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Software Requirements Specification (SRS) for Auction Management Platform

1. Introduction

1.1 Purpose

This document specifies the requirements for the Auction Management Platform, designed to manage an online auction marketplace. The platform allows users to participate in auctions, bid for products, and manage listings. Sellers will be able to create auctions, track bids, and finalize sales.

1.2 Scope

The Auction Management Platform is intended for buyers and sellers participating in online auctions. It provides a user-friendly interface for creating, managing, and bidding on auction items. The system is integrated with an SQL database for secure data storage, including user details, auction items, bids, and transaction history.

1.3 Definitions, Acronyms, and Abbreviations

- **Auction:** The process of buying and selling goods or services by offering them for bids.
- **Bid:** An offer to pay a particular amount for an auction item.
- **SQL:** Structured Query Language for managing and manipulating databases.

1.4 Overview

This document outlines the system's functional and non-functional requirements, system features, and external interfaces, and other key technical specifications.

2. Overall Description

2.1 Product Perspective

The Auction Management Platform is a standalone product designed to facilitate online auctions. It will interact with a central SQL database for all data storage operations and consist

of a frontend built using Next.js, along with a backend API for business logic and database interaction.

2.2 Product Functions

- **User Registration and Authentication:** Users can create accounts, log in, and manage profiles.
- **Auction Creation and Management:** Sellers can list products for auction, specify starting bids, and track ongoing bids.
- **Bidding System:** Users can browse items and place bids on active auctions.
- **Bid Tracking:** Both buyers and sellers can track bids in real-time.
- **Transaction Management:** Payment integration for handling transactions after an auction ends..

2.3 User Classes and Characteristics

- **Buyers:** Users looking to bid on auction items.
- **Sellers:** Vendors creating auction listings.

2.4 Operating Environment

- **Frontend:** React.
- **Backend:** Node.js (API Routes).
- **Database:** MySQL.
- **Hardware:** Personal computer or server.

2.5 Design and Implementation Constraints

- **Scalability:** The platform must be able to handle growing user numbers and auctions.
- **Security:** Ensure secure bidding and transaction processing.

2.6 Assumptions and Dependencies

- **Stable Network Connection:** Assumes that both users and the server have reliable internet connectivity.
- **Payment Gateway:** Integration with a third-party gateway for secure payment processing.

3. External Interface Requirements

3.1 User Interfaces

- **Buyer UI:** Interface for browsing auctions and placing bids.
- **Seller UI:** Interface for managing auction listings and tracking bids.

3.2 Hardware Interfaces

The system will run on a server equipped to handle the application and database.

3.3 Software Interfaces

- **SQL Database:** MySQL for storing auction data, bids, and user information.
- **Payment Gateway API:** Used for handling transactions after an auction ends.

3.4 Communication Interfaces

All communications will use HTTPS to ensure secure data transmission.

4. System Features

4.1 User Registration and Authentication

Description: Users can create accounts, log in, and manage profiles.

Functional Requirements:

- The system shall validate user credentials during login.
- The system shall allow users to reset passwords securely.

4.2 Auction Creation and Management

Description: Sellers can create and manage auctions.

Functional Requirements:

- The system shall allow sellers to list auction items with starting bids.
- The system shall update the auction status when the bidding closes.

4.3 Bidding System

Description: Enables users to bid on items in active auctions.

Functional Requirements:

- The system shall allow users to place bids higher than the current highest bid.
- The system shall notify users when they are outbid.

4.4 Bid Tracking

Description: Allows users to track ongoing bids in real-time.

Functional Requirements:

- The system shall display real-time bid updates on auction pages.

4.5 Payment Processing

Description: Handles payment transactions securely after an auction ends.

Functional Requirements:

- The system shall process transactions securely using a third-party payment gateway.
- The system shall confirm payment before finalizing the sale.

4.6 Review and Ratings

Description: Allows buyers and sellers to leave feedback after auctions.

Functional Requirements:

- The system shall allow users to rate transactions.
 - The system shall display the average rating and reviews for sellers.
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5. Non-Functional Requirements

5.1 Performance Requirements

- The system shall load auction pages within 3 seconds under normal conditions.

5.2 Usability Requirements

- The platform shall have a responsive design to ensure usability on both desktop and mobile devices.

5.3 Security Requirements

- The system shall use two-factor authentication for admin access.

Requirement ID	Requirement Description	Design Specification	Implementation Module	Test Case ID
FR-01	User Registration and Authentication	User Authentication Design	Authentication Module	TC-01
FR-02	Auction Creation and Management	Auction Listing Workflow Design	Auction Managament Module	TC-02
FR-03	Bidding System	Bid Tracking and Update Design	Bidding Module	TC-03

FR-04	Payment Processing	Payment Gateway Integration Design	Payment Processing Module	TC-04
FR-05	Seller Dashboard for Auction Monitoring	Seller Dashboard Interface Design	Seller Management Module	TC-05
NFR-01	System Performance: Page load within 3 seconds	Performance Optimization Design	All Modules	TC-08
NFR-02	Security: authentication for user access	Security Protocol Design	Authentication Module	TC-09
NFR-03	Usability: Responsive design for mobile and desktop	Responsive Design Specification	Frontend Module	TC-10
NFR-04	Reliability: 99.9% system uptime	System Architecture Design	Server Management Module	TC-11