

# CODING CHALLENGE

**Name:** Ramireddy Preethi

**Coding Challenge:** Virtual Art Gallery

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```
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 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 Picassos 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);

```

## -- 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(aw.artworkID) as Number_of_Artworks from artists a

```

```
inner join artworks aw on a.artistid=aw.artistid
group by a.name order by Number_of_Artworks DESC
```

Output:

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

```
/* 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
inner join Artists a on aw.ArtistID=a.ArtistID
where a.Nationality in ('Spanish','Dutch')
order by aw.year ASC
```

Output:

Results Messages	
	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 , count(aw.ArtworkId) as Num_of_Artworks from Artists a
inner join Artworks aw on a.ArtistID= aw.ArtistID
inner join Categories c on aw.CategoryID=c.CategoryID
where c.name='Painting'
Group by a.Name
```

Output:

	Name	Num_of_Artworks
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 Artworks
aw
inner join ExhibitionArtworks ea on aw.ArtworkID = ea.ArtworkID
inner join Exhibitions e on ea.ExhibitionID = e.ExhibitionID
inner join Artists a on aw.ArtistID = a.ArtistID
inner join Categories c on aw.CategoryID = c.CategoryID
where e.Title = 'Modern Art Masterpieces'

```

Output:

	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 , count(aw.ArtworkID) as ArtworkCount
from Artists a
join Artworks aw on a.ArtistID=aw.ArtistID
group by a.Name
Having count(aw.ArtworkID) >2

```

Output:

	Name	ArtworkCount
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/\* 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 = 'Modern Art Masterpieces'
and a.ArtworkID in (
    select ea2.ArtworkID from ExhibitionArtworks ea2
    join Exhibitions e2 on ea2.ExhibitionID = e2.ExhibitionID
    where e2.Title = 'Renaissance Art'
)

```

Output:

	Title
1	Mona Lisa

```
/* 7. Find the total number of artworks in each category */
```

```
select c.Name AS CategoryName, count(aw.ArtworkID) AS TotalArtworks from Categories c  
left join Artworks aw on c.CategoryID = aw.CategoryID  
group by c.Name
```

Output:

	CategoryName	TotalArtworks
1	Painting	3
2	Photography	0
3	Sculpture	0

```
/* 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;
```

Output:

	Name

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

```
Select aw.title as Artwork_title, a.Name, aw.year from artworks aw  
join artists a ON aw.ArtistID = a.ArtistID  
WHERE a.nationality = 'Spanish';
```

Output:

	Artwork_title	Name	year
1	Guernica	Pablo Picasso	1937

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

```

select e.Title from Exhibitions e
JOIN ExhibitionArtworks ea1 ON e.ExhibitionID = ea1.ExhibitionID
JOIN Artworks aw1 ON ea1.ArtworkID = aw1.ArtworkID
JOIN Artists a1 ON aw1.ArtistID = a1.ArtistID
JOIN ExhibitionArtworks ea2 ON e.ExhibitionID = ea2.ExhibitionID
JOIN Artworks aw2 ON ea2.ArtworkID = aw2.ArtworkID
JOIN Artists a2 ON aw2.ArtistID = a2.ArtistID
WHERE a1.Name = 'Vincent van Gogh' AND a2.Name = 'Leonardo da Vinci';

```

Output:

Results		Messages
	Title	
1	Modern Art Masterpieces	

```

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

```

```

select aw.title, a.Name From Artworks aw
Join Artists a on aw.ArtistID=a.ArtistID
Left join ExhibitionArtworks ea on aw.ArtworkID=ea.ArtworkID
where ea.ExhibitionID IS null;

```

Output:

Results		Messages
title	Name	

```

/* 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(CategoryID) from Categories)

```

Output:

Results		Messages
Name		

/\* 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, count(aw.artworkid) as artworkcount FROM Artists a
JOIN Artworks Aw ON A.ArtistID = Aw.ArtistID
GROUP BY A.Name
HAVING COUNT(Aw.ArtworkID) >2;
```

Output:

	Name	artworkcount

/\* 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 Average_Year FROM Categories c
JOIN Artworks Aw ON c.CategoryID = Aw.CategoryID
GROUP BY C.Name
HAVING COUNT(Aw.ArtworkID) > 1
```

Output:

	Name	Average_Year
1	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'
```

Output:

Results		Messages
	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 as CategoryName from Categories c
join Artworks aw on c.CategoryID = aw.CategoryID
GROUP BY c.CategoryID, c.Name
HAVING AVG(aw.Year) > (select AVG(Year) from Artworks)
```

Output:

Results		Messages
	CategoryName	

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

```
select aw.Title as artworks from Artworks aw
LEFT JOIN ExhibitionArtworks ea on aw.ArtworkID = ea.ArtworkID
WHERE ea.ArtworkID IS NULL
```

Output:

Results		Messages
	artworks	



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

```
select distinct a.Name as artists from Artists a
JOIN Artworks aw on a.ArtistID = aw.ArtistID
WHERE aw.CategoryID = (select CategoryID from Artworks WHERE Title = 'Mona Lisa')
```

Output:

Results		Messages
	artists	
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
JOIN Artworks aw on a.ArtistID = aw.ArtistID
GROUP BY a.Name
```

Output:

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