SQL for Real-World e-commerce Analytics–– Beginner Level I

Prepared by: Shambhu Kumar Kushwaha
Date: 24/08/2025

1. Project Overview

This project focuses on analyzing e-commerce transactions using SQL. The dataset contains order details, including customer information, product details, order status, and payment methods.
The analysis aims to extract valuable business insights, such as customer purchasing patterns, product demand, and high-value transactions.

2. Database & Table Creation

We first create a dedicated database and table structure to store e-commerce order data.

```
CREATE DATABASE ecommerce_analytics;
USE ecommerce_analytics;

CREATE TABLE eCommerceOrders (
    OrderID VARCHAR(20) PRIMARY KEY,
    CustomerID VARCHAR(20),
    CustomerName VARCHAR(100),
    OrderDate DATE,
    ProductID VARCHAR(20),
    ProductName VARCHAR(100),
    Quantity INT,
    Price DECIMAL(10,2),
    TotalAmount DECIMAL(10,2),
    Category VARCHAR(50),
    OrderStatus VARCHAR(50),
    PaymentMethod VARCHAR(50),
    ShippingAddress VARCHAR(255)
);
```

Key Table Columns:

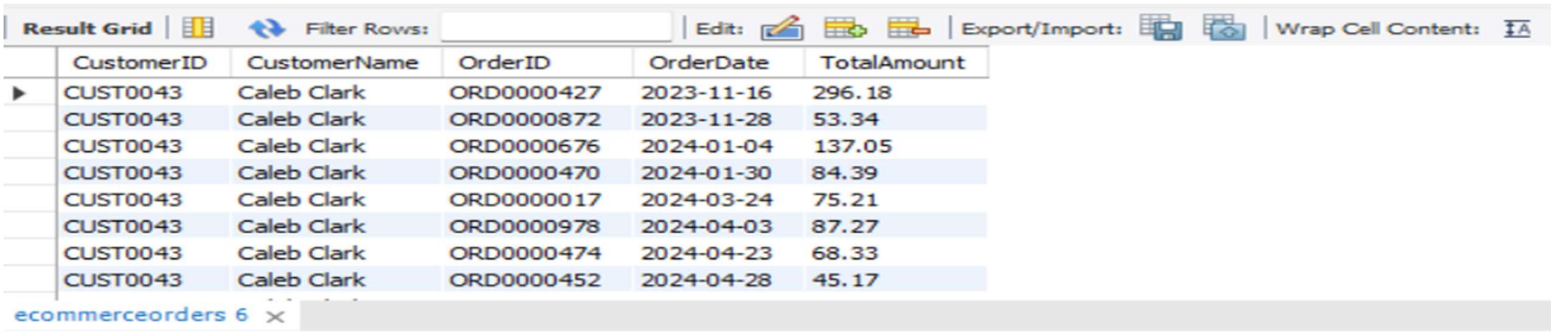
- **OrderID, CustomerID, CustomerName** → Customer and order identification
- **ProductID, ProductName, Category** → Product information
- **Quantity, Price, TotalAmount** → Sales and revenue details
- **OrderDate, OrderStatus, PaymentMethod** → Transaction details
- **ShippingAddress** → Delivery details

3. SQL Queries & Insights

🔹 Task 1: Retrieve Orders by a Specific Customer

Q) Identify all orders placed by **Caleb Clark** to understand their purchasing behavior.

```
SELECT
    CustomerID,
    CustomerName,
    OrderID,
    OrderDate,
    TotalAmount
FROM ecommerceorders
WHERE CustomerName = 'Caleb Clark'
ORDER BY OrderDate;
```



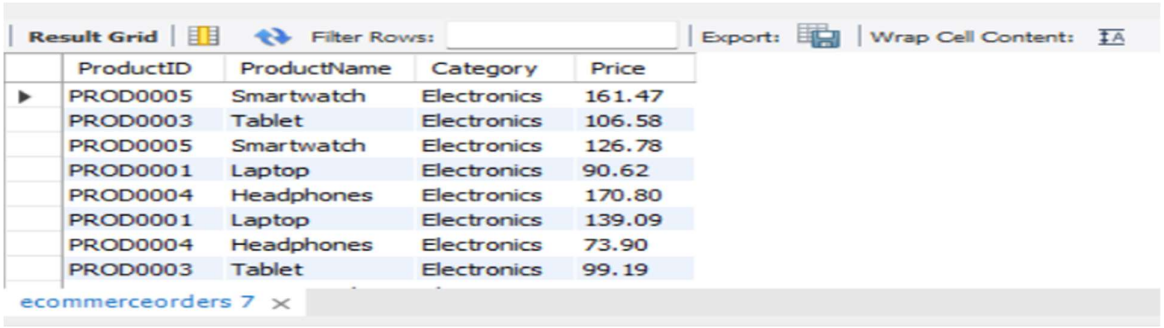
CustomerID	CustomerName	OrderID	OrderDate	TotalAmount
CUST0043	Caleb Clark	ORD0000427	2023-11-16	296.18
CUST0043	Caleb Clark	ORD0000872	2023-11-28	53.34
CUST0043	Caleb Clark	ORD0000676	2024-01-04	137.05
CUST0043	Caleb Clark	ORD0000470	2024-01-30	84.39
CUST0043	Caleb Clark	ORD0000017	2024-03-24	75.21
CUST0043	Caleb Clark	ORD0000978	2024-04-03	87.27
CUST0043	Caleb Clark	ORD0000474	2024-04-23	68.33
CUST0043	Caleb Clark	ORD0000452	2024-04-28	45.17

Insight: Helps track individual customer loyalty, frequency, and spending patterns for targeted marketing.

Task 2: Retrieve Products by Category (Electronics)

Q) Filter products belonging to the **Electronics** category.

```
SELECT
    ProductID,
    ProductName,
    Category,
    Price
FROM ecommerceorders
WHERE Category = 'Electronics';
```



Result Grid | Filter Rows: | Export: | Wrap Cell Content:

ProductID	ProductName	Category	Price
PROD0005	Smartwatch	Electronics	161.47
PROD0003	Tablet	Electronics	106.58
PROD0005	Smartwatch	Electronics	126.78
PROD0001	Laptop	Electronics	90.62
PROD0004	Headphones	Electronics	170.80
PROD0001	Laptop	Electronics	139.09
PROD0004	Headphones	Electronics	73.90
PROD0003	Tablet	Electronics	99.19

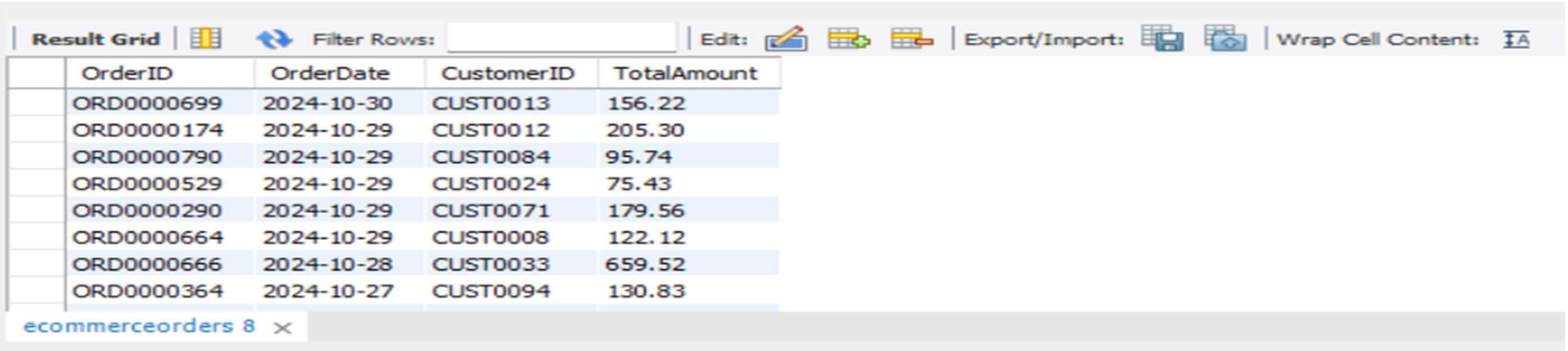
ecommerceorders 7

Insight: Useful for category-specific sales tracking and stock management.

Task 3: List Recent Orders (October 2024)

Q) Retrieve all orders placed in **October 2024**.

```
SELECT
    OrderID,
    OrderDate,
    CustomerID,
    TotalAmount
FROM ecommerceorders
WHERE OrderDate BETWEEN '2024-10-01' AND '2024-10-31'
ORDER BY OrderDate DESC;
```



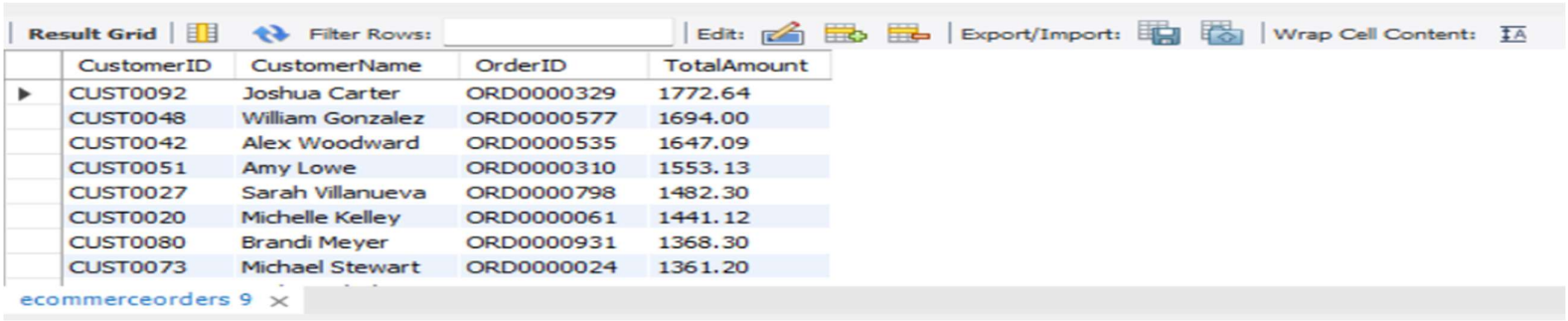
OrderID	OrderDate	CustomerID	TotalAmount
ORD0000699	2024-10-30	CUST0013	156.22
ORD0000174	2024-10-29	CUST0012	205.30
ORD0000790	2024-10-29	CUST0084	95.74
ORD0000529	2024-10-29	CUST0024	75.43
ORD0000290	2024-10-29	CUST0071	179.56
ORD0000664	2024-10-29	CUST0008	122.12
ORD0000666	2024-10-28	CUST0033	659.52
ORD0000364	2024-10-27	CUST0094	130.83

Insight: Identifies seasonal sales trends and recent purchasing activity.

Task 4: Identify High-Value Orders (> $500)

Q) Find orders where the total purchase exceeds **$500**.

```
SELECT
    CustomerID,
    CustomerName,
    OrderID,
    TotalAmount
FROM ecommerceorders
WHERE TotalAmount > 500
ORDER BY TotalAmount DESC;
```



Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

CustomerID	CustomerName	OrderID	TotalAmount
CUST0092	Joshua Carter	ORD0000329	1772.64
CUST0048	William Gonzalez	ORD0000577	1694.00
CUST0042	Alex Woodward	ORD0000535	1647.09
CUST0051	Amy Lowe	ORD0000310	1553.13
CUST0027	Sarah Villanueva	ORD0000798	1482.30
CUST0020	Michelle Kelley	ORD0000061	1441.12
CUST0080	Brandi Meyer	ORD0000931	1368.30
CUST0073	Michael Stewart	ORD0000024	1361.20

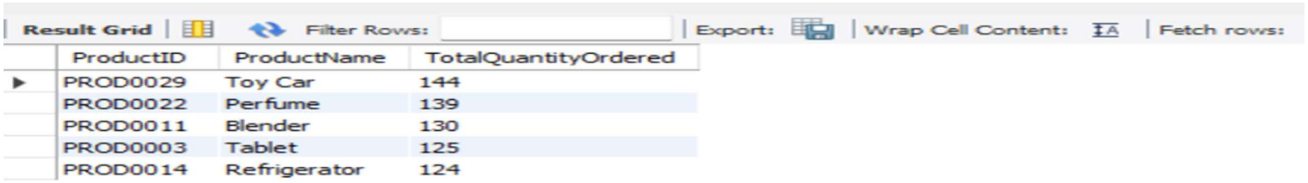
ecommerceorders 9

Insight: Highlights premium customers and big transactions, enabling personalized offers and retention strategies.

Task 5: Retrieve Top 5 Most Ordered Products

Q) Find the most popular products based on total quantity ordered.

```
SELECT
    ProductID,
    ProductName,
    SUM(Quantity) AS TotalQuantityOrdered
FROM ecommerceorders
GROUP BY ProductID, ProductName
ORDER BY TotalQuantityOrdered DESC
LIMIT 5;
```


Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

ProductID	ProductName	TotalQuantityOrdered
PROD0029	Toy Car	144
PROD0022	Perfume	139
PROD0011	Blender	130
PROD0003	Tablet	125
PROD0014	Refrigerator	124

Insight: Identifies bestsellers, guiding restocking decisions and promotional campaigns.

4. Conclusion

Through this SQL-based e-commerce analysis, we derived key insights:

- **Customer-level analysis** → Track purchasing behavior and loyalty.
- **Category insights** → Electronics and other categories can be evaluated for demand.
- **Recent orders** → Seasonal demand trends (October 2024 analysis).
- **High-value orders** → Identify premium customers for targeted engagement.
- **Top products** → Guide inventory and marketing strategies.