ASSIGNMENT-5

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.

SELECT A1.Name, COUNT(A2.ArtworkID) AS Artwork_Count FROM Artists A1 LEFT JOIN Artworks A2 ON A1.ArtistID = A2.ArtistID GROUP BY A1.ArtistID ORDER BY Artwork_Count DESC;

```
mysql> SELECT A1.Name, COUNT(A2.ArtworkID) AS Artwork_Count FROM
 Artists A1 LEFT JOIN Artworks A2 ON A1.ArtistID = A2.ArtistID G
ROUP BY A1.ArtistID ORDER BY Artwork_Count DESC;
+-------------------+---------------+
| Name              | Artwork_Count |
+-------------------+---------------+
| Pablo Picasso     |             1 |
| Vincent van Gogh  |             1 |
| Leonardo da Vinci |             1 |
+-------------------+---------------+
3 rows in set (0.00 sec)
```

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

SELECT A1.Title, A1.Year FROM Artworks A1 JOIN Artists A2 ON A1.ArtistID = A2.ArtistID WHERE A2.Nationality IN ('Spanish', 'Dutch') ORDER BY A1.Year ASC;

```
mysql> SELECT A1.Title, A1.Year FROM Artworks A1 JOIN Artists A2
 ON A1.ArtistID = A2.ArtistID WHERE A2.Nationality IN ('Spanish'
, 'Dutch') ORDER BY A1.Year ASC;
+--------------+------+
| Title        | Year |
+--------------+------+
| Starry Night | 1889 |
| Guernica     | 1937 |
+--------------+------+
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.

SELECT A1.Name, COUNT(A2.ArtworkID) AS Number_of_Paintings FROM Artists A1 JOIN Artworks A2 ON A1.ArtistID = A2.ArtistID JOIN Categories C ON A2.CategoryID = C.CategoryID WHERE C.Name = 'Painting' GROUP BY A1.Name ORDER BY Number_of_Paintings DESC;

```
mysql> SELECT A1.Name, COUNT(A2.ArtworkID) AS Number_of_Painting
s FROM Artists A1 JOIN Artworks A2 ON A1.ArtistID = A2.ArtistID
JOIN Categories C ON A2.CategoryID = C.CategoryID WHERE C.Name =
 'Painting' GROUP BY A1.Name ORDER BY Number_of_Paintings DESC;
+---------------------+---------------------+
| Name                | Number_of_Paintings |
+---------------------+---------------------+
| Vincent van Gogh    |                   1 |
| Leonardo da Vinci   |                   1 |
| Pablo Picasso       |                   1 |
+---------------------+---------------------+
3 rows in set (0.00 sec)
```

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

SELECT A.Title, Art.Name, C.Name AS Category_Name FROM Exhibitions E JOIN ExhibitionArtworks EA ON E.ExhibitionID = EA.ExhibitionID JOIN Artworks A ON EA.ArtworkID = A.ArtworkID JOIN Artists Art ON A.ArtistID = Art.ArtistID JOIN Categories C ON A.CategoryID = C.CategoryID WHERE E.Title = 'Modern Art Masterpieces';

```
mysql> SELECT A.Title, Art.Name, C.Name AS Category_Name FROM Exhibit
ions E JOIN ExhibitionArtworks EA ON E.ExhibitionID = EA.ExhibitionID
 JOIN Artworks A ON EA.ArtworkID = A.ArtworkID JOIN Artists Art ON A.
ArtistID = Art.ArtistID JOIN Categories C ON A.CategoryID = C.Categor
yID WHERE E.Title = 'Modern Art Masterpieces';
+--------------+-------------------+---------------+
| Title        | 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

SELECT A.Name, COUNT(W.ArtworkID) AS Number_of_Artworks FROM Artists A JOIN Artworks W ON A.ArtistID = W.ArtistID GROUP BY A.Name HAVING COUNT(W.ArtworkID) > 2;

```
mysql> SELECT A.Name, COUNT(W.ArtworkID) AS Number_of_Artworks FROM A
rtists A JOIN Artworks W ON A.ArtistID = W.ArtistID GROUP BY A.Name H
AVING COUNT(W.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

SELECT A.Title FROM Artworks A JOIN ExhibitionArtworks EA ON A.ArtworkID = EA.ArtworkID JOIN Exhibitions E ON EA.ExhibitionID = E.ExhibitionID WHERE E.Title IN ('Modern Art Masterpieces', 'Renaissance Art') GROUP BY A.Title HAVING COUNT(E.Title) = 2;

```
mysql> SELECT A.Title FROM Artworks A JOIN ExhibitionArtworks EA ON A
.ArtworkID = EA.ArtworkID JOIN Exhibitions E ON EA.ExhibitionID = E.E
xhibitionID WHERE E.Title IN ('Modern Art Masterpieces', 'Renaissance
 Art') GROUP BY A.Title HAVING COUNT(E.Title) = 2;
+-----------+
| Title     |
+-----------+
| Mona Lisa |
+-----------+
1 row in set (0.00 sec)
```

7. Find the total number of artworks in each category

SELECT C.Name, COUNT(A.ArtworkID) FROM Categories C LEFT JOIN Artworks A ON C.CategoryID = A.CategoryID GROUP BY C.Name;

```
mysql> SELECT C.Name, COUNT(A.ArtworkID) FROM Categories C LEFT JOIN
Artworks A ON C.CategoryID = A.CategoryID GROUP BY C.Name;
+-------------+-------------------+
| Name        | COUNT(A.ArtworkID) |
+-------------+-------------------+
| Painting    |                 3 |
| Sculpture   |                 0 |
| Photography |                 0 |
+-------------+-------------------+
3 rows in set (0.00 sec)
```

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

SELECT A.Name, COUNT(W.ArtworkID) AS Number_of_Artworks FROM Artists A JOIN Artworks W ON A.ArtistID = W.ArtistID GROUP BY A.Name HAVING COUNT(W.ArtworkID) > 3;

```
mysql> SELECT A.Name, COUNT(W.ArtworkID) AS Number_of_Artworks FROM A
rtists A JOIN Artworks W ON A.ArtistID = W.ArtistID GROUP BY A.Name H
AVING COUNT(W.ArtworkID) > 3;
Empty set (0.00 sec)
```

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

SELECT W.Title FROM Artworks W JOIN Artists A ON W.ArtistID = A.ArtistID WHERE A.Nationality = 'Spanish';

```
mysql> SELECT W.Title FROM Artworks W JOIN Artists A ON W.ArtistID =
A.ArtistID WHERE A.Nationality = 'Spanish';
+----------+
| Title    |
+----------+
| Guernica |
+----------+
1 row in set (0.00 sec)
```

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

SELECT E.Title FROM Exhibitions E JOIN ExhibitionArtworks EA ON E.ExhibitionID = EA.ExhibitionID JOIN Artworks W ON EA.ArtworkID = W.ArtworkID JOIN Artists A ON W.ArtistID = A.ArtistID WHERE A.Name IN ('Vincent van Gogh', 'Leonardo da Vinci') GROUP BY E.Title HAVING COUNT(DISTINCT A.Name) = 2;

```
mysql> SELECT E.Title FROM Exhibitions E JOIN ExhibitionArtworks EA O
N E.ExhibitionID = EA.ExhibitionID JOIN Artworks W ON EA.ArtworkID =
W.ArtworkID JOIN Artists A ON W.ArtistID = A.ArtistID WHERE A.Name IN
 ('Vincent van Gogh', 'Leonardo da Vinci') GROUP BY E.Title HAVING CO
UNT(DISTINCT A.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.

SELECT W.Title FROM Artworks W LEFT JOIN ExhibitionArtworks EA ON W.ArtworkID = EA.ArtworkID WHERE EA.ArtworkID IS NULL;

```
mysql> SELECT W.Title FROM Artworks W LEFT JOIN ExhibitionArtworks EA
 ON W.ArtworkID = EA.ArtworkID WHERE EA.ArtworkID IS NULL;
Empty set (0.00 sec)
```

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

SELECT A.Name FROM Artists A JOIN Artworks W ON A.ArtistID = W.ArtistID JOIN Categories C ON W.CategoryID = C.CategoryID GROUP BY A.Name HAVING COUNT(DISTINCT C.CategoryID) = (SELECT COUNT(*) FROM Categories);

```
mysql> SELECT A.Name FROM Artists A JOIN Artworks W ON A.ArtistID = W
.ArtistID JOIN Categories C ON W.CategoryID = C.CategoryID GROUP BY A
.Name HAVING COUNT(DISTINCT C.CategoryID) = (SELECT COUNT(*) FROM Cat
egories);
Empty set (0.00 sec)
```

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

SELECT C.Name AS CategoryName, COUNT(A.ArtworkID) AS Total_Art_works FROM Categories C LEFT JOIN Artworks A ON C.CategoryID = A.CategoryID GROUP BY C.Name;

```
mysql> SELECT C.Name AS CategoryName, COUNT(A.ArtworkID) AS Total_Art
_works FROM Categories C LEFT JOIN Artworks A ON C.CategoryID = A.Cat
egoryID GROUP BY C.Name;
+--------------+-----------------+
| CategoryName | Total_Art_works |
+--------------+-----------------+
| Painting     |               3 |
| Sculpture    |               0 |
| Photography  |               0 |
+--------------+-----------------+
3 rows in set (0.00 sec)
```

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

SELECT A.Name, COUNT(W.ArtworkID) AS NumberOfArtworks FROM Artists A JOIN Artworks W ON A.ArtistID = W.ArtistID GROUP BY A.Name HAVING COUNT(W.ArtworkID) > 2;

```
mysql> SELECT A.Name, COUNT(W.ArtworkID) AS NumberOfArtworks FROM Art
ists A JOIN Artworks W ON A.ArtistID = W.ArtistID GROUP BY A.Name HAV
ING COUNT(W.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.

SELECT C.Name, AVG(A.Year) AS Average_Year FROM Categories C JOIN Artworks A ON C.CategoryID = A.CategoryID GROUP BY C.Name HAVING COUNT(A.ArtworkID) > 1;

```
mysql> SELECT C.Name, AVG(A.Year) AS Average_Year FROM Categories C J
OIN Artworks A ON C.CategoryID = A.CategoryID GROUP BY C.Name HAVING
COUNT(A.ArtworkID) > 1;
+----------+--------------+
| Name     | Average_Year |
+----------+--------------+
| Painting |    1776.3333 |
+----------+--------------+
1 row in set (0.00 sec)
```

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

SELECT A.Title FROM Artworks A JOIN ExhibitionArtworks EA ON A.ArtworkID = EA.ArtworkID JOIN Exhibitions E ON EA.ExhibitionID = E.ExhibitionID WHERE E.Title = 'Modern Art Masterpieces';

```
mysql> SELECT A.Title FROM Artworks A JOIN ExhibitionArtworks EA ON A
.ArtworkID = EA.ArtworkID JOIN Exhibitions E ON EA.ExhibitionID = E.E
xhibitionID 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

SELECT C.Name FROM Categories C JOIN Artworks A ON C.CategoryID = A.CategoryID GROUP BY C.Name HAVING AVG(A.Year) > (SELECT AVG(Year) FROM Artworks);

```
mysql> SELECT C.Name FROM Categories C JOIN Artworks A ON C.CategoryI
D = A.CategoryID GROUP BY C.Name HAVING AVG(A.Year) > (SELECT AVG(Yea
r) FROM Artworks);
Empty set (0.00 sec)
```

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

SELECT A.Title FROM Artworks A LEFT JOIN ExhibitionArtworks EA ON A.ArtworkID = EA.ArtworkID WHERE EA.ExhibitionID IS NULL;

```
mysql> SELECT A.Title FROM Artworks A LEFT JOIN ExhibitionArtworks EA
 ON A.ArtworkID = EA.ArtworkID WHERE EA.ExhibitionID IS NULL;
Empty set (0.00 sec)
```

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

SELECT Art.Name FROM Artists Art JOIN Artworks A ON Art.ArtistID = A.ArtistID WHERE A.CategoryID = (SELECT CategoryID FROM Artworks WHERE Title = 'Mona Lisa');

```
mysql> SELECT Art.Name FROM Artists Art JOIN Artworks A ON Art.Artist
ID = A.ArtistID WHERE A.CategoryID = (SELECT CategoryID FROM Artworks
 WHERE Title = 'Mona Lisa');
+-------------------+
| Name              |
+-------------------+
| Pablo Picasso     |
| Vincent van Gogh  |
| Leonardo da Vinci |
+-------------------+
3 rows in set (0.00 sec)
```

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

SELECT A.Name, COUNT(W.ArtworkID) AS Number_of_Artworks FROM Artists A JOIN Artworks W ON A.ArtistID = W.ArtistID GROUP BY A.Name;

```
mysql> SELECT A.Name, COUNT(W.ArtworkID) AS Number_of_Artworks FROM A
rtists A JOIN Artworks W ON A.ArtistID = W.ArtistID GROUP BY A.Name;
+-------------------+--------------------+
| Name              | Number_of_Artworks |
+-------------------+--------------------+
| Pablo Picasso     |                  1 |
| Vincent van Gogh  |                  1 |
| Leonardo da Vinci |                  1 |
+-------------------+--------------------+
3 rows in set (0.00 sec)
```