CODING CHALLENGE

Virtual Art Gallery

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Topic: Virtual Art Gallery(SQL)

```
--Creating Database
create database VIRTUAL_ART_GALLERY;
use VIRTUAL_ART_GALLERY;
-- 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));

-- Insert sample data
    --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');
```

⊞ Results						
	ArtistID	Name	Biography	Nationality		
1	1	Pablo Picasso	Renowned Spanish painter and sculptor.	Spanish		
2	2	Vincent van Gogh	Dutch post-impressionist painter.	Dutch		
3	3	Leonardo da Vinci	Italian polymath of the Renaissance.	Italian		

```
--Categories table
INSERT INTO Categories (CategoryID, Name) VALUES
  (1, 'Painting'),
  (2, 'Sculpture'),
  (3, 'Photography');
```

⊞ Results						
	Category	ylD	Name			
1	1		Painting			
2	2		Sculpture			
3	3		Photography			

```
--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 Picassos powerful anti-war mural.',
'guernica.jpg');
```

■ Results									
	ArtworkID	Title	ArtistID	CategoryID	Year	Description	ImageURL		
1	1	Starry Night	2	1	1889	A famous painting by Vincent van Gogh.	starry_night.jpg		
2	2	Mona Lisa	3	1	1503	The iconic portrait by Leonardo da Vinci.	mona_lisa.jpg		
3	3	Guernica	1	1	1937	Pablo Picassos powerful anti-war mural.	guernica.jpg		

```
-- 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
```

OUTPUT:

Renaissance art treasures.');

⊞ R	Results	Ba W	essages			
	Exhibiti		Title	StartDate	EndDate	Description
1	1		Modern Art Masterpieces	2023-01-01	2023-03-01	A collection of modern art masterpieces.
2	2		Renaissance Art	2023-04-01	2023-06-01	A showcase of Renaissance art treasures.

```
--ExhibitionsArtworks table
INSERT INTO ExhibitionArtworks (ExhibitionID, ArtworkID) VALUES
(1, 1),
(1, 2),
(1, 3),
(2, 2);
```

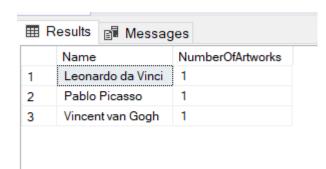


--Queries

--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 , COUNT(b.ArtworkID) AS NumberOfArtworks FROM Artists a , Artworks b WHERE a.ArtistID = b.ArtistID GROUP BY a.Name ORDER BY NumberOfArtworks 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.

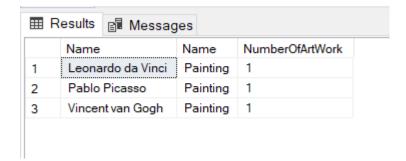
```
SELECT a.Title ,a.Year, b.Name , b.Nationality
FROM Artworks a , Artists b
WHERE a.ArtistID = b.ArtistID
AND b.Nationality = 'Dutch' OR b.Nationality = 'Spanish'
ORDER BY a.Year;
```



--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 a.Name , b.Name , COUNT(b.CategoryID) AS NumberOfArtWork
FROM Artists a , Categories b , Artworks c
WHERE b.CategoryID = c.CategoryID
AND c.ArtistID = a.ArtistID
AND b.Name = 'Painting'
GROUP BY a.Name, b.Name;
```

OUTPUT:



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

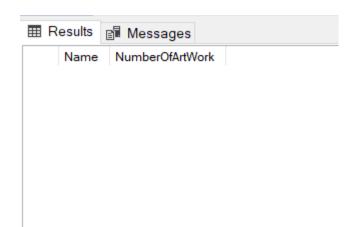
```
SELECT a.Name AS Artist ,e.Title AS ArtName, b.Name AS Category , c.Title FROM Artists a , Categories b , Exhibitions c , ExhibitionArtworks d ,Artworks e WHERE c.ExhibitionID = d.ExhibitionID AND d.ArtworkID = e.ArtworkID AND e.ArtistID = a.ArtistID AND e.CategoryID = b.CategoryID AND c.Title = 'Modern Art Masterpieces';
```



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

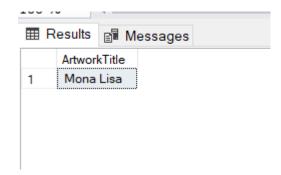
```
SELECT a.Name , COUNT(b.ArtworkID) AS NumberOfArtWork
FROM Artists a , ExhibitionArtworks b , Artworks c
WHERE b.ArtworkID = c.ArtworkID
AND a.ArtistID = c.ArtistID
GROUP BY a.Name
HAVING COUNT(b.ArtworkID) > 2 ;
```

OUTPUT:



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

```
SELECT b.Title AS ArtworkTitle
FROM Artworks b
JOIN ExhibitionArtworks c ON b.ArtworkID = c.ArtworkID
JOIN Exhibitions a ON c.ExhibitionID = a.ExhibitionID
WHERE a.Title = 'Modern Art Masterpieces'
AND b.ArtworkID IN (
    SELECT b2.ArtworkID
    FROM Artworks b2
    JOIN ExhibitionArtworks c2 ON b2.ArtworkID = c2.ArtworkID
    JOIN Exhibitions a2 ON c2.ExhibitionID = a2.ExhibitionID
    WHERE a2.Title = 'Renaissance Art'
);
```



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

```
SELECT b.Name , COUNT(a.CategoryID) Category
FROM Categories b
LEFT JOIN Artworks a ON a.CategoryID = b.CategoryID
GROUP BY b.Name;
```

OUTPUT:



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

```
SELECT a.Name AS Artist_Name , COUNT(b.ArtworkID) AS NumberOfArt
FROM Artists a , Artworks b
WHERE a.ArtistID = b.ArtistID
GROUP BY a.Name
HAVING COUNT(b.ArtworkID) >3;
```



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

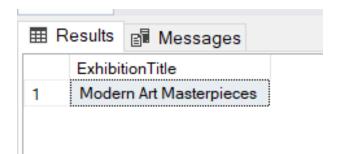
SELECT a.Name AS Artist_Name , a.Nationality , b.Title
FROM Artists a , Artworks b
WHERE a.ArtistID = b.ArtistID
```



AND a.Nationality = 'Spanish';

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

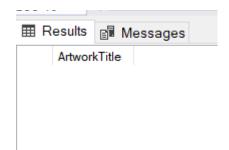
```
SELECT e.Title AS ExhibitionTitle
FROM Exhibitions e
JOIN ExhibitionArtworks ea ON e.ExhibitionID = ea.ExhibitionID
JOIN Artworks a ON ea.ArtworkID = a.ArtworkID
JOIN Artists ar ON a.ArtistID = ar.ArtistID
WHERE ar.Name = 'Vincent van Gogh'
AND e.ExhibitionID IN (
    SELECT e2.ExhibitionID
    FROM Exhibitions e2
    JOIN ExhibitionArtworks ea2 ON e2.ExhibitionID = ea2.ExhibitionID
    JOIN Artworks a2 ON ea2.ArtworkID = a2.ArtworkID
    JOIN Artists ar2 ON a2.ArtistID = ar2.ArtistID
    WHERE ar2.Name = 'Leonardo da Vinci'
);
```



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

```
SELECT Title AS ArtworkTitle
FROM Artworks
WHERE ArtworkID NOT IN (
SELECT ArtworkID
FROM ExhibitionArtworks
);
```

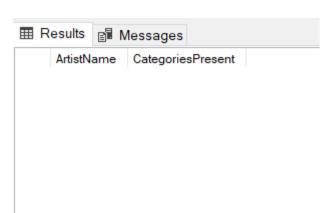
OUTPUT:



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

```
SELECT a.Name as ArtistName , COUNT(b.CategoryID) AS CategoriesPresent
FROM Artists a , Categories b , Artworks c
WHERE a.ArtistID = c.ArtistID
AND b.CategoryID = c.CategoryID
GROUP BY a.Name
HAVING COUNT(b.CategoryID)=3;
```

OUTPUT:

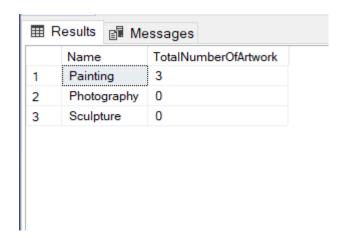


--13. List the total number of artworks in each category.

```
SELECT a.Name , count(b.ArtworkID) AS TotalNumberOfArtwork
FROM Categories a left join Artworks b on a.CategoryID= b.CategoryID
```

GROUP BY a.Name;

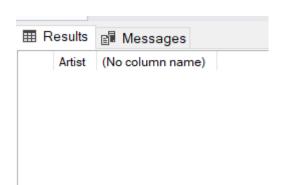
OUTPUT:



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

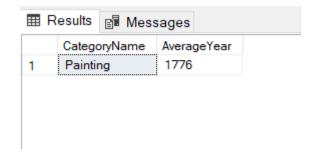
```
SELECT a.Name AS Artist , COUNT(b.ArtworkID)
FROM Artists a , Artworks b
WHERE a.ArtistID = b.ArtistID
GROUP BY a.Name
HAVING COUNT(b.ArtworkID)=2;
```

OUTPUT:



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

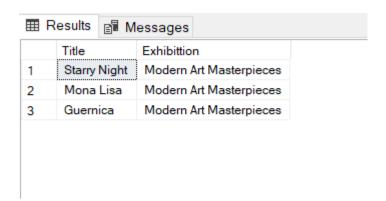
```
SELECT c.Name AS CategoryName, AVG(a.Year) AS AverageYear
FROM Categories c
JOIN Artworks a ON c.CategoryID = a.CategoryID
GROUP BY c.CategoryID, c.Name
HAVING COUNT(a.ArtworkID) > 1;
```



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

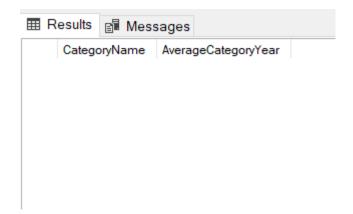
```
SELECT ar.Title , e.Title AS Exhibittion
FROM Artworks ar , Exhibitions e , ExhibitionArtworks ea
WHERE e.ExhibitionID = ea.ExhibitionID
AND ea.ArtworkID = ar.ArtworkID
AND e.Title = 'Modern Art Masterpieces';
```

OUTPUT:



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

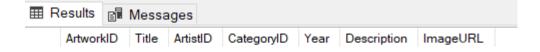
```
SELECT c.Name AS CategoryName, AVG(a.Year) AS AverageCategoryYear
FROM Categories c
JOIN Artworks a ON c.CategoryID = a.CategoryID
GROUP BY c.Name
HAVING AVG(a.Year) > (SELECT AVG(Year) FROM Artworks);
```



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

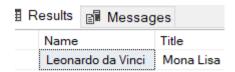
```
SELECT *
FROM Artworks a
WHERE a.ArtworkID
NOT IN (SELECT ea.ArtworkID FROM ExhibitionArtworks ea);
```

OUTPUT:



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

```
SELECT a.Name , b.Title
FROM Artists a , Artworks b
WHERE a.ArtistID = b.ArtistID
AND b.Title = 'Mona lisa';
```



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

```
SELECT a.Name , COUNT(ar.ArtworkID) AS Number_OF_ART
FROM Artists a , Artworks ar
WHERE a.ArtistID = ar.ArtistID
GROUP BY a.Name;
```

⊞ Results							
	Name	Number_OF_ART					
1	Leonardo da Vinci	1					
2	Pablo Picasso	1					
3	Vincent van Gogh	1					