MYSQL Project

use painting;

select * from artist; -- 421

select * from canvas_size; -- 200

select * from image_link; -- 14775

select * from museum; -- 57

select * from museum_hours; -- 351

select * from product_size; -- 110135

select * from subject; -- 6771

select * from work; -- 14776

1) Fetch all the paintings which are not displayed on any museums?

select *
from work
where museum_id is null;

work_id	name	artist_id	style	museum_id
125752	Arabian Horses at Pasture	757	Baroque	NULL
125818	Count Halm on His Basedow Estate	757	Baroque	NULL
125763	Napoleon Before the Burning City of Smolensk	757	Baroque	NULL
125774	Peasants Resting in the Field	757	Baroque	NULL
125785	Portrait Oberleutnant Theodor Von Klein	757	Baroque	NULL
125796	The Rescue of Count Munnich	757	Baroque	NULL
125807	The Stable Yard	757	Baroque	NULL

2) Are there museums without any paintings?

select
        museum_id,
    m.name
from museum as m
where not exists (select museum_id
                    from work as w
        where w.museum_id = m.museum_id);

museum_id	name

3) How many paintings have an asking price of more than their regular price?

select *

from product_size

where sale_price > regular_price;

work_id	size_id		sale_price	regular_price

4) Identify the paintings whose asking price is less than 50% of its regular price

```
select work_id,size_id,sale_price,regular_price
from (
        select
                *,
                sale_price / regular_price * 100 as sales_percentage
        from product_size) as t
where sales_percentage < 50
order by regular_price desc;
```

work_id	size_id		sale_price	regular_price
190824	6040		635	1275
961	4060		615	1255
20084	6040		585	1245
4455	4848		505	1015
4703	4848		505	1015
7339	4030		385	775
8225	3040		385	775

5) Which canva size costs the most?

```
select
        c.*,sale_price,regular_price
from (
        select
                *,
                rank() over(order by sale_price desc) as rnk
        from product_size) as t
join canvas_size as c
        on c.size_id = t.size_id
where rnk = 1;
```

size_id	width	height	label	sale_price	regular_price
4896	48	96	48" x 96"(122 cm x 244 cm)	1115	2045

6) Delete duplicate records from work, product_size, subject and image_link tables

```sql
-- work

drop procedure if exists diplicate_fetch;

delimiter $$
create procedure diplicate_fetch()
begin

	drop table if exists work_info;
	create temporary table Work_info
		select
			*
		from (
			select
				*,
				row_number() over(partition by work_id, artist_id) as row_num
			from work) as t
		where row_num = 1;

	truncate table work;

	insert into work
	select work_id, name, artist_id, style, museum_id from Work_info;

	select * from work;

end $$
delimiter ;
call diplicate_fetch();

-- product_size

drop procedure if exists diplicate_fetch;

delimiter $$
create procedure diplicate_fetch()
begin

	drop table if exists product_size_info;
	create temporary table product_size_info
		select
			*
		from (
			select
				*,
				row_number() over(partition by work_id, size_id) as row_num
			from product_size) as t
		where row_num = 1;

	truncate table product_size;
	insert into product_size
	select work_id, size_id, sale_price, regular_price from product_size_info;
```

```
        select * from product_size;
end $$
delimiter ;
call diplicate_fetch();

-- subject

drop procedure if exists diplicate_fetch;

delimiter $$
create procedure diplicate_fetch()
begin

        drop table if exists subject_info;
   create temporary table subject_info
        select
                *
        from (
                select
                        *,
                        row_number() over(partition by work_id) as row_num
                from subject) as t
        where row_num = 1;

   truncate table subject;

   insert into subject
   select work_id, subject from subject_info;

   select * from subject; -- 6771

end $$
delimiter ;

call diplicate_fetch();

-- image_link

drop procedure if exists diplicate_fetch;

delimiter $$
create procedure diplicate_fetch()
begin

        drop table if exists image_link_info;
   create temporary table image_link_info
        select
                *
        from (
                select
                        *,
                        row_number() over(partition by work_id) as row_num
                from image_link) as t
        where row_num = 1;
```

```
    truncate table image_link;

    insert into image_link
    select work_id, url, thumbnail_small_url, thumbnail_large_url from image_link_info;

    select * from image_link;

end $$

delimiter ;

call diplicate_fetch();
```

7) Identify the museums with invalid city information in the given dataset

```
select *
from museum
where city regexp "[0-9]";
```

museum_id	name	address	city	state	postal	country	phone
34	The State Hermitage Museum	Palace Square	2	Sankt-Peterburg	190000	Russia	7 812 710-90-79
36	Museum Folkwang	Museumsplatz 1	45128	Essen	NULL	Germany	49 201 8845000
37	Museum of Grenoble	5 Pl. de Lavalette	38000	Grenoble	NULL	France	33 4 76 63 44 44
38	Musée des Beaux-Arts de Quimper	40 Pl. Saint-Corentin	29000	Quimper	NULL	France	33 2 98 95 45 20
40	Musée du Louvre	Rue de Rivoli	75001	Paris	NULL	France	33 1 40 20 50 50
74	Kröller-Müller Museum	Houtkampweg 6	6731 AW Otterlo	NULL	NULL	Netherlands	+31 318 591 241

8) Museum_Hours table has 1 invalid entry. Identify it and remove it.

```
update Museum_Hours
set day = 'Thursday'
where day = "Thusday";

select distinct day
from Museum_Hours;
```

9) Fetch the top 10 most famous painting subject

```
select
        subject,
    count(*) as no_of_painting,
    rank() over(order by count(*) desc) as rnk
from work
join subject
        using(work_id)
group by subject
limit 10;
```

subject	no_of_painting	rnk
Portraits	1070	1
Abstract/Modern Art	575	2
Nude	525	3
Landscape Art	495	4
Rivers/Lakes	480	5
Flowers	457	6
Still-Life	395	7
Seascapes	326	8
Marine Art/Maritime	268	9
Horses	265	10

10) Identify the museums which are open on both Sunday and Monday. Display museum name, city.

```
with
        Sun as (
                select *
                from museum_hours
                where day = 'Sunday'
        ),
   Mon as (
                select *
                from museum_hours
                where day = 'Monday'
        ),
        cte as (
     select
                        museum_id
                from sun
                join mon
                        using(museum_id)
        )
select
        name as museum_name,
   city
from cte
join museum
        using(museum_id);
```

museum_name	city
The Museum of Modern Art	New York
Pushkin State Museum of Fine Arts	Moscow
National Gallery of Victoria	Melbourne
The Metropolitan Museum of Art	New York
Museum of Grenoble	38000
Nelson-Atkins Museum of Art	Kansas City
Musée du Louvre	75001
National Maritime Museum	London
Museum of Fine Arts Boston	Boston
Rijksmuseum	Amsterdam
Israel Museum	Jerusalem
National Gallery of Art	Washington

11) How many museums are open every single day?

```
select
        name as museum_name,
   city
from (
        select museum_id, count(*) as no_of_day
        from museum_hours
        group by museum_id
        having count(*) = 7) as t
join museum as m
        using(museum_id);
```

museum_name	city
The Museum of Modern Art	New York
Pushkin State Museum of Fine Arts	Moscow
National Gallery of Victoria	Melbourne
The Metropolitan Museum of Art	New York
National Maritime Museum	London
Rijksmuseum	Amsterdam
Israel Museum	Jerusalem
National Gallery	London
Mauritshuis Museum	Den Haag
The Prado Museum	Madrid
Van Gogh Museum	Amsterdam
Solomon R. Guggenheim Museum	New York
The Tate Gallery	London
Smithsonian American Art Museum	Washington
Dallas Museum of Art	Dallas
Army Museum	Paris
National Gallery Prague	Nové Měst
Courtauld Gallery	Stran

12) Which are the top 5 most popular museum? (Popularity is defined based on most no of paintings in a museum)

```
with
    museum_painting as (
        select
            museum_id,
            count(*) as no_of_painting,
            rank() over(order by count(*) desc) as rnk
        from work
        where museum_id is not null
        group by museum_id
    )
select
    museum_id,
  name as museum_name,
  country,
  no_of_painting
from museum_painting
join museum
    using(museum_id)
order by no_of_painting desc
limit 5;
```

museum_id	museum_name	country	no_of_painting
35	The Metropolitan Museum of Art	USA	939
43	Rijksmuseum	Netherlands	452
47	National Gallery	UK	423
46	National Gallery of Art	USA	375
51	The Barnes Foundation	USA	350

13) Who are the top 5 most popular artist? (Popularity is defined based on most no of paintings done by an artist)

```
with
        artist_Painted as(
                select
                        artist_id,
                        count(*) as no_of_painting,
                        rank() over(order by count(*) desc) as rnk
                from work
                group by artist_id
        )
select
        artist_id,
   full_name,
   no_of_painting
from artist_Painted
join artist
        using(artist_id)
order by no_of_painting desc
limit 5;
```

artist_id	full_name	no_of_painting
500	Pierre-Auguste Renoir	469
550	Claude Monet	378
677	Vincent Van Gogh	308
649	Maurice Utrillo	253
559	Albert Marquet	233

14) Display the 3 least popular canva sizes

```
select
        size_id,
        label,
   count(*) as no_of_painting,
   dense_rank() over(order by count(*)) as rnk
from work
join product_size
        using(work_id)
join canvas_size
        using(size_id)
group by size_id, label
limit 3;
```

size_id	label	no_of_painting
3730	37" x 30"(94 cm x 76 cm)	1
3218	32" x 18"(81 cm x 46 cm)	1
4635	46" x 35"(117 cm x 89 cm)	1

15) Which museum is open for the longest during a day. Display museum name, city and hours open and which day?

```
select
        museum_id,
        name as museum_name,
   city,
   open,
   close,
   duration
from (
        select
                museum_id,
                day,
                open,
                close,
                date_format(cast(open as time),"%r") - date_format(cast(close as time),"%r") as duration,
                rank() over(order by (date_format(cast(open as time),"%r") - date_format(cast(close as time),"%r"))
desc) as rnk
        from museum_hours
) as t
join museum
        using(museum_id)
where rnk = 1;
```

museum_id	museum_name	city	open	close	duration
44	Israel Museum	Jerusalem	10:00:AM	02:00:PM	8

-- 16) Which museum has the most no of most popular painting style?

```
with cte as(
        select
                style,
                count(*) as no_of_painting,
                rank() over(order by count(*) desc) as rnk
        from work
        group by style
        limit 1
   ),
   cte1 as (
        select
                museum_id
        from work
        where style = (select style from cte) and museum_id is not null
        group by museum_id
   )
select
        m.museum_id, name as museum_name, city, country
from museum as m
where exists (select museum_id from cte1 as c where c.museum_id = m.museum_id);
```

museum_id	museum_name	city	country
43	Rijksmuseum	Amsterdam	Netherlands
44	Israel Museum	Jerusalem	Israel
46	National Gallery of Art	Washington	USA
47	National Gallery	London	UK
49	Musée d'Orsay	Paris	France
50	The Prado Museum	Madrid	Spain
51	The Barnes Foundation	Philadelphia	USA

17) Identify the artists whose paintings are displayed in multiple countries

```
select * from artist;
select * from work;
select * from museum;

SELECT
    a.artist_id,
    a.full_name as artist_name
FROM
    artist a
JOIN
    work w ON a.artist_id = w.artist_id
JOIN
    museum m ON w.museum_id = m.museum_id
GROUP BY
    a.artist_id, a.full_name
HAVING
    COUNT(DISTINCT m.country) > 1;
```

artist_id	artist_name
500	Pierre-Auguste Renoir
501	Alexandre Cabanel
503	Maximilien Luce
504	August Macke
505	Thomas Gainsborough
510	Hans Memling

18) Display the country and the city with most no of museums. Output 2 separate columns to mention the city and country. If there are multiple value, separate them with comma.

```
with cte_country as(
        select *
        from (
                select
                        country,
                        count(*) as no_of_museum,
                        rank() over(order by count(*) desc) as rnk
                from museum
                group by country) as t
        where rnk = 1),
    cte_city as(
    select *
        from (
                select
                        city,
                        count(*) as no_of_museum,
                        rank() over(order by count(*) desc) as rnk
```

```
                from museum
                group by city) as t
        where rnk = 1)
select
        group_concat(distinct country separator ' , ') as country,
    group_concat(city order by city separator ' , ') as city
from cte_country
cross join cte_city;
```

country	city
USA	London , New York , Paris , Washington

19) Identify the artist and the museum where the most expensive and least expensive painting is placed. Display the artist name, sale_price, painting name, museum name, museum city and canvas label

```
select * from artist;

select * from product_size;

select * from museum;

select * from canvas_size;

select * from work;


with cte_most_exp as(
        select
                *,
                rank() over(order by sale_price desc) as most_expensive
        from product_size
        limit 1
        ),
    cte_least_exp as(
        select
                *,
                rank() over(order by sale_price) as least_expensive
        from product_size
        limit 1
    ),
    cte as(
        select
                work_id, size_id, sale_price
        from cte_most_exp
        union
        select
                work_id, size_id, sale_price
        from cte_least_exp
        )
select
        w.name as painting_name,
    c.sale_price,
    a.full_name as artist_name,
    cs.label as canvas_label,
    m.name as museum_name,
    m.city
from cte as c
join work as w
```

```
        on w.work_id = c.work_id
join artist as a
        on a.artist_id = w.artist_id
join museum as m
        on m.museum_id = w.museum_id
join canvas_size as cs
        on cs.size_id = c.size_id;
```

painting_name	sale_price	artist_name	canvas_label	museum_name	city
Fortuna	1115	Peter Paul Rubens	48" x 96"(122 cm x 244 cm)	The Prado Museum	Madrid

20) Which country has the 5th highest no of paintings?

```
select
        country,
   counts as no_of_paintings
from (
        select
                country,
                count(*) as counts,
                rank() over(order by count(*) desc) as rnk
        from museum
        join work
                using(museum_id)
        group by country) as t
where rnk = 5;
```

country	no_of_paintings
Spain	196

21) Which are the 3 most popular and 3 least popular painting styles?

```
with
        cte_most as(
                select
                        style,
                        count(*) as no_of_painting,
                        rank() over(order by count(*) desc) as rnk
                from work
                group by style
                limit 3
                ),
        cte_least as(
                select
                        style,
                        count(*) as no_of_painting,
                        rank() over(order by count(*)) as rnk
                from work
                where style is not null
                group by style
                limit 3
        )
select
        m.style as most_popular_style,
   l.style as least_popular_style
```

from cte_most as m
join cte_least as l
        on m.rnk = l.rnk;

most_popular_style	least_popular_style
Impressionism	Japanese Art
Post-Impressionism	Art Nouveau
Realism	Avant-Garde

22) Which artist has the most no of Portraits paintings outside USA?. Display artist name, no of paintings and the artist nationality.

with cte as (
        select
                full_name as artist_name,
                nationality as artist_nationality,
    count(*) as no_of_painting,
    rank() over(order by count(*) desc) as rnk
        from artist as a
        join work as w
                on w.artist_id = a.artist_id
        join museum as m
                on m.museum_id = w.museum_id
        join subject as s
                on s.work_id = w.work_id
        where m.country <> "USA" and s.subject='Portraits'
        group by full_name, nationality
  order by no_of_painting desc
)
select
        artist_name,
  artist_nationality,
  no_of_painting
from cte
where rnk = 1;

artist_name	artist_nationality	no_of_painting
Jan Willem Pieneman	Dutch	14
Vincent Van Gogh	Dutch	14