Data Types

Type	Name	Description
String	VARCHAR / NVARCHAR / CHAR	Holds strings. A CHAR is always of fixed length, whereas a VARCHAR is of variable length, up to some maximum size (256 characters, for example). NVARCHAR, Supports multilingual text and special characters not covered by standard VARCHAR.
	TEXT / BLOB	Holds longer strings that don't fit in a VARCHAR. Descriptions or free text entered by survey respondents might be held in these fields.
Numeric	INT / SMALLINT / BIGINT	Holds integers (whole numbers). Some databases have SMALLINT and/or BIGINT. SMALLINT can be used when the field will only hold values with a small number of digits. SMALLINT takes less memory than a regular INT. BIGINT can hold numbers with more digits than an INT, but it takes up more space than an INT.
	FLOAT / DOUBLE / DECIMAL	Holds decimal numbers, sometimes with the number of decimal places specified.
Logical	BOOLEAN	Holds values of TRUE or FALSE.
DATE / TIME	DATETIME / TIMESTAMP	Holds dates with times. Typically in a YYYY-MM-DD hh:mi:ss format, where YYYY is the four-digit year, MM is the two-digit month number, DD is the two-digit day, hh is the two-digit hour (usually 24-hour time, or values of 0 to 23), mi is the two-digit minutes, and ss is the two-digit seconds. Some databases store only timestamps without time zone, while others have specific types for timestamps with and without time zones.

Categories of SQL

SQL has several categories of statement, these are the common ones:

1. Data definition language (**DDL**): CREATE, ALTER, DROP, TRUNCATE
2. Data manipulation language (**DML**): SELECT, INSERT, UPDATE, DELETE
3. Data control language (**DCL**): GRANT, REVOKE, DENY

Common Types of Database Objects:

1. Tables: Store data in rows and columns.
2. Views: Virtual tables that represent a stored query.
3. Indexes: Improve **query performance** by creating a fast lookup structure.
4. Stored Procedures: Predefined **SQL scripts** stored in the database.
5. Functions: Return a value or table based on input.

Populating a Database (Data Ingestion)

1. Using Connectors
2. Using SELECT & INTO
3. Using CSV
4. Using Excel
5. Using INSERT INTO

Logical Query Processing steps

Step 1: The FROM phase (Common types of Join: JOIN, LEFT JOIN)

Step 2: The WHERE phase

Step 3: The Group BY phase

Step 4: The HAVING phase

Step 5: The SELECT phase

Step 6: The ORDER BY phase

Querying Tables

Precedence among operators, from highest to lowest:

1. ( ) (Parentheses)
2. * (Multiplication), / (Division), % (Modulo)
3. + (Positive), – (Negative), + (Addition), + (Concatenation), – (Subtraction)
4. =, >, <, >=, <=, <>, !=, !>, !< (Comparison operators)
5. NOT
6. AND
7. BETWEEN, IN, LIKE, OR
8. = (Assignment)

Case Expression: A CASE expression is a scalar expression that returns a value based on conditional logic.