

SQL Query Report

Purpose

This project leverages advanced SQL techniques to analyze and manage data in an online retail database. It focuses on key areas such as revenue generation, customer engagement, inventory management, and operational efficiency.

Query Breakdown and Use Cases

Best-Selling Products

- **Purpose:** Identifies the top 5 products based on sales volume.
- **Use Case:** Helps highlight best-selling products for promotional strategies.

Revenue Generated by Each Product

- **Purpose:** Calculates total revenue generated by each product.
- **Use Case:** Supports profitability analysis for strategic decisions.

Revenue by Category

- **Purpose:** Summarizes revenue contributions by product categories.
- **Use Case:** Guides decisions on category-level sales strategies and inventory planning.

Products Priced Above Average

- **Purpose:** Lists premium products priced above the average.
- **Use Case:** Identifies high-value products for targeted marketing campaigns.

High-Spending Customers

- **Purpose:** Identifies customers who have spent more than the average order value.
 - **Use Case:** Facilitates customer loyalty initiatives by targeting high-value customers.
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Views for Operational Insights

Customer Orders View

- **Purpose:** Provides an aggregated view of customer orders.
- **Use Case:** Simplifies tracking of high-value orders for revenue analysis.

Product Stock Levels View

- **Purpose:** Displays products with sufficient stock levels for efficient inventory management.
 - **Use Case:** Ensures stock readiness for upcoming demands.
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Stored Procedures for Automation

Get Orders for a Specific Customer

- **Purpose:** Retrieves all orders placed by a specific customer.
- **Use Case:** Enhances customer service with quick access to order histories.

Update Product Stock

- **Purpose:** Automates stock updates after sales.
- **Use Case:** Maintains accurate inventory records.

Calculate Total Revenue for a Date Range

- **Purpose:** Computes total revenue within a given time frame.
- **Use Case:** Tracks financial performance over specific periods.

Add a New Customer

- **Purpose:** Simplifies the process of adding new customer records.
- **Use Case:** Streamlines customer data management.

Record a New Order

- **Purpose:** Automates the addition of new order records.
 - **Use Case:** Speeds up order processing and reduces errors.
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Advanced Revenue Insights

Highest Revenue-Generating Products by Category

- **Purpose:** Identifies top-performing products in each category based on revenue.
- **Use Case:** Focuses promotional efforts on category-leading products.

Ranking Products by Revenue

- **Purpose:** Ranks products according to their revenue performance.
 - **Use Case:** Provides insight into product performance for better decision-making.
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Challenges Addressed

- Optimized handling of complex joins and aggregations to ensure performance efficiency.
 - Automated repetitive tasks with stored procedures to improve productivity.
 - Designed normalized schemas and views to maintain data integrity and consistency.
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Future Enhancements

- Introduce dynamic inputs for stored procedures to allow more flexible query execution.
- Integrate real-time analytics for immediate data-driven decisions.
- Expand views and stored procedures to cover additional business scenarios.

Summary

This project demonstrates the use of advanced SQL techniques to analyze and manage data within an online retail database. Key focus areas include identifying best-selling products, calculating revenue at various levels (product, category, and date range), and highlighting high-spending customers. Operational efficiencies are achieved through views and stored procedures for tasks like managing inventory, recording orders, and updating stock levels.