VIETNAM NATIONAL UNIVERSITY - HO CHI MINH CITY

INTERNATIONAL UNIVERSITY

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

PRINCIPLES OF DATABASE MANAGEMENT

FINAL REPORT

Course by Assoc. Prof. Nguyen Van Sinh

TOPIC: ONLINE ART GALLERY

BY GROUP 10 – MEMBERLIST

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I. INTRODUCTION

1. Abstracts

The Online Art Gallery project is an innovative platform meticulously designed to adhere to the principles of the B.C. normal form, ensuring optimal data integrity and efficient data retrieval. This dynamic platform offers a comprehensive and engaging experience for art enthusiasts, artists, and buyers within the visual arts realm.

The logical design process is centered around defining data entities, relationships, attributes, and constraints, resulting in a robust and scalable system that eliminates anomalies and achieves higher levels of normalization. Users can create accounts, benefit from advanced artwork search functionality, and experience a streamlined reservation system, all contributing to a seamless online art exploration.

The user-friendly interface plays a pivotal role in facilitating easy access to various features, such as quick searches for artworks, scheduling appointments with artists, and exploring a diverse range of creative expressions, all while maintaining adherence to normalization principles.

The database, enriched with credible information sourced from reputable global organizations, ensures reliability and relevance. The project's primary goal is to create a vibrant online art community by leveraging technology to enhance accessibility and enjoyment of art. Continuous improvement, robust security measures, and user education further contribute to the resilience and value of the Online Art Gallery, offering a space for individuals to explore, appreciate, and engage with the diverse world of visual arts online, all within the framework of B.C. normal form principles ("1NF, 2NF, 3NF, and BCNF in Database Normalization | Studytonight," n.d.).

2. System Overview

The Online Art Gallery system is a dynamic and adaptive platform that caters to the evolving landscape of the art industry, particularly responding to the increased demand for virtual art experiences. Mirroring the shift towards online engagement and the growing appreciation for digital art, this system leverages technology to make art more accessible and enjoyable for individuals seeking diverse visual experiences.

Key Components:

1. Adapting to Changing Perspectives:

   Recognizing the evolving attitudes towards the accessibility and appreciation of digital art, the Online Art Gallery system serves as a responsive platform that aligns with the shifting mindset of individuals towards seeking art online.

2. Accessibility and Overcoming Barriers:

   Similar to online platforms addressing barriers in physical art experiences, the Online Art Gallery system strives to eliminate obstacles in accessing and enjoying art. It provides a virtual space where users can explore and engage with artworks without constraints like geographical location or physical presence.

3. Flexibility and Convenience:
   Just as online platforms offer flexibility in exploring various content, the Online Art Gallery system allows users to discover and appreciate artworks at their own convenience. This flexibility is crucial in accommodating diverse schedules and preferences.

4. Affordability and Inclusivity:
   Reflecting the trend in online platforms offering diverse digital content, the Online Art Gallery system aims to make art accessible to a broader audience. By providing a variety of digital artworks and artists with varying styles, the system promotes inclusivity and affordability in the digital art market.

5. Digital Engagement and Privacy:
   Acknowledging the significance of online platforms in maintaining privacy during digital experiences, the Online Art Gallery system provides a digital space where users can explore art with a sense of online anonymity. This is particularly appealing to individuals who may prefer digital art engagement over traditional physical gallery visits.

6. Adaptation to Changing Trends:
   Similar to online platforms gaining prominence in response to evolving digital trends, the Online Art Gallery system recognizes the importance of adapting to changing preferences. It becomes a resilient resource for individuals seeking a seamless transition to digital art experiences, especially in an era marked by a surge in online content consumption.

7. Supplementing Traditional Approaches:
   While not a substitute for traditional in-person art experiences, the Online Art Gallery system supplements traditional approaches by offering a valuable alternative. It serves as a complementary tool, providing convenience and accessibility while respecting the unique benefits of physical engagement with art.

In conclusion, the Online Art Gallery system aligns with the transformative nature of digital platforms in addressing the demand for virtual art experiences. It embraces technology to make digital art more accessible, enjoyable, and relevant, reflecting the changing dynamics in how individuals engage with and appreciate the world of visual arts online.

3. Goal

- **Database Optimization:** Design and implement a normalized database structure (BC Normal Form) for efficient data management.

- **Front-end Integration:** Establish a seamless connection between the front-end interface and the back-end database using a Java connection driver.

- **Feature Development and Testing:** Develop key functions such as user authentication, account creation, and artwork booking, ensuring comprehensive testing with complex queries.

- **Data Analysis and Prediction:** Analyze user interactions and transactional data to enhance predictive capabilities for personalized user recommendations.

- **Security Implementation:** Implement robust security measures, including prevention of SQL injection attacks, to safeguard user data and ensure privacy.

- **Privacy Protection:** Incorporate access controls and encryption mechanisms to prioritize user privacy and confidentiality.

- **Continuous Improvement:** Monitor system performance, security, and user interactions regularly, making improvements based on feedback and emerging trends.

- **User Education and Engagement:** Develop educational resources to raise user awareness on privacy measures and security best practices, fostering a secure online environment.

4. The techniques and tools ultilized

- SQL Server manages data in a relational database management system (RDBMS) using the SQL Server Management Studio
- Java language using JetBrains IntelliJ IDEA GUI design the interface for users from the database and application logic flow

- Figma to design briefly about the interface.
- Some other means of contact: are Microsoft Teams and Zalo

II. TASK TIMELINE AND DIVISION

1. Contribution

Name	Responsibility	Contribution
Nguyen Dinh Thang	Database Developer	50%
Huynh Thanh Thuy	Interface Developer	50%

Table 1. Individual responsibility and contribution

2. Project Timeline & Task Division

TIMELINE	ACTION	CONTRIBUTOR	STAGE
WEEK 1	Agree with workflow and tools being used	All	PLANNING
	Analyze proper approach and methodology for project development	All	
	Determine scopes, learning objectives, and goals for the project	All	
WEEK 2	Research information about the Online Art Gallery topic	All	
	Collect and and create sample data for analyzing	Thang	
	Define the project's requirements.	All	
	Generate the project timeline	All	
	Propose necessary features and priorities for the project	All	
WEEK 3	Identify utilized cases	All	CONCEPTUAL DESIGN
	Specify types of information that are essential to be stored in the database	Thang	
	Prepare the E.R. diagram and Class diagram	Thang	
	Design the relational models	Thang	
WEEK 4	Design user interface for core functionalities	Thuy	
WEEK 5-7	Database creation and setup	Thang	IMPLEMENTATION
	Setup database tables, their relationship, and constraints	Thang	
	Implement necessary queries for each functionality	Thuy	
	Develop application interface and client-side functionalities	Thuy	

	Phase 3 review and retrospective	All	
WEEK 8	Code review and refactoring	All	TESTING
	Bug detection and fixing	Thuy	
	Fix and modify the application until stable	Thuy	
	Phase 4 review and retrospective	All	
	Final report	Thang	PRESENTATION
	Presentation slides	Thang	

Table 2. Sprint planning and task division for individuals and teams

III. PROJECT ANALYSIS

1. Requirements Analysis

The Online Art Gallery System will feature a robust user authentication system with distinct roles for artists, buyers, and administrators, ensuring secure account access and allowing users to interact based on their designated roles. Users, particularly artists, will have the capability to propose new artworks, update existing information, and manage their portfolios within the platform. The system will provide comprehensive information on artworks, including title, description, dimensions, price, creation date, and medium. Additionally, a recommendation system will suggest artworks based on user preferences, fostering a personalized and engaging experience. Security measures will be implemented to protect user data, transactions, and sensitive information, ensuring a safe and trustworthy environment. The system will encourage user feedback and suggestions, facilitating continuous improvement based on user input. With a responsive design and powerful search and filter functionality, the Online Art Gallery aims to provide a seamless and user-friendly experience for both artists and buyers, fostering a vibrant online art community.

2. Approach Analysis

a. Reviewed Materials

- **Advanced SQL Server Language Structure:** In-depth understanding of advanced SQL server language structures ("SQL Tutorial," n.d.).

- **Java, JDBC, Swing Worker Official Usage Documents:** Thorough review of official documentation for Java, JDBC, and Swing Worker usage ("Lesson: JDBC Basics (The JavaTM Tutorials > JDBC Database Access)," n.d.), ("SwingWorker (Java Platform S.E. 8)," n.d.).

b. Research Approach

i. Methodology

We have adopted the Scrum framework, a subset of the Agile approach, for our project. Scrum facilitates iterative and incremental development, emphasizing adaptability and responsiveness to change. Unlike traditional project management, which focuses on fixed requirements to control time and costs, Scrum allows teams to deliver products in stages. Key strategies employed in Scrum include time boxes, group rituals, a prioritized product backlog, and regular feedback loops.

ii. Process

- **Product Backlog:** A comprehensive to-do list containing all project features.
- **Sprint Planning Meeting:** The team selects items from the product backlog to form a sprint backlog, detailing features and activities to be completed during the sprint.
- **Sprint Execution:** The team works with undivided focus on the assigned tasks to achieve the sprint goal. The sprint backlog remains unchanged during the sprint, while the product backlog can be adjusted before the subsequent sprint.
- **Scrum Meetings:** Short, daily meetings during the sprint to discuss progress, address challenges, and provide feedback. Each team member presents their work, fostering open communication and collaboration.
- **Scrum Pillars:** The framework is built on the three pillars of transparency, inspection, and adaptability, promoting open communication, ongoing review, and the ability to adapt to changing conditions.

Our approach ensures efficient project management, flexibility in adapting to evolving requirements, and constant collaboration among team members.

3. System Analysis

a. Database design

Figure 1: The Online Art Gallery ER Diagram

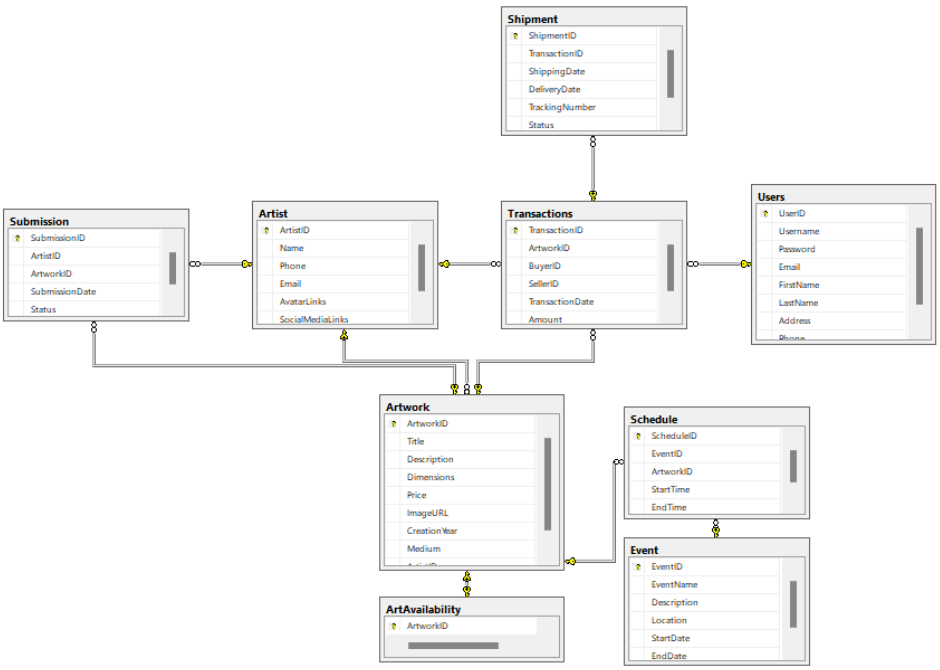

Figure 2: Schema design created by using SQL Server

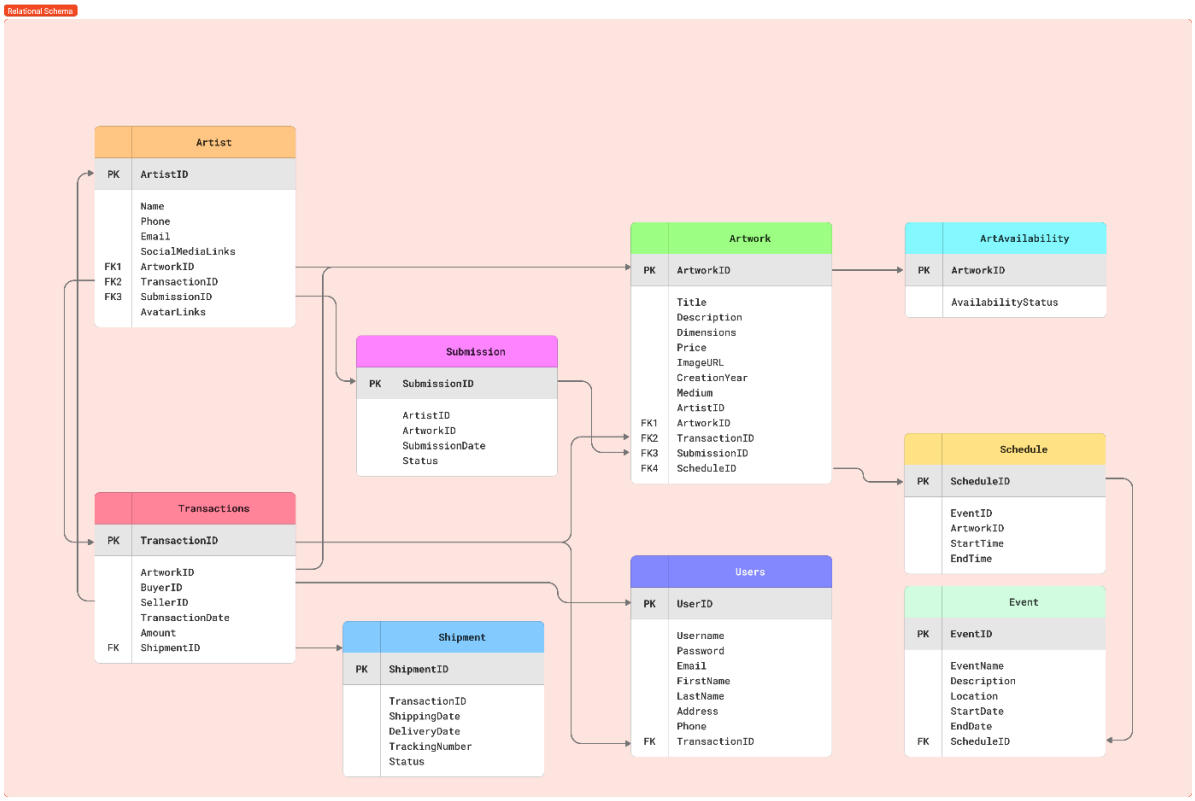

Figure 3: Relational schema design created by using Figma

Project's GITHUB: LINK
Project's Figma Design: LINK

Data Schema and Sample: Link
Presentation Slide: Link

Project's Figma Design: FIGMALINK

Normal Form	Description
1 N.F.	There are no tuples with multiple values in the database.
2 N.F.	Every attribute that is not a key relies on the primary key.
3 N.F.	Non-key attributes do not exhibit transitive dependencies with each other.
BC N.F.	Each significant functional dependency in the database relies on a candidate key.

Table 3: Normal form achievement

b. Database and Tables creations

This part discusses the database creation, schemas, and tables following the E.R.D. the diagram in SQL Server Database:

i. Database Creation

```
CREATE DATABASE ArtGallery;
USE ArtGallery;
```

ii. Schema and Table Creation

The current version of the Entity-Relationship Diagram (E.R.D.) has the following nine entities:

Table	Attributes
Users	UserID bigint IDENTITY(1, 1) PRIMARY KEY Username varchar (50) NOT NULL Password varchar (50) NOT NULL Email varchar (50) NOT NULL FirstName varchar (30) NOT NULL LastName varchar (30) NOT NULL Address varchar (200) NOT NULL Phone varchar (20) NOT NULL
Artist	ArtistID bigint IDENTITY(1, 1) PRIMARY KEY Name varchar(70) NOT NULL Phone varchar(30) NOT NULL Email varchar(50) NOT NULL AvatarLinks varchar (200) NOT NULL SocialMediaLinks varchar (200) NOT NULL
Event	EventID bigint IDENTITY(1, 1) PRIMARY KEY EventName varchar (100) NOT NULL Description varchar (400) Location varchar (100) StartDate date NOT NULL EndDate date NOT NULL
Artwork	ArtworkID bigint IDENTITY(1, 1) PRIMARY KEY Title varchar (50) NOT NULL Description varchar (1000) Dimensions varchar (70) NOT NULL Price money NOT NULL ImageURL varchar (600) NOT NULL CreationYear int NOT NULL Medium varchar (100) NOT NULL ArtistID bigint NOT NULL (Referencing Artist)
ArtAvailability	ArtworkID bigint PRIMARY KEY (referencing Artwork) AvailabilityStatus varchar(30) NOT NULL

Transactions	**TransactionID** int PRIMARY KEY **ArtworkID** bigint NOT NULL (referencing Artwork) **BuyerID** bigint NOT NULL (referencing User) **SellerID** bigint NOT NULL (referencing Artist) **TransactionDate** date NOT NULL **Amount** int NOT NULL
Schedule	**ScheduleID** bigint IDENTITY(1, 1) PRIMARY KEY **EventID** bigint NOT NULL (referencing Event) **ArtworkID** bigint NOT NULL (referencing Artwork) **StartTime** date NOT NULL **EndTime** date NOT NULL
Shipment	**ShipmentID** bigint IDENTITY(1, 1) PRIMARY KEY **TransactionID** int NOT NULL (referencing Transaction) **ShippingDate** date NOT NULL **DeliveryDate** date NOT NULL **TrackingNumber** varchar (30) NOT NULL **Status** varchar (30) NOT NULL
Submission	**SubmissionID** bigint IDENTITY(1, 1) PRIMARY KEY **ArtistID** bigint NOT NULL (referencing Artist) **ArtworkID** bigint NOT NULL (referencing Artwork) **SubmissionDate** date NOT NULL **Status** varchar (30) NOT NULL

Table 4: An overview of all database entities and their attributes

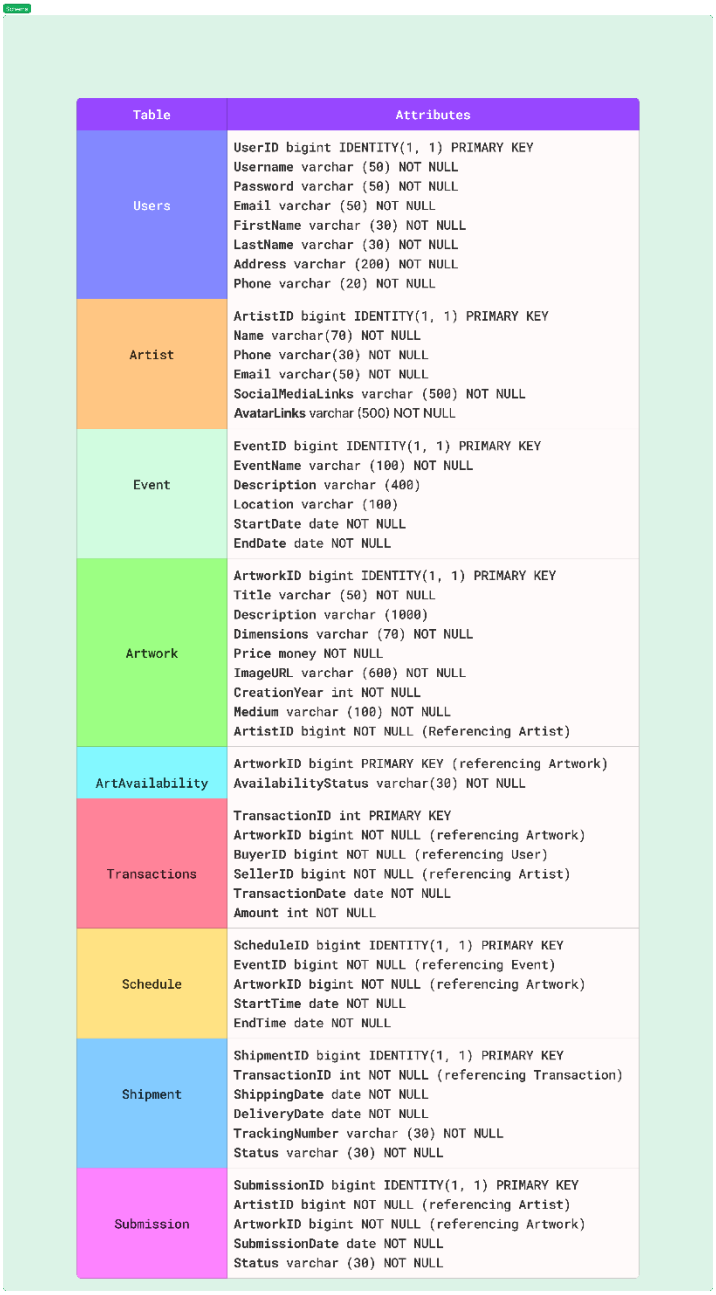

Table	Attributes
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Artist	ArtistID bigint IDENTITY(1, 1) PRIMARY KEY Name varchar(70) NOT NULL Phone varchar(30) NOT NULL Email varchar(50) NOT NULL SocialMediaLinks varchar (500) NOT NULL AvatarLinks varchar (500) NOT NULL
Event	EventID bigint IDENTITY(1, 1) PRIMARY KEY EventName varchar (100) NOT NULL Description varchar (400) Location varchar (100) StartDate date NOT NULL EndDate date NOT NULL
Artwork	ArtworkID bigint IDENTITY(1, 1) PRIMARY KEY Title varchar (50) NOT NULL Description varchar (1000) Dimensions varchar (70) NOT NULL Price money NOT NULL ImageURL varchar (600) NOT NULL CreationYear int NOT NULL Medium varchar (100) NOT NULL ArtistID bigint NOT NULL (Referencing Artist)
ArtAvailability	ArtworkID bigint PRIMARY KEY (referencing Artwork) AvailabilityStatus varchar(30) NOT NULL
Transactions	TransactionID int PRIMARY KEY ArtworkID bigint NOT NULL (referencing Artwork) BuyerID bigint NOT NULL (referencing User) SellerID bigint NOT NULL (referencing Artist) TransactionDate date NOT NULL Amount int NOT NULL
Schedule	ScheduleID bigint IDENTITY(1, 1) PRIMARY KEY EventID bigint NOT NULL (referencing Event) ArtworkID bigint NOT NULL (referencing Artwork) StartTime date NOT NULL EndTime date NOT NULL
Shipment	ShipmentID bigint IDENTITY(1, 1) PRIMARY KEY TransactionID int NOT NULL (referencing Transaction) ShippingDate date NOT NULL DeliveryDate date NOT NULL TrackingNumber varchar (30) NOT NULL Status varchar (30) NOT NULL
Submission	SubmissionID bigint IDENTITY(1, 1) PRIMARY KEY ArtistID bigint NOT NULL (referencing Artist) ArtworkID bigint NOT NULL (referencing Artwork) SubmissionDate date NOT NULL Status varchar (30) NOT NULL

Figure 4: Database entities and their attributes in Figma

iii. Account Schema

Users Table:

```
--Create Users Table
CREATE TABLE Users(
UserID bigint IDENTITY(1, 1) PRIMARY KEY,
Username varchar (50) NOT NULL,
Password varchar (50) NOT NULL,
```

```
Email varchar (50) NOT NULL,
FirstName varchar (30) NOT NULL,
LastName varchar (30) NOT NULL,
Address varchar (200) NOT NULL,
Phone varchar (20) NOT NULL
);
```

Artist Table:

```
--Create Artist Table
CREATE TABLE Artist(
ArtistID bigint IDENTITY(1, 1) PRIMARY KEY,
Name varchar(70) NOT NULL,
Phone varchar(30) NOT NULL,
Email varchar(50) NOT NULL,
AvatarLinks varchar (500) NOT NULL,
SocialMediaLinks varchar (500) NOT NULL
);
```

Event Table:

```
--Create Event Table
CREATE TABLE Event(
EventID bigint IDENTITY(1, 1) PRIMARY KEY,
EventName varchar (100) NOT NULL,
Description varchar (400),
Location varchar (100),
StartDate date NOT NULL,
EndDate date NOT NULL
);
```

Artwork Table:

```
--Create Artwork Table
CREATE TABLE Artwork(
ArtworkID bigint IDENTITY(1, 1) PRIMARY KEY,
Title varchar(50) NOT NULL,
Description varchar(1000),
Dimensions varchar(70) NOT NULL,
Price money NOT NULL,
ImageURL varchar (600) NOT NULL,
CreationYear int NOT NULL,
Medium varchar (100) NOT NULL,
ArtistID bigint NOT NULL,
FOREIGN KEY (ArtistID) REFERENCES Artist(ArtistID)
);
```

ArtAvailability Table:

```
--Create ArtAvailability Table
CREATE TABLE ArtAvailability(
```

```
ArtworkID bigint PRIMARY KEY,
FOREIGN KEY (ArtworkID) REFERENCES Artwork(ArtworkID),
AvailabilityStatus varchar(30) NOT NULL
);
```

Transaction Table:

```
--Create Transaction Table
CREATE TABLE Transactions(
TransactionID int PRIMARY KEY,
ArtworkID bigint NOT NULL,
FOREIGN KEY (ArtworkID) REFERENCES Artwork(ArtworkID),
BuyerID bigint NOT NULL,
FOREIGN KEY (BuyerID) REFERENCES Users(UserID),
SellerID bigint NOT NULL,
FOREIGN KEY (SellerID) REFERENCES Artist(ArtistID),
TransactionDate date NOT NULL,
Amount int NOT NULL
);
```

Schedule Table:

```
--Create Schedule Table
CREATE TABLE Schedule(
ScheduleID bigint IDENTITY(1, 1) PRIMARY KEY,
EventID bigint NOT NULL,
FOREIGN KEY (EventID) REFERENCES Event(EventID),
ArtworkID bigint NOT NULL,
FOREIGN KEY (ArtworkID) REFERENCES Artwork(ArtworkID),
StartTime date NOT NULL,
EndTime date NOT NULL
);
```

Shipment Table:

```
--Create Shipment Table
CREATE TABLE Shipment(
ShipmentID bigint IDENTITY(1, 1) PRIMARY KEY,
TransactionID int NOT NULL,
FOREIGN KEY (TransactionID) REFERENCES Transactions(TransactionID),
ShippingDate date NOT NULL,
DeliveryDate date NOT NULL,
TrackingNumber varchar (30) NOT NULL,
Status varchar (30) NOT NULL
);
```

Submission Table:

```
--Create Submission Table
CREATE TABLE Submission(
SubmissionID bigint IDENTITY(1, 1) PRIMARY KEY,
```

```
ArtistID bigint NOT NULL,
FOREIGN KEY (ArtistID) REFERENCES Artist(ArtistID),
ArtworkID bigint NOT NULL,
FOREIGN KEY (ArtworkID) REFERENCES Artwork(ArtworkID),
SubmissionDate date NOT NULL,
Status varchar (30) NOT NULL
);
```

c. Database Data Insertion

i. Source of data insertion

Data insertion for the Online Art Gallery is derived from multiple sources to ensure accuracy and relevance:

- **Testing Data:** Self-generated data is utilized during the development phase for testing various features like account creation, artwork submission, and transactions.
- **Web Scraping for Art Details:** Accurate and extensive art information is obtained through web scraping reputable art databases and galleries, enriching the database with diverse and authentic details.
- **User Input and Validation:** Real user input becomes a key source as the system goes public, with user-submitted artworks, account details, and transactions validated before integration.
- **User-Initiated Updates:** Users can update or remove their information, empowering them to manage profiles and portfolios, ensuring the database remains current and aligned with users' evolving needs.

This diverse sourcing strategy aims to create a dynamic, authentic, and user-centric art database for the Online Art Gallery.

ii. Relational Schema

Users Table:

```
-- Inserting data into Users table
INSERT INTO Users (Username, Password, Email, FirstName, LastName, Address,
Phone)
VALUES
('demo', 'demo', 'demo@gmail.com', 'Demo', 'Demo', 'Demo', '000-0000'),
('artlover12', 'art12', 'user1@gmail.com', 'John', 'Doe', '123 Art Street,
Cityville', '555-1234'),
('painter45', 'paint45', 'artist1@yahoo.com', 'Alice', 'Smith', '456 Brush Lane,
Paintville', '555-5678'),
('buyer78', 'buy78', 'buyer@gmail.com', 'Emma', 'Johnson', '789 Gallery Road,
Artland', '555-9876'),
('artcollector321', 'art321', 'collector@yahoo.com', 'Sophia', 'Williams', '321
Art Avenue, Collectortown', '555-4321'),
('creativeartist789', 'creative789', 'creative@outlook.com', 'Oliver', 'Jones',
'789 Palette Street, Artville', '555-8765'),
```

```
('artsybuyer555', 'art555', 'artsybuyer@outlook.com', 'Ava', 'Miller', '555
Gallery Road, Aropolis', '555-5555'),
('abstractlover', 'abstract0', 'abstract@hotmail.com', 'Ethan', 'Anderson', '456
Canvas Street, Artropolis', '555-6543'),
('sculpturefan', 'sculputre0', 'sculpture@gmail.com', 'Lily', 'Roberts', '789
Sculpt Avenue, Sculptureville', '555-7890'),
('arthistorybuff', 'art0', 'historybuff@outlook.com', 'Noah', 'Thompson', '101
Museum Lane, Artville', '555-1111'),
('thassng2222', '251103', 'thassng2222@gmail.com', 'Thang', 'Nguyen', '102
Nguyen Ai Quoc Street, Dong Nai', '123-5678'),
('TracyHT', '12345678', 'TracyHT@gmail.com', 'Thuy', 'Huynh', '5 Tran Hung Dao
Street, Ho Chi Minh city', '876-4321');
```

Artist Table:

```
-- Insert data into Artist table
INSERT INTO Artist (Name, Phone, Email, AvatarLinks, SocialMediaLinks)
VALUES
('Vincent van Gogh', 'tel:+31205705200', 'info@vangoghmuseum.nl',
'https://upload.wikimedia.org/wikipedia/commons/thumb/4/4c/Vincent_van_Gogh_-
_Self-Portrait_-_Google_Art_Project_%28454045%29.jpg/1620px-Vincent_van_Gogh_-
_Self-Portrait_-_Google_Art_Project_%28454045%29.jpg',
'https://www.instagram.com/vangoghmuseum/'),
('Pablo Picasso', 'tel:+330670743871', 'sandrine.cormault@culture.gouv.fr',
'https://upload.wikimedia.org/wikipedia/commons/b/b8/Portrait_de_Picasso%2C_1908
.jpg', 'https://www.instagram.com/pablopicasso_arty/'),
('Leonardo da Vinci', 'tel:+39055282966', 'info@leonardointeractivemuseum.com',
'https://upload.wikimedia.org/wikipedia/commons/thumb/c/c3/LEONARDO.JPG/393px-
LEONARDO.JPG', 'https://www.instagram.com/ldavinci.official/'),
('Salvador Dalí', 'tel:+34972677505', 'cr.pintures@fundaciodali.org',
'https://upload.wikimedia.org/wikipedia/commons/2/24/Salvador_Dal%C3%AD_1939.jpg
', 'https://www.instagram.com/salvadordali_arty/'),
('Edvard Munch', 'tel:+4723493500', 'info@munchmuseet.no',
'https://upload.wikimedia.org/wikipedia/commons/b/b2/Aksel_Johannessen_-
_Munch_mit_dem_Portr%C3%A4t_von_Jappe_Nilssen_big.jpg',
'https://www.instagram.com/edvard_munch_art/'),
('Johannes Vermeer', 'tel:+370205231523', 'info@johannesvermeerprijs.nl',
'https://upload.wikimedia.org/wikipedia/commons/4/46/Cropped_version_of_Jan_Verm
eer_van_Delft_002.jpg',
'https://www.instagram.com/jvermeerart?igsh=c2FvcTIxNncybGJ1'),
('Sandro Botticelli', 'tel:+441214147333', 'info@barber.org.uk',
'https://upload.wikimedia.org/wikipedia/commons/d/d4/Sandro_Botticelli_083.jpg',
'https://www.instagram.com/sandro.botticelli?igsh=MWxvaXExY2htMmFkag==='),
('Grant Wood', 'tel:+66863239768', 'info(at)bluesurfart.com',
'https://upload.wikimedia.org/wikipedia/commons/0/02/Grant_Wood.jpg',
'https://www.instagram.com/grant_wood_art_colony?igsh=emF6bGJ4MTAxaDI3'),
('Gustav Klimt', 'tel:+43018909818', 'office@klimt-foundation.com',
'https://upload.wikimedia.org/wikipedia/commons/d/d8/Klimt.jpg',
'https://www.instagram.com/gustavklimtofficial?igsh=NDZoZjIzOXN4em9k'),
('Claude Monet', 'tel:+85295489382', 'marketing@envoyage-monet.hk',
'https://upload.wikimedia.org/wikipedia/commons/3/33/Claude_Monet_1899_Nadar.jpg
', 'https://www.instagram.com/claude._.monet?igsh=NmYzYXdhMzVncXF4'),
('Rembrandt', 'tel:+45800736272', 'customerservice@rembrandt.co.nz',
'https://upload.wikimedia.org/wikipedia/commons/9/99/Rembrandt_Self-
```

```
portrait_%28Kenwood%29.jpg',
'https://www.instagram.com/rembrandtartistpaint?igsh=cGxwbTFlZ2JtcThl'),
('Katsushika Hokusai', 'tel:+48124335500', 'contact@hokusai-katsushika.org',
'https://upload.wikimedia.org/wikipedia/commons/1/18/Hokusai_portrait.png',
'https://www.instagram.com/k.hokusai?igsh=MWM3MnB2N3I5dzg4Mw==');
```

Event Table:

```
-- Inserting data into Event table
INSERT INTO Event (EventName, Description, Location, StartDate, EndDate)
VALUES
('Art Exhibition Opening', 'Join us for the grand opening of our latest art
exhibition.', 'Art Gallery', '2024-01-18', '2024-01-18'),
('Artist Meet & Greet', 'Meet the talented artists behind the exhibited
artworks.', 'Exhibition Hall', '2024-01-20', '2024-01-20'),
('Art Workshop', 'Participate in a hands-on art workshop with renowned
artists.', 'Creative Studio', '2024-01-22', '2024-01-22'),
('Art Auction', 'Bid on exquisite artworks in our exclusive art auction event.',
'Auction House', '2024-01-25', '2024-01-25'),
('Gallery Night', 'Enjoy an evening stroll through the gallery with live music &
more.', 'Art Gallery', '2024-01-28', '2024-01-28'),
('Art Workshop', 'Participate in a hands-on art workshop with renowned
artists.', 'Creative Studio', '2024-02-08', '2024-02-08'),
('Art Auction', 'Bid on exquisite artworks in our exclusive art auction event.',
'Auction House', '2024-02-10', '2024-02-10'),
('Gallery Night', 'Enjoy an evening stroll through the gallery with live music &
more.', 'Art Gallery', '2024-02-12', '2024-02-12'),
('Artist Meet & Greet', 'Meet the talented artists behind the exhibited
artworks.', 'Exhibition Hall', '2024-02-15', '2024-02-15'),
('Art Exhibition Opening', 'Join us for the grand opening of our latest art
exhibition.', 'Art Gallery', '2024-02-18', '2024-02-18');
```

Artwork Table:

```
-- Insert data into Artwork table
INSERT INTO Artwork (Title, Description, Dimensions, Price, ImageURL,
CreationYear, Medium, ArtistID)
VALUES
('Mona Lisa', 'Da Vinci''s timeless portrait of a woman with an elusive smile,
marked by exquisite detailing and the use of sfumato.', '30 x 21 inches',
9811.20,
'https://upload.wikimedia.org/wikipedia/commons/thumb/b/b1/Mona_Lisa%2C_by_Leona
rdo_da_Vinci%2C_from_C2RMF.jpg/1399px-
Mona_Lisa%2C_by_Leonardo_da_Vinci%2C_from_C2RMF.jpg', 1517, 'Oil on popular
wood', 3),
('Starry Night', 'Van Gogh''s swirling night sky above a village, characterized
by bold brushstrokes and vibrant colors, conveying emotional intensity.', '28.7
x 36.2 inches', 12490.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/e/ea/Van_Gogh_-
_Starry_Night_-_Google_Art_Project.jpg/2560px-Van_Gogh_-_Starry_Night_-
_Google_Art_Project.jpg', 1889, 'Oil on canvas', 1),
('The Persistence of Memory', 'Dalí''s surrealist masterpiece featuring melting
clocks draped over objects, challenging our perception of time and reality.',
'9.5 x 13 inches', 7162.00,
```

```
'https://upload.wikimedia.org/wikipedia/en/d/dd/The_Persistence_of_Memory.jpg',
1931, 'Oil on canvas', 4),
('The Scream', 'Munch''s expressionist painting captures a figure on a bridge,
hands pressed to its face in a scream. The distorted background enhances the
intense emotional impact of this iconic work.', '36 x 28.9 inches', 4532.00,
'https://upload.wikimedia.org/wikipedia/vi/a/a4/Scr.JPG', 1893, 'Oil, tempera,
pastel and crayon on cardboard', 5),
('Guernica', 'Picasso''s powerful anti-war painting depicting the horrors of the
bombing of Guernica, using distorted figures and symbols.', '137.4 x 305.5
inches', 15079.00,
'https://upload.wikimedia.org/wikipedia/commons/6/6f/Mural_del_Gernika.jpg',
1937, 'Oil on canvas', 2),
('The Last Supper', 'Da Vinci''s masterpiece portrays the moment of Christ''s
revelation that one of his disciples would betray him. The composition and
expressions convey a poignant narrative.', '181 x 346 inches', 8630.00,
'https://upload.wikimedia.org/wikipedia/commons/4/4b/%C3%9Altima_Cena_-
_Da_Vinci_5.jpg', 1948, 'Tempera on gesso, pitch, and mastic', 3),
('Girl with a Pearl Earring', 'Vermeer''s portrait of a young woman wearing a
turban and a pearl earring is a study in subtle light and shadow, capturing a
timeless and captivating beauty.', '17.5 x 15 inches', 5617.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/0/0f/1665_Girl_with_a_Pear
l_Earring.jpg/1729px-1665_Girl_with_a_Pearl_Earring.jpg', 1665, 'Oil on canvas',
6),
('The Night Watch', 'Rembrandt''s masterful group portrait of a militia captures
a moment of action and unity. The use of light and shadow draws attention to key
figures in this dynamic scene.', '142.9 x 172 inches', 6694.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/5/5a/The_Night_Watch_-
_HD.jpg/2444px-The_Night_Watch_-_HD.jpg', 1642, 'Oil on canvas', 11),
('The Kiss', 'Klimt''s symbolist painting features a couple locked in an
intimate embrace, adorned with elaborate patterns and gold leaf, creating a
harmonious and ornate composition.', '71 x 71 inches', 2360.90,
'https://upload.wikimedia.org/wikipedia/commons/thumb/4/40/The_Kiss_-
_Gustav_Klimt_-_Google_Cultural_Institute.jpg/2041px-The_Kiss_-_Gustav_Klimt_-
_Google_Cultural_Institute.jpg', 1908, 'Oil and gold leaf on canvas', 9),
('The Great Wave off Kanagawa', 'Hokusai''s woodblock print portrays a colossal
wave about to engulf fishing boats beneath Japan''s iconic Mount Fuji. The
dynamic composition and detailed waves make it a symbol of Japanese art.', '10.1
x 14.9 inches', 1514.20,
'https://upload.wikimedia.org/wikipedia/commons/thumb/a/a5/Tsunami_by_hokusai_19
th_century.jpg/2560px-Tsunami_by_hokusai_19th_century.jpg', 1831, 'Ukiyo-e
(Woodblock print)', 12),
('The Birth of Venus', 'Botticelli''s Renaissance painting depicts the goddess
Venus emerging from a sea shell. The graceful composition and ethereal beauty of
Venus embody classical ideals.', '67.9 x 109.6 inches', 7758.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/0/0b/Sandro_Botticelli_-
_La_nascita_di_Venere_-_Google_Art_Project_-_edited.jpg/2560px-
Sandro_Botticelli_-_La_nascita_di_Venere_-_Google_Art_Project_-_edited.jpg',
1486, 'Tempera on canvas', 7),
('Les Demoiselles d''Avignon', 'Picasso''s groundbreaking painting depicts five
nude women in a stylized and distorted manner, incorporating African and Iberian
art influences, marking a shift towards cubism.', '96 x 92 inches', 6903.50,
'https://upload.wikimedia.org/wikipedia/en/thumb/4/4c/Les_Demoiselles_d%27Avigno
n.jpg/1977px-Les_Demoiselles_d%27Avignon.jpg', 1907, 'Oil on canvas', 2),
('American Gothic', 'Wood''s iconic painting features a stern-faced farmer and
his daughter standing in front of a Gothic-style farmhouse. The work is a symbol
of American rural life during the Great Depression.', '29.25 x 24.5 inches',
12570.00,
```

```
'https://upload.wikimedia.org/wikipedia/commons/thumb/c/cc/Grant_Wood_-
_American_Gothic_-_Google_Art_Project.jpg/1697px-Grant_Wood_-_American_Gothic_-
_Google_Art_Project.jpg', 1930, 'Oil on beaverboard', 8),
('Water Lilies', 'Monet''s series of water lily paintings, including serene
ponds and floating blooms, exemplify his impressionist style, capturing the
ever-changing play of light and color.', '78.74 x 502.36 inches', 8695.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/6/66/Claude_Monet_-
_The_Water_Lilies_-_Setting_Sun_-_Google_Art_Project.jpg/2560px-Claude_Monet_-
_The_Water_Lilies_-_Setting_Sun_-_Google_Art_Project.jpg', 1926, 'Oil on
canvas', 10),
('Sunflowers', 'A series of still life paintings featuring sunflowers, each
canvas radiates with the joy and warmth associated with these iconic blossoms.',
'36.3 x 29 inches', 6593.00,
'https://upload.wikimedia.org/wikipedia/commons/4/46/Vincent_Willem_van_Gogh_127
.jpg', 1888, 'Oil on canvas', 1),
('The Elephants', 'Dalí''s surreal exploration features elongated elephants with
spindly legs, creating a dreamlike atmosphere that challenges traditional
perceptions of reality.', '19 x 24 inches', 6653.90,
'https://upload.wikimedia.org/wikipedia/en/4/43/Dali_Elephants.jpg', 1948, 'Oil
on canvas', 4),
('The Great Wave off Kanagawa', 'The Great Wave off Kanagawa showcases a massive
wave, boats in peril, and Mount Fuji in the background, symbolizing the dynamic
power of nature. Hokusai''s detailed depiction makes it an iconic piece in the
ukiyo-e tradition.', '10.2 x 14.9 inches', 6738.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/0/0d/Great_Wave_off_Kanaga
wa2.jpg/2560px-Great_Wave_off_Kanagawa2.jpg', 1832, 'Ukiyo-e (Woodblock print)',
12),
('The Art of Painting', 'A meta-painting that invites viewers into Vermeer''s
studio, showcasing the artist at work and providing a glimpse into his creative
process.', '47 x 39 inches', 1542.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/5/5e/Jan_Vermeer_-
_The_Art_of_Painting_-_Google_Art_Project.jpg/1724px-Jan_Vermeer_-
_The_Art_of_Painting_-_Google_Art_Project.jpg', 1668, 'Oil on canvas', 6),
('Woman with a Parasol', 'Monet''s lively portrayal captures his wife with an
open parasol, portraying the play of light and movement in a sunlit landscape.',
'39 x 32 inches', 501.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/1/1b/Claude_Monet_-
_Woman_with_a_Parasol_-_Madame_Monet_and_Her_Son_-
_Google_Art_Project.jpg/1648px-Claude_Monet_-_Woman_with_a_Parasol_-
_Madame_Monet_and_Her_Son_-_Google_Art_Project.jpg', 1875, 'Oil on canvas', 10),
('Portrait of Adele Bloch-Bauer I', 'Klimt''s gilded portrait radiates opulence,
showcasing the artist''s signature use of gold leaf and intricate patterns in
capturing the essence of an elegant socialite.', '55 x 55 inches', 1640.00,
'https://upload.wikimedia.org/wikipedia/commons/8/84/Gustav_Klimt_046.jpg',
1907, 'Oil and gold leaf on canvas', 9),
('The Jewish Bride', 'A tender and intimate portrait of a couple, Rembrandt''s
work reflects his ability to convey deep human emotions with sensitivity and
insight.', '47.8 x 65.6 inches', 7893.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/0/0c/Rembrandt_Harmensz._v
an_Rijn_-
_Portret_van_een_paar_als_oudtestamentische_figuren%2C_genaamd_%27Het_Joodse_bru
idje%27_-_Google_Art_Project.jpg/2560px-Rembrandt_Harmensz._van_Rijn_-
_Portret_van_een_paar_als_oudtestamentische_figuren%2C_genaamd_%27Het_Joodse_bru
idje%27_-_Google_Art_Project.jpg', 1669, 'Oil on canvas', 11),
('Daughters of Revolution', 'Thought-provoking and emblematic, Wood''s portrayal
of three women contemplating a changing world reflects his social commentary on
the challenges of modernity.', '20 x 39.9 inches', 6645.00,
```

```
'https://upload.wikimedia.org/wikipedia/commons/d/de/Daughters_of_Revolution.jpg
', 1932, 'Oil on masonite', 8),
('The Madonna', 'Munch''s emotionally charged portrayal of the Madonna radiates
with vibrant colors and expressive lines, conveying a deep sense of spiritual
intensity.', '35 x 27 inches', 8864.00,
'https://upload.wikimedia.org/wikipedia/commons/5/5f/Edvard_Munch_-_Madonna_-
_Google_Art_Project.jpg', 1893, 'Oil on canvas', 5),
('Venus and Mars', 'A mythological scene featuring Venus and Mars in a romantic
embrace, exploring themes of love and conflict through Botticelli''s distinctive
style.', '27.17 x 68.5 inches', 7749.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/1/1d/Venus_and_Mars_Nation
al_Gallery.jpg/2560px-Venus_and_Mars_National_Gallery.jpg', 1485, 'Oil on
canvas', 7),
('Water Lily Pond', 'An impressionistic masterpiece depicting Monet''s iconic
water lilies, reflecting the artist''s fascination with nature and its ever-
changing beauty.', '78.74 x 502.36 inches', 8863.00,
'https://upload.wikimedia.org/wikipedia/commons/9/99/Water-Lilies-and-Japanese-
Bridge-%281897-1899%29-Monet.jpg', 1899, 'Oil on canvas', 10),
('The Guitarist', 'Picasso''s cubist exploration of a musician playing the
guitar, showcasing innovative perspectives and geometric shapes.', '25 x 37
inches', 445.00,
'https://upload.wikimedia.org/wikipedia/vi/2/28/Nhaccongguitargia.jpeg', 1904,
'Oil on canvas', 2),
('Spring in Town', 'Wood''s scene of vibrant spring captures the essence of
seasonal renewal in a small town, highlighting regional American life with
warmth and charm.', '26 x 24 inches', 780.00,
'https://upload.wikimedia.org/wikipedia/commons/8/8e/Grant_Wood%2C_Spring_in_Tow
n_%281941%29.jpg', 1941, 'Oil on wood', 8),
('Galatea of the Spheres', 'A cosmic portrait of Dalí''s wife Gala, transformed
into a celestial being surrounded by spherical shapes, symbolizing the atomic
and spiritual realms.', '26 x 21 inches', 8891.00,
'https://upload.wikimedia.org/wikipedia/en/0/08/Galaofspheres.JPG', 1952, 'Oil
on canvas', 4),
('The Dance of Life', 'Symbolic and dynamic, Munch''s depiction of life''s
stages through dancing figures captures the essence of existence with vivid and
emotive strokes.', '56.3 x 81.9 inches', 4763.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/b/b6/Edvard_Munch_-
_The_dance_of_life_%281899-1900%29.jpg/2560px-Edvard_Munch_-
_The_dance_of_life_%281899-1900%29.jpg', 1900, 'Oil on canvas', 5),
('Ginevra de'' Benci', 'A captivating portrait of a young woman, da Vinci''s
work exudes a mysterious charm, inviting viewers to contemplate the subject''s
enigmatic expression.', '150 x 15 inches', 6659.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/3/39/Leonardo_da_Vinci_-
_Ginevra_de%27_Benci_-_Google_Art_Project.jpg/1932px-Leonardo_da_Vinci_-
_Ginevra_de%27_Benci_-_Google_Art_Project.jpg', 1478, 'Oil paint on drawing',
3),
('Primavera', 'Botticelli''s masterpiece portrays mythological figures in a lush
garden, symbolizing the arrival of spring and the flourishing of love with grace
and beauty.', '80 x 124 inches', 1485.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/3/3c/Botticelli-
primavera.jpg/2560px-Botticelli-primavera.jpg', 1480, 'Tempera on panel', 7),
('Café Terrace at Night', 'Van Gogh''s nocturnal masterpiece immerses viewers in
the cozy ambiance of a café, where starry skies merge with earthly tones.',
'31.8 x 25.7 inches', 6540.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/0/09/Van_Gogh_-
_Terrasse_des_Caf%C3%A9s_an_der_Place_du_Forum_in_Arles_am_Abend1.jpeg/1559px-
Van_Gogh_-
```

```
_Terrasse_des_Caf%C3%A9s_an_der_Place_du_Forum_in_Arles_am_Abend1.jpeg', 1888,
'Oil on canvas', 1),
('Portrait of Adele Bloch-Bauer II', 'Another exquisite portrait of Adele Bloch-
Bauer, showcasing Klimt''s distinctive style and attention to detail, capturing
the subject''s personality with timeless elegance.', '75 x 47 inches', 456.00,
'https://upload.wikimedia.org/wikipedia/commons/3/33/Gustav_Klimt_047.jpg',
1912, 'Oil on canvas', 9),
('Fine Wind, Clear Morning', 'Hokusai''s iconic woodblock print featuring Mount
Fuji under a dynamic sky symbolizes the power and beauty of nature, capturing a
moment of serene clarity.', '10.125 x 15 inches', 9952.00,
'https://upload.wikimedia.org/wikipedia/commons/0/00/%E3%80%8C%E5%AF%8C%E5%B6%BD
%E4%B8%89%E5%8D%81%E5%85%AD%E6%99%AF_%E5%87%B1%E9%A2%A8%E5%BF%AB%E6%99%B4%E3%80%
8D-
South_Wind%2C_Clear_Sky_%28Gaif%C5%AB_kaisei%29%2C_also_known_as_Red_Fuji%2C_fro
m_the_series_Thirty-
six_Views_of_Mount_Fuji_%28Fugaku_sanj%C5%ABrokkei%29_MET_DP141062.jpg', 1832,
'Ukiyo-e (Woodblock print)', 12),
('Self-Portrait with Two Circles', 'A powerful self-portrait where Rembrandt
explores his own identity with profound introspection, showcasing his mastery of
chiaroscuro and emotional depth.', '45 x 37 inches', 3547.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/9/99/Rembrandt_Self-
portrait_%28Kenwood%29.jpg/1699px-Rembrandt_Self-portrait_%28Kenwood%29.jpg',
1669, 'Oil on canvas', 11),
('The Milkmaid', 'Vermeer''s intimate portrayal of a maid pouring milk is a
masterpiece of light and composition, highlighting the artist''s meticulous
attention to detail.', '17.9 x 16.1 inches', 446.00,
'https://upload.wikimedia.org/wikipedia/commons/thumb/2/20/Johannes_Vermeer_-
_Het_melkmeisje_-_Google_Art_Project.jpg/1826px-Johannes_Vermeer_-
_Het_melkmeisje_-_Google_Art_Project.jpg', 1658, 'Oil paint', 6);
```

ArtAvailability Table:

```
-- Insert data into ArtAvailability table
INSERT INTO ArtAvailability (ArtworkID, AvailabilityStatus)
VALUES
(1, 'Available'),
(2, 'Available'),
(3, 'Unavailable'),
(4, 'Unavailable'),
(5, 'Unavailable'),
(6, 'Available'),
(7, 'Available'),
(8, 'Available'),
(9, 'Unavailable'),
(10, 'Available'),
(11, 'Unavailable'),
(12, 'Unavailable'),
(13, 'Available'),
(14, 'Available'),
(15, 'Available'),
(16, 'Unavailable'),
(17, 'Available'),
(18, 'Unavailable'),
(19, 'Available'),
(20, 'Unavailable'),
(21, 'Available'),
```

```
(22, 'Available'),
(23, 'Available'),
(24, 'Unavailable'),
(25, 'Available'),
(26, 'Unavailable'),
(27, 'Available'),
(28, 'Available'),
(29, 'Unavailable'),
(30, 'Unavailable'),
(31, 'Unavailable'),
(32, 'Available'),
(33, 'Available'),
(34, 'Available'),
(35, 'Unavailable'),
(36, 'Available');
```

Transaction Table:

```
-- Insert data into Transactions table
INSERT INTO Transactions (TransactionID, ArtworkID, BuyerID, SellerID,
TransactionDate, Amount)
VALUES
(1, 1, 2, 1, '2024-01-12 09:30:00', 9801.20),
(2, 6, 4, 6, '2024-01-12 10:45:00', 7162.00),
(3, 7, 5, 7, '2024-01-12 11:30:00', 5617.00),
(4, 14, 9, 10, '2024-01-12 12:15:00', 8695.00),
(5, 10, 2, 12, '2024-01-12 13:00:00', 1514.20),
(6, 15, 1, 3, '2024-01-12 14:15:00', 6593.00),
(7, 8, 3, 8, '2024-02-02 09:30:00', 6694.00),
(8, 22, 5, 7, '2024-02-02 10:45:00', 7893.00),
(9, 29, 10, 11, '2024-02-02 11:30:00', 4763.00),
(10, 17, 2, 12, '2024-02-02 12:15:00', 6738.00),
(11, 30, 1, 3, '2024-02-02 13:00:00', 6659.00),
(12, 23, 9, 10, '2024-02-02 14:15:00', 8864.00);
```

Schedule Table

```
-- Insert data into Schedule table
INSERT INTO Schedule (EventID, ArtworkID, StartTime, EndTime)
VALUES
(6, 1, '2024-01-12 15:00:00', '2024-01-12 16:00:00'),
(2, 6, '2024-01-12 16:30:00', '2024-01-12 17:30:00'),
(8, 7, '2024-01-12 18:00:00', '2024-01-12 19:00:00'),
(3, 14, '2024-01-12 19:30:00', '2024-01-12 20:30:00'),
(5, 10, '2024-01-12 21:00:00', '2024-01-12 22:00:00'),
(1, 8, '2024-02-02 15:00:00', '2024-02-02 16:00:00'),
(7, 22, '2024-02-02 16:30:00', '2024-02-02 17:30:00'),
(4, 29, '2024-02-02 18:00:00', '2024-02-02 19:00:00'),
(9, 17, '2024-02-02 19:30:00', '2024-02-02 20:30:00'),
(10, 30, '2024-02-02 21:00:00', '2024-02-02 22:00:00');
```

Shipment Table:

```
-- Insert data into Shipment table
INSERT INTO Shipment (TransactionID, ShippingDate, DeliveryDate, TrackingNumber,
Status)
VALUES
(3, '2024-01-12 15:00:00', '2024-01-18 10:00:00', '123456789', 'Shipped'),
(2, '2024-01-12 16:15:00', '2024-01-20 12:00:00', '987654321', 'Delivered'),
(9, '2024-01-12 17:00:00', '2024-01-22 14:30:00', '456789012', 'Shipped'),
(4, '2024-01-12 18:15:00', '2024-01-25 16:45:00', '567890123', 'Delivered'),
(8, '2024-01-12 19:00:00', '2024-01-28 18:00:00', '234567890', 'Shipped'),
(6, '2024-01-12 20:15:00', '2024-01-30 20:15:00', '345678901', 'Delivered'),
(7, '2024-02-02 15:00:00', '2024-02-08 10:00:00', '789012345', 'Shipped'),
(12, '2024-02-02 16:15:00', '2024-02-10 12:00:00', '345678901', 'Delivered'),
(1, '2024-02-02 17:00:00', '2024-02-12 14:30:00', '901234567', 'Shipped'),
(10, '2024-02-02 18:15:00', '2024-02-15 16:45:00', '234567890', 'Delivered'),
(5, '2024-02-02 19:00:00', '2024-02-18 18:00:00', '456789012', 'Shipped'),
(11, '2024-02-02 20:15:00', '2024-02-20 20:15:00', '567890123', 'Delivered');
```

Submission Table:

```
-- Insert data into Submission table
INSERT INTO Submission (ArtistID, ArtworkID, SubmissionDate, Status)
VALUES
(4, 16, '2024-01-12 09:00:00', 'Approved'),
(7, 18, '2024-01-12 10:15:00', 'Pending'),
(9, 20, '2024-01-12 11:00:00', 'Rejected'),
(12, 26, '2024-01-12 12:45:00', 'Approved'),
(2, 31, '2024-01-12 13:30:00', 'Pending'),
(6, 35, '2024-01-12 14:45:00', 'Rejected'),
(8, 19, '2024-02-02 09:00:00', 'Approved'),
(11, 21, '2024-02-02 10:15:00', 'Pending'),
(4, 24, '2024-02-02 11:00:00', 'Rejected'),
(6, 25, '2024-02-02 12:45:00', 'Approved'),
(10, 32, '2024-02-02 13:30:00', 'Pending'),
(2, 34, '2024-02-02 14:45:00', 'Rejected');
```

d. Database Queries

i. Queries analysis

The queries displayed below follow a consistent structure to guarantee that user input is properly sanitized. In this structure, each question mark serves as a placeholder, indicating that it is parameterized to accommodate the user data content:

- **INSERT INTO VALUES**: to insert data into the tables
- **SELECT**: to show the columns for return
- **FROM**: to specify the table use
- **INNER JOIN**: to join the table for more linked data query

- **WHERE**: to set a condition for each query
- **ORDER BY**: to sort the results in ascending order
- **GROUP BY**: to pack the same data into groups

ii. Login Page

```
String connectionUrl = "jdbc:sqlserver://sql.bsite.net\\MSSQL2016;databaseName=htthuy_ArtGallery;user=htthuy_Ar
try(Connection con = DriverManager.getConnection(connectionUrl)){

    String username = usernameField.getText();
    String password = String.valueOf(passwordField.getPassword());

    String SQL = "SELECT * FROM Users WHERE username=? AND password=?";
    PreparedStatement preparedStatement = con.prepareStatement(SQL);
    preparedStatement.setString(1, username);
    preparedStatement.setString(2, password);
```

Figure 5: SQL Syntax for Login Page

iii. Artist Page

```
public List<artistModel> getAllArtists() {
    List<artistModel> artists = new ArrayList<>();

    try (Connection connection = DriverManager.getConnection(connectionUrl)) {
        String query = "SELECT * FROM Artist";
        try (PreparedStatement preparedStatement = connection.prepareStatement(query);
             ResultSet resultSet = preparedStatement.executeQuery()) {
```

Figure 6: SQL Syntax for Artist Page

iv. Artwork Page

```
public List<ArtworkModel> getAllArtworks() {
    return getArtworksByQuery("SELECT A.*, B.Name AS ArtistName " +
            "FROM Artwork A " +
            "JOIN Artist B ON A.ArtistID = B.ArtistID");
}

public List<ArtworkModel> searchArtworksByArtist(String artistName) {
    String query = "SELECT A.*, B.Name AS ArtistName " +
            "FROM Artwork A " +
            "JOIN Artist B ON A.ArtistID = B.ArtistID " +
            "WHERE B.Name LIKE ?";
    String searchTerm = "%" + artistName + "%";
    return getArtworksByQueryWithParameter(query, searchTerm);
}

public List<ArtworkModel> getArtworksByMedium(String medium) {
    String query = "SELECT A.*, B.Name AS ArtistName " +
            "FROM Artwork A " +
            "JOIN Artist B ON A.ArtistID = B.ArtistID " +
            "WHERE A.Medium LIKE ?";
    String searchTerm = "%" + medium + "%";
    return getArtworksByQueryWithParameter(query, searchTerm);
}
```

Figure 7: SQL Syntax for Artwork Page

4. Application Java Structure

a. Project Structure

For this project, our team has opted to utilize IntelliJ IDEA as the Integrated Development Environment (IDE) for application development. Members are familiar with this IDE, and it boasts excellent community support, providing valuable assistance when encountering challenges. IntelliJ IDEA offers essential tools such as an SQL Console, Terminal, and a Debugging Tool, enhancing our capabilities for testing and ensuring the robustness of our application, especially when dealing with complex tasks.

Upon initiating the project in IntelliJ IDEA, the IDE automatically generates the project structure. The figure below illustrates the initial project structure tailored for our Online Art Gallery application:

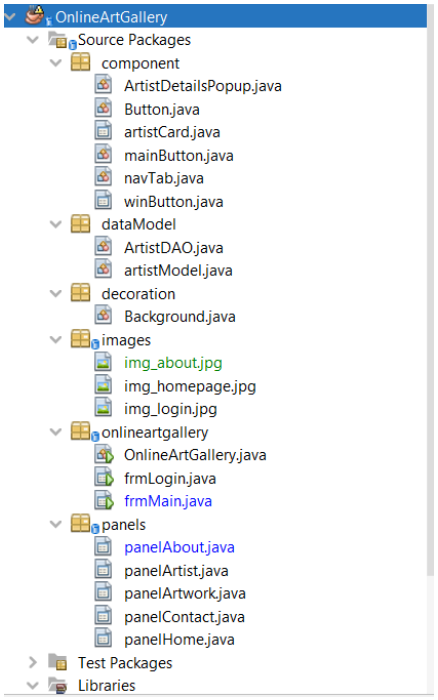

Figure 8: The project structures in IDE

This structure serves as the foundation for our development efforts, providing an organized and efficient framework to build upon as we work towards creating a seamless and engaging online art platform.

We can summarize the folders and files' purpose as follows:

- component: This place holds the components java files such as Artist Card, Buttons, Navigantion Tab, etc.
- dataModel: This place holds the SQL database for the Online Art Gallery Project.
- decoration: This place holds the General Background of the application.
- images: This place holds the background images in every single frame.
- onlineartgallery: This place holds the main frames including frmLogin and frmMain to provide environments for the panels.
- panels: This place holds the panels for the Main frame including About, Artist, Artwork, Contact, Home.

b. Connection implementation:

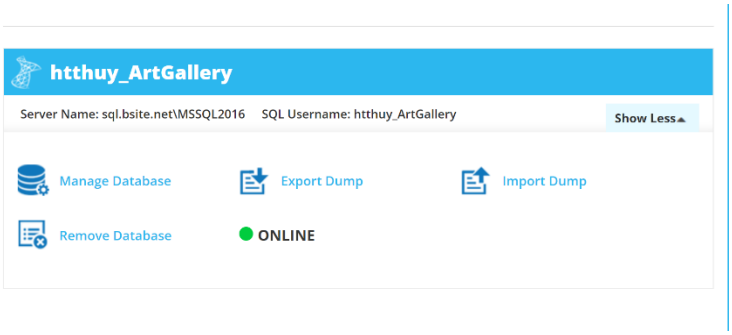

Figure 9: Free database hosting website for the project

c. Application Demo

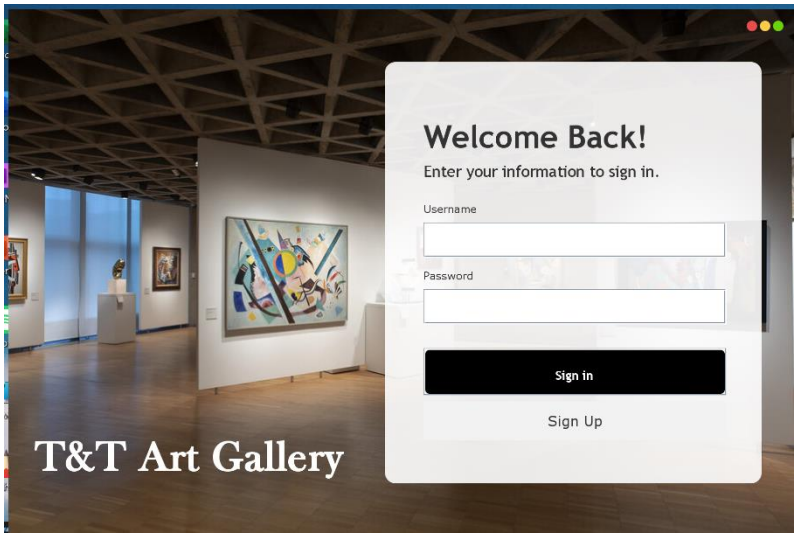

Figure 10: Login Page

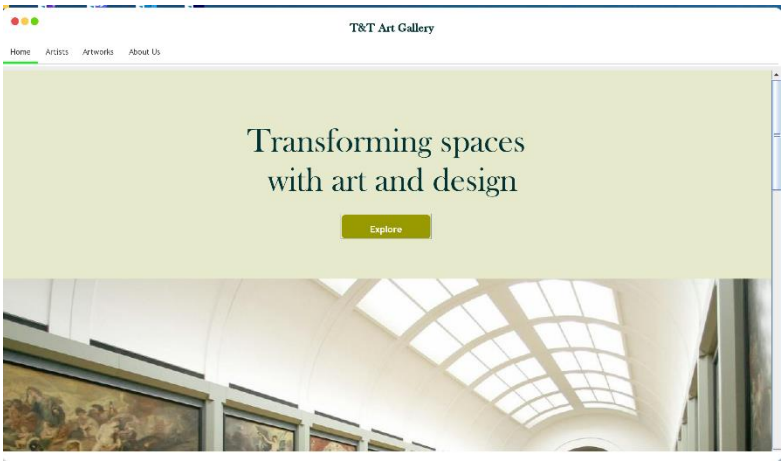

Figure 11: Home Page

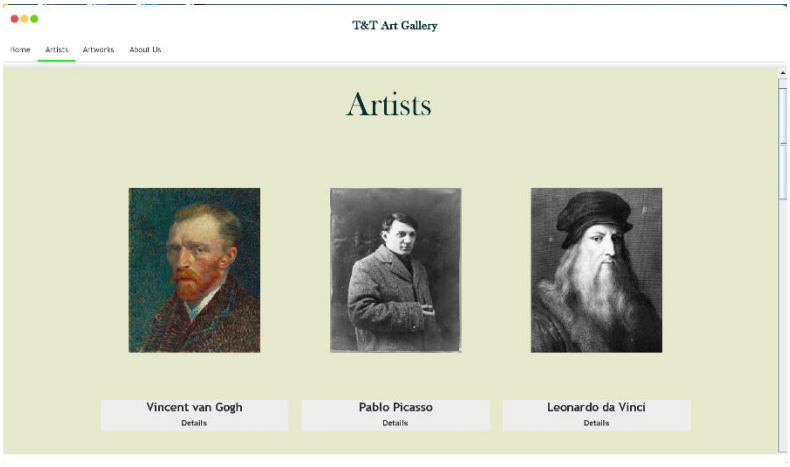

Figure 12: Artist Page

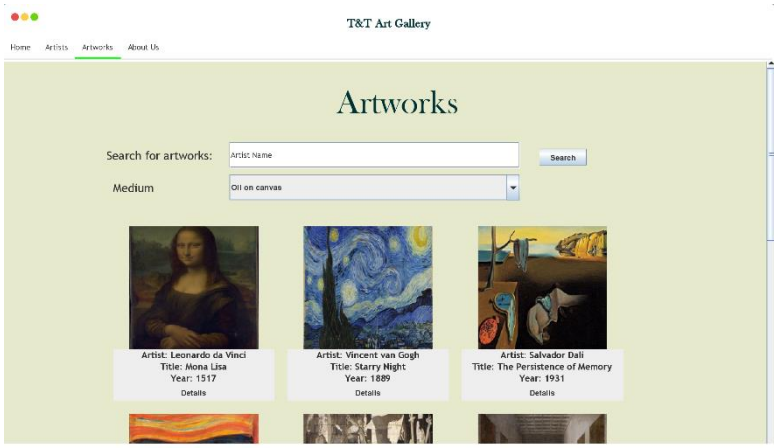

Figure 13: Artwork Page

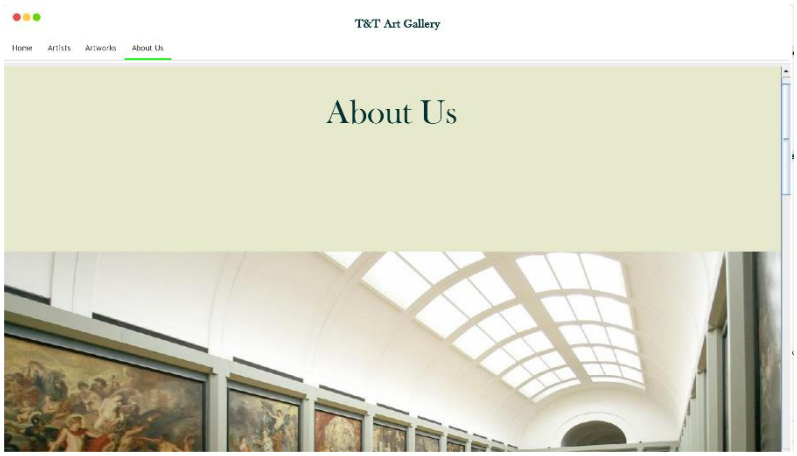

Figure 14: About Us Page

Project's GITHUB: LINK
Project's Figma Design: LINK

Data Schema and Sample: Link
Presentation Slide: Link

IV. CONCLUSION

1. Achieved Goals:

Throughout the development of the Online Art Gallery project, our team successfully realized key objectives. Initially, we meticulously designed the database, ensuring adherence to B.C. Normal Form principles for optimal data storage, retrieval, and the elimination of anomalies. Subsequently, we seamlessly integrated the front-end interface with the back-end database using a Java connection driver, establishing a secure and efficient connection. Essential functions, such as login, account creation, and artwork reservation, were implemented with intricate queries to manage diverse scenarios effectively. To enhance user experience, we incorporated data evaluation techniques for more precise predictions and recommendations related to artistic preferences. Robust security measures were also implemented to protect user data and thwart unauthorized access, including defenses against SQL injection attacks. The project has culminated in a reliable and user-friendly Online Art Gallery, meeting contemporary standards in database management, security, and user interaction.

2. Future Work:

The accomplishment of these goals sets the stage for future developments, transforming the project into a comprehensive real-world application. Our commitment involves implementing advanced features to enrich the user experience, including the ability for users to update their information, expanded support from specialists, and interface enhancements. We plan to optimize the connection process to reduce user waiting times and introduce a scheduling system for managing art-related activities conveniently. Our focus remains on continuous improvement, delivering a holistic, user-centric Online Art Gallery solution.

3. Concluding Thoughts:

In conclusion, we harbor optimism for the ongoing development and refinement of our Online Art Gallery platform. Our aim is to make the system increasingly user-friendly and practical, concentrating on elevating the overall experience for our users. Throughout this project, our team has gained valuable insights into collaboration, communication, and problem-solving, laying a foundation for future endeavors. We express heartfelt gratitude to our esteemed lecturers for their guidance and support, without which this project would not have come to fruition. The opportunity to contribute to the realm of art and technology is deeply appreciated, and we look forward to positively impacting individuals seeking creative expression and engagement. With a dedication to continuous learning and innovation, we are enthusiastic about the potential of our Online Art Gallery to enhance the artistic well-being of our users.

V. REFERENCES

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