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Assignment 06

Introduction

Tables in a SQL database may contain vast amount of data, but they are not always in a useful format to be readily used. The volume of data must be filtered based upon some specified criteria for efficient use. Due to security reason, we might want to make public only a certain amount of data while rest might be accessible to the privileged users.

1. Explain when you would use a SQL View.

1. A VIEW in SQL Server is like a virtual table that contains data from one or multiple tables. It does not hold any data and does not exist physically in the database. Similar to a SQL table, the view name should be unique in a database. It contains a set of predefined SQL queries to fetch data from the database. We use View in SQL since it can contain database tables from single or multiple databases and due to security reason, we might want to make public only a certain amount of data while rest might be accessible to the authorized users and by doing these we can achieve the following
    - Hiding the complexity
    - Implementing Row and Column Level Security.
    - Presenting the aggregated data by hiding the detailed data

2. Explain are the differences and similarities between a View, Function, and Stored Procedure

Views: Database views allow you to create "virtual tables" that are generated on the fly when they are accessed. A view is stored on the database server as an SQL statement that pulls data from one or more tables and (optionally) performs transformations on that data. Users may then query the view just as they would any real database table. Views are often used to alleviate security concerns by providing users with access to a certain view of a database table without providing access to the basic table itself.

Views, which are a type of virtual tables allow users to do the following −

- Structure data in a way that users or classes of users find natural or intuitive.
- Restrict access to the data
- Summarize data from various tables which can be used to generate reports

Function: In addition to SQL Server's built-in functions, you can create custom functions. These are often called User Defined Functions or just UDFs. There are two basic types of functions; functions that return a table of values and functions that return a single value.

Stored Procedure: A stored procedure can contain loops, if/else statements and other logic you might usually see within a function if you've worked with any programming language before. It means you can create functions for getting popular users for example and allow date ranges to be specified to the procedure which will affect the results.

Let us see some of the basic similarities and difference among them:

S.No.	View	Function	Stored Procedure
1	Does not accepts parameters	Can have only input parameters	Accept parameters
2	Can be used as a building block in large query.	Try-catch block cannot be used in a Function	Can not be used as a building block in large query.
3	Can contain only one single Select query.	Can contain only one single Select query.	Can contain several statement like if, else, loop etc.
4	Can not perform modification to any table.	Return tables can be treated as another rowset. This can be used in JOINs with other tables.	Can perform modification to one or several tables.
5	Can be used (sometimes) as the target for Insert, update, delete queries.	Can allows only SELECT statement in it	Can not be used as the target for Insert, update, delete queries.

Summery

The SQL views are also useful tool for accessing multiple data types. Complex queries can be stored within view definition. This leverages reuse because we can put forward the view instead of recreating the queries every time we need them. It is a handy way to present information to user hiding many information that we do not want to expose to everyone. This important from the security perspective as well. Complex structures can be synthesized and presented in an easy format for the end user.Function can return an only single value or a table. We can't use a function to Insert, Update, Delete records in the database table(s). A function returns a value and a procedure just executes commands. A stored procedures can accept input and output parameters. Stored procedures can return multiple values using output parameters. Using stored procedure, we can Select, Insert, Update, Delete data in the database.