

# (G3) SRS for Auction Site

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## Introduction

The introduction section provides a high-level overview of the SRS document.

### Purpose

The purpose of this document is to define the functional and non-functional requirements for the development of an Auction Site. It serves as a reference guide for the development team, stakeholders, and QA personnel involved in the project.

### Scope

The Auction Site aims to be a comprehensive online platform that facilitates auctions for a diverse range of items. It provides users with the ability to create, manage, and participate in auctions in real-time. The platform will feature robust security measures, efficient bidding mechanisms, and an intuitive user interface. Key features include user authentication, auction room creation, bidding, search functionality, recommendation systems, auction management, and viewing of auction history.

## Overall Description

This section offers a comprehensive overview of the system.

### Product Perspective

The Auction Site operates as a standalone web application accessible via standard web browsers. It interfaces with databases for storing user data, auction information, and item details. The system also integrates with external services for authentication, recommendation systems, and payment processing.

### Product Functions

#### User Management:

- Users can register with the site, providing necessary information for account creation.
- Secure authentication mechanisms will be implemented to safeguard user accounts and personal information.
- Users can manage their profiles, update information, and reset passwords if needed.

**Auction Room Management:**

- Registered users can create new auction rooms, specifying auction types (public or private), duration, and item categories.
- Users can search and browse existing auction rooms based on various criteria such as category, popularity, and end time.
- Auctioneers have the authority to moderate and configure auction rooms, including setting starting bids, reserve prices, and auction rules.

**Bidding Functionality:**

- Registered users can place bids on items within active auction rooms.
- The system will support real-time bidding updates and notifications to keep users informed of auction progress.
- Bids will be validated against predefined rules to ensure fairness and integrity.

**Search Feature:**

- The platform will offer robust search capabilities, allowing users to find specific items or auction rooms based on keywords, categories, or attributes.
- Search results will be displayed in a structured manner, providing relevant item details and auction room information.

**Recommendation System:**

- A recommendation engine based on the K-nearest neighbors (KNN) algorithm will provide personalized item suggestions to users based on their past activity, preferences, and bidding history.
- The recommendation system will enhance user engagement and satisfaction by showcasing relevant items of interest.

**Auction Management:**

- Auctioneers have full control over auction proceedings, including the ability to start, pause, resume, and end auctions as necessary.
- The system will enforce predefined rules for auction closure, including automatic closure upon reaching the designated end time or meeting reserve prices.

**Auction History:**

- Users can access their auction participation history, including details of items bid on, winning bids, and auction outcomes.
- Historical data will be stored securely and made accessible for reference and analysis purposes.

## User Classes and Characteristics

### Bidder:

- Bidders are individuals interested in participating in auctions to acquire items of interest.
- They have varying levels of auction experience and preferences regarding item categories and bidding strategies.
- Bidders expect a seamless and secure bidding experience, with access to relevant information and real-time updates during auctions.

### Auctioneer:

- Auctioneers are responsible for managing and overseeing auction activities within the platform.
- They have expertise in auction management and are entrusted with setting auction parameters, moderating bidding activities, and ensuring compliance with auction rules and regulations.
- Auctioneers require comprehensive tools and functionalities to effectively host and administer auctions, including robust reporting and analytics capabilities.

## Specific Requirements

This section outlines detailed functional and non-functional requirements for the Auction Site.

### Functional Requirements

#### User Management

- The system shall provide user registration functionality, requiring users to provide valid email addresses and secure passwords.
- User accounts shall be verified via email confirmation to prevent unauthorized access.
- Users shall have the option to update their profile information, including contact details and preferences.

#### Auction Room Management

- **Use case 1:** Adding items for auction
  - *Primary actor:* Auctioneer
  - *Pre-condition:* Internet connection, Auctioneer logged in
  - *Main scenario:*
    1. The auctioneer clicks on the start new auction button.
    2. Opens up the page to fill in auction details.

3. The auctioneer fills in the details of the items to be auctioned as well as the scheduled start time.
  4. The auctioneer also mentions whether he wants the auction to be public or private
  5. The auction is published on the website and the auctioneer is redirected to the auction page.
  6. The notification is sent to the auctioneer 5 minutes before the scheduled start time.
  7. If the auction is private, the notification is also sent to chosen bidders.
  8. At the scheduled start time server starts the auction by allowing bidders to click on the enter auction room button.
- **Use case 2:** Entering an auction as a bidder
    - *Primary actor:* bidder
    - *Pre-condition:* Internet connection, bidder logged in, bidder is allowed to enter auction room
    - *Main scenario:*
      1. The bidder clicks on enters auction button
      2. The bidder is redirected to the auction room page where details of the auction as well as the leader board of the highest bidders will be displayed.
  - **Use case 3:** Make a bid
    - *Primary actor:* bidder
    - *Pre-condition:* Internet connection, bidder logged in, the bidder has entered the auction room
    - *Main scenario:*
      1. The bidder specifies the bid price
      2. The server accepts the bid price and updates the leaderboard accordingly.
    - *Alternate Scenario:*
      - 2a. If the bid price is less than the current highest bid price then the server informs the bidder and asks to rebid.
  - **Use case 4:** Completing an auction
    - *Primary actor:* Server
    - *Pre-condition:* Internet connection, bidder logged in, scheduled end time has reached
    - *Main scenario:*
      1. The server selects the highest bidder.
      2. The server sends an email to the auctioneer and highest bidder regarding the final bid price.
      3. The server publishes the highest bidder and final bid price on the auction page and adds the auction to history.

### **Bidding Functionality**

- Users shall be able to place bids on items within active auction rooms, adhering to predefined bid increments and reserve prices.
- The system shall support real-time bidding updates and notifications, alerting users of competing bids and auction status changes.
- Bids shall be processed securely, with encryption protocols and transaction logging to ensure data integrity.

### **Search Feature**

- The search functionality shall allow users to search for specific items or auction rooms based on keywords, categories, and attributes.
- Search results shall be sorted based on relevance and displayed in a structured format for easy navigation.

### **Recommendation System**

- The recommendation engine shall analyze user behavior and historical data to generate personalized item suggestions.
- Recommendations shall be based on similarity metrics derived from user profiles, bidding patterns, and item characteristics.
- Users shall have the option to provide feedback on recommended items to improve future recommendations.

### **Auction Management**

- Auctioneers shall have the authority to start, pause, resume, and end auctions within designated auction rooms.
- The system shall enforce predefined rules for auction closure, including automatic closure upon reaching the designated end time or meeting reserve prices.
- Auction closure notifications shall be sent to all participants, with details of winning bids and the next steps for transaction completion.

### **Auction History**

- Users shall have access to their auction participation history, including details of items bid on, winning bids, and auction outcomes.
- Historical data shall be stored securely and made accessible for reference and analysis purposes.

### **Performance Requirements**

- The system shall support a minimum of 1000 concurrent users during peak usage periods.

- Response times for critical operations, such as bid placement and auction room creation, shall not exceed 3 seconds under normal load conditions.
- The platform shall be scalable and capable of handling increased user traffic and auction activity without degradation in performance.

## Design Constraints

- The system architecture shall adhere to industry best practices and standards for web application development, including RESTful APIs, MVC architecture, and modular design principles.
- Compliance with relevant data protection regulations, including GDPR and CCPA, shall be ensured through robust data encryption, access controls, and user consent mechanisms.

## Future Extensions

This section identifies potential enhancements and future development opportunities for the Auction Site, including but not limited to:

- Integration with third-party payment gateways for secure transaction processing.
- Implementation of advanced analytics and reporting tools for auction performance analysis.
- Expansion of recommendation systems to incorporate machine learning algorithms and collaborative filtering techniques.
- Integration with social media platforms

for enhanced user engagement and marketing opportunities.

## Appendix

### Appendix A: The User Screens

This appendix contains detailed mockups and descriptions of user interface screens for reference, including login/signup screens, auction room views, bidding interfaces, and user profile pages.

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This expanded SRS document provides a comprehensive overview of the requirements and specifications for the development of the Auction Site, encompassing both functional and non-functional aspects of the system. Further refinement and detailing may be required during the development lifecycle to ensure alignment with stakeholder expectations and project objectives.