19.6.25

CODING CHALLENGE SQL VIRTUAL ART GALLERY SCHEMA DDL AND DML

-- 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\'s powerful anti-war mural.', 'guerninica.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);

SOLVE THE BELOW 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

ArtworkCount

FROM Artists a

JOIN Artworks aw ON a.ArtistID = aw.ArtistID

GROUP BY a.Name

ORDER BY ArtworkCount DESC;

	Name	ArtworkCount
١	Pablo Picasso	4
	Vincent van Gogh	1
	Leonardo da Vinci	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

JOIN Artists a ON aw.ArtistID = a.ArtistID

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

ORDER BY aw. Year ASC;

	Title
•	Starry Night
	Les Demoiselles d'Avignon
	Three Musicians
	Guernica
	The Weeping Woman

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 PaintingCount

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;

	Name	ArtworkCount
١	Pablo Picasso	4
	Vincent van Gogh	1
	Leonardo da Vinci	1

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

SELECT aw. Title, a. Name AS ArtistName, c. Name AS Category

FROM Artworks aw

JOIN ExhibitionArtworks ea ON aw.ArtworkID = ea.ArtworkID

JOIN Exhibitions e ON ea. Exhibition ID =

e.ExhibitionID

JOIN Artists a ON aw.ArtistID = a.ArtistID

JOIN Categories c ON aw.CategoryID =

c.CategoryID

WHERE e.Title = 'Modern Art Masterpieces';



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

SELECT a.Name, COUNT(aw.ArtworkID) AS

ArtworkCount

	Name	ArtworkCount
•	Pablo Picasso	4

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

JOIN ExhibitionArtworks ea1 ON aw.ArtworkID =

ea1.ArtworkID

JOIN Exhibitions e1 ON ea1. Exhibition ID = e1. Exhibition ID

JOIN ExhibitionArtworks ea2 ON aw.ArtworkID = ea2.ArtworkID

JOIN Exhibitions e2 ON ea2. Exhibition ID = e2. Exhibition ID

WHERE e1. Title = 'Modern Art Masterpieces' AND e2. Title = 'Renaissance Art';

7. Find the total number of artworks in each category

SELECT c.Name AS Category, COUNT(aw.ArtworkID)

AS TotalArtworks

FROM Categories c

LEFT JOIN Artworks aw ON c.CategoryID =

aw.CategoryID

GROUP BY c.Name;

	Category	TotalArtworks
•	Painting	5
	Sculpture	0
	Photography	0

Title

Mona Lisa

8. List artists who have more than 3 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) > 3;

	Name	ArtworkCount
•	Pablo Picasso	4

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';

	Title
•	Guernica
	The Weeping Woman
	Les Demoiselles d'Avignon
	Three Musicians

Title

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 IN ('Vincent van Gogh', 'Leonardo da Vinci')

GROUP BY e.Title

HAVING COUNT(DISTINCT a.Name) = 2;

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. ArtworkID IS NULL;

	Title
•	The Weeping Woman
	Les Demoiselles d'Avignon
	Three Musicians

Modern Art Masterpieces

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

	Name	
•	Pablo Picasso	

HAVING COUNT(DISTINCT aw.CategoryID) = (SELECT COUNT(*) FROM Categories);

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

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

	Category	TotalArtworks
١	Painting	6
	Sculpture	1
	Photography	1

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;

-		-
	Name	ArtworkCount
•	Pablo Picasso	6

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

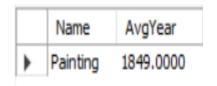
SELECT c.Name, AVG(aw.Year) AS AvgYear

FROM Categories c

JOIN Artworks aw ON c.CategoryID = aw.CategoryID

GROUP BY c.Name

HAVING COUNT(aw.ArtworkID) > 1;



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

	Title
•	Starry Night
	Mona Lisa
	Guernica

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

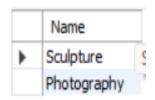
SELECT c.Name

FROM Categories c

JOIN Artworks aw ON c.CategoryID = aw.CategoryID

GROUP BY c.Name

HAVING AVG(aw. Year) > (SELECT AVG(Year) FROM Artworks);



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. ArtworkID IS NULL;

	Title	
•	The Weeping Woman	
	Les Demoiselles d'Avignon	
	Three Musicians	
	Sculpture A	
	Photo B	

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

SELECT DISTINCT a.Name

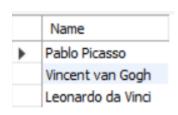
FROM Artists a

JOIN Artworks aw ON a.ArtistID = aw.ArtistID

WHERE aw. CategoryID = (

SELECT CategoryID FROM Artworks WHERE Title =

'Mona Lisa');



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;

	Name	ArtworkCount
١	Pablo Picasso	6
	Vincent van Gogh	1
	Leonardo da Vinci	1