Coding Challenge SQL

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)

);

CREATE TABLE ExhibitionArtworks (

ExhibitionID INT,

ArtworkID INT,

PRIMARY KEY (ExhibitionID, ArtworkID),

FOREIGN KEY (ExhibitionID) REFERENCES Exhibitions(ExhibitionID),

FOREIGN KEY (ArtworkID) REFERENCES Artworks(ArtworkID)

);

**Insert values**

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 Categories (CategoryID, Name) VALUES

(1, 'Painting'),

(2, 'Sculpture'),

(3, 'Photography');

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 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 ExhibitionArtworks (ExhibitionID, ArtworkID) VALUES

(1, 1),

(1, 2),

(1, 3),

(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 AS ArtistName, COUNT(aw.ArtworkID) AS NumberOfArtworks FROM Artists a LEFT JOIN Artworks aw ON a.ArtistID = aw.ArtistID GROUP BY a.ArtistID, a.Name ORDER BY NumberOfArtworks 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 aw.Title FROM Artworks aw WHERE aw.ArtistID IN ( SELECT a.ArtistID FROM Artists a WHERE a.Nationality IN ('Spanish', 'Dutch')) ORDER BY aw.Year;

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.ArtistID, a.Name;

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 ExhibitionArtworks ea JOIN Artworks aw ON ea.ArtworkID = aw.ArtworkID JOIN Artists a ON aw.ArtistID = a.ArtistID JOIN Exhibitions e ON ea.ExhibitionID = e.ExhibitionID 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 AS ArtistName, COUNT(aw.ArtworkID) AS NumberOfArtworks FROM Artists a JOIN Artworks aw ON a.ArtistID = aw.ArtistID GROUP BY a.ArtistID, 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 AS ArtworkTitle FROM ExhibitionArtworks ea JOIN Artworks aw ON ea.ArtworkID = aw.ArtworkID JOIN Exhibitions e ON ea.ExhibitionID = e.ExhibitionID WHERE e.Title IN ('Modern Art Masterpieces', 'Renaissance Art') GROUP BY aw.ArtworkID, aw.Title HAVING COUNT(DISTINCT e.ExhibitionID) = 2;

7. Find the total number of artworks in each category

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

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

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

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

SELECT aw.Title AS ArtworkTitle, a.Name AS ArtistName FROM Artworks aw JOIN Artists a ON aw.ArtistID = a.ArtistID WHERE a.Nationality = 'Spanish';

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 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.ExhibitionID, e.Title HAVING COUNT(DISTINCT a.Name) = 2;

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

SELECT aw.Title AS ArtworkTitle 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 AS ArtistName FROM Artists a JOIN Artworks aw ON a.ArtistID = aw.ArtistID JOIN Categories c ON aw.CategoryID = c.CategoryID GROUP BY a.ArtistID, a.Name HAVING COUNT(DISTINCT c.CategoryID) = (SELECT COUNT(\*) FROM Categories);

13. List 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.CategoryID, c.Name;

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

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

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

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

SELECT aw.Title AS ArtworkTitle, a.Name AS ArtistName FROM Artworks aw JOIN ExhibitionArtworks ea ON aw.ArtworkID = ea.ArtworkID JOIN Exhibitions e ON ea.ExhibitionID = e.ExhibitionID JOIN Artists a ON aw.ArtistID = a.ArtistID 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 AS CategoryName, AVG(aw.Year) AS AverageYear 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);

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

SELECT aw.Title AS ArtworkTitle, a.Name AS ArtistName 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;

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

SELECT DISTINCT a.Name AS ArtistName FROM Artists a JOIN Artworks aw ON a.ArtistID = aw.ArtistID WHERE aw.CategoryID = ( SELECT aw2.CategoryID FROM Artworks aw2 WHERE aw2.Title = 'Mona Lisa');

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

SELECT a.Name AS ArtistName, COUNT(aw.ArtworkID) AS NumberOfArtworks FROM Artists a LEFT JOIN Artworks aw ON a.ArtistID = aw.ArtistID GROUP BY a.ArtistID, a.Name;