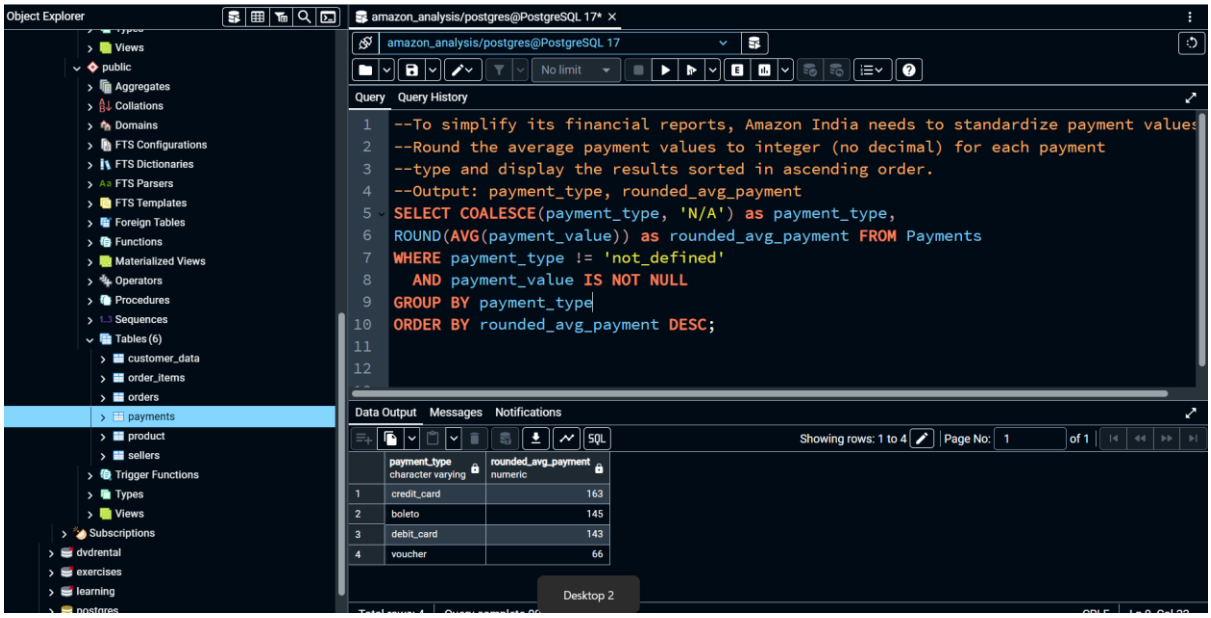
Analysis - I

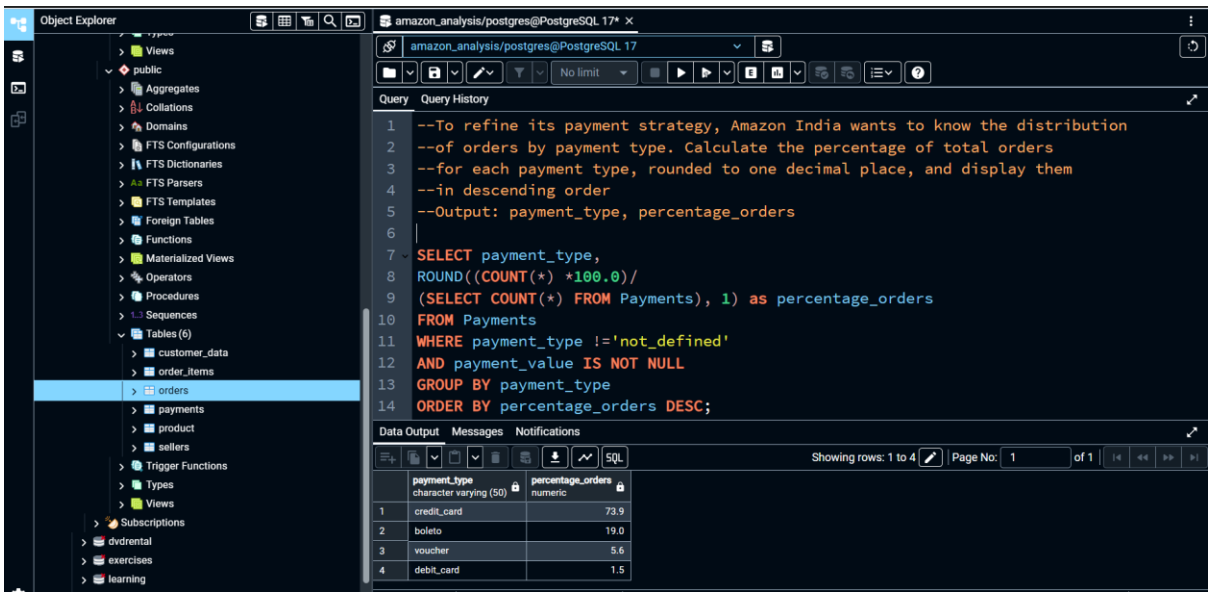
1. **To simplify its financial reports, Amazon India needs to standardize payment values.** Round the average payment values to integer (no decimal) for each payment type and display the results sorted in ascending order.
    - **Output**: payment_type, rounded_avg_payment

1. ANSWER:



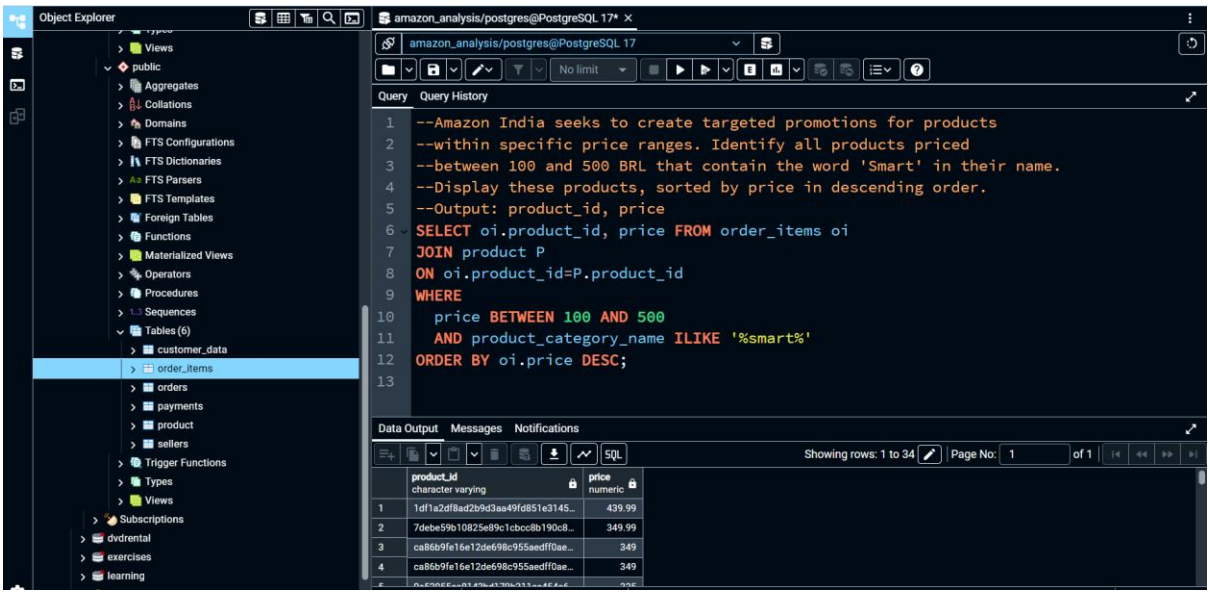
Ques2.) To refine its payment strategy, Amazon India wants to know the distribution of orders by payment type. Calculate the percentage of total orders for each payment type, rounded to one decimal place, and display them in descending order

- **Output**: payment_type, percentage_orders

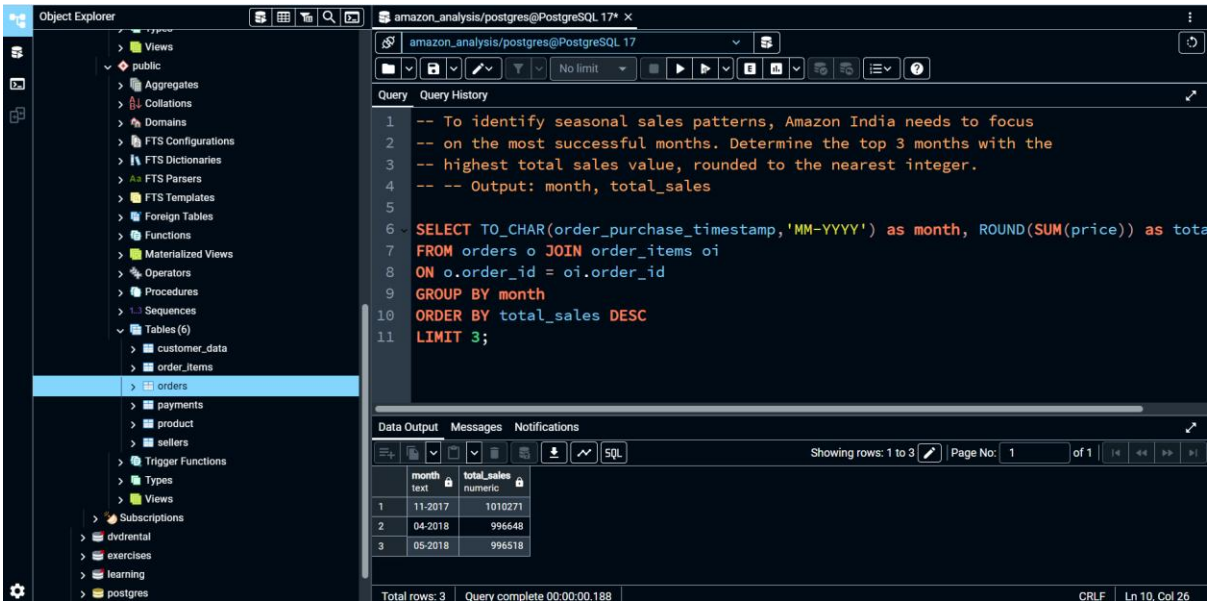


QUES3) Amazon India seeks to create targeted promotions for products within specific price ranges. Identify all products priced between 100 and 500 BRL that contain the word 'Smart' in their name. Display these products, sorted by price in descending order.

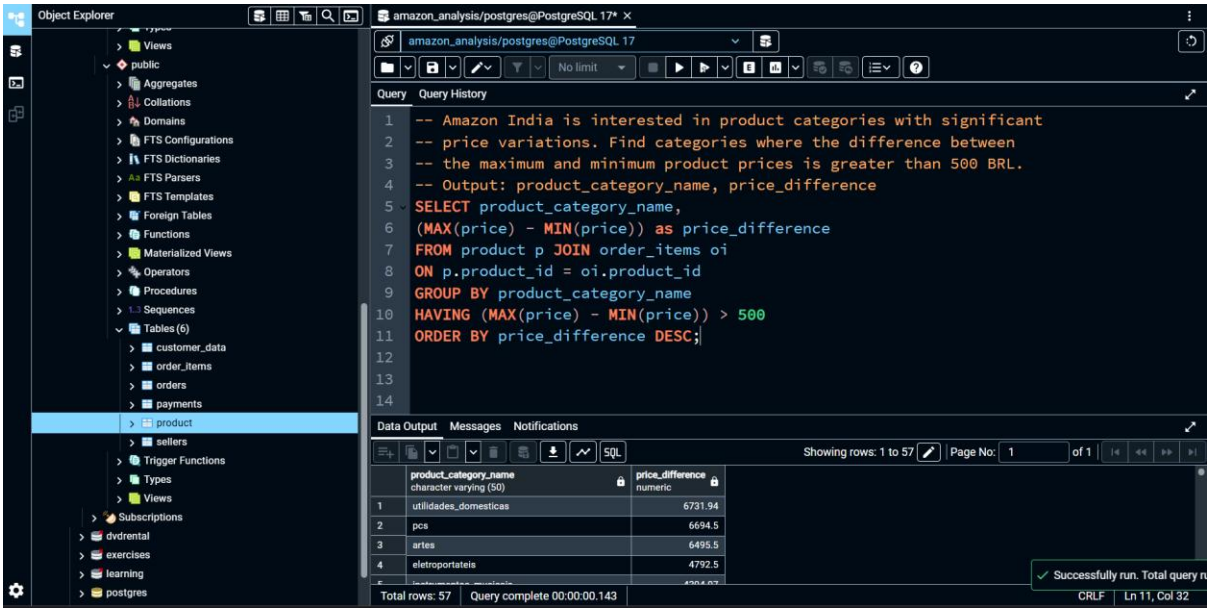
- **Output**: product_id, price



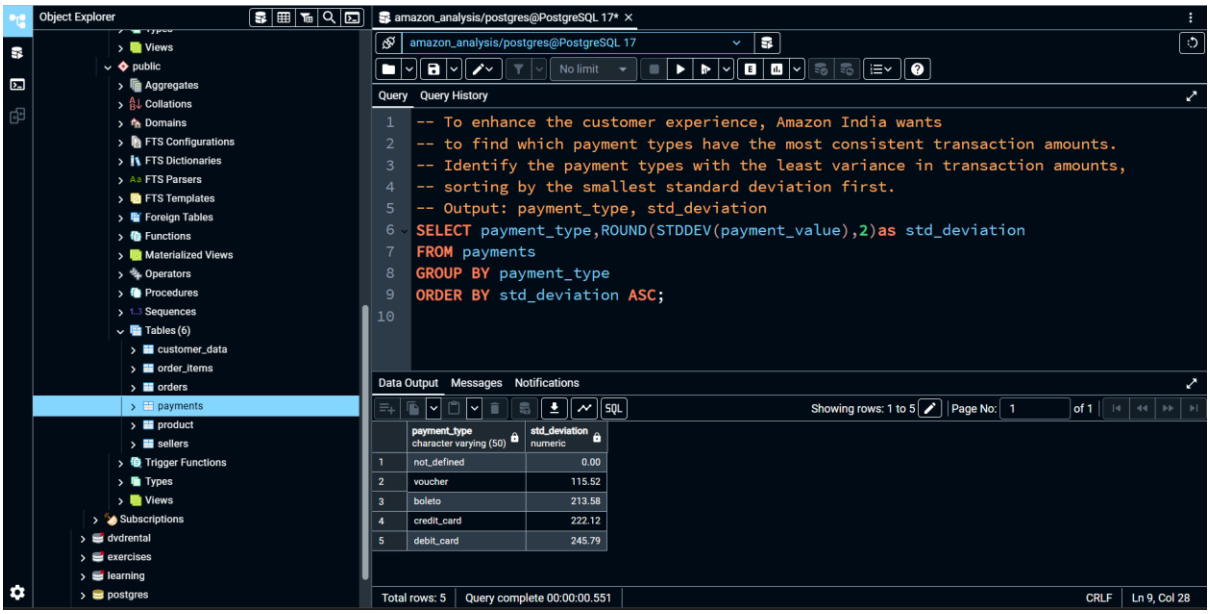
QUES4) **To identify seasonal sales patterns, Amazon India needs to focus on the most successful months.** Determine the top 3 months with the highest total sales value, rounded to the nearest integer.
Output: month, total_sales



QUES5) **Amazon India is interested in product categories with significant price variations.** Find categories where the difference between the maximum and minimum product prices is greater than 500 BRL.
Output: product_category_name, price_difference

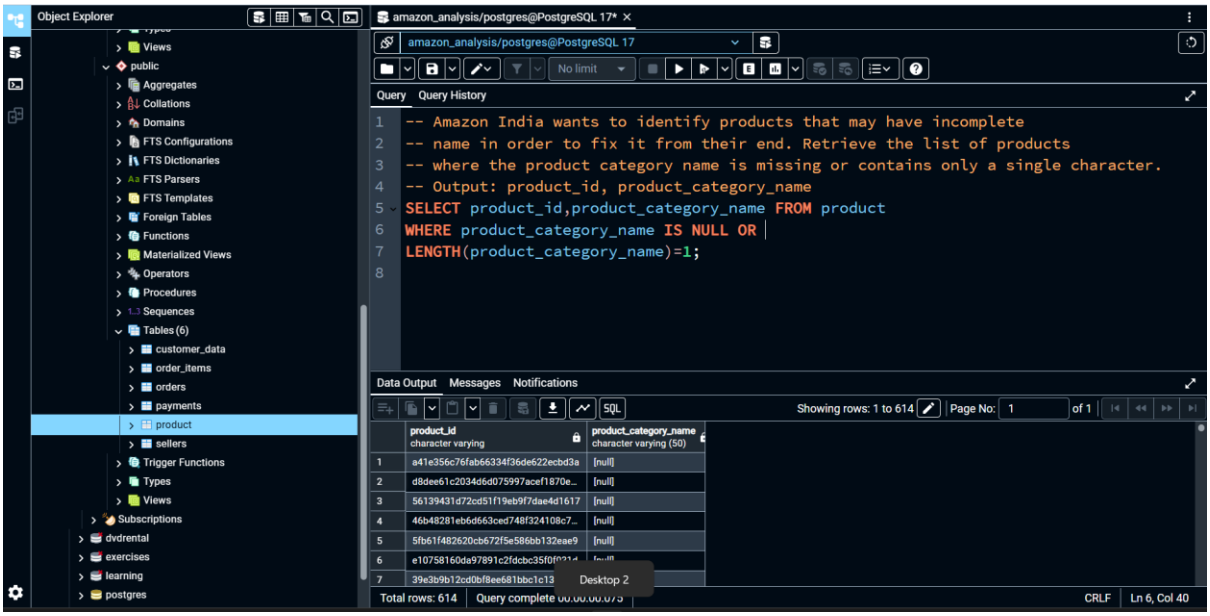


QUES6) **To enhance the customer experience, Amazon India wants to find which payment types have the most consistent transaction amounts.** Identify the payment types with the least variance in transaction amounts, sorting by the smallest standard deviation first.
Output: payment_type, std_deviation



QUES7) **Amazon India wants to identify products that may have incomplete name in order to fix it from their end**. Retrieve the list of products where the product category name is missing or contains only a single character.

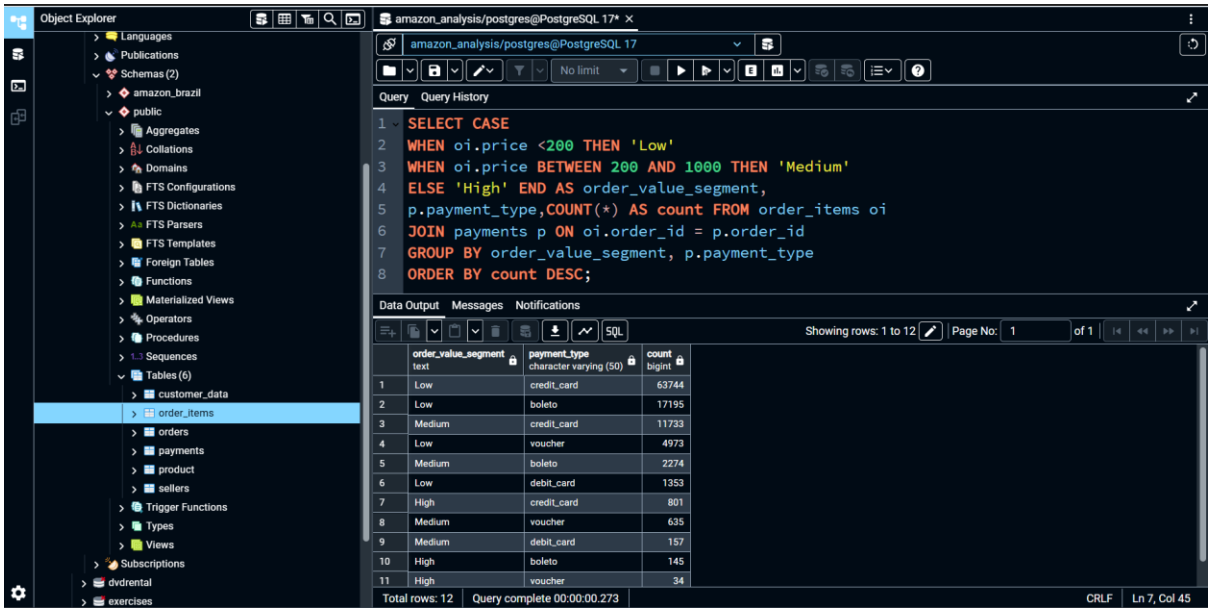
Output: product_id, product_category_name



Analysis - II

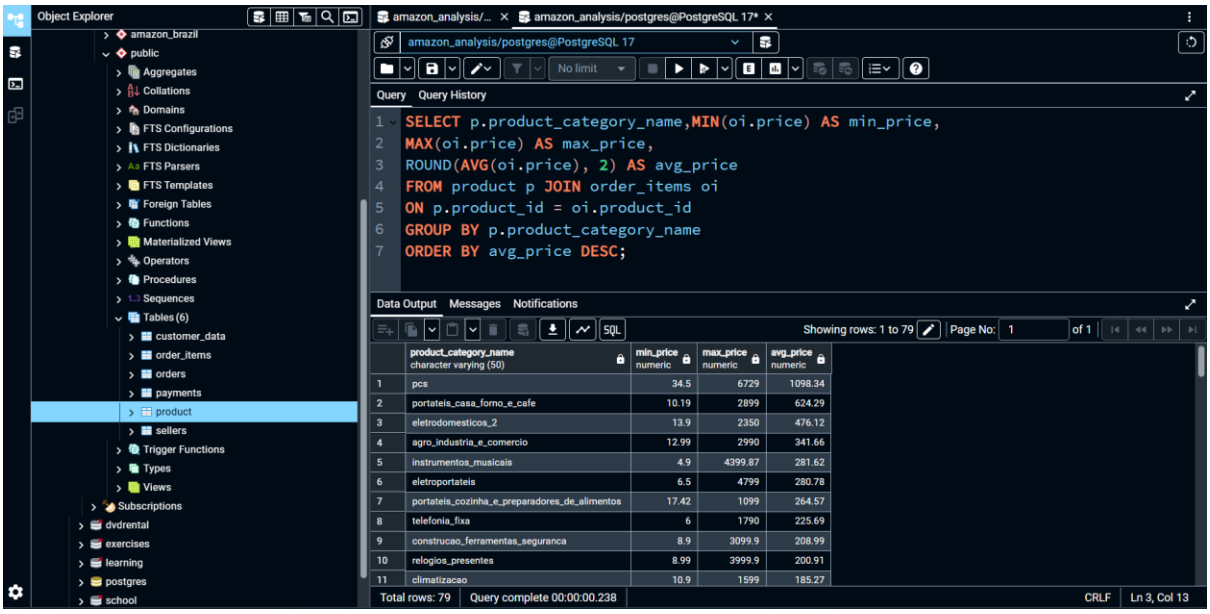
QUES1) Amazon India wants to understand which payment types are most popular across different order value segments (e.g., low, medium, high). Segment order values into three ranges: orders less than 200 BRL, between 200 and 1000 BRL, and over 1000 BRL. Calculate the count of each payment type within these ranges and display the results in descending order of count

Output: order_value_segment, payment_type, count

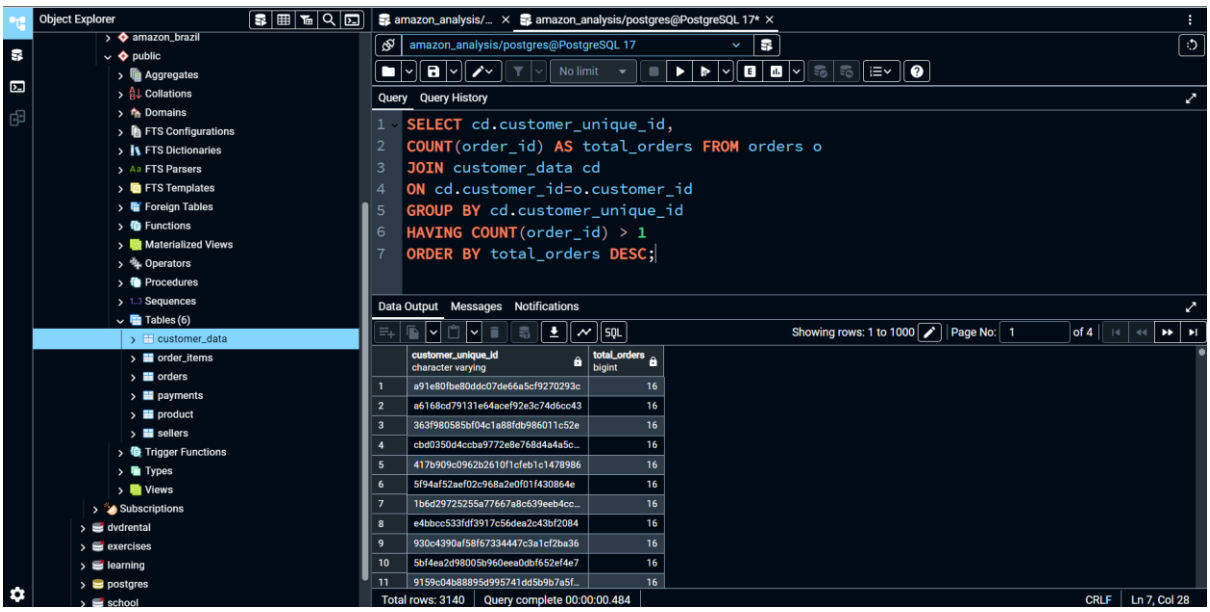


QUES2) Amazon India wants to analyse the price range and average price for each product category. Calculate the minimum, maximum, and average price for each category, and list them in descending order by the average price.

Output: product_category_name, min_price, max_price, avg_price



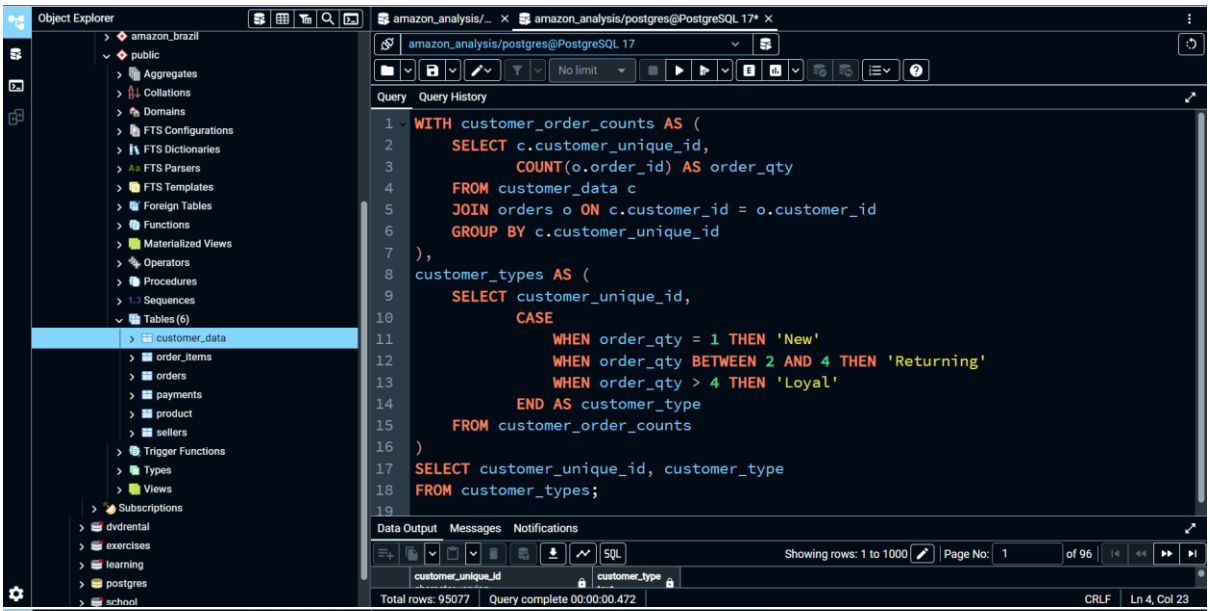
QUES3) Amazon India wants to identify the customers who have placed multiple orders over time. Find all customers with more than one order, and display their customer unique IDs along with the total number of orders they have placed.
Output: customer_unique_id, total_orders

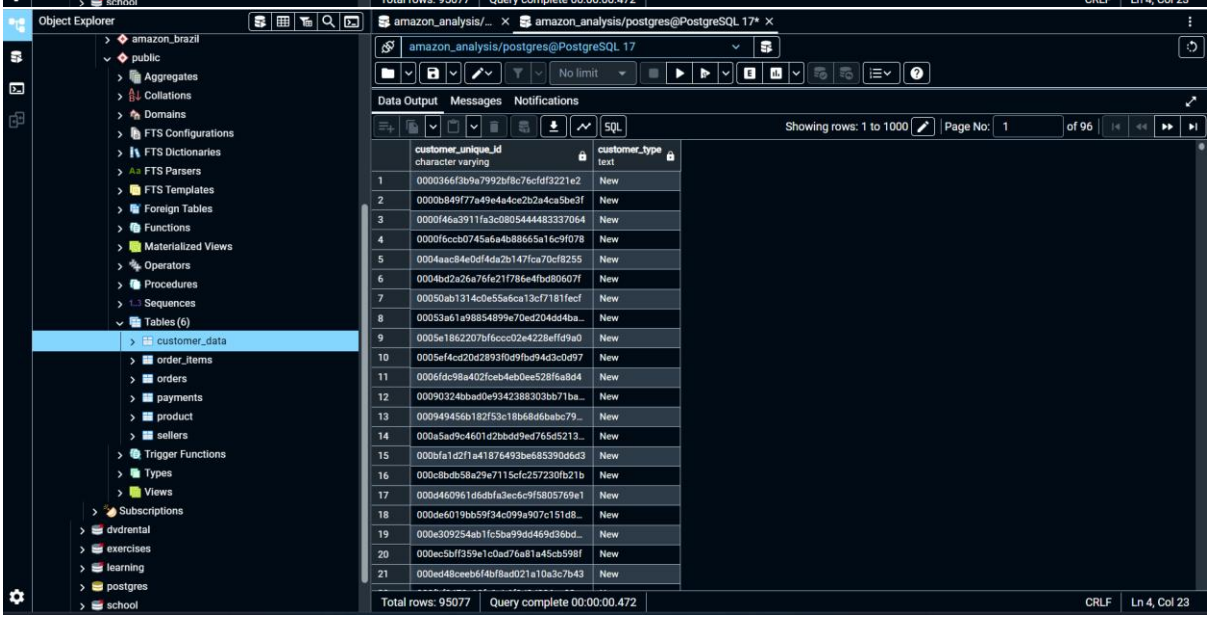
1. 

QUES4) Amazon India wants to categorize customers into different types ('New – order qty. = 1' ; 'Returning' –order qty. 2 to 4; 'Loyal' – order qty. >4) based on their purchase history. Use a temporary table to define these categories and join it with the customers table to update and display the customer types.

Output: customer_unique_id, customer_type

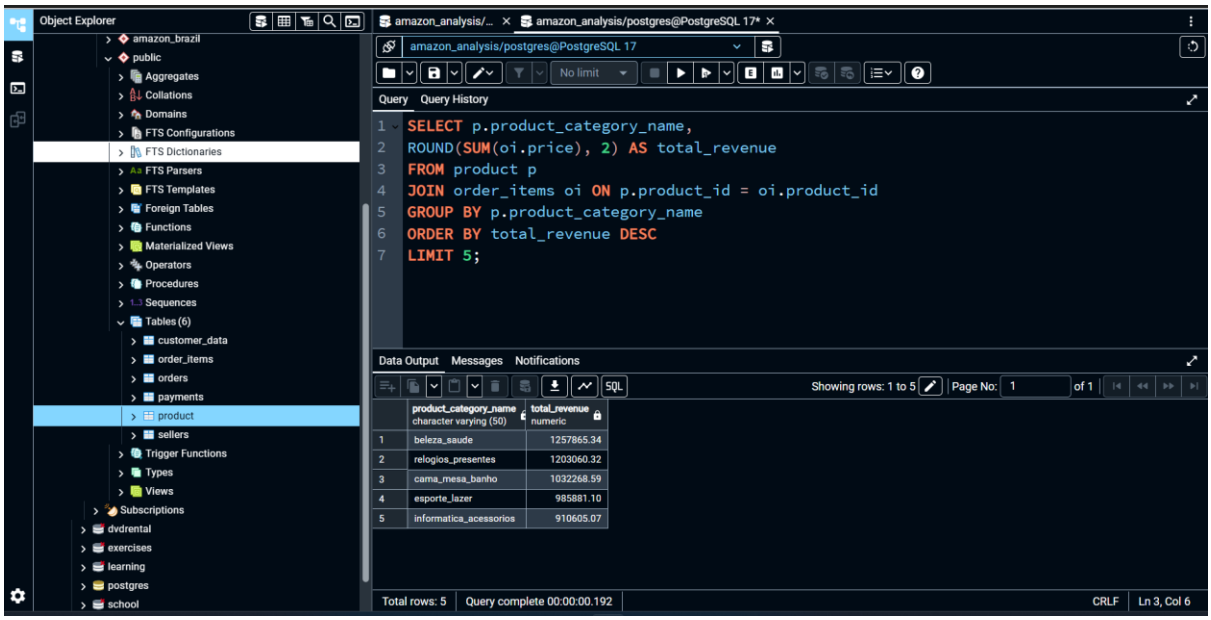
1.





QUES5)Amazon India wants to know which product categories generate the most revenue. Use joins between the tables to calculate the total revenue for each product category. Display the top 5 categories.

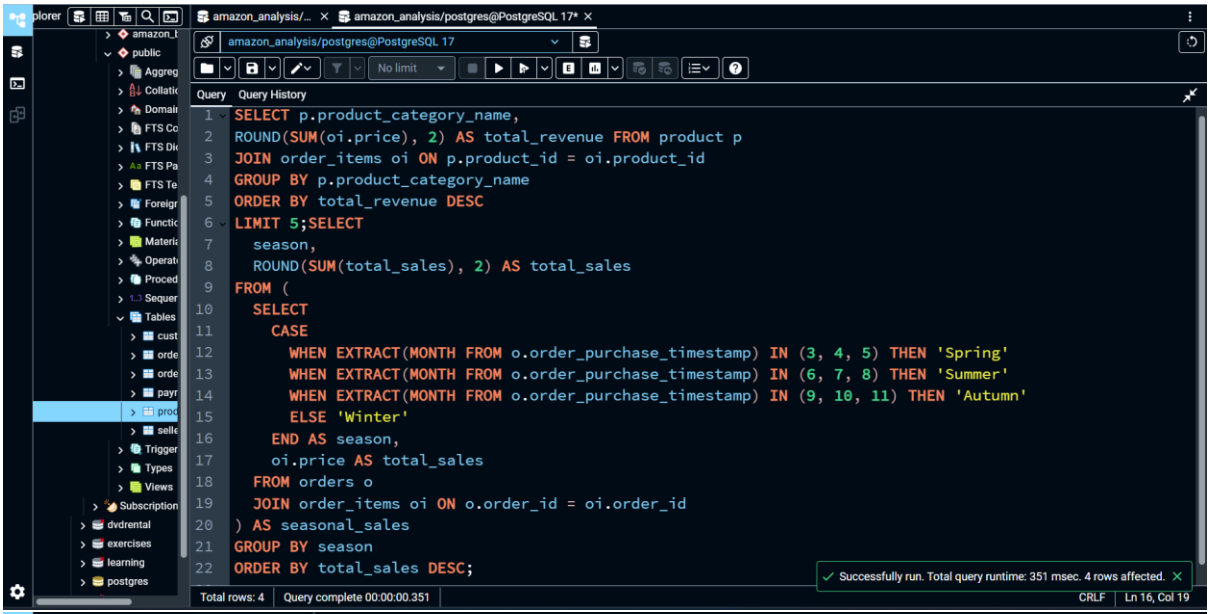
Output: product_category_name, total_revenue



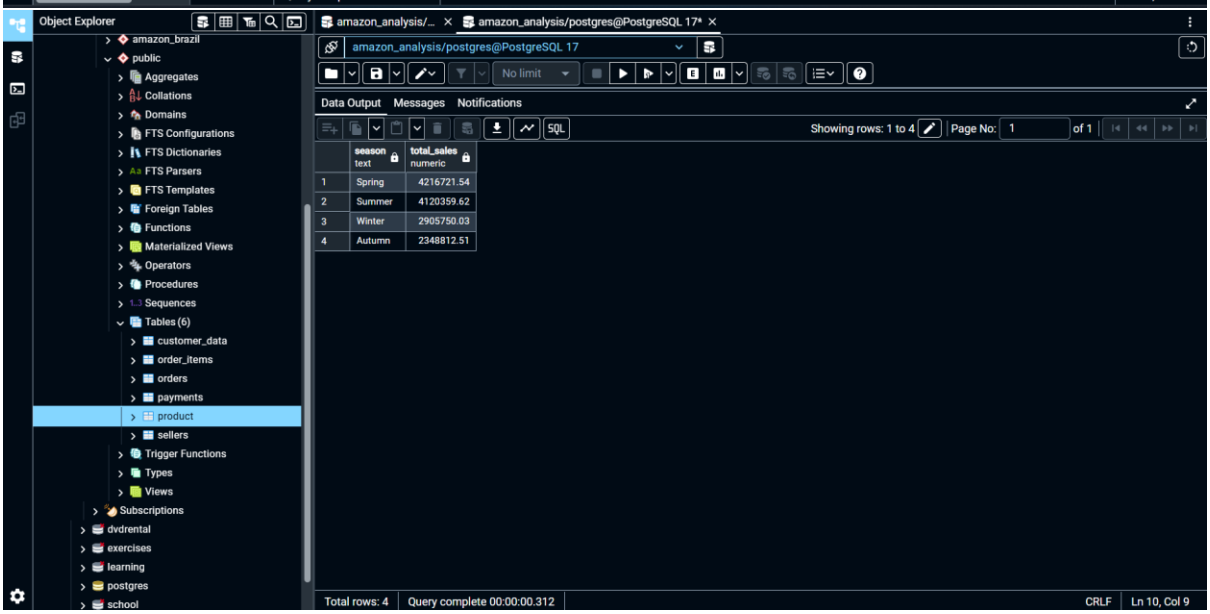
Analysis - III

QUES1)The marketing team wants to compare the total sales between different seasons. Use a subquery to calculate total sales for each season (Spring, Summer, Autumn, Winter) based on order purchase dates, and display the results. Spring is in the months of March, April and May. Summer is from June to August and Autumn is between September and November and rest months are Winter.
Output: season, total_sales

1.



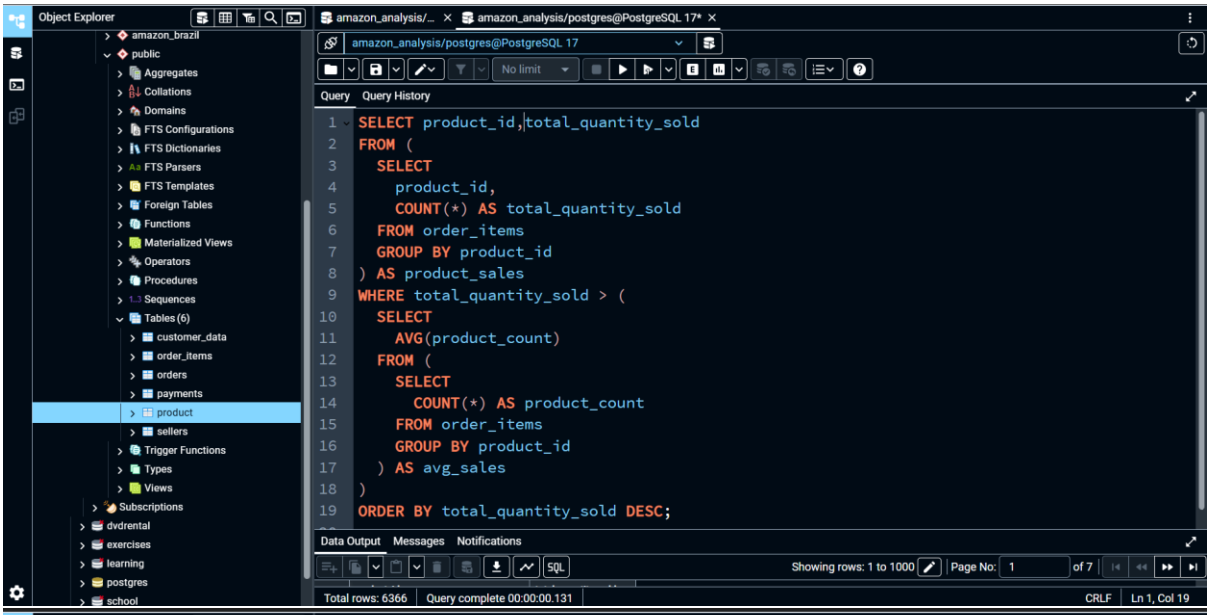
```
SELECT p.product_category_name,
ROUND(SUM(oi.price), 2) AS total_revenue FROM product p
JOIN order_items oi ON p.product_id = oi.product_id
GROUP BY p.product_category_name
ORDER BY total_revenue DESC
LIMIT 5;SELECT
  season,
  ROUND(SUM(total_sales), 2) AS total_sales
FROM (
  SELECT
    CASE
      WHEN EXTRACT(MONTH FROM o.order_purchase_timestamp) IN (3, 4, 5) THEN 'Spring'
      WHEN EXTRACT(MONTH FROM o.order_purchase_timestamp) IN (6, 7, 8) THEN 'Summer'
      WHEN EXTRACT(MONTH FROM o.order_purchase_timestamp) IN (9, 10, 11) THEN 'Autumn'
      ELSE 'Winter'
    END AS season,
    oi.price AS total_sales
  FROM orders o
  JOIN order_items oi ON o.order_id = oi.order_id
) AS seasonal_sales
GROUP BY season
ORDER BY total_sales DESC;
```

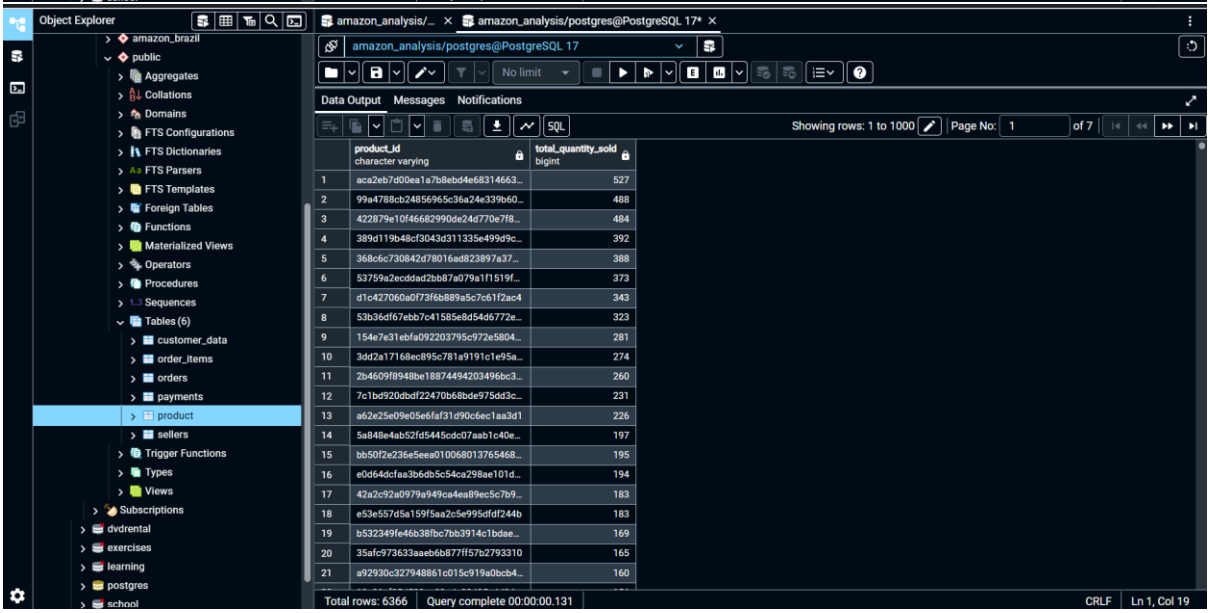


	season (text)	total_sales (numeric)
1	Spring	4216721.54
2	Summer	4120359.62
3	Winter	2905750.03
4	Autumn	2348812.51

QUES2)The inventory team is interested in identifying products that have sales volumes above the overall average. Write a query that uses a subquery to filter products with a total quantity sold above the average quantity.

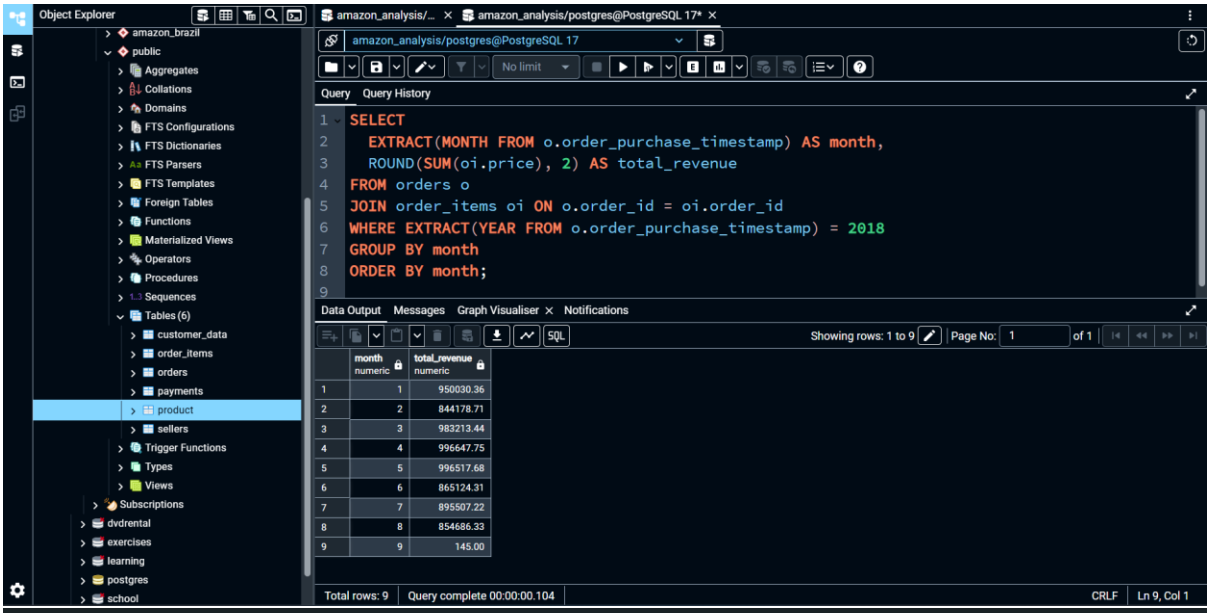
Output: product_id, total_quantity_sold

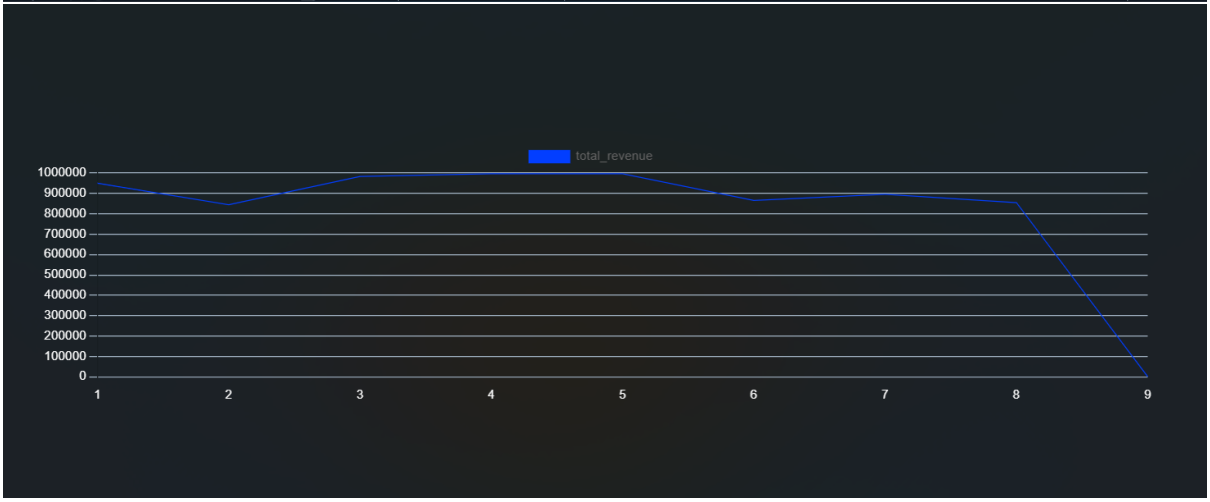




QUES3)To understand seasonal sales patterns, the finance team is analysing the monthly revenue trends over the past year (year 2018). Run a query to calculate total revenue generated each month and identify periods of peak and low sales. Export the data to Excel and create a graph to visually represent revenue changes across the months.
Output: month, total_revenue

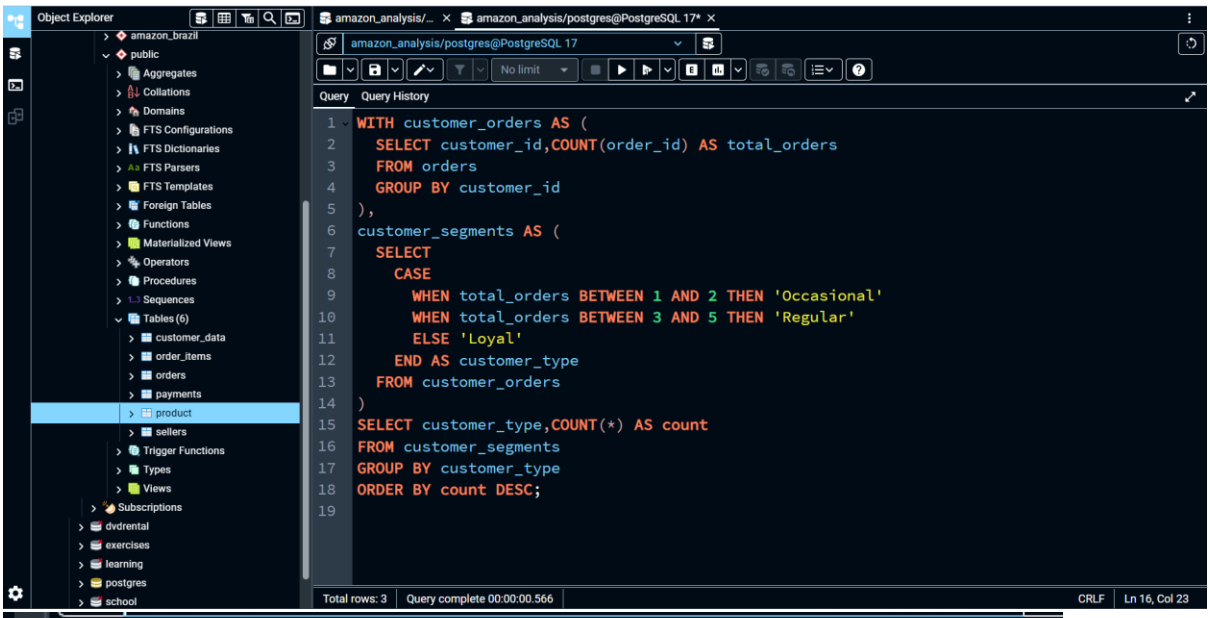
1.

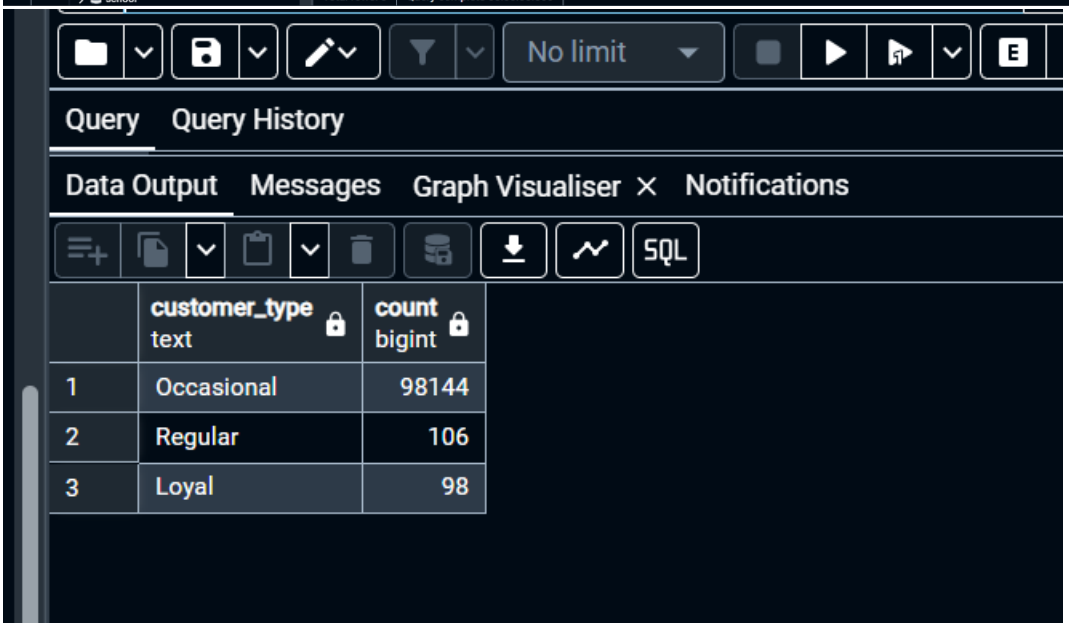




QUES4)A loyalty program is being designed for Amazon India. Create a segmentation based on purchase frequency: 'Occasional' for customers with 1-2 orders, 'Regular' for 3-5 orders, and 'Loyal' for more than 5 orders. Use a CTE to classify customers and their count and generate a chart in Excel to show the proportion of each segment.

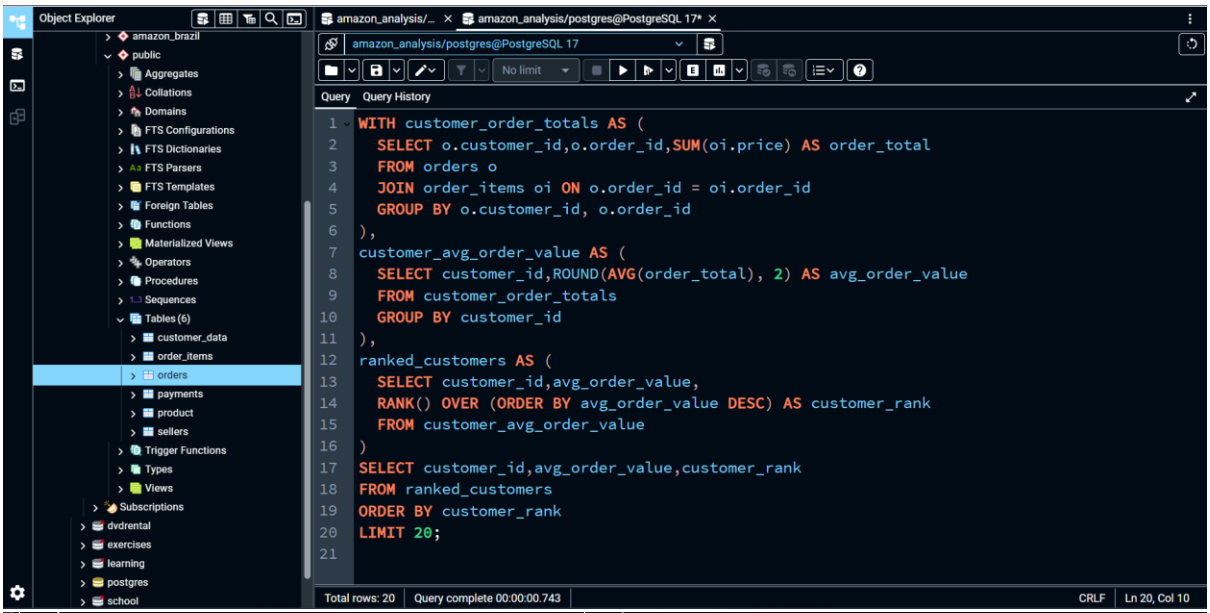
Output: customer_type, count





QUES5)Amazon wants to identify high-value customers to target for an exclusive rewards program. You are required to rank customers based on their average order value (avg_order_value) to find the top 20 customers.

Output: customer_id, avg_order_value, and customer_rank



amazon_analysis/postgres@PostgreSQL 17

No limit

Query | Query History

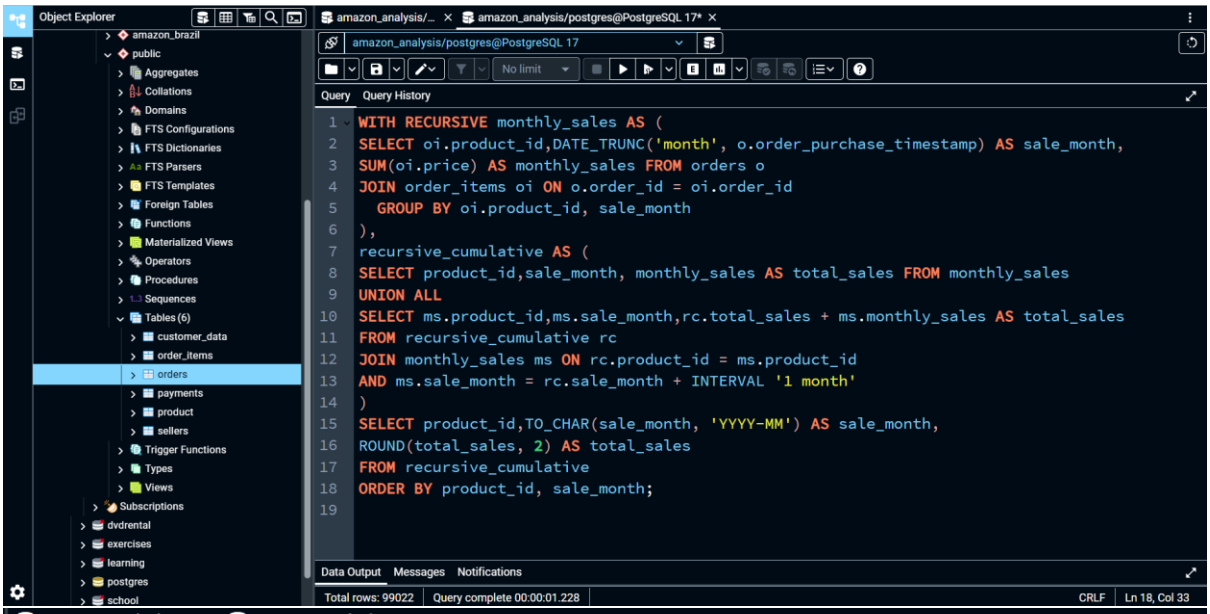
Data Output | Messages | Notifications

SQL | Showing rows: 1 to 20 | Page No: 1 of 1

	customer_id character varying	avg_order_value numeric	customer_rank bigint
1	1617b1357756262bfa56ab541c47bc...	13440.00	1
2	ec5b2ba62e574342386871631fafd3fc	7160.00	2
3	c6e2731c5b391845f6800c97401a43...	6735.00	3
4	f48d464a0baaea338cb25f816991ab1f	6729.00	4
5	3fd6777bbce08a352fddd04e4a7cc8f6	6499.00	5
6	05455dfa7cd02f13d132aa7a6a9729...	5934.60	6
7	df55c14d1476a9a3467f131269c2477f	4799.00	7
8	24bbf5fd2f2e1b359ee7de94defc4a15	4690.00	8
9	e0a2412720e9ea4f26c1ac985f6a7358	4599.90	9
10	3d979689f636322c62418b6346b1c6...	4590.00	10
11	cc803a2c412833101651d3f90ca7de...	4400.00	11
12	1afc82cd60e303ef09b4ef9837c9505c	4399.87	12
13	35a413c7ca3c69756cb75867d6311c...	4099.99	13
14	e9b0d0eb3015ef1c9ce6cf5b9dcbee9f	4059.00	14
15	c6695e3b1e48680db36b487419fb03...	3999.90	15
16	926b6a6fb8b6081e00b335edaf578d...	3999.00	16
17	3be2c536886b2ea4668eced3a80dd0...	3980.00	17
18	31e83c01fce824d0ff786fcd48dad009	3930.00	18
19	eb7a157e8da9c488cd4ddc48711f10...	3899.00	19
20	19b32919fa1198aefc0773ee2e46e693	3700.00	20

Total rows: 20 | Query complete 00:00:00.743 | CRLF

1. **QUES6)Amazon wants to analyze sales growth trends for its key products over their lifecycle.** Calculate monthly cumulative sales for each product from the date of its first sale. Use a recursive CTE to compute the cumulative sales (total_sales) for each product month by month.
   Output: product_id, sale_month, and total_sales



amazon_analysis/... × amazon_analysis/postgres@PostgreSQL 17* ×

amazon_analysis/postgres@PostgreSQL 17

No limit

Data Output Messages Notifications

SQL Showing rows: 1 to 1000 Page No: 1 of 100

	product_id character varying	sale_month text	total_sales numeric
1	00066f42aeeb9f3007548bb9d3f33c38	2018-05	101.65
2	00088930e925c41fd95ebfe695fd2655	2017-12	129.90
3	0009406fd7479715e4bef61dd91f2462	2017-12	229.00
4	000b8f95fcb9e0096488278317764d...	2018-08	117.80
5	000d9be29b5207b54e86aa1b1ac54...	2018-04	199.00
6	0011c512eb256aa0dbbb544d8dffcf6e	2017-12	52.00
7	00126f27c813603687e6ce486d909d...	2017-09	498.00
8	001795ec6f1b187d37335e1c470476...	2017-10	38.90
9	001795ec6f1b187d37335e1c470476...	2017-11	77.80
10	001795ec6f1b187d37335e1c470476...	2017-11	116.70
11	001795ec6f1b187d37335e1c470476...	2017-12	350.10
12	001795ec6f1b187d37335e1c470476...	2017-12	311.20
13	001795ec6f1b187d37335e1c470476...	2017-12	233.40
14	001b237c0e9bb435f2e54071129237...	2018-08	78.90
15	001b72dfd63e9833e8c02742adf472...	2017-02	104.97
16	001b72dfd63e9833e8c02742adf472...	2017-03	34.99
17	001b72dfd63e9833e8c02742adf472...	2017-03	139.96
18	001b72dfd63e9833e8c02742adf472...	2017-07	104.97
19	001b72dfd63e9833e8c02742adf472...	2017-08	69.98
20	001b72dfd63e9833e8c02742adf472...	2017-08	174.95
21	001b72dfd63e9833e8c02742adf472...	2017-09	244.93

Total rows: 99022 Query complete 00:00:01.228 CRLF

QUES7)To understand how different payment methods affect monthly sales growth, Amazon wants to compute the total sales for each payment method and calculate the month-over-month growth rate for the past year (year 2018). Write query to first calculate total monthly sales for each payment method, then compute the percentage change from the previous month.

Output: payment_type, sale_month, monthly_total, monthly_change.

```sql
WITH monthly_sales AS (
SELECT p.payment_type,DATE_TRUNC('month', o.order_purchase_timestamp) AS sale_month,
SUM(p.payment_value) AS monthly_total FROM orders o
JOIN payments p ON o.order_id = p.order_id
WHERE EXTRACT(YEAR FROM o.order_purchase_timestamp) = 2018
GROUP BY p.payment_type, sale_month
),
growth_calc AS (
  SELECT payment_type,sale_month,monthly_total,
  LAG(monthly_total) OVER (
      PARTITION BY payment_type
      ORDER BY sale_month
    ) AS previous_month_total
  FROM monthly_sales
)
SELECT payment_type,TO_CHAR(sale_month, 'YYYY-MM') AS sale_month,
  ROUND(monthly_total, 2) AS monthly_total,
  ROUND(
    CASE
      WHEN previous_month_total IS NULL THEN NULL
      WHEN previous_month_total = 0 THEN NULL
      ELSE ((monthly_total - previous_month_total) / previous_month_total) * 100
    END, 2
  ) AS monthly_change
FROM growth_calc
ORDER BY payment_type, sale_month;
```

Total rows: 36 | Query complete 00:00:00.198 | CRLF | Ln 11, Col 33

	payment_type	sale_month	monthly_total	monthly_change
	character varying (50)	text	numeric	numeric
1	boleto	2018-01	204844.66	[null]
2	boleto	2018-02	183112.72	-10.61
3	boleto	2018-03	191538.02	4.60
4	boleto	2018-04	193547.09	1.05
5	boleto	2018-05	195378.93	0.95
6	boleto	2018-06	153350.28	-21.51
7	boleto	2018-07	198041.24	29.14
8	boleto	2018-08	143805.90	-27.39
9	credit_card	2018-01	868880.38	[null]
10	credit_card	2018-02	778803.00	-10.37
11	credit_card	2018-03	933770.10	19.90
12	credit_card	2018-04	934306.00	0.06
13	credit_card	2018-05	927556.35	-0.72
14	credit_card	2018-06	811508.56	-12.51
15	credit_card	2018-07	803674.49	-0.97
16	credit_card	2018-08	797648.89	-0.75
17	debit_card	2018-01	11543.55	[null]
18	debit_card	2018-02	7469.53	-35.29
19	debit_card	2018-03	8375.11	12.12
20	debit_card	2018-04	10782.53	28.74
21	debit_card	2018-05	9710.74	-9.94

Total rows: 36 | Query complete 00:00:00.112

Key Insights & Action Points: ANALYSIS-1

Insights:

- Average order value differs across payment types—some are more suited for higher spenders.
- A few payment methods account for most transactions, showing clear user preference.
- "Smart" products priced between 100–500 BRL are trending.
- Revenue fluctuates by month, showing seasonal patterns.
- Wide price gaps within categories point to varied customer budgets.
- Some payment methods show consistent spend, indicating trust and stability.
- Several product categories have incomplete or inconsistent names—potential data quality issue.

Recommendations:

- Prioritize top-performing, consistent payment types to enhance checkout.
- Push mid-range “Smart” items with targeted campaigns.
- Plan stock and marketing around peak sales months.
- Clean and standardize product category data.
- Use category price ranges to personalize offers for different customer segments.

Key Insights & Action Points: ANALYSIS-2

Key Insights:

- Customers use different payment types based on how much they spend.
- High revenue comes from a few key product categories.
- Most buyers return—some multiple times.
- Products fall into distinct price segments: Low, Medium, High.

Recommendations:

- Tailor payment options and offers to customer spend levels.
- Prioritize top-performing categories for promotions and inventory.
- Segment customers (New, Returning, Loyal) and personalize engagement.
- Encourage repeat purchases through loyalty programs.
- Reassess low-selling categories for improvement or discontinuation.

Key Insights & Action Points: ANALYSIS-3

Key Insights:

- Sales patterns shift with seasons and festivals, reflecting local trends.
- A few standout products sell significantly above average—crucial for business focus.
- Monthly sales show a clear rhythm, with predictable highs and lows.
- Most buyers are either occasional or regular; only a few are truly loyal.
- A small group of top customers contributes a large share of total spending.
- Product sales evolve over time, highlighting clear life cycle stages.
- Payment methods show varying growth rates across months.

Recommendations:

- Align marketing and inventory with Brazil's seasonal and festive sales cycles.
- Prioritize high-performing products in stock and promotions.
- Design loyalty programs that motivate frequent purchases.
- Offer tailored benefits to high-value customers.
- Monitor trends in payment preferences to keep checkout options optimized.
- Use product lifecycle data to time new launches or phase out declining items.
- Localize these insights to fit Indian customer behaviour for better results.