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Foundations of Databases & SQL Programming

Assignment 06

<https://github.com/ssparky77/DBFoundations> (external site).

Using Views in Microsoft SQL Server

# Introduction

This paper discusses using Views in a relational database like Microsoft SQL Server. Database programmers use Views to restrict the amount or type of data accessible and displayable by users. Views, Functions, and Stored Procedures can perform similar jobs in SQL, but there are critical differences between them I will discuss below.

# When to Use Views in SQL

In SQL, Views are virtual tables built from the results of an SQL statement. A View contains rows and columns and is visually similar to other tables. The fields in a View are fields from one or more actual tables in the database. Programmers can add SQL Functions, Where, and Join statements to a View and present the data as if it were coming from one table. (W3Schools website, <https://www.w3schools.com/sql/sql_view.asp> (external site), 2021.02.23).

A good database contains views for the following reasons:

1. **Restricting Access.** Views provide additional security levels, known as abstraction layers, by limiting access to a particular group of rows and columns in a table.
2. **Hiding Complexity.** A View hides the complexity that exists in a multiple-table join.
3. **Simplifies User Commands.** Views allow the user to select information from multiple tables without requiring them to know how to perform a Join using proper SQL code.
4. **Store Complex Queries.** Programmers use Views to store complex queries in the database file rather than a separate SQL script file.
5. **Rename Columns.** Programmers can also use Views to rename columns without affecting the underlying tables when the number of columns in a View must match the number of columns specified in a Select statement. Therefore, renaming hides the scripted names of the columns of the underlying tables.
6. **Multiple View Facilitation.** Programmers can create different Views of the same table for various users.

(Geeks for Geeks website, <https://www.geeksforgeeks.org/sql-views/> (external site), 2021.02.23).

# Views, Functions, and Stored Procedures: Similarities and Differences

In SQL, Views, Functions, and Stored Procedures each offer a way to save code, or instructions, inside the database itself, rather than the SQL script file where the system stores the rest of the designer’s information. Functions have different syntax from Views. The SQL server [.dbo] schema and a Returns statement must be present when building SQL functions. Functions must also be written with () at the end. On the other hand, Stored Procedures share nearly identical syntax to Views in the SQL script and are the most similar of the three. An important distinction is that Stored Procedures are Executed rather than Selected.

See figures 1 through 3 below for a code snippet of each, comparing the items mentioned above visually.

Create or Alter View vCustomersByLocation As

Select [Customer Name] = CompanyName , City, [Region] = IsNull(Region, Country), Country

From Northwind.dbo.Customers;

Go

### (Figure 1: Sample View Code.)

Create Function dbo.fCustomersByLocation()

Returns Table As

Return

(Select [Customer Name] = CompanyName, City, [Region] = IsNull(Region, Country), Country

From Northwind.dbo.Customers);

Go

### (Figure 2: Sample Function Code.)

Create or Alter Proc pCustomersByLocation As

Begin

Select [Customer Name] = CompanyName, City, [Region] = IsNull(Region, Country), Country

From Northwind.dbo.Customers;

End

Go

Exec pCustomersByLocation;

Go

### (Figure 3: Sample Stored Procedure Code.)

# Summary

Microsoft SQL Server contains powerful tools used to conceal or present information when programmers require abstraction layers between design and end-use. Programmers use Views, Functions, and Stored Procedures similarly in this fashion. While Views are indeed handy, data analysts must take care to employ the proper syntax and convention when using these tools and identify when Views are appropriate in place of Functions or Stored Procedures.