

Assignment 7 – Function

Introduction

A SQL User-Defined Function (UDF) is a custom function that you can create and use within a SQL query. It allows you to define your own functions to perform specific tasks or calculations that are not covered by other SQL functions. There are several different types of UDFs, each serving a specific purpose. These types include scalar functions, inline functions, and multi-statement functions. In this document, we will expand on possible uses for UDFs and describe in detail the different types of UDFs.

When to Use a User Defined Function (UDF)

There are several situations where using a SQL USD can be beneficial:

1. **Complex calculations:** UDFs can be used when dealing with complex calculations that are not directly supported by the built-in SQL functions. For example, if you need to calculate a custom formula, manipulate strings in a specific way, or perform a specialized aggregation, creating a UDF may be more effective than using built-in functions.
2. **Cleaning data:** UDFs can also be helpful for cleaning data and transforming it from one format to another. If you have specific data cleaning tasks like removing special characters, standardizing phone numbers, or extracting information from unstructured data, you can use UDFs to handle these transformations.
3. **Organization and efficiency:** If you find yourself needing to perform a specific calculation or transformation repeatedly in SQL queries, creating a UDF can help make your code more modular and reusable. By separating complex logic into smaller, self-contained functions, your queries can become more readable and easier to maintain over time.

Scalar, Inline, and Multi-Statement Functions

Scalar Functions: Scalar functions return a single value as the result. They also take one or more input parameters and perform calculations or transformations on those parameters to produce a single value. They are typically used to perform simple calculations, manipulate strings, or convert data. Examples include: SUM, AVG, LEN, and UPPER.

Inline Functions: Inline functions return a table-like result rather than one single value. They are used within the FROM clause and are defined using the RETURNS TABLE clause. They are typically used to gather data for complex queries or to join operations to make them reusable. They are helpful in retrieving data from multiple tables, creating a new virtual table as a result. Examples include table-valued functions (TVFs), which return a table with multiple rows and columns.

Multi-Statement Functions: Multi-statement functions also return a single value as a result, but

they are defined using a BEGIN / END block and can contain multiple statements. They can include complex logic, such as IF /ELSE clauses and are typically used when the calculation or transformation requires multiple steps that can't be achieved with a single SQL statement.

Summary

In summary, UDFs are useful for creating custom functions by allowing the use of complex calculations and transformations, cleaning data with specific standardizations and formatting, and allowing better code organization and efficiency. The three types of UDFs; scalar, inline, and multi-statement functions each have a specific use for achieving these goals.