Name: Max Boath

Date: 3/12/2025

Course Name: IT FDN 130 A Wi 25: Foundations Of Databases & SQL Programming

Assignment 07 – Functions

Introduction

User-Defined Functions (UDFs) in SQL provide a way to encapsulate reusable logic, making queries more efficient and easier to manage. They allow for calculations, data transformations, and table-based queries while maintaining a read-only approach. Understanding the different types of UDFs helps in choosing the right function for various database operations.

Topic

Explain when you would use a SQL UDF.

A User-Defined Function (UDF) in SQL is used when you need to encapsulate reusable logic within a database query. Unlike stored procedures, UDFs must return a value—either a single (scalar) value or a table. They are useful for simplifying complex expressions, performing calculations, or creating virtual tables that can be used in SELECT statements. Additionally, UDFs can enforce business rules, such as using them in check constraints to validate data before insertion. However, they cannot modify database state, making them ideal for read-only operations.

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

UDFs come in three main types:

- Scalar Functions return a single value (e.g., a number or string) and are often used for calculations or data transformations within queries.

- Inline Table-Valued Functions return a table and act like a view, but they allow parameters, making them more flexible.

- Multi-Statement Table-Valued Functions also return a table but allow multiple SQL statements, including variable declarations, making them more powerful but potentially slower than inline functions.

Each type is useful for different scenarios, depending on whether you need a single value or a table of results.

Summary

Whether working with scalar values, inline tables, or multi-statement functions, UDFs enhance query flexibility and maintainability. By selecting the appropriate function type, developers can streamline data retrieval, enforce business rules, and improve database performance.