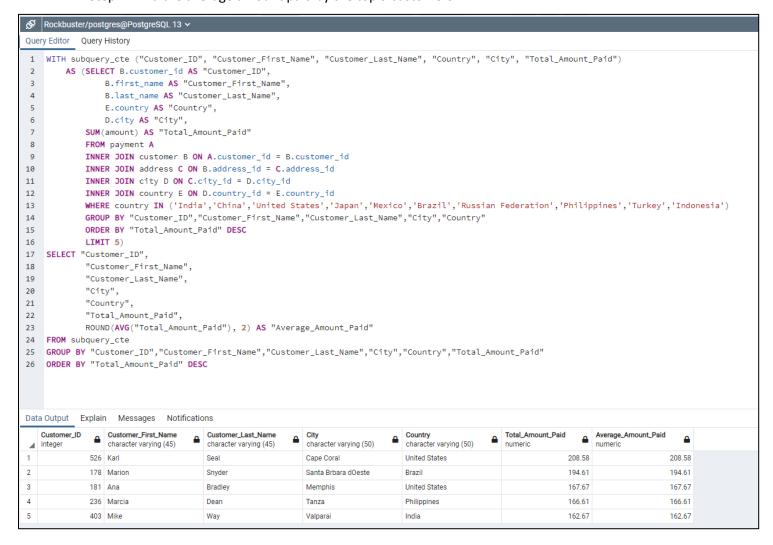
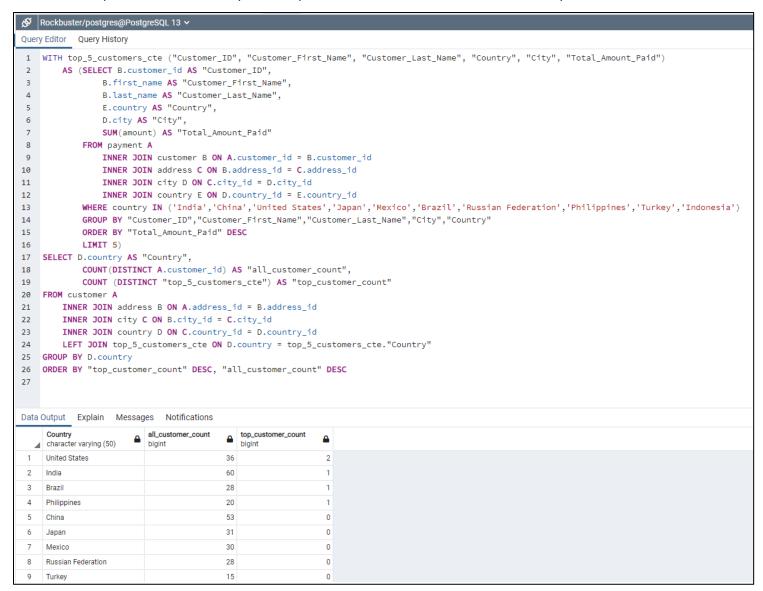
- 1. Answer the business questions from step 1 and 2 of task 3.8 using CTEs:
  - Step 1: Find the average amount paid by the top 5 customers.



Step 2: Find out how many of the top 5 customers are based within each country.



• First, I copied my entire query from step 1 of task 3.8. Then I selected the subquery and pasted it into a new query window to create the CTE. Next, I pasted the remainder of my original query, pasted it below the CTE and wherever the subquery was referenced, I updated it to reference the CTE. I ran the query and checked the data output against the original query output. Then I followed the same steps for step 2 of task 3.8.

## 2. Compare the performance of your CTEs and subqueries:

- I expect the subquery approach to be slower because the general recommendation is to use CTEs instead of subqueries whenever possible.
- Query 1: amount paid by the top 5 customers.
  - Option 1: subquery
    - Estimated cost: 202.23
    - Total runtime: 77 msec.

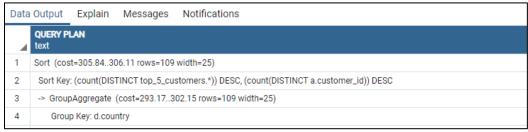
Data	Output Explain Messages Notifications
4	QUERY PLAN text
1	GroupAggregate (cost=202.23202.40 rows=5 width=99)
2	Group Key: subquery."Total_Amount_Paid", subquery."Customer_ID", subquery."Customer_First_Name", subquery."Customer_Last_Name", subquery."
3	-> Sort (cost=202.23202.24 rows=5 width=67)
4	Sort Key: subquery."Total_Amount_Paid" DESC, subquery."Customer_ID", subquery."Customer_First_Name", subquery."Customer_Last_Name", su

Option 2: CTE

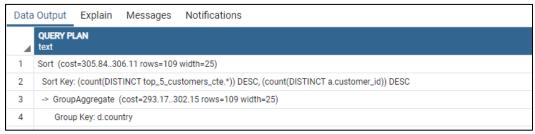
Estimated cost: 203.23Total runtime: 73 msec.



- Query 2: how many of the top 5 customers are based within each country.
  - Option 1: subquery
    - Estimated cost: 305.84Total runtime: 87 msec.



- Option 2: CTE
  - Estimated cost: 305.84Total Runtime: 117 msec.



- I didn't expect these results. Estimated costs are identical and runtimes are similar between the CTE and subquery options.
- 3. Challenges replacing subqueries with CTEs:

My main challenge was grasping the concept of CTEs vs. subqueries and understanding the CTE syntax. After that, everything went fairly smoothly. I also realized how important it was to check my entire query to ensure table and column names referenced the correct table and column names.