

VIRTUAL ART GALLERY MANAGEMENT SYSTEM

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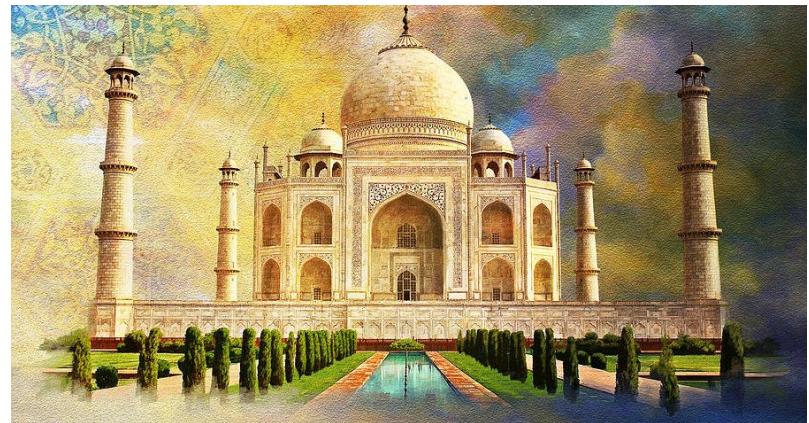
Professor: Dr. Bhaskar Vidhyacharan

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 - Basic
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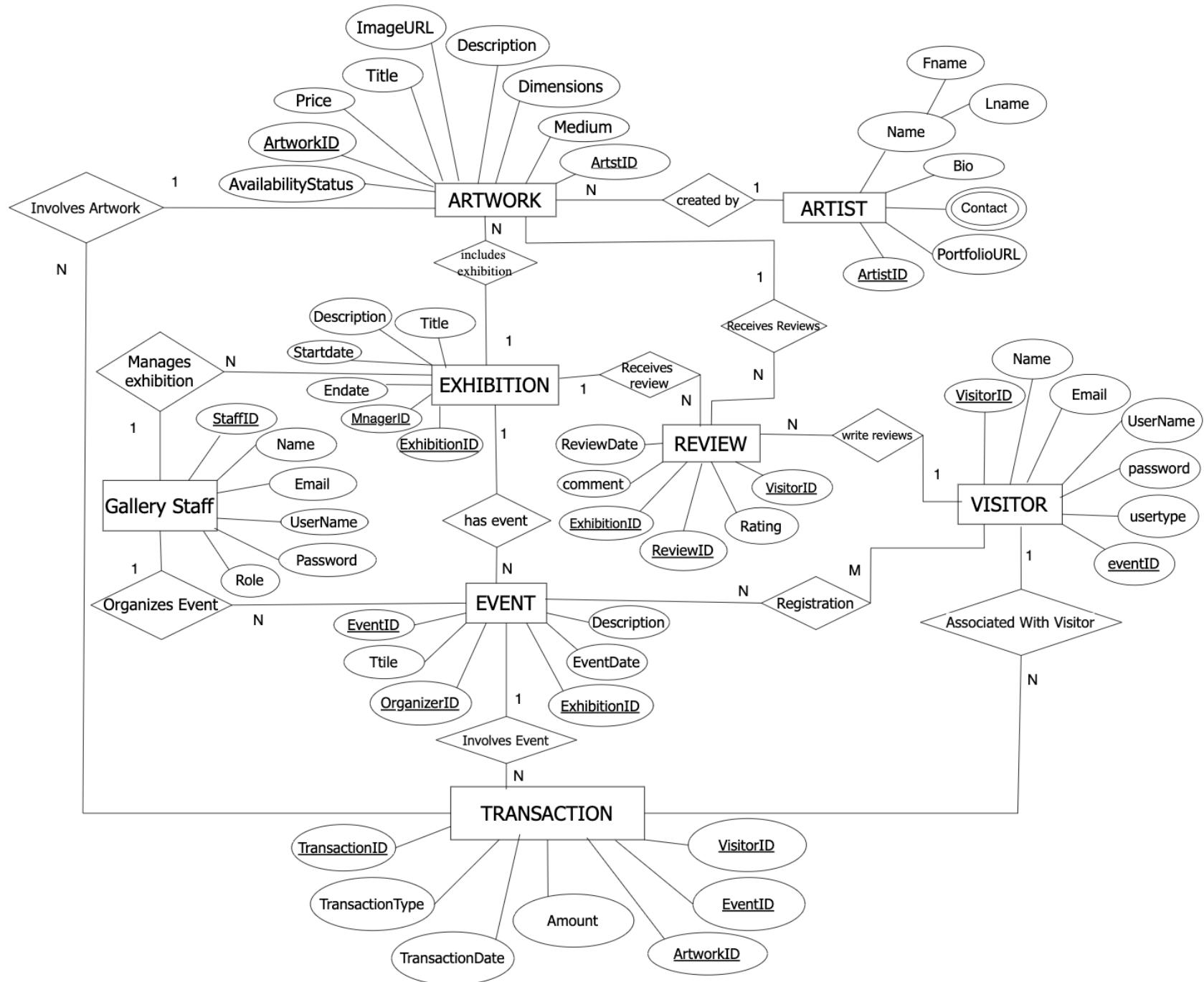
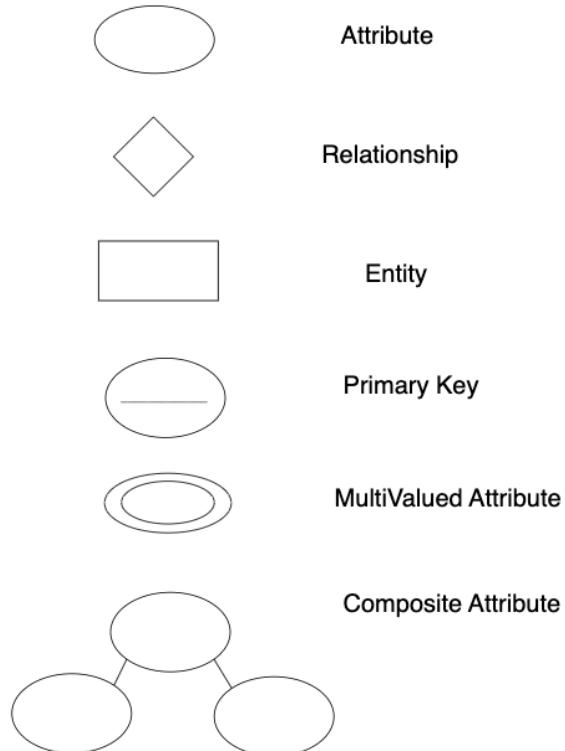
Introduction

- Art Gallery Management System:
 - A database that can handle Information like Art Gallery system, including list of art works, artists, Exhibition, Event and Transaction histories
 - It leverages technology to create seamless experiences for stakeholders and contribute to the vibrant art community.
- Users:
 - Art Gallery can retrieve and store information about their Employees(GalleryStaff)
 - Can retrieve Information about Artists and Visitors who registered for Events



ER DIAGRAM

LEGEND



Entities and Attributes

- **GalleryStaff:** Stores information about Gallery Employees, such as StaffID(PK), Name, Email, Role
- **Artist:** Contains Information about Artist like ArtistID(PK), Name, Bio, ContactInfo and PortfolioURL
- **Exhibition:** Stores information Related to exhibition ExhibitionID(PK), Title, Description, StartDate, EndDate, ManagerID(FK)
- **Event:** contains Every Event information like EventID, Title, Description, EventDate, OrganizerID(FK) and ExhibitionID(FK)
- **ArtWork:** Table contains information about all Artworks, such as ArtworkID(PK), Title, Description, Medium, Dimensions, Price, AvailabilityStatus, ImageURL, ArtistID(FK), ExhibitionID(FK)
- **Review:** stores information regarding reviews given by visitors like ReviewID(PK), Rating, Comment, ReviewDate, VisitorID(FK), ArtworkID(FK), ExhibitionID(FK))
- **Visitor:** Visitor table contains all visitors who register for events ,such as VisitorID(PK), FirstName, LastName, Email, UserType, EventID(FK)
- **Transaction:** Entity store every transaction Information like TransactionID, TransactionType, Amount, TransactionDate, VisitorID(FK), ArtworkID(FK), EventID(FK)

Relationship Instances

- Artists create artworks (1:N Relationship)
- Visitors register Events (N:M Relationship)
- Visitor Write Reviews (1:N Relationship)
- Gallery Staff Organize Event (1:N Relationship)
- Galler Staff manage Exhibition (1:N Relationship)
- Artworks are displayed in exhibitions (M:N relationship)
- Exhibition Receive Reviews (1:N Relationship)
- Visitors Involves Artwork (N:M Relationship)

Creating Tables

```
CREATE TABLE GalleryStaff (
    StaffID INT PRIMARY KEY,
    Name VARCHAR(100),
    Email VARCHAR(255),
    Username VARCHAR(50),
    Password VARCHAR(255),
    Role VARCHAR(50)
);
```

```
CREATE TABLE Artist (
    ArtistID INT PRIMARY KEY,
    Name VARCHAR(100),
    Bio TEXT,
    ContactInfo VARCHAR(255),
    PortfolioURL VARCHAR(255)
);
```

```
CREATE TABLE Exhibition (
    ExhibitionID INT PRIMARY KEY,
    Title VARCHAR(255),
    Description TEXT,
    StartDate DATE,
    EndDate DATE,
    ManagerID INT,
    FOREIGN KEY (ManagerID) REFERENCES GalleryStaff(StaffID)
);
```

```
CREATE TABLE Event (
    EventID INT PRIMARY KEY,
    Title VARCHAR(255),
    Description TEXT,
    EventDate DATE,
    OrganizerID INT,
    ExhibitionID INT,
    FOREIGN KEY (OrganizerID) REFERENCES GalleryStaff(StaffID),
    FOREIGN KEY (ExhibitionID) REFERENCES Exhibition(ExhibitionID)
);
```

```
CREATE TABLE Visitor (
    VisitorID INT PRIMARY KEY,
    Name VARCHAR(100),
    Email VARCHAR(255),
    Username VARCHAR(50),
    Password VARCHAR(255),
    UserType VARCHAR(20),
    EventID INT,
    FOREIGN KEY (EventID) REFERENCES Event(EventID)
);
```

Creating Tables

```
CREATE TABLE Artwork (
    ArtworkID INT PRIMARY KEY,
    Title VARCHAR(255),
    Description TEXT,
    Medium VARCHAR(100),
    Dimensions VARCHAR(50),
    Price DECIMAL(10, 2),
    AvailabilityStatus VARCHAR(20),
    ImageURL VARCHAR(255),
    ArtistID INT,
    ExhibitionID INT,
    FOREIGN KEY (ArtistID) REFERENCES Artist(ArtistID),
    FOREIGN KEY (ExhibitionID) REFERENCES Exhibition(ExhibitionID)
);
```

```
CREATE TABLE Transaction (
    TransactionID INT PRIMARY KEY,
    TransactionType VARCHAR(50),
    Amount DECIMAL(10, 2),
    TransactionDate DATE,
    VisitorID INT,
    ArtworkID INT,
    EventID INT,
    FOREIGN KEY (VisitorID) REFERENCES Visitor(VisitorID),
    FOREIGN KEY (ArtworkID) REFERENCES Artwork(ArtworkID),
    FOREIGN KEY (EventID) REFERENCES Event(EventID)
);
```

```
CREATE TABLE Review (
    ReviewID INT PRIMARY KEY,
    Rating INT,
    Comment TEXT,
    ReviewDate DATE,
    VisitorID INT,
    ArtworkID INT,
    ExhibitionID INT,
    FOREIGN KEY (VisitorID) REFERENCES Visitor(VisitorID),
    FOREIGN KEY (ArtworkID) REFERENCES Artwork(ArtworkID),
    FOREIGN KEY (ExhibitionID) REFERENCES Exhibition(ExhibitionID)
);
```

Inserted Data

| ArtworkID | Title | Description | Medium | Dimensions | Price | AvailabilityStatus | ArtistID | ExhibitionID |
|-----------|----------------------------|---|-------------------|--------------|---------|--------------------|----------|--------------|
| 1 | Sunrise in Jaipur | Captures the mesmerizing sunrise over Jaipur cityscape. | Oil on Canvas | 30x40 inches | 1800.00 | Available | 7 | 14 |
| 2 | Goddess Durga | Exquisite portrayal of Goddess Durga in a traditional style. | Tempera on Board | 24x36 inches | 1200.00 | Sold | 20 | 6 |
| 3 | The Golden Temple | A stunning view of the Golden Temple at Amritsar. | Acrylic on Canvas | 18x24 inches | 900.00 | Available | 4 | 20 |
| 4 | Rajput Warriors | Depiction of brave Rajput warriors in a battle scene. | Watercolor | 16x20 inches | 500.00 | Available | 15 | 5 |
| 5 | Lotus Pond | A serene painting capturing lotus flowers in a pond. | Oil on Canvas | 24x30 inches | 1400.00 | Available | 12 | 8 |
| 6 | Kathakali Dance | Colorful portrayal of Kathakali dancers in full costume. | Mixed Media | 20x24 inches | 800.00 | Sold | 3 | 15 |
| 7 | Jaisalmer Fort | Detailed painting showcasing the majestic Jaisalmer Fort. | Watercolor | 12x18 inches | 600.00 | Available | 19 | 17 |
| 8 | Taj Mahal Reflections | A unique perspective capturing the reflection of Taj Mahal. | Oil on Canvas | 36x48 inches | 2500.00 | Available | 10 | 19 |
| 9 | Indian Street Vendor | Vibrant portrayal of an Indian street vendor scene. | Acrylic on Canvas | 22x28 inches | 1100.00 | Available | 11 | 11 |
| 10 | Mughal Garden | A beautiful depiction of a Mughal garden with intricate details. | Watercolor | 16x22 inches | 700.00 | Sold | 6 | 3 |
| 11 | Varanasi Ghats | Scenic view of the Ghats in Varanasi, a spiritual city. | Oil on Canvas | 28x36 inches | 1800.00 | Available | 8 | 16 |
| 12 | Traditional Indian Wedding | Celebration of a traditional Indian wedding. | Mixed Media | 18x24 inches | 950.00 | Available | 5 | 10 |
| 13 | Holi Festival | Colorful depiction of people celebrating the Holi festival. | Acrylic on Canvas | 20x30 inches | 1200.00 | Available | 14 | 13 |
| 14 | Indian Spices Market | Busy market scene showcasing various Indian spices. | Watercolor | 14x20 inches | 400.00 | Sold | 17 | 9 |
| 15 | Rural India | Scenic painting capturing the essence of rural life in India. | Oil on Canvas | 32x40 inches | 2000.00 | Available | 18 | 18 |
| 16 | Bollywood Icons | Portraits of famous Bollywood actors and actresses. | Tempera on Board | 24x30 inches | 1300.00 | Available | 16 | 1 |
| 17 | Spiritual Sadhu | Detailed portrait of a spiritual Sadhu in meditation. | Graphite on Paper | 11x14 inches | 300.00 | Sold | 9 | 12 |
| 18 | Indian Street Scenes | Collection of vibrant street scenes from different Indian cities. | Mixed Media | 20x28 inches | 900.00 | Available | 2 | 4 |
| 19 | Diwali Celebrations | Festive atmosphere capturing Diwali celebrations. | Oil on Canvas | 26x36 inches | 1600.00 | Available | 13 | 7 |
| 20 | Tribal Artistry | Artistic representation of tribal culture and traditions. | Acrylic on Canvas | 18x22 inches | 750.00 | Sold | 1 | 2 |
| 21 | Rajasthani Folk Music | Colorful depiction of Rajasthani folk musicians. | Watercolor | 16x20 inches | 600.00 | Available | 3 | 11 |
| 22 | Indian Wildlife | Realistic portrayal of diverse Indian wildlife species. | Oil on Canvas | 30x40 inches | 2200.00 | Available | 4 | 20 |
| 23 | Desert Oasis | Scenic oasis scene in the Indian desert. | Acrylic on Canvas | 24x36 inches | 1500.00 | Available | 5 | 18 |
| 24 | Mysore Palace | Architectural beauty of the Mysore Palace. | Mixed Media | 22x28 inches | 1100.00 | Available | 6 | 7 |
| 25 | Indian Coastal Life | Idyllic coastal life with fishing boats and seaside. | Watercolor | 18x24 inches | 700.00 | Available | 7 | 16 |
| 26 | Ganga Aarti | Spiritual Ganga Aarti ritual along the riverbanks. | Oil on Canvas | 28x36 inches | 1800.00 | Available | 8 | 12 |
| 27 | Bengal Tiger | Majestic Bengal Tiger in its natural habitat. | Acrylic on Canvas | 20x30 inches | 1300.00 | Available | 9 | 5 |
| 28 | Indian Temple Architecture | Detailed depiction of intricate temple architecture. | Watercolor | 14x20 inches | 500.00 | Available | 10 | 1 |
| 29 | Goan Beaches | Relaxing scenes from the beautiful beaches of Goa. | Oil on Canvas | 32x40 inches | 2400.00 | Available | 11 | 19 |
| 30 | Kerala Backwaters | Serene backwater landscapes of Kerala. | Mixed Media | 18x22 inches | 1000.00 | Sold | 20 | 9 |

[MariaDB [20165av]> select * from Artist;

| ArtistID | Name | Bio | ContactInfo | PortfolioURL |
|----------|---------------|---|----------------|---|
| 1 | Rajesh Sharma | Award-winning painter specializing in Indian landscapes. | +91 9876543210 | https://www.example.com/rajesh_sharma_portfolio |
| 2 | Priya Gupta | Talented sculptor inspired by Indian mythology. | +91 8765432109 | https://www.example.com/priya_gupta_portfolio |
| 3 | Amit Singh | Photography enthusiast capturing the essence of Indian culture. | +91 7654321098 | https://www.example.com/amit_singh_portfolio |
| 4 | Ananya Joshi | Versatile artist exploring various Indian art forms. | +91 6543210987 | https://www.example.com/ananya_joshi_portfolio |
| 5 | Kunal Verma | Digital art expert blending modern techniques with Indian themes. | +91 5432109876 | https://www.example.com/kunal_verma_portfolio |
| 6 | Neha Kapoor | Specializing in traditional Indian folk art. | +91 4321098765 | https://www.example.com/neha_kapoor_portfolio |
| 7 | Ravi Sharma | Creating realistic watercolor paintings of Indian landscapes. | +91 3210987654 | https://www.example.com/ravi_sharma_portfolio |
| 8 | Anjali Sinha | Expressing emotions through abstract Indian art. | +91 2109876543 | https://www.example.com/anjali_sinha_portfolio |
| 9 | Sanjay Patel | Capturing the spirit of Indian festivals through art. | +91 1098765432 | https://www.example.com/sanjay_patel_portfolio |
| 10 | Meera Rao | Showcasing Indian culture through vibrant acrylic paintings. | +91 0987654321 | https://www.example.com/meera_rao_portfolio |
| 11 | Rahul Kumar | Impressionist artist with a unique perspective on Indian landscapes. | +91 9876543210 | https://www.example.com/rahul_kumar_portfolio |
| 12 | Sneha Singh | Contemporary artist experimenting with Indian mythological themes. | +91 8765432109 | https://www.example.com/sneha_singh_portfolio |
| 13 | Vikram Sharma | Abstract art specialist exploring Indian color palettes. | +91 7654321098 | https://www.example.com/vikram_sharma_portfolio |
| 14 | Nisha Verma | Mixed media artist inspired by Indian traditions and textiles. | +91 6543210987 | https://www.example.com/nisha_verma_portfolio |
| 15 | Arjun Das | Sculptor known for his contemporary interpretations of Indian sculptures. | +91 5432109876 | https://www.example.com/arjun_das_portfolio |
| 16 | Pooja Patel | Abstract expressionist artist with Indian cultural influences. | +91 4321098765 | https://www.example.com/pooja_patel_portfolio |
| 17 | Rajat Mishra | Photorealism artist capturing Indian street scenes. | +91 3210987654 | https://www.example.com/rajat_mishra_portfolio |
| 18 | Shreya Singh | Digital illustrator focusing on Indian mythology. | +91 2109876543 | https://www.example.com/shreya_singh_portfolio |
| 19 | Aryan Kapoor | Realistic painter portraying Indian wildlife. | +91 1098765432 | https://www.example.com/aryan_kapoor_portfolio |
| 20 | Neha Verma | Contemporary art exploring Indian traditions in a modern context. | +91 0987654321 | https://www.example.com/neha_verma_portfolio |

20 rows in set (0.000 sec)

Inserted Data

[MariaDB [20165av]> select * from Visitor;

| VisitorID | FirstName | LastName | Email | UserType | EventID |
|-----------|-----------|------------|------------------------------|-------------------|---------|
| 1 | Aditi | Sharma | aditisharma@example.com | Regular Visitor | 5 |
| 2 | Rahul | Gupta | rahulgupta@example.com | Registered Member | 12 |
| 3 | Priya | Patel | priyapatel@example.com | Regular Visitor | 1 |
| 4 | Aarav | Singh | aaravsingh@example.com | Registered Member | 2 |
| 5 | Ishaan | Reddy | ishaanreddy@example.com | Regular Visitor | 7 |
| 6 | Ayesha | Kumar | ayeshakumar@example.com | Registered Member | 14 |
| 7 | Aryan | Joshi | aryanjoshi@example.com | Regular Visitor | 8 |
| 8 | Amaya | Das | amayadas@example.com | Registered Member | 32 |
| 9 | Arjun | Nair | arjunnair@example.com | Regular Visitor | 8 |
| 10 | Zara | Chopra | zarachopra@example.com | Registered Member | 20 |
| 11 | Vivan | Agarwal | vivanagarwal@example.com | Regular Visitor | 3 |
| 12 | Ishika | Rao | ishikarao@example.com | Registered Member | 2 |
| 13 | Advik | Malhotra | advikmalhotra@example.com | Regular Visitor | 3 |
| 14 | Ananya | Khan | ananyakhan@example.com | Registered Member | 8 |
| 15 | Devansh | Shah | devanshshah@example.com | Regular Visitor | 2 |
| 16 | Myra | Singhania | myrasinghania@example.com | Registered Member | 11 |
| 17 | Kabir | Sharma | kabirsharma@example.com | Regular Visitor | 15 |
| 18 | Aadhya | Gupta | aadhyagupta@example.com | Registered Member | 1 |
| 19 | Reyansh | Verma | reyanshverma@example.com | Regular Visitor | 9 |
| 20 | Anika | Jain | anikajain@example.com | Registered Member | 16 |
| 21 | Riya | Krishnan | riyakrishnan@example.com | Regular Visitor | 10 |
| 22 | Kabir | Menon | kabirmenon@example.com | Registered Member | 2 |
| 23 | Saanvi | Iyer | saanviiyer@example.com | Regular Visitor | 6 |
| 24 | Aaryan | Sinha | aaryansinha@example.com | Registered Member | 19 |
| 25 | Aanya | Rajput | aanyarajput@example.com | Regular Visitor | 25 |
| 26 | Arnav | Chatterjee | arnavchatterjee@example.com | Registered Member | 1 |
| 27 | Anvi | Chopra | anvichopra@example.com | Regular Visitor | 29 |
| 28 | Advik | Kumar | advikkumar@example.com | Registered Member | 13 |
| 29 | Diya | Sharma | diyasharma@example.com | Regular Visitor | 26 |
| 30 | Rudra | Gupta | rudragupta@example.com | Registered Member | 2 |
| 31 | Tanisha | Singh | tanishasingh@example.com | Regular Visitor | 1 |
| 32 | Vihannir | Nair | vihaannir@example.com | Registered Member | 4 |
| 33 | Aaradhya | Malhotra | aaradhyamalhotra@example.com | Regular Visitor | 33 |
| 34 | Veer | Khan | veerkhan@example.com | Registered Member | 3 |
| 35 | Ira | Shah | irashah@example.com | Regular Visitor | 5 |
| 36 | Anish | Singhania | anishsinghania@example.com | Registered Member | 16 |
| 37 | Samaira | Reddy | samairareddy@example.com | Regular Visitor | 5 |
| 38 | Arnav | Gupta | arnavgupta@example.com | Registered Member | 11 |
| 39 | Kavya | Patel | kavyapatel@example.com | Regular Visitor | 18 |
| 40 | Adwait | Singh | adwaitsingh@example.com | Registered Member | 9 |
| 41 | Vivan | Agarwal | vivanagarwal@example.com | Regular Visitor | 3 |
| 42 | Ishika | Rao | ishikarao@example.com | Registered Member | 2 |
| 43 | Advik | Malhotra | advikmalhotra@example.com | Regular Visitor | 3 |
| 44 | Ananya | Khan | ananyakhan@example.com | Registered Member | 18 |
| 45 | Devansh | Shah | devanshshah@example.com | Regular Visitor | 7 |
| 46 | Myra | Singhania | myrasinghania@example.com | Registered Member | 11 |
| 47 | Kabir | Sharma | kabirsharma@example.com | Regular Visitor | 15 |
| 48 | Aadhya | Gupta | aadhyagupta@example.com | Registered Member | 31 |
| 49 | Reyansh | Verma | reyanshverma@example.com | Regular Visitor | 9 |
| 50 | Anika | Jain | anikajain@example.com | Registered Member | 16 |
| 51 | Riya | Krishnan | riyakrishnan@example.com | Regular Visitor | 10 |
| 52 | Kabir | Menon | kabirmenon@example.com | Registered Member | 24 |
| 53 | Saanvi | Iyer | saanviiyer@example.com | Regular Visitor | 6 |
| 54 | Aaryan | Sinha | aaryansinha@example.com | Registered Member | 19 |
| 55 | Aanya | Rajput | aanyarajput@example.com | Regular Visitor | 5 |
| 56 | Arnav | Chatterjee | arnavchatterjee@example.com | Registered Member | 1 |

[MariaDB [20165av]> select EventID, Title, Description, OrganizerID, ExhibitionID from Event;

| EventID | Title | Description | OrganizerID | ExhibitionID |
|---------|----------------------------------|-----------------------------------|-------------|--------------|
| 1 | Artists Meetup 1 | A gathering of local artists. | 1 | 6 |
| 2 | Art Workshop 1 | Learn painting techniques. | 2 | 1 |
| 3 | Photography Masterclass 1 | Advanced photography techniques. | 3 | 9 |
| 4 | Sculpture Exhibition Opening 1 | Grand opening event. | 4 | 3 |
| 5 | Digital Art Symposium 1 | Discussing digital art trends. | 5 | 12 |
| 6 | Abstract Art Workshop 1 | Create your own abstract art. | 6 | 18 |
| 7 | Artisan Market 1 | Showcasing artworks for sale. | 7 | 5 |
| 8 | Photography Exhibition Opening 1 | Showcasing photography works. | 8 | 11 |
| 9 | Sculpture Symposium 1 | Discussing sculptural techniques. | 9 | 15 |
| 10 | Digital Art Showcase 1 | Showcasing digital artworks. | 10 | 8 |
| 11 | Artists Meetup 2 | A gathering of local artists. | 11 | 10 |
| 12 | Art Workshop 2 | Learn painting techniques. | 12 | 17 |
| 13 | Photography Masterclass 2 | Advanced photography techniques. | 13 | 2 |
| 14 | Sculpture Exhibition Opening 2 | Grand opening event. | 14 | 13 |
| 15 | Digital Art Symposium 2 | Discussing digital art trends. | 15 | 19 |
| 16 | Abstract Art Workshop 2 | Create your own abstract art. | 16 | 10 |
| 17 | Artisan Market 2 | Showcasing artworks for sale. | 17 | 16 |
| 18 | Photography Exhibition Opening 2 | Showcasing photography works. | 18 | 4 |
| 19 | Sculpture Symposium 2 | Discussing sculptural techniques. | 19 | 20 |
| 20 | Digital Art Showcase 2 | Showcasing digital artworks. | 20 | 7 |
| 21 | Artists Meetup 3 | A gathering of local artists. | 1 | 14 |
| 22 | Art Workshop 3 | Learn painting techniques. | 2 | 15 |
| 23 | Photography Masterclass 3 | Advanced photography techniques. | 3 | 6 |
| 24 | Sculpture Exhibition Opening 3 | Grand opening event. | 4 | 1 |
| 25 | Digital Art Symposium 3 | Discussing digital art trends. | 5 | 18 |
| 26 | Abstract Art Workshop 3 | Create your own abstract art. | 6 | 9 |
| 27 | Artisan Market 3 | Showcasing artworks for sale. | 7 | 16 |
| 28 | Photography Exhibition Opening 3 | Showcasing photography works. | 8 | 12 |
| 29 | Sculpture Symposium 3 | Discussing sculptural techniques. | 9 | 2 |
| 30 | Digital Art Showcase 3 | Showcasing digital artworks. | 10 | 20 |
| 31 | Artists Meetup 4 | A gathering of local artists. | 11 | 5 |
| 32 | Art Workshop 4 | Learn painting techniques. | 12 | 11 |
| 33 | Photography Masterclass 4 | Advanced photography techniques. | 13 | 17 |
| 34 | Sculpture Exhibition Opening 4 | Grand opening event. | 14 | 8 |
| 35 | Digital Art Symposium 4 | Discussing digital art trends. | 15 | 14 |
| 36 | Abstract Art Workshop 4 | Create your own abstract art. | 16 | 3 |
| 37 | Artisan Market 4 | Showcasing artworks for sale. | 17 | 19 |
| 38 | Photography Exhibition Opening 4 | Showcasing photography works. | 18 | 7 |
| 39 | Sculpture Symposium 4 | Discussing sculptural techniques. | 19 | 13 |
| 40 | Digital Art Showcase 4 | Showcasing digital artworks. | 20 | 15 |

40 rows in set (0.000 sec)

SQL Basic Commands

1. Retrieves Visitors based on specific User Type and Name starts with "A"

```
SELECT VisitorID,  
       FirstName,  
       LastName FROM Visitor  
      WHERE  
      FirstName like "A%"  
      AND  
      UserType IN ('Regular Visitor');
```

| | VisitorID | FirstName | LastName |
|--|-----------|-----------|----------|
| | 1 | Aditi | Sharma |
| | 7 | Aryan | Joshi |
| | 9 | Arjun | Nair |
| | 13 | Advik | Malhotra |
| | 25 | Aanya | Rajput |
| | 27 | Anvi | Chopra |
| | 33 | Aaradhyा | Malhotra |
| | 43 | Advik | Malhotra |
| | 55 | Aanya | Rajput |
| | 57 | Anvi | Chopra |
| | 63 | Aaradhyा | Malhotra |

11 rows in set (0.000 sec)

2. Retrieves providing a count of artworks for each artist.

```
SELECT  
    ArtistID,  
    COUNT(ArtworkID) AS ArtworkCount  
FROM  
    Artwork  
GROUP BY  
    ArtistID;
```

| ArtistID | ArtworkCount |
|----------|--------------|
| 1 | 1 |
| 2 | 1 |
| 3 | 2 |
| 4 | 2 |
| 5 | 2 |
| 6 | 2 |
| 7 | 2 |
| 8 | 2 |
| 9 | 2 |
| 10 | 2 |
| 11 | 2 |
| 12 | 1 |
| 13 | 1 |
| 14 | 1 |
| 15 | 1 |
| 16 | 1 |
| 17 | 1 |
| 18 | 1 |
| 19 | 1 |
| 20 | 2 |

20 rows in set (0.000 sec)

3. Retrieves total revenue for each artist based on the prices of their artworks.

```
SELECT  
    ArtistID,  
    SUM(Price) AS TotalRevenue  
FROM  
    Artwork  
GROUP BY  
    ArtistID;
```

| ArtistID | TotalRevenue |
|----------|--------------|
| 1 | 750.00 |
| 2 | 900.00 |
| 3 | 1400.00 |
| 4 | 3100.00 |
| 5 | 2450.00 |
| 6 | 1800.00 |
| 7 | 2500.00 |
| 8 | 3600.00 |
| 9 | 1600.00 |
| 10 | 3000.00 |
| 11 | 3500.00 |
| 12 | 1400.00 |
| 13 | 1600.00 |
| 14 | 1200.00 |
| 15 | 500.00 |
| 16 | 1300.00 |
| 17 | 400.00 |
| 18 | 2000.00 |
| 19 | 600.00 |
| 20 | 2200.00 |

20 rows in set (0.000 sec)

4. Retrieve artworks that are not in available status

```
SELECT ArtworkID, Title, AvailabilityStatus  
FROM Artwork  
WHERE AvailabilityStatus NOT LIKE 'Available';
```

| ArtworkID | Title | AvailabilityStatus |
|-----------|----------------------|--------------------|
| 2 | Goddess Durga | Sold |
| 6 | Kathakali Dance | Sold |
| 10 | Mughal Garden | Sold |
| 14 | Indian Spices Market | Sold |
| 17 | Spiritual Sadhu | Sold |
| 20 | Tribal Artistry | Sold |
| 30 | Kerala Backwaters | Sold |

7 rows in set (0.000 sec)

5. Retrieves artworks whose price exceeds 1000, ordering the results in descending order based on price

```
SELECT  
    ArtworkID,  
    Title,  
    Price  
FROM  
    Artwork  
HAVING  
    Price>1000  
ORDER BY  
    Price Desc;
```

| ArtworkID | Title | Price |
|-----------|-----------------------|---------|
| 8 | Taj Mahal Reflections | 2500.00 |
| 29 | Goan Beaches | 2400.00 |
| 22 | Indian Wildlife | 2200.00 |
| 15 | Rural India | 2000.00 |
| 1 | Sunrise in Jaipur | 1800.00 |
| 11 | Varanasi Ghats | 1800.00 |
| 26 | Ganga Aarti | 1800.00 |
| 19 | Diwali Celebrations | 1600.00 |
| 23 | Desert Oasis | 1500.00 |
| 5 | Lotus Pond | 1400.00 |
| 16 | Bollywood Icons | 1300.00 |
| 27 | Bengal Tiger | 1300.00 |
| 2 | Goddess Durga | 1200.00 |
| 13 | Holi Festival | 1200.00 |
| 9 | Indian Street Vendor | 1100.00 |
| 24 | Mysore Palace | 1100.00 |

SQL Intermediate Commands

1. retrieves the titles of artworks, the names of artists containing 'j', and the exhibitions starting from January 1, 2023, or later.

SELECT Artwork.Title, Artist.Name, Exhibition.ExhibitionID

FROM

Artwork

INNER JOIN

Exhibition ON Artwork.ExhibitionID = Exhibition.ExhibitionID

INNER JOIN

Artist ON Artwork.ArtistID = Artist.ArtistID

WHERE

Exhibition.StartDate >= '2023-01-01'

AND

Artist.Name LIKE '%j%';

| Title | Name | ExhibitionID |
|----------------------|---------------|--------------|
| Tribal Artistry | Rajesh Sharma | 2 |
| The Golden Temple | Ananya Joshi | 20 |
| Indian Wildlife | Ananya Joshi | 20 |
| Varanasi Ghats | Anjali Sinha | 16 |
| Ganga Aarti | Anjali Sinha | 12 |
| Spiritual Sadhu | Sanjay Patel | 12 |
| Bengal Tiger | Sanjay Patel | 5 |
| Rajput Warriors | Arjun Das | 5 |
| Bollywood Icons | Pooja Patel | 1 |
| Indian Spices Market | Rajat Mishra | 9 |

10 rows in set (0.001 sec)

2. Retrieve artists whose ID corresponds to those with more than one artwork, ordered in descending order

```
SELECT Artist.Name,  
       COUNT(Artwork.ArtworkID) AS TotalArtworks  
FROM  
      Artist  
LEFT JOIN  
      Artwork ON Artist.ArtistID = Artwork.ArtistID  
GROUP BY  
      Artist.ArtistID, Artist.Name  
HAVING  
      TotalArtworks > 1  
ORDER BY  
      TotalArtworks DESC;
```

| Name | TotalArtworks |
|--------------|---------------|
| Neha Verma | 2 |
| Rahul Kumar | 2 |
| Anjali Sinha | 2 |
| Kunal Verma | 2 |
| Meera Rao | 2 |
| Ravi Sharma | 2 |
| Ananya Joshi | 2 |
| Sanjay Patel | 2 |
| Neha Kapoor | 2 |
| Amit Singh | 2 |

10 rows in set (0.000 sec)

3. Retrieves all artworks with a medium containing "Oil" and exhibitions that started after January 1, 2023

```
SELECT Artwork.Title, Artist.Name, Exhibition.Title
```

```
FROM
```

```
    Artwork
```

```
LEFT JOIN
```

```
    Artist ON Artwork.ArtistID = Artist.ArtistID
```

```
LEFT JOIN
```

```
    Exhibition ON Artwork.ExhibitionID=Exhibition.ExhibitionID
```

```
WHERE
```

```
    Exhibition.StartDate >= '2023-01-01'
```

```
AND
```

```
    Artwork.Medium like '%Oil%'
```

```
ORDER BY
```

```
    Exhibition.StartDate DESC;
```

| Title | Name | Title |
|-----------------------|---------------|----------------------------|
| Lotus Pond | Sneha Singh | Indian Temple Architecture |
| Diwali Celebrations | Vikram Sharma | Bengal Tiger |
| Indian Wildlife | Ananya Joshi | Rhythms of India |
| Taj Mahal Reflections | Meera Rao | Modern Indian Artistry |
| Goan Beaches | Rahul Kumar | Modern Indian Artistry |
| Rural India | Shreya Singh | India Through Lens |
| Varanasi Ghats | Anjali Sinha | Unity in Diversity |
| Sunrise in Jaipur | Ravi Sharma | Expressions of Bollywood |
| Ganga Aarti | Anjali Sinha | Heritage Crafts of India |

9 rows in set (0.001 sec)

4. retrieve the names of artists along with the total number of reviews they have received, considering only artists with two or more reviews, and sorting them by the total number of reviews in descending order.

```
SELECT Artist.Name, COUNT(Review.ReviewID) AS TotalReviews  
FROM  
    Artist  
INNER JOIN  
    Artwork ON Artist.ArtistID = Artwork.ArtistID  
INNER JOIN  
    Review ON Artwork.ArtworkID = Review.ArtworkID  
GROUP BY  
    Artist.ArtistID, Artist.Name  
HAVING  
    TotalReviews >= 2  
ORDER BY  
    TotalReviews DESC;
```

| Name | TotalReviews |
|--------------|--------------|
| Rahul Kumar | 2 |
| Ravi Sharma | 2 |
| Amit Singh | 2 |
| Sanjay Patel | 2 |
| Kunal Verma | 2 |

5 rows in set (0.000 sec)

5. retrieve all Artists along with their corresponding total artworks sold (artwork purchases) and total earnings

```
SELECT Artist.Name,  
       COUNT(Transaction.TransactionID) AS TotalArtWorks,  
       SUM(Transaction.Amount) AS TotalAmount  
FROM     Artist  
JOIN    Artwork ON Artist.ArtistID = Artwork.ArtistID  
JOIN    Transaction ON Artwork.ArtworkID = Transaction.ArtworkID  
WHERE   Transaction.TransactionType = 'artwork purchase'  
GROUP BY Artist.Name  
ORDER BY TotalAmount DESC;
```

| Name | TotalArtWorks | TotalAmount |
|--------------|---------------|-------------|
| Arjun Das | 1 | 1500.00 |
| Meera Rao | 1 | 1350.00 |
| Kunal Verma | 1 | 1200.00 |
| Ananya Joshi | 1 | 1200.00 |
| Amit Singh | 1 | 1100.00 |
| Ravi Sharma | 1 | 1000.00 |
| Neha Kapoor | 1 | 1000.00 |
| Aryan Kapoor | 1 | 950.00 |
| Sneha Singh | 1 | 900.00 |
| Anjali Sinha | 1 | 850.00 |
| Neha Verma | 1 | 800.00 |
| Rahul Kumar | 1 | 700.00 |

12 rows in set (0.001 sec)

SQL Advanced Commands

1. Retrieve the names of artists and their corresponding artworks that have received a rating of 4 or higher in reviews

```
SELECT Artist.Name,  
       COUNT(Artwork.ArtworkID) AS TotalArtworks  
  FROM Artist  
 JOIN Artwork ON Artist.ArtistID = Artwork.ArtistID  
 JOIN (  
         SELECT ArtworkID, COUNT(*) AS TotalReviews  
           FROM Review  
          WHERE Rating >= 4  
          GROUP BY ArtworkID  
      ) AS Reviews  
        ON Artwork.ArtworkID = Reviews.ArtworkID  
 GROUP BY  
       Artist.Name  
 ORDER BY  
   TotalArtworks DESC;
```

| Name | TotalArtworks |
|---------------|---------------|
| Sanjay Patel | 2 |
| Amit Singh | 2 |
| Rahul Kumar | 2 |
| Ravi Sharma | 2 |
| Kunal Verma | 1 |
| Aryan Kapoor | 1 |
| Vikram Sharma | 1 |
| Anjali Sinha | 1 |
| Shreya Singh | 1 |
| Nisha Verma | 1 |

10 rows in set (0.001 sec)

2. Retrieve Artists with the total number of Artworks they have created and the average ratings for those Artworks:

```
SELECT Name, TotalArtworks, AverageRating  
FROM (  
    SELECT Artist.Name,  
        COUNT(Artwork.ArtworkID) AS TotalArtworks,  
        AVG(Review.Rating) AS AverageRating  
    FROM Artist  
    JOIN Artwork ON Artist.ArtistID = Artwork.ArtistID  
    LEFT JOIN Review  
    ON Artwork.ArtworkID = Review.ArtworkID  
    GROUP BY Artist.Name  
) AS ArtistInfo  
WHERE AverageRating IS NOT NULL;
```

| Name | TotalArtworks | AverageRating |
|---------------|---------------|---------------|
| Amit Singh | 2 | 4.00 |
| Anjali Sinha | 2 | 4.00 |
| Aryan Kapoor | 1 | 4.00 |
| Kunal Verma | 2 | 3.50 |
| Neha Kapoor | 2 | 3.00 |
| Neha Verma | 2 | 3.00 |
| Nisha Verma | 1 | 4.00 |
| Priya Gupta | 1 | 3.00 |
| Rahul Kumar | 2 | 4.00 |
| Ravi Sharma | 2 | 4.00 |
| Sanjay Patel | 2 | 4.00 |
| Shreya Singh | 1 | 4.00 |
| Sneha Singh | 1 | 3.00 |
| Vikram Sharma | 1 | 4.00 |

14 rows in set (0.001 sec)

3. list of visitors who have interacted with artworks created using the medium "Oil on Canvas" during exhibitions starting from January 1, 2023

```
SELECT Visitor.FirstName, Visitor.LastName,  
Artwork.Title AS ArtWorkTitle, Exhibition.Title AS ExhibitionName
```

```
FROM Visitor  
JOIN (  
    SELECT Transaction.VisitorID, Transaction.ArtworkID  
    FROM Transaction  
    JOIN (  
        SELECT ArtworkID  
        FROM Artwork  
        WHERE Medium = 'Oil on Canvas'  
    ) AS OilArtworks ON Transaction.ArtworkID = OilArtworks.ArtworkID  
) AS OilTransactions ON Visitor.VisitorID = OilTransactions.VisitorID  
JOIN Artwork ON OilTransactions.ArtworkID = Artwork.ArtworkID  
JOIN Exhibition ON Artwork.ExhibitionID = Exhibition.ExhibitionID  
WHERE Exhibition.StartDate >= '2023-01-01';
```

| FirstName | ArtWorkTitle | ExhibitionName |
|-----------|-----------------------|----------------------------|
| Aditi | Sunrise in Jaipur | Expressions of Bollywood |
| Aryan | Lotus Pond | Indian Temple Architecture |
| Advik | Taj Mahal Reflections | Modern Indian Artistry |
| Kabir | Varanasi Ghats | Unity in Diversity |

4 rows in set (0.001 sec)

4. Retrieve artists and titles of their highly-rated artworks and the corresponding exhibition titles from relevant exhibitions that started on or after January 1, 2023.

```
SELECT Artist.Name, Artwork.Title AS ArtWorkTitle, Exhibition.Title AS ExhibitionName
```

```
FROM Artist
```

```
JOIN (
```

```
    SELECT Artwork.ArtistID, Artwork.ArtworkID, Artwork.ExhibitionID
```

```
    FROM Artwork
```

```
    JOIN (
```

```
        SELECT ExhibitionID FROM Exhibition
```

```
        WHERE StartDate >= '2023-01-01'
```

```
    ) AS RecentExhibitions ON Artwork.ExhibitionID = RecentExhibitions.ExhibitionID
```

```
    JOIN (
```

```
        SELECT ArtworkID FROM Review WHERE Rating >= 4
```

```
    ) AS HighlyRatedArtworks ON Artwork.ArtworkID = HighlyRatedArtworks.ArtworkID
```

```
) AS RelevantArtworks ON Artist.ArtistID = RelevantArtworks.ArtistID
```

```
JOIN Artwork ON RelevantArtworks.ArtworkID = Artwork.ArtworkID
```

```
JOIN Exhibition ON RelevantArtworks.ExhibitionID = Exhibition.ExhibitionID
```

```
WHERE Exhibition.StartDate >= '2023-01-01';
```

| Name | ArtWorkTitle | ExhibitionName |
|---------------|-----------------------|--------------------------|
| Amit Singh | Kathakali Dance | Incredible India |
| Amit Singh | Rajasthani Folk Music | Colors of India |
| Kunal Verma | Desert Oasis | India Through Lens |
| Ravi Sharma | Sunrise in Jaipur | Expressions of Bollywood |
| Ravi Sharma | Indian Coastal Life | Unity in Diversity |
| Anjali Sinha | Varanasi Ghats | Unity in Diversity |
| Sanjay Patel | Spiritual Sadhu | Heritage Crafts of India |
| Sanjay Patel | Bengal Tiger | Indian Coastal Life |
| Rahul Kumar | Indian Street Vendor | Colors of India |
| Rahul Kumar | Goan Beaches | Modern Indian Artistry |
| Vikram Sharma | Diwali Celebrations | Bengal Tiger |
| Nisha Verma | Holi Festival | Spiritual Journey |
| Shreya Singh | Rural India | India Through Lens |
| Aryan Kapoor | Jaisalmer Fort | Indian Folklore Tales |

14 rows in set (0.000 sec)

5. Retrieve list of visitors along with the artwork title, exhibition name, and transaction ID for transactions that occurred on or after January 1, 2023:

```
SELECT V.FirstName AS VisitorFirstName, AT.ArtworkTitle,
```

```
E.Title AS ExhibitionName, AT.TransactionID
```

```
FROM Visitor AS V
```

```
JOIN (
```

```
    SELECT T.VisitorID, T.ArtworkID, T.TransactionID,
```

```
        A.Title AS ArtworkTitle, A.ExhibitionID
```

```
    FROM Transaction AS T
```

```
    JOIN Artwork AS A ON T.ArtworkID = A.ArtworkID
```

```
) AS AT ON V.VisitorID = AT.VisitorID
```

```
JOIN Exhibition AS E ON AT.ExhibitionID = E.ExhibitionID
```

```
JOIN GalleryStaff AS GS ON E.ManagerID = GS.StaffID
```

```
WHERE E.StartDate >= '2023-01-01';
```

| VisitorFirstName | ArtworkTitle | ExhibitionName | TransactionID |
|------------------|----------------------------|----------------------------|---------------|
| Aditi | Sunrise in Jaipur | Expressions of Bollywood | 1 |
| Rahul | Goddess Durga | Ganga Aarti | 2 |
| Priya | The Golden Temple | Rhythms of India | 3 |
| Ayesha | Rajput Warriors | Indian Coastal Life | 6 |
| Aryan | Lotus Pond | Indian Temple Architecture | 7 |
| Arjun | Kathakali Dance | Incredible India | 9 |
| Zara | Jaisalmer Fort | Indian Folklore Tales | 10 |
| Advik | Taj Mahal Reflections | Modern Indian Artistry | 13 |
| Ananya | Indian Street Vendor | Colors of India | 14 |
| Myra | Mughal Garden | Desert Oasis | 16 |
| Kabir | Varanasi Ghats | Unity in Diversity | 17 |
| Anika | Traditional Indian Wedding | Kerala Backwaters | 20 |

12 rows in set (0.001 sec)

Mathematical Notation

Basic

1.Retrieves Visitors based on specific User Type and Name starts with "A"

```
SELECT VisitorID,  
       FirstName,  
       LastName FROM Visitor  
      WHERE  
      FirstName like "A%"  
      AND  
      UserType IN ('Regular Visitor');
```

VISITORS $\leftarrow \sigma_{(FirstName \text{ like } "A" \text{ AND } UserType = "Regular Visitor")}(Visitor)$

RESULT $\leftarrow \pi_{(VisitorID, FirstName, LastName)}(VISITORS)$

2. Retrieves providing a count of artworks for each artist.

```
SELECT ArtistID, Title, COUNT(ArtworkID) AS ArtworkCount  
      FROM  
            Artwork  
      GROUP BY  
            ArtistID;
```

RESULT $\leftarrow \pi_{(ArtworkID, Title)} \setminus \text{COUNT}_{ArtistID}(\tau_{ArtistID}(\text{Artwork}))$

3. Retrieves total revenue for each artist based on the prices of their artworks.

```
SELECT ArtistID, Title, SUM(Price) AS TotalRevenue
```

```
    FROM
```

```
        Artwork
```

```
    GROUP BY
```

```
        ArtistID;
```

RESULT $\leftarrow \pi_{(ArtworkID, Title)} \Join_{SUM\ Price} (\tau_{ArtistID}(\text{Artwork}))$

4. Retrieve artworks that are not in available status

```
SELECT ArtworkID, Title, AvailabilityStatus  
FROM  
    Artwork  
WHERE  
    AvailabilityStatus NOT LIKE 'Available';
```

FIRST $\leftarrow \sigma_{(AvailabilityStatus NOT LIKE "Available")}(Artwork)$

RESULT $\leftarrow \pi_{(ArtworkID, Title, AvailabilityStatus)}(\text{FIRST})$

5. Retrieves artworks whose price exceeds 1000, ordering the results in descending order based on price

select ArtworkID,Title,Price

FROM

Artwork

HAVING

Price>1000

ORDER BY

Price Desc;

RESULT $\leftarrow \pi_{(ArtworkID,Title,Price)}(\sigma_{(Price > 1000)}(\tau_{Price DESC}(Artwork)))$

Mathematical Notation

Intermediate

1. Retrieves the titles of artworks, the names of artists containing 'j', and the exhibitions starting from January 1, 2023, or later.

$F \leftarrow (\rho_A Artwork \bowtie_{Artwork.ExhibitionID=ExhibitionID} \rho_E Exhibition)$

$SECOND \leftarrow (F \bowtie_{Artist.ArtistID=Artwork.ArtistID} (Artist))$

$EXHIBITIONS \leftarrow (\sigma_{Exhibition.Startdate \geq "2023-01-01"} (SECOND))$

$FOUR \leftarrow (\sigma_{Artist.Name \text{ LIKE } "%j%"} (EXHIBITION))$

$RESULT \leftarrow \pi_{A.Title, Artist.Name, E.ExhibitionID} (FOUR)$

2. Retrieve artists whose ID corresponds to those with more than one artwork, ordered in descending order

$\text{FIRST} \leftarrow \text{Artist} \bowtie_{\text{Artist.ArtistID} = \text{Artwork.ArtistID}} \text{Artwork}$

$\text{SECOND} \leftarrow \tau_{\text{Artist.ArtistID}, \text{Artist.Name}} (\text{FIRST})$

$\text{THIRD} \leftarrow \sigma_{\text{TotalArtworks} > 1} (\text{SECOND})$

$\text{ORDER} \leftarrow \tau_{\text{TotalArtworks}} (\text{THIRD})$

$\text{RESULT} \leftarrow \pi_{\text{Artist.Name}} (\rho_{\text{TotalArtworks}}) \Join_{\text{COUNT Artwork.ArtworkID}} (\text{FOUR})$

3. Retrieves all artworks with a medium containing "Oil" and exhibitions that started after January 1, 2023

FIRST $\leftarrow \text{Artist} \bowtie_{\text{Artist.ArtistID} = \text{Artwork.ArtistID}} \text{Artwork}$

SECOND $\leftarrow \text{Exhibition} \bowtie_{\text{Exhibition.ExhibitionID} = \text{Artwork.ExhibitionID}} \text{FIRST}$

THIRD $\leftarrow \sigma_{\text{Exhibition.StartDate} \geq "2023-01-01"}(\text{SECOND})$

FOUR $\leftarrow \sigma_{\text{Artwork.Medium LIKE \%oil\%}}(\text{THIRD})$

ORDER $\leftarrow \tau_{\text{Exhibition.StartDate DESC}}(\text{FOUR})$

RESULT $\leftarrow \pi_{\text{Artwork.Title}, \text{Exhibition.Title}, \text{Artist.Name}} (\text{FOUR})$

Mathematical Notation

Advanced

1. Retrieve list of visitors along with the artwork title, exhibition name, and transaction ID for transactions that occurred on or after January 1, 2023:

FIRST $\leftarrow \rho_T Transaction \bowtie_{Artist.ArtistID=Artwork.ArtistID} \rho_A Artwork$

INNER $\leftarrow \rho_{AT} (\pi_{Artwork.Title, Exhibition.Title, Artist.Name} (FOUR))$

SECOND $\leftarrow \rho_V Visitor \bowtie_{V.VisitorID=AT.ArtistID} INNER$

THIRD $\leftarrow SECOND \bowtie_{AT.ExhibitionID=E.ExhibitionID} \rho_E EXHIBITION$

FOUR $\leftarrow THIRD \bowtie_{E.ManagerID=GS.StaffID} \rho_{GS} GalleryStaff$

FIVE $\leftarrow \sigma_{E.StartDate \geq "2023-01-01"} (FOUR)$

RESULT $\leftarrow \pi_{V.FirstName, AT.ArtworkTitle, E.Title, AT.TransactionID} (FOUR)$

CONCLUSION

- The art gallery management system database project has resulted in a comprehensive relational database schema designed to efficiently manage various aspects of an art gallery, including artists, artworks, exhibitions, visitors, transactions, and staff. Through the implementation of primary keys, foreign keys, constraints, and indexing, data integrity and performance have been prioritized



THANK YOU