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Assignment 06

SQL Views, Functions and Stored Procedures

## Introduction

In this document I will define what is a SQL View and discuss the benefits and drawbacks of using them. In addition, I will define the differences and similarities between views, functions and stored procedures.

## SQL View

In short, a view presents data from a table. A view does not store data but instead is a query. Another way to look at a view is that it is a “virtual” table in that no physical data is being stored. Benefits of a view are that they can be used to hide the complexities of the database by focusing and customizing information grabbed from it. In addition, a view can be a useful tool to protect the information in a database by allowing users to gain access to it without main access to the base tables. It also has the benefit of stabilizing a view even if the underlying data has changed. This is a benefit in terms of user experience in that you can keep a consistent view even though something might have changed in the underlying schema.

## Functions and Stored Procedures

Above I defined a view as a query that presents data but two other terms that are used alongside views are functions and stored procedures. But what are those and why are they similar or different from views?

**Function** – A function is a database object that is composed of one or SQL more statements. SQL has built-in functions such ROUND and POWER, but you can also create custom function (UDL – User- Defined Function). Functions can be separated in two different types, functions that return multiple rows (table) or functions that return a single row. Functions are like views but allow for multiple statements while a view is a single statement. Furthermore, they allow the input of parameters to change the results of the query while views do not. However, a huge drawback of using functions is that you cannot manipulate the state of the database such as performing operations such as insert, update and delete. (Figure1)

Diagram

Description automatically generated

**Figure 1: Example of process of a function.**

**Stored Procedure** – Stored procedures are as the name implies, is a pre-saved collection of SQL statements that is stored in a database. Therefore, if you have a code that you write numerous times you can save it as a stored procedure and recall it every time you need to execute. Stored procedures are like functions but are not limited to select statements. In stored procedures you can manipulate the database with operations such as insert, delete etc.

## Views v. Functions v. Stored Procedures

Below is a chart created that summarizes some of the similarities and differences between the types of procedure:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **View** | **Function** | **Stored Procedure** |
| Accepts Parameters | NO | YES | YES |
| Multiple Statements | NO – Limited to one SELECT query | YES | YES |
| Types of Statements | Only Select Statement | Only Select Statement | Allows insert, update, delete, select. |
| Database/Table Modification | NO | NO | YES |
| Output/Return | Return a single table. | Return a single value or table. Mandatory return values. | Return multiple tables and values. No mandatory return value, can return null. |
| SELECT Query | YES | YES | NO – Must use EXEC |
| Exception Handling | NO | NO | YES |

## Conclusion

In summary, views, functions and stored procedures are all important tools in SQL. They can be utilized in different scenarios depending on what you are trying to accomplish. I would not say that one is better than the other as each can be used effectively depending on the scenario. Views can be useful for database control as you can protect the underlying information but still allow access to the data needed. If you need multiple statements, then you can use a function instead of a view. Stored procedures on the other hand can be used to manipulate the database using insert, delete and update statements. Stored procedures streamline the code and therefore improve the response of your application which improves productivity. Furthermore, since the code is cached, it lowers the memory requirement, and it also has the advantage of being scalable.