SQL User-Defined Function (UDF)

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When to Use SQL UDF

A User-Defined Function (UDF) in SQL is a powerful tool that allows the user to;

- Reuse operations such as complex calculations, string manipulation, or date formatting
- Simplify queries to make them more readable and maintainable.
- Enforce business rules to ensure uniform behavior across multiple queries.
- Perform complex data transformation, particularly using table-valued functions involving joins and filters.

Differences Between Scalar, Inline, and Multi-Statement Functions

1. Scalar Functions return a single value (e.g., integer, string, date).

Syntax: RETURNS <data_type>

Usage: Often used in SELECT lists, WHERE clauses, or computed columns.

2. Inline Table-Valued Functions (ITVFs) returns a table using a single SELECT statement

Syntax: RETURNS TABLE AS RETURN (SELECT…)

Usage: Ideal for reusable table expressions; often used in joins and views.

3. Multi-Statement Table-Valued Functions (mTVFs) returns a table that is built using multiple statements.

Syntax: Declare a table variable, populate it using multiple statements, then return it.

Usage: Useful for more complex logic that cannot be written in a single SELECT.

References

- Scalar User-Defined Functions in SQL Server
- Table-valued functions in SQL
- Writing Complex User-Defined Functions
- W3Schools