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Foundations Of Databases & SQL Programming

Assignment 06

<https://github.com/dwong1uw/DBFoundations.git>

# Views

## Introduction

The purpose of this document is to learn about the different tools available to report data as an output. Some of the tools include SQL View, Function and Stored Procedure. Creating Views, Functions, and Stored Procedures are all similar in purpose, while still having their uniqueness in their methodology. We'll learn about the similarities and differences among the various reporting tools to report data.

## SQL View

SQL View is a form of generating data in a simple and secured way. A View is saved query that is a virtual table copied from the initial raw table(s). SQL View can provide simplicity when the initial raw table is a complex code. By duplicating the raw table as a View, the complex code does not need to be written again. Recalling the saved View query will retrieve the raw table already and further SQL statements and functions can be added. View can also provide security in that the initial raw data table is not used. SQL View limits access to updating of the raw data, while still allowing users to be able to generate the data they want without compromising the raw data.

### View

A View is one way of being able to report and display data. View tables can quickly pull results without having to repeat writing long and complex codes. No data is actually saved or stored with a View as it is the selected statements codes that are saved in the database.

(Creating Views Functions And Stored Procedures Part 1, [https://www.youtube.com/watch?v=N\\_rPXaj-74o&list=PLfycUyp06LG8cefs0gA38wO7nFrRjD5Ad&index=1](https://www.youtube.com/watch?v=N_rPXaj-74o&list=PLfycUyp06LG8cefs0gA38wO7nFrRjD5Ad&index=1) 2020) (External Site) Figure 1 shows a sample code of creating a View. The initial raw table starts at the Select and From. The View created is 'vProducts.'

```
-- View
Create View vProducts
AS
    Select ProductID, ProductName, CurrentPrice = UnitPrice, CategoryID, Discontinued
    From Northwind.dbo.Products;
go
Select * from vProducts; -- 77rows
Go
```

Figure 1- View

## Function

Similar to Views, Functions also use select statement codes to save in a database. However, unlike views, functions can also use parameters to change the results of the query, allowing for more possibilities of changes. Functions have the capability of customization to report a table of values or a single value. (Creating Views Functions And Stored Procedures Part 3, <https://www.youtube.com/watch?v=wdMk2YG2sBo&list=PLfycUyp06LG8cefs0gA38wO7nFrRjD5Ad&index=4> 2020) (External Site) Figure 2 below shows a sample code of creating a Function.

```
-- Function
Create Function dbo.fProducts() # Using the dbo prefix is common in Microsoft SQL Server
Returns Table
AS
    Return(
        Select ProductID, ProductName, CategoryId, Discontinued
            From Northwind.dbo.Products
        );
go
Select * from dbo.fProducts(); -- 77rows
Go
```

Figure 2 - Function

## Stored Procedure

Similar to both Views and Functions, Stored Procedures use select statement codes in a database. Unlike Views and Functions, however, Stored Procedure codes are executed and run. Stored Procedure can use many statements, other than Select.

(Creating Views Functions And Stored Procedures Part 4, <https://www.youtube.com/watch?v=22yz763fAg0&list=PLfycUyp06LG8cefs0gA38wO7nFrRjD5Ad&index=5> 2020) (External Site) Figure 3 below shows a sample code of creating a Stored Procedure.

```
-- Stored Procedure
Create Procedure pProducts()
AS
    Select ProductID, ProductName, CategoryId, Discontinued
        From Northwind.dbo.Products;
go
Execute pProducts(); -- 77rows
Go
```

Figure 3 - Stored Procedure

In reviewing Figure 1, 2 and 3, they all produce the same results, using View, Function and Stored Procedure respectively. We can see that both View and Function uses the select statement to retrieve the 77 rows of saved data in a database, while the code for Stored Procedure is run and executed for the 77 rows of data.

## Summary

We reviewed some of the different ways of reporting data as an output in SQL with Views, Functions or Stored Procedures. All these create a copy from the original tables, leaving the raw data table intact, allowing the opportunity to simplify the usage and data for the targeted users. These reporting output can also help reduce complex codes for users in the future. At its simplicity, the View, Function or Stored

Procedure can all produce the same results in different approaches, while also each having its limitations and flexibility.