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Date: Mar 24, 2025

Course: Foundations Of Databases & SQL Programming

**Understanding SQL Views, Functions, and Stored Procedure**

**Introduction**

In SQL, Views, Functions, and Stored Procedures are critical tools for optimizing database queries and improving data management. Each serves a unique purpose and understanding when and how to use them can significantly enhance the efficiency and readability of your database interactions. This report will discuss when to use a SQL View and compare the differences and similarities between Views, Functions, and Stored Procedures.

**When to Use a SQL View**

A SQL View is a virtual table that provides a way to simplify complex queries by encapsulating them into a single, reusable object. Views are used when you need to abstract complex joins, unions, or aggregations into a single query that can be used like a table. They are especially useful for creating summaries or reports, providing an easy way to present data from multiple tables in a simplified manner without altering the underlying database structure.

**Differences and Similarities Between a View, Function, and Stored Procedure**

**View**: A View is essentially a saved query that presents data from one or more tables in a specific format. It does not store data itself but rather acts as a virtual table. Views can be used to simplify complex queries and ensure consistent data retrieval without modifying the actual

database. Views are read-only in most cases but can be updated under certain conditions.

**Function**: A Function in SQL is a stored program that can accept parameters, perform a specific operation, and return a value. Functions are typically used to encapsulate logic that needs to be executed and return a single value or set of values. Functions are often used in SELECT statements, as they can be called directly in queries to return computed results. Functions are generally used for computations or returning a result based on input parameters.

**Stored Procedure**: A Stored Procedure is a set of SQL statements that can be executed together as a single unit. Unlike Functions, stored procedures may not necessarily return a value, and they are typically used to perform a series of actions, such as modifying data or managing database tasks. Stored Procedures can accept parameters, execute multiple SQL operations, and contain control-of-flow logic (such as loops and conditional statements).

**Summary**  
This report clarified the purpose and use cases of SQL Views, explaining that they are ideal for simplifying complex queries and presenting data in an accessible manner. The differences and similarities between Views, Functions, and Stored Procedures were also highlighted, focusing on their distinct purposes in a database environment. While Views provide a simplified representation of data, Functions and Stored Procedures enable more complex operations with greater flexibility in handling input parameters and returning results. Understanding the appropriate use of each tool is essential for efficient database management and query execution.