Software Requirements and Design Document

for

BIDHUB

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1.   Introduction

1.1   Purpose

BIDHUB, a auction management app that allows users to sell and buy items through auction.

1.2   Product Scope

The application caters to the general ,offering features such as selling and buying items through auction ensuring good price for their product.

1.3   Title

BIDHUB

1.4   Objectives

- Ensure fair and transparent bidding processes by providing real-time updates and secure systems to manage auctions.
- Provide a platform where sellers can list items for auction and buyers can bid on items of interest, fostering a competitive yet user-friendly environment.
- Offer an intuitive interface and smooth navigation to make the auction experience accessible for users of all skill levels.
- Enable real-time bidding with instantaneous updates and notifications to keep participants engaged and informed.
- Help users reach a wider audience by connecting buyers and sellers across different geographical locations.

1.5   Problem Statement

In the fast-paced digital era, traditional auction systems face significant challenges in providing transparency, accessibility, and efficiency to buyers and sellers. These systems often suffer from issues such as limited geographical reach, lack of trust in the bidding process, inefficient auction management, and insufficient real-time updates.

Moreover, users encounter difficulties in accessing auctions remotely, monitoring bids effectively, and ensuring secure transactions. Sellers face challenges in reaching a broader

audience, while buyers struggle with trust and transparency in the auction process. This creates a need for a modern, reliable, and user-friendly solution that can overcome these barriers.

The **BIDHUB App** aims to address these challenges by developing an online auction platform that fosters trust, ensures transparency, and provides a seamless user experience. The platform is designed to support real-time bidding, secure transactions, and comprehensive auction management, catering to the needs of diverse users across different locations.

2.   Overall Description

2.1   Product Perspective

The **BIDHUB App** is a modern, user-friendly, and web-based platform designed to revolutionize the auctioning experience for buyers, sellers, and administrators. It aims to eliminate the limitations of traditional auction systems by offering a fully digital solution that is accessible, transparent, and efficient.

2.2   Product Functions

- User Registration and Authentication
- Item Listing and Management (Seller)
- Real-Time Bidding (Buyer)
- Auction Reporting (Inspector & Admin)
- Auction Results
- User Account Management
- Logging and Activity Tracking

2.3　List of Use Cases

Use Case 1: Register User (By Ubaida Tariq)

Scope: Auction Management System

Level: User Goal

Primary Actor: User (Bidder or Seller)

Stakeholders and Interests: User wants to register to participate in auctions. System ensures security.

Preconditions: User is not yet registered.

Post conditions: User account is created and verified.

Main Success Scenario:

User	System
1. User provides registration details.	
	2. System validates information.
	3. System sends verification email.
4. User confirms via email.	

User	System
	5. System creates the account.

Extensions:

3a. Invalid email format: System prompts user to enter a valid email.

Use Case 2: List Item for Auction (By Ubaida Tariq)

Scope: Auction Management System

Level: User Goal

Primary Actor: Seller

Stakeholders and Interests: Seller wants to list an item for bidding, and system validates data.

Preconditions: Seller is logged in.

Post conditions: Item is listed for auction.

Main Success Scenario:

User	System
1. Seller enters item details.	
	2. System validates and lists the item.
3. Item is visible for bidding.	

Extensions:

2a. Invalid input: System prompts for correct details.

Use Case 3: Search Auction Items (By Ubaida Tariq)

Scope: Auction Management System

Level: User Goal

Primary Actor: Bidder/User

Stakeholders and Interests: User wants to find auction items of interest, and system provides results.

Preconditions: User is browsing or logged in.

Post conditions: Relevant auction items are displayed.

Main Success Scenario:

User	System
1. User enters search terms or filters.	
	2. System processes the query.
3. Relevant items are displayed.	

Extensions:

2a. No results: System prompts user with options to refine the search.

Use Case 4: Place Bid (By Ubaida Tariq)

Scope: Auction Management System

Level: User Goal

Primary Actor: Bidder

Stakeholders and Interests: Bidder wants to place a bid, system ensures the bid is valid and recorded.

Preconditions: Bidder is logged in, auction is active.

Post conditions: Bid is placed and recorded.

Main Success Scenario:

User	System
1. Bidder selects an item to bid on.	
2. Bidder enters bid amount.	

	3. System validates and records the bid.

Extensions:

2a. Bid lower than current: System notifies bidder.

Use Case 5: View Auction Details (By Ubaida Tariq)

Scope: Auction Management System

Level: User Goal

Primary Actor: User (Bidder or Seller)

Stakeholders and Interests: User wants to see detailed auction information. System provides the details.

Preconditions: Item is listed for auction and user is logged in.

Post conditions: Auction details are displayed.

Main Success Scenario:

User	System
1. User selects an auction item.	
	2. System retrieves item details.

User	System
3. Details are displayed to the user.	

Extensions: None.

Use Case 6: **Manage Watchlist** (By Ahmed Ali)

Scope: Auction Management System

Level: User Goal

Primary Actor: Bidder

Stakeholders and Interests: Bidder wants to organize their watchlist. System provides watchlist management.

Preconditions: Bidder is logged in.

Post conditions: Watchlist is updated.

Main Success Scenario:

User	System
1. Bidder navigates to watchlist.	
2. Bidder removes or views items.	
	3. System updates watchlist.

Extensions: None.

Use Case 7: Cancel Bid (By Ahmed Ali)

Scope: Auction Management System

Level: User Goal

Primary Actor: Bidder

Stakeholders and Interests: Bidder wants to cancel a bid. System handles the cancellation.

Preconditions: Auction allows bid cancellations and bidder is logged in.

Post conditions: Bid is removed from the auction.

Main Success Scenario:

User	System
1. Bidder selects the option to cancel bid.	
	2. System verifies bid can be cancelled.
	3. System removes the bid.

Extensions:

2a. Bid cannot be cancelled: System notifies the bidder.

Use Case 8: Send Auction Notifications (By Ahmed Ali)

Scope: Auction Management System

Level: System Function

Primary Actor: System

Stakeholders and Interests: Users want timely notifications, and the system keeps them updated.

Preconditions: User is watching or bidding on an auction.

Post conditions: Notifications are sent to users.

Main Success Scenario:

User	System
	1. System tracks auction status.
	2. System sends notifications for updates (bid change, time remaining).

Extensions:

      1a. User unsubscribed from notifications: System skips sending.

Use Case 9: Approve or Reject Item for Auction (By Ahmed Ali)

Scope: Auction Management System

Level: User Goal

Primary Actor: Admin

Stakeholders and Interests:

· Seller: Wants their item approved for auction.

· Admin: Ensures only appropriate items are listed for auction based on inspection results.

· System: Updates the item status based on the admin's decision.

Preconditions:

- The item has undergone inspection.
- The inspection report is available.
- Admin is logged in.

Post conditions:

- The item is either approved or rejected for auction.
- The seller is notified of the outcome.

Main Success Scenario:

User	System

1. Admin reviews the inspection report for the item.	
2. Admin decides whether to approve or reject the item based on the report.	
	3. The system updates the auction listing to proceed with the auction.
	4. The system records the final status of the item.

Extensions:

3a. Admin requests additional information from the inspector: The system notifies the   inspector to provide more details.

Use Case 10: Process Payment for Winning Bid (By Ahmed Ali)

Scope: Auction Management System

Level: User Goal

Primary Actor: Winning Bidder

Stakeholders and Interests: Winning bidder wants to pay, and the system processes payments securely.

Preconditions: Bidder has won the auction and is logged in.

Post conditions: Payment is processed, and item is marked as sold.

Main Success Scenario:

User	System
1. Winning bidder selects payment method.	
	2. System processes payment.
	3. System confirms payment and updates item status.

Extensions:

2a. Payment fails: System notifies user to retry.

Use Case 11: Issue Invoice to Seller (By Abdul Wahab)

Scope: Auction Management System

Level: System Function

Primary Actor: System

Stakeholders and Interests: Seller wants payment for the sold item. System generates the invoice.

Preconditions: Item is sold successfully.

Post conditions: Seller receives an invoice.

Main Success Scenario:

User	System
	1. System generates an invoice for the seller.
2. Seller receives notification.	

Extensions: None.

Use Case 12: Close Auction (By Abdul Wahab)

Scope: Auction Management System

Level: System Function

Primary Actor: System

Stakeholders and Interests: System ensures the auction ends on time, informing both bidders and sellers.

Preconditions: Auction time has ended.

Post conditions: Auction is closed, and winners are notified.

Main Success Scenario:

User	System
	1. System tracks auction time
	2. System closes auction automatically.
3. Bidders and seller are notified.	

Extensions: None.

Use Case 13: Generate Auction Reports (By Abdul Wahab)

Scope: Auction Management System

Level: User Goal

Primary Actor: Seller

Stakeholders and Interests:

· Seller: Wants to generate reports on auction performance.

Preconditions: The seller is logged in and has completed auctions.

Post conditions: The report is generated and available for download or viewing.

Main Success Scenario:

User	System
1. Seller navigates to generate report.	
2. Seller chooses auction(s) to include in the report.	
	3. System generates and displays the report.

Extensions: None.

Use Case 14: Refund Payment (By Abdul Wahab)

Scope: Auction Management System

Level: User Goal

Primary Actor: Admin/Support Agent

Stakeholders and Interests: User wants a refund due to an issue, and the system processes it.

Preconditions: Payment has been made, and a valid refund request exists.

Post conditions: Refund is processed and returned to the bidder.

Main Success Scenario:

User	System
1. User requests refund.	
	2. Admin reviews and approves the request.
	3. System processes the refund.

Extensions:

2a. Invalid refund request: System denies the refund request.

Use Case 15: Item Inspection and Assessment (By Abdul Wahab)

Scope: Auction Management System

Level: User Goal

Primary Actor: Inspector (Inspection Team)

Stakeholders and Interests:

· **Seller:** Wants an accurate market value assigned to the item.

· **Inspector:** Inspects the item and determines its market value.

· **System:** Records the market value and inspection report.

Preconditions:

1. The seller has listed an item for auction.

2. The inspection team has been assigned to inspect the item.

Post conditions:

1. The market value of the item is recorded.

2. The item is ready for listing based on the inspection outcome.

Main Success Scenario:

User	System
1. Seller lists an item for auction.	
	2. The system assigns the inspection team to inspect the item.
	3. The inspector physically inspects the item.
	4. Inspector determines the market value and other relevant details.
	5. The system records the inspector's report and market value.
	6. The system notifies the seller of the outcome and updates the auction listing.

Extensions:

4a. If the inspection team cannot access the item, the system reschedules the inspection.

5a. If the inspector finds an issue with the item, the system notifies the seller for resolution.

2.4　Use Case Diagram

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User

Seller

Admin

System

Payment Authorizer

Register user

list item

search item

place bid

view item

process payment

Approve or reject item

send notification

cancel bid

manage watchlist

issue invoice to seller

close auction

generate auction report

refund payment

item inspection
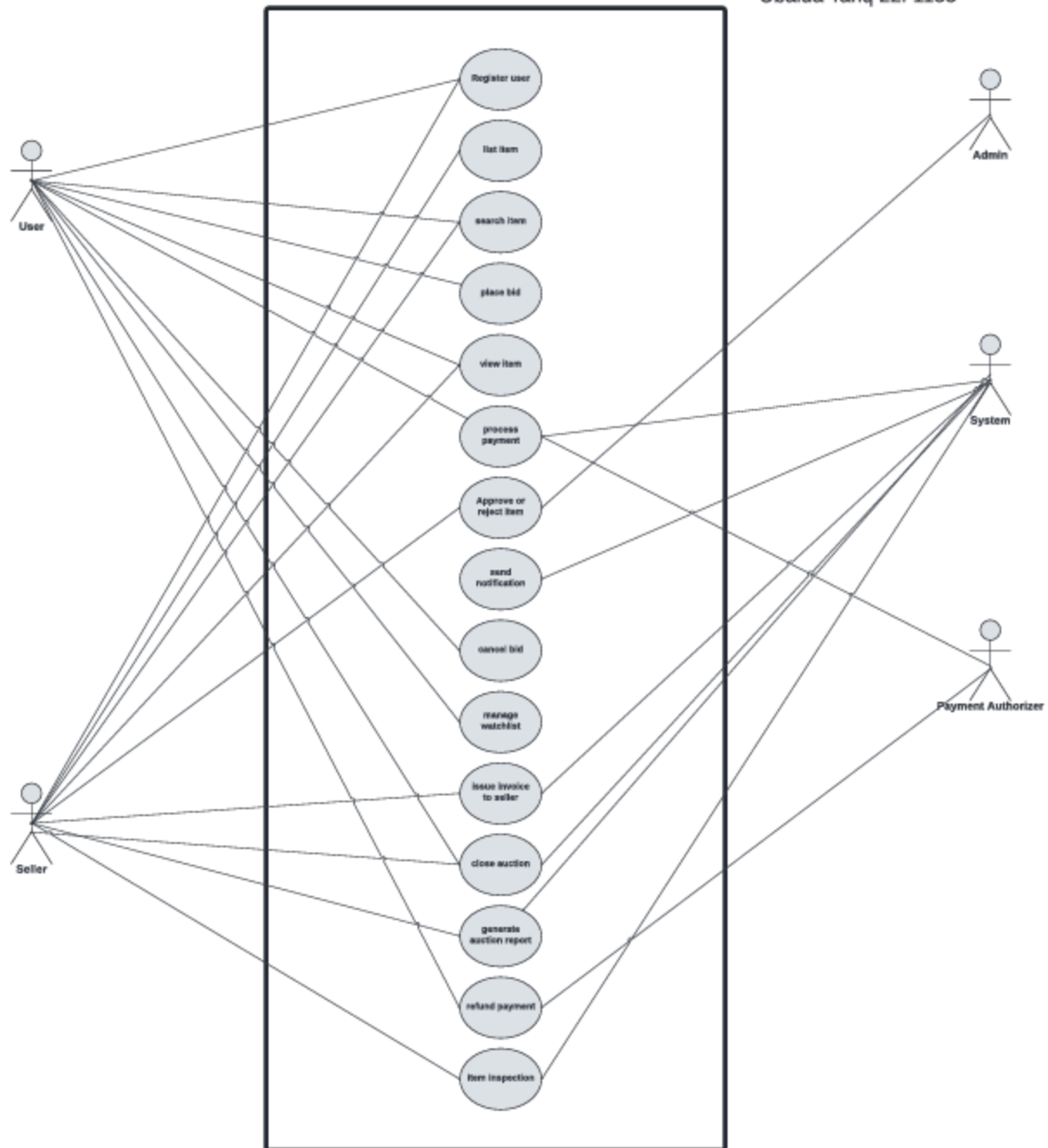
3.   Other Nonfunctional Requirements

3.1   Performance Requirements

- Users must input correct data to obtain the best possible personalized plans to achieve their fitness goals.
- All user interactions, including page loads and feature access, should have a response time of less than **2 seconds** under normal conditions.
- System should be able to support at least 100 users.

3.2   Safety Requirements

- The user cannot list any illegal item.

3.3   Security Requirements

- Users must possess a unique username and password.
- User data will not be accessible or shared with any third party.

3.4   Software Quality Attributes

- Designed to require minimal learning, with no more than **5 minutes** needed for a new user to understand the basic functions.
- Chances of Data sync errors are **improbable** in typical usage scenarios.
- The system architecture allows **updates and fixes**.

3.5   Business Rules

- General users can only access their own items.
- Inspector can not view user data. They can only respond to inspections and give report.
- System ensures Data Integrity.

3.6   Operating Environment

Hardware Platform:

- 4GB RAM, 4GB storage (8 GB recommended for smooth experience).

Operating Systems:

- Microsoft Windows 10/11.

Software Requirements:

- **IDE:** Eclipse
- **JDK:** Java Development Kit (JDK) version 11 or above.
- **Spring Framework:** Spring Boot 2.7.
- **Database:** MySQL (version 8.0).
- **Scene builder**: version 23
- **Java FX:** version 23.

3.7   User Interfaces

The BIDHUB application will feature a user-friendly, responsive and visually appealing interface that caters to both general users and inspection professionals.

Interfaces

- **Home Screen**: A dynamic dashboard displaying user main functionality.

- **Account Creation Screens**: Simple forms for user and inspector account registration.
- **List Item:** Viewer friendly interfaces to add items in specific category.
- Bid item: A simple yet convenient interface for a bidder to place bid on items also having filter to see dedicated items.
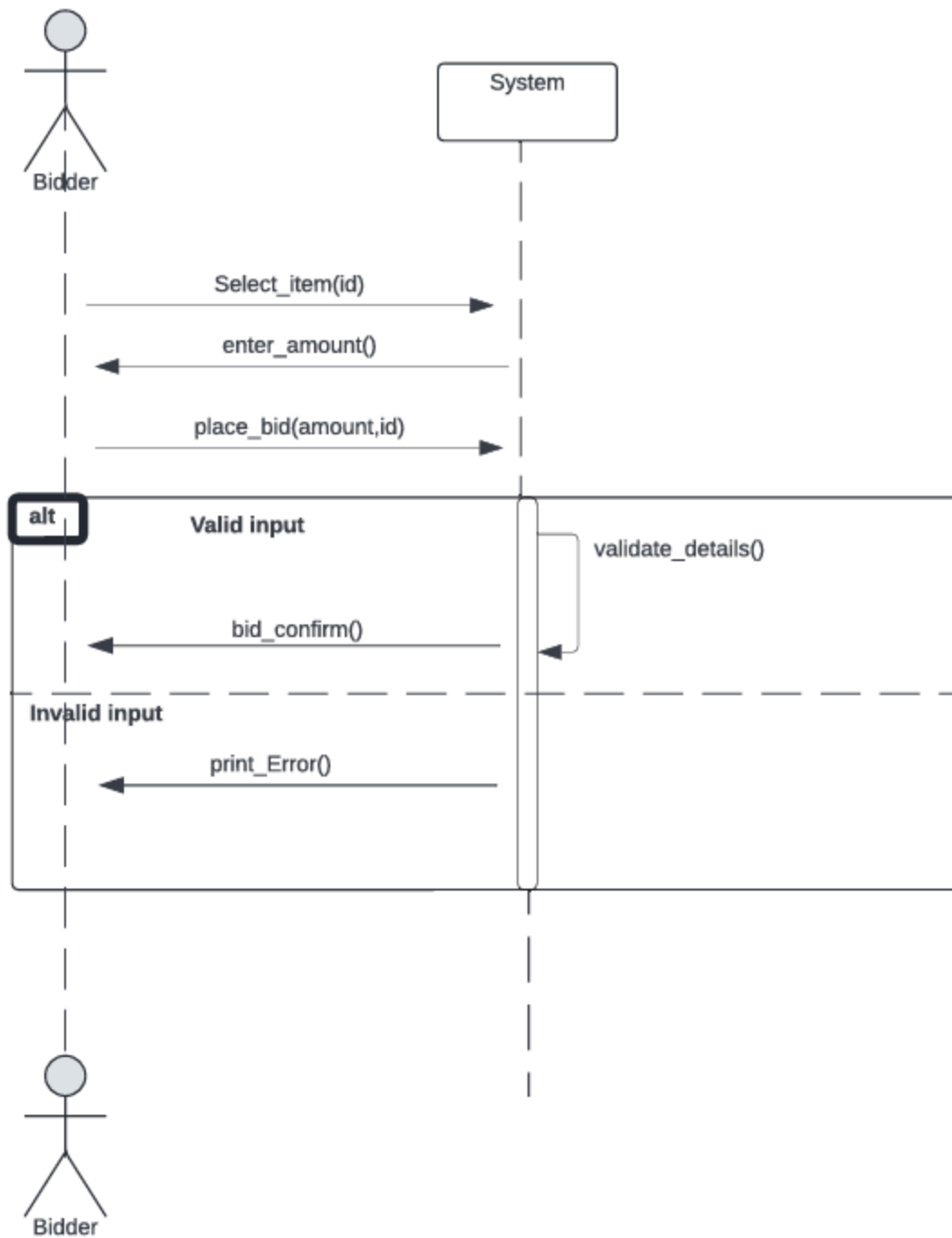- **User Info:** Easily accessible and editable.
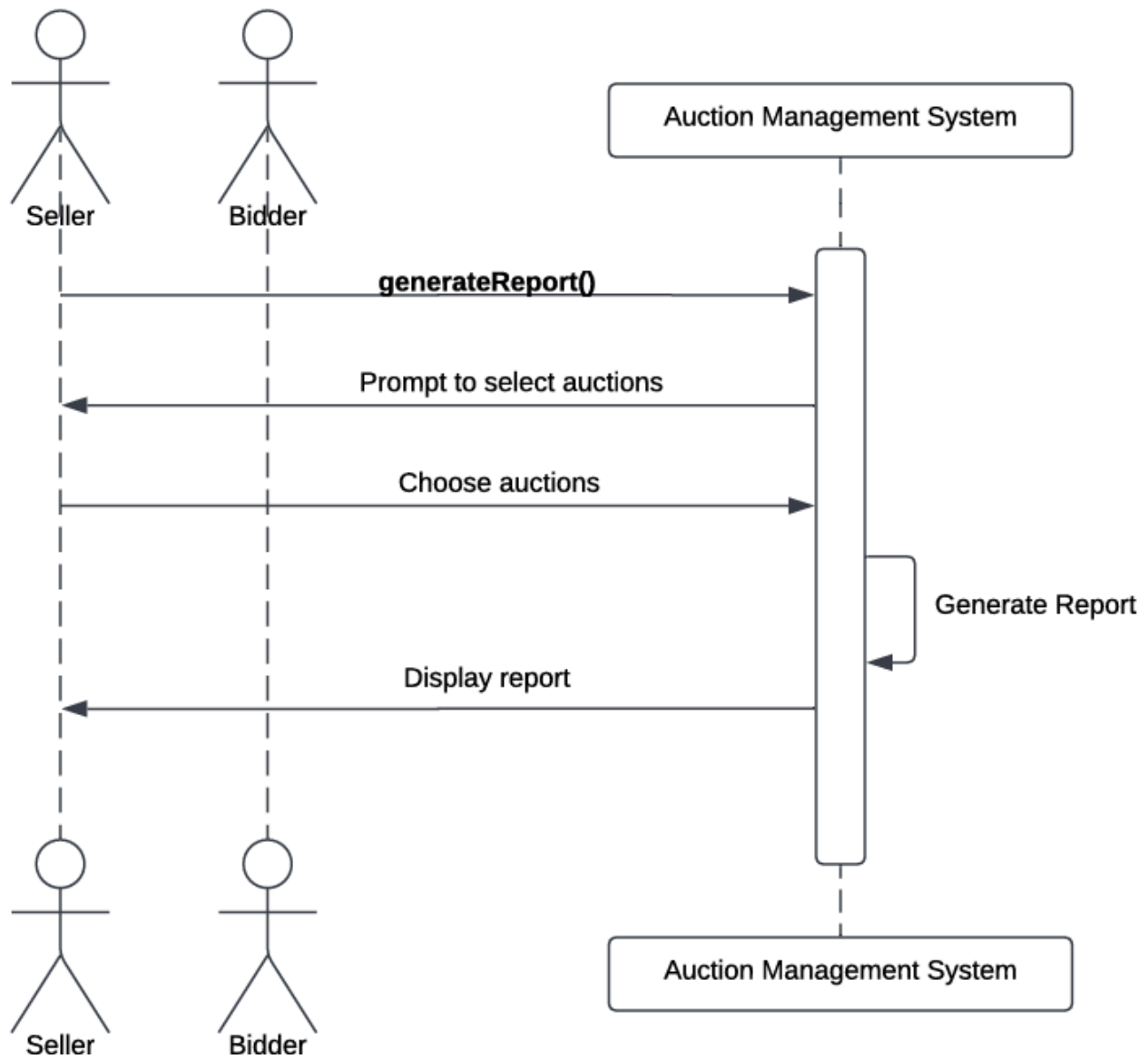
4. Domain Model
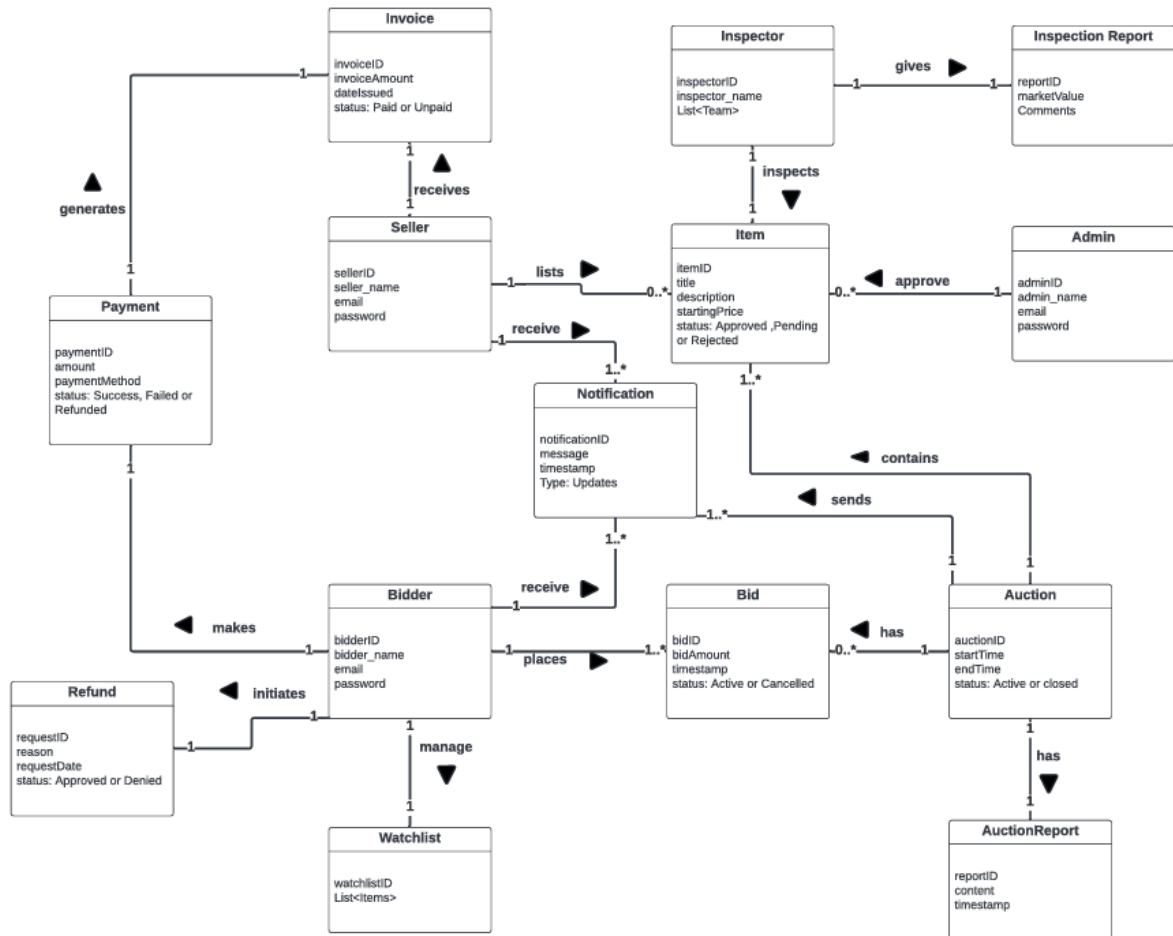
5. System Sequence Diagram
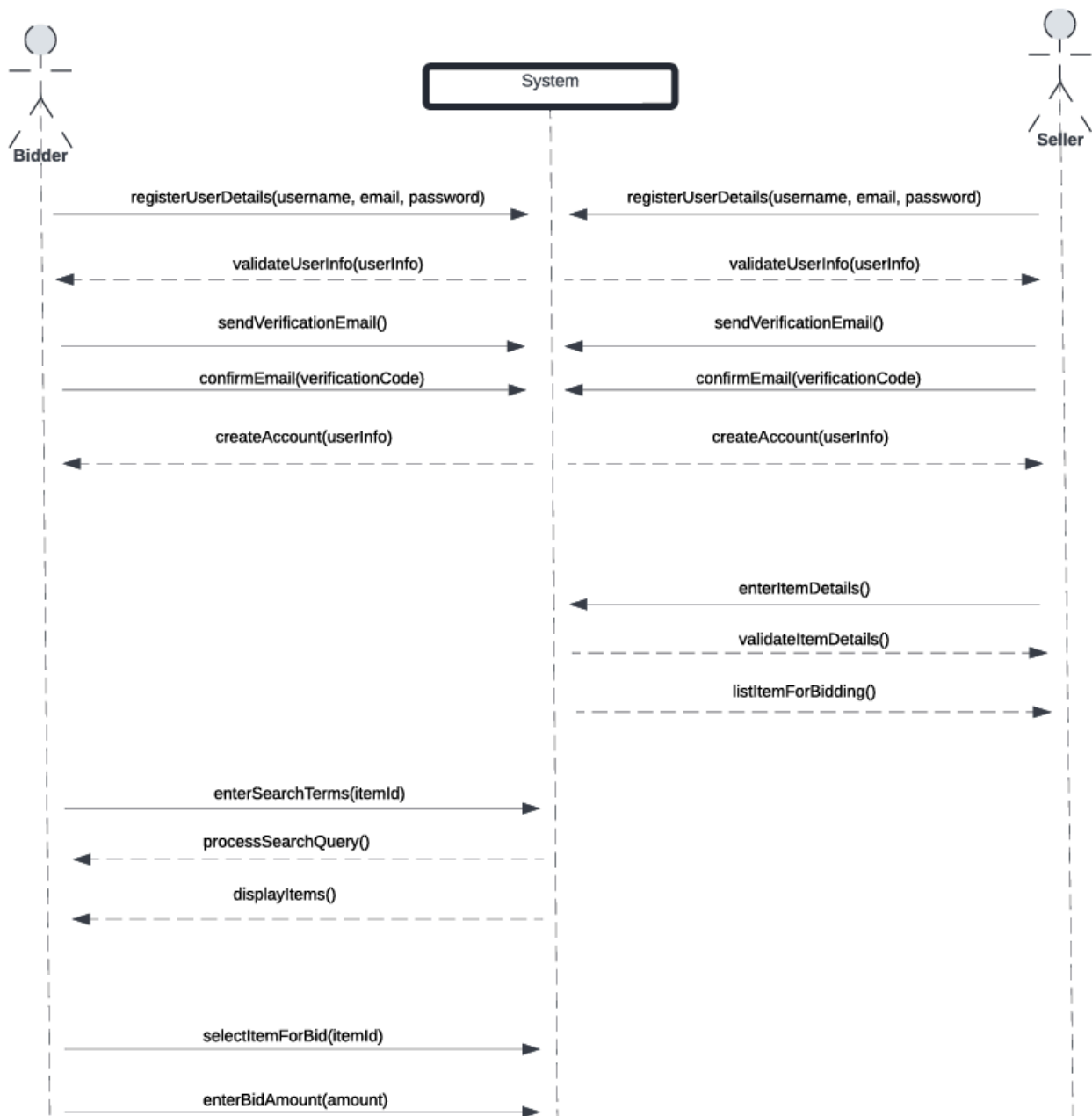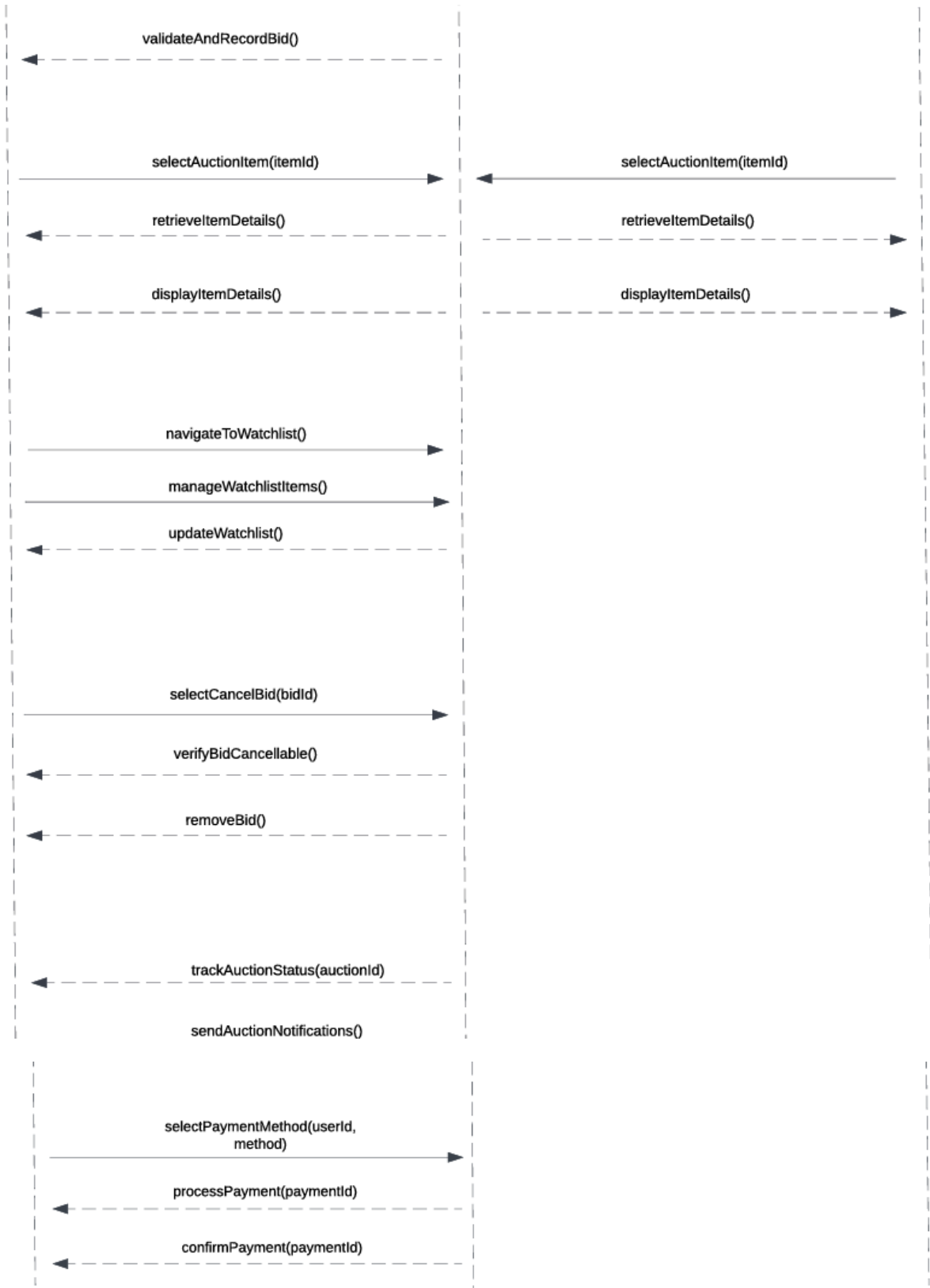
6.   Sequence Diagram
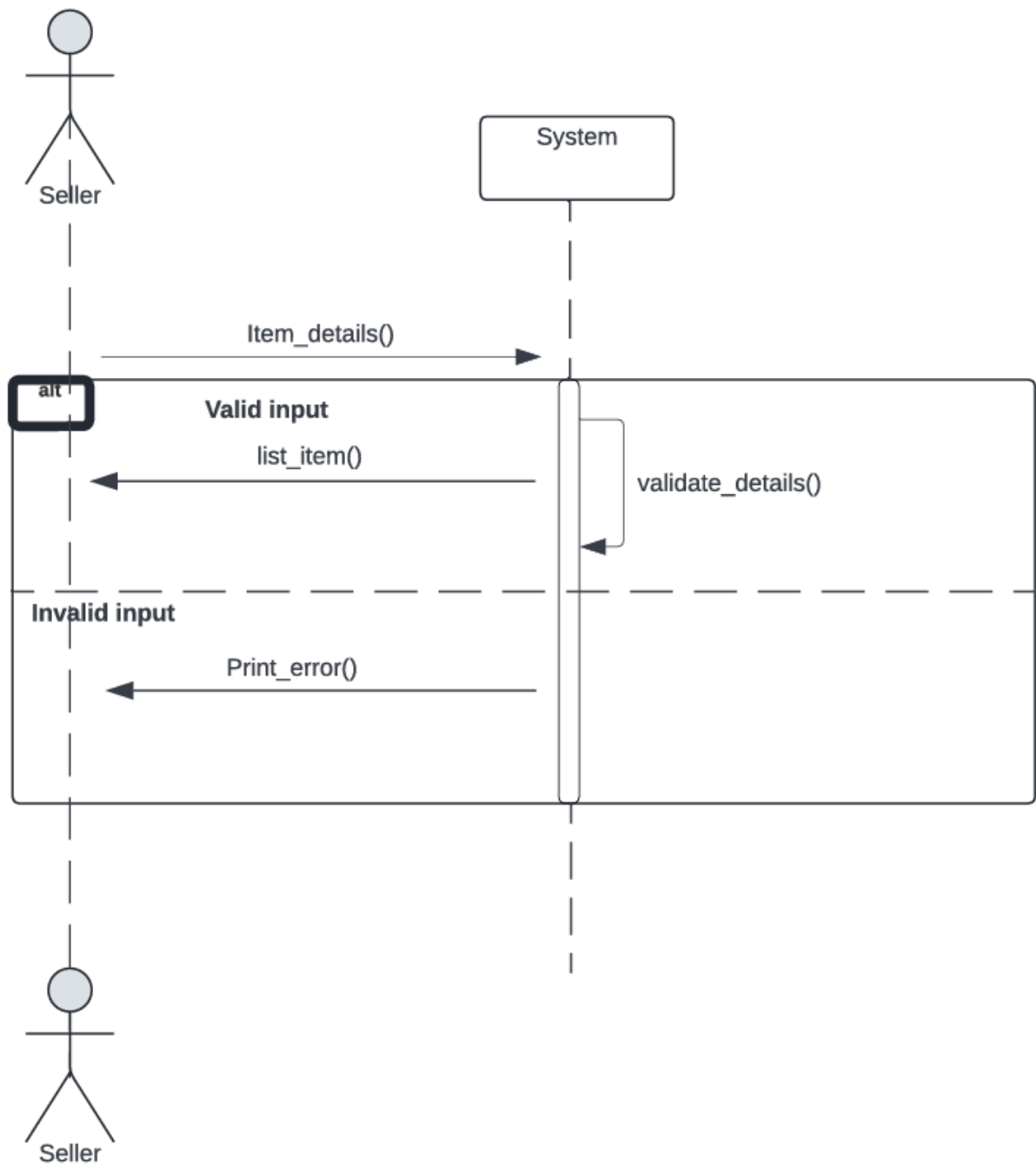
1. **Place Bid:**

2. Generate Report:

3. Add Item:

4. Search Item:
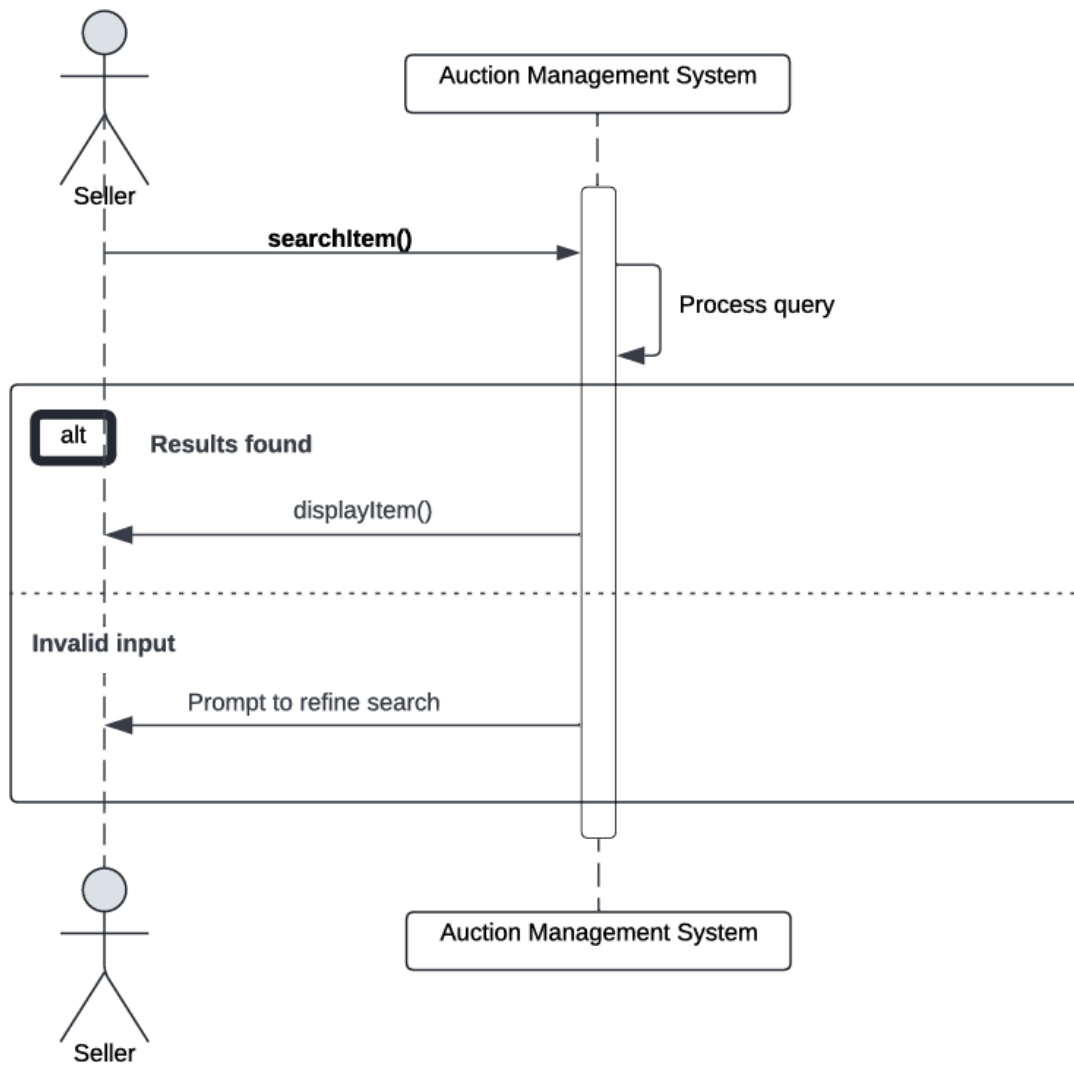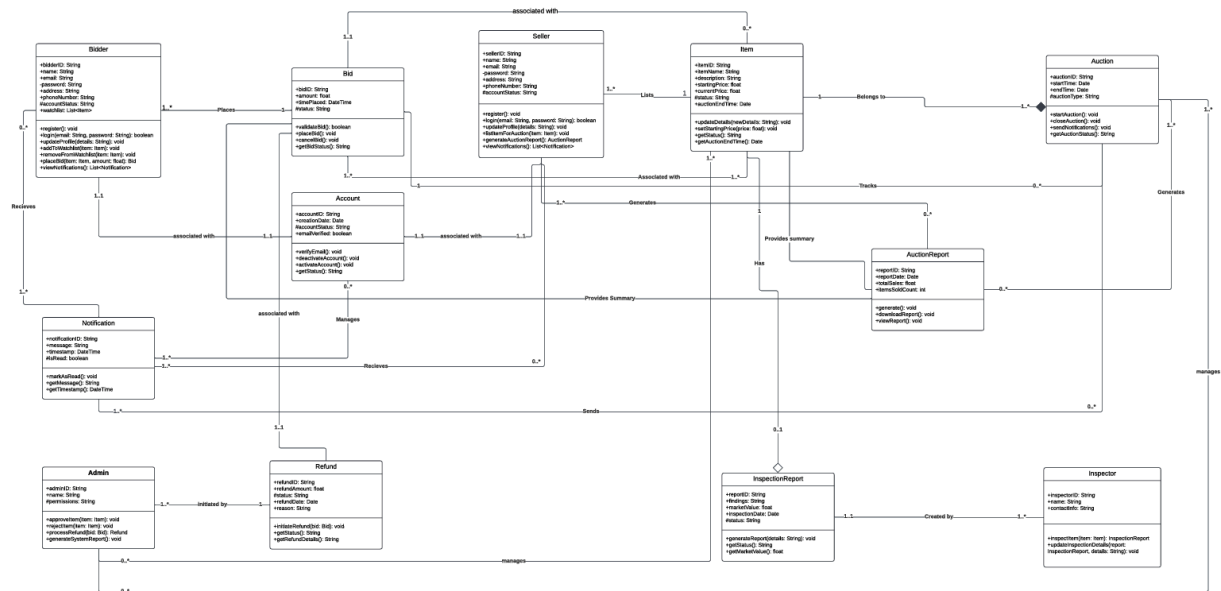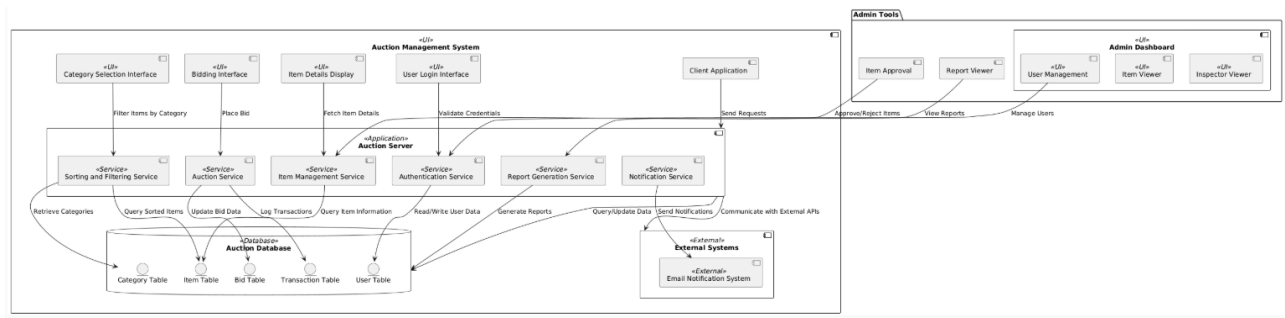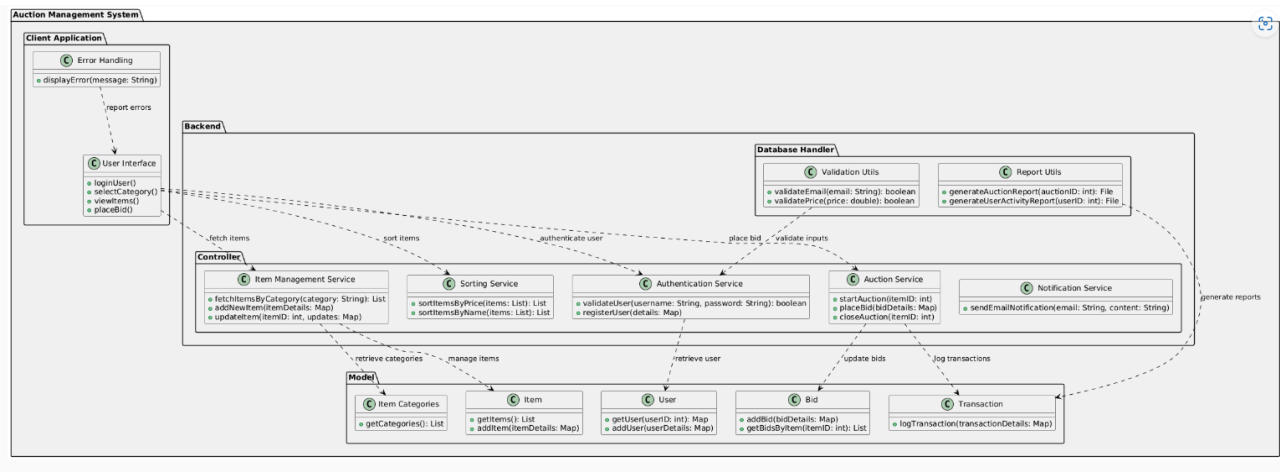
7.   Class Diagram

8.   Component Diagram

9.   Package Diagram

10. Deployment Diagram