**Software Requirement Specifications**

**Project Name:**

Online Auction Platform System

**Introduction :**

* 1. **Purpose:**

Defines the purpose of the online auction platform, describing its role as a digital marketplace where users can buy and sell items through bidding.

* 1. **Scope:**

Specifies the scope of the functionality covered, including user registration, item listings, bidding mechanisms, payments, and feedback systems.

**Technologies to be used:**

**- Frontend Technologies:**

* HTML5, CSS3, and JavaScript: Core web technologies for creating user interfaces.
* React Js:

React is a framework that employs Webpack to automatically compile React, JSX, and ES6 code while handling CSS file prefixes. React is a [JavaScript-](https://www.simplilearn.com/tutorials/javascript-tutorial/introduction-to-javascript)based UI development library.

* Bootstrap5:

This is UI libraries use to CSS framework for responsive design.

- **Back-End:**

* Python (Version 3.12.515)
* Django Rest Framework (DRF)
* Node.js

**-Database Management:**

* Use database MySQL for data storage.

**Security:**

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

**Payment Processing:**

* Integrate with payment processors.

**Mobile Banking:**

* Develop mobile apps for iOS and Android.

**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.

**Compliance and Maintenance:**

* + - Ensure compliance with financial regulations, regular maintenance, and security updates.

**Hardware Requirements:**

The StartupSprint 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.

**System Overview:**

* **System Architecture**: A high-level description of the platform’s architecture, including user-facing components (front-end) and server-side processes (back-end)
* **Users**:
* **Buyers**: Individuals who participate in auctions to place bids and purchase items.
* **Sellers**: Individuals or businesses who list items for auction.
* **Administrators**: Manage and oversee the platform, ensuring auctions are fair and users are compliant with policies.

**Functional Requirements:**

This section outlines the specific functionality that the system must support. It typically covers major features of the platform

**1.User Registration and Authentication:**

* **User Registration**:
* Users should be able to create accounts by providing personal details (e.g., name, email, password).
* The system must validate input and send a verification email or use authentication for added security.
* **User Login:**
* Users must log in using a valid email and password.
* **Password Recovery**:
* Users must log in using a valid email and password.
* **Profile Management:**
* Users can update personal details, such as contact information and payment preferences.

**2.Auction Listings (For Sellers):**

* **Item Listing Creation:**
* Sellers must be able to create auction listings by providing item details (title, description, starting bid, auction duration, etc.).
* **Set Auction Duration:**
* Sellers must be able to define how long the auction will run (e.g., 1 day, 7 days).
* **Set Reserve Price:**
* Sellers can specify a minimum acceptable price for an item. If bidding does not meet this price, the item will not be sold.
* **“Buy Now" Option:**
* Sellers can offer an option for buyers to purchase an item immediately without bidding.

**3. Bidding (For Buyers):**

* **Manual Bidding:**
  + Buyers must be able to place manual bids, with each bid higher than the previous one.
* **Automatic (Proxy) Bidding**:
* Buyers can set a maximum bid, and the system will automatically increase their bid incrementally up to this limit as other bids are placed.
* **Bid Increments**:
* The system must define increments by which the current highest bid is increased.
* **Bidding History**:
* Buyers must be able to view the history of bids placed on an auction, showing the amounts and timestamps.

**4.Auction Management (For Both Sellers and Buyers)**

* **Watchlist:**
  + Buyers can add items to a watchlist to monitor auctions they are interested in.
* **Auction Notifications**:
  + The system must notify users of important auction events, such as when they are outbid, when an auction is about to end, or if they have won the auction.
* **Auction Closing**:
  + When the auction ends, the system must notify the highest bidder and the seller.
* **Reserve Price Not Met**:
  + If the reserve price is not met, the system must notify the seller that the item was not sold.
* **Transaction Management**:
  + The platform must facilitate post-auction transactions, including providing payment options for buyers and ensuring sellers receive payment

**5.Payments and Transactions:**

* **Payment Gateway Integration**:
  + The platform must integrate with payment services such as PayPal, Stripe, or direct credit card payments.
* **Buyer Payment**:
  + After winning an auction, the buyer must be able to complete the transaction through the platform.
* **Seller Payout**:
  + After the buyer's payment is confirmed, the platform must transfer the funds to the seller, potentially deducting platform fees.
* **Escrow Service (Optional)**:
  + The system can offer an escrow service, holding the payment until both parties confirm the transaction is completed satisfactorily.

6.**Feedback and Ratings:**

* **Post-Transaction Feedback**:
  + Both buyers and sellers must be able to leave feedback and ratings for each other after a transaction.
* **Rating System**:
  + The system should maintain a rating system (e.g., 5-star scale) for users based on their feedback history.
* **Public Reviews**:
  + Feedback left by buyers and sellers should be viewable to others, promoting trust and transparency.

**7. User Dashboard:**

* + **Seller Dashboard**:
* Sellers must have access to a dashboard where they can view their active, completed, and unsold auctions.
* Sellers can track revenue, view buyer interactions, and manage pending payments.
* **Buyer Dashboard**:
  + Buyers must be able to view their bidding history, ongoing auctions they are participating in, and past purchases.
* **Notification Center**:
  + The dashboard must include notifications for bids, auction outcomes, and payment updates.

**8. Search and Filtering:**

* **Search Functionality**:
  + Users must be able to search for items by keywords, categories, price range, seller ratings, or auction status.
* **Advanced Filters**:
  + The system must provide filtering options like item condition (new/used), auction ending soon, reserve price, and more.

**9. Admin Functionality:**

* **User Management**:
  + Administrators must be able to manage user accounts, suspend users, and resolve disputes.
* **Auction Moderation**:
  + Administrators should be able to monitor active auctions for suspicious behaviour or fraudulent activity.
* **Payment Oversight**:
  + Admins must have tools to oversee payments and resolve payment disputes.
* **Reporting Tools**:
  + The platform must offer reporting tools for analysing platform activity, such as the number of active auctions, revenue generated, user growth, etc.

**Non-Functional Requirements**

This section addresses performance, security, and other non-functional aspects of the platform.

**1.Performance**

* The platform must handle a high number of concurrent users, particularly during auction closing times.
* The system should provide real-time updates on bids and auction status.
* Loading times for auction pages must be minimal.

**2. Security**

* **User Authentication**: The platform must implement secure user authentication methods, such as encryption of sensitive information.
* **Data Protection**: All personal and payment data must be securely stored and comply with data protection regulations (e.g., GDPR, CCPA).
* **Fraud Detection**: The system must monitor suspicious bidding patterns and flag potential fraudulent activity for review.

**3. Scalability**

* The system must be designed to scale horizontally to accommodate increasing users, auctions, and bids.

**4. Availability**

* The platform should maintain a high availability rate (e.g., 99.9%) with measures like load balancing and redundant server infrastructure to handle downtime.

**5. Usability**

* The platform must provide an intuitive user interface that is easy for both novice and experienced users.
* It should be responsive, accessible, and mobile-friendly, offering the same functionality across devices.

**6. Compliance**

* The platform must comply with applicable laws, such as data privacy regulations and consumer protection laws.
* Tax handling for sellers and cross-border transactions should be implemented where applicable.

**Conclusion**

* This functionality requirements documentation provides a detailed outline of the core features and operational behaviour of the online auction platform. It is crucial for the development and deployment phases to ensure that the platform meets both user needs and business objectives.