**📘 Day 60 – SQL Challenge (Midpoint Mock Interview)**

**Dataset Theme:** Online Retail Marketplace (Amazon/Flipkart style)

**Tables & Sample Data**

**Customers**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CustomerID | Name | City | Country | JoinDate |
| 1 | Alice | New York | USA | 2020-01-15 |
| 2 | Bob | London | UK | 2019-03-22 |
| 3 | Charlie | Delhi | India | 2021-07-19 |
| 4 | David | Toronto | Canada | 2022-11-11 |
| 5 | Eva | Berlin | Germany | 2018-05-01 |

**Sellers**

|  |  |  |  |
| --- | --- | --- | --- |
| SellerID | Name | Country | Rating |
| 101 | TechWorld | USA | 4.6 |
| 102 | FashionHub | UK | 4.1 |
| 103 | GadgetMart | India | 4.4 |
| 104 | HomeStore | Canada | 3.9 |
| 105 | BookZone | Germany | 4.8 |

**Products**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ProductID | Name | Category | Price | SellerID |
| 201 | Laptop | Electronics | 1200 | 101 |
| 202 | T-Shirt | Fashion | 25 | 102 |
| 203 | Smartphone | Electronics | 800 | 103 |
| 204 | Sofa | Home | 500 | 104 |
| 205 | Novel | Books | 15 | 105 |

**Orders**

|  |  |  |  |
| --- | --- | --- | --- |
| OrderID | CustomerID | OrderDate | Status |
| 301 | 1 | 2022-01-10 | Completed |
| 302 | 2 | 2022-01-15 | Completed |
| 303 | 3 | 2022-02-05 | Cancelled |
| 304 | 4 | 2022-02-10 | Completed |
| 305 | 5 | 2022-03-12 | Completed |
| 306 | 1 | 2022-04-01 | Completed |
| 307 | 3 | 2022-04-15 | Completed |
| 308 | 2 | 2022-05-01 | Completed |
| 309 | 4 | 2022-05-10 | Completed |
| 310 | 5 | 2022-06-01 | Completed |

**OrderDetails**

|  |  |  |  |
| --- | --- | --- | --- |
| OrderDetailID | OrderID | ProductID | Quantity |
| 401 | 301 | 201 | 1 |
| 402 | 302 | 202 | 3 |
| 403 | 303 | 203 | 1 |
| 404 | 304 | 204 | 2 |
| 405 | 305 | 205 | 4 |
| 406 | 306 | 201 | 1 |
| 407 | 307 | 203 | 2 |
| 408 | 308 | 202 | 2 |
| 409 | 309 | 204 | 1 |
| 410 | 310 | 205 | 5 |

**Payments**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PaymentID | OrderID | PaymentDate | PaymentMethod | Amount |
| 501 | 301 | 2022-01-10 | Credit Card | 1200 |
| 502 | 302 | 2022-01-15 | PayPal | 75 |
| 503 | 304 | 2022-02-10 | Credit Card | 1000 |
| 504 | 305 | 2022-03-12 | NetBanking | 60 |
| 505 | 306 | 2022-04-01 | Credit Card | 1200 |
| 506 | 307 | 2022-04-15 | Credit Card | 1600 |
| 507 | 308 | 2022-05-01 | PayPal | 50 |
| 508 | 309 | 2022-05-10 | NetBanking | 500 |
| 509 | 310 | 2022-06-01 | Credit Card | 75 |

**Reviews**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ReviewID | ProductID | CustomerID | Rating | Comment | ReviewDate |
| 601 | 201 | 1 | 5 | Excellent laptop | 2022-01-12 |
| 602 | 202 | 2 | 4 | Nice quality T-shirt | 2022-01-16 |
| 603 | 203 | 3 | 2 | Bad experience | 2022-02-06 |
| 604 | 204 | 4 | 5 | Comfortable sofa | 2022-02-12 |
| 605 | 205 | 5 | 3 | Average book | 2022-03-15 |
| 606 | 201 | 1 | 4 | Good value | 2022-04-03 |
| 607 | 203 | 3 | 5 | Improved service | 2022-04-16 |
| 608 | 202 | 2 | 5 | Loved it | 2022-05-03 |
| 609 | 204 | 4 | 3 | Delayed delivery | 2022-05-12 |
| 610 | 205 | 5 | 4 | Great read | 2022-06-03 |

**Questions**

1. Find the **top 3 customers by total spending**.
2. Calculate the **total revenue by country**.
3. Find the **top-selling category by revenue**.
4. List customers who have ordered from **more than 2 different sellers**.
5. Identify sellers with **average rating ≥ 4.5 and more than 2 products sold**.
6. Calculate the **monthly revenue trend** for the marketplace.
7. Find products that were **ordered but never reviewed**.
8. Show the **most loyal customer per seller** (highest number of completed orders).
9. Identify orders where **payment amount does not match product \* quantity**.
10. Calculate **year-over-year growth in completed orders**.
11. Find the **highest-rated product per category**.
12. Using **RANK()**, rank sellers by total revenue generated.
13. Identify customers with **consecutive purchases within 30 days**.
14. Show the **average delivery time per country** (assume Delivery table exists, join with Orders).
15. Find **products returned/cancelled most often**.
16. Calculate the **running total of revenue per customer** using a window function.
17. Identify customers who have spent **above the overall average spending**.
18. Detect **at-risk sellers**:

* Avg rating < 4, AND At least 1 order cancelled.

1. Find the **median rating per product** (hint: use window functions).
2. List all customers who **never left a review** despite having completed orders.

**Bonus (Optimization Discussion):**  
21. How would you optimize queries for:

* Top customers by spending
* Detecting fraud (payment mismatch)
* Running totals (indexes, partitioning, covering indexes)