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Module 06: SQL Views

Introduction

In Module 06, our class explored views, functions, and stored procedures. We learned the difference between the three, and how/when to use them. This paper explores each of these programmatic blocks and explains when to use SQL views, as well as the difference between the 3.

When to Use SQL Views

Views in SQL are virtual tables that retrieve data based on pre-set queries every time they're accessed – they're not stored in the hard drive of the computer. Rather than rewriting code each time a user accesses a database, views allow users to pull specific complex queries with pre-defined code and provide a layer of abstraction. Views can also be very helpful for restricting access to privileged information by setting certain columns or rows as private in permissions. They are a more flexible way of accessing stored data that respects security concerns and enable efficient data storage. Views are very helpful for when specific reporting needs to be generated, or privileged information needs to be protected from folks without the right permissions who still need access to SQL data.

Views, Functions, and Stored Procedures

Views are tables storing pre-set SQL query results that are not stored on the hard drive on the computer running the view! They are a quick way to call customized “views” of data required by users. Views are especially helpful for security purposes and restrict user access based on permissions.

Functions are specific sets of SQL statements that perform specified tasks and return single values or single tables (if you specify you want something returned as a table in your code!). They're great for performing repetitive tasks and typically are used for calculations or returning results! Functions don't modify database states, meaning they can't INSERT,

UPDATE, or DELETE things from databases. They can be implemented in SQL statements though!

Stored procedures are pre-written blocks of SQL code that can perform one or many operations like querying, updating, or modifying databases. Stored procedures are versatile and can return multiple result sets and can be customized to do many tasks. Rather than having Select statements, stored procedures use EXEC statements.

All of these are helpful for improving SQL usability and maintenance. They can all be used to restrict access to sensitive data, and they are all database objects stored in SQL server.

Users should use views when they need specific virtual tables, functions are helpful for calculations or returning specific tables in SELECT queries, and stored procedures are necessary for performing multiple laborious SQL operations or complex logic!

Summary

I've explained what each of these statements mean and do in SQL, highlighting their differences and similarities. Views are virtual tables that simplify complex queries and enhance security (the best for structured data access), functions execute specific tasks (best for computation) and return single values or tables, and stored procedures are endlessly customizable blocks of SQL code capable of executing multiple operations (best for complex database tasks). Each helps SQL to be more usable, efficient, and secure.