

Problem 1: Sales rep performance analysis - Management wants to evaluate sales representative performance to determine bonus eligibility and identify coaching opportunities. Create an analysis that shows each sales representative's total sales revenue, number of active customers, and average order value for customers under their management. Include only sales reps who have at least one customer with orders and rank them by total sales revenue.

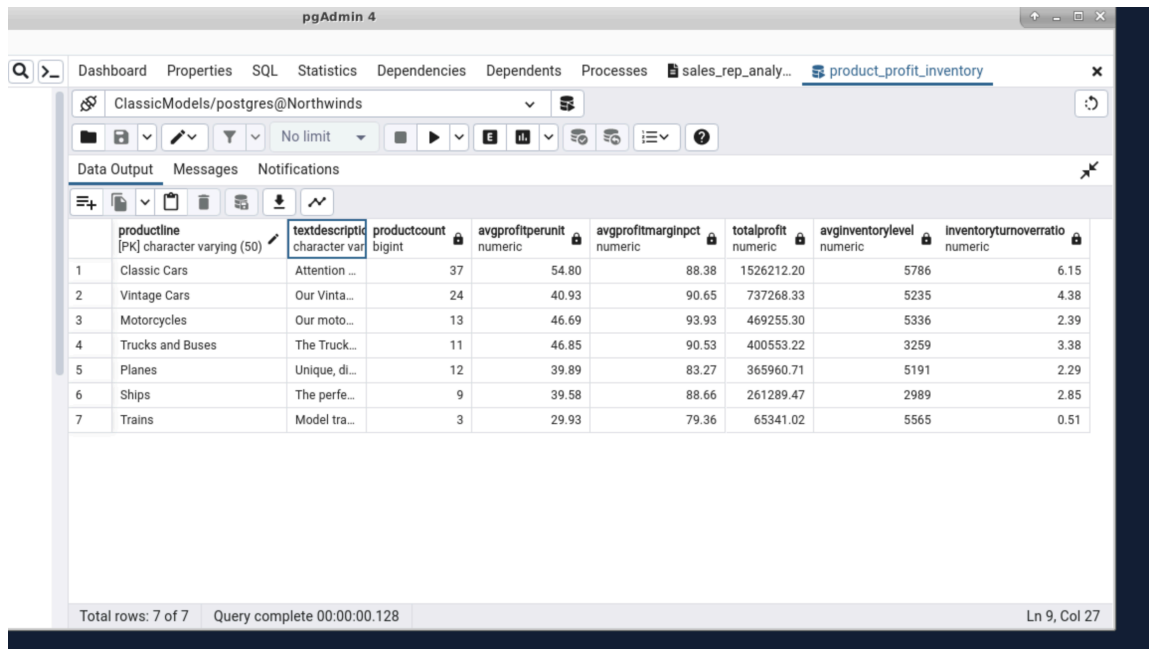
```
SELECT e.employeeNumber, e.firstName || ' ' || e.lastName AS
salesRepName,
      COUNT(DISTINCT c.customerNumber) AS activeCustomers,
      COUNT(DISTINCT o.orderNumber) AS totalOrders,
      ROUND(SUM(od.quantityOrdered * od.priceEach)::numeric, 2)
AS totalSalesRevenue,
      ROUND(AVG(od.quantityOrdered * od.priceEach)::numeric, 2)
AS avgOrderValue
FROM employees e
      INNER JOIN customers c ON e.employeeNumber =
c.salesRepEmployeeNumber
      INNER JOIN orders o ON c.customerNumber = o.customerNumber
      INNER JOIN orderdetails od ON o.orderNumber =
od.orderNumber
WHERE e.jobTitle LIKE '%Sales Rep%'
GROUP BY e.employeeNumber, e.firstName, e.lastName
HAVING SUM(od.quantityOrdered * od.priceEach) > 0
ORDER BY totalSalesRevenue DESC;
```

Data Output Messages Notifications							
	employeeNumber [PK] integer	salesrepname text	activecustomers bigint	totalorders bigint	totalsalesrevenue numeric	avgordervalue numeric	
1	1370	Gerard Hernandez	7	43	1258577.81	3178.23	
2	1165	Leslie Jennings	6	34	1081530.54	3267.46	
3	1401	Pamela Castillo	10	31	868220.55	3191.99	
4	1501	Larry Bott	8	22	732096.79	3102.11	
5	1504	Barry Jones	9	25	704853.91	3203.88	
6	1323	George Vanauf	8	22	669377.05	3172.40	
7	1612	Peter Marsh	5	19	584593.76	3159.97	
8	1337	Loui Bondur	6	20	569485.75	3217.43	
9	1611	Andy Fixter	5	19	562582.59	3040.99	
10	1216	Steve Patterson	6	18	505875.42	3328.13	
11	1286	Foon Yue Tseng	6	17	488212.67	3438.12	
12	1621	Mami Nishi	5	16	457110.07	3336.57	
13	1702	Martin Gerard	5	12	387477.47	3398.93	
14	1188	Julie Firrelli	6	14	386663.20	3118.25	
Total rows: 15 of 15 Query complete 00:00:00.097 Ln 1, Col							

Problem 2: Profitability and Inventory Optimization - The procurement team wants to optimize inventory investments by understanding which products generate the highest profit margins and how current stock levels align with sales velocity. Calculate profit

margin, total profit, and inventory turnover metrics for each product to guide purchasing decisions.

```
SELECT pl.productLine, pl.textDescription,
       COUNT(DISTINCT p.productCode) AS productCount,
       ROUND(AVG(p.MSRP - p.buyPrice)::numeric, 2) AS
avgProfitPerUnit,
       ROUND(AVG((p.MSRP - p.buyPrice) / p.buyPrice *
100)::numeric, 2) AS avgProfitMarginPct,
       ROUND(SUM(od.quantityOrdered * (od.priceEach -
p.buyPrice))::numeric,2) AS totalProfit,
       ROUND(AVG(p.quantityInStock)::numeric, 0) AS
avgInventoryLevel,
       ROUND((SUM(od.quantityOrdered)::numeric /
AVG(p.quantityInStock)::numeric),2) AS inventoryTurnoverRatio
FROM productlines pl
     INNER JOIN products p ON pl.productLine = p.productLine
     INNER JOIN orderdetails od ON p.productCode =
od.productCode
GROUP BY pl.productLine, pl.textDescription
ORDER BY totalProfit DESC;
```



	productline [PK] character varying (50)	textdescription character var	productcount bigint	avgprofitperunit numeric	avgprofitmarginpct numeric	totalprofit numeric	avginventorylevel numeric	inventoryturnoverratio numeric
1	Classic Cars	Attention ...	37	54.80	88.38	1526212.20	5786	6.15
2	Vintage Cars	Our Vinta...	24	40.93	90.65	737268.33	5235	4.38
3	Motorcycles	Our moto...	13	46.69	93.93	469255.30	5336	2.39
4	Trucks and Buses	The Truck...	11	46.85	90.53	400553.22	3259	3.38
5	Planes	Unique, di...	12	39.89	83.27	365960.71	5191	2.29
6	Ships	The perfe...	9	39.58	88.66	261289.47	2989	2.85
7	Trains	Model tra...	3	29.93	79.36	65341.02	5565	0.51

Total rows: 7 of 7 Query complete 00:00:00.128 Ln 9, Col 27

Problem 3: Customer Retention Analysis - The marketing team needs to identify at-risk customers for a retention campaign. Find customers who have made purchases but haven't placed an order in the last 6 months of available data in the database. Include their total historical order value and last order date to help prioritize outreach efforts. Only include customers who have spent more than \$5000 historically.

```
SELECT c.customerNumber, c.customerName, c.country,
       COUNT(o.orderNumber) AS totalOrders,
       ROUND(SUM(od.quantityOrdered * od.priceEach)::numeric, 2)
AS totalSpent,
```

```

MAX(o.orderDate) AS lastOrderDate,
CURRENT_DATE - MAX(o.orderDate::date) AS daysSinceLastOrder
FROM customers c
INNER JOIN orders o ON c.customerNumber = o.customerNumber
INNER JOIN orderdetails od ON o.orderNumber =
od.orderNumber
GROUP BY c.customerNumber, c.customerName, c.country
HAVING SUM(od.quantityOrdered * od.priceEach) > 5000
AND MAX(o.orderDate::date) < CURRENT_DATE - INTERVAL '180
days'
ORDER BY totalSpent DESC, daysSinceLastOrder DESC;

```

pgAdmin 4

Statistics Dependencies Dependents Processes sales_rep_analy... product_profit... customer_retention

ClassicModels/postgres@Northwinds

No limit

Data Output Messages Notifications

	customerNumber [PK] integer	customerName character varying (50)	country character varying (50)	totalorders bigint	totalspent numeric	lastorderdate date	dayssincelastorder integer
1	141	Euro+ Shopping Channel	Spain	259	820689.54	2005-05-31	7394
2	124	Mini Gifts Distributors Ltd.	USA	180	591827.34	2005-05-29	7396
3	114	Australian Collectors, Co.	Australia	55	180585.07	2004-11-29	7577
4	151	Muscle Machine Inc	USA	48	177913.95	2004-12-01	7575
5	119	La Rochelle Gifts	France	53	158573.12	2005-05-31	7394
6	148	Dragon Souvenirs, Ltd.	Singapore	43	156251.03	2005-03-02	7484
7	323	Down Under Souvenirs, Inc	New Zealand	46	154622.08	2005-04-08	7447
8	131	Land of Toys Inc.	USA	49	149085.15	2004-11-15	7591
9	187	AV Stores, Co.	UK	51	148410.09	2004-11-17	7589
10	450	The Sharp Gifts Warehouse	USA	40	143536.27	2005-04-22	7433
11	382	Salzburg Collectables	Austria	40	137480.07	2005-05-17	7408
12	496	Kelly's Gift Shop	New Zealand	48	137460.79	2005-04-01	7454
13	276	Anna's Decorations, Ltd	Australia	46	137034.22	2005-03-09	7477
14	282	Souvenirs And Things Co.	Australia	46	133907.12	2005-05-29	7396

Total rows: 98 of 98 Query complete 00:00:00.229 Ln 1, Col 1