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22 Advanced Business Problems

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| Categories | Problems |
| 1. Sales & Revenue Analysis | * Problem 1: Top Selling Products * Problem 2: Revenue by Category * Problem 3: Average Order Value (AOV) * Problem 4: Monthly Sales Trend * Problem 7: Customer Lifetime Value (CLTV) * Problem 20: Revenue Decrease Ratio |
| 2. Customer Analytics | * Problem 5: Customers with No Purchases * Problem 13: Most Returned Products * Problem 16: Identify Returning vs New Customers * Problem 18: Top 5 Customers by Orders in Each State * Problem 17: Cross-Sell Opportunities |
| 3. Inventory & Operations | * Problem 8: Inventory Stock Alerts * Problem 14: Orders Pending Shipment * Problem 9: Shipping Delays * Problem 19: Revenue by Shipping Provider |
| 4. Sellers & Performance | * Problem 11: Top Performing Sellers * Problem 15: Active Sellers |
| 5. Profitability & Margins | * Problem 12: Product Profit Margin |
| 6. Automation & Advanced | * Problem 21: Stored Procedure (Auto-update inventory) |

**1. Top Selling Products**

Query the top 10 products by total sales value.

Challenge: Include product name, total quantity sold, and total sales value.

**2. Revenue by Category**

Calculate total revenue generated by each product category.

Challenge: Include the percentage contribution of each category to total revenue.

**3. Average Order Value (AOV)**

Compute the average order value for each customer.

Challenge: Include only customers with more than 5 orders.

**4. Monthly Sales Trend**

Query monthly total sales over the years.

Challenge: Display the sales trend, grouping by month, return current\_month sale!

**5. Customers with No Purchases**

Find customers who have registered but never placed an order.

Challenge: List customer details and the time since their registration.

**6. Least-Selling Categories by State**

Identify the least-selling product category for each state.

Challenge: Include the total sales for that category within each state.

**7. Customer Lifetime Value (CLTV)**

Calculate the total value of orders placed by each customer over their lifetime.

Challenge: Rank customers based on their CLTV.

**8. Inventory Stock Alerts**

Query products with stock levels below a certain threshold (e.g., less than 10 units).

Challenge: Include last restock date and warehouse information.

**9. Shipping Delays**

Identify orders where the shipping date is later than 3 days after the order date.

Challenge: Include customer, order details, and delivery provider.

**10. Payment Success Rate**

Calculate the percentage of successful payments across all orders.

Challenge: Include breakdowns by payment status (e.g., failed, pending).

**11. Top Performing Sellers**

Find the top 5 sellers based on total sales value.

Challenge: Include both successful and failed orders, and display their percentage of successful orders.

**12. Product Profit Margin**

Calculate the profit margin for each product (difference between price and cost of goods sold).

Challenge: Rank products by their profit margin, showing highest to lowest.

**13. Most Returned Products**

Query the top 10 products by the number of returns.

Challenge: Display the return rate as a percentage of total units sold for each product.

**14. Orders Pending Shipment**

Find orders that have been paid but are still pending shipment.

Challenge: Include order details, payment date, and customer information.

**15. Active Sellers**

Identify sellers who have made maximum sales in the last 6 months.

Challenge: Show the last sale date and total sales from those sellers.

**16. IDENTITY customers into returning or new**

if the customer has done more than 5 return categorize them as returning otherwise new

Challenge: List customers id, name, total orders, total returns

**17. Cross-Sell Opportunities**

Find customers who purchased product A but not product B (e.g., customers who bought AirPods but not AirPods Max).  
Challenge: Suggest cross-sell opportunities by displaying matching product categories.

**18. Top 5 Customers by Orders in Each State**

Identify the top 5 customers with the highest number of orders for each state.  
Challenge: Include the number of orders and total sales for each customer.

**19. Revenue by Shipping Provider**

Calculate the total revenue handled by each shipping provider.  
Challenge: Include the total number of orders handled and the average delivery time for each provider.

**20. Top 10 product with highest decreasing revenue ratio compare to last year(2022) and current\_year(2023)**

Challenge: Return product\_id, product\_name, category\_name, 2022 revenue and 2023 revenue decrease ratio at end Round the result

Note: Decrease ratio = cr-ls/ls\* 100 (cs = current\_year ls=last\_year)

**21.Store Procedure**

create a function as soon as the product is sold the the same quantity should reduced from inventory table

after adding any sales records it should update the stock in the inventory table based on the product and qty purchased