Sales Data Analysis Using Advanced SQL Window Functions

Project Title:

Sales Data Analysis Using Advanced SQL Window Functions

Overview:

This project demonstrates the use of advanced SQL window functions and analytical techniques applied to a comprehensive sales dataset. It simulates real-world business reporting and analysis scenarios such as performance tracking, regional comparisons, running totals, moving averages, sales rankings, and detecting trends or outliers.

Skills Demonstrated:

- Advanced SQL Window Functions: ROW_NUMBER, RANK, DENSE_RANK, NTILE, PERCENT_RANK, CUME_DIST
- Time-based analysis: Running Totals, Moving Averages, Cumulative Sums
- Trend detection, performance segmentation, outlier identification
- Full-table analysis without PARTITION BY
- Analytical queries with CASE statements, formatting, and conditional thresholds

Key Highlights:

1. Calculate moving averages and cumulative metrics over time.
2. Rank products and sales within and across regions.
3. Track quarterly performance trends and compare current to previous periods.
4. Identify top and bottom performers using percentiles and cumulative distribution.
5. Detect sharp drops in product sales using statistical thresholds.
6. Evaluate overall contribution of each sale to total revenue using percent-of-total logic.

Files Included:

- SQL Code: sales_data window function challenges

- Business-ready insights for client dashboards and analytics teams

Ideal For:

Clients needing deep SQL analysis for dashboards, sales tracking, marketing performance, or automated business insights.