

# Coding Challenge

## SQL Virtual Art Gallery

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Tables:

Artists table

```
mysql> select * from artists;
```

ArtistID	Name	Nationality	Biography
1	Pablo Picasso	Spanish	Renowned Spanish painter and sculptor.
2	Vincent van Gogh	Dutch	Dutch post-impressionist painter.
3	Leonardo da Vinci	Italian	Italian polymath of the Renaissance.
4	Claude Monet	French	French impressionist painter.
5	Michelangelo Buonarroti	Italian	Italian sculptor, painter, and architect.
6	Georgia O'Keeffe	American	American modernist artist.

6 rows in set (0.00 sec)

Categories table

```
mysql> select * from categories;
```

CategoryID	Name
1	Painting
2	Sculpture
3	Photography
4	Drawing
5	Installation
6	Printmaking

6 rows in set (0.00 sec)

Exhibition artworks table :

```
mysql> select * from exhibitionartworks;
```

ExhibitionID	ArtworkID
1	1
1	2
2	2
4	2
1	3
4	3
3	4
3	6
4	6

9 rows in set (0.00 sec)

Artworks table:

```
mysql> select * from artworks;
```

ArtworkID	Title	ArtistID	CategoryID	Year	Description	ImageURL
1	Starry Night	2	1	1889	A famous painting by Vincent van Gogh.	starry_night.jp
2	Mona Lisa	3	1	1503	The iconic portrait by Leonardo da Vinci.	mona_lisa.jpg
3	Guernica	1	1	1937	Pablo Picasso's powerful anti-war mural.	guernica.jpg
4	Water Lilies	4	1	1916	A series of paintings by Claude Monet.	water_lilies.jp
5	David	5	2	1504	A masterpiece of Renaissance sculpture by Michelangelo.	david.jpg
6	Black Iris	6	1	1926	A painting by Georgia O'Keeffe.	black_iris.jpg

6 rows in set (0.00 sec)

Exhibition table:

```
mysql> select * from exhibitions;
```

ExhibitionID	Title	StartDate	EndDate	Description
1	Modern Art Masterpieces	2023-01-01	2023-03-01	A collection of modern art masterpieces.
2	Renaissance Art	2023-04-01	2023-06-01	A showcase of Renaissance art treasures.
3	Impressionist Art	2023-07-01	2023-09-01	A collection of impressionist artworks.
4	Women in Art	2023-10-01	2023-12-01	Celebrating women artists.

4 rows in set (0.00 sec)

### Solve the below queries:

1. Retrieve the names of all artists along with the number of artworks they have in the gallery, and list them in descending order of the number of artworks.

```
mysql> select a.name,count(ar.artistid) as artcount from artist
s a join artworks as ar on a.artistid=ar.artistid group by a.art
istid order by artcount desc;
+-----+-----+
| name | artcount |
+-----+-----+
| Pablo Picasso | 1 |
| Vincent van Gogh | 1 |
| Leonardo da Vinci | 1 |
| Claude Monet | 1 |
| Michelangelo Buonarroti | 1 |
| Georgia O'Keeffe | 1 |
+-----+-----+
6 rows in set (0.01 sec)
```

2. List the titles of artworks created by artists from 'Spanish' and 'Dutch' nationalities, and order them by the year in ascending order.

```
mysql> select ar.title,a.name,a.nationality from artworks as ar
join artists as a on ar.artistid=a.artistid where a.nationality
in('Spanish','Dutch') order by ar.year asc;
+-----+-----+-----+
| title | name | nationality |
+-----+-----+-----+
| Starry Night | Vincent van Gogh | Dutch |
| Guernica | Pablo Picasso | Spanish |
+-----+-----+-----+
2 rows in set (0.00 sec)
```

3. Find the names of all artists who have artworks in the 'Painting' category, and the number of artworks they have in this category.

```
mysql> select a.name,count(ar.artworkid) as artcount from artist
s a join artworks as ar on a.artistid=ar.artistid join catego
ries as c on ar.categoryid=c.categoryid where c.name='Painting'
group by a.artistid;
+-----+-----+
| name | artcount |
+-----+-----+
| Vincent van Gogh | 1 |
| Leonardo da Vinci | 1 |
| Pablo Picasso | 1 |
| Claude Monet | 1 |
| Georgia O'Keeffe | 1 |
+-----+-----+
5 rows in set (0.00 sec)
```

4. List the names of artworks from the 'Modern Art Masterpieces' exhibition, along with their artists and categories.

```
mysql> select a.title as artwork_title, ar.name as artist_name,
c.name as category_name from artworks as a join artists as ar on
a.artistid = ar.artistid join categories as c on a.categoryid =
c.categoryid join exhibitionartworks as ea on a.artworkid = ea.
artworkid join exhibitions as e on ea.exhibitionid = e.exhibitio
nid where e.title = 'modern art masterpieces';
+-----+-----+-----+
| artwork_title | artist_name | category_name |
+-----+-----+-----+
| Starry Night | Vincent van Gogh | Painting |
| Mona Lisa | Leonardo da Vinci | Painting |
| Guernica | Pablo Picasso | Painting |
+-----+-----+-----+
3 rows in set (0.00 sec)
```

5. Find the artists who have more than two artworks in the gallery.

```
mysql> select a.name, count(ar.artworkid) as artworkcount from a
rtists a join artworks as ar on a.artistid = ar.artistid group b
y a.artistid having count(ar.artworkid) > 2;
Empty set (0.00 sec)
```

6. Find the titles of artworks that were exhibited in both 'Modern Art Masterpieces' and 'Renaissance Art' exhibitions.

```
mysql> select ar.title from artworks as ar join exhibitionartwor
ks as ea on ar.artworkid=ea.artworkid join exhibitions as e on e
a.exhibitionid=e.exhibitionid where e.title in('Modern Art Maste
rpieces','Renaissance Art') group by ar.title having count(disti
nct e.title)=2;
+-----+
| title |
+-----+
| Mona Lisa |
+-----+
1 row in set (0.00 sec)
```

7. Find the total number of artworks in each category .

```
mysql> select c.name,count(ar.artworkid) from categories as c jo
in artworks as ar on c.categoryid=ar.categoryid group by c.categ
oryid;
+-----+-----+
| name | count(ar.artworkid) |
+-----+-----+
| Painting | 5 |
| Sculpture | 1 |
+-----+-----+
2 rows in set (0.00 sec)
```

8. List artists who have more than 3 artworks in the gallery.

```
mysql> select a.name,count(ar.artworkid) from artists as a join
artworks as ar on a.artistid=ar.artistid group by a.artistid hav
ing count(ar.artworkid)>3;
Empty set (0.00 sec)
```

9. Find the artworks created by artists from a specific nationality (e.g., Spanish).

```
mysql> select ar.title,a.name from artworks as ar join artists a
s a on ar.artistid=a.artistid where a.nationality='Spanish';
+-----+-----+
| title | name |
+-----+-----+
| Guernica | Pablo Picasso |
+-----+-----+
1 row in set (0.00 sec)
```

10. List exhibitions that feature artwork by both Vincent van Gogh and Leonardo da Vinci.

```
mysql> select e.title from exhibitions as e join exhibitionartworks as ea on e.exhibitionid = ea.exhibitionid join artworks as a on ea.artworkid = a.artworkid join artists as ar on a.artistid = ar.artistid where ar.name in ('vincent van gogh', 'leonardo da vinci') group by e.exhibitionid having count(distinct ar.name) = 2;
+-----+
| title |
+-----+
| Modern Art Masterpieces |
+-----+
1 row in set (0.00 sec)
```

11. Find all the artworks that have not been included in any exhibition.

```
mysql> select ar.title from artworks as ar join exhibitionartworks as ea on ar.artworkid=ea.artworkid where ea.artworkid is null;
Empty set (0.00 sec)
```

12. List artists who have created artworks in all available categories.

```
mysql> select a.name from artists as a join artworks as ar on a.artistid=ar.artistid group by a.artistid having count(distinct ar.categoryid)=(select count(*) from categories);
Empty set (0.01 sec)
```

13. List the total number of artworks in each category.

```
mysql> select c.name, count(ar.artworkid) from categories as c join artworks as ar on c.categoryid=ar.categoryid group by c.categoryid;
+-----+-----+
| name | count(ar.artworkid) |
+-----+-----+
| Painting | 5 |
| Sculpture | 1 |
+-----+-----+
2 rows in set (0.00 sec)
```

14. Find the artists who have more than 2 artworks in the gallery.

```
mysql> select a.name, count(ar.artworkid) from artists as a join artworks as ar on a.artistid=ar.artistid group by a.artistid having count(ar.artworkid)>2;
Empty set (0.00 sec)
```

15. List the categories with the average year of artworks they contain, only for categories with more than 1 artwork.

```
mysql> select c.name,avg(ar.year) from categories as c join artworks as ar on c.categoryid=ar.categoryid group by c.categoryid having count(ar.artworkid)>1;
+-----+-----+
| name   | avg(ar.year) |
+-----+-----+
| Painting | 1834.2000 |
+-----+-----+
1 row in set (0.01 sec)
```

16. Find the artworks that were exhibited in the 'Modern Art Masterpieces' exhibition.

```
mysql> select ar.title from artworks as ar join exhibitionartworks as ea on ar.artworkid=ea.artworkid join exhibitions as e on ea.exhibitionid=e.exhibitionid where e.title='Modern Art Masterpieces';
+-----+
| title   |
+-----+
| Starry Night |
| Mona Lisa   |
| Guernica    |
+-----+
3 rows in set (0.00 sec)
```

17. Find the categories where the average year of artworks is greater than the average year of all artworks.

```
mysql> select c.name,avg(ar.year) from categories as c join artworks as ar on c.categoryid=ar.categoryid group by c.categoryid having avg(ar.artworkid)<(select avg(year) from artworks);
+-----+-----+
| name   | avg(ar.year) |
+-----+-----+
| Painting | 1834.2000 |
| Sculpture | 1504.0000 |
+-----+-----+
2 rows in set (0.00 sec)
```

18. List the artworks that were not exhibited in any exhibition.

```
mysql> select ar.title from artworks as ar join exhibitionartworks as ea on ar.artworkid=ea.artworkid where ea.artworkid is null;
Empty set (0.00 sec)
```

19. Show artists who have artworks in the same category as "Mona Lisa."

```
mysql> select distinct a.name as artist from artists a join artworks aw on a.artistid = aw.artistid join categories c on aw.categoryid = c.categoryid where c.categoryid in (select ac.categoryid from artworks ac join categories cc on ac.categoryid = cc.categoryid where ac.title = 'mona lisa');
```

artist
Vincent van Gogh
Leonardo da Vinci
Pablo Picasso
Claude Monet
Georgia O'Keeffe

5 rows in set (0.00 sec)

20. List the names of artists and the number of artworks they have in the gallery.

```
mysql> select a.name, count(ar.artworkid) from artists a join artworks ar on a.artistid=ar.artistid group by a.artistid;
```

name	count(ar.artworkid)
Pablo Picasso	1
Vincent van Gogh	1
Leonardo da Vinci	1
Claude Monet	1
Michelangelo Buonarroti	1
Georgia O'Keeffe	1

6 rows in set (0.00 sec)