

Ashley Lane

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IT FDN 130 A Au 25

Assjgnment06

# Room with a View

## Introduction

In this paper I focus on SQL VIEWS and briefly touch on Functions and Stored Procedures. These additional tools we learned about this week allow developers to improve data retrieval for users and enhance security in their database.

## CREATE VIEW

A SQL VIEW is a way to save a query that presents a virtual table. You can use a view for reporting purposes that general users can access (by setting permissions) without connecting directly to tables in the database. Views are useful to form complex queries, so users can run a simple SELECT on the view. If there are specific queries that are commonly run including multiple tables, views can be created so the user can run a simple SELECT statement. In this example in **Figure 1** from our assignment you can see the creation of a view and the simple SELECT statement used to query on the information defined by the view.

```
GO
CREATE VIEW dbo.vInventoriesForChaiAndChangByEmployees
AS
    SELECT c.CategoryName, p.ProductName, i.InventoryDate, i.[Count],
    CONCAT (e.EmployeeFirstName, ' ', e.EmployeeLastName) AS Employee
FROM Categories AS C
    INNER JOIN Products AS P
    ON C.CategoryID = P.CategoryID
    INNER JOIN Inventories AS I
    ON P.ProductID = I.ProductID
    INNER JOIN Employees AS E
    ON I.EmployeeID = E.EmployeeID
WHERE p.ProductID IN
    (SELECT ProductID
    FROM Products
    WHERE ProductName IN ('Chai', 'Chang'))
GO
SELECT * FROM vInventoriesForChaiAndChangByEmployees
```

**Figure 1: Create & Select From View**

You can also set advanced permissions to the views and tables. Typically, this would mean denying access to tables once similar views of the table are created, furthermore setting up different views of the same table for information that HR or managers may be privy to that employees may not. An example of this is shown here as an excerpt from our lab notes, **Figure 2**.

```
Use Northwind;
Deny Select On Employees to Public;

Use Module06Demos;
Deny Select vPrivateEmployeeInfo to Public;
Grant Select On vPublicEmployeeInfo to Public;

Grant Select vPrivateEmployeeInfo to HR;
```

**Figure 2: Permission setting**

## FUNCTIONS

A function in SQL is like a “mini-program” that performs a specific task then returns a result. Commonly called User Defined Functions (UDFs), they go beyond the built-in functions like SUM(), AVG(), or COUNT(). Functions can perform advanced calculations, manipulate data or return values based on the parameters set. There is a slight difference from the syntax in view creation to the creation of functions where you add:

RETURNS TABLE

AS

RETURN

Between your CREATE FUNCTION and SELECT statement.

## Stored Procedure

A stored procedure is like a recipe that you can save in your database and always refer back to. It's a set of SQL commands that perform a specific or set of tasks that you often do such as inserts, updates, etc. Once created, you can EXECUTE it whenever you need to perform the task. This can save time, reduce errors and you can also set permissions on them as well.

# Summary

To summarize:

- Use views to present simplified, reusable, and secure outputs of data.
- Use functions when you need parameterized logic that can be embedded in queries (scalar or table-valued).
- Use stored procedures to automate repetitive tasks, such as data insertion and updates.

These three tools advance us further along in our SQL and database journey and allow us to create more efficient, secure and user-friendly databases.