Exercise 3.8 Answers
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Step 1: Find the average amount paid by the top 5 customers.

1. Copy the query you wrote in step 3 of the task from Exercise 3.7: Joining Tables of Data into the Query Tool. This will be your subquery, so give it an alias, "total_amount_paid," and add parentheses around it.
2. Write an outer statement to calculate the average amount paid.

Query | Query History

```sql
SELECT
A.customer_id,
A.first_name,
A.last_name,
D.country,
C.city,
SUM(B.amount) AS total_amount_paid
FROM
customer A
JOIN
payment B ON A.customer_id = B.customer_id
JOIN
address E ON A.address_id = E.address_id
JOIN
city C ON E.city_id = C.city_id
JOIN
country D ON C.country_id = D.country_id
WHERE
C.city IN (
SELECT city
FROM customer A
JOIN address E ON A.address_id = E.address_id
JOIN city C ON E.city_id = C.city_id
JOIN country D ON C.country_id = D.country_id
GROUP BY C.city
ORDER BY COUNT(A.customer_id) DESC
LIMIT 10
)
GROUP BY
A.customer_id, A.first_name, A.last_name, D.country, C.city
```

Step 2:

Query | Query History

```
SELECT A.country, B.all_customer_count, COUNT(A.country) AS top_5_customer_count
FROM
(SELECT
A.customer_id, B.first_name, B.last_name,
E.country, D.city,
SUM(A.amount) AS total_spent, B.email
FROM payment A
INNER JOIN customer B ON A.customer_id = B.customer_id
INNER JOIN address C ON B.address_id = C.address_id
INNER JOIN city D ON C.city_id = D.city_id
INNER JOIN country E ON D.country_id = E.country_id
WHERE city IN
('Aurora', 'Atlixco', 'Xintai',
'Adoni', 'Dhule (Dhulla)', 'Khurasaki', 'Pingxiang', 'Sivas', 'Celaya', 'So Leopoldo')
GROUP BY
A.customer_id, A.customer_id, B.first_name, B.last_name,
A.amount, B.email, C.address, D.city, E.country
ORDER BY total_spent DESC
LIMIT 5) A
LEFT JOIN ((SELECT
country, COUNT(country) AS all_customer_count
FROM payment A
INNER JOIN customer B ON A.customer_id = B.customer_id
INNER JOIN address C ON B.address_id = C.address_id
INNER JOIN city D ON C.city_id = D.city_id
INNER JOIN country E ON D.country_id = E.country_id
GROUP BY country
ORDER BY all_customer_count DESC)
) B ON A.country = B.country
GROUP BY A.country, B.all_customer_count
```

Data Output | Messages | Notifications

	country character varying (50)	all_customer_count bigint	top_5_customer_count bigint
1	China	1297	1
2	India	1422	1
3	Mexico	718	2
4	United States	869	1

Step 3:

Do you think steps 1 and 2 could be done without using subqueries?

There is a lot of repetition and confusion when writing queries that are as long that have similar resolutions when we can use the “Explain” function or use a CTE that was briefly explained at the end of the chapter. Because Step 1 and 2 are related, it is important to keep them together to get the write Query data output, so doing subqueries are necessary to make the two work together.

When do you think subqueries are useful?

Subqueries can be thought of as cliffnotes for the initial Query and thus helping the actual query simple and then the subqueries code is more helpful in organizing things within the outer query. This is useful since the main query doesn’t have to be written repetitively and stays the same throughout. Subqueries are also helpful since they are always in parentheses and you’re able to use functions such as SUM and AVG to get more detailed reporting when looking at large sums of data through multiple avenues.