

# RUSHALEE DAS

## VIRTUAL ART GALLERY

```
mysql> CREATE DATABASE VirtualArtGallery;  
Query OK, 1 row affected (0.03 sec)
```

```
mysql> SHOW DATABASES;  
+-----+  
| Database |  
+-----+  
| hmbank |  
| information_schema |  
| mysql |  
| performance_schema |  
| sisdb |  
| students |  
| sys |  
| virtualartgallery |  
+-----+  
8 rows in set (0.01 sec)
```

```
mysql> use virtualartgallery;  
Database changed
```

```
mysql> use virtualartgallery;  
Database changed  
mysql> CREATE TABLE Artists(  
    -> artist_id INT PRIMARY KEY,  
    -> name VARCHAR(225) NOT NULL,  
    -> biography TEXT,  
    -> nationality VARCHAR(100));  
Query OK, 0 rows affected (0.07 sec)  
  
mysql> CREATE TABLE Categories(  
    -> category_id INT PRIMARY KEY,  
    -> name VARCHAR(100) NOT NULL);  
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> CREATE TABLE Artworks(  
  -> artwork_id INT PRIMARY KEY,  
  -> title VARCHAR(225) NOT NULL,  
  -> artist_id INT,  
  -> category_id INT,  
  -> year INT,  
  -> description TEXT,  
  -> image_url VARCHAR(225),  
  -> FOREIGN KEY (artist_id) REFERENCES Artists(artist_id),  
  -> FOREIGN KEY (category_id) REFERENCES Categories(category_id));  
Query OK, 0 rows affected (0.09 sec)
```

```
mysql> CREATE TABLE Exhibitions(  
  -> exhibition_id INT PRIMARY KEY,  
  -> title VARCHAR(225) NOT NULL,  
  -> start_date DATE,  
  -> end_date DATE,  
  -> description TEXT);  
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> CREATE TABLE ExhibitionArtworks(  
  -> exhibition_id INT,  
  -> artwork_id INT,  
  -> PRIMARY KEY (exhibition_id, artwork_id),  
  -> FOREIGN KEY (exhibition_id) REFERENCES Exhibitions(exhibition_id),  
  -> FOREIGN KEY (artwork_id) REFERENCES Artworks(artwork_id));  
Query OK, 0 rows affected (0.08 sec)
```

```
mysql> INSERT INTO Artists (artist_id, 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');  
Query OK, 3 rows affected (0.01 sec)  
Records: 3 Duplicates: 0 Warnings: 0
```

```
mysql> INSERT INTO Categories (category_id, name) VALUES  
  -> (1, 'Painting'),  
  -> (2, 'Sculpture'),  
  -> (3, 'Photography');  
Query OK, 3 rows affected (0.01 sec)  
Records: 3 Duplicates: 0 Warnings: 0
```

```
mysql> INSERT INTO Artworks (artwork_id, title, artist_id, category_id, year, description, image_url) 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');  
Query OK, 3 rows affected (0.01 sec)  
Records: 3 Duplicates: 0 Warnings: 0
```

```
mysql> INSERT INTO Exhibitions (exhibition_id, title, start_date, end_date, 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.');  
Query OK, 2 rows affected (0.01 sec)  
Records: 2 Duplicates: 0 Warnings: 0
```

```
mysql> INSERT INTO ExhibitionArtworks (exhibition_id, artwork_id) VALUES  
  -> (1, 1),  
  -> (1, 2),  
  -> (1, 3),  
  -> (2, 2);  
Query OK, 4 rows affected (0.01 sec)  
Records: 4 Duplicates: 0 Warnings: 0
```

1

```
mysql> SELECT artist.name AS Artist_Name,  
-> COUNT(artwork.artist_id) AS No_of_Artworks  
-> FROM Artists artist  
-> LEFT JOIN Artworks artwork ON artist.artist_id = artwork.artist_id  
-> GROUP BY artist.artist_id, artist.name  
-> ORDER BY No_of_Artworks DESC;  
+-----+-----+  
| Artist_Name | No_of_Artworks |  
+-----+-----+  
| Pablo Picasso | 1 |  
| Vincent van Gogh | 1 |  
| Leonardo da Vinci | 1 |  
+-----+-----+  
3 rows in set (0.00 sec)
```

2

```
mysql> SELECT AR.title AS Artwork_title,  
-> AR.year  
-> FROM Artworks AR  
-> JOIN Artists A ON A.artist_id = AR.artist_id  
-> WHERE A.nationality IN('Spanish', 'Dutch')  
-> ORDER BY AR.year ASC;  
+-----+-----+  
| Artwork_title | year |  
+-----+-----+  
| Starry Night | 1889 |  
| Guernica | 1937 |  
+-----+-----+  
2 rows in set (0.00 sec)
```

3

```
mysql> SELECT A.name AS Artist_name,
-> COUNT(AR.artist_id) AS nof_artworks
-> FROM Artists A
-> JOIN Artworks AR ON AR.artist_id = A.artist_id
-> JOIN Categories C ON C.category_id = AR.category_id
-> WHERE C.name = 'Painting'
-> GROUP BY A.name, A.artist_id
-> ORDER BY A.artist_id;
```

Artist_name	nof_artworks
Pablo Picasso	1
Vincent van Gogh	1
Leonardo da Vinci	1

3 rows in set (0.00 sec)

4

```
mysql> SELECT AR.title AS NameofArtwork,
-> A.name AS ArtistName,
-> C.name AS Category
-> FROM Artworks AR
-> JOIN Artists A ON A.artist_id = AR.artist_id
-> JOIN Categories C ON C.category_id = AR.category_id
-> JOIN ExhibitionArtworks EA ON EA.artwork_id = AR.artwork_id
-> JOIN Exhibitions E ON E.exhibition_id = EA.exhibition_id
-> WHERE E.title = 'Modern Art Masterpieces';
```

NameofArtwork	ArtistName	Category
Starry Night	Vincent van Gogh	Painting
Mona Lisa	Leonardo da Vinci	Painting
Guernica	Pablo Picasso	Painting

3 rows in set (0.00 sec)

5

```
mysql> INSERT INTO Artworks (artwork_id, title, artist_id, category_id, year, description, image_url) VALUES
-> (4, 'Last Supper', 3, 1, 1495, 'The religious painting by Leonardo da Vinci.', 'last_supper.jpg');
Query OK, 1 row affected (0.02 sec)
```

```
mysql> INSERT INTO Artworks (artwork_id, title, artist_id, category_id, year, description, image_url) VALUES
-> (5, 'Salvator Mundi', 3, 1, 1500, 'The celestial sphere of the heavens by Leonardo da Vinci.', 'salvador_mundi.jpg');
Query OK, 1 row affected (0.01 sec)

mysql> SELECT A.artist_id,
-> A.name AS Artistname,
-> COUNT(AR.artwork_id) AS nofArtwork
-> FROM Artists A
-> JOIN Artworks AR ON AR.artist_id = A.artist_id
-> GROUP BY A.artist_id, A.name
-> HAVING COUNT(AR.artwork_id)>2;
+-----+-----+
| artist_id | Artistname | nofArtwork |
+-----+-----+
| 3 | Leonardo da Vinci | 3 |
+-----+-----+
1 row in set (0.00 sec)
```

6

```
mysql> SELECT AR.title AS Artworktitle
-> FROM Artworks AR
-> JOIN ExhibitionArtworks EA ON AR.Artwork_id = EA.artwork_id
-> JOIN Exhibitions E ON E.exhibition_id = EA.exhibition_id
-> WHERE E.title IN ('Modern Art Masterpieces', 'Renaissance Art')
-> GROUP BY AR.artwork_id, AR.title
-> HAVING COUNT(DISTINCT E.exhibition_id) = 2;
+-----+
| Artworktitle |
+-----+
| Mona Lisa |
+-----+
1 row in set (0.00 sec)
```

7

```
mysql> SELECT c.name AS CategoryName,
-> COUNT(ar.artwork_id) AS TotalArtworks
-> FROM Categories c
-> LEFT JOIN Artworks ar ON c.category_id = ar.category_id
-> GROUP BY c.category_id, c.name;
+-----+-----+
| CategoryName | TotalArtworks |
+-----+-----+
| Painting | 5 |
| Sculpture | 0 |
| Photography | 0 |
+-----+-----+
3 rows in set (0.00 sec)
```

8

```
mysql> INSERT INTO Artworks (artwork_id, title, artist_id, category_id, year, description, image_url) VALUES
-> (6, 'Vitruvian Man', 3, 1, 1490, 'Illustrates Vitruvius's theory of an ideal human by Leonardo da Vinci.', 'vitruvian_man.jpg');
Query OK, 1 row affected (0.01 sec)

mysql> SELECT a.name AS ArtistName,
-> COUNT(ar.artwork_id) AS nofArtwork
-> FROM Artists a
-> JOIN Artworks ar ON ar.artist_id = a.artist_id
-> GROUP BY a.artist_id, a.name
-> HAVING COUNT(ar.artwork_id)>3;
+-----+-----+
| ArtistName | nofArtwork |
+-----+-----+
| Leonardo da Vinci | 4 |
+-----+-----+
1 row in set (0.00 sec)
```

9

```
mysql> SELECT ar.artwork_id,
-> ar.title AS Artworktitle,
-> a.name AS artistname,
-> a.nationality
-> FROM Artworks ar
-> JOIN Artists a ON a.artist_id = ar.artist_id
-> WHERE a.nationality = 'Spanish';
+-----+-----+-----+-----+
| artwork_id | Artworktitle | artistname | nationality |
+-----+-----+-----+-----+
| 3 | Guernica | Pablo Picasso | Spanish |
+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

10

```
mysql> SELECT e.exhibition_id,
-> e.title AS ExhibitionTitle,
-> e.start_date,
-> e.end_date,
-> e.description
-> FROM Exhibitions e
-> JOIN ExhibitionArtworks ea ON e.exhibition_id = ea.exhibition_id
-> JOIN Artworks ar ON ea.artwork_id = ar.artwork_id
-> JOIN Artists a ON ar.artist_id = a.artist_id
-> WHERE a.name IN('Vincent van Gogh', 'Leonardo da Vinci')
-> GROUP BY e.exhibition_id, e.title, e.start_date, e.end_date, e.description
-> HAVING COUNT(DISTINCT a.artist_id) = 2;
+-----+-----+-----+-----+-----+
| exhibition_id | ExhibitionTitle | start_date | end_date | description |
+-----+-----+-----+-----+-----+
| 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. |
+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

11

```
mysql> SELECT ar.artwork_id,
-> ar.title AS ArtworkTitle,
-> a.name AS ArtistName,
-> c.name AS CategoryName
-> FROM Artworks ar
-> JOIN Artists a ON ar.artist_id = a.artist_id
-> JOIN Categories c ON ar.category_id = c.category_id
-> WHERE ar.artwork_id NOT IN (
-> SELECT artwork_id FROM ExhibitionArtworks);
```

artwork_id	ArtworkTitle	ArtistName	CategoryName
4	Last Supper	Leonardo da Vinci	Painting
5	Salvator Mundi	Leonardo da Vinci	Painting

```
2 rows in set (0.00 sec)
```

12

```
mysql> INSERT INTO Artworks (artwork_id, title, artist_id, category_id, year, description, image_url)
-> VALUES (7, 'Man with Lamb', 1, 2, 1990, 'Illustrates a symbol of humanism by Pablo Picasso.', 'man_with_lamb.jpg');
Query OK, 1 row affected (0.01 sec)
```

```
mysql> INSERT INTO Artworks (artwork_id, title, artist_id, category_id, year, description, image_url)
-> VALUES (8, 'Self Portrait', 1, 3, 1901, 'Illustrates a himself by Pablo Picasso.', 'photo.jpg');
Query OK, 1 row affected (0.00 sec)
```

```
mysql> SELECT a.artist_id,
-> a.name AS artistname
-> FROM Artists a
-> JOIN Artworks ar ON a.artist_id = ar.artist_id
-> JOIN Categories c ON c.category_id = ar.category_id
-> GROUP BY a.artist_id, a.name
-> HAVING COUNT(DISTINCT c.category_id) = (
-> SELECT COUNT(*) FROM Categories);
```

artist_id	artistname
1	Pablo Picasso

```
1 row in set (0.02 sec)
```

13

```
mysql> SELECT c.category_id,
-> c.name AS categoryname,
-> COUNT(ar.artwork_id) AS totalArtwork
-> FROM Categories c
-> LEFT JOIN Artworks ar ON ar.category_id = c.category_id
-> GROUP BY c.category_id,c.name;
+-----+-----+-----+
| category_id | categoryname | totalArtwork |
+-----+-----+-----+
|          1 | Painting     |            6 |
|          2 | Sculpture    |            1 |
|          3 | Photography  |            1 |
+-----+-----+-----+
3 rows in set (0.00 sec)
```

14

```
mysql> SELECT a.artist_id,
-> a.name AS artistName,
-> COUNT(ar.artwork_id) AS NofArtwork
-> FROM Artists a
-> JOIN Artworks ar ON a.artist_id = ar.artist_id
-> GROUP BY a.artist_id, a.name
-> HAVING COUNT(ar.artwork_id)>2;
+-----+-----+-----+
| artist_id | artistName      | NofArtwork |
+-----+-----+-----+
|          1 | Pablo Picasso   |            3 |
|          3 | Leonardo da Vinci |            4 |
+-----+-----+-----+
2 rows in set (0.00 sec)
```

15

```
mysql> SELECT c.category_id,
-> c.name AS categoryname,
-> AVG(ar.year) AS averageyear
-> FROM Categories c
-> JOIN Artworks ar ON c.category_id = ar.category_id
-> GROUP BY c.category_id, c.name
-> HAVING COUNT(ar.artwork_id) > 1;
+-----+-----+-----+
| category_id | categoryname | averageyear |
+-----+-----+-----+
|          1 | Painting     | 1635.6667   |
+-----+-----+-----+
1 row in set (0.00 sec)
```



16

```
mysql> SELECT ar.artwork_id,
-> ar.title AS artworktitle,
-> a.name AS Artistname,
-> c.name AS categoryname
-> FROM Artworks ar
-> JOIN Artists a ON ar.artist_id = a.artist_id
-> JOIN Categories c ON c.category_id = ar.category_id
-> JOIN ExhibitionArtworks ea ON ea.artwork_id = ar.artwork_id
-> JOIN Exhibitions e ON ea.exhibition_id = e.exhibition_id
-> WHERE e.title = 'Modern Art Masterpieces';
```

artwork_id	artworktitle	Artistname	categoryname
1	Starry Night	Vincent van Gogh	Painting
2	Mona Lisa	Leonardo da Vinci	Painting
3	Guernica	Pablo Picasso	Painting

3 rows in set (0.00 sec)

17

```
mysql> SELECT c.category_id,
-> c.name AS category_name,
-> AVG(ar.year) AS category_avg_year
-> FROM Categories c
-> JOIN Artworks ar ON c.category_id = ar.category_id
-> GROUP BY c.category_id, c.name
-> HAVING AVG(ar.year) > (SELECT AVG(year) FROM Artworks);
```

category_id	category_name	category_avg_year
2	Sculpture	1990.0000
3	Photography	1901.0000

2 rows in set (0.01 sec)

18

```
mysql> SELECT ar.artwork_id,
-> ar.title AS artworktitle,
-> a.name AS artistname,
-> c.name AS categoryname
-> FROM Artworks ar
-> JOIN Artists a ON ar.artist_id = a.artist_id
-> JOIN Categories c ON ar.category_id = c.category_id
-> LEFT JOIN ExhibitionArtworks ea ON ar.artwork_id = ea.artwork_id
-> WHERE ea.exhibition_id IS NULL;
```

artwork_id	artworktitle	artistname	categoryname
4	Last Supper	Leonardo da Vinci	Painting
5	Salvator Mundi	Leonardo da Vinci	Painting
7	Man with Lamb	Pablo Picasso	Sculpture
8	Self Portrait	Pablo Picasso	Photography

4 rows in set (0.00 sec)

19

```
mysql> SELECT a.artist_id,
-> a.name AS artistname,
-> c.name AS categoryname
-> FROM Artists a
-> JOIN Artworks ar ON ar.artist_id = a.artist_id
-> JOIN Categories c ON ar.category_id = c.category_id
-> WHERE ar.title = 'Mona Lisa';
```

artist_id	artistname	categoryname
3	Leonardo da Vinci	Painting

1 row in set (0.00 sec)

20

```
mysql> SELECT a.artist_id,  
-> a.name AS artistname,  
-> COUNT(ar.artwork_id) AS nofartwork  
-> FROM Artists a  
-> LEFT JOIN Artworks ar ON a.artist_id = ar.artist_id  
-> GROUP BY a.artist_id, a.name  
-> ORDER BY nofartwork DESC;
```

artist_id	artistname	nofartwork
3	Leonardo da Vinci	4
1	Pablo Picasso	3
2	Vincent van Gogh	1

3 rows in set (0.00 sec)