3.8 SQL Sub-Queries

Q1 Find the average amount paid by the top 5 customers.

Query:

```
SELECT AVG(total_amount_paid) AS average_amount_paid
FROM (SELECT B.customer_id,
B.first_name,
B.last_name,
D.city,
E.country,
SUM(A.amount) AS Total_Amount_Paid
FROM customer B
INNER JOIN payment A ON B.customer_id = A.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 D.city IN ('Aurora', 'Atlixco', 'Xintai', 'Adoni', 'Dhule (Dhulia)', 'Kurashiki', 'Pingxiang',
'Sivas', 'Celaya', 'So Leopoldo')
GROUP BY B.customer_id, B.first_name, B.last_name, D.city, E.country
ORDER BY Total_Amount_Paid DESC
LIMIT 5)
AS average_amount_paid
```

Query | Query History

```
SELECT AVG(total_amount_paid) AS average_amount_paid
FROM (SELECT B.customer_id,
B.first_name,
B.last_name,
D.city,
E.country,
SUM(A.amount) AS Total_Amount_Paid
FROM customer B
INNER JOIN payment A ON B.customer_id = A.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 D.city IN ('Aurora', 'Atlixco', 'Xintai', 'Adoni', 'Dhule (Dhulia)', 'Kurashiki', 'Pingxiang',
'Sivas', 'Celaya', 'So Leopoldo')
GROUP BY B.customer_id, B.first_name, B.last_name, D.city, E.country
ORDER BY Total_Amount_Paid DESC
LIMIT 5)AS average_amount_paid
```

Data Output | Messages | Notifications

	average_amount_paid numeric
1	107.3540000000000000

Q2: Find out how many of the top 5 customers are based within each country.

Your final output should include 3 columns:

- “country”
- “all_customer_count” with the total number of customers in each country
- “top_customer_count” showing how many of the top 5 customers live in each country

Query

```
SELECT all_customers.country, all_customers.all_customer_count,
top_customers.top_customer_count
FROM
(SELECT DISTINCT D.country, COUNT (DISTINCT A.customer_id) AS all_customer_count
FROM customer A
INNER JOIN rental E ON A.customer_id = E.customer_id
INNER JOIN payment F ON E.rental_id = F.rental_id
INNER JOIN address B ON A.address_id = B.address_id
INNER JOIN city C ON B.city_ID = C.city_id
INNER JOIN country D on C.country_ID = D.country_ID
GROUP BY country
ORDER BY all_customer_count DESC) AS all_customers
INNER JOIN
(SELECT top_5_customers.country, COUNT (top_5_customers.customer_id) AS
top_customer_count
FROM (SELECT
A.customer_id, A.first_name, A.last_name, C.city, D.country, SUM(F.amount) AS
total_paid_to_rockbuster
FROM customer A
INNER JOIN rental E ON A.customer_id = E.customer_id
INNER JOIN payment F ON E.rental_id = F.rental_id
INNER JOIN address B ON A.address_id = B.address_id
INNER JOIN city C ON B.city_ID = C.city_id
INNER JOIN country D on C.country_ID = D.country_ID
WHERE city IN ('Aurora','Atlixco','Xintai','Adoni','Dhule (Dhulia)',
'Kurashiki','Pingxiang','Sivas','Celaya','So Leopoldo')
GROUP BY a.customer_id, A.first_name, A.last_name, C.city, D.country
ORDER BY total_paid_to_rockbuster DESC
LIMIT 5) AS top_5_customers
GROUP BY top_5_customers.country) AS top_customers
ON all_customers.country = top_customers.country
ORDER BY top_customer_count DESC
```

Query Query History

```sql
SELECT all_customers.country, all_customers.all_customer_count, top_customers.top_customer_count
FROM
(SELECT DISTINCT D.country, COUNT (DISTINCT A.customer_id) AS all_customer_count
FROM customer A
INNER JOIN rental E ON A.customer_id = E.customer_id
INNER JOIN payment F ON E.rental_id = F.rental_id
INNER JOIN address B ON A.address_id = B.address_id
INNER JOIN city C ON B.city_ID = C.city_id
INNER JOIN country D on C.country_ID = D.country_ID
GROUP BY country
ORDER BY all_customer_count DESC) AS all_customersINNER JOIN
(SELECT top_5_customers.country, COUNT (top_5_customers.customer_id) AS top_customer_count
FROM (SELECT
A.customer_id, A.first_name, A.last_name, C.city, D.country, SUM(F.amount) AS total_paid_to_rockbuster
FROM customer A
INNER JOIN rental E ON A.customer_id = E.customer_id
```

Data Output Messages Notifications

	country character varying (50)	all_customer_count bigint	top_customer_count bigint
1	Mexico	30	2
2	India	60	1
3	United States	36	1
4	Turkey	15	1

Total rows: 4 of 4 Query complete 00:00:00.191

Q3. Write 1 to 2 short paragraphs on the following:

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

I can not think that these question can be solved without subqueries. If we want to try it without subqueries, it colud be taken a lot of time and lead to confusion and might no result come. Although while performing Subqueries there is also lot of mistake I did and but once Data analyst perfect it in, than its easy to use and have fast result.

2.When do you think subqueries are useful?

- When we want Queries to be cost effective and quick result arrived.
- When we want only limited result to be include from multiple table.