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Course: Foundations of Databases & SQL Programming (IT FDN 103 A)

Github: <https://github.com/anitabeec/DBFoundations>

Assignment 6 - Views

Introduction

In relational database management, SQL (Structured Querying Language) provides a comprehensive set of tools to manage data. This paper explores the fundamental concepts of SQL views, functions, and stored procedures.

SQL Views

SQL Views are virtual tables built from one or more tables. Views don't store data themselves, but rather provide a simplified way to access data by simplifying complex data structures. One might use views for simplifying data for users who don't need to see all technical details of the data structures, presenting data in a format that's more suitable for reports, and minimizing the errors due to repeated query writing by ensuring consistent querying.

In database Assignment06_ACamargo, we have the 'Categories' and 'Products' tables. To retrieve category and product details, a direct query to the tables is needed:

```
SELECT C.CategoryName, P.ProductName, P.UnitPrice
FROM vCategories AS C
INNER JOIN vProducts AS P
ON C.CategoryID = P.CategoryID
ORDER BY CategoryName, ProductName;
```

Through creating view 'vProductsByCategories' using the query above, one can access the data as if it were coming from the 'Categories' and 'Products' tables while hiding their underlying structure. This simplifies the query to retrieve category and product details to:

```
SELECT * FROM vProductsByCategories
```

Views, Functions, Stored Procedures

SQL views, functions, and stored procedures play a crucial role streamlining database task by reducing redundancy through simplifying database operations and enhancing data security.. While they share common benefits, each serves a distinct purpose:

- **Views** provide a virtual way to look at data. They are primarily used for data presentation and controlling access to underlying data structures.

- **Functions** are reusable blocks of code that perform calculations on data, returning a single value. They're often used to manipulate data in queries.
- **Stored procedures** are sets of pre-defined instructions that can be saved and reused.

Summary

In conclusion, SQL views, functions, and stored procedures are pivotal components of effective database management. Views provide a virtual way to look at data, functions enable data calculation, and stored procedures automate tasks. While each has its distinct role, understanding their unique roles in managing data provides a pathway to optimizing data management.