70+ SQL Concepts

- **Primary Key** – A column that uniquely identifies each row in a table. No duplicates or empty values.

- **Foreign Key** – A column that links one table to another. It connects related data.

- **Unique** – Makes sure all values in a column are different.

- **Not Null** – The column must have a value. It can't be left empty.

- **Default** – Gives a column a value automatically if no value is provided.

- **Check** – Makes sure the data in a column meets a certain condition.

- **Index** – Speeds up searches in a table by quickly finding data.

- **View** – A virtual table that shows results of a stored SQL query. It doesn't store real data.

- **Stored Procedure** – A saved set of SQL commands that you can run whenever needed.

- **Trigger** – Automatically runs some SQL code when something changes in a table (like insert, update, delete).

- **Function** – A small piece of code that returns a result. Used inside queries.

- **Cursor** – Used to go through each row in a result, one by one.

- **Transaction** – A group of SQL operations that are done together. All succeed or all fail.

- **Commit** – Saves the changes made in a transaction.

- **Rollback** – Cancels changes if something goes wrong.

- **Savepoint** – A marker inside a transaction to roll back to if needed.

- **Select** – Used to get data from a table.

- **Insert** – Adds new data into a table.

- **Update** – Changes existing data in a table.

- **Delete** – Removes data from a table.

- **Cross Join** – Returns every possible combination of rows from two tables.

- **Union** – Combines data from two queries and removes duplicates.

- **Union All** – Combines data from two queries and keeps all duplicates.

- **Exists** – Checks if a subquery returns any results.

- **In** – Checks if a value exists in a list of values.

- **Between** – Checks if a value is within a range.

- **Like** – Used for simple pattern matching (like searching names that start with 'A').

- **Is Null** – Checks if a value is missing.

- **Distinct** – Removes duplicate rows from the results.

- **Alias** – Gives a temporary name to a column or table.

- **Case** – Works like "if-else" to create conditions inside queries.

- **Rank** – Gives a rank to rows with possible gaps in the numbers.

- **Dense Rank** – Gives a rank without gaps in the numbers.

- **Row Number** – Gives a unique number to each row in the result.

- **Window Functions** – Do calculations across a group of rows without grouping them.

- **Schema** – The structure or blueprint of a database (tables, columns, types, etc.)

- **Normalization** – Organizing data to remove repetition and save space.

- **Denormalization** – Adding some repetition to improve speed of access.

- **Constraints** – Rules that protect the data (like primary key, foreign key, etc.)

- **Subquery** – A query inside another query. It helps in filtering or calculating.

- **Data Definition Language (DDL)** – Commands that define the structure of the database (like CREATE, ALTER, DROP).

- **Data Manipulation Language (DML)** – Commands that deal with data changes (like INSERT, UPDATE, DELETE).

- **Data Query Language (DQL)** – Commands used to fetch data (SELECT is the main one).

- **Data Control Language (DCL)** – Commands that handle permissions (GRANT, REVOKE).

- **Truncate** – Removes all rows from a table quickly, but keeps the table structure.

- **Drop** – Deletes a table or database completely.

- **Alter** – Changes an existing table (like adding/removing columns).

- **Temporary Table** – A table that exists temporarily for one session or query.

- **Materialized View** – A view that stores data physically and updates it periodically.

- **Auto Increment** – Automatically increases a numeric column value for each new row.

- **Data Type – Defines the type of data a column holds (e.g., INT, VARCHAR, DATE).**

- **Metadata** – Data about data (like table name, column types, etc.)

- **Constraint Violation** – Happens when data breaks a rule (e.g., duplicate in a PRIMARY KEY).

- **Referential Integrity** – Ensures relationships between tables stay consistent.

- **Surrogate Key** – A unique identifier for a record, usually an auto-incremented number.

- **Composite Key** – A combination of two or more columns to make a unique key.

- **Derived Table** – A temporary result set created inside a query (like a subquery with an alias).

- **Scalar Subquery** – A subquery that returns only one value.

- **Correlated Subquery** – A subquery that uses values from the outer query.

- **Null Handling** – Special treatment for missing or unknown values.

- **Coalesce** – Returns the first non-null value from a list of inputs.

- **NVL (Oracle)** – Similar to Coalesce; replaces NULL with a given value.

- **IFNULL / ISNULL** – Functions that handle NULL values depending on the database.

- **Set Operators** – Commands like UNION, INTERSECT, EXCEPT that combine or compare results.

- **Execution Plan** – Shows how SQL will run a query behind the scenes (for performance tuning).

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