Meta/Facebook Interview Question

Which countries have risen in the rankings based on the number of comments between Dec 2021 vs Jan 2022? Hint: Avoid gaps between ranks when ranking countries

Post_info table

user_id	date	post_id	num_comments
usr1	11/20/2021	p01	10
usr4	11/25/2021	p02	83
usr4	12/1/2021	p03	96
usr5	12/3/2021	p04	40
usr8	12/10/2021	p05	23
usr7	12/19/2021	p06	50
usr6	12/23/2021	p07	35
usr2	12/29/2021	p08	12
usr3	1/5/2022	p09	23
usr8	1/8/2022	p10	18
usr1	1/12/2022	p11	50
usr2	1/16/2022	p12	46
usr3	1/21/2022	p13	6
usr6	1/22/2022	p14	80
usr5	1/25/2022	p15	20
usr6	1/26/2022	p16	23
usr8	1/8/2022	p17	55
usr1	2/5/2022	p18	10
usr5	2/8/2022	p19	12

User info table

user_id	Country
usr1	India
usr2	India
usr3	Australia
usr4	Australia
usr5	USA
usr6	USA
usr7	UK
usr8	UK

Join the two tables

```
select *
from fb.post_info p join fb.user_info u
        on p.user_id = u.user_id
```

Filter our table for Dec 2021 and Jan 2022

```
with dec_info as (
      select u.country,
            Extract(month from p.date) as dec_month,
      from fb.post_info p join fb.user_info u
            on p.user_id = u.user_id
      where Extract(month from p.date) = 12 and extract(year from date) = 2021
),

jan_info as (
      select u.country,
            Extract(month from p.date) as jan_month,
      from fb.post_info p join fb.user_info u
            on p.user_id = u.user_id
      where Extract(month from p.date) = 1 and extract(year from date) = 2022
)

Select * from jan_info
```

Exclude rows where the country is empty(in case if we have NULL rows in country)

```
with dec_info as (
      select u.country,
            Extract(month from p.date) as dec_month,
      from fb.post_info p join fb.user_info u
            on p.user_id = u.user_id
      where Extract(month from p.date) = 12 and extract(year from date) = 2021 and country is not NULL
),

jan_info as (
      select u.country,
            Extract(month from p.date) as jan_month,
      from fb.post_info p join fb.user_info u
            on p.user_id = u.user_id
      where Extract(month from p.date) = 1 and extract(year from date) = 2022 and country is not NULL
)

Select * from jan_info
```

Step 4: Sum the number of comments per country

```
with dec_info as (
      select u.country,
            Extract(month from p.date) as dec_month,
            sum(p.num_comments) as total_comments,
      from fb.post_info p join fb.user_info u
            on p.user_id = u.user_id
      where Extract(month from p.date) = 12 and extract(year from date) = 2021 and country is not NULL
      group by country, Extract(month from p.date)
),

jan_info as (
      select u.country,
            Extract(month from p.date) as jan_month,
            sum(p.num_comments) as total_comments,
      from fb.post_info p join fb.user_info u
            on p.user_id = u.user_id
      where Extract(month from p.date) = 1 and extract(year from date) = 2022 and country is not NULL
      group by country, Extract(month from p.date)
)


Select * from jan_info
```

Step 5: Rank 2021 comments counts and 2022 comment counts

```
with dec_info as (
      select u.country,
            Extract(month from p.date) as dec_month,
            sum(p.num_comments) as total_comments,
            dense_rank() over(order by sum(p.num_comments) desc) as dec_rank
      from fb.post_info p join fb.user_info u
            on p.user_id = u.user_id
      where Extract(month from p.date) = 12 and extract(year from date) = 2021 and country is not NULL
      group by country, Extract(month from p.date)
),

jan_info as (
      select u.country,
            Extract(month from p.date) as jan_month,
            sum(p.num_comments) as total_comments,
            dense_rank() over(order by sum(p.num_comments) desc) as jan_rank
      from fb.post_info p join fb.user_info u
            on p.user_id = u.user_id
      where Extract(month from p.date) = 1 and extract(year from date) = 2022 and country is not NULL
      group by country, Extract(month from p.date)
)


Select * from jan_info
```

Join the two CTE tables

```
with dec_info as (
      select u.country,
            Extract(month from p.date) as dec_month,
            sum(p.num_comments) as total_comments,
            dense_rank() over(order by sum(p.num_comments) desc) as dec_rank
      from fb.post_info p join fb.user_info u
            on p.user_id = u.user_id
      where Extract(month from p.date) = 12 and extract(year from date) = 2021 and country is not NULL
      group by country, Extract(month from p.date)
),

jan_info as (
      select u.country,
            Extract(month from p.date) as jan_month,
            sum(p.num_comments) as total_comments,
            dense_rank() over(order by sum(p.num_comments) desc) as jan_rank
      from fb.post_info p join fb.user_info u
            on p.user_id = u.user_id
      where Extract(month from p.date) = 1 and extract(year from date) = 2022 and country is not NULL
      group by country, Extract(month from p.date)
),

Dec_and_jan as (
      select j.country,
            d.total_comments as dec_cmt,
            j.total_comments as jan_cmt,
            d.dec_rank,
            j.jan_rank
      from dec_info d left join jan_info j
            on d.country =j.country
)

Select * from Dec_and_jan
```

Step 6: Apply final filter to fetch only countries with ranking decline(Jan rank >dec rank)

```
with dec_info as (
      select u.country,
            Extract(month from p.date) as dec_month,
            sum(p.num_comments) as total_comments,
            dense_rank() over(order by sum(p.num_comments) desc) as dec_rank
      from fb.post_info p join fb.user_info u
            on p.user_id = u.user_id
      where Extract(month from p.date) = 12 and extract(year from date) = 2021 and country is not NULL
      group by country, Extract(month from p.date)
),

jan_info as (
      select u.country,
            Extract(month from p.date) as jan_month,
            sum(p.num_comments) as total_comments,
            dense_rank() over(order by sum(p.num_comments) desc) as jan_rank
      from fb.post_info p join fb.user_info u
            on p.user_id = u.user_id
      where Extract(month from p.date) = 1 and extract(year from date) = 2022 and country is not NULL
      group by country, Extract(month from p.date)
),

Dec_and_jan as (
      select j.country,
            d.total_comments as dec_cmt,
            j.total_comments as jan_cmt,
            d.dec_rank,
            j.jan_rank
      from dec_info d left join jan_info j
            on d.country =j.country
)

Select * from Dec_and_jan where jan_rank <dec_rank
```