**Requirement Specifications**

**Project Name:** Online Auction Platform

**Purpose:**

The purpose of the **online auction system** is to provide a digital platform where buyers and sellers can engage in a competitive, time-limited bidding process for goods and services. It aims to simplify the auction process by allowing users to participate from anywhere, enhancing accessibility, transparency, and convenience. The platform will serve various purposes for different stakeholders:

1. Sellers
2. Buyers
3. Platform Administrators/Owners

**Scope:**

The **scope** of the online auction system defines the features, functionality, and boundaries of the project, ensuring clarity on what will be delivered to stakeholders. The scope outlines both the **functional aspects** for end-users (buyers, sellers, admins) and the **technical aspects** required to implement and support the platform.

**Technologies :**

**Frontend :**

**Language :** HTML5, CSS, JavaScript .

**Framework :**  React.js .

**Backend :**

**Language :** Python(3.12.3), Django. .

**Framework :**  Django Rest Framework (DRF ).

**Database :** MySQL(8.0).

**Payment Gateways:**

* + - Third-party payment processors for secure transaction handling..

**Hosting:**

* + - AWS, Google Cloud, or Microsoft Azure for cloud hosting and scalability.

**Security:**

* + - Implement encryption, multi-factor authentication, and security measures.

**API and Integration:**

* + - Development of API to connect with Django Rest Framework.

**Backup and Recovery:**

* + - Automated backup solutions for data integrity.

**User Notifications:**

* + - Email and SMS gateways for alerts.

**Hardware Requirements:**

The Online Auction Platform requires specific hardware resources to operate effectively. The following hardware requirements should be met for optimal system performance:

* **CPU:** An Intel Core i5 or equivalent processor is recommended to handle the system's computational demands efficiently.
* **RAM:** A minimum of 8 GB of RAM is necessary to ensure smooth operation when handling multiple users and large datasets.
* **Storage:** The system should be equipped with a minimum of 500 GB of SSD storage, ensuring fast data retrieval and ample space for logs and backups.
* **Network:** A high-speed and stable internet connection is essential for seamless access to web-based components, secure data transfers, and communication with external financial networks.
* **Security:** Robust security measures, including firewall protection and antivirus software, should be in place to safeguard the system from potential threats, ensuring data integrity and privacy.

**Functional Requirements**

**Buyer Functional Requirement:**

**1. User Registrations and Login :**

* Buyers must be able to register for an account using their email address or phone number
* Provide a login feature for returning users, with options for password recovery.

**2. Profile Management:**

* Buyers can view and edit their profile details, including name, email, and payment information.
* Buyers can set preferences for notifications (email/SMS) and auction alerts.

**3. Auction Search and Discovery:**

* Buyers can search for auctions using keywords, categories, and filters (price range, auction status).
* Provide sorting options (e.g., by time remaining, starting price, or popularity).

**4. Bidding Participation:**

* Buyers can place bids on auction items and view current bid statuses in real-time.
* Provide an auto-bid option, allowing buyers to set a maximum bid amount for automatic bidding.

**5. Bid Notifications :**

* Notify buyers via email, when they win an auction, or when an auction they are watching is about to end.

**6. Transaction Management:**

* Buyers can view their transaction history, including bids placed, won auctions, and payment statuses.
* Provide options for payment methods (credit/debit cards, digital wallets).

**7. Feedback and Rating System:**

* Buyers can leave feedback and ratings for sellers after completing a transaction.
* Display feedback on the seller's profile to promote transparency.

**Seller Functional Requirement:**

1. **User Registrations and Login :**

* Sellers must be able to register for an account with similar options as buyers (email, social media, phone).
* Login functionality with password recovery options.

**2. Profile Management:**

* Sellers can manage their profiles, including contact information and payment details for receiving funds.

**3. Auction Creation:**

* Sellers can create new auction listings with details such as item description, starting price, auction duration, and images.
* Allow sellers to specify auction types (standard, reserve price, buy-it-now).

**4. Auction Management:**

* Sellers can edit or delete their auction listings before the auction starts.
* Sellers can view and manage their active and past auctions.

**5. Bid Monitoring:**

* Provide real-time updates on bids placed on their items, including the highest bid and current bidders.

**6. Sales and Transaction Overview:**

* Sellers can view their sales history, including successful auctions, transaction details, and payment statuses.

**7. Communication with Buyers:**

* Enable messaging or communication features between sellers and buyers to discuss auction items or transaction details.

**8. Feedback and Rating System:**

* Sellers can view feedback and ratings left by buyers and respond to comments if needed.

**Administrator Functional Requirement:**

1. **Admin Dashboard :**

* Administrators can access a centralized dashboard to monitor user activity, auction statistics, and overall platform health.
* Login functionality with password recovery options.

**2. User Management:**

* Admins can view, edit, suspend, or delete user accounts (both buyers and sellers) as necessary.
* Admins can manage user feedback and ratings, addressing disputes or concerns.

**3. Auction Monitoring:**

* Admins can view all active, upcoming, and ended auctions, with the ability to remove or flag inappropriate listings.

**4. Reporting and Analytics:**

* Generate reports on user activity, auction performance, transaction volumes, and platform revenue.

**5. Bid Monitoring:**

* Provide real-time updates on bids placed on their items, including the highest bid and current bidders.

**6. Content Management:**

* Admins can manage FAQs, help center content, and system notifications to users.

**7. System Settings Management:**

* Admins can manage platform settings, including payment gateway configurations and notification settings.

**8. Customer Support Management:**

* Admins can view and respond to user inquiries submitted through the support contact form.

**Non Functional Requirements**

**A. Security:**

* **User Authentication**: Secure authentication protocols, including strong password policies and multi-factor authentication.
* **Data Encryption**: Sensitive user data and transactions must be encrypted during transmission and storage.
* Access control should be granular, and data should be protected against SQL injection and other common v2ulnerabilities.

**B. Performance:**

* **Response Time**: The system should respond to user actions (e.g., bids, searches) within few seconds under normal load.
* **Scalability**: It should be able to handle a high number of concurrent users and transactions during peak times.

**C. Reliability:**

* **Uptime**: The system must ensure 99.9% uptime, allowing users to access auctions consistently.
* **Error Handling**: Provide meaningful error messages and recovery options in case of failures.

**D. Recovery and Backup:**

* The system should have a robust data backup and recovery strategy to prevent data loss in case of system failures.
* Regular backups should be performed and tested for reliability.

**Conclusion:**

The online auction system is designed to provide a seamless and engaging marketplace for buyers and sellers, featuring user-friendly registration, real-time bidding, and secure payment processes to enhance user experience. With robust auction management and administrative controls, the platform ensures efficient operations and oversight while prioritizing scalability, performance, and security to support growth and protect user data. By emphasizing usability and accessibility, the system promotes inclusivity and ease of navigation for all users. Overall, the implementation of these functional and non-functional requirements aims to deliver a reliable and enjoyable experience, fostering trust and active participation in the auction community, with continuous improvements guided by user feedback and testing.