Bidding Site: Online Auc
Auction Platform

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Table of Contents

Introduction: Empowering Online Auctions

The Bidding Site is a dynamic online auction platform designed to connect sellers and buyers in a seamless marketplace. Users can engage as **sellers (hosts)** to list items for auction or as **buyers (bidders)** to compete for desired goods.

Our system prioritizes data integrity and efficiency, built upon a **normalized relational database**. This robust foundation ensures accurate transaction records, secure user data, and a smooth, reliable auction experience for all participants.

Core Technologies Driving Our Platform

Frontend

HTML for structuring content and **CSS** for comprehensive styling, ensuring an intuitive and visually appealing user interface.

Backend

JavaScript (Node.js) powers the server-side logic, handling user requests, business rules, and data flow with high performance.

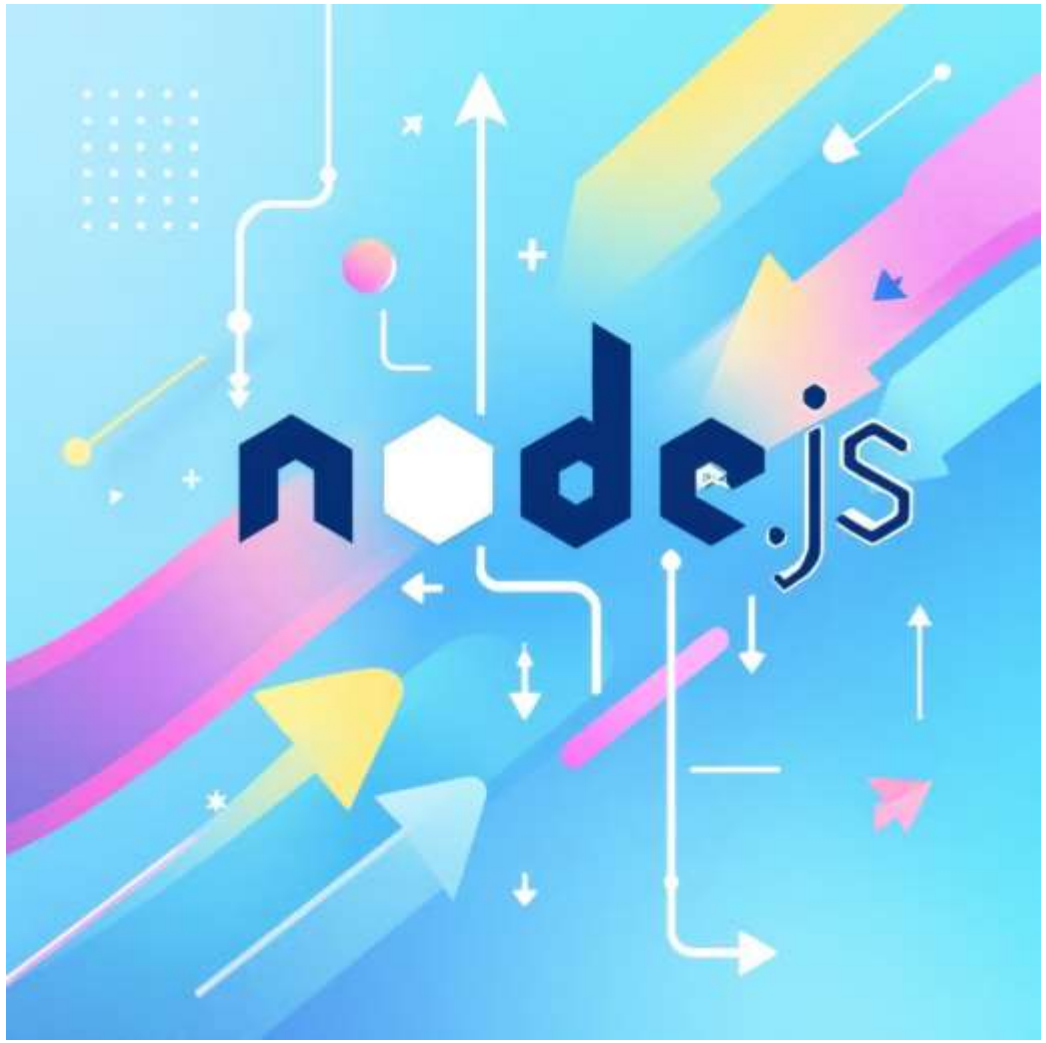
Database

SQLite provides a lightweight yet powerful database solution, meticulously designed with **BCNF normalization** for optimal integrity.

Architecture

A clear separation allows the **frontend** to communicate effectively with the **backend**, which in turn efficiently manages all database operations.

Robust Backend Implementation with Node.js



Our backend, built with **JavaScript (Node.js)**, serves as the critical intermediary between the user interface and our persistent data storage.

It orchestrates a multitude of operations, including:

- **User Authentication:** Securely managing logins for both sellers and bidders.
- **Auction Management:** Overseeing the creation, listing, and lifecycle of all auctions.
- **Bid Processing:** Accurately recording bids and determining auction winners.
- **Database Interaction:** Executing complex queries to maintain data integrity and consistency.

ER Diagram & Database Design Principles

Our system's foundation is built upon a meticulously designed **ER Diagram**, which visually maps the relationships and structure of our data.

The core of our platform revolves around two primary user roles:

The ER diagram represents an **online auction system** with two main user roles: **Hosts (Sellers)** and **Bidders (Buyers)**.

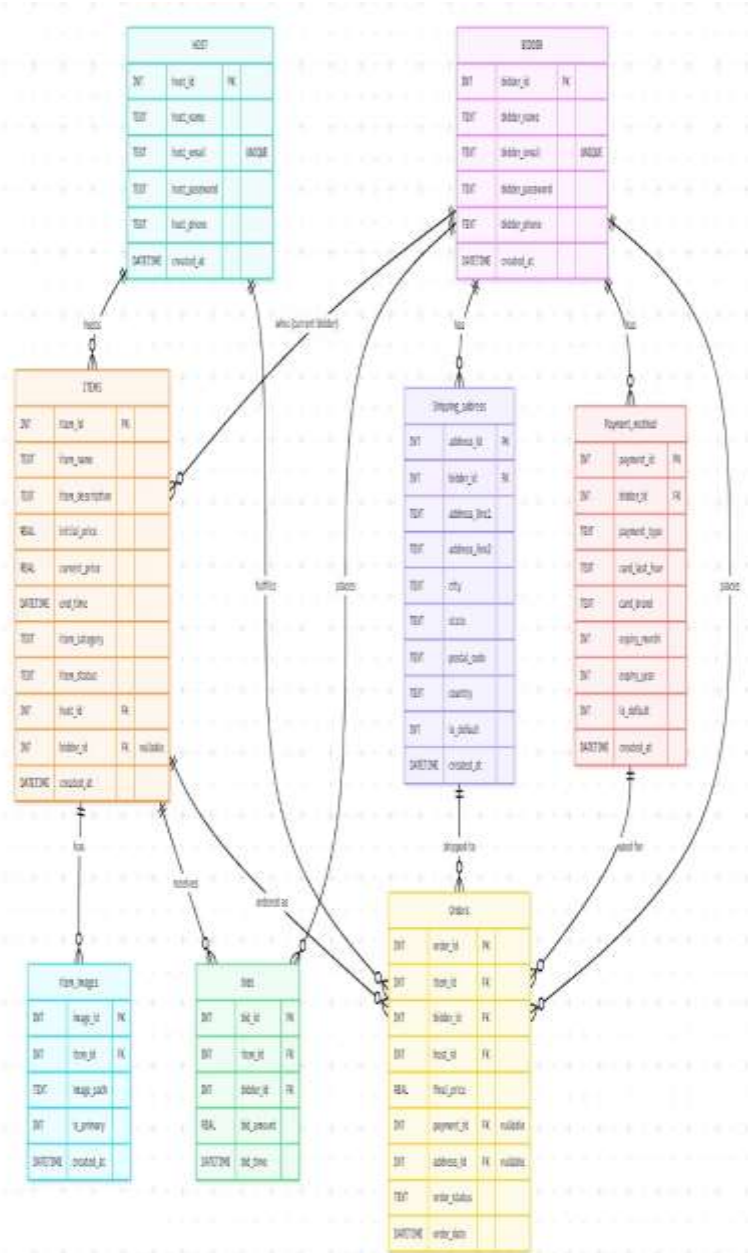
Hosts create and manage **items**, where each item belongs to one host and can receive multiple **bids**.

Bidders can place multiple bids, and each bid is linked to one bidder and one item. Each item has a single **auction**, which controls the bidding period.

When the auction ends, an **order** is created for the winning bidder.
Orders are linked to:

- A **payment method**
- A **shipping address**

Additionally, items can have multiple **images**.
The database is fully **normalized (BCNF)** to avoid redundancy and ensure data integrity.



Key Relationships within the ER Diagram

Hosts & Items

Sellers (Hosts) are responsible for creating, listing, and managing their auction **Items**.

Items & Bids

Each auction **Item** can receive multiple **Bids** from various participants, forming the core of the auction process.

Bidders & Bids

Buyers (Bidders) actively engage by placing **Bids** on items they wish to acquire.

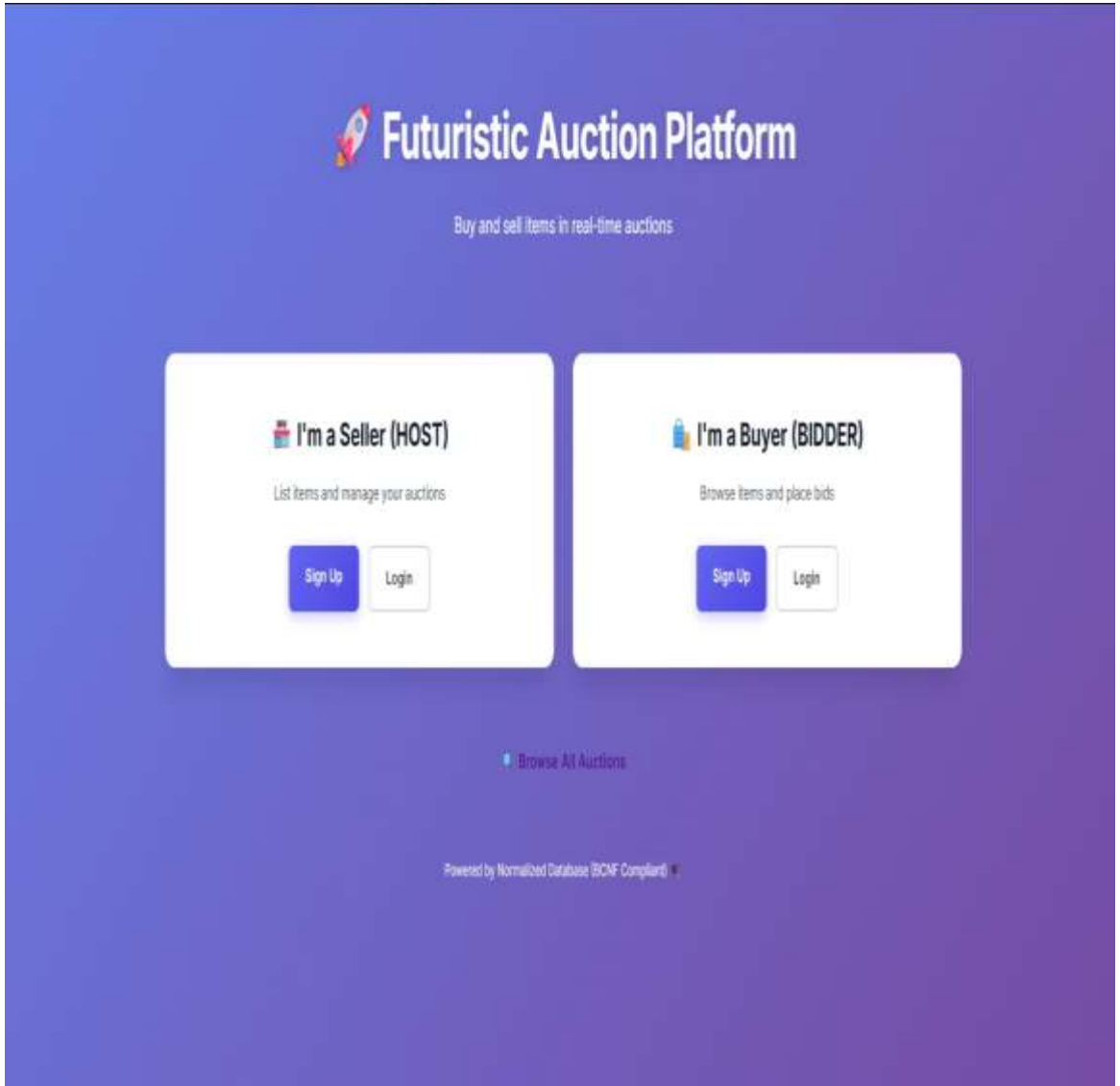
Auctions & Orders

Upon successful completion, **Auctions** culminate in the generation of specific **Orders**.

Orders & Details

Orders are meticulously linked to associated **Payment Methods** and designated **Shipping Addresses** for fulfillment.

Seamless User Role Selection



Upon accessing the Bidding Site, users are prompted to define their interaction by selecting a specific role:

Seller (Host)

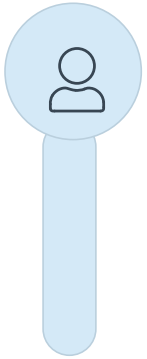
Opting for this role enables users to list items, manage auctions, and oversee their sales.

Buyer (Bidder)

Choosing this role grants users the ability to browse listings, place bids, and track their auction participation.

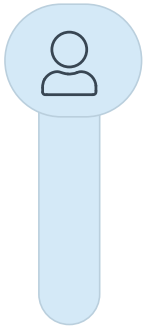
This initial selection is pivotal as it dynamically customizes the available features and user interface, ensuring a tailored and efficient experience based on their intended actions within the platform.

Seller (Host) Registration and Dashboard Access



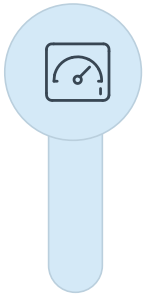
Register Personal Information

Prospective sellers begin by registering their personal and contact details, establishing their unique profile on the platform.



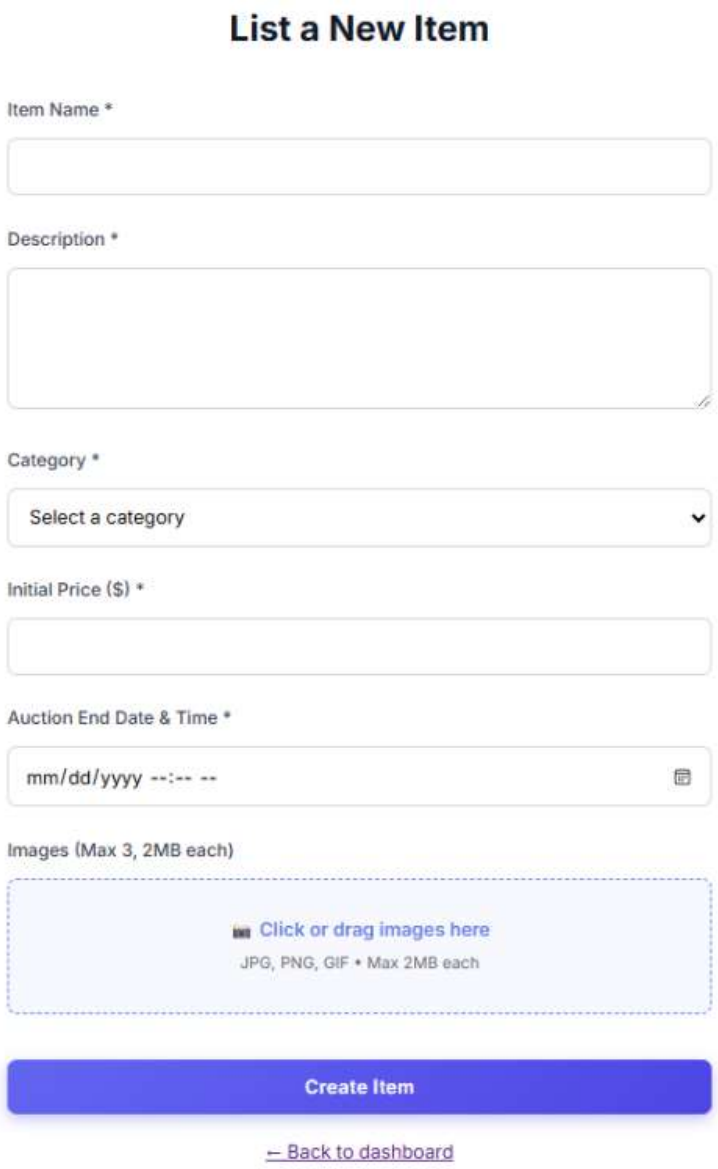
Secure System Login

After registration, sellers log into their secure account, granting them access to their personalized host functionalities.



Access Seller Dashboard

Upon successful login, sellers are directed to a comprehensive dashboard, the central hub for managing all their auction activities and listings.



The seller dashboard provides an intuitive interface for creating new auction items. To list an item, the seller must input critical details:

Item Name & Description: A clear title and a detailed overview of the product.

Category Selection: Assigning the item to an appropriate category for easy discoverability.

Initial Price: Setting the starting bid for the auction.

Auction End Date & Time: Defining the precise conclusion of the bidding period.

Item Images: Uploading high-quality photos to showcase the item effectively.

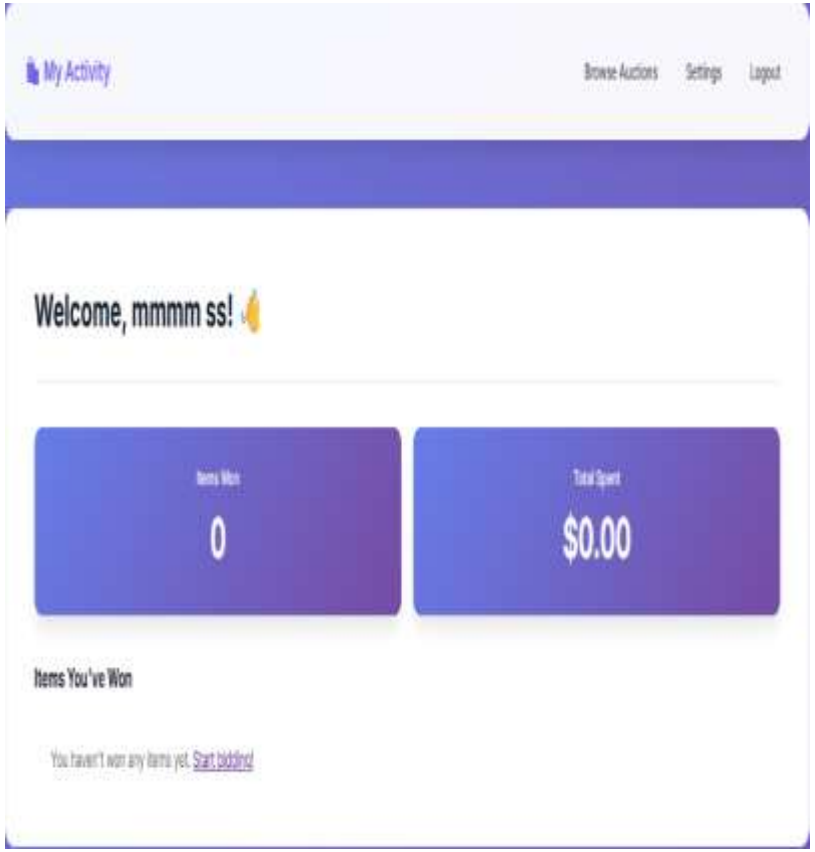
Once all information is entered and confirmed, the item is published, becoming immediately available for buyers to view and bid on, initiating the auction process.

Buyer Dashboard: Your Gateway to Auctions

Upon logging in, bidders are greeted with an intuitive dashboard designed for seamless navigation. This central hub provides an immediate overview of all active auction items, ensuring users never miss an opportunity.

- View all available auction items with real-time updates.
- Monitor current prices and track remaining auction time.
- Effortlessly select any item to delve into its detailed description.

This streamlined interface empowers bidders to easily browse, track, and actively participate in ongoing auctions.



Streamlined Bidding Process: Engaging & Efficient

Detailed Item Exploration

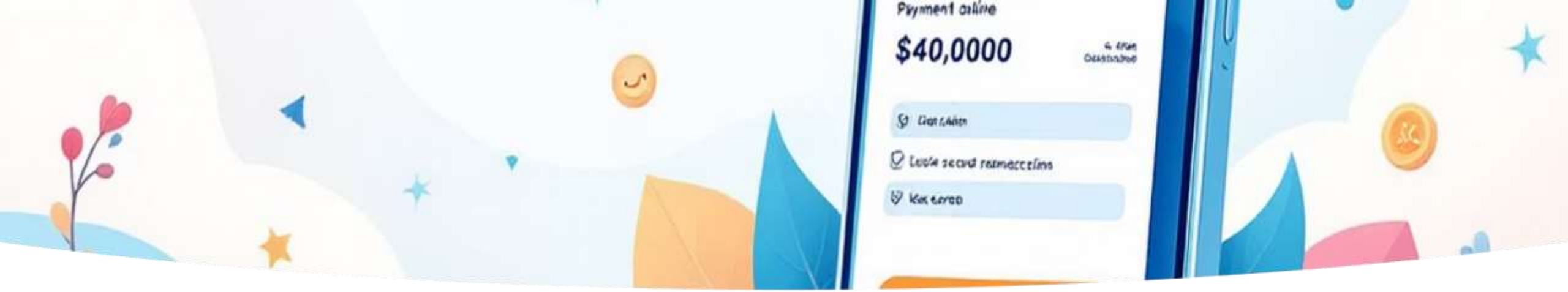
Bidders can access comprehensive item details, including high-resolution images, in-depth descriptions, and seller information.

Intuitive Bid Placement

An easy-to-use input field allows bidders to enter their desired bid amount, with clear visual cues indicating the current highest bid.

Real-time id Updates

All bids are instantly recorded and reflected across the platform, maintaining transparency and fairness throughout the auction. The database is dynamically updated to reflect the latest offers



Payment & Order Completion: Securing the Win

Auction Closes: Highest Bidder Wins

When the clock runs out, the system automatically identifies and declares the highest valid bidder as the winner.

Shipping Confirmation

Shipping details are verified and confirmed to ensure timely and accurate delivery of the purchased item.

Payment Method Selection

The victorious bidder is prompted to securely select their preferred payment method from a range of options.

Order Creation & Finalization

A comprehensive order record is generated and stored in the database, officially completing the auction transaction.

Database Initialization: The Foundation of Functionality

The robust functionality of our auction platform hinges on a meticulously designed database structure. This slide details the foundational SQL queries critical for setting up the system.

- **Table Creation:** SQL queries are executed to create all necessary tables, including `Items`, `Users`, `Bids`, and `Orders`.
- **Key Definitions:** Primary and foreign keys are precisely defined to ensure data integrity and efficient retrieval.
- **Relationship Enforcement:** Constraints are implemented to maintain the logical relationships between tables, reflecting the ER diagram structure.

```sql
-- BIDDER table
CREATE TABLE IF NOT EXISTS BIDDER (
  bidder_id INTEGER PRIMARY KEY AUTOINCREMENT,
  bidder_name TEXT NOT NULL,
  bidder_email TEXT UNIQUE NOT NULL,
  bidder_password TEXT NOT NULL,
  bidder_phone TEXT,
  created_at DATETIME DEFAULT CURRENT_TIMESTAMP
);

-- HOST table
CREATE TABLE IF NOT EXISTS HOST (
  host_id INTEGER PRIMARY KEY AUTOINCREMENT,
  host_name TEXT NOT NULL,
  host_email TEXT UNIQUE NOT NULL,
  host_password TEXT NOT NULL,
  host_phone TEXT,
  created_at DATETIME DEFAULT CURRENT_TIMESTAMP
);
```

```sql
-- ITEMS table
CREATE TABLE IF NOT EXISTS ITEMS (
  item_id INTEGER PRIMARY KEY AUTOINCREMENT,
  item_name TEXT NOT NULL,
  item_description TEXT,
  initial_price REAL NOT NULL,
  current_price REAL NOT NULL,
  end_time DATETIME NOT NULL,
  item_category TEXT NOT NULL,
  item_status TEXT DEFAULT 'available',
  host_id INTEGER NOT NULL,
  bidder_id INTEGER,
  created_at DATETIME DEFAULT CURRENT_TIMESTAMP,
  FOREIGN KEY (host_id) REFERENCES HOST(host_id),
  FOREIGN KEY (bidder_id) REFERENCES BIDDER(bidder_id)
);

-- Item images table
CREATE TABLE IF NOT EXISTS item_images (
  image_id INTEGER PRIMARY KEY AUTOINCREMENT,
  item_id INTEGER NOT NULL,
  image_path TEXT NOT NULL,
  is_primary INTEGER DEFAULT 0,
  created_at DATETIME DEFAULT CURRENT_TIMESTAMP,
  FOREIGN KEY (item_id) REFERENCES ITEMS(item_id) ON DELETE CASCADE
);
```

Conclusion: A Robust and Integrated Auction Platform

Complete Auction Workflow

The platform offers an end-to-end solution, from item listing to final payment, covering all aspects of an online auction.

Distinct User Roles

Clear separation between seller and bidder interfaces ensures tailored experiences and secure operations.

Optimized Database Design

Utilizing BCNF normalization, the database is structured for efficiency, scalability, and data integrity.

Seamless Integration

Frontend, backend, and database components are cohesively integrated, providing a fluid and reliable user experience.