Cindy Goodman

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IT FDN 130A Au 23: Foundations of Databases & SQL Programming

Assignment06

**Views, Functions and Stored Procedures**

**Introduction**

Views are used to simplify complex queries and provide a virtual representation of data. Functions perform computations and return values, and Stored Procedures summarize SQL logic and can perform various operations, including transaction management and complex business logic. The following explains when we use SQL View and the similarities and differences between Views, Functions, and Stored Procedures.

**When to use a SQL View**

SQL View is used to extract data for reporting purposes and is called a "Reporting View.". They can save simple, or complex Select statements, but more complex ones are typical.

Views also allow you to "split" data by rows (horizontal partitioning) stored in one table. You can divide data by rows using a Where clause to create specialized reports.

You can also divide data by Columns (vertical partitioning).

You can allow people to only access data through the appropriate views and protect private data with permissions.

Differences and similarities between Views, Functions and Store Procedures

**Differences:**

1. **Purpose**

* View is used to create a virtual table that represents the result of a stored query. They simplify complex queries and provide a view of data from one or multiple tables.
* Function is used to perform a computation and return a single value or a table result. They can accept parameters and are used to summarize specific logic.
* Stored Procedure is used to perform a series of operations or tasks. They can include SQL statements, control structures, and logic. It serves complex business operations.

**2. Execution**

* View represents a stored query's result set, behaving like a table. Views don't contain procedural logic or execute multiple statements.
* Function executes specific computations and returns a value or a table. Functions focus on calculations or transformations rather than sequences of actions.
* Stored Procedure contains multiple SQL statements and procedural logic. They can perform transactions, handle errors, and execute several commands in sequence.

**3. Transaction Management**

* View and Function do not have management capabilities.
* Stored Procedure can manage transactions, allowing complex operations to be grouped together within a transaction boundary.

**Similarities:**

**1. Database Objects**

All three database objects are stored in the database and can be utilized by other database components.

**2. Reusability**

Views, Functions, and Stored Procedures are reusable components that can be called multiple times within SQL queries or other stored procedures/functions.

**3. Abstraction**

Views and Functions provide a level of abstraction. Views abstract the underlying structure, simplifying queries. Functions allow specific computations or transformations.

**4. Parameters**

Functions and Stored Procedures can accept input/output parameters, allowing for dynamic behavior and enhancing reusability. Views do not accept parameters.

**Summary**

Views are used for simplifying queries and creating a virtual representation of data, while Functions are used for computations and returning specific values or tables. Stored Procedures are primarily used for procedural operations and transaction management, Each serves a unique purpose within a database environment.