Introduction

-- Title: Assignment06

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-- Desc: This file demonstrates about SQL Views

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1. Explain when you would use SQL View.

A SQL view is a virtual table that is created by a **SELECT** query, and it can be used in a variety of scenarios for several benefits. Here are some common use cases for SQL views:

1. **Simplifying Complex Queries**:
   * When you have a complex query involving multiple joins, subqueries, or aggregations, you can encapsulate it in a view. This simplifies your code by allowing you to query the view as if it were a regular table.
   * Example: Simplifying a complex report query by creating a view that encapsulates all necessary joins and calculations.
2. **Enhancing Security**:
   * Views can be used to restrict access to sensitive data. By granting permissions on the view and not the underlying tables, you can control what data users can see.
   * Example: Creating a view that omits sensitive columns such as salary or personal information from an employee table.
3. **Abstracting Database Schema Changes**:
   * If the structure of your underlying tables changes frequently, you can create views to provide a stable interface to the underlying data. This way, applications using the view do not need to change every time the table structure changes.
   * Example: Changing the schema of a table and adjusting the view to accommodate the new schema while keeping the view's interface consistent.
4. **Data Aggregation and Summarization**:
   * Views can be used to create summary tables that provide aggregated data, such as totals, averages, or counts, which are useful for reporting and analytics.
   * Example: Creating a view that provides the total sales per region per month.
5. **Reusing Common Queries**:
   * If you have queries that are used repeatedly across different parts of your application, you can create a view for these queries to avoid redundancy and ensure consistency.
   * Example: Creating a view for a frequently used query that joins multiple tables to fetch order details.
6. **Simplifying Permissions Management**:
   * Instead of granting permissions on multiple tables, you can grant permissions on a view, which simplifies the management of user permissions.
   * Example: Granting read access to a view that joins multiple related tables, rather than granting access to each individual table.
7. **Improving Performance**:
   * In some databases, materialized views (a special type of view) can be used to store the result of a query physically. This can significantly improve performance for complex queries, as the data is precomputed and stored.
   * Example: Creating a materialized view for a report that involves expensive joins and aggregations and refreshing it periodically.

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

Views, functions, and stored procedures are all essential components in SQL databases, each serving different purposes but also having some overlapping features. Here’s a detailed comparison highlighting their differences and similarities:

### **Views**

**Definition**: A view is a virtual table based on a SQL query that selects data from one or more tables.

### **Functions**

**Definition**: A function is a database object that takes input parameters, performs an operation (such as calculations or data retrieval), and returns a single value or a table.

### **Stored Procedures**

**Definition**: A stored procedure is a precompiled collection of one or more SQL statements that perform a specific task.