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Foundations of Databases & SQL Programming

Assignment 06

<https://github.com/ArsenaultKate/DBFoundations> [External Site]

Using Views in SQL

# Introduction

In this paper we will be discussing what views are, when to use views, and how views compare to functions and stored procedures.

# What are Views and When to Use Them

A view is essentially a select statement that has been stored within the database for future use. Once the select statement has been stored as a view it can be called by other select statements, functions, stored procedures, and even other views.

Views offer several advantages over querying tables directly. First, a view can be customized for a specific user or group of users. Most often this customization is done by renaming fields so that they make more sense to a user. Secondly, views can show a subset of data from the table. This can be useful when there is protected information in a table, such as an Employee’s SSN, that all users may not need to have access to. Third, a view can combine data from multiple tables into a single table. This can be helpful when there are tables in the database that are frequently joined together or for users who don’t have much experience writing joins. Fourth, a view can contain aggregating functions like sum, count, and average. All the advantages of views can make writing queries simpler for folks who may be less proficient at writing queries. But plenty of advanced programmers will also use views to store complex queries or even simple queries that will be frequently used.

Additionally, views can present a layer of abstraction so that if changes are made to the underlying structure of the database, applications or reports using the view would not need to be changed as long as the view was altered to use the new structure changes. Furthermore, using a view for a query may prevent a table from locking up if a different process is attempting to make changes to a table at the same time it is being queried. Importantly, using a view can help prevent inadvertent changes being made to the tables themselves, so that data is not accidently added or deleted. For this reason, many programmers will create base views for all the tables in a database and force all queries to be run off the views rather than the tables themselves.

# Contrasting Views with Functions and Stored Procedures

Most SQL languages will have several built-in functions to perform common actions like sum or count or to return as specific part of a datetime. However, users can also write user defined functions. While some functions may look like views, an important difference is that functions can be written to use parameters. Often a function will take the defined parameter and perform a complex calculation and return the value so it can be used in a report or in a stored procedure or inserted into a view.

Stored Procedures are similar to functions and views in that they are code that is stored in the database for ease of use and reuse. Stored procedures can do much more than just create queries and make calculations. Stored Procedures are often used to add data, update data, and delete data from a database.

# Summary

Views are an integral part of databases and SQL programming. Using views helps protect the integrity of data within the database, provides control over who has access to what data, and can help make querying easier for less experienced users. Views are used in addition to functions, which can perform complex calculations on data, and stored procedures, which can modify data within database tables.