

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');

```

OUTPUT:

| Results | | Messages | | | |
|---------|----------|-------------------|--|-------------|--|
| | 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');

```

OUTPUT:

| Results | | Messages | |
|---------|------------|-------------|--|
| | CategoryID | 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');
```

OUTPUT:

| Results Messages | | | | | | | |
|------------------|-----------|--------------|----------|------------|------|---|------------------|
| | 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
Renaissance art treasures.');
```

OUTPUT:

| Results Messages | | | | | |
|------------------|--------------|-------------------------|------------|------------|--|
| | ExhibitionID | 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);
```

OUTPUT:

| Results | | Messages | | |
|---------|-------------------|--------------|----------|-------------------------|
| | Artist | ArtName | Category | Title |
| 1 | Vincent van Gogh | Starry Night | Painting | Modern Art Masterpieces |
| 2 | Leonardo da Vinci | Mona Lisa | Painting | Modern Art Masterpieces |
| 3 | Pablo Picasso | Guernica | Painting | 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:

| Results | | Messages | | |
|---------|------|-----------------|--|--|
| | Name | NumberOfArtWork | | |

--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'
);
```

OUTPUT:

| Results | | Messages |
|---------|--------------|----------|
| | ArtworkTitle | |
| 1 | Mona Lisa | |

--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:

| Results | | | Messages |
|---------|-------------|----------|----------|
| | Name | Category | |
| 1 | Painting | 3 | |
| 2 | Photography | 0 | |
| 3 | Sculpture | 0 | |

--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;
```

OUTPUT:

| Results | | | Messages |
|---------|-------------|-------------|----------|
| | Artist_Name | NumberOfArt | |

--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';
```

OUTPUT:

| Results | | Messages | |
|---------|---------------|-------------|----------|
| | Artist_Name | Nationality | Title |
| 1 | Pablo Picasso | Spanish | Guernica |

--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'
);
```

OUTPUT:

| Results | | Messages | |
|---------|-------------------------|----------|--|
| | ExhibitionTitle | | |
| 1 | Modern Art Masterpieces | | |


```
--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:

| Results | | Messages | |
|--------------|--|----------|--|
| ArtworkTitle | | | |
| | | | |

```
--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:

| Results | | Messages | |
|------------|-------------------|----------|--|
| ArtistName | CategoriesPresent | | |
| | | | |

```
--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:

| Results Messages | | |
|------------------|-------------|----------------------|
| | Name | TotalNumberOfArtwork |
| 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 Artist , COUNT(b.ArtworkID)
FROM Artists a , Artworks b
WHERE a.ArtistID = b.ArtistID
GROUP BY a.Name
HAVING COUNT(b.ArtworkID)=2;
```

OUTPUT:

| Results Messages | |
|------------------|------------------|
| Artist | (No column name) |

--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;
```

OUTPUT:

| Results | Messages |
|--------------|---------------------|
| CategoryName | AverageCategoryYear |
| | |

--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:

Results

Messages

| ArtworkID | Title | ArtistID | CategoryID | Year | Description | ImageURL |
|-----------|-------|----------|------------|------|-------------|----------|
|-----------|-------|----------|------------|------|-------------|----------|

--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';
```

OUTPUT:

| Results | Messages |
|-------------------|-----------|
| Name | Title |
| Leonardo da Vinci | 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;
```

OUTPUT:

| Results | | Messages |
|---------|-------------------|---------------|
| | Name | Number_OF_ART |
| 1 | Leonardo da Vinci | 1 |
| 2 | Pablo Picasso | 1 |
| 3 | Vincent van Gogh | 1 |