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IT FDN 130 A Sp 21: Foundation of Databases

Assignment06

<https://github.com/crockett-7/BDFoundations>

**Views, Functions, and Stored Procedures**

**Introduction**

Views, functions, and stored procedures are all methods for saving your SQL script inside the database. This allows complex SQL code to be stored but also run using a simple Select statement. Overall, these tools have similar functionality and characteristics but do have differences that separate them and the applications that they are utilized in.

**Explain when you would use a SQL View.**

A view is a stored Select statement that returns one virtual table comprised of data from one or more tables. It is considered a virtual table because the view only lasts for the duration of the SQL statement. The underlying tables that the data is pulled from to return the virtual table can be base tables, temporary tables, or other views.

Views have many benefits including simplified querying, automatic updating, data security, as an abstraction layer. One of the biggest benefits of a view is that it allows end users to get the result of a complex query by running a simple Select statement. Views also provide real time look at the table without having to store redundant data in another table. Views also provide a level of security because columns that are sensitive can be omitted from the view. It also preserves data integrity by providing an abstraction layer from the base tables. This is why databases will typically have a view for each table in the database. That way users can access the data without it being in jeopardy of being changed, manipulated, or deleted. Additionally, applications that are running off the view can continue to operate while structural changes to the underlying database occur. All tables should be built off base views. Overall, views are used in every database for the reasons listed above. However, views do have some limitations. Namely they can only store Select statements and they can only present the data in one table. Another important note about views is that they can be used with the Where clause if you use Top 10000 command.

**Explain the differences and similarities between a View, Function, and Stored Procedure.**

Above we discussed the benefits and characteristics of views now let us define functions and stored procedures. Functions allow users to create their own user defined functions (UDF) that accept parameters and performs an action returning a value. The value can either be a single value or return a table. The ability to define parameters for the result is a benefit over views but as mentioned the Top 10000 command along with the Where clause is a work around for this issue. However, using functions to return calculated values is a huge benefit of functions.

Like views and functions, stored procedures are SQL script that is saved in the database and can be executed easily. Stored procedures differ from views in that they are not limited to just Select statements and they can take parameters. Stored procedures are used for common Insert, Delete, and Update statements. Views should be used when a Select statement and Join is needed, and we want to create a table to see an exact set of data. Stored procedures should be used for complex logic, contain loops, variables, and calls to other stored procedures. Stored procedures also offer more versatility than functions, which support less clauses and functionality. For example, functions only allow you to return one scalar value, however, using stored procedures allows you to return multiple values. Functions can also not be invoked within a function. However, functions can be invoked within a stored procedure.

**Summary**

Views, functions, and stored procedure are similar in that they store SQL script in the database. However, they differ in the script that can be stored in them. Views should be used for extracting an exact data set. Functions should be used to return values that will be needed in in more complex queries. Stored procedures should be used for T-SQL queries and more complex logic that will be used regularly.