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Date: Aug, 22, 2023
Course: IT FDN 130A Su 23: Foundations of Databases & SQL Programming
GitHubURL: https://github.com/Wonderdeep/ITFnd100-Mod07/tree/main

Assignment 7 – User-Defined Functions

Introduction

In addition to SQL Server's built-in functions, we can create custom functions. These are often called User-Defined Functions or just UDFs written by the user and executed by the database software. User-defined functions are routines that accept parameters, perform an action, such as a complex calculation, and return the result of that action. Each function constitutes a name, one or several arguments, an output or return statement, and the body of the function. There are two basic types of functions; functions that return a table of values and functions that return a single value.

Benefits of User-Defined Functions

We can create a function once, store it in the database, and call it any number of times in our program what is known as "Modular programming". In addition, an operation that filters data based on some complex constraint that can't be expressed in a single scalar expression can be expressed as a function. The function can then be invoked in the WHERE clause to reduce the number of rows sent to the client. This can lead to network traffic reduction. A user-defined function doesn't need to be reparsed and reoptimized with each use resulting in much faster execution times.

Differences between Scalar, Inline, and Multi-Statement Functions.

User-defined *scalar* functions return a single data value of the type defined in the RETURNS clause. For an *inline scalar* function, the returned scalar value is the result of a single statement. For a *multi-statement scalar* function, the function body can contain a series of statements that return a single value.

A *table-valued* function, on the other hand, is a function that returns a table of data. Similarly, there are two types of table-valued functions in SQL: (a) for an inline table-valued function, there is no function body; the table is the result set of a single SELECT statement, and (b) the multi-statement table-valued functions which returns a table of data, but only after some additional processing. The output from the table-valued function can be used like any other SQL table or view.

Summary

The user-defined functions can help us to separate the complex calculations from the regular query so that we can understand and debug the query quicker and better.