

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

```
select * from work where museum_id is null;
```

2) Are there museums without any paintings?

```
select * from museum m
where not exists (select 1 from work w
                  where w.museum_id=m.museum_id)
```

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

```
select * from product_size
where sale_price > regular_price;
```

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

```
select *
from product_size
where sale_price < (regular_price*0.5);
```

5) Which canvas size costs the most?

```
select cs.label as canva, ps.sale_price
from (select *
```

```
, rank() over(order by sale_price desc) as rnk  
from product_size) ps  
join canvas_size cs on cs.size_id::text=ps.size_id  
where ps.rnk=1;
```

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

```
delete from work  
where ctid not in (select min(ctid)  
                   from work  
                   group by work_id );  
  
delete from product_size  
where ctid not in (select min(ctid)  
                   from product_size  
                   group by work_id, size_id );  
  
delete from subject  
where ctid not in (select min(ctid)  
                   from subject  
                   group by work_id, subject );  
  
delete from image_link  
where ctid not in (select min(ctid)  
                   from image_link  
                   group by work_id );
```

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

```
select * from museum
where city ~ '^[0-9]'
```

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

```
delete from museum_hours
where ctid not in (select min(ctid)
                  from museum_hours
                  group by museum_id, day );
```

9) Fetch the top 10 most famous painting subject

```
select *
from (
    select s.subject, count(1) as no_of_paintings
    , rank() over (order by count(1) desc) as ranking
    from work w
    join subject s on s.work_id=w.work_id
    group by s.subject ) x
where ranking <= 10;
```

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

```
select distinct m.name as museum_name, m.city,  
m.state,m.country  
  
from museum_hours mh  
  
join museum m on m.museum_id=mh.museum_id  
  
where day='Sunday'  
  
and exists (select 1 from museum_hours mh2  
            where mh2.museum_id=mh.museum_id  
            and mh2.day='Monday');
```

11) How many museums are open every single day?

```
select count(1)  
  
from (select museum_id, count(1)  
      from museum_hours  
      group by museum_id  
      having count(1) = 7) x;
```

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

```
select m.name as museum, m.city,m.country,x.no_of_painintgs  
  
from (      select m.museum_id, count(1) as no_of_painintgs  
            , rank() over(order by count(1) desc) as rnk  
            from work w  
            join museum m on m.museum_id=w.museum_id  
            group by m.museum_id) x  
  
join museum m on m.museum_id=x.museum_id  
  
where x.rnk<=5;
```

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

```
select a.full_name as artist,
a.nationality,x.no_of_painintgs
from (
    select a.artist_id, count(1) as no_of_painintgs
    , rank() over(order by count(1) desc) as rnk
    from work w
    join artist a on a.artist_id=w.artist_id
    group by a.artist_id) x
join artist a on a.artist_id=x.artist_id
where x.rnk<=5;
```

14) Display the 3 least popular canva sizes

```
select label,ranking,no_of_paintings
from (
    select cs.size_id,cs.label,count(1) as no_of_paintings
    , dense_rank() over(order by count(1) ) as ranking
    from work w
    join product_size ps on ps.work_id=w.work_id
    join canvas_size cs on cs.size_id::text = ps.size_id
    group by cs.size_id,cs.label) x
where x.ranking<=3;
```

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

```
select museum_name,state as city,day, open, close, duration
from (    select m.name as museum_name, m.state, day, open,
close
        , to_timestamp(open,'HH:MI AM')
        , to_timestamp(close,'HH:MI PM')
        , to_timestamp(close,'HH:MI PM') -
to_timestamp(open,'HH:MI AM') as duration
        , rank() over (order by
(to_timestamp(close,'HH:MI PM') - to_timestamp(open,'HH:MI AM'))
desc) as rnk
        from museum_hours mh
        join museum m on m.museum_id=mh.museum_id) x
where x.rnk=1;
```

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

```
with pop_style as
    (select style
    ,rank() over(order by count(1) desc) as rnk
    from work
    group by style),
cte as
    (select w.museum_id,m.name as
museum_name,ps.style, count(1) as no_of_paintings
    ,rank() over(order by count(1) desc) as rnk
    from work w
    join museum m on m.museum_id=w.museum_id
    join pop_style ps on ps.style = w.style
```

```
        where w.museum_id is not null  
        and ps.rnk=1  
        group by w.museum_id, m.name,ps.style)  
select museum_name,style,no_of_paintings  
from cte  
where rnk=1;
```

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

```
with cte as  
    (select distinct a.full_name as artist  
    --, w.name as painting, m.name as museum  
    , m.country  
    from work w  
    join artist a on a.artist_id=w.artist_id  
    join museum m on m.museum_id=w.museum_id)  
select artist,count(1) as no_of_countries  
from cte  
group by artist  
having count(1)>1  
order by 2 desc;
```

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

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

select string_agg(distinct country.country, ', '),
string_agg(city.city, ', ')
from cte_country country
cross join cte_city city
where country.rnk = 1
and city.rnk = 1;
```

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

```
with cte as
    (select *
     , rank() over(order by sale_price desc) as rnk
     , rank() over(order by sale_price ) as rnk_asc
     from product_size )
```



```
select w.name as painting
, cte.sale_price
, a.full_name as artist
, m.name as museum, m.city
, cz.label as canvas
from cte
join work w on w.work_id=cte.work_id
join museum m on m.museum_id=w.museum_id
join artist a on a.artist_id=w.artist_id
join canvas_size cz on cz.size_id = cte.size_id::NUMERIC
where rnk=1 or rnk_asc=1;
```

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

```
with cte as
(
  select m.country, count(1) as no_of_Paintings
  , rank() over(order by count(1) desc) as rnk
  from work w
  join museum m on m.museum_id=w.museum_id
  group by m.country)
select country, no_of_Paintings
from cte
where rnk=5;
```

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

```
with cte as
    (select style, count(1) as cnt
     , rank() over(order by count(1) desc) rnk
     , count(1) over() as no_of_records
    from work
    where style is not null
    group by style)
select style
    , case when rnk <=3 then 'Most Popular' else 'Least
Popular' end as remarks
from cte
where rnk <=3
or rnk > no_of_records - 3;
```

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

```
select full_name as artist_name, nationality,
no_of_paintings
from (
    select a.full_name, a.nationality
    ,count(1) as no_of_paintings
    ,rank() over(order by count(1) desc) as rnk
    from work w
    join artist a on a.artist_id=w.artist_id
```

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```
join subject s on s.work_id=w.work_id
join museum m on m.museum_id=w.museum_id
where s.subject='Portraits'
and m.country != 'USA'
group by a.full_name, a.nationality) x
where rnk=1;
```

Thank You