



CS353 DATABASE SYSTEMS PROJECT PROPOSAL

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Online Art Gallery and Auction Platform

Project Group No: 07

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Table of Contents

1. Introduction	3
2. Project Description	3
3. Requirements	3
3.1. Functional Requirements	3
User Management	3
Artwork Management	3
Administrator Approval Workflow	4
Auction and Bidding:	4
Payment Process	4
Collection Management	5
Workshop Management	5
Email Notifications	5
3.2. Non-Functional Requirements	5
3.2.1 Performance	5
3.2.2 Usability	5
3.2.3 Scalability	6
3.2.4 Reliability	6
3.2.5 Security	6
3.2.6 Maintainability	6
3.2.7 Compatibility	6
3.2.8 Third-Party Integrations	6
3.3. Limitations	7
4. ER Diagram	7

1. Introduction

This project proposal is for an online art gallery and auction platform. As such a system would require a lot of data to be handled and stored thoroughly, forming an appropriate database design is a must. The website offers a platform for browsing, purchasing, and selling artworks to bring together artists, collectors, and art fans. The functional requirements, limitations, and Entity-Relationship (E/R) model for the database system that would serve as the platform's backbone are all described in this proposal.

2. Project Description

The stated web application will constitute a platform in which individuals will be able to browse, purchase, and sell artworks through auction or for a fixed price, and attend workshops. Additionally, galleries and artists can create art piece collections and artists can conduct workshops. The actions made within the web application will be overseen by administrators such as user transactions and artworks' validation. Information about users, artworks, collections, auctions, bids, galleries, and workshops will be stored in the database. Real-time notifications and a system administration dashboard will also be included on the platform.

3. Requirements

3.1. Functional Requirements

User Management

User Registration:

- The system must allow users, artists, and galleries to register on the platform.
- Artists and galleries must be authenticated upon registration.

Artwork Management

Artwork Upload:

- Users must be able to upload artworks with the artworks' images.
- Uploaded artworks must include details such as title, description, medium, art movement, size as dimensions, rarity, and other relevant information.
- Users should be able to set a fixed price or set an auction when uploading an artwork.
- Users should receive timely notifications regarding the status of their artwork approvals.

Artwork Search and Filtering:

- Users must be able to search for a specific artwork.
- Users must be able to filter artworks by various criteria.

Saved Artworks:

- Users must be able to save specific artworks to access them later easily.

Administrator Approval Workflow

Artwork Approval:

- There should be an admin screen to review, approve or reject artworks with fixed prices or set auctions with initial bids if the amount exceeds \$5000.
- The system must notify administrators when an artwork requires approval.

Payment Approval:

- Administrators should have a dedicated screen to review and approve or reject high-value payments.
- The system must notify administrators when a high-value payment is pending approval.

Analysis:

- Administrators must be able to track and analyze auction outcomes, high-value transactions, and approval activities.

Auction and Bidding:

- An auction must start after a time defined by the user who owns the related artwork.
- Users should be able to place bids for artworks on active auctions.
- The bidding system should allow users to bid any amount above the starting bid set by the uploader.
- The system should automatically close an auction after a defined time.
- The user with the highest bid at the end of the auction period should be declared the winner.

Payment Process

- After winning an auction, users should be notified to purchase the related artwork via a secure third-party payment application.
- Users should receive email confirmations and invoices upon successful payment.
- The system should enforce a 3-day payment deadline for the winning bidder.

- If the winning bidder fails to make payment within the specified time, the system should automatically offer the artwork to the second-highest bidder, and so on.

Collection Management

Collection Creation:

- Artists and galleries must have the ability to create collections of artworks.
- Each collection must have a title, description, and a curated set of artworks.

Collection Search:

- Users must be able to search for a specific collection.
- Users must be able to filter collections by various criteria.

Workshop Management

Workshop Creation:

- Artists must be able to create workshops, specifying details such as title, description, date, time, and location.

Workshop Registration:

- Users must have the ability to register for workshops.
- The system must integrate a payment system for workshops that require a fee.

Email Notifications

- The system must send email notifications to users, artists, and galleries for events such as auctions, workshop registrations, collection additions, and other relevant activities.

3.2. Non-Functional Requirements

3.2.1 Performance

- Response time for any user interaction must be lower than 2 seconds. It should be able to handle a large number of users at the same time. Additionally, it should be optimized and responsive on various devices.

3.2.2 Usability

- Interfaces should be user-friendly with clear navigation and paths to different pages.

- Navigation between pages and searching for a collection, artwork, artist, gallery, or workshop should be as easy as one button click.

3.2.3 Scalability

- The application should be able to keep up with the scale of growth over time with more users using at the same time.

3.2.4 Reliability

- The system should ensure that it will not lose any data, especially financial records of artworks and payments, and the state of auctions must be preserved. Aim for minimal downtime, and in case of downtime, there should be disaster recovery procedures to protect user data.

3.2.5 Security

- Use of authentication and authorization methods to ensure only authorised users can access certain features such as admin accessing bidding and payments section.
- Implement security measures to protect user data and use encryption for data in transit.

3.2.6 Maintainability

- Develop well-documented code for the ease of future updates and maintenance. Use of version control tools that can track changes in the code.

3.2.7 Compatibility

- The application should be compatible with different web browsers and operating systems.

3.2.8 Third-Party Integrations

- The application should be able to integrate third-party services, for example, for payments and shipping services.

3.3. Limitations

- Users cannot upload an artwork unless they enter all the required information.
- An artwork that has a price over \$5,000 can only be uploaded only if the admin approves it.
- Payments and initial values of artworks can be approved only by admins.
- Only admins can track auction outcomes and transactions.
- Users cannot bid if an artwork is not currently on auction.
- Users cannot bid below the previous highest bid or starting bid.
- Only ArtistUsers and GalleryUsers can create collections.
- Only ArtistUsers can organize workshops.
- GalleryUser and ArtistUser accounts can only register if they are approved by an admin.
- Only admins can approve GalleryUser and ArtistUser accounts.
- Workshops can be organized by only one artist.

4. ER Diagram

In our ER model, ArtGallery-GalleryUser and Artist-ArtistUser couples are different from each other, within themselves. Galleries and Artists are obtained from an outside source. ArtistUsers and GalleryUsers introduce themselves to admins as they are signing up. If the admin confirms that the ArtistUser is actually the Artist that he/she is claiming to be or the GalleryUser is actually the owner of the gallery that he/she is claiming to be, they approve the ArtistUser/GalleryUser. In addition, as can be seen in the diagram below, ArtistUsers and GalleryUsers are obliged to be one of the artists or owner of one of the galleries, respectively.

