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Assignment: Assignment 06
GitHubURL: https://github.com/annspiral/DBFoundations

SQL Views

Introduction

Assignment 06 introduced SQL Views, Functions and Procedures. Each of these options can be used to save a SQL query in a database with some functional differences between them. Prior to this assignment, our SQL queries were saved as scripts in a file external to the database.

When to use a SQL View

There are a number of different scenarios that where a SQL View would benefit the database usage and design. A view can:

- Prevent inadvertently altering the base data table
- Limit the columns of the base table data accessible
- Present data using different names
- Protect users against future changes in the base table columns
- Save a commonly used or complex query

The SQL View is not a stored dataset itself. Only when referenced, the SQL View will run the query within the Create View statement and use the generated table for the calling statement. (Module06Notes, IT FDN 130 A – Autumn 2022 – Foundations of Databases & SQL Programming, RRoot, 2022). The user will be interacting with a newly generated set of data rather than the base table itself. This abstraction of the base tables helps to prevent inadvertently altering the data in the base table.

The base tables in the database may be designed to optimize data storage based on the main usage of the database. Some users may want to query the database for other functions in the business. Using a View can allow the database administrator to provide access to only the data that is within the privileges of that are of the business. This can help ensure necessary privacy. An example is providing access to a table, but limiting the columns presented in the View so that private data is not exposed. Another usage optimization is presenting the data with friendly column names that relate to the user.

The View is presenting the data in a way that is relatable to the user. If the base data tables change, the View may be able to disregard additional columns or update the Create statement to support any changes and leave the View results consistent for the user. In this way, changes to the base tables need not impact users of the Views.

Lastly, a View can be a convenient way to store a long, commonly used or complex query. Rather than storing a Select statement in a script file, the Select statement can be stored in a View and then stored in the database for reuse.

SQL Views, Functions and Stored Procedures

SQL Views, Functions and Stored Procedures are all database objects used to store SQL code in the database, but each has a slightly different implementation. **SQL Views and Functions are "Named" <u>Select</u> statements** whose code is stored in a database. **Stored Procedures** are similar, but they are **<u>not restricted to just Select</u>** statements (Module06Notes, IT FDN 130 A – Autumn 2022 – Foundations of Databases & SQL Programming, RRoot, 2022). The main difference between a View and a Function is that a Function can take a parameter. While a similar result might be able to be obtained using a filter on a View, determining which to use may depend on the experience or type of users of the View or Function.

Stored Procedures can also utilize Select statements differ from Views and Functions in that they can contain multiple statements and support statements other than just the Select statement. "Views have only a select statement as their body, but procedures can have Variable declarations, variable assignments, control statements, loops, SQL queries and other functions/procedure/package calls as its body." ([Difference Between View and Stored Procedure | Compare the Difference Between Similar Terms](#), DifferenceBetween.com, 2022) Stored Procedure can also accept parameters, similar to Functions.

Below is a table outlining some of the key similarities and differences between the there database objects:

	View	Function	Stored Procedure
Table Result	Yes	Yes	Yes
Scalar Result	Yes	Yes	Yes
Accept Parameter	No	Yes	Yes
Allow multiple Select statements	No	No	Yes
Allow statements other than Select	No	No	Yes

Summary
Assignment 06 explored Views, Functions and Stored Procedures. By using a similar Question set to Assignment 05, we saw how to use the Select statements in the Assignment 05 script within Views. We further explored the use of Functions and Stored Procedures as options for storing queries and interacting with base tables.