**SQL\_CODE\_CHALLENGE**

**VIRTUAL ART GALLERY**

**DDL AND DML COMMANDS:**

create table if not exists Artists

(

ArtistID INT PRIMARY KEY,

Name varchar(255) not null,

Biography text,

Nationality varchar(100));

create table if not exists Categories

(

CategoryID int primary key,

Name varchar(100) not null

);

create table if not exists Artworks

(

ArtworkID int primary key,

Title varchar(255) not null,

ArtistID int,

CategoryID int,

Year int,

Description text,

Imageurl varchar(255),

Constraint Artwork\_artistID\_fk foreign key(ArtistID) references Artists(ArtistID),

Constraint Artwork\_categoryID\_pk foreign key(CategoryID) references Categories(CategoryID)

);

create table if not exists Exhibitions

(

ExhibitionID int primary key,

Title varchar(255) not null,

StartDate date,

EndDate date,

Description text

);

create table if not exists ExhibitionArtworks

(

ExhibitionID int,

ArtworkID int,

primary key (ExhibitionID,ArtworkID),

Constraint Ea\_exhibitionID\_fk foreign key(ExhibitionID) references Exhibitions(ExhibitionID),

Constraint Ea\_artworkID\_fk FOREIGN KEY (ArtworkID) REFERENCES Artworks(ArtworkID)

);

-- DML

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,count(aw.ArtworkID) AS NumberOfArtworks

from Artists a left join Artworks aw on a.ArtistID = aw.ArtistID

group by a.ArtistID

order by NumberOfArtworks desc;

1. **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,a.nationality,aw.year from artworks aw inner join

Artists a on a.artistID=aw.artistID

where a.nationality in ("Dutch","Spanish")

order by aw.year;

1. **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,c.Name,count(aw.artworkID) 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.ArtistID;

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

select aw.title,a.name,c.name 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';

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

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.ArtistID

having count(aw.ArtworkID) > 2;

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

select c.Name,count(a.ArtworkID) AS TotalArtworks

from Categories c left join Artworks a on c.CategoryID = a.CategoryID

group by c.CategoryID;

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

select a.Name,count(aw.ArtworkID) as ArtworkCount

from Artists a inner join Artworks aw on aw.ArtistID = a.ArtistID

group by a.ArtistID having count(aw.ArtworkID) > 3;

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

select aw.Title,a.Name from Artworks aw inner join Artists a on a.ArtistID=aw.ArtistID where a.Nationality='Spanish';

**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

inner join Artworks aw on a.ArtistID=aw.ArtistID

inner join Categories c on aw.CategoryID=c.CategoryID

group by a.ArtistID,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;

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

select a.Name,count(aw.ArtworkID) AS ArtworkCount

FROM Artists a inner join Artworks aw on a.ArtistID = aw.ArtistID

group by 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,avg(aw.Year) AS AverageYear

from Categories c inner 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

inner join ExhibitionArtworks ea on aw.ArtworkID = ea.ArtworkID

inner join Exhibitions e on ea.ExhibitionID = e.ExhibitionID

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(aw.Year) as AverageYear

from Categories c inner 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.ExhibitionID is null;

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

select distinct a.Name from Artists a

inner 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 left join Artworks aw on a.ArtistID = aw.ArtistID

group by a.Name;