPTNO column from the EMP table.
- After this, the column no longer exists.

4. Inserting Data

Command:

INSERT INTO EMP (EID, ENAME, SALARY, DOB) VALUES
(101, 'John Smith', 55000.75, '1988-04-12'),
(102, 'Emma Brown', 62000.50, '1990-09-25'),
(103, 'Michael Lee', 48000.00, '1985-01-30'),
(104, 'Sophia Taylor', 71000.20, '1992-07-18'),
(105, 'David Johnson', 53000.00, '1987-11-05');

Notes:

- Inserts 5 employee records into EMP.

- Each row contains EID, ENAME, SALARY, and DOB.
- Dates are in YYYY-MM-DD format.
- Decimal values store salary with cents.

5. Removing Data

a) TRUNCATE TABLE

Command:

TRUNCATE TABLE EMP;

Notes:

- Deletes all rows from EMP instantly.
- Table structure remains.
- Faster than DELETE.
- Resets identity values (if any).

6. Dropping a Table

Command:

DROP TABLE EMP;

Notes:

- Permanently deletes the EMP table.
- Removes both structure and data.
- Cannot be undone.

7. Selecting Data

Command:

SELECT * FROM EMP;

Notes:

- Retrieves all rows and columns from EMP.
- After DROP TABLE, this will produce an error because EMP no longer exists.