## Instructions:

* The assignment aims to reinforce SQL query skills using the **WideWorldImporters** database. You will write and execute SQL queries to retrieve and manipulate data using various SQL constructs covered in Chapter 9 of our SQL text.
* Write SQL queries that fulfill the requirements listed below.
* Use appropriate column names, functions, and sorting techniques where necessary.
* Ensure queries return meaningful results based on the dataset.
* Save your work as a .sql file and upload it to D2L Dropbox folder for the assignment. Use the following file naming convention: *yourFirstName\_yourLastName\_SQL\_HW\_07.sql*

Query 1: Advanced String Manipulation with CTE

Description: Extract the domain name from the EmailAddress column in the Application.People table and count the number of occurrences of each domain.

Concepts: CHARINDEX, SUBSTRING, CTE, COUNT, GROUP BY

Query 2: Complex String Problem Solving with Subquery

Description: Find the top 5 customers with the longest CustomerName in the Sales.Customers table.

Concepts: LEN, ORDER BY, TOP

Query 3: Advanced Numeric Data Handling with Window Functions

Description: Calculate the average UnitPrice for each StockItemID in the Sales.OrderLines table, rounded to 2 decimal places, and include the overall average UnitPrice for all items.

Concepts: AVG, ROUND, GROUP BY, OVER

Query 4: Floating-Point Number Search with Conditions and Subquery

Description: Find all StockItems in the Warehouse.StockItems table where the RecommendedRetailPrice is a floating-point number and greater than the average RecommendedRetailPrice.

Concepts: ISNUMERIC, CAST, AVG, SUBQUERY

Query 5: Advanced Date/Time Data Handling with CTE

Description: Calculate the number of days between the InvoiceDate and the current date for each invoice in the Sales.Invoices table and categorize them into 'Recent' (within 30 days) and 'Old' (more than 30 days).

Concepts: DATEDIFF, GETDATE, CTE, CASE

Query 6: Parsing and Formatting Dates with Subquery

Description: Using the InvoiceDate column in the Sales.Invoices table, find the month with the highest number of invoices.

Concepts: DATENAME, MONTH, GROUP BY, COUNT, ORDER BY, TOP

Query 7: Advanced Date Operations with Window Functions

Description: Calculate the end of the month for each InvoiceDate in the Sales.Invoices table and find the running total of invoices for each month.

Concepts: EOMONTH, COUNT, OVER, PARTITION BY

Query 8: Complex CASE Expression with Joins

Description: Categorize StockItems based on their QuantityPerOuter and RecommendedRetailPrice in the Warehouse.StockItems table and include the supplier name from the Purchasing.Suppliers table.

Concepts: CASE, JOIN

Query 9: Advanced COALESCE Usage with Window Functions

Description: Replace NULL values in the CustomerCategoryID column of the Sales.Customers table with the average CustomerCategoryID and include the overall average for reference.

Concepts: COALESCE, AVG, OVER

Query 10: Advanced Ranking Functions with CTE and Subquery

Description: Rank Customers based on their total InvoiceAmount in descending order, and include only those customers whose total invoice amount is above the average. Use the Sales.Customers, Sales.Invoices, and Sales.InvoiceLines tables.

Concepts: RANK, SUM, OVER, JOIN, CTE, SUBQUERY

**Grading Rubric**

Each query is worth \*\*10 points\*\*, evaluated based on the following criteria:

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| --- | --- | --- | --- | --- |
| **Criteria** | **Excellent (10 - 9 pts)** | **Good (8 - 7 pts)** | **Satisfactory (6 - 5 pts)** | **Needs Improvement (4 - 0 pts)** |
| **Correctness of Query (50%)** | Query executes without errors and returns the expected result set. | Query executes with minor logical errors but mostly correct. | Query contains errors affecting correctness. | Query does not execute properly or is incorrect. |
| **Use of Required SQL Concepts (30%)** | Successfully applies the required SQL concepts. | Uses most required SQL concepts correctly. | Uses some SQL concepts but omits key elements. | SQL concepts are misused or omitted. |
| **Query Formatting & Readability (10%)** | Query is well-structured and properly formatted. | Query is readable but could use better formatting. | Query is difficult to read with inconsistent formatting. | Query lacks readability and proper structure. |
| **Use of Proper Column Naming and Aliasing (10%)** | All columns are named meaningfully. | Most columns are appropriately named. | Some columns are meaningfully named. | Column naming and aliasing are unclear or missing. |