

Coding Challenge

Virtual Art Gallery

- Sameer Pal

/*DataBase Creation*/

```
CREATE DATABASE VirtualArtGallery;  
USE VirtualArtGallery;
```

/*Tables Creation*/

```
CREATE TABLE Artists (  
    ArtistID INT PRIMARY KEY,  
    Name VARCHAR(255) NOT NULL,  
    Biography TEXT,  
    Nationality VARCHAR(100)  
);
```

```
CREATE TABLE Categories (  
    CategoryID INT PRIMARY KEY,  
    Name VARCHAR(100) NOT NULL  
);
```

```
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 TABLE Exhibitions (  
    ExhibitionID INT PRIMARY KEY,  
    Title VARCHAR(255) NOT NULL,  
    StartDate DATE,  
    EndDate DATE,  
    Description TEXT  
);
```

```
CREATE TABLE ExhibitionArtworks (  
    ExhibitionID INT,  
    ArtworkID INT,  
    PRIMARY KEY (ExhibitionID, ArtworkID),  
    FOREIGN KEY (ExhibitionID) REFERENCES Exhibitions (ExhibitionID),  
    FOREIGN KEY (ArtworkID) REFERENCES Artworks (ArtworkID)  
);
```

```
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 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');
select * from Artists
```

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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

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

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

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Messages

(3 rows affected)

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

```
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's powerful anti-war mural.', 'guernica.jpg');
select * from Artworks
```

97 %

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 Picasso's powerful anti-war mural.	guernica.jpg

```
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 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.');
```

97 %

Messages

(2 rows affected)

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

```
INSERT INTO ExhibitionArtworks (ExhibitionID, ArtworkID) VALUES
(1, 1),
(1, 2),
(1, 3),
(2, 2);
select * from ExhibitionArtworks
```

97 %

Results Messages

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

-- 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(aw.ArtworkID) AS ArtworkCount
FROM Artists a
LEFT JOIN Artworks aw ON a.ArtistID = aw.ArtistID
GROUP BY a.Name
ORDER BY ArtworkCount DESC;
```

	Name	ArtworkCount
1	Leonardo da Vinci	1
2	Pablo Picasso	1
3	Vincent van Gogh	1
4	Wassily Kandinsky	0
5	Rembrandt van Rijn	0
6	Salvador Dalí	0
7	Michelangelo	0
8	Andy Warhol	0
9	Claude Monet	0
10	Edvard Munch	0
11	Frida Kahlo	0
12	Georgia O'Keeffe	0
13	Henri Matisse	0
14	Jackson Pollock	0

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

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

	Title
1	Starry Night
2	Guernica

-- 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 AS ArtistName, COUNT(aw.ArtworkID) AS NumberOfArtworks
FROM Artists a
JOIN Artworks aw ON a.ArtistID = aw.ArtistID
JOIN Categories c ON aw.CategoryID = c.CategoryID
WHERE c.Name = 'Painting'
GROUP BY a.Name;
```

Results		Messages	
	ArtistName	NumberOfArtworks	
1	Leonardo da Vinci	1	
2	Pablo Picasso	1	
3	Vincent van Gogh	1	

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

```
SELECT aw.Title AS ArtworkTitle, a.Name AS ArtistName, c.Name AS CategoryName
FROM Exhibitions e
JOIN ExhibitionArtworks ea ON e.ExhibitionID = ea.ExhibitionID
JOIN Artworks aw ON ea.ArtworkID = aw.ArtworkID
JOIN Artists a ON aw.ArtistID = a.ArtistID
JOIN Categories c ON aw.CategoryID = c.CategoryID
WHERE e.Title = 'Modern Art Masterpieces';
```

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

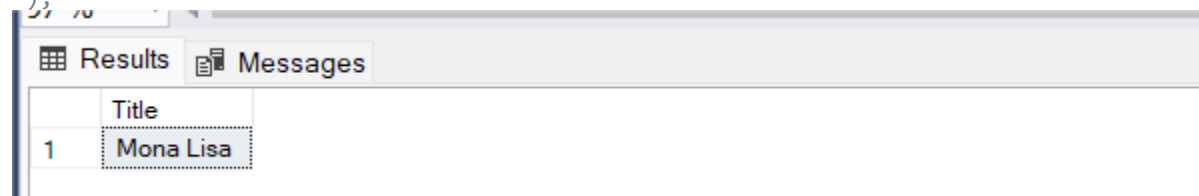
-- 5. Find the artists who have more than two artworks in the gallery.

```
SELECT a.Name
FROM Artists a
JOIN Artworks aw ON a.ArtistID = aw.ArtistID
GROUP BY a.Name
HAVING COUNT(aw.ArtworkID) > 2;
```



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

```
select aw.Title from Artworks aw
where aw.ArtworkID in
(
    select ea.ArtworkID
    from ExhibitionArtworks ea
    join Exhibitions e on ea.ExhibitionID = e.ExhibitionID
    where e.Title = 'Modern Art Masterpieces'
)
and aw.ArtworkID in
(
    select ea.ArtworkID
    from ExhibitionArtworks ea
    join Exhibitions e on ea.ExhibitionID = e.ExhibitionID
    where e.Title = 'Renaissance Art'
);
```



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

```
SELECT c.Name, COUNT(aw.ArtworkID) AS TotalArtworks
FROM Categories c
LEFT JOIN Artworks aw ON c.CategoryID = aw.CategoryID
GROUP BY c.Name;
```

Results Messages		
	Name	TotalArtworks
1	Architecture	0
2	Ceramics	0
3	Digital Art	0
4	Drawing	0
5	Installation Art	0
6	Mixed Media	0
7	Painting	3
8	Performance Art	0
9	Photography	0
10	Printmaking	0
11	Sculpture	0
12	Textile Art	0
13	Video Art	0

Query executed successfully | desktop-tcsvdnh\SQLEXPRESS ... | DESKTOP-TCSVD

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

```
SELECT a.Name
FROM Artists a
JOIN Artworks aw ON a.ArtistID = aw.ArtistID
GROUP BY a.Name
HAVING COUNT(aw.ArtworkID) > 3;
```

--Q8

```
SELECT a.Name
FROM Artists a
JOIN Artworks aw ON a.ArtistID = aw.ArtistID
GROUP BY a.Name
HAVING COUNT(aw.ArtworkID) > 3;
```

--Getting NULL

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Results Messages

Name

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

```
SELECT aw.Title
FROM Artworks aw
JOIN Artists a ON aw.ArtistID = a.ArtistID
WHERE a.Nationality = 'Spanish';
```

Results Messages	
	Title
1	Guernica

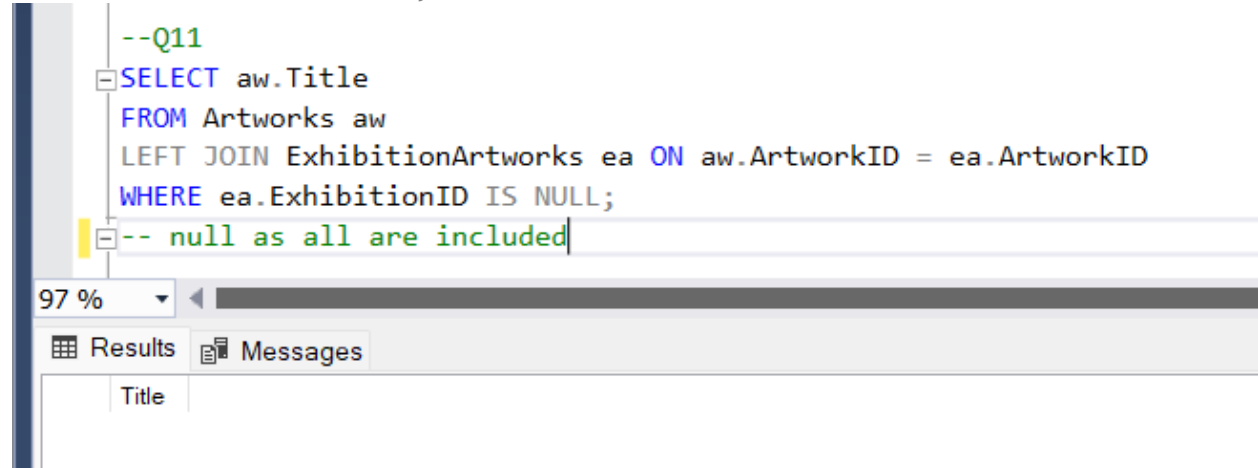
-- 10. List exhibitions that feature artwork by both Vincent van Gogh and Leonardo da Vinci.

```
SELECT e.Title
FROM Exhibitions e
JOIN ExhibitionArtworks ea ON e.ExhibitionID = ea.ExhibitionID
JOIN Artworks aw ON ea.ArtworkID = aw.ArtworkID
JOIN Artists a ON aw.ArtistID = a.ArtistID
WHERE a.Name = 'Vincent van Gogh'
AND e.ExhibitionID IN (
  SELECT e2.ExhibitionID
  FROM Exhibitions e2
  JOIN ExhibitionArtworks ea2 ON e2.ExhibitionID = ea2.ExhibitionID
  JOIN Artworks aw2 ON ea2.ArtworkID = aw2.ArtworkID
  JOIN Artists a2 ON aw2.ArtistID = a2.ArtistID
  WHERE a2.Name = 'Leonardo da Vinci'
)
GROUP BY e.Title;
```

Results Messages	
	Title
1	Modern Art Masterpieces

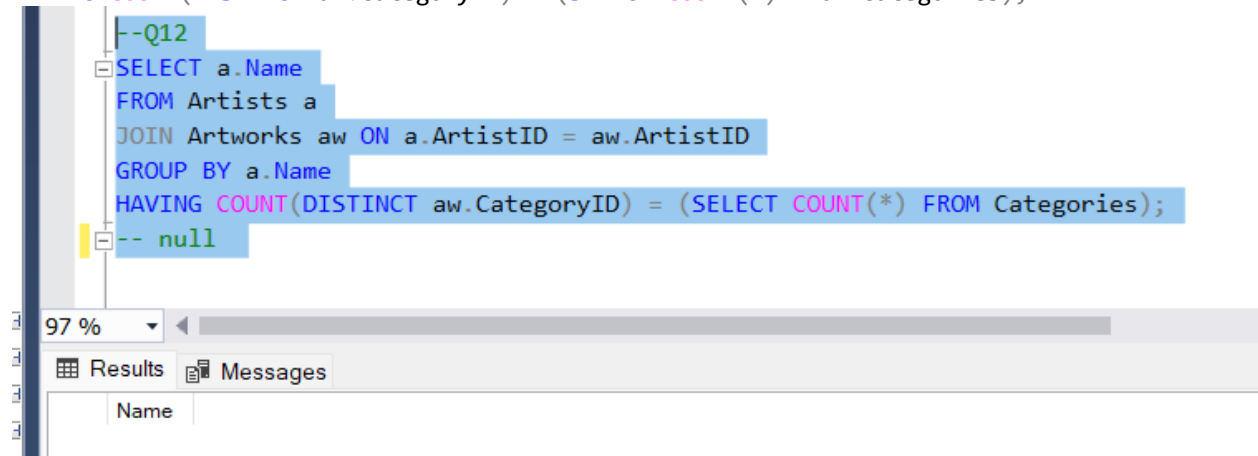
-- 11. Find all the artworks that have not been included in any exhibition.

```
SELECT aw.Title
FROM Artworks aw
LEFT JOIN ExhibitionArtworks ea ON aw.ArtworkID = ea.ArtworkID
WHERE ea.ExhibitionID IS NULL;
```



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

```
SELECT a.Name
FROM Artists a
JOIN Artworks aw ON a.ArtistID = aw.ArtistID
GROUP BY a.Name
HAVING COUNT(DISTINCT aw.CategoryID) = (SELECT COUNT(*) FROM Categories);
```



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

```
SELECT c.Name, COUNT(aw.ArtworkID) AS TotalArtworks
FROM Categories c
LEFT JOIN Artworks aw ON c.CategoryID = aw.CategoryID
GROUP BY c.Name
ORDER BY TotalArtworks DESC;
```

Results Messages		
	Name	TotalArtworks
1	Painting	3
2	Performance Art	0
3	Photography	0
4	Printmaking	0
5	Sculpture	0
6	Textile Art	0
7	Video Art	0
8	Architecture	0
9	Ceramics	0
10	Digital Art	0
11	Drawing	0
12	Installation Art	0
13	Mixed Media	0

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

```
SELECT a.Name
FROM Artists a
JOIN Artworks aw ON a.ArtistID = aw.ArtistID
GROUP BY a.Name
HAVING COUNT(aw.ArtworkID) > 2;
```

--Q14
SELECT a.Name
FROM Artists a
JOIN Artworks aw ON a.ArtistID = aw.ArtistID
GROUP BY a.Name
HAVING COUNT(aw.ArtworkID) > 2;

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Results	Messages
Name	

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

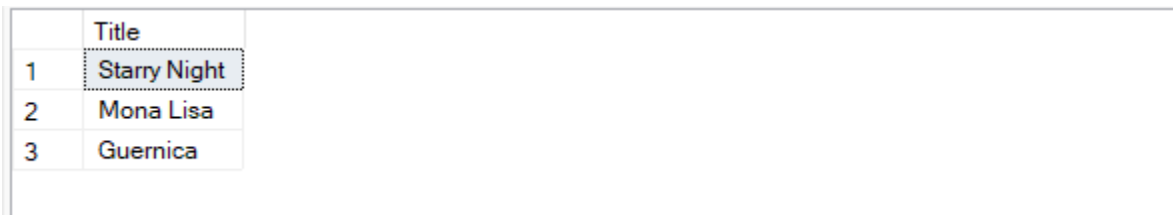
```
SELECT c.Name, AVG(aw.Year) AS AverageYear
FROM Categories c
JOIN Artworks aw ON aw.CategoryID = c.CategoryID
GROUP BY c.Name
HAVING COUNT(aw.ArtworkID) > 1;
```



Name	AverageYear
Painting	1776

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

```
SELECT aw.Title
FROM Artworks aw
JOIN ExhibitionArtworks ea ON aw.ArtworkID = ea.ArtworkID
JOIN Exhibitions e ON ea.ExhibitionID = e.ExhibitionID
WHERE e.Title = 'Modern Art Masterpieces';
```



	Title
1	Starry Night
2	Mona Lisa
3	Guernica

-- 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 aw ON c.CategoryID = aw.CategoryID
GROUP BY c.Name
HAVING AVG(aw.Year) > (SELECT AVG(Year) FROM Artworks);
```

--Q17

```
SELECT c.Name
FROM Categories c
JOIN Artworks aw ON c.CategoryID = aw.CategoryID
GROUP BY c.Name
HAVING AVG(aw.Year) > (SELECT AVG(Year) FROM Artworks);
```

--Null

97 %

Results Messages

Name

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

```
SELECT aw.Title
FROM Artworks aw
LEFT JOIN ExhibitionArtworks ea ON aw.ArtworkID = ea.ArtworkID
WHERE ea.ExhibitionID IS NULL;
```

--Q18

```
SELECT aw.Title
FROM Artworks aw
LEFT JOIN ExhibitionArtworks ea ON aw.ArtworkID = ea.ArtworkID
WHERE ea.ExhibitionID IS NULL;
```

-- null becасue all artworkS are included

97 %

Results Messages

Title

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

```
SELECT DISTINCT a.Name
FROM Artists a
JOIN Artworks aw ON a.ArtistID = aw.ArtistID
WHERE aw.CategoryID = (SELECT CategoryID FROM Artworks WHERE Title = 'Mona Lisa');
```

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

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

```
SELECT a.Name, COUNT(aw.ArtworkID) AS ArtworkCount
FROM Artists a
LEFT JOIN Artworks aw ON a.ArtistID = aw.ArtistID
GROUP BY a.Name
order by ArtworkCount DESC;
```

Results		Messages
	Name	ArtworkCount
1	Leonardo da Vinci	1
2	Pablo Picasso	1
3	Vincent van Gogh	1
4	Wassily Kandinsky	0
5	Rembrandt van Rijn	0
6	Salvador Dalí	0
7	Michelangelo	0
8	Andy Warhol	0
9	Claude Monet	0
10	Edvard Munch	0
11	Frida Kahlo	0
12	Georgia O'Keeffe	0
13	Henri Matisse	0
14	Jackson Pollock	0