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Foundation of Databases &SQL Programing

Assignment 07-DB Foundation

Introduction

This week we worked with SQL server functions. SQL Server Functions are pre-built actions that perform calculations, manipulate data, and return results. At the most fundamental level, these functions simplify complex queries and automate repetitive tasks. Common SQL functions include string, numeric, date/time, conditional and aggregate functions. These functions give users the ability to extract and analyze data efficiently and effectively.

Explain when you would use SQL UDF.

In the context of a SQL database, UDF is a function that is written by the user and executed by the software. SQL UDFs typically have at least four elements:

A **NAME,** which is used to invoke the function.

ARGUMENTS, the inputs a function takes.

An output or **RETURN** statement.

The **FUNCTION BODY** itself. (The code that the database software will execute using the provided inputs).

You would choose to implement an SQL UDF if:

1) Functional requirements can be met by an SQL function, and you don't anticipate later requiring the feature provided by an SQL procedure.
2) Performance is a priority and the logic to be contained in the routine consists only of queries or returns only a single result set.

Explain the differences between Scalar, Inline, and Multi-Statement Functions.

Scaler Function is a type or user-defined function that returns a single scaler value based on the input parameters passed to it. The scaler function is used to perform some calculations or operations on the input parameters and return a single result. They are commonly used to simplify complex queries. Scalar functions can be created in SQL using the **CREATE FUNCTION** statement.

Inline Tabled-valued Function is a user-defined function that returns a **table** as its result. Unlike a scaler function that returns a single value, an Inline Table Valued Function returns a result set that can be used in a query just like a table. An Inline Table Valued Function is "inline" because its definition is part of a query, rather than being a standalone object.

An Inline Table Valued Function is defined using **CREATE FUNCTION** statement with the **RETURNS TABLE** clause. The function can have one or more input parameters, and it must use a **RETURN** statement to return a table variable that defines the structure of the result set.

Multi-Statement Table -Valued Function is a user-defined function that returns a table of rows and columns. Multi-Statement Function is very similar to Inline Tabled-valued Functions only difference is that in muti-statement function we need to define the structure of a table and have the **Begin and End** block.

Summary

In summary SQL functions are powerful tools that can make data management and analysis more efficient and effective. With a wide range of functions available, you can easily manipulate and transform data to get the insights you need.