**📘 Day 45 – SQL Challenge**

**Dataset Setup**

**Customers Table**

|  |  |  |  |
| --- | --- | --- | --- |
| CustomerID | Name | Segment | Country |
| 1 | Alice | Retail | USA |
| 2 | Bob | Corporate | India |
| 3 | Charlie | Retail | Canada |
| 4 | David | Small Business | UK |
| 5 | Emma | Retail | India |
| 6 | Frank | Corporate | USA |

**Products Table**

|  |  |  |  |
| --- | --- | --- | --- |
| ProductID | ProductName | Category | Price |
| 101 | Laptop | Electronics | 800.00 |
| 102 | Mouse | Electronics | 40.00 |
| 103 | Chair | Furniture | 150.00 |
| 104 | Desk | Furniture | 300.00 |
| 105 | Phone | Electronics | 600.00 |
| 106 | Printer | Electronics | 200.00 |

**Orders Table**

|  |  |  |  |
| --- | --- | --- | --- |
| OrderID | CustomerID | OrderDate | Status |
| 1001 | 1 | 2024-01-10 | Completed |
| 1002 | 2 | 2024-01-12 | Completed |
| 1003 | 2 | 2024-01-15 | Cancelled |
| 1004 | 3 | 2024-02-05 | Completed |
| 1005 | 3 | 2024-02-06 | Returned |
| 1006 | 4 | 2024-02-10 | Completed |
| 1007 | 5 | 2024-03-01 | Completed |
| 1008 | 6 | 2024-03-03 | Completed |
| 1009 | 6 | 2024-03-10 | Completed |
| 1010 | 1 | 2024-04-01 | Completed |

**OrderDetails Table**

|  |  |  |  |
| --- | --- | --- | --- |
| OrderDetailID | OrderID | ProductID | Quantity |
| 1 | 1001 | 101 | 1 |
| 2 | 1002 | 102 | 2 |
| 3 | 1002 | 103 | 1 |
| 4 | 1003 | 105 | 1 |
| 5 | 1004 | 104 | 1 |
| 6 | 1005 | 102 | 3 |
| 7 | 1006 | 103 | 2 |
| 8 | 1007 | 101 | 1 |
| 9 | 1008 | 105 | 2 |
| 10 | 1009 | 106 | 1 |
| 11 | 1010 | 101 | 1 |
| 12 | 1010 | 101 | 2 |

**Questions**

1. **Total Sales by Segment**  
   Calculate total revenue for each **customer segment** (Retail, Corporate, Small Business).
2. **Category-Wise Performance**  
   Find the **top 2 categories** contributing maximum revenue.
3. **Customer Order Frequency**  
   Find customers who have placed **more than 2 completed orders**.
4. **First Purchase Date vs Latest Purchase Date**  
   For each customer, show FirstOrderDate, LatestOrderDate, and OrderGap (days).
5. **Rolling Revenue**  
   Use SUM() OVER(ORDER BY OrderDate) to show cumulative revenue trend by order date.
6. **High-Value Customers**  
   Customers whose **average completed order value > 500**.
7. **Top Products Returned**  
   List products most frequently found in **Returned** orders.
8. **Customer Retention**  
   Find customers who placed orders in **consecutive months**.
9. **Country Revenue Share**  
   Show revenue contribution per country and calculate % contribution out of total.
10. **Profitability Check**  
    Assume margin:

* Electronics = 20%
* Furniture = 30%  
  Calculate profit per order.

**Bonus Challenge**

1. **RFM Analysis (Recency, Frequency, Monetary)**

* **Recency** = Days since last order
* **Frequency** = Number of completed orders
* **Monetary** = Total Completed Revenue

Classify customers into segments:

* High Value (Recent < 60 days, Frequency > 2, Monetary > 1000)
* Medium Value
* Low Value