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Foundations of Databases & SQL Programming

Assignment 07

GitHub: <https://github.com/Merarte1/DBFoundations-Module07>

User Defined Functions (UDFs) in SQL

Introduction

As seen during the last module, User Defined Functions (UDFs) are one of three alternatives for storing useful and complex queries, and they are different from views and stored procedures in the way the code is written, their flexibility and their execution. In this paper, we will dig deeper into UDFs and explain in which circumstances they are a helpful tool, which kinds of UDFs there are and how these types compare to each other.

When to Use User Defined Functions (UDF)

User Defined Functions, or UDFs, are custom functions that a user can create if SQL server's built-in functions are not sufficient for the purpose they are needed. They can use parameters to return a value according to specific logic. Even though views and stored procedures are always good alternatives, the possibility of using parameters allows for versatility that other options do not have.

Types of Functions

Functions can be Table-Valued Functions, which return a table, or Scalar-Valued Functions, which return a single data point.

Among Table-Valued Functions, these can be:

- **In-line Functions** – return the results of a single select statement,
- **Multi-statement Functions** – perform multiple select statements and return a table of records.

Comparing Scalar, In-line and Multi-statement Functions

While Scalar functions can return a single value, In-line and Multi-statement functions are types of Table-Valued functions, and they can return tables of data. At the same time, In-line and Multi-statement functions are also different from each other. While the former contains one line of select statement with no return variable, the latter includes a return variable, a Begin and End block, and they require that we define the structure of the table with multiple statements, returning a table of records. Additionally, In-line functions do not require a lot of processing, while the multi-statement variable requires additional processing, which makes the process more complex.

Summary

To conclude, UDFs can be used when built-in functions are not sufficient to find the information we are looking for. They can be Table-Valued Functions, which return tables, or Scalar-Valued Functions, which return single values. Among Table-Valued Functions, In-line and Multi-statement functions can be used with one or multiple statements. These options use different syntax and require a different amount of processing.