SQL Test

For this data task, you are expected to write a piece of SQL code. The code must be written on Trino SQL language, docs here. Feel free to add any comments to your code to explain the logic behind it.

For all exercises it isn't mandatory to use all the tables provided and it's allowed the use of CTEs.

Exercise 1

You have the following table available:

Orders					
order_id	**order_country_code**	**order_city_code**	**order_created_at**	**total_cost_eur**	**customer_id**
873321	KE	NBO	2023-09-24 16:07:16	22.5	473321
873322	MA	CAS	2023-10-15 16:11:16	10	573777
...	...	...	...	...	...

We need you to build a query to get **the daily percentage change in orders** of **Jan 2023** at a **country level** for **all countries**.

The expected output should look like this:

day	country	orders	var
2023-01-01	KE	1000	0.00
2023-01-02	KE	1245	0.25
2023-01-03	KE	1150	-0.08
2023-01-04	KE	1243	0.08
2023-01-05	KE	1100	-0.12
...	...		
...	...		
2023-01-01	MA	1100	0.00
2023-01-02	MA	1152	0.05
2023-01-03	MA	1526	0.32

*Note that "day" field format is "YYYY-MM-DD"

Exercise 2

You have the following tables available:

Orders					
order_id	**order_country_code**	**order_city_code**	**order_created_at**	**total_cost_eur**	**customer_id**
873321	KE	NBO	2023-09-24 16:07:16	22.5	473321
873322	MA	CAS	2023-10-15 16:11:16	10	573777
...	...	...	...	...	...

Customers		
customer_id	**customer_is_prime**	**account_created_at**
123452	TRUE	2022-10-24 12:07:16
874639	FALSE	2023-05-01 13:11:16
...	...	...

We need you to **build a report of the previous month** (last closed month), that includes the following **information at the country and city level** for all countries:

- **Total orders**: Number of orders created last month.
- **MAUs**: Monthly active users, users that created at least one order during last month.
- **Recurrent customers (RC)**: Number of customers who made an order before last month and also ordered during last month.
- **Recurrent customer orders**: Number of orders created by recurrent customers during last month.
- **Recurrent customers average spend per order:** Average spent per order by recurrent customers during last month.
- **AMORU**: Average monthly orders of recurrent customers (RC orders / RC) during last month.

The expected output should look like this:

Orders							
order_country_code	**order_city_code**	**total_orders**	**maus**	**rc**	**rc_orders**	**rc_spend**	**amoru**
KE	NBO	183400	52400	31440	82530	23.0	3.5
KE	MBS	157500	45000	27000	70875	15.2	5.0
MA	CAS	96128	27465	16479	43257	20.5	2.7
...	...	...	...	...	...	...	...

Exercise 3

You have the following table available:

Orders					
order_id	**order_country_code**	**order_city_code**	**order_created_at**	**total_cost_eur**	**customer_id**
873321	KE	NBO	2023-09-24 16:07:16	22.5	473321
873322	MA	CAS	2023-10-15 16:11:16	10	573777
...	...	...	...	...	...

We need you to build a query that calculates **the new customer retention M0 to M3 of the last 3 closed months**. New customer retention refers to the number of **new customers who continue to place orders after their first purchase**.

The expected output should look like this:

Month	M0	M1	M2	M3
2023-01-01	5000	3000	1800	0
2023-02-01	6400	3840	0	0
2023-03-01	5400	0	0	0

Being:

- **M0** → The number of new customers acquired during a specific month (M0).
- **MN** → The number of those M0 new customers who placed an order during the subsequent months (M1, M2, and M3).

Important: The report is going to be recurrent so it needs to be executed every month without doing any changes, so please do not assume that you are at a specific month and avoid hardcoding the month dates.