# VirtualArtGallery

**--Creating Database**

CREATE DATABASE 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),

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 Picasso\"s 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)

**Solving Quries**

**--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 Name, COUNT(a.ArtistID) AS no\_of\_artworks FROM Artists

INNER JOIN Artworks a

ON Artists.ArtistID = a.ArtistID

GROUP BY Name

ORDER BY no\_of\_artworks DESC

**--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.Nationality, a1.Title FROM Artists a

INNER JOIN Artworks a1

ON a.ArtistID = a1.ArtistID

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

ORDER BY a1.Year ASC

**--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 (SELECT Name FROM Artists a WHERE a.ArtistID = t.ArtistID) AS Name,

t.art\_works FROM (SELECT a.ArtistID, count(c.Name) AS art\_works FROM Artworks a

INNER JOIN Categories c

ON a.CategoryID = c.CategoryID

WHERE c.Name = 'Painting'

GROUP BY a.ArtistID) t

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

SELECT a.Title AS artwork\_title, a1.Name AS artist\_name, c.Name AS category FROM Exhibitions e

INNER JOIN ExhibitionArtworks ea ON e.ExhibitionID = ea.ExhibitionID

INNER JOIN Artworks a ON ea.ArtworkID = a.ArtworkID

INNER JOIN Artists a1 ON a.ArtistID = a1.ArtistID

INNER JOIN Categories c ON a.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(a1.ArtistID) AS num\_artworks FROM Artists a

INNER JOIN Artworks a1 ON a.ArtistID = a1.ArtistID

GROUP BY a.name

HAVING COUNT(a1.ArtistID) > 2

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

SELECT a.Title FROM ExhibitionArtworks ea

INNER JOIN ExhibitionArtworks ea1 ON ea.ArtworkID = ea1.ArtworkID

INNER JOIN Artworks a ON ea.ArtworkID = a.ArtworkID

WHERE ea.ExhibitionID = 1 AND ea1.ExhibitionID = 2;

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

SELECT a.CategoryID, COUNT(a.Title) AS num\_artworks FROM Artworks a

GROUP BY a.CategoryID

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

SELECT a1.Name, COUNT(a.ArtworkID) AS num\_artworks FROM Artworks a

INNER JOIN Artists a1

ON a.ArtistID = a1.ArtistID

group BY a1.Name

HAVING COUNT(a.ArtworkID) > 3

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

SELECT a1.Title AS Artwork, a.Name AS Author\_name, a.Nationality FROM Artists a

INNER JOIN Artworks a1 ON a.ArtistID = a1.ArtistID

WHERE a.Nationality = 'Spanish'

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

SELECT e.Title FROM Exhibitions e

INNER JOIN ExhibitionArtworks ea1 ON e.ExhibitionID = ea1.ExhibitionID

INNER JOIN Artworks a1 ON ea1.ArtworkID = a1.ArtworkID

INNER JOIN Artists ar1 ON a1.ArtistID = ar1.ArtistID

INNER JOIN ExhibitionArtworks ea2 ON e.ExhibitionID = ea2.ExhibitionID

INNER JOIN Artworks a2 ON ea2.ArtworkID = a2.ArtworkID

INNER JOIN Artists ar2 ON a2.ArtistID = ar2.ArtistID

WHERE ar1.Name = 'Vincent van Gogh' AND ar2.Name = 'Leonardo da Vinci' AND ea1.ExhibitionID = ea2.ExhibitionID

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

SELECT a.ArtworkID, a.Title FROM Artworks a

LEFT JOIN ExhibitionArtworks ea ON a.ArtworkID = ea.ArtworkID

WHERE ea.ArtworkID IS NULL

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

SELECT DISTINCT(a3.Name) FROM Artworks a

INNER JOIN Artworks a1 ON a.ArtworkID = a1.ArtworkID

INNER JOIN Artworks a2 ON a.ArtworkID = a1.ArtworkID

INNER JOIN Artists a3 ON a.ArtistID = a3.ArtistID

WHERE a.CategoryID = 1 AND a1.CategoryID = 2 AND a2.CategoryID = 3

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

SELECT c.Name, COUNT(a.Title) AS num\_artworks FROM Artworks a

INNER JOIN Categories c ON a.CategoryID = c.CategoryID

GROUP BY c.Name

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

SELECT a1.Name, COUNT(a.Title) AS num\_artworks FROM Artworks a

INNER JOIN Artists a1 ON a.ArtistID = a1.ArtistID

GROUP BY a1.Name

HAVING COUNT(a.Title) > 2

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

SELECT c.Name, AVG(Year) AS average FROM Artworks a

INNER JOIN Categories c ON a.CategoryID = c.CategoryID

GROUP BY c.Name

HAVING COUNT(year) > 1

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

SELECT a.Title FROM ExhibitionArtworks ea

INNER JOIN Exhibitions e ON ea.ExhibitionID = e.ExhibitionID

INNER JOIN Artworks a ON ea.ArtworkID = a.ArtworkID

WHERE e.Title = 'Modern Art Masterpieces'

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

SELECT c.Name, AVG(Year) AS average FROM Artworks a

INNER JOIN Categories c ON a.CategoryID = c.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

LEFT JOIN ExhibitionArtworks ea ON a.ArtworkID = ea.ArtworkID

WHERE a.ArtworkID IS NULL

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

SELECT a1.Name FROM Artworks a

INNER JOIN Artists a1 ON a.ArtistID = a1.ArtistID

WHERE a.CategoryID = (SELECT a.CategoryID FROM Artworks a

WHERE a.Title = 'Mona Lisa')

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

SELECT a.Name, COUNT(a1.ArtworkID) AS num\_artworks FROM Artists a

INNER JOIN Artworks a1 ON a.ArtistID = a1.ArtistID

GROUP BY a.Name