3.7: Joining Tables of Data

Write a query to find the top 10 countries for Rockbuster in terms of customer numbers. (Tip: you'll have to use `GROUP BY` and `ORDER BY`, both of which follow the join.)

```
SELECT
COUNT (A.customer_id) AS number_of_customers,
D.country
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
GROUP BY country
ORDER BY number_of_customers DESC
LIMIT 10;
```

Data Output | Messages | Notifications

	number_of_customers bigint	country character varying (50)
1	60	India
2	53	China
3	36	United States
4	31	Japan
5	30	Mexico
6	28	Brazil
7	28	Russian Federation
8	20	Philippines
9	15	Turkey
10	14	Indonesia

I started with the requirements of the data. In this case I wanted to find the amount of customers (table CUSTOMER) in each country. To identify the country of each customer, I followed the structure of the ERD: Customer (A) -> address (B) -> city (C) -> country (D). I then formulated the Command to COUNT all Customers_id and grouped them according to their country (D. country). I decided for this way of query, because it is the most efficient way to get the required information. Another interesting aspect, of course, would be to figure out, how many customers are without address using FULL JOIN.

```sql
SELECT
COUNT (A.customer_id) AS number_of_customers,
C.city,
D.country
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
WHERE country IN
('India', 'China', 'United States', 'Japan', 'Mexico', 'Brazil', 'Russian Federation', 'Philippines', 'Turkey', 'Indonesia')
GROUP BY country, city
ORDER BY number_of_customers DESC
LIMIT 10;
```

Data Output | Messages | Notifications

	number_of_customers bigint	city character varying (50)	country character varying (50)
	2	Aurora	United States
	1	Acua	Mexico
	1	Citrus Heights	United States
	1	Iwaki	Japan
	1	Ambattur	India
	1	Shanwei	China
	1	So Leopoldo	Brazil
	1	Teboksary	Russian Federation
	1	Tianjin	China
0	1	Cianjur	Indonesia

2. Write a query to find the top 10 cities within the top 10 countries identified in step 1.

```sql
SELECT
COUNT (A.customer_id) AS number_of_customers,
C.city,
D.country
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
WHERE country IN
('India', 'China', 'United States', 'Japan', 'Mexico', 'Brazil', 'Russian Federation', 'Philippines', 'Turkey', 'Indonesia')
GROUP BY country, city
ORDER BY number_of_customers DESC
LIMIT 10;
```

Data Output | Messages | Notifications

	number_of_customers bigint	city character varying (50)	country character varying (50)
1	2	Aurora	United States
2	1	Acua	Mexico
3	1	Citrus Heights	United States
4	1	Iwaki	Japan
5	1	Ambattur	India
6	1	Shanwei	China
7	1	So Leopoldo	Brazil
8	1	Teboksary	Russian Federation
9	1	Tianjin	China
10	1	Cianjur	Indonesia

I first thought that it is enough to take “one step back” from the first exercise, but then I realized, that there seemed to be no connection with the cities and the countries. That´s where I realized that I need to filter (WHERE) the cities according the identified countries and group them. Apart from that, the procedure is the same as in the first exercise.

3. Write a query to find the top 5 customers in the top 10 cities who have paid the highest total amounts to Rockbuster. The customer team would like to reward them for their loyalty!

```sql
SELECT
A. customer_id,
A.first_name,
A.last_name,
B.address,
C.city,
D.country,
SUM(E.amount) AS total_amount_paid
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
INNER JOIN payment E ON A.customer_id = E.customer_id
WHERE city IN
('Aurora', 'Acua', 'Citrus Heights', 'Iwaki', 'Ambattur', 'Shanwei', 'So Leopoldo', 'Teboksary', 'Tianjin', 'Cianjur')
GROUP BY A.customer_id, B.address, C.city, D.country
ORDER BY total_amount_paid DESC
LIMIT 5;
```

Data Output | Messages | Notifications

	customer_id integer	first_name character varying (45)	last_name character varying (45)	address character varying (50)	city character varying (50)	country character varying (50)	total_amount_paid numeric
1	225	Arlene	Harvey	1014 Loja Manor	Ambattur	India	111.76
2	424	Kyle	Spurlock	1269 Botosani Manor	Shanwei	China	109.71
3	240	Marlene	Welch	1148 Saarbrcken Parkway	Iwaki	Japan	106.77
4	486	Glen	Talbert	1789 Saint-Denis Parkway	Acua	Mexico	100.77
5	537	Clinton	Buford	43 Vilnius Manor	Aurora	United States	98.76