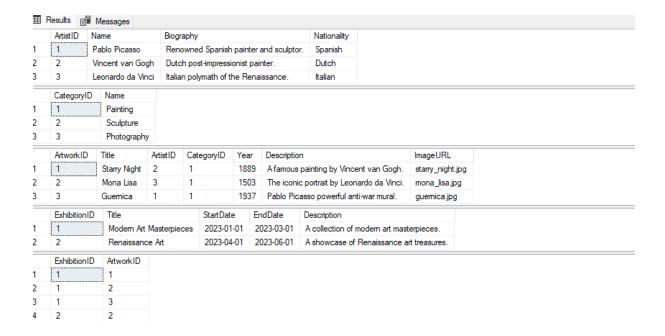
CODING CHALLENGE-VIRTUAL ART GALLERY

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```
create database virtual artGallery
```

```
use virtual artGallery
-- Create the Artists table
CREATE TABLE Artists (
ArtistID INT PRIMARY KEY,
Name VARCHAR(255) NOT NULL,
 Biography TEXT,
Nationality VARCHAR(100));
-- Create the Categories table
CREATE TABLE Categories (
CategoryID INT PRIMARY KEY,
Name VARCHAR(100) NOT NULL);
-- Create the Artworks table
CREATE TABLE Artworks (
ArtworkID INT PRIMARY KEY,
Title VARCHAR(255) NOT NULL,
ArtistID INT,
CategoryID INT,
 Year INT,
 Description TEXT,
 ImageURL VARCHAR(255),
 FOREIGN KEY (ArtistID) REFERENCES Artists (ArtistID),
 FOREIGN KEY (CategoryID) REFERENCES Categories (CategoryID));
 -- Create the Exhibitions table
CREATE TABLE Exhibitions (
 ExhibitionID INT PRIMARY KEY,
 Title VARCHAR(255) NOT NULL,
 StartDate DATE,
 EndDate DATE,
Description TEXT);
-- Create a table to associate artworks with exhibitions
CREATE TABLE ExhibitionArtworks (
 ExhibitionID INT,
ArtworkID INT,
 PRIMARY KEY (ExhibitionID, ArtworkID),
 FOREIGN KEY (ExhibitionID) REFERENCES Exhibitions (ExhibitionID),
 FOREIGN KEY (ArtworkID) REFERENCES Artworks (ArtworkID));
 --DML(Insert sample data to tables)
```

```
-- Insert sample data into the Artists table
INSERT INTO Artists (ArtistID, Name, Biography, Nationality) VALUES
(1, 'Pablo Picasso', 'Renowned Spanish painter and sculptor.',
'Spanish'),
(2, 'Vincent van Gogh', 'Dutch post-impressionist painter.',
'Dutch'),
(3, 'Leonardo da Vinci', 'Italian polymath of the Renaissance.',
'Italian');
-- Insert sample data into the Categories table
INSERT INTO Categories (CategoryID, Name) VALUES
 (1, 'Painting'),
 (2, 'Sculpture'),
(3, 'Photography');
-- Insert sample data into the Artworks table
INSERT INTO Artworks (ArtworkID, Title, ArtistID, CategoryID, Year,
Description, ImageURL) VALUES
 (1, 'Starry Night', 2, 1, 1889, 'A famous painting by Vincent van
Gogh.', 'starry_night.jpg'),
 (2, 'Mona Lisa', 3, 1, 1503, 'The iconic portrait by Leonardo da
Vinci.', 'mona lisa.jpg'),
(3, 'Guernica', 1, 1, 1937, 'Pablo Picasso powerful anti-war
mural.', 'guernica.jpg');
-- Insert sample data into the Exhibitions table
INSERT INTO Exhibitions (ExhibitionID, Title, StartDate, EndDate,
Description) VALUES
 (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.');
-- Insert artworks into exhibitions
INSERT INTO ExhibitionArtworks (ExhibitionID, ArtworkID) VALUES
 (1, 1),
 (1, 2),
 (1, 3),
 (2, 2);
select * from Artists
select * from Categories
select * from Artworks
select * from Exhibitions
select * from ExhibitionArtworks
output:
```



--solving the 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.

SELECT

A. Name AS ArtistName,

COUNT(Art.ArtworkID) AS ArtworkCount

FROM

Artists A

LEFT JOIN Artworks Art ON A.ArtistID = Art.ArtistID

GROUP BY

A. Name

ORDER BY

ArtworkCount DESC;

Output:



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

SELECT

Art.Title,

```
A.Name AS ArtistName,
A.Nationality,
Art.Year

FROM
Artworks Art
JOIN Artists A ON Art.ArtistID = A.ArtistID

WHERE
A.Nationality IN ('Spanish', 'Dutch')

ORDER BY
Art.Year ASC;
```



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

SELECT

A. Name AS ArtistName,

COUNT(Art.ArtworkID) AS ArtworkCount

FROM

Artists A

JOIN Artworks Art ON A.ArtistID = Art.ArtistID

JOIN Categories C ON Art.CategoryID = C.CategoryID

WHERE

C.Name = 'Painting'

GROUP BY A.Name;

Output:



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

SELECT

Art.Title AS ArtworkTitle,

A. Name AS ArtistName,

C.Name AS CategoryName

FROM

ExhibitionArtworks EA

JOIN Exhibitions E ON EA.ExhibitionID = E.ExhibitionID

```
JOIN Artworks Art ON EA.ArtworkID = Art.ArtworkID
JOIN Artists A ON Art.ArtistID = A.ArtistID
JOIN Categories C ON Art.CategoryID = C.CategoryID
WHERE
E.Title = 'Modern Art Masterpieces';
Output:
```

Results Messages ArtworkTitle ArtistName CategoryName Starry Night Vincent van Gogh Painting Mona Lisa Leonardo da Vinci Painting Guernica Pablo Picasso Painting

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

SELECT

```
A.Name AS ArtistName,
COUNT(Art.ArtworkID) AS ArtworkCount
FROM
Artists A
JOIN Artworks Art ON A.ArtistID = Art.ArtistID
GROUP BY
A.Name
HAVING
COUNT(Art.ArtworkID) > 2;
```

Output:



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

```
Art.Title AS ArtworkTitle FROM
```

ExhibitionArtworks EA1

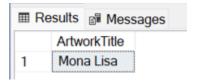
JOIN Exhibitions E1 ON EA1.ExhibitionID = E1.ExhibitionID

JOIN Artworks Art ON EA1.ArtworkID = Art.ArtworkID

WHERE

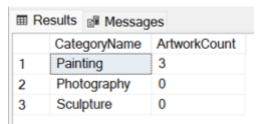
```
E1.Title = 'Modern Art Masterpieces'
AND Art.ArtworkID IN (
SELECT EA2.ArtworkID
```

```
FROM ExhibitionArtworks EA2
JOIN Exhibitions E2 ON EA2.ExhibitionID = E2.ExhibitionID
WHERE E2.Title = 'Renaissance Art'
);
```



--7. Find the total number of artworks in each category SELECT C.Name AS CategoryName, COUNT(Art.ArtworkID) AS ArtworkCount FROM Categories C
LEFT JOIN Artworks Art ON C.CategoryID = Art.CategoryID GROUP BY C.Name;

Output:



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

SELECT A.Name AS ArtistName,

COUNT(Art.ArtworkID) AS ArtworkCount

FROM Artists A

JOIN Artworks Art ON A.ArtistID = Art.ArtistID

GROUP BY A.Name

HAVING COUNT(Art.ArtworkID) > 3;

Output:



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

Art.Title AS ArtworkTitle,
A.Name AS ArtistName
FROM

Artworks Art

```
JOIN Artists A ON Art.ArtistID = A.ArtistID
WHERE
 A. Nationality = 'Spanish';
Output:
 ArtworkTitle ArtistName
               Pablo Picasso
     Guernica
 1
 --10. List exhibitions that feature artwork by both Vincent van
Gogh and Leonardo da --11. Find all the artworks that have not been
included in any exhibition.
SELECT DISTINCT
 E. Title AS Exhibition Title
FROM
 Exhibitions E
 JOIN ExhibitionArtworks EA ON E.ExhibitionID = EA.ExhibitionID
 JOIN Artworks Art ON EA.ArtworkID = Art.ArtworkID
 JOIN Artists A ON Art.ArtistID = A.ArtistID
WHERE
 A.Name IN ('Vincent van Gogh', 'Leonardo da Vinci')
GROUP BY
 E.Title
HAVING
COUNT(DISTINCT A.Name) = 2;
Output:
ExhibitionTitle
     Modern Art Masterpieces
1
--11. Find all the artworks that have not been included in any
exhibition.
SELECT
 Art.Title AS ArtworkTitle,
 A. Name AS ArtistName
FROM
 Artworks Art
 JOIN Artists A ON Art.ArtistID = A.ArtistID
WHERE
 Art.ArtworkID NOT IN (SELECT ArtworkID FROM ExhibitionArtworks);
Output:
```

```
ArtworkTitle ArtistName
 --12. List artists who have created artworks in all available
categories.
SELECT
A. Name AS ArtistName
FROM
Artists A
 JOIN Artworks Art ON A.ArtistID = Art.ArtistID
GROUP BY
A. Name
HAVING
COUNT(DISTINCT Art.CategoryID) = (SELECT COUNT(CategoryID) FROM
Categories);
Output:
100 % ▼ ◀
ArtistName
 --13. List the total number of artworks in each category.
SELECT
C.Name AS CategoryName,
COUNT(Art.ArtworkID) AS ArtworkCount
FROM
Categories C
LEFT JOIN Artworks Art ON C.CategoryID = Art.CategoryID
GROUP BY
C.Name;
Output:
 CategoryName ArtworkCount
 1
     Painting
                3
 2
     Photography
                0
 3
     Sculpture
                0
```

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

```
SELECT
 A. Name AS ArtistName,
 COUNT(Art.ArtworkID) AS ArtworkCount
FROM
 Artists A
 JOIN Artworks Art ON A.ArtistID = Art.ArtistID
GROUP BY
 A. Name
HAVING
 COUNT(Art.ArtworkID) > 2;
Output:
ArtistName ArtworkCount
 --15. List the categories with the average year of artworks they
contain, only for categories with morethan 1 artwork.
SELECT
 C. Name AS CategoryName,
 AVG(Art. Year) AS AvgYear
FROM
 Categories C
 JOIN Artworks Art ON C.CategoryID = Art.CategoryID
GROUP BY
 C.Name
HAVING
 COUNT(Art.ArtworkID) > 1;
Output:
CategoryName AvgYear
                 1776
     Painting
--16. Find the artworks that were exhibited in the 'Modern Art
Masterpieces' exhibition.
SELECT
 Art.Title AS ArtworkTitle,
 A. Name AS ArtistName
 FROM
 Artworks Art
 JOIN ExhibitionArtworks EA ON Art.ArtworkID = EA.ArtworkID
 JOIN Exhibitions E ON EA.ExhibitionID = E.ExhibitionID
 JOIN Artists A ON Art.ArtistID = A.ArtistID
WHERE
 E.Title = 'Modern Art Masterpieces';
```

```
ArtworkTitle ArtistName
     Starry Night | Vincent van Gogh
 1
 2
              Leonardo da Vinci
     Mona Lisa
     Guernica
               Pablo Picasso
 3
 --17. Find the categories where the average year of artworks is
greater than the average year of allartworks.
SELECT
C.Name AS CtegoryName,
AVG(Art.Year) AS AvgYear
FROM
Categories C
 JOIN Artworks Art ON C.CategoryID = Art.CategoryID
GROUP BY
C.Name
HAVING
AVG(Art.Year) > (SELECT AVG(Year) FROM Artworks);
Output:
CtegoryName AvgYear
 --18. List the artworks that were not exhibited in any exhibition.
SELECT
Art. Title AS Artwork Title,
A. Name AS ArtistName
FROM
Artworks Art
 JOIN Artists A ON Art.ArtistID = A.ArtistID
WHERE
Art.ArtworkID NOT IN (SELECT ArtworkID FROM ExhibitionArtworks);
Output:
 ArtworkTitle ArtistName
```

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

```
A.Name AS ArtistName
FROM
Artworks Art1
JOIN Categories C ON Art1.CategoryID = C.CategoryID
JOIN Artworks Art2 ON Art1.CategoryID = Art2.CategoryID
JOIN Artists A ON Art2.ArtistID = A.ArtistID
WHERE
Art1.Title = 'Mona Lisa';
```



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

SELECT

```
A.Name AS ArtistName,
COUNT(Art.ArtworkID) AS ArtworkCount
FROM
Artists A
LEFT JOIN Artworks Art ON A.ArtistID = Art.ArtistID
GROUP BY
A.Name;
```

Output:

