B.M.S. COLLEGE OF ENGINEERING BENGALURU
Autonomous Institute, Affiliated to VTU

OOMD Mini Project Report

Local Art Ecommerce

Submitted in partial fulfillment for the award of degree of

Bachelor of Engineering
in
Computer Science and Engineering

Submitted by:
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B.M.S. COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DECLARATION

We, Raja Simha Reddy(1BM23CS070), Crevan Neil Fernandes(1BM23CS082),DhruhiAtykar(1BM23CS091),Dhruvdeep Nayak(1BM23CS093) students of 5th Semester, B.E, Department of Computer Science and Engineering, BMS College of Engineering, Bangalore, hereby declare that, this OOMD Mini Project entitled "Local Art Ecommerce" has been carried out in Department of CSE, B.M.S. College of Engineering, Bangalore during the academic semester August 2025- December 2025. I also declare that to the best of our knowledge and belief, the OOMD mini Project report is not from part of any other report by any other students.

Signature of the Candidate

Raja Simha Reddy(1BM23CS070)

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CERTIFICATE

This is to certify that the OOMD Mini Project titled "**Local Art Ecommerce"** has been carried out by Raja Simha Reddy(1BM23CS070),Crevan Neil Fernandes(1BM23CS082),Dhruhi Atykar(1BM23CS091),Dhruvdeep Nayak(1BM23CS093) during the academic year 2025-2026.

Signature of the Faculty in Charge (Sonika Sharma D)

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Chapter 1: Problem Statement

1:1 Introduction:

In today's digital age, local artists and artisans often struggle to reach a broader audience due to limited access to traditional marketplaces and inadequate digital presence. Additionally, art enthusiasts face challenges in discovering unique, locally-made pieces amidst mass-produced items. There is a pressing need for a dedicated platform that bridges this gap, providing artists with a global stage to showcase their work while fostering community engagement and collaboration. Artree addresses this need by offering a comprehensive e-commerce app tailored to the needs of local artists and their supporters. By leveraging modern technology, Artree connects artists with a wider audience, allowing them to showcase and sell their unique creations directly to consumers. Artree not only empowers artists by giving them a platform to display their work but also enriches the art community by making unique, locally-made pieces more accessible to art enthusiasts around the world. Artree's user-friendly interface and robust features ensure a seamless and enjoyable experience for both artists and buyers. With Artree, local artistry thrives in the digital marketplace, fostering a vibrant and interconnected art community.

1:2 Problem Statement:

Local artists often struggle to find a platform where they can showcase and sell their handmade products to a wider audience. Most existing ecommerce platforms focus on mass produced items, which reduces the visibility of unique local artwork. Customers who want to buy authentic local art face difficulty in discovering genuine creators from their region. There is also a lack of a centralized digital space where artists can directly interact with buyers. Many artists are not familiar with complex online selling tools, which creates a barrier to entering the online market. Traditional marketing methods are costly and do not guarantee reach. Small scale artists need an affordable and easy to use solution to promote their work. Customers need a trustworthy platform that provides verified artist profiles and secure transactions. This gap between local creators and potential customers results in missed opportunities for both. A dedicated Local Art Ecommerce Website is required to connect artists and buyers in a simple and efficient way.

Chapter 2: Software Requirement Specification

2.1 Software Requirement Specification (SRS)

Software Requirements Specification (SRS)
Project: Local Art Ecommerce Website
Version: 1.0

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1. Introduction

1.1 Purpose
This SRS describes the complete requirements for the Local Art Ecommerce Website. It defines the system features, constraints, interfaces, and performance expectations.

1.2 Scope
The website enables local artists to upload and sell artwork. Customers can browse, search, purchase, and review products. The system supports user authentication, product management, payment processing, and administration.

1.3 Document Conventions
Standard English formatting, numbered sections, and clear definitions.

1.4 Intended Audience
Developers, testers, project managers, designers, administrators, and academic reviewers.

1.5 References
IEEE SRS 830
W3C Accessibility Guidelines
Payment gateway API documentation
SQL and MongoDB documentation

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2. Overall Description

2.1 Product Perspective
The system is a standalone web application with user interface, backend server, admin dashboard, and cloud database. It includes payment gateway and notification service integration.

2.2 Product Functions
User registration and login
Artist product upload and management
Artwork browsing and filtering
Cart management and checkout
Online payment processing
Order tracking and invoice generation
Ratings and reviews
Admin management of users, products, and reports

2.3 User Classes and Characteristics
Guest users: browse products without login
Customers: purchase products, review items, track orders
Artists: upload, edit, delete artworks, manage inventory
Admins: handle system level management

2.4 Operating Environment
Compatible with Chrome, Firefox, Edge
Backend hosted on cloud server
HTTPS for secure transactions
Runs on desktop and mobile browsers

2.5 Design Constraints
Responsive web design
PCI compliant payment handling
Restricted image upload size
Copyright safe artwork uploads

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3. Specific Requirements

3.1 Functional Requirements

User Registration and Login
• Users can register using email or phone number
• The system verifies credentials during login
• Forgot password and reset options must be available

Artist Module
• Upload artwork with title, description, price, and images
• Edit or delete existing artwork listings
• View sales analytics
• Manage stock and availability

Customer Module
• Add items to cart and update quantities
• Proceed to checkout and pay using available methods
• View order history and track shipping
• Rate and review purchased products
• Add items to wishlist

Search and Navigation
• Search by category, price, artist name, or material
• Filter by rating, price range, and popularity
• Sort by newest, highest rated, or lowest price

Order Management
• Automatic invoice generation
• Notifications for order confirmation and shipping
• Support order cancellation and refund requests

Admin Module
• Manage users, artists, and customers
• Approve or delete artwork listings
• View analytics and reports
• Manage categories and promotional content

Notification System
• Send email or SMS for orders, payments, and status updates

3.2 Non Functional Requirements

Performance Requirements
• Core pages must load within three seconds
• Support up to ten thousand simultaneous users
• Optimized database queries for fast search

Security Requirements
• Password encryption
• HTTPS enabled on all pages
• No storage of sensitive payment data
• Role based access control

Usability Requirements
• Simple and intuitive user interface
• Consistent design layout
• Help and support section available

Reliability Requirements
• Minimum uptime of ninety nine percent
• Daily database backups
• Recovery time within fifteen minutes after failure

Scalability Requirements
• Allow addition of new artists, categories, and regions
• Backend capable of handling increased traffic

Compatibility Requirements
• Works on Windows, macOS, Linux, Android, and iOS
• Supports screen readers and accessibility tools

3.3 External Interface Requirements

User Interface
• Responsive layout suitable for mobile and desktop
• Dashboard for artists and administrators

Software Interfaces
• Payment gateway APIs
• Email and SMS notification services
• Database systems such as MySQL or MongoDB

Hardware Interfaces
• Works on any device with internet access
• Supports uploading images from storage or camera

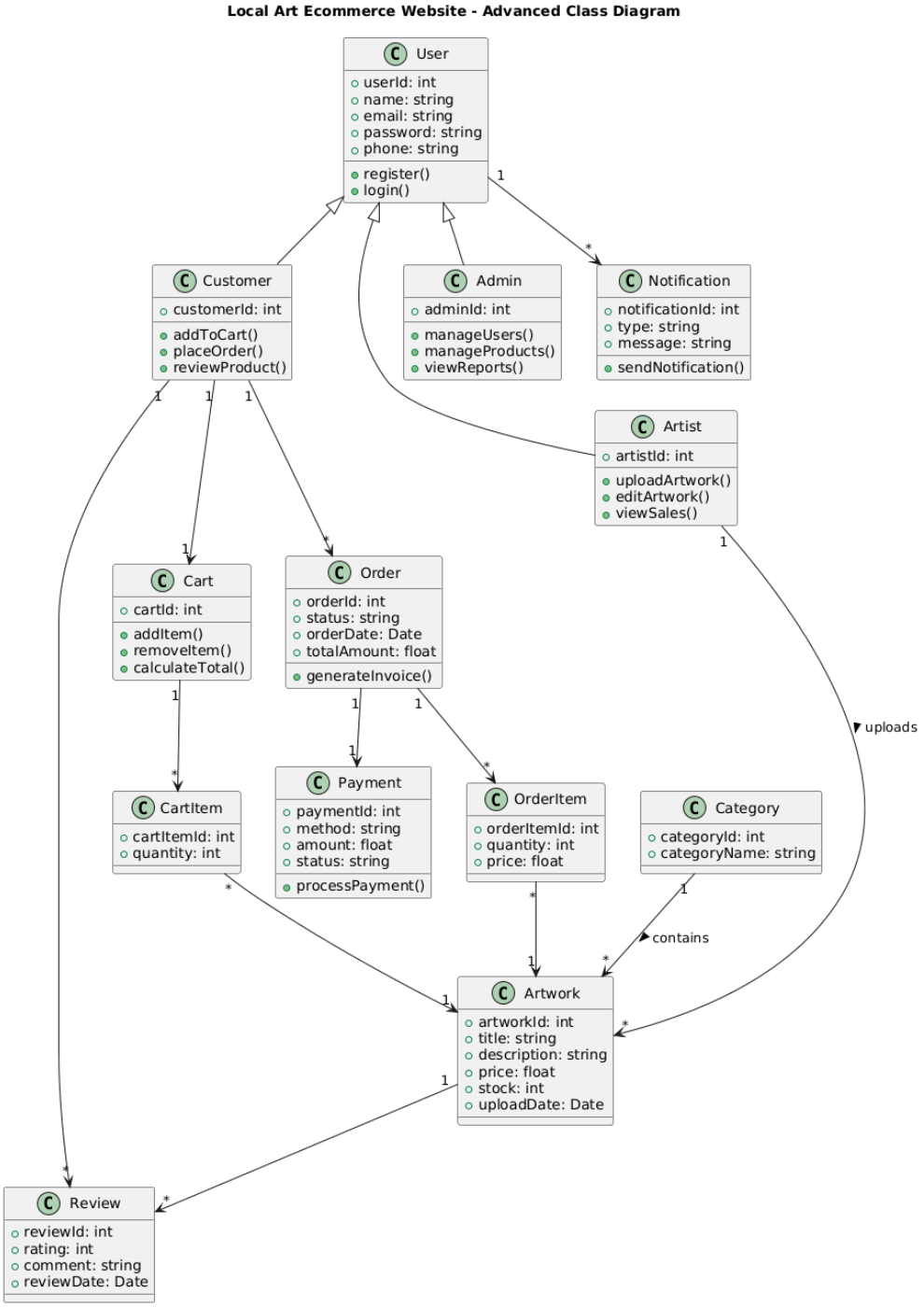
4. Appendix

Glossary
SKU: Stock Keeping Unit
UI: User Interface
UX: User Experience
COD: Cash On Delivery
OTP: One Time Password

Future Enhancements
• Mobile app version
• AI based art recommendations
• Chat system between artists and customers
• Augmented reality preview of artworks

Chapter 3: Class Modeling

3.1 Advanced Class diagram:



3.2 Features of Class Diagram:

The class diagram represents the main components of the Local Art Ecommerce Website and shows how they interact with each other. The system is built around different types of users, product management, ordering, payment processing, and communication modules. Each class contains attributes and operations that describe its behavior and purpose in the system.

The User class is the parent class for all user types in the system. It holds common attributes such as userId, name, email, password, and phone. It also contains basic functions like register and login. Customer, Artist, and Admin inherit from User. This avoids duplicate code and allows each role to have its own additional features.

The Customer class represents users who buy artworks. It includes functions for adding items to the cart, placing orders, and reviewing products. The Artist class represents creators who upload and manage their artwork listings. They can upload, edit, and track their sales. The Admin class handles system level management, including user monitoring, product approval, and generating reports.

The Artwork class represents each product uploaded by artists. It contains information such as artworkId, title, description, price, stock, and upload date. Artworks belong to a category, so the Category class is connected to Artwork. This helps with filtering and organizing artworks on the website.

The Cart and CartItem classes manage the shopping process for customers. Each customer has one cart. The cart contains multiple cart items, each linked to a specific artwork. Cart methods such as addItem, removeItem, and calculateTotal help manage the shopping experience.

The Order and OrderItem classes represent confirmed purchases. A customer can have multiple orders. Each order contains order items that store the quantity and price of purchased artworks. The order class also includes functions for invoice generation and status tracking.

The Review class allows customers to provide ratings and comments for artworks they purchased. Each artwork can have multiple reviews, and each customer can write multiple reviews.

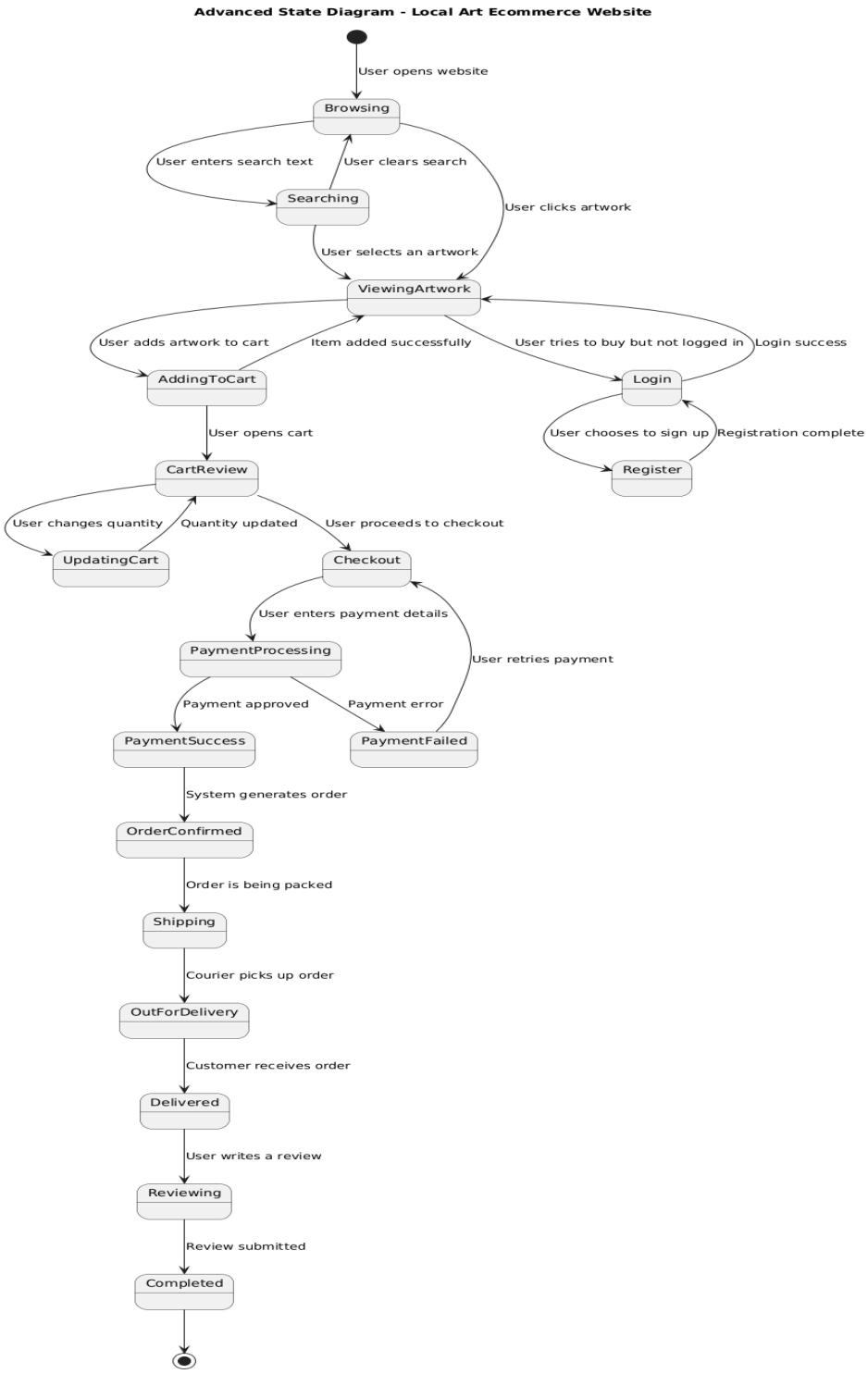
Payment is handled through the Payment class. Each order has one payment record, including details such as method, amount, and status. The processPayment method ensures secure transaction handling.

The Notification class is used to send messages to users regarding order status, payment confirmation, or updates. A user can receive many notifications.

Overall, the class diagram shows a clear separation of responsibilities. User roles are structured using inheritance, product and order management follow logical relationships, and supportive modules like payment and notifications maintain proper connectivity. The diagram provides a strong object oriented model for developing the Local Art Ecommerce Website.

Chapter 4: State Modeling

4.1 Advanced State Modeling:



4.2 State diagram features:

The state diagram shows the complete user journey on the Local Art Ecommerce Website. The process begins in the browsing state, where the user explores artworks. If the user types keywords or applies filters, the system moves to the searching state.

When an artwork is selected, the system transitions to viewingArtwork, allowing the user to see details. If the user adds the item to the cart, the system moves to addingToCart and then back to viewingArtwork. If the user tries to buy without logging in, the system moves to login, and if required, to register before returning to the product page.

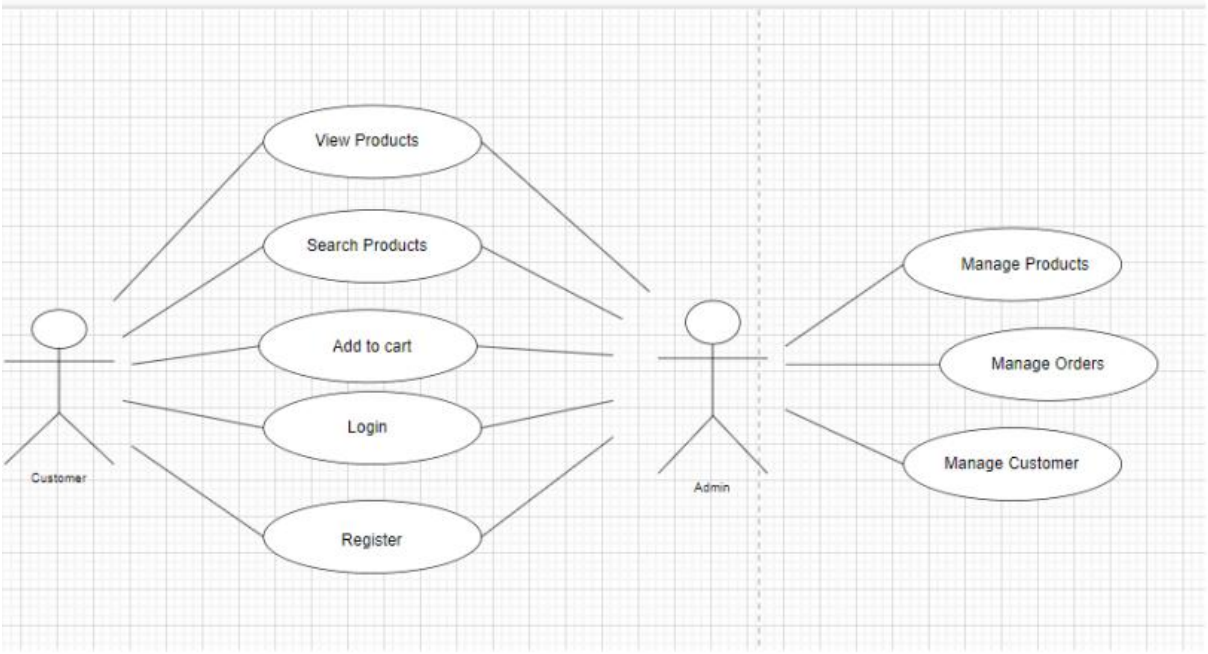
Opening the cart leads to the cartReview state, and any quantity change triggers updatingCart before returning to cartReview. When the user proceeds to checkout, the system enters checkout and then paymentProcessing when payment details are entered.

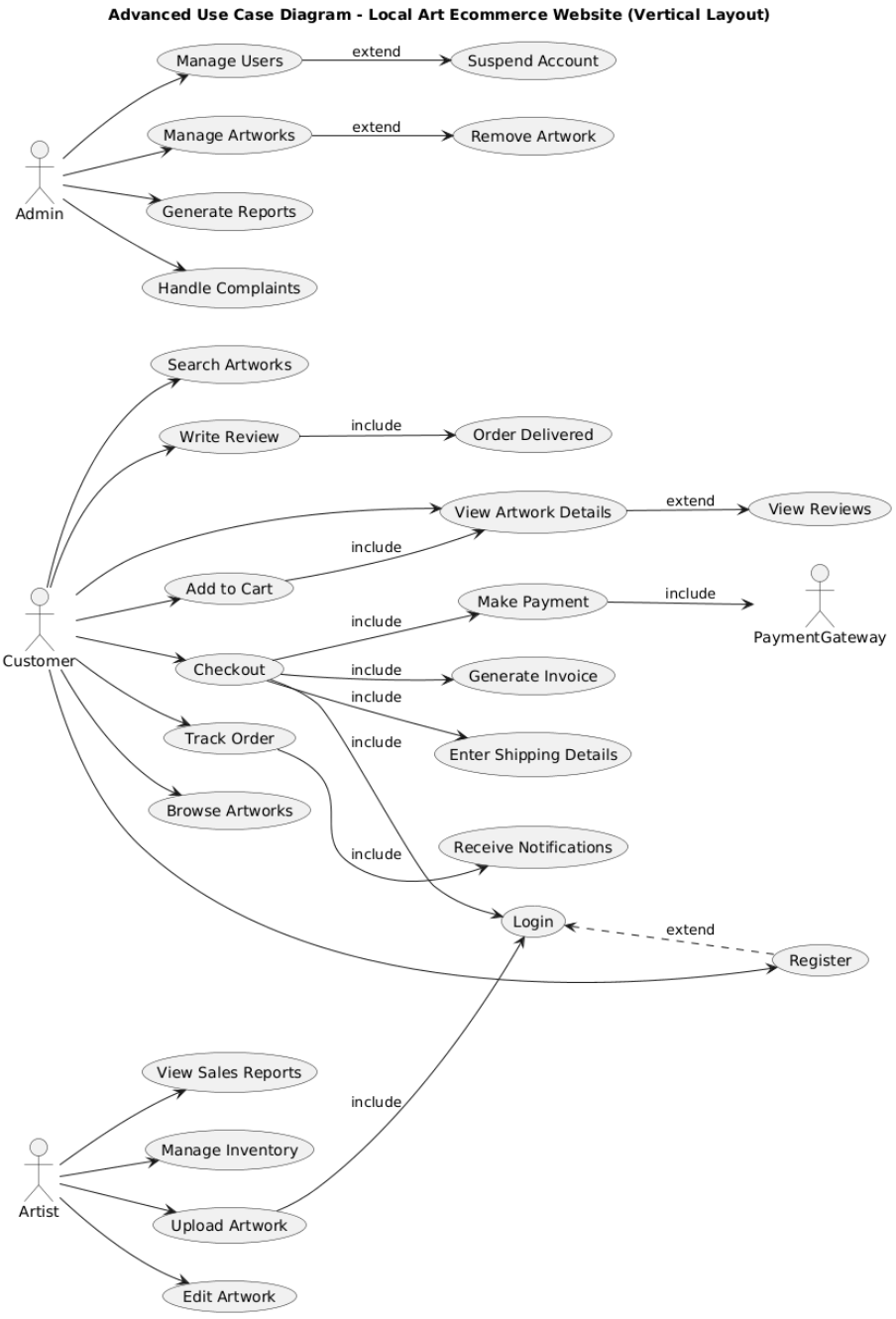
A successful transaction moves the system to paymentSuccess and then orderConfirmed, while a failed transaction sends it to paymentFailed, allowing retry. After the order is confirmed, the system transitions through shipping, outForDelivery, and delivered as the order progresses.

Once the product is received, the user may enter the reviewing state to submit feedback, leading finally to the completed state. Events such as selecting items, adding to cart, entering payment details, system confirmations, courier updates, and review submission drive each transition between states.

Chapter 5: Interaction Modeling

5.1 Use Case Diagram:



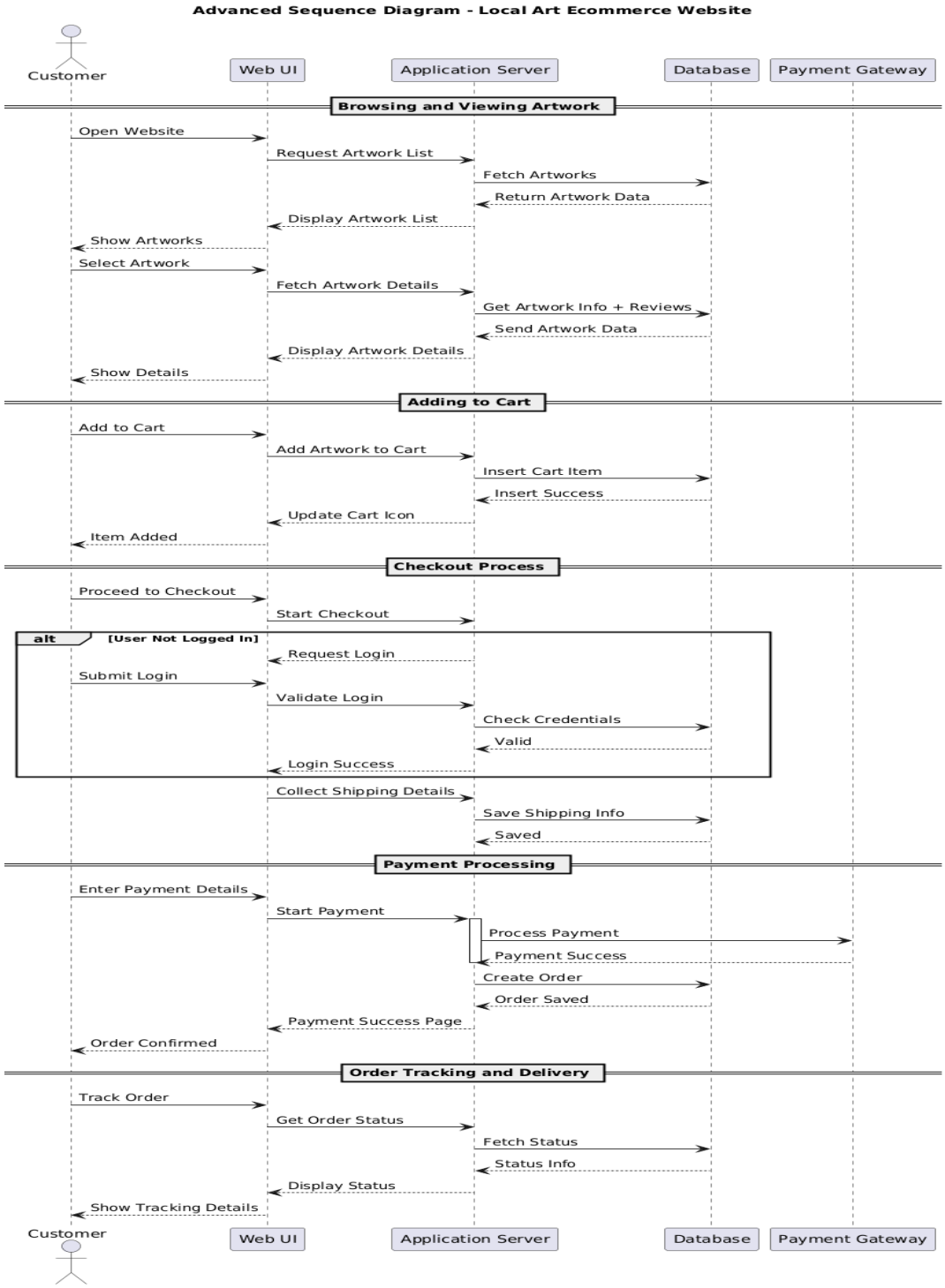

Advanced Use Case Diagram - Local Art Ecommerce Website (Vertical Layout)
Admin
Manage Users
extend
Suspend Account
Manage Artworks
extend
Remove Artwork
Generate Reports
Handle Complaints
Customer
Search Artworks
Write Review
include
Order Delivered
View Artwork Details
extend
View Reviews
include
Add to Cart
Make Payment
include
PaymentGateway
include
Checkout
include
Generate Invoice
include
Track Order
include
Enter Shipping Details
Browse Artworks
include
Receive Notifications
Login
extend
Register
Artist
View Sales Reports
include
Manage Inventory
Upload Artwork
Edit Artwork

The use case diagram shows how different users interact with the Local Art Ecommerce Website. Customers can browse and search artworks, view details, add items to their cart, and complete purchases through the checkout process. Some actions such as login, entering shipping details, making payments, and generating invoices are included use cases because they are necessary steps inside the main checkout process. Viewing reviews is an extended use case because it occurs only if the user chooses to explore more information.

Artists use the system to upload artwork, edit listings, manage inventory, and view their sales reports. These actions may require login as an included step. Admin users are responsible for managing users, artworks, reports, and complaints. Some administrative tasks extend others, such as removing artwork or suspending accounts, since they are optional and happen only in specific situations.

The payment gateway is an external actor used during payment processing, which is included inside the checkout use case. Additional system actions like generating invoices and sending notifications are automatically included during order completion and tracking. Overall, the diagram highlights how customers, artists, admins, and external services interact with the system, and how include and extend relationships structure the flow of activities.

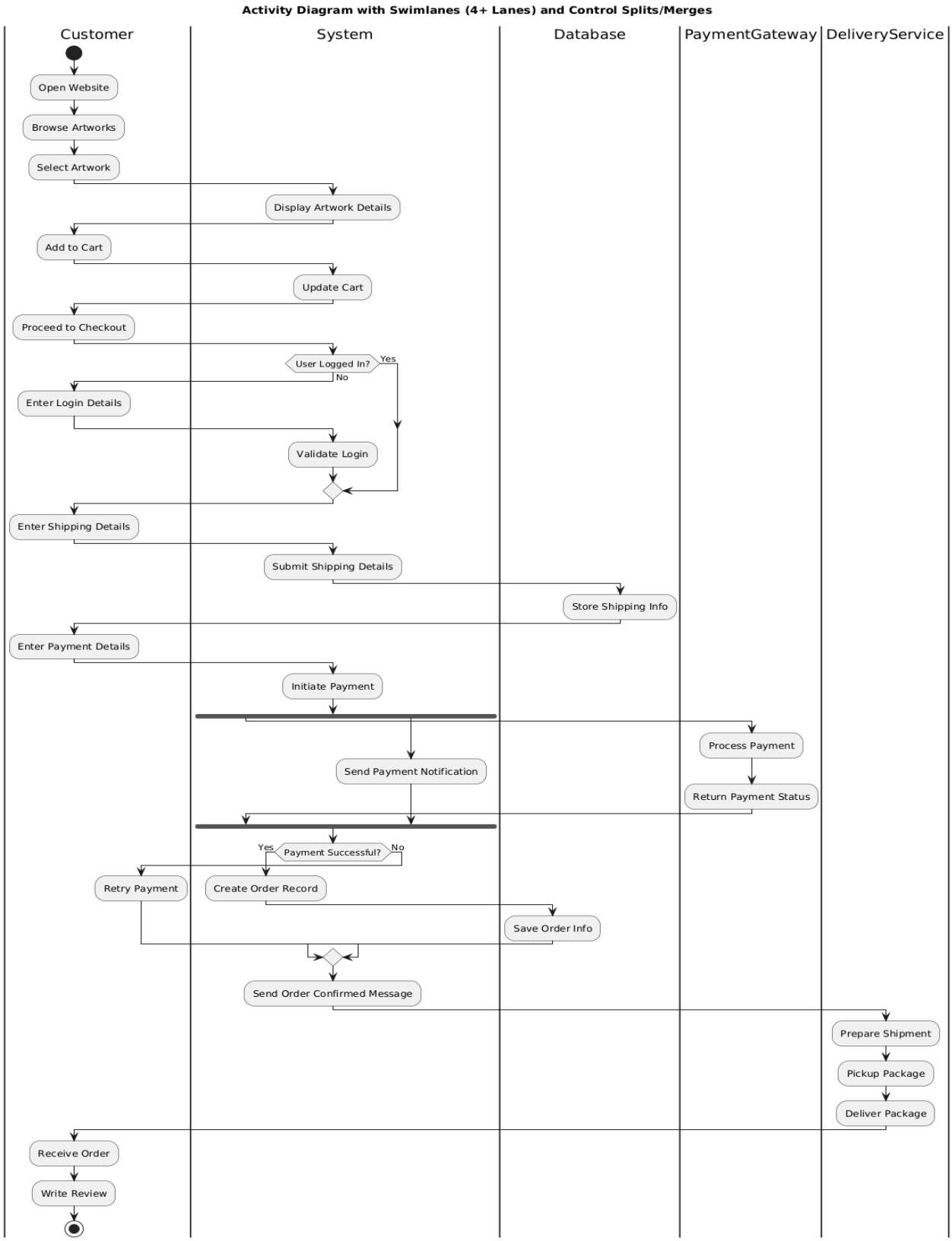
5.2 Sequence Diagram:



The sequence diagram illustrates how the customer, user interface, application server, database, and payment gateway interact during a complete purchase process on the Local Art Ecommerce Website. The flow begins when the customer opens the website and the interface requests artwork data from the server, which retrieves it from the database and sends it back for display. When the customer selects an artwork, the system again fetches detailed information and reviews using the same request-response pattern. Adding an item to the cart triggers a server request that stores the cart item in the database.

During checkout, if the customer is not logged in, the system performs a login validation step before continuing. The customer then submits shipping details, which are saved in the database. For payment, the server sends the transaction details to the external payment gateway and waits for a confirmation response. If the payment succeeds, the server creates an order record in the database and returns a confirmation message to the customer. Later, when the customer tracks their order, the system retrieves the updated status from the database and displays it. Overall, the diagram clearly shows the sequence of interactions, decision points, and external communication required to complete an ecommerce purchase.

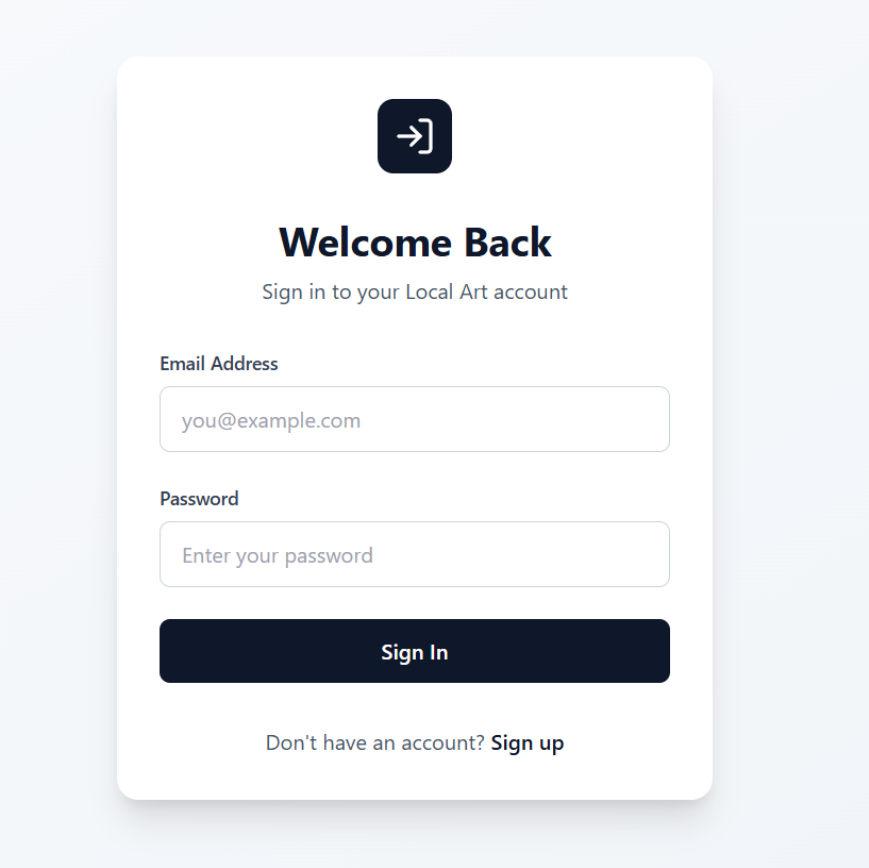
5.3 Activity Diagram:

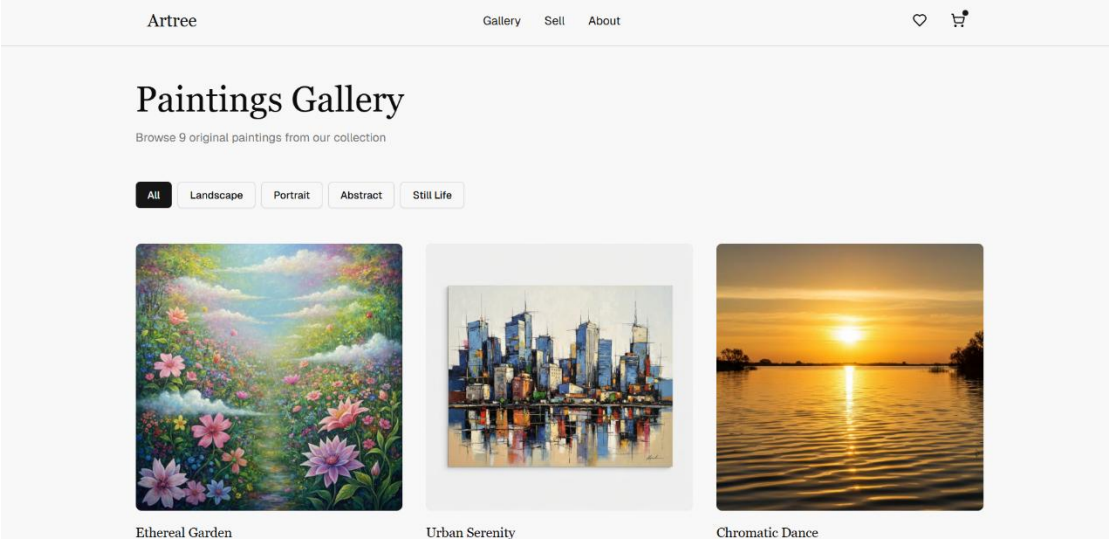


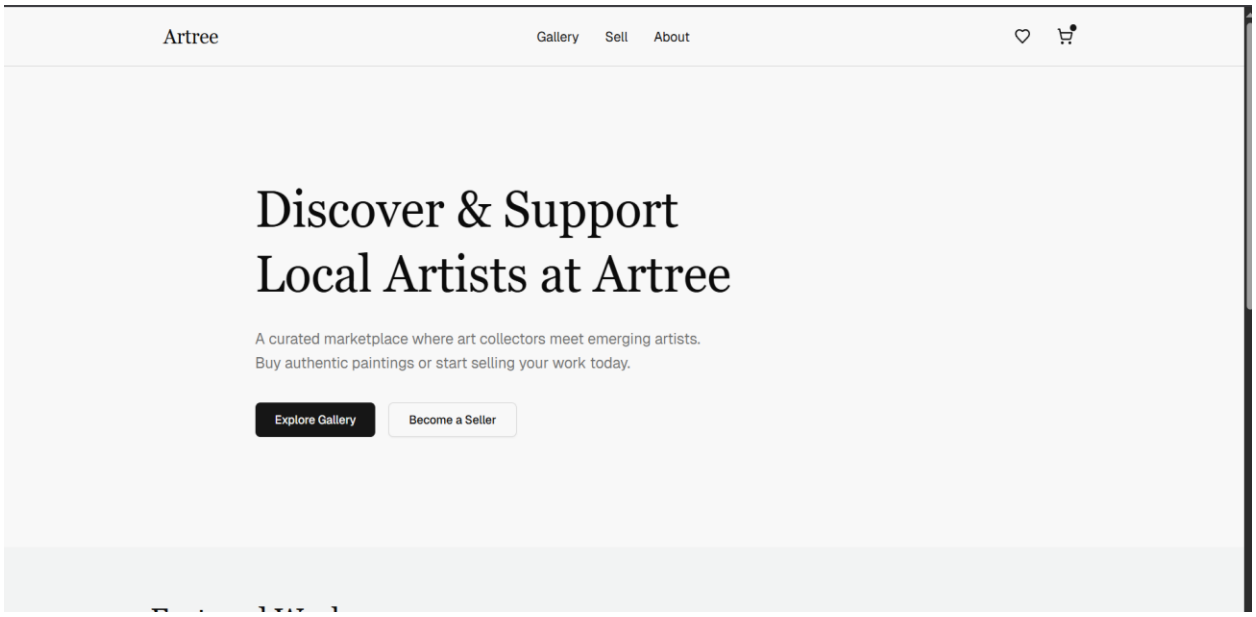
The activity diagram describes the complete workflow of placing an order on the Local Art Ecommerce Website, using multiple swimlanes to show how different actors and systems participate. The process begins in the Customer lane, where the user opens the website, browses artworks, selects an item, and adds it to the cart. Control then shifts to the System lane, which displays details and updates the cart. During checkout, the system checks if the user is logged in. If not, the flow returns to the customer to enter login details, and the system validates them before continuing. After this, the customer enters shipping and payment details. These details are passed to the system and stored in the Database lane.

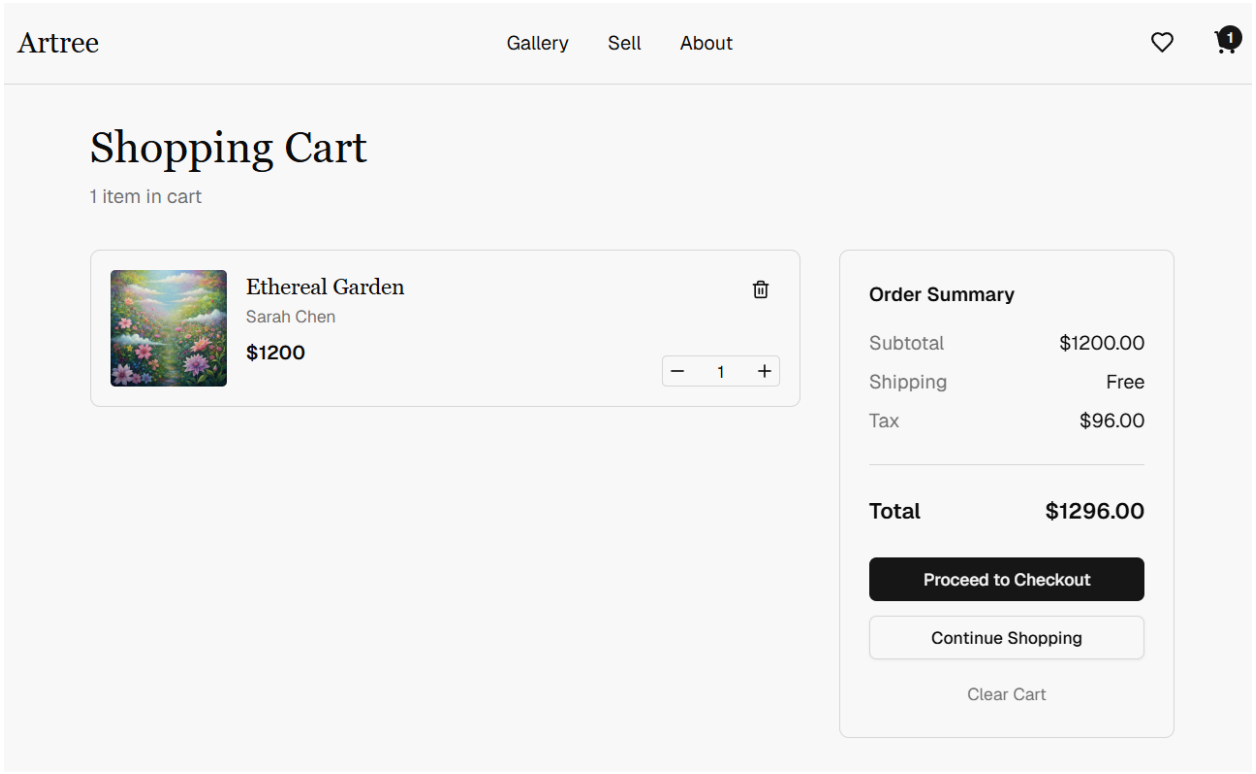
When payment is submitted, a split occurs: one path sends the transaction to the Payment Gateway for processing, while the system simultaneously sends a payment notification. After both parallel activities finish, the flow merges and the system checks whether the payment succeeded. A successful payment leads the system to create an order record in the database and confirm the order to the customer. The process then moves to the DeliveryService lane, where the shipment is prepared, picked up, and delivered. Finally, the customer receives the order and may write a review. The diagram clearly shows responsibility distribution, data flow, parallel execution, and decision points involved in the ecommerce process.

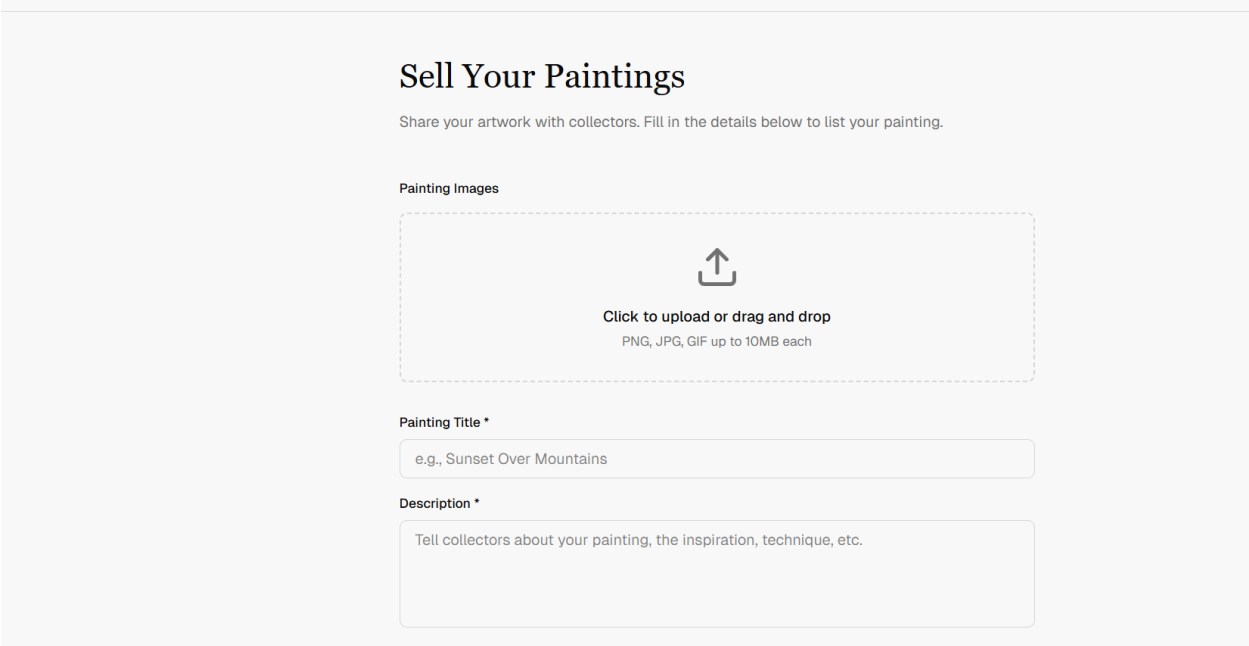
Chapter 6: UI Design with Screenshots






Artree
Gallery
Sell
About
Discover & Support
Local Artists at Artree
A curated marketplace where art collectors meet emerging artists.
Buy authentic paintings or start selling your work today.
Explore Gallery
Become a Seller


Artree
Gallery
Sell
About
1
Shopping Cart
1 item in cart
Ethereal Garden
Sarah Chen
$1200
1
Order Summary
Subtotal
$1200.00
Shipping
Free
Tax
$96.00
Total
$1296.00
Proceed to Checkout
Continue Shopping
Clear Cart



The project showcases a fully functional Local Art Ecommerce Website designed to connect local artists with buyers through a clean, modern, and user friendly interface. The main focus of the platform is to make the process of discovering, viewing, and purchasing artwork as smooth as possible for customers. At the same time, it offers a streamlined experience for artists who want to upload and sell their paintings online. Each section of the website contributes to the complete marketplace flow that aligns with the SRS, UML diagrams, and functional requirements of the project.

The shopping cart page represents the final stage before a customer commits to a purchase. It allows users to clearly view the artwork they have selected, including its price, quantity, and total cost. The cart is interactive, meaning the customer can increase or decrease quantities or remove items entirely. An order summary is displayed on the side, showing the subtotal, tax, shipping details, and the final total. A checkout button is provided to continue the purchasing process, while a continue shopping option encourages further browsing. This interface directly supports key activities such as order review, cart management, and preparing the user for payment.

The gallery page forms the core browsing experience for customers. It displays a collection of artworks sourced from various artists, each shown with a large image, title, artist name, and price. Above the artwork grid, there are filter buttons such as landscape, portrait, abstract, and still life. These filters make it easier for users to find artwork that matches their interests. The layout is visually appealing and encourages users to explore multiple artworks. This page demonstrates the browsing, searching, and viewing functions described in the system's use cases and activity flows.

The login page provides a secure entry point for customers and artists. It contains fields for email and password, organized clearly within a centered box to maintain user focus. The page also guides new users toward creating an account by offering a sign up option. The login screen ensures that only authenticated users can proceed to sensitive parts of the system, such as purchasing artwork or listing items for sale. It supports the authentication workflow shown in the state diagram, where login is required before checkout or uploading.
The homepage introduces visitors to the platform and communicates its purpose. It highlights the mission of supporting local artists by giving customers a place to discover and purchase authentic artwork. Prominent buttons encourage visitors to explore the gallery or sign up as sellers. The page uses large typography and a clean layout to create a professional first impression. It serves as an entry point for all user actions and supports the initial browsing activities described in the UML diagrams.

The sell page is designed specifically for artists who want to upload their artwork. It includes fields for adding painting images, titles, descriptions, and other details needed to display the artwork in the gallery. The upload section allows users to drag and drop files, making the process simple and efficient. This part of the system aligns with the artist use cases such as uploading artwork, editing details, managing inventory, and interacting with the marketplace. It enables creators to showcase their work with minimal effort.
Altogether, these interfaces demonstrate the complete functional flow of an ecommerce system tailored for local artwork. They support browsing, authentication, uploading, purchasing, and order management in a visually organized and user friendly manner. The pages also reflect the design constraints and functional requirements defined in the SRS and maintain consistency with the UML models such as use case diagrams, activity diagrams, and sequence diagrams. This makes the project a cohesive and realistic representation of a modern online art marketplace.