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Foundations of Databases and SQL Programming
Assignment 06: https://github.com/morr3/DBFoundations

Introduction

In this writeup we will summarize SQL views, functions, and stored procedures, all of which are useful abstraction layers that can simplify routine workflows within a database.

SQL Views

When used effectively, views can increase database security and simplify workflows for end users. Here are a few examples of situations where they may come in handy:

- If different teams within an organization refer to one type of database entity with different names, their respective views can be customized with their specific nomenclature to help them interpret/query the views more easily. For example, a company-type entity could be labeled as a client, a vendor, or a prospect to different teams.
- If different user groups should have different levels of access to sensitive data, views can be created for each security level so that end users can't accidentally stumble upon sensitive information.
- If certain types of SELECT queries need to be repeated on some cadence for reporting purposes, the queries can be saved as a view within the database. This saves engineers the time needed to re-create the query.

The differences between Views, Functions, and Stored Procedures

View and Functions can sometimes be very similar - both are essentially SELECT statements that are named and stored in a database for repeated use. However, functions can be further tailored with parameters to filter the result set beyond the "base" function.

Stored Procedures are also a set of SQL statements, but they are not limited to SELECT statements. They are a more flexible tool overall and can contain several different SQL statements, or make changes to tables in the database.

It's worth noting that some use cases could be handled by any of the three options. With that in mind, it's best to keep things simpler with views whenever possible. However, functions and stored procedures can help in situations where more complexity is needed.

Summary

When working with a database, it's very likely that a team or user will need to use the raw data to make the same types of reports repeatedly, or on a regular cadence. The above tools can make life easier for everyone involved by lowering the effort required to create common reports/analysis, and making the database more user-friendly for a variety of audiences.