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

```
select
AVG(Total_amount_paid.Total_amount_paid) as average
from
(SELECT A.customer_id,
B.first_name,
B.last_name,
E.country,
D.city,
SUM(A.amount) AS Total_amount_paid
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 D.CITY IN('Aurora','Tokat','Tarsus','Atlixco','Emeishan','Pontianak','Shimoga','Apar
GROUP BY A.customer_id,first_name,last_name,country,city
ORDER BY Total_amount_paid DESC
LIMIT 5 ) as Total_amount_paid;
```

Data Output | Explain | Messages | Notifications

	average numeric
1	120.3220000000000000

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

```
SELECT D.country,

COUNT(A.customer_id) AS all_cust_id,

COUNT(DISTINCT top5.customer_id) AS top_customer_count

FROM customer A

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

LEFT JOIN

(SELECT A.customer_id,

B.first_name,

B.last_name,

E.country,

D.city,

SUM(A.amount) AS total_amount_paid

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 D.city IN('Aurora','Tokat','Tarsus','Atlixco','Emeishan','Pontianak','Shimoga','Aparecida de Goinia','Zalantun','Taguig')

GROUP BY A.customer_id,first_name,last_name,country,city

ORDER BY Total_amount_paid DESC

LIMIT 5 )AS top5

ON D.country=top5.country

GROUP BY D.country

ORDER BY top_customer_count DESC;
```

Data Output | Explain | Messages | Notifications

	country character varying (50)	all_cust_id bigint	top_customer_count bigint
1	Mexico	30	1
2	Turkey	15	1
3	China	53	1
4	United States	36	1
5	Indonesia	14	1
6	Argentina	13	0
7	Armenia	1	0
8	Austria	3	0
9	Azerbaijan	2	0
10	Bahrain	1	0
11	Bangladesh	3	0
12	Belarus	2	0
13	Bolivia	2	0
14	Brazil	28	0
15	Brunei	1	0

Step 3:

Write 1 to 2 short paragraphs on the following:

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

I do not think that Steps 1 and 2 could be done without using subqueries. As in Step 1 we need to calculate the average amount paid by top 5 customers, for that we first need the output of total amount paid by top 5 customers, which we got as an output from our sub query and based on that output executed the outer statement.

Similarly in Step 2, to arrive at the conclusion of how many of the top 5 customers are based within each country, first we need to filter lots of information using multiple tables , which is only possible with different types of joints, executed in inner statements.

When do you think subqueries are useful?

Subqueries are useful when we need to combine data from two different steps into the single result , where the one step result is dependent on the output of the previous step. Using subqueries we can write queries that are more dynamic and data driven and they give the flexibility to our statements even when the input data is changing frequently.