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GitHub: https://github.com/carilynette/DBFoundations-Module07/tree/main

User-Defined Functions

User-defined functions are categorized into three main types – scalar, in-line table-valued and multi-statement table-valued. In-line table-valued and multi-statement table-valued both return results in the form of tables, whereas scalar functions return a single value.

Scalar functions are used like a built-in function within SELECT and WHERE clauses to perform calculations or return specific data values. Inline table-valued functions are based on a single SELECT statement, in contrast, multi-statement table-valued functions return multiple statements.

They each have their benefits, but at a cost of performance and reduced query optimization. In-line table-valued functions are optimized because they are "inline" with queries, whereas multi-statement table-valued functions have reduced performance and limited query optimization but offer more flexibility.

In my day-to-day work, I frequently perform repetitive calculations, and SQL user-defined functions (UDFs) are essential for streamlining these tasks—especially when managing inventory expiration dates. I work for a food production company where products have a limited shelf life, and we guarantee customers a minimum number of shelf-life days upon delivery.

To support this, I've developed an SQL function that calculates the number of days remaining before a product can no longer be shipped to customers. This allows me to quickly identify lots approaching expiration that may need to be discounted or disposed of —neither of which is ideal.

The function ensures that older inventory is prioritized for fulfillment and flags when certain products aren't moving as expected. If I notice unusual slowdowns, I can alert the Sales team to investigate potential issues.

The function itself is straightforward: it takes the production date and shelf-life as inputs, calculates the days remaining, and determines the exact date the guaranteed shelf life will be reached. If a product is nearing that threshold date, the function returns a "Needs Action" flag—making it easy to act before the product expires.