

VIRTUAL GALLERY

```
create database virtual_gallery;
```

```
use virtual_gallery;
```

```
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,  
  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));
```

-- insertions

-- 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) VALUES  
(1, 'Starry Night', 2, 1, 1889, 'A famous painting by Vincent van Gogh.'),  
(2, 'Mona Lisa', 3, 1, 1503, 'The iconic portrait by Leonardo da Vinci.'),  
(3, 'Guernica', 1, 1, 1937, 'Pablo Picasso\'s powerful anti-war mural.');
```

-- 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);

-- 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(art.artworkID) as number_of_artworks from artists a

join artworks art on a.artistID=art.artistID group by a.name order by number_of_artworks;

/*Pablo Picasso 1

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 art.title

from artists a join artworks art on a.artistID=art.artistID where a.nationality in ('dutch','spanish') order
by year asc;

/*Starry Night

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(a.artistID) as number_of_artworks from artists a
join artworks art on a.artistID=art.artistID
join categories c on art.categoryID=c.categoryID where c.name='painting' group by a.name;

/*Pablo Picasso1
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 art.title,a.name,c.name from artists a
join artworks art on a.artistID=art.artistID
join categories c on c.categoryID=art.categoryID
join exhibitionartworks ea on ea.artworkID=art.artworkID
join exhibitions e on e.exhibitionID=ea.exhibitionID
where e.title='Modern Art Masterpieces';

/*Starry Night Vincent van Gogh Painting
Mona Lisa Leonardo da Vinci Painting
Guernica Pablo Picasso Painting*/
```

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

```
select a.name, count(*) as number_of_artwork from artists a
join artworks art on a.artistID=art.artistID
group by art.artworkID
having number_of_artwork >2;

/*                                     NO OUTPUT
*/
```

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

```

-- 'Renaissance Art' exhibitions

select distinct art.title from artworks art

join exhibitionartworks ea on ea.artworkID=art.artworkID

join exhibitions e on e.exhibitionID=ea.exhibitionID

WHERE e.title IN ('Modern Art Masterpieces','Renaissance Art' )

GROUP BY art.Title

HAVING COUNT(DISTINCT e.title) = 2;

```

```

/*Mona Lisa*/

```

```

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

select count(*)as number_of_artworks from artworks art

join categories c on c.categoryID=art.categoryID

group by c.categoryID;

/*3*/

```

```

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

```

```

select a.* from artists a

join artworks art on a.artistID=art.artistID

group by art.artworkID

having count(art.artworkID)>3 ;

```

```

/*                                NO OUTPUT
*/

```

```

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

```

```

select a.name,art.title from artists a

join artworks art on a.artistID=art.artistid

where a.nationality='spanish';

```

```
/*Pablo Picasso      Guernica*/
```

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

```
select distinct e.title from artists a
join artworks art on a.artistID=art.artistID
join exhibitionartworks ea on ea.artworkID=art.artworkID
join exhibitions e on e.exhibitionID=ea.exhibitionID
WHERE a.Name IN ('Vincent van Gogh', 'Leonardo da Vinci')
GROUP BY E.Title
HAVING COUNT(DISTINCT a.Name) = 2;
/*Modern Art Masterpieces*/
```

-- 11,18 find all artwork that has been not included in any exhibition

```
select * from artworks where artworkID not in(
select art.artworkID from artworks art
join exhibitionartworks ea on ea.artworkID=art.artworkID
join exhibitions e on e.exhibitionID=ea.exhibitionID);
/*                                NO OUTPUT
*/
```

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

```
select a.name from artists a
join artworks art on a.artistID=art.artistID
join categories c on c.categoryID=art.categoryID
group by a.name,a.artistid
having count(distinct c.categoryid)=(select count(*) from categories );
/*                                NO OUTPUT
*/
```

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

```
select c.name,count(art.artworkID) as total_number_of_artwoks from artworks art
join categories c on c.categoryID=art.categoryID
group by c.name;
/*Painting      3*/
```

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

```
select a.* from artists a
join artworks art on a.artistID=art.artistID
group by art.artworkID
having count(art.artworkID)>2 ;
/*                                NO OUTPUT
*/
```

-- 15 list the categories with the average year of artworks they contain only for categories with more than 1 artwork

```
select c.name,avg(art.year) from artworks art
join categories c on c.categoryID=art.categoryID
group by c.name having count(*)>1;
/*Painting      1776.3333*/
```

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

```
select art.* from artworks art
join categories c on c.categoryID=art.categoryID
join exhibitionartworks ea on ea.artworkID=art.artworkID
join exhibitions e on e.exhibitionID=ea.exhibitionID
where e.title='Modern Art Masterpieces';
```

| | | | | | |
|-----|--------------|---|---|------|--|
| /*1 | Starry Night | 2 | 1 | 1889 | A famous painting by Vincent van Gogh. |
| 2 | Mona Lisa | 3 | 1 | 1503 | The iconic portrait by Leonardo da Vinci. |
| 3 | Guernica | 1 | 1 | 1937 | Pablo Picasso's powerful anti-war mural.*/ |

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

```
select c.name from artworks art
```

```
join categories c on art.categoryID=c.categoryID
```

```
group by c.name,c.categoryID
```

```
having avg(art.year)<(select avg(year) from artworks);
```

```
/*                                NO OUTPUT
*/
```

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

```
select a.* from artists a
```

```
join artworks art on a.artistID=art.artistID
```

```
join categories c on c.categoryID=art.categoryID
```

```
where art.title='Mona Lisa';
```

```
/*3    Leonardo da Vinci        Italian polymath of the Renaissance.    Italian*/
```

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

```
select a.name,count(art.artworkID) as num_of_artwork from artists a
```

```
join artworks art on a.artistID=art.artistID
```

```
group by art.artworkID;
```

```
/*Pablo Picasso1
```

```
Vincent van Gogh        1
```

```
Leonardo da Vinci      1*/
```