NSBM GREEN
UNIVERSITY

AUCTION
HOUSE
BID UNIQUE

Auction House System Software Architecture and Design Report

PROJECT TITLE	AUCTION HOUSE SYSTEM
SUBJECT TITLE	SOFTWARE ARCHITECTURE
MODULE CODE	SE205.3
GROUP	14

TEAM DETAILS

Task / Contribution	Name	ID	Github
Documentation & Testing – User Guide, onboarding docs, testing instructions and documentations, error scenarios, deployment notes, demo scripts, and slides	EMDK Ekanayake	32000	Dushani-Ekanayake
Backend: Authentication & User Management – Registration, login, JWT, roles, user profile, admin/user separation, security, password hashing, user CRUD	Nuwantha U N	31386	UNNuwantha
Backend: Auctions, Bidding, Transactions, Payments – Auction CRUD, categories, images, bidding logic, validation, real-time (SignalR), transactions, Stripe integration, webhooks, Postman API testing	DAV Kumarage	31775	AnuhasK
Frontend: App Architecture & Routing – React app structure, routing, state management, environment config, API service layer, login/register UI, home page, JWT storage, UI design, navigation, protected routes	KC Udugamakorala	32230	Kavindi Chamika (Kv23-corder)
Frontend: Authentication & User Dashboard – User dashboard, profile, stats	BSLR Senarathna	32425	lakminiweb
Frontend: Auctions & Bidding UI – Auction list/detail pages, create/edit forms, bidding UI, bid history, real-time updates, auction images, categories	WPI Amenda	31967	Amenda-Welgama
Frontend: Transactions & Payments UI – Transaction list/detail, payment status, Stripe checkout integration, payment success/cancel pages, shipping info, delivery confirmation	DD Wijerathna	31433	Dwijerathna
Frontend: Admin Panel & Extra Features – Admin dashboard, user/auction management, category management, stats, notifications, error handling, UI polish	JMKMB Jayewardene	31933	Kasuntha-2002

Abstract

This report describes the design and development of the **Auction House System**, an online platform that enables users to participate in real-time auctions. The system was built using **ASP.NET Core** for the backend and **React with Vite** for the frontend. It supports secure authentication, auction listing management, and instant bid updates through **SignalR, and payment integrations using Stripe** . The following sections discuss the system's architecture, applied design patterns, architectural decisions, and working interfaces.

1. Introduction

The **Auction House System** provides a web-based environment for users to create auctions, place bids, and track live updates in real time. The system is designed to be scalable, maintainable, and secure. It follows a **layered architecture** approach, separating the presentation, business logic, data access, and database layers to improve modularity and performance. Communication between the frontend and backend occurs through RESTful APIs and WebSockets.

Github link - https://github.com/AnuhasK/auction-management-system

Video- https://nsbm365-my.sharepoint.com/:v:/g/personal/davkumarage_students_nsbm_ac_lk/ERWYVzptb2BKolhToZ0S0gMBW0BkoyHFQHv_fk5ZJ8vVtA?nav=eyJyZWZlcnJhbEluZm8iOnsicmVmZXJyYWxBcHAiOiJPbmVEcml2ZUZvckJ1c2luZXNzIiwicmVmZXJyYWxBcHBQbGF0Zm9ybSI6IldlYiIsInJlZmVycmFsTW9kZSI6InZpZXciLCJyZWZlcnJhbFZpZXciOiJNeUZpbGVzTGlua0NvcHkifX0&e=kjXEDs

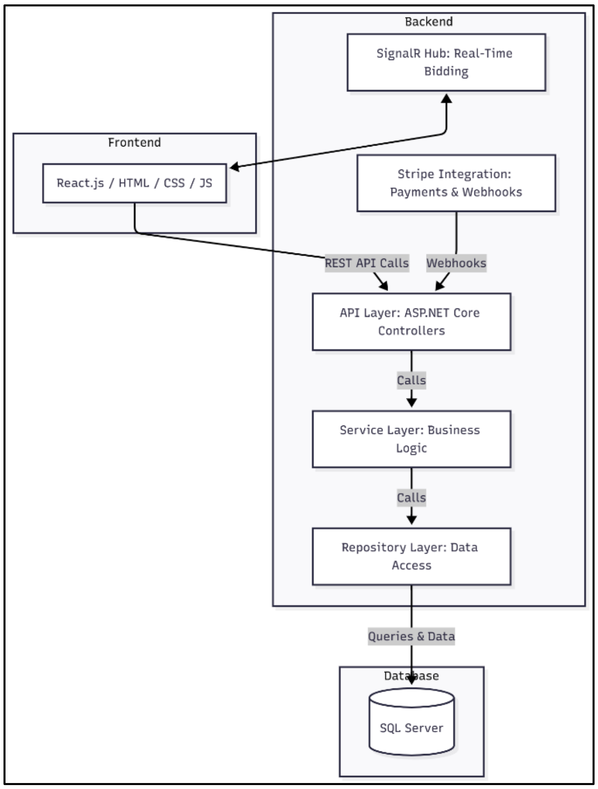
2. Objectives

The main objectives of the Auction House System are:

- To develop a modern, full-stack auction platform.
- To enable **real-time bid updates** using **SignalR**.
- To ensure **secure user authentication and authorization** through **JWT**.
- To allow uses to securely make payments to won auctions.
- To apply software design patterns that enhance maintainability and scalability.
- To deploy the system in a **production-ready environment**.

3. System Architecture

The system follows a four-layered architecture, each responsible for specific operations:


Backend
SignalR Hub: Real-Time Bidding
Frontend
React.js / HTML / CSS / JS
Stripe Integration: Payments & Webhooks
REST API Calls
Webhooks
API Layer: ASP.NET Core Controllers
Calls
Service Layer: Business Logic
Calls
Repository Layer: Data Access
Queries & Data
Database
SQL Server

Presentation Layer: Built using React (Vite + Tailwind CSS), this layer handles user interactions and displays real-time data updates.

Business Logic Layer: Implemented in ASP.NET Core, this layer manages application logic through controllers and services.

Data Access Layer: Uses Entity Framework Core and the Repository Pattern to manage data transactions.

Database Layer: Stores persistent data in an SQL Server database.

This structure ensures a clean separation of concerns, making the system easier to maintain, test, and scale.

4. Design Patterns Used

Several software design patterns were applied throughout the project to improve structure and maintainability:

- **Repository Pattern:** Separates database logic from business logic, allowing easy database management.
- **Unit of Work Pattern:** Ensures all database transactions are handled efficiently and consistently.
- **Singleton Pattern:** Used for registering key services such as the SignalR Hub to maintain a single instance across the application.
- **Strategy Pattern:** Allows flexible implementation of authentication and bidding logic.
- **Observer Pattern:** Facilitates real-time bid updates through **SignalR**, ensuring all users see the latest bid instantly.

5. Architectural Decisions

To ensure scalability, security, and modularity, the following architectural decisions were made:

- **RESTful API** structure for efficient communication between frontend and backend.
- **JWT Authentication** for secure session management.
- **SignalR** integration to provide real-time synchronization of bids.
- **Stripe Payment Integration** to enable secure, reliable processing of user transactions, with webhook support for real-time payment status updates.
- **Entity Framework Core** for data management and migration handling.
- **Cloud Deployment Configuration** for flexible hosting options on Azure or similar platforms.

Assumptions:

- ✓ Users have stable internet connection.
- ✓ Application will handle a moderate initial user base (~500 users).
- ✓ Further load balance will be added in future iterations.

6. Sequence Flow – Place Bid

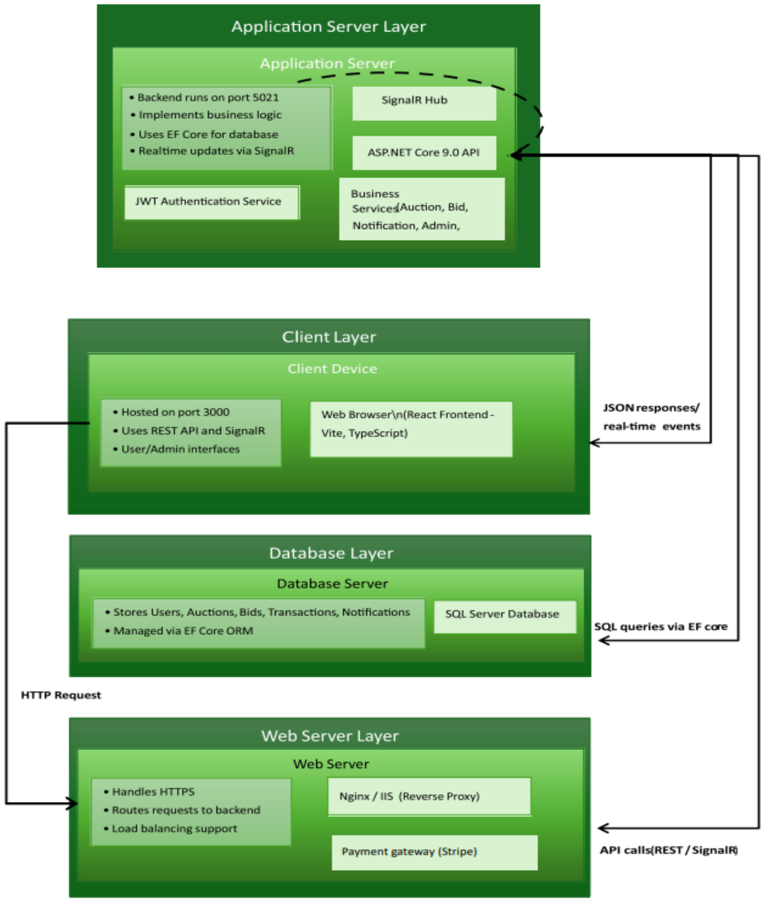
- The user places a bid via the frontend interface.
- The request is sent to the backend endpoint (/api/bids).
- The backend validates and records the bid in the database.
- SignalR broadcasts the new bid to all connected clients.
- The frontend updates the bidding interface in real time.

7. Deployment Architecture

The deployment consists of two main services:

- **Backend:** Hosted on Azure App Service or IIS, running the ASP.NET Core application.
- **Frontend:** Deployed using Vercel for global accessibility.
- The backend communicates with SQL Server or Azure SQL Database for data persistence.

This setup ensures both scalability and fault tolerance in a live environment.


Application Server Layer
Application Server
• Backend runs on port 5021
• Implements business logic
• Uses EF Core for database
• Realtime updates via SignalR
SignalR Hub
ASP.NET Core 9.0 API
JWT Authentication Service
Business Services(Auction, Bid, Notification, Admin,
Client Layer
Client Device
• Hosted on port 3000
• Uses REST API and SignalR
• User/Admin interfaces
Web Browser\n(React Frontend - Vite, TypeScript)
JSON responses/ real-time events
Database Layer
Database Server
• Stores Users, Auctions, Bids, Transactions, Notifications
• Managed via EF Core ORM
SQL Server Database
SQL queries via EF core
HTTP Request
Web Server Layer
Web Server
• Handles HTTPS
• Routes requests to backend
• Load balancing support
Nginx / IIS (Reverse Proxy)
Payment gateway (Stripe)
API calls(REST / SignalR)

Development diagram

8. Design and Implementation

This section illustrates the structural and behavioral design of the Online Auction Website System. The system was designed using object-oriented programming (OOP) concepts such as encapsulation, inheritance, and abstraction to ensure modularity, reusability, and scalability. Each component of the system works together to provide smooth user experience for both buyers and sellers.

8.1. Class Diagram

The **Class Diagram** represents the core structure and interactions within the **Online Auction Website System**. It outlines the main entities **User**, **Auction**, **Bid**, **Transaction**, **Notification**, **AuctionImage**, and **ClaRevokedToken** along with their attributes, methods, and relationships. This model defines how data flows between users, auctions, and system services.

Key Classes Explained:

- **User Class**
  Manages all user-related information such as username, email, password hash, role, and account status. It includes methods for registration, authentication, profile management, and deactivation. The User class is central, linking with auctions, bids, notifications, and revoked tokens.

- **Auction Class**
  Represents an auction listing with attributes like title, description, start price, current price, status, seller ID, and winner ID. It includes methods to start or close an auction, update the current price, and retrieve bids or associated images.

- **Bid Class**
  Records each user’s bid activity. Attributes include bid ID, auction ID, user ID, amount, and timestamp. Methods such as placeBid() and

validateBid() ensure valid and competitive bidding, while getBidHistory() retrieves all bids for a given auction.

- **Transaction Class**

  Handles payment and transaction details after an auction ends. It stores buyer/seller IDs, auction ID, amount, transaction date, status, and payment method. The createTransaction() and updateStatus() methods manage financial processes and confirm transactions.

- **Notification Class**

  Manages system notifications sent to users for updates such as successful bids, auction results, or payment confirmations. Methods like sendNotification() and markAsRead() enhance real-time user interaction and system communication.

- **AuctionImage Class**

  Handles image uploads for auction items. Each image is linked to an auction and includes methods for uploading and setting the primary display image.

- **ClaRevokedToken Class**

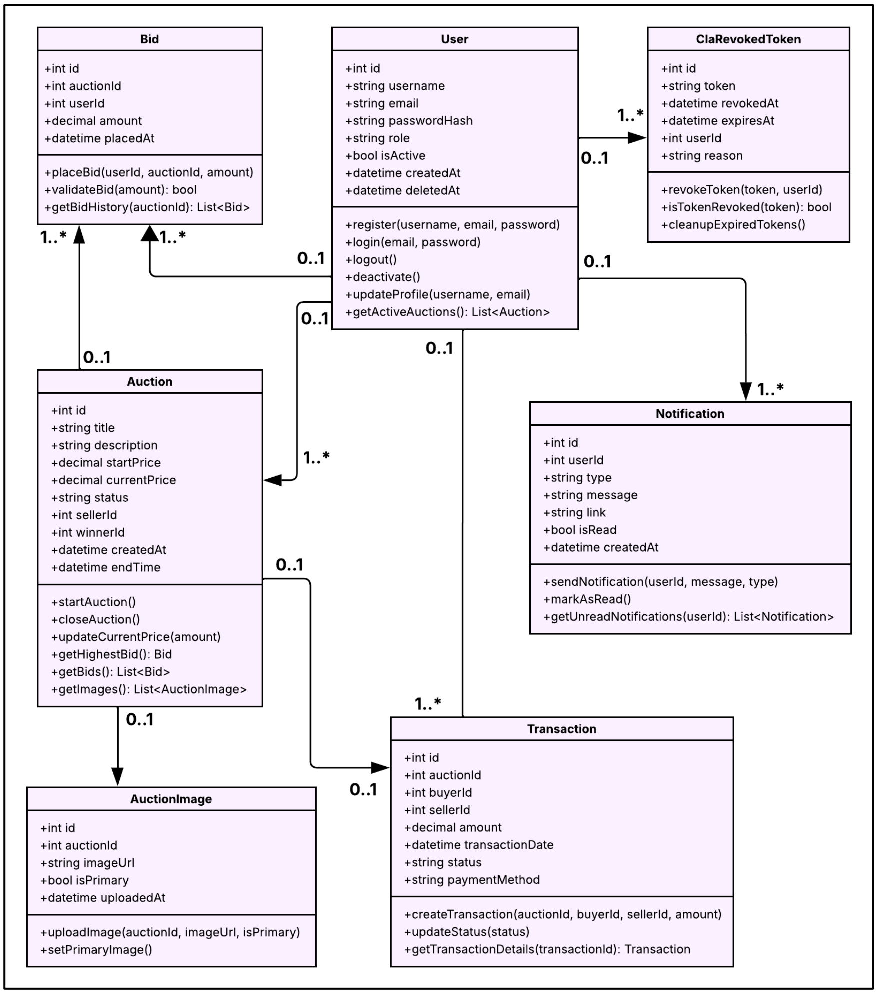
  Tracks and manages revoked authentication tokens for enhanced security. It ensures that expired or invalid JWT tokens are properly handled, maintaining safe user sessions.

OOP Concept Application:

- **Encapsulation:**

  Each class maintains private or protected attributes with public methods for controlled access. For instance, user credentials are never directly exposed, preserving system integrity.

- **Abstraction:**
  Complex processes like bidding validation and transaction updates are encapsulated within methods, hiding unnecessary implementation details from the user interface.
- **Association and Aggregation:**
  Classes are interlinked logically—one user can have multiple bids, notifications, and transactions; one auction can include multiple images and bids.
- **Polymorphism:**
  Functions such as sendNotification() or createTransaction() adapt behavior based on parameters passed, allowing flexibility in system operations.



8.2. ER Diagram

The Flow Diagram illustrates how data and control move through the Auction Website System. It defines the logical relationships between entities User, Bid, Transaction, Notification, and RevokedToken showing how each component interacts during the auction process.

The diagram shows that users are at the core of the system. They can create auctions, place bids, and receive updates in real time. The flow ensures smooth communication between all modules, maintaining data consistency and traceability across every operation.

Key Data Flows Explained:

- **User → Auction**
  In our auction system, users place bids until the auction closes, and the highest bidder automatically becomes the winner. The winner receives a notification to proceed with payment via Stripe's test payment portal. Once the payment is successful, the admin is notified, reviews the transaction in the admin panel, and approves it for shipping.
- **User ↔ Bid**
  Users place bids on active auctions. Each bid contains information about the auction, the bidder, the amount, and the time placed. Multiple bids can belong to the same auction, allowing competitive bidding.
- **User ↔ Transaction**
  Once an auction ends, the winning bidder and the seller are linked through a transaction record. This transaction includes buyer ID, seller ID, amount, auction ID, and date, ensuring that payment and delivery are traceable.
- **User ↔ Notification**
  Users receive system notifications for actions such as new bids, auction

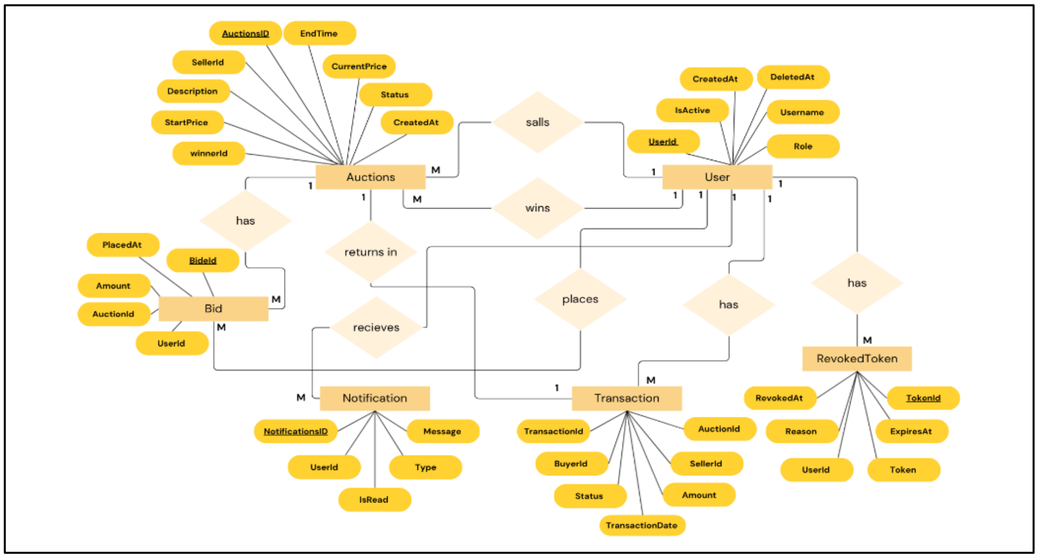
wins, and payment confirmations. Each notification includes the user ID, message, and reading status to improve communication and engagement.

- **User ↔ RevokedToken**
  For security purposes, revoked tokens are tracked to prevent unauthorized access. Each token includes the user ID, reason, and expiration details.

System Logic Flow Summary:

1. **Auction Creation:**
   A seller logs in and creates an auction with details such as title, description, start price, and duration.
2. **Bidding Phase:**
   Buyer’s place bids on active auctions. The system validates each bid and updates the current price dynamically.
3. **Auction Closure:**
   When the auction ends, the highest bid is identified as the winner.
4. **Transaction Handling:**

   When the auction ends, the highest bidder is notified to pay via Stripe’s test portal, and once payment succeeds, the admin verifies it and approves the order for shipping
5. **Notification Trigger:**
   Both parties receive real-time notifications confirming auction results and transaction updates.
6. **Security & Session Control:**
   Revoked tokens are logged to manage secure authentication and prevent token reuse.



8.3. Use Case Diagram

Description:

The use case diagram illustrates the primary interactions between actors and the system.

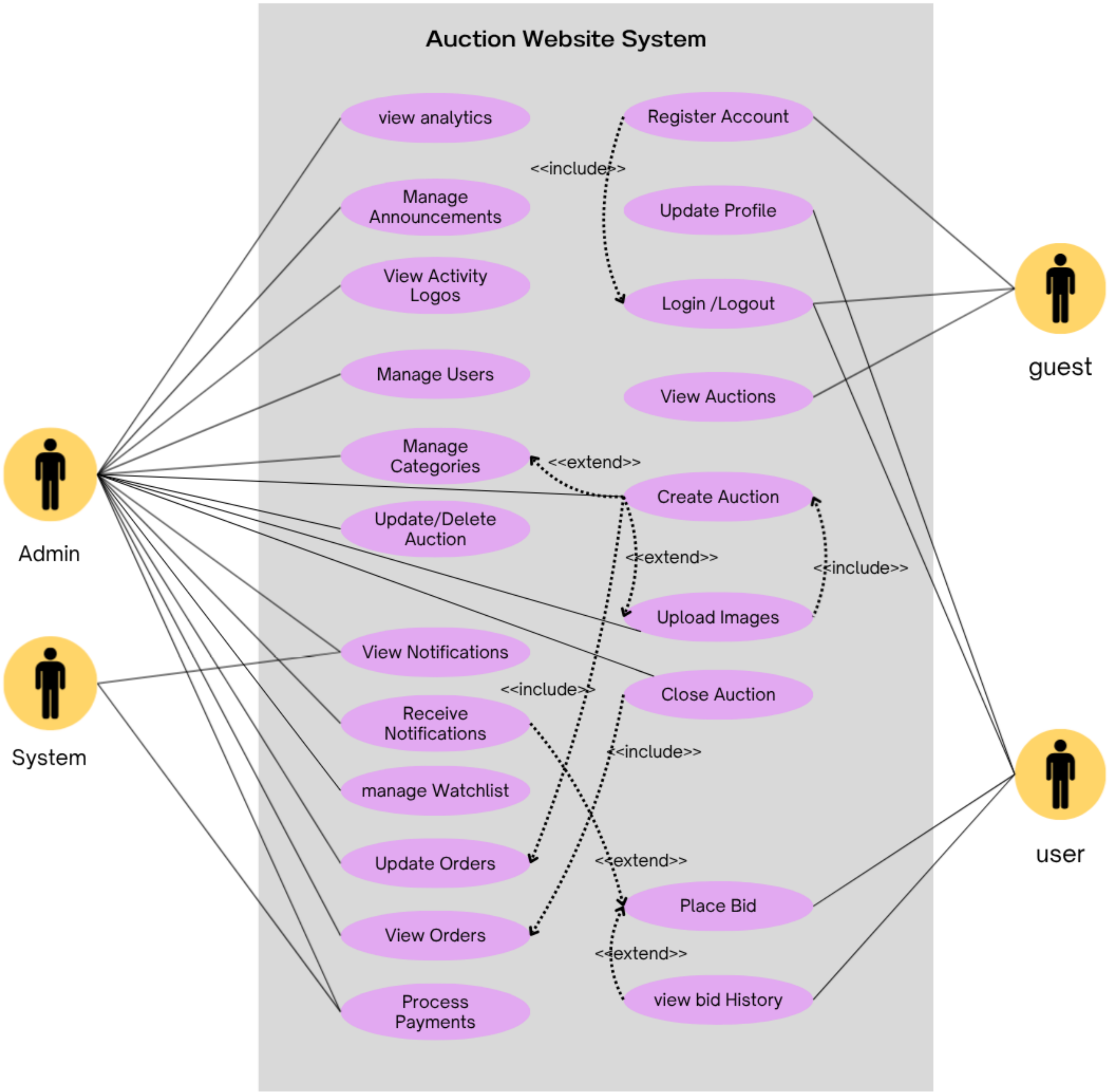
There are three main actors: User, Admin, and System.

- User can register, log in, create auctions, place bids, make payments, view transactions, and receive notifications.
- Admin manages users and auctions, views reports, sends notifications, and handles token revocation.
- System automatically handles notifications and token revocations in the background.

Includes/Extends Relationships:

- The PlaceBid, CreateAuction, and MakePayment actions include Login, meaning authentication is required for these operations.
- The ViewTransaction use case extends MakePayment, since transactions appear after payments.

- The ManageAuctions use case extends RevokeTokens, showing administrative control dependencies.



Purpose:

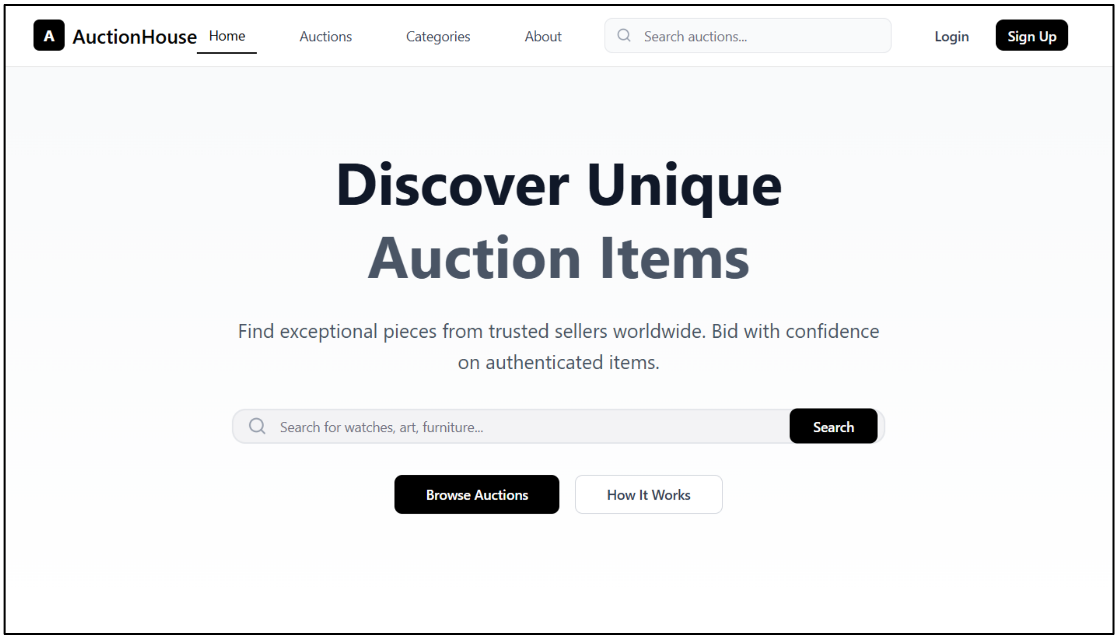
This diagram provides a high-level view of system functionality, showing how different users interact with system features and how use cases are related.

9. System Interfaces

The Auction House System includes several key interfaces:

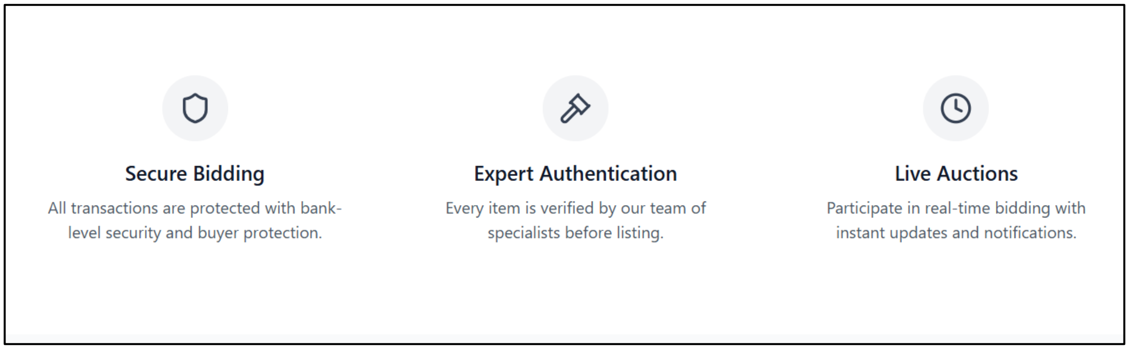
- **Home Page:** Displays active and upcoming auctions.
- **Login/Register Page:** Allows user authentication and account creation.
- **Dashboard:** Displays the user's auctions and bidding history.
- **Auction Details Page:** Shows auction details, bid history, and a live bidding interface.
- **Bidding Interface:** Real-time updates of the highest bid using SignalR.

Home page



Discover Unique Auction Items

Find exceptional pieces from trusted sellers worldwide. Bid with confidence on authenticated items.



Secure Bidding

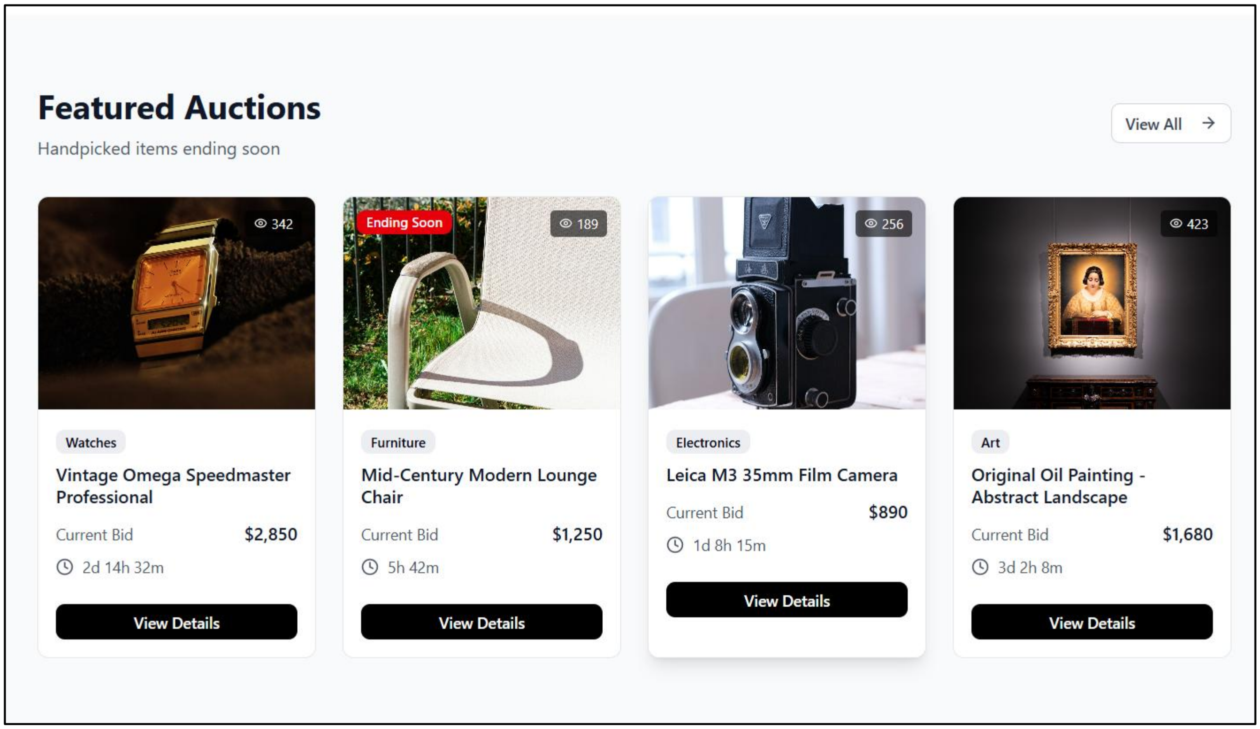
All transactions are protected with bank-level security and buyer protection.

Expert Authentication

Every item is verified by our team of specialists before listing.

Live Auctions

Participate in real-time bidding with instant updates and notifications.

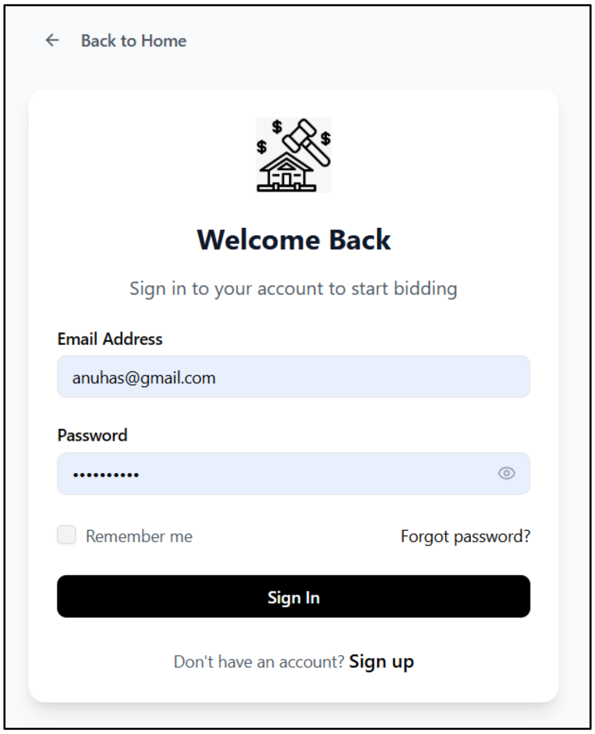


Featured Auctions

Handpicked items ending soon

	Watches	Furniture	Electronics	Art
Views	342	189	256	423
Badge		Ending Soon		
Item	Vintage Omega Speedmaster Professional	Mid-Century Modern Lounge Chair	Leica M3 35mm Film Camera	Original Oil Painting - Abstract Landscape
Current Bid	$2,850	$1,250	$890	$1,680
Time left	2d 14h 32m	5h 42m	1d 8h 15m	3d 2h 8m

Login and register pages



Welcome Back

Sign in to your account to start bidding

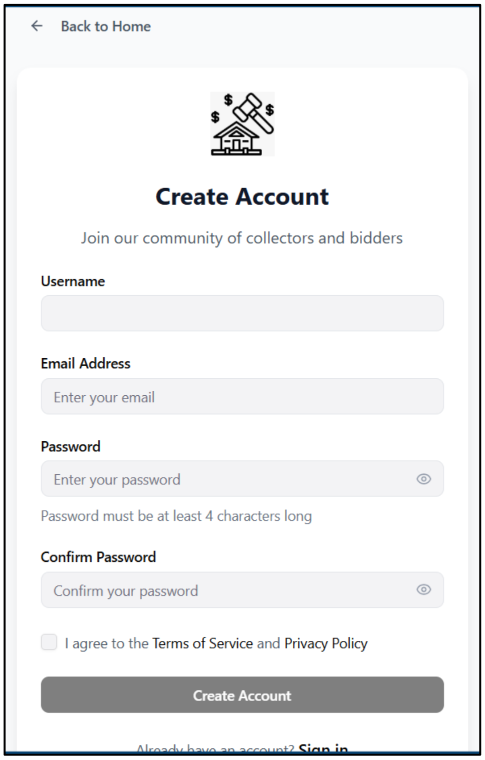
Email Address

anuhas@gmail.com

Password

••••••••••

Don't have an account? **Sign up**



Create Account

Join our community of collectors and bidders

Username

Email Address

Enter your email

Password

Enter your password

Password must be at least 4 characters long

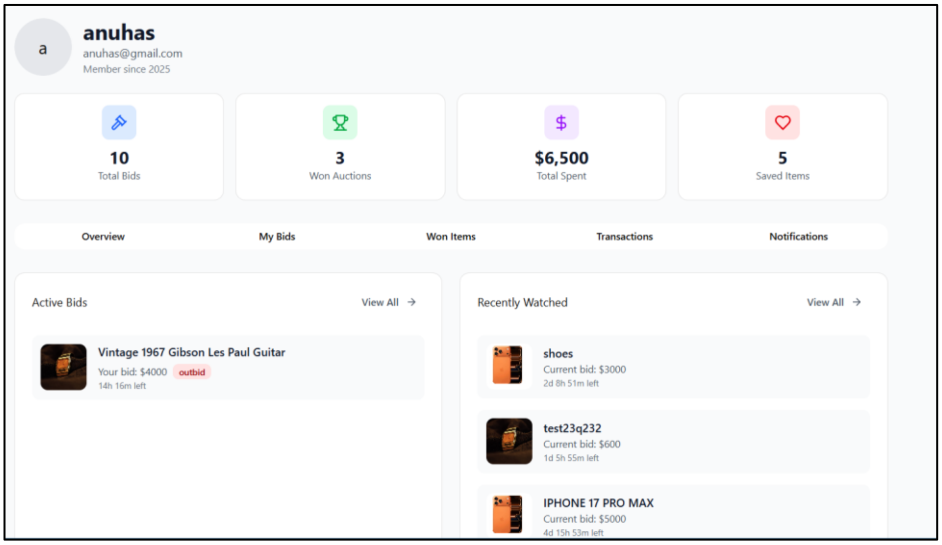
Confirm Password

Confirm your password

□ I agree to the Terms of Service and Privacy Policy

Already have an account? **Sign in**

User Dashboard - Overview



a

anuhas

anuhas@gmail.com

Member since 2025

10 Total Bids

3 Won Auctions

$6,500 Total Spent

5 Saved Items

Active Bids

Vintage 1967 Gibson Les Paul Guitar

Your bid: $4000 outbid

14h 16m left

Recently Watched

shoes

Current bid: $3000

2d 8h 51m left

test23q232

Current bid: $600

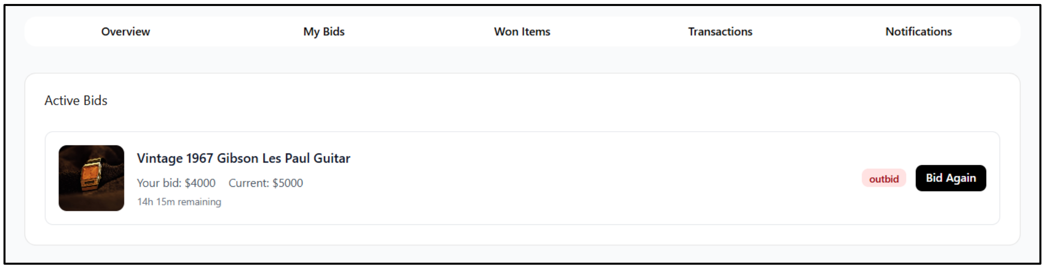
1d 5h 55m left

IPHONE 17 PRO MAX

Current bid: $5000

4d 15h 53m left

User Dashboard – My bids (Current bids user placed)



Active Bids

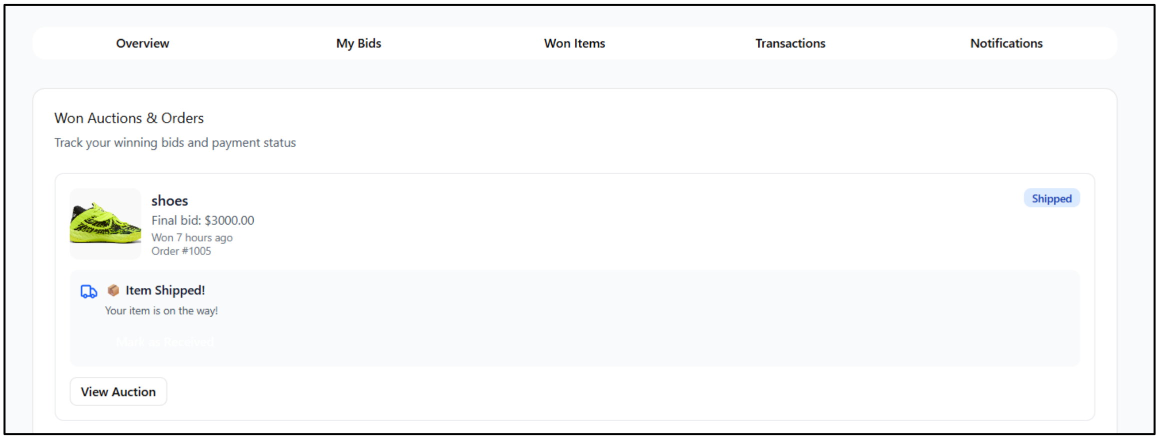
Vintage 1967 Gibson Les Paul Guitar

Your bid: $4000 Current: $5000

14h 15m remaining

outbid

User Dashboard – Won Items



Won Auctions & Orders

Track your winning bids and payment status

shoes

Final bid: $3000.00

Won 7 hours ago

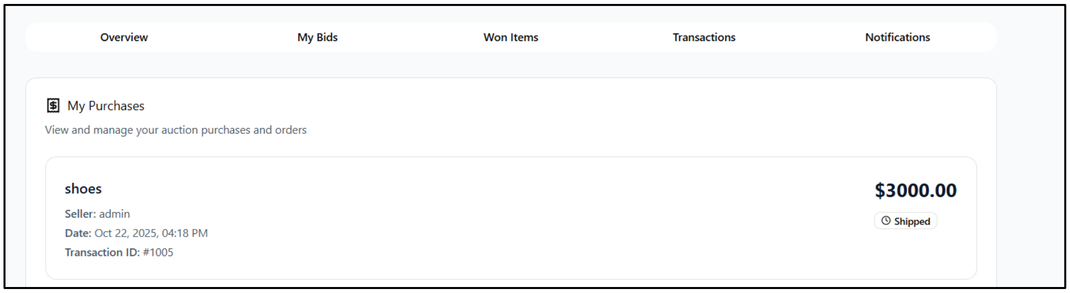
Order #1005

Shipped

📦 Item Shipped!

Your item is on the way!

User Dashboard - Transactions



My Purchases

View and manage your auction purchases and orders

shoes

Seller: admin

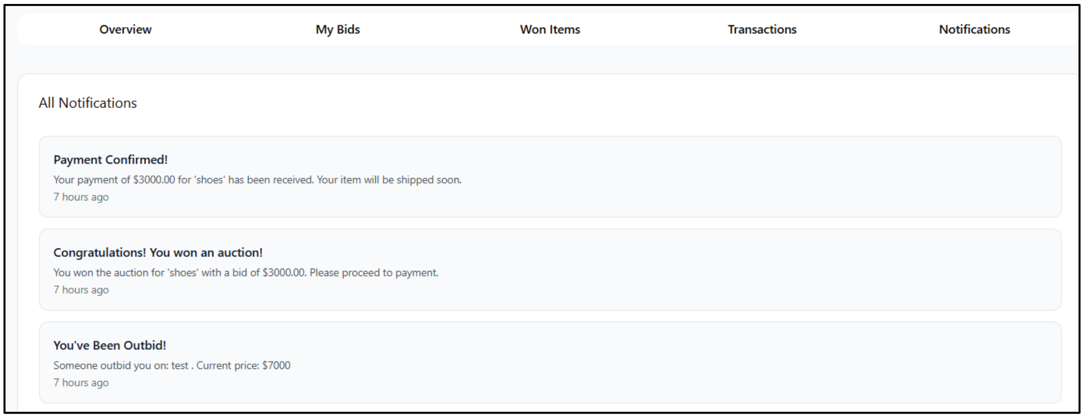
Date: Oct 22, 2025, 04:18 PM

Transaction ID: #1005

$3000.00

Shipped

User Dashboard - Notifications



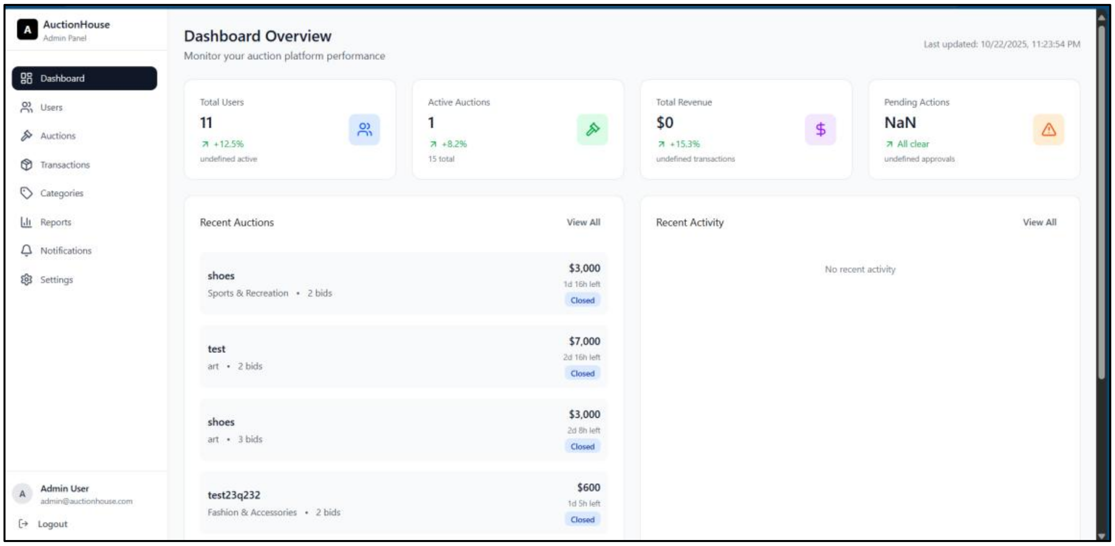
All Notifications

Payment Confirmed!
Your payment of $3000.00 for 'shoes' has been received. Your item will be shipped soon.
7 hours ago

Congratulations! You won an auction!
You won the auction for 'shoes' with a bid of $3000.00. Please proceed to payment.
7 hours ago

You've Been Outbid!
Someone outbid you on: test . Current price: $7000
7 hours ago

Admin Dashboard – Overview page



Dashboard Overview

Monitor your auction platform performance

Last updated: 10/22/2025, 11:23:54 PM

Total Users	Active Auctions	Total Revenue	Pending Actions
11	1	$0	NaN
↗ +12.5%	↗ +8.2%	↗ +15.3%	↗ All clear
undefined active	15 total	undefined transactions	undefined approvals

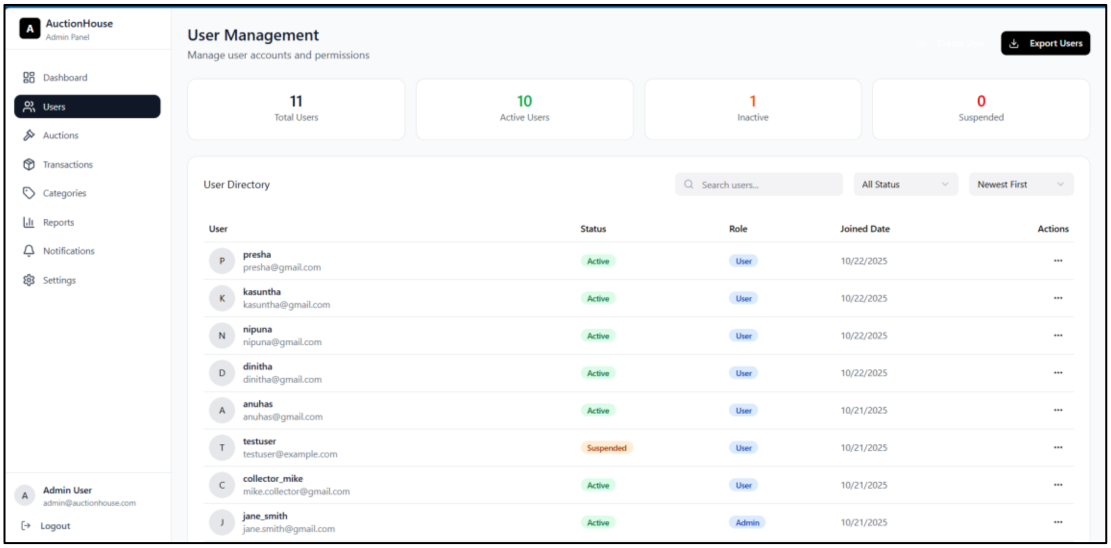
Recent Auctions — View All

shoes Sports & Recreation • 2 bids	$3,000 1d 16h left Closed
test art • 2 bids	$7,000 2d 16h left Closed
shoes art • 3 bids	$3,000 2d 8h left Closed
test23q232 Fashion & Accessories • 2 bids	$600 1d 5h left Closed

Recent Activity — View All

No recent activity

Admin Dashboard – User Management page



User Management

Manage user accounts and permissions

11 Total Users

10 Active Users

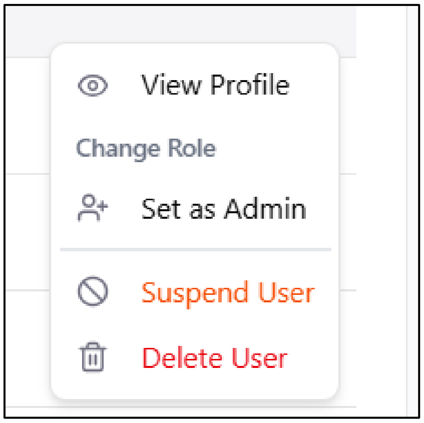
1 Inactive

0 Suspended

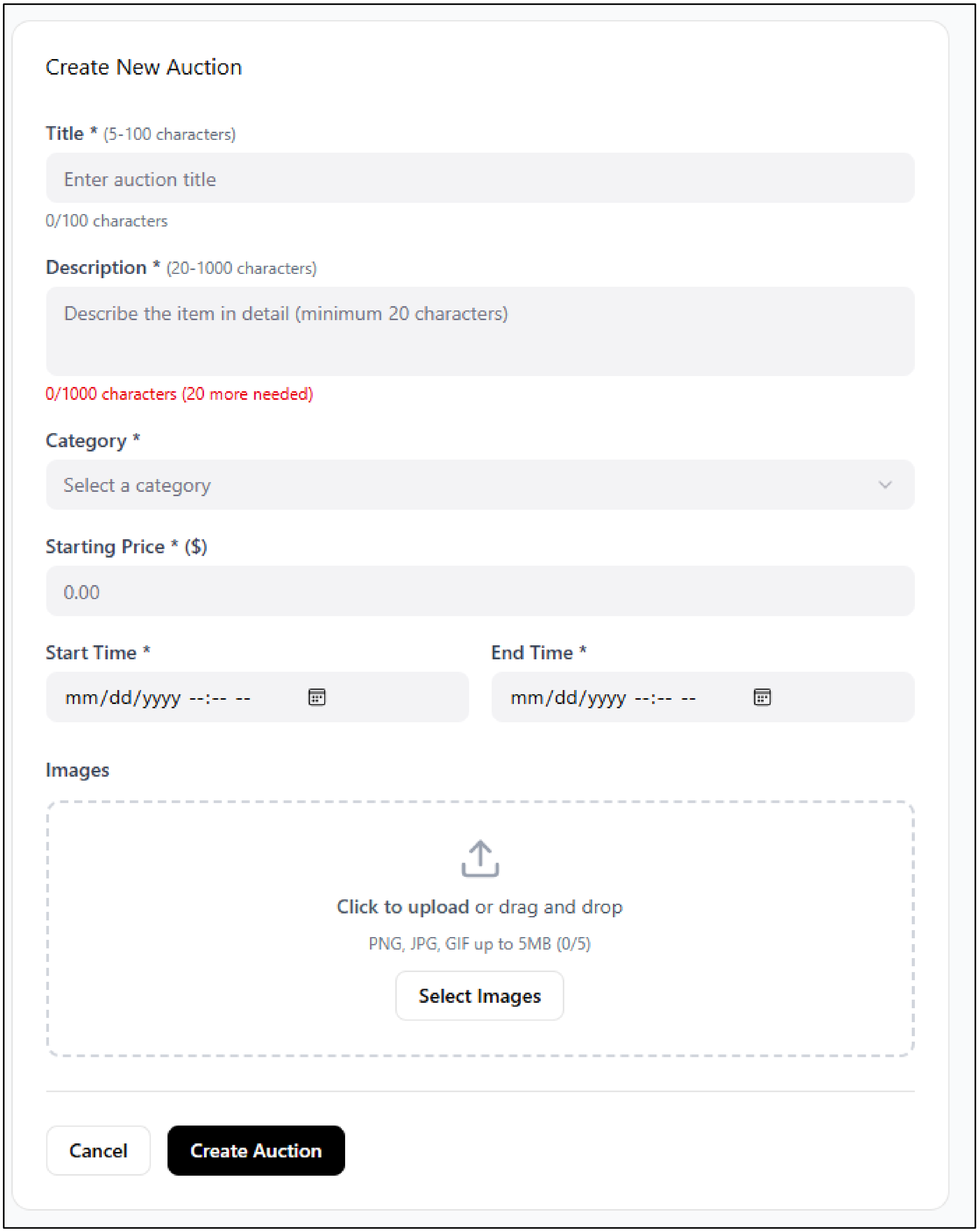
User Directory

User	Status	Role	Joined Date	Actions
P presha presha@gmail.com	Active	User	10/22/2025	···
K kasuntha kasuntha@gmail.com	Active	User	10/22/2025	···
N nipuna nipuna@gmail.com	Active	User	10/22/2025	···
D dinitha dinitha@gmail.com	Active	User	10/22/2025	···
A anuhas anuhas@gmail.com	Active	User	10/21/2025	···
T testuser testuser@example.com	Suspended	User	10/21/2025	···
C collector_mike mike.collector@gmail.com	Active	User	10/21/2025	···
J jane_smith jane.smith@gmail.com	Active	Admin	10/21/2025	···

Actions on users



Admin Dashboard – Auctions management page



Create New Auction

Title * (5-100 characters)

Enter auction title

0/100 characters

Description * (20-1000 characters)

Describe the item in detail (minimum 20 characters)

0/1000 characters (20 more needed)

Category *

Select a category

Starting Price * ($)

0.00

Start Time *

mm/dd/yyyy --:-- --

End Time *

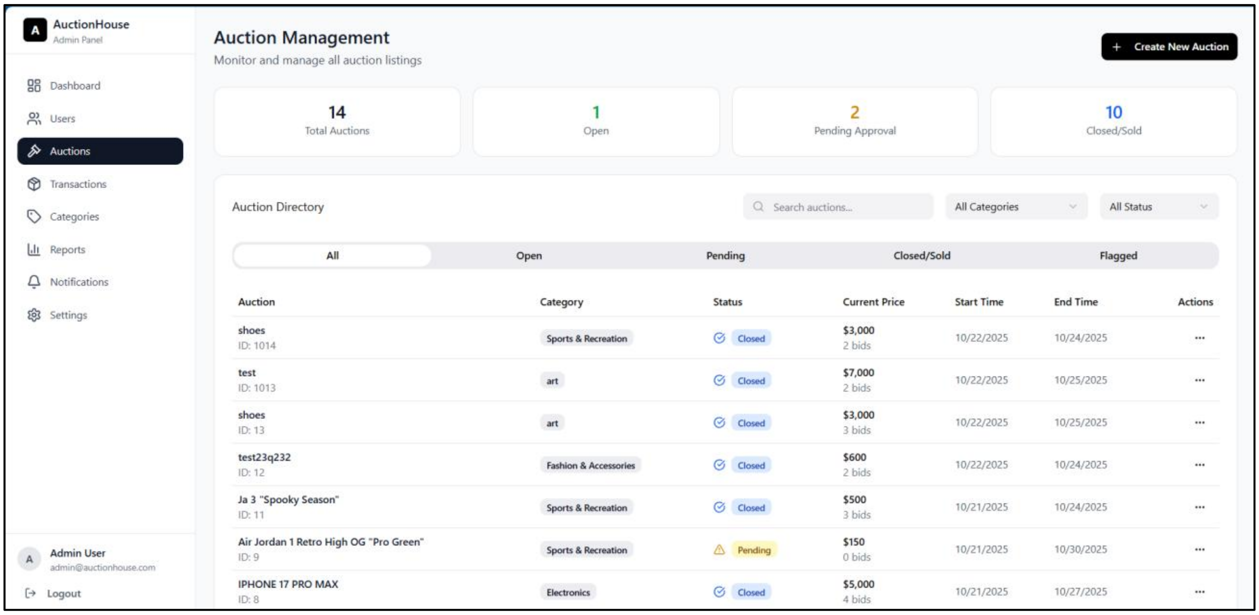
mm/dd/yyyy --:-- --

Images

Click to upload or drag and drop

PNG, JPG, GIF up to 5MB (0/5)

Admin Dashboard - Create new auction page



Auction Management

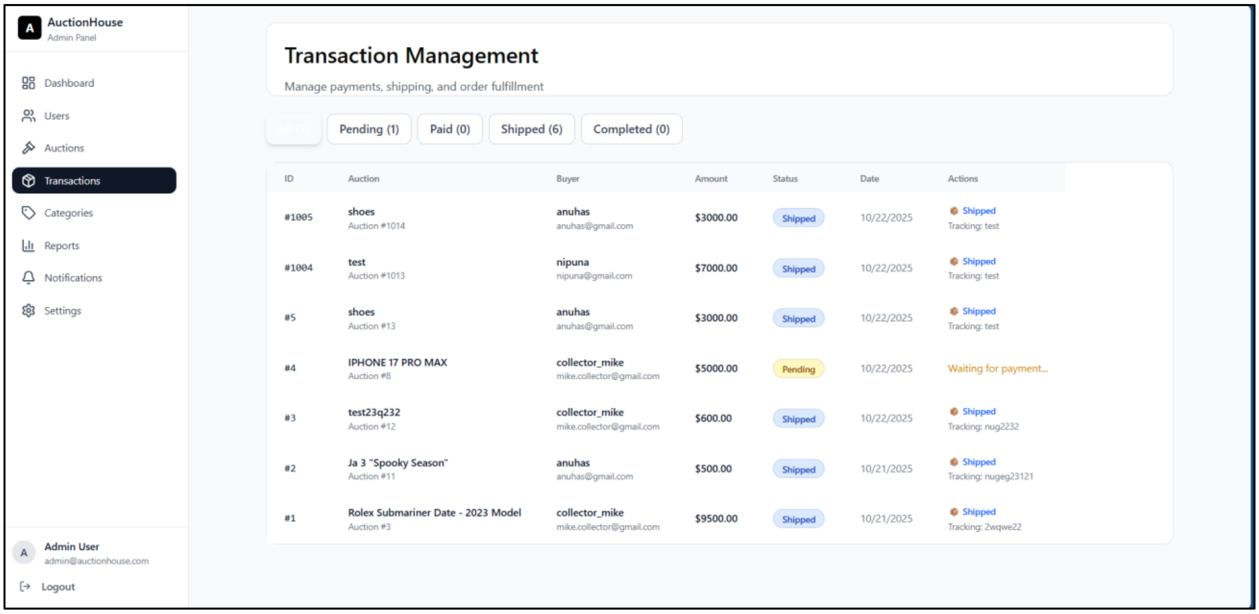
Monitor and manage all auction listings

14	1	2	10
Total Auctions	Open	Pending Approval	Closed/Sold

Auction Directory

Auction	Category	Status	Current Price	Start Time	End Time	Actions
shoes ID: 1014	Sports & Recreation	Closed	$3,000 2 bids	10/22/2025	10/24/2025	···
test ID: 1013	art	Closed	$7,000 2 bids	10/22/2025	10/25/2025	···
shoes ID: 13	art	Closed	$3,000 3 bids	10/22/2025	10/25/2025	···
test23q232 ID: 12	Fashion & Accessories	Closed	$600 2 bids	10/22/2025	10/24/2025	···
Ja 3 "Spooky Season" ID: 11	Sports & Recreation	Closed	$500 3 bids	10/21/2025	10/24/2025	···
Air Jordan 1 Retro High OG "Pro Green" ID: 9	Sports & Recreation	Pending	$150 0 bids	10/21/2025	10/30/2025	···
IPHONE 17 PRO MAX ID: 8	Electronics	Closed	$5,000 4 bids	10/21/2025	10/27/2025	···

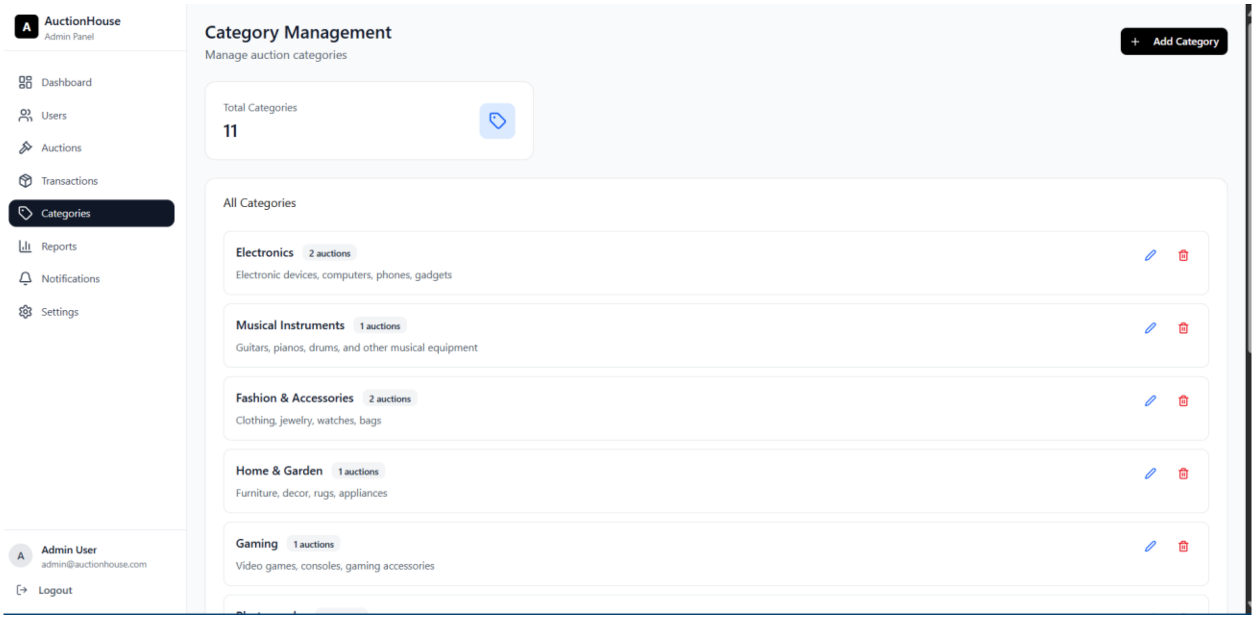
Admin Dashboard – Transactions Management page



Transaction Management

Manage payments, shipping, and order fulfillment

ID	Auction	Buyer	Amount	Status	Date	Actions
#1005	shoes Auction #1014	anuhas anuhas@gmail.com	$3000.00	Shipped	10/22/2025	Shipped Tracking: test
#1004	test Auction #1013	nipuna nipuna@gmail.com	$7000.00	Shipped	10/22/2025	Shipped Tracking: test
#5	shoes Auction #13	anuhas anuhas@gmail.com	$3000.00	Shipped	10/22/2025	Shipped Tracking: test
#4	IPHONE 17 PRO MAX Auction #8	collector_mike mike.collector@gmail.com	$5000.00	Pending	10/22/2025	Waiting for payment...
#3	test23q232 Auction #12	collector_mike mike.collector@gmail.com	$600.00	Shipped	10/22/2025	Shipped Tracking: nug2232
#2	Ja 3 "Spooky Season" Auction #11	anuhas anuhas@gmail.com	$500.00	Shipped	10/21/2025	Shipped Tracking: nugeg23121
#1	Rolex Submariner Date - 2023 Model Auction #3	collector_mike mike.collector@gmail.com	$9500.00	Shipped	10/21/2025	Shipped Tracking: 2wqwe22



Category Management

Manage auction categories

Total Categories

11

All Categories

Electronics 2 auctions
Electronic devices, computers, phones, gadgets

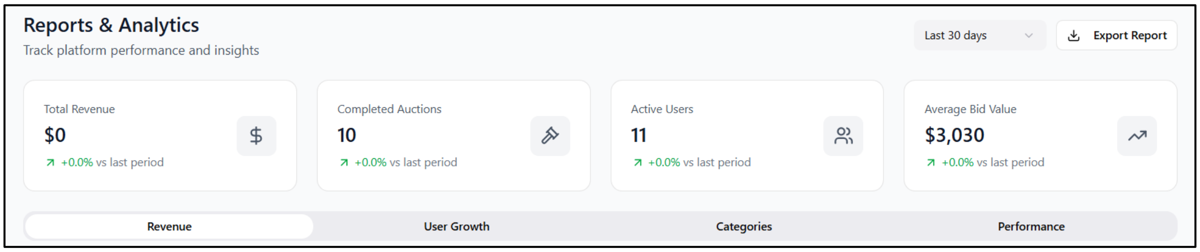
Musical Instruments 1 auctions
Guitars, pianos, drums, and other musical equipment

Fashion & Accessories 2 auctions
Clothing, jewelry, watches, bags

Home & Garden 1 auctions
Furniture, decor, rugs, appliances

Gaming 1 auctions
Video games, consoles, gaming accessories

Admin Dashboard – Analytics page

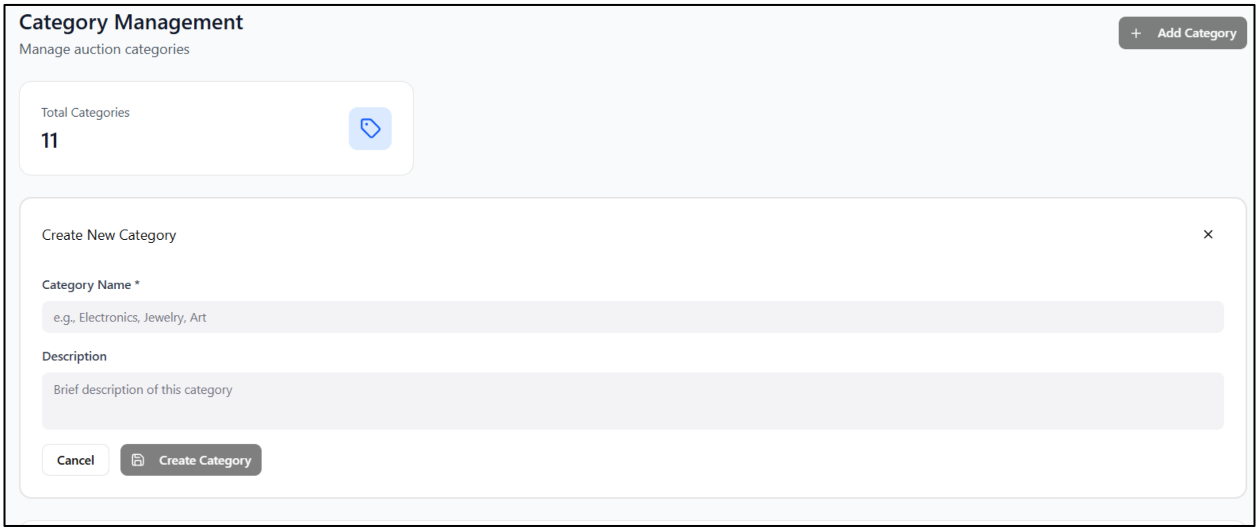


Reports & Analytics

Track platform performance and insights

Total Revenue	Completed Auctions	Active Users	Average Bid Value
$0	10	11	$3,030
+0.0% vs last period	+0.0% vs last period	+0.0% vs last period	+0.0% vs last period

Admin Dashboard – Auction Category management page



Category Management

Manage auction categories

Total Categories

11

Create New Category

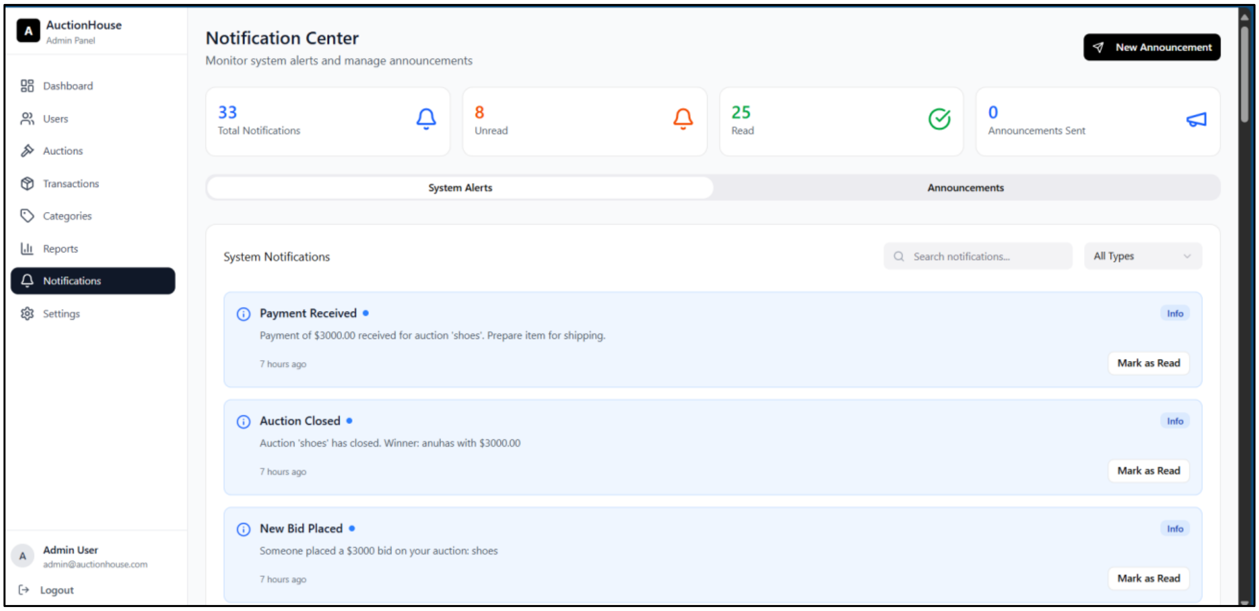
Category Name *

e.g., Electronics, Jewelry, Art

Description

Brief description of this category

Admin Dashboard – Notifications center



Notification Center

Monitor system alerts and manage announcements

33 Total Notifications

8 Unread

25 Read

0 Announcements Sent

System Notifications

Payment Received •

Payment of $3000.00 received for auction 'shoes'. Prepare item for shipping.

7 hours ago

Auction Closed •

Auction 'shoes' has closed. Winner: anuhas with $3000.00

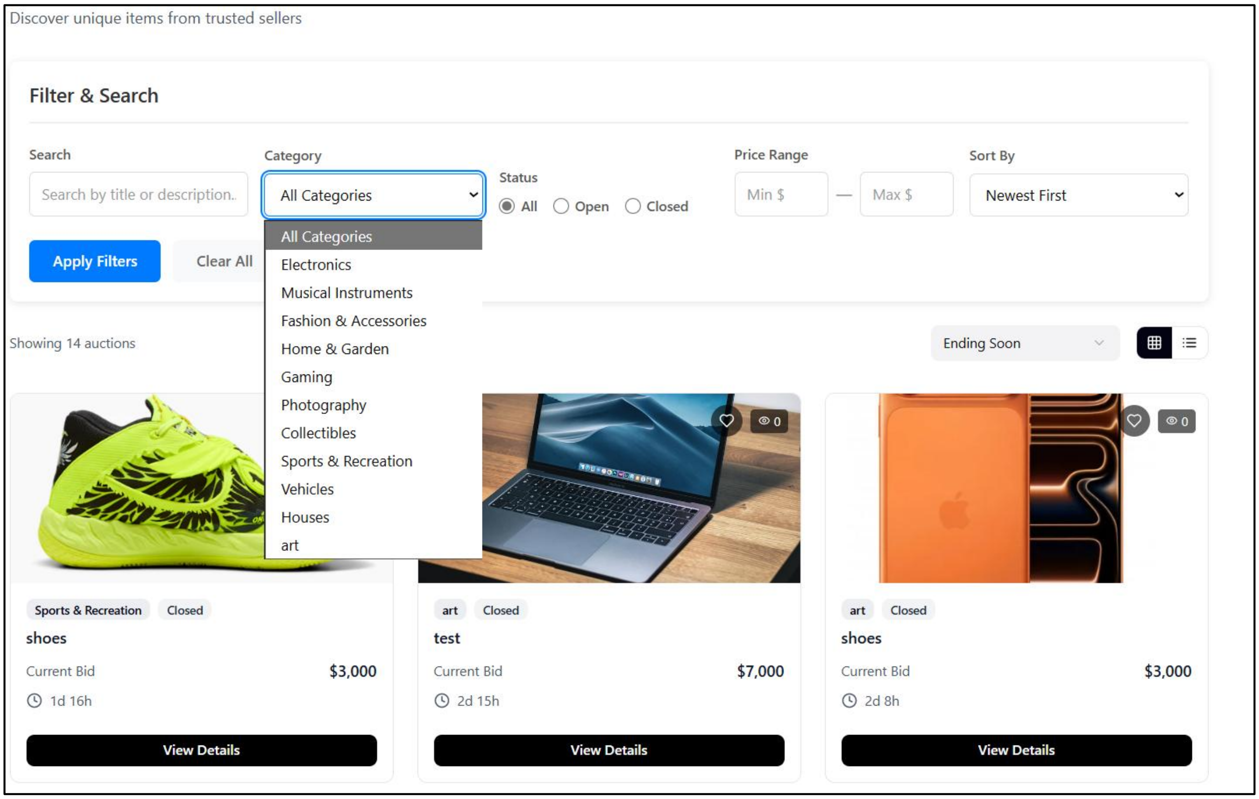
7 hours ago

New Bid Placed •

Someone placed a $3000 bid on your auction: shoes

7 hours ago

Auction pages



Discover unique items from trusted sellers

Filter & Search

Showing 14 auctions

Sports & Recreation · Closed

shoes

Current Bid $3,000

1d 16h

art · Closed

test

Current Bid $7,000

2d 15h

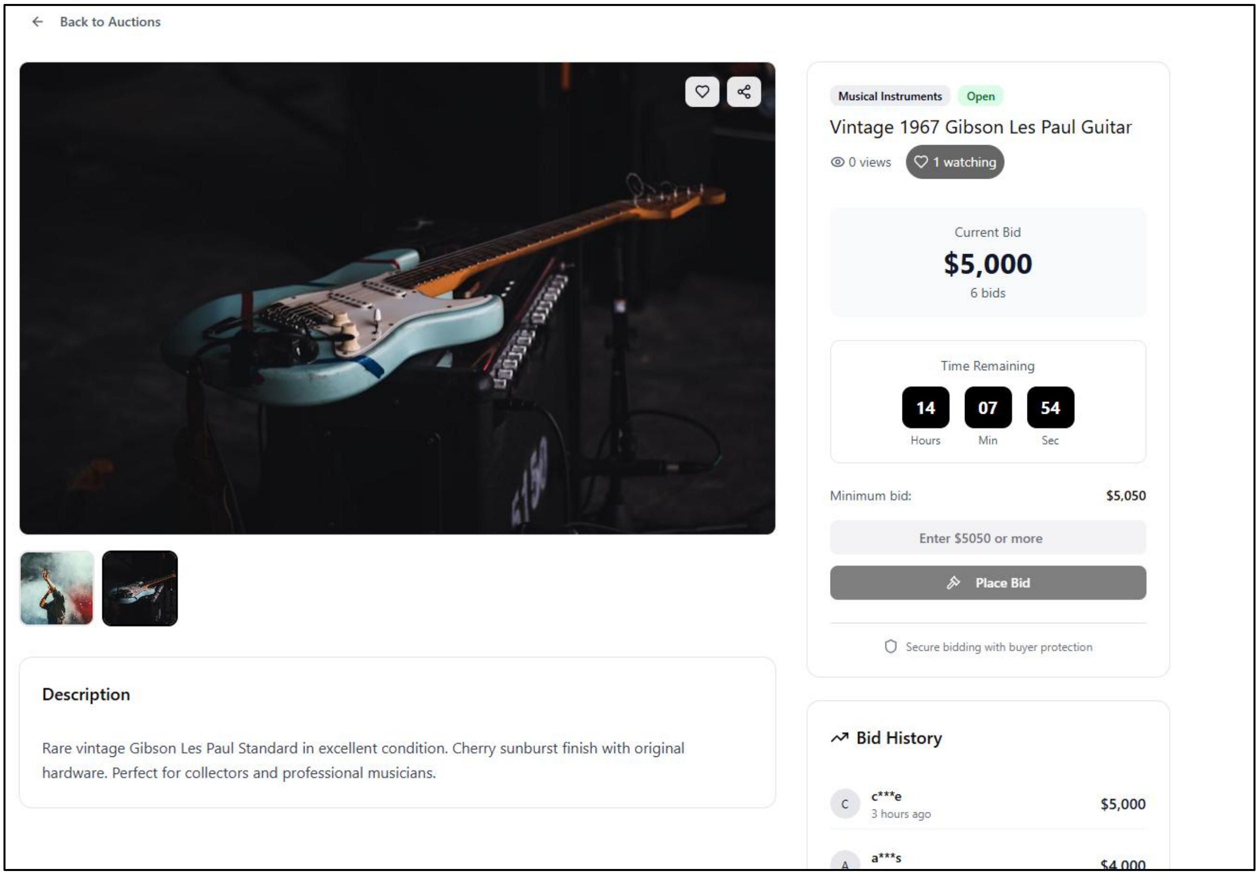
art · Closed

shoes

Current Bid $3,000

2d 8h

Bids page



← Back to Auctions

Musical Instruments Open

Vintage 1967 Gibson Les Paul Guitar

0 views 1 watching

Current Bid

$5,000

6 bids

Time Remaining

14 Hours 07 Min 54 Sec

Minimum bid: $5,050

Enter $5050 or more

Place Bid

Secure bidding with buyer protection

Description

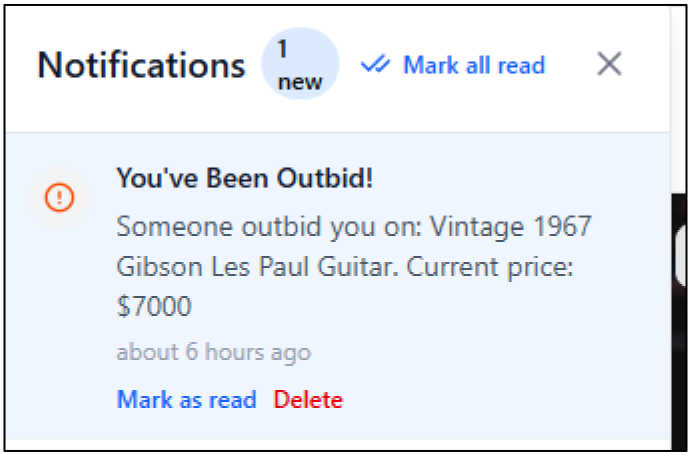
Rare vintage Gibson Les Paul Standard in excellent condition. Cherry sunburst finish with original hardware. Perfect for collectors and professional musicians.

Bid History

C c***e 3 hours ago $5,000

A a***s $4,000

User got outbid notification



Notifications 1 new ✓ Mark all read ×

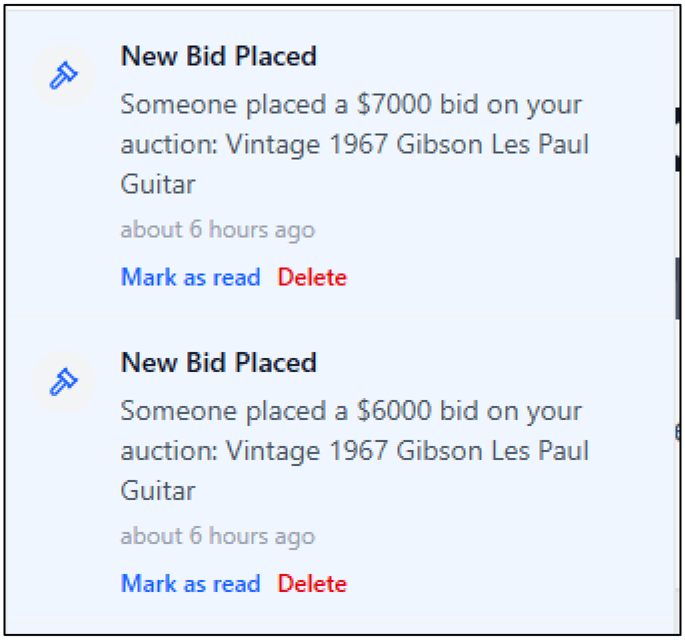
You've Been Outbid!

Someone outbid you on: Vintage 1967 Gibson Les Paul Guitar. Current price: $7000

about 6 hours ago

Mark as read Delete

Admin notification



New Bid Placed

Someone placed a $7000 bid on your auction: Vintage 1967 Gibson Les Paul Guitar

about 6 hours ago

Mark as read Delete

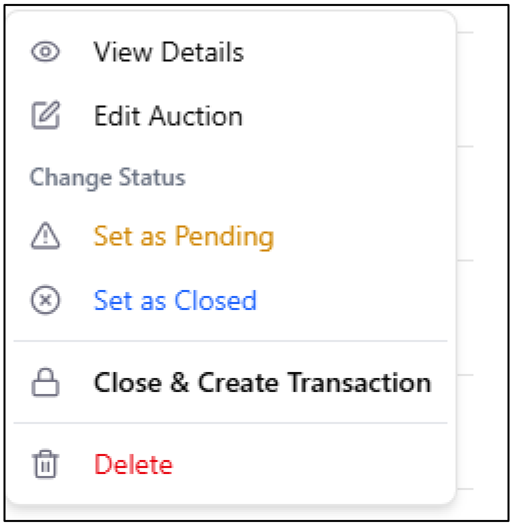
New Bid Placed

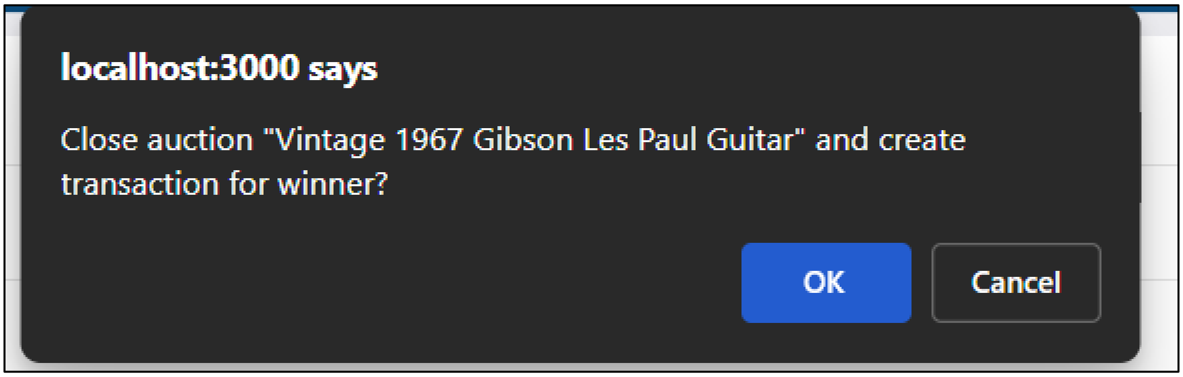
Someone placed a $6000 bid on your auction: Vintage 1967 Gibson Les Paul Guitar

about 6 hours ago

Mark as read Delete

Admin closing auction (can be triggered by time limit as well)

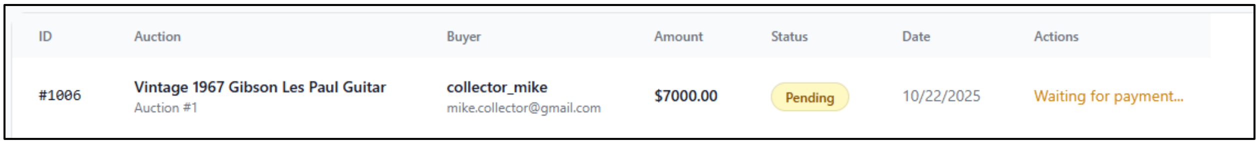




localhost:3000 says

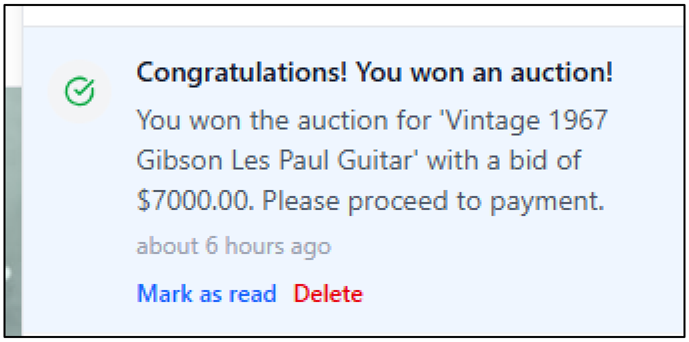
Close auction "Vintage 1967 Gibson Les Paul Guitar" and create transaction for winner?

New transaction logged



ID	Auction	Buyer	Amount	Status	Date	Actions
#1006	Vintage 1967 Gibson Les Paul Guitar Auction #1	collector_mike mike.collector@gmail.com	$7000.00	Pending	10/22/2025	Waiting for payment...

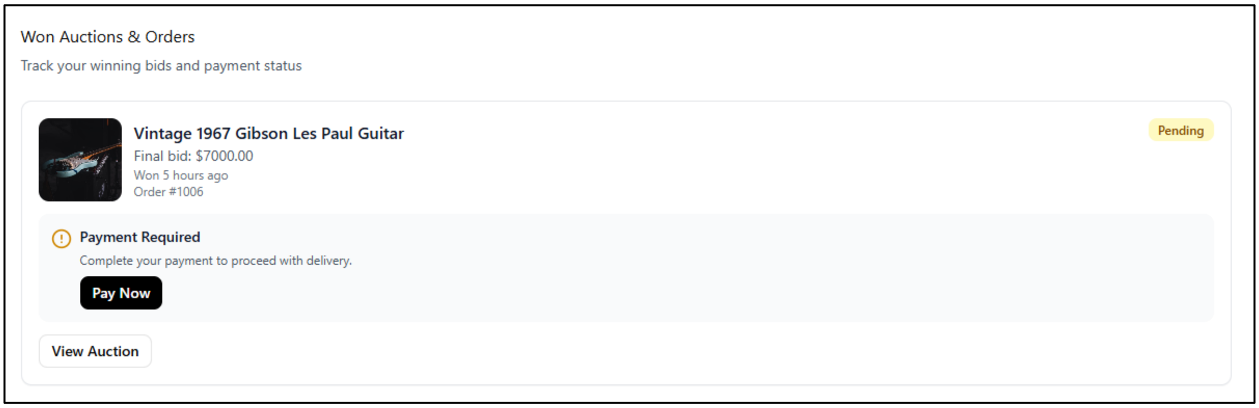
User notification of winning and payment



Congratulations! You won an auction!

You won the auction for 'Vintage 1967 Gibson Les Paul Guitar' with a bid of $7000.00. Please proceed to payment.

about 6 hours ago



Won Auctions & Orders

Track your winning bids and payment status

Vintage 1967 Gibson Les Paul Guitar

Final bid: $7000.00

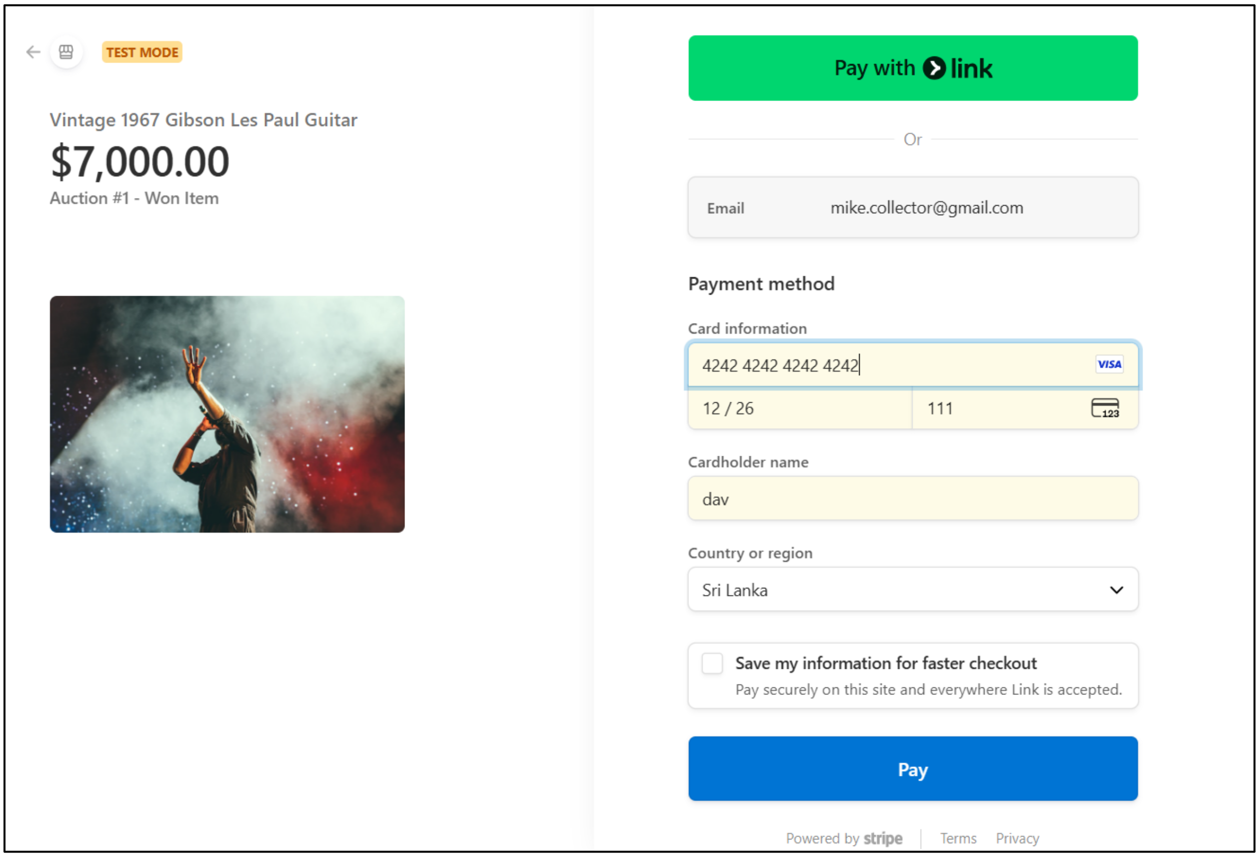
Won 5 hours ago

Order #1006

Pending

Payment Required

Complete your payment to proceed with delivery.



TEST MODE

Vintage 1967 Gibson Les Paul Guitar

$7,000.00

Auction #1 - Won Item

Pay with link

Or

Email mike.collector@gmail.com

Payment method

Card information

4242 4242 4242 4242 VISA

12 / 26 111

Cardholder name

dav

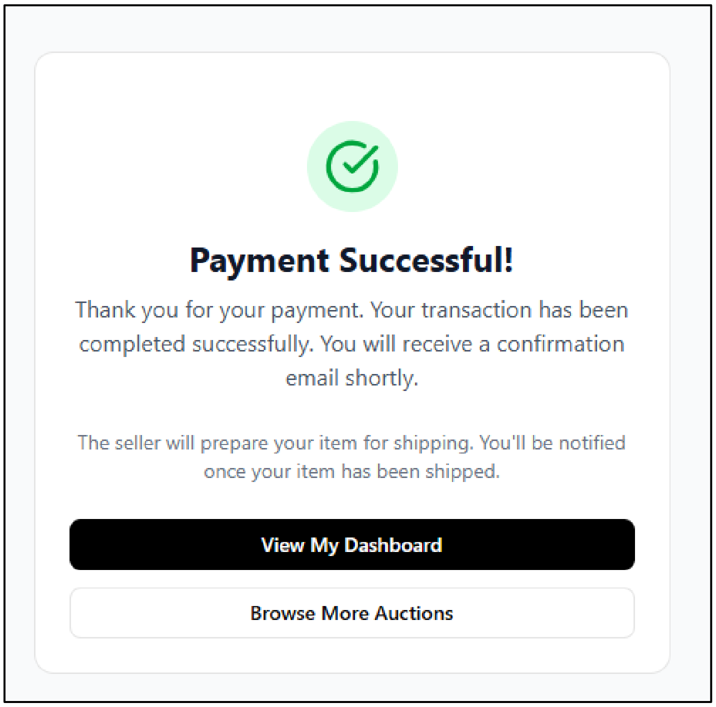
Country or region

Sri Lanka

□ Save my information for faster checkout
Pay securely on this site and everywhere Link is accepted.

Pay

Powered by stripe | Terms Privacy



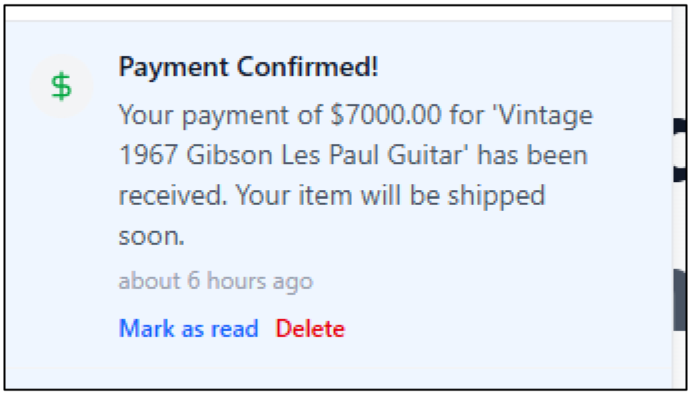
Payment Successful!

Thank you for your payment. Your transaction has been completed successfully. You will receive a confirmation email shortly.

The seller will prepare your item for shipping. You'll be notified once your item has been shipped.

View My Dashboard

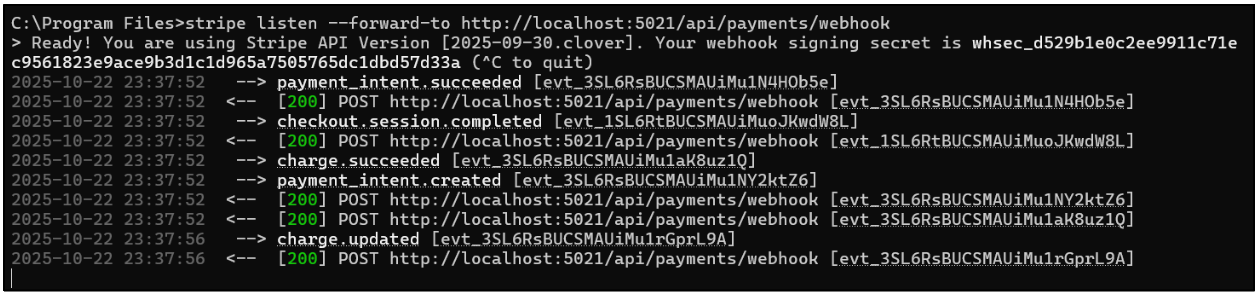
Browse More Auctions



Payment Confirmed!

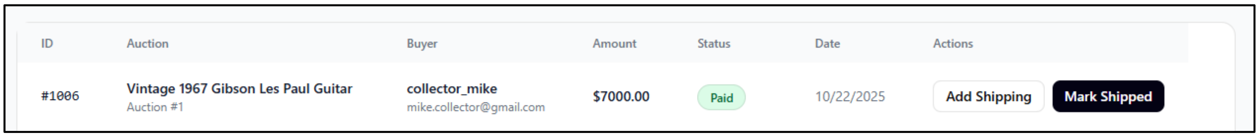
Your payment of $7000.00 for 'Vintage 1967 Gibson Les Paul Guitar' has been received. Your item will be shipped soon.

about 6 hours ago

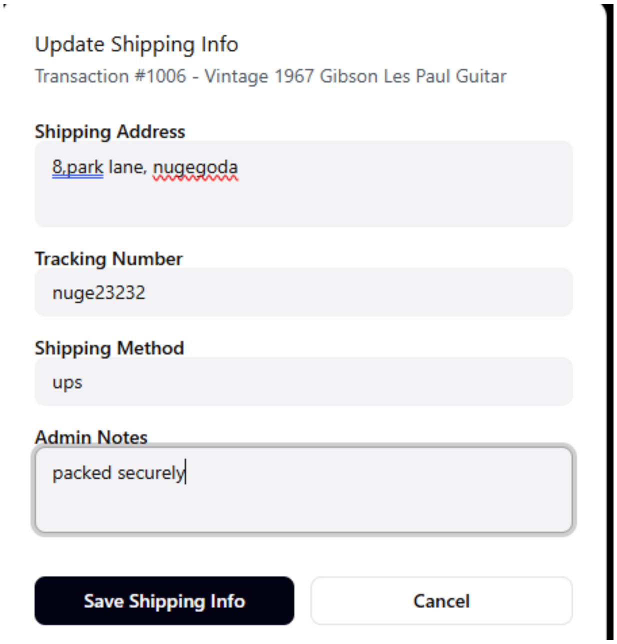


```
C:\Program Files>stripe listen --forward-to http://localhost:5021/api/payments/webhook
> Ready! You are using Stripe API Version [2025-09-30.clover]. Your webhook signing secret is whsec_d529b1e0c2ee9911c71e
c9561823e9ace9b3d1c1d965a7505765dc1dbd57d33a (^C to quit)
2025-10-22 23:37:52   --> payment_intent.succeeded [evt_3SL6RsBUCSMAUiMu1N4HOb5e]
2025-10-22 23:37:52  <--  [200] POST http://localhost:5021/api/payments/webhook [evt_3SL6RsBUCSMAUiMu1N4HOb5e]
2025-10-22 23:37:52   --> checkout.session.completed [evt_1SL6RtBUCSMAUiMuoJKwdW8L]
2025-10-22 23:37:52  <--  [200] POST http://localhost:5021/api/payments/webhook [evt_1SL6RtBUCSMAUiMuoJKwdW8L]
2025-10-22 23:37:52   --> charge.succeeded [evt_3SL6RsBUCSMAUiMu1aK8uz1Q]
2025-10-22 23:37:52   --> payment_intent.created [evt_3SL6RsBUCSMAUiMu1NY2ktZ6]
2025-10-22 23:37:52  <--  [200] POST http://localhost:5021/api/payments/webhook [evt_3SL6RsBUCSMAUiMu1NY2ktZ6]
2025-10-22 23:37:52  <--  [200] POST http://localhost:5021/api/payments/webhook [evt_3SL6RsBUCSMAUiMu1aK8uz1Q]
2025-10-22 23:37:56   --> charge.updated [evt_3SL6RsBUCSMAUiMu1rGprL9A]
2025-10-22 23:37:56  <--  [200] POST http://localhost:5021/api/payments/webhook [evt_3SL6RsBUCSMAUiMu1rGprL9A]
```

Admin shipping confirmation after successful payment



ID	Auction	Buyer	Amount	Status	Date	Actions
#1006	Vintage 1967 Gibson Les Paul Guitar Auction #1	collector_mike mike.collector@gmail.com	$7000.00	Paid	10/22/2025	Add Shipping Mark Shipped



Update Shipping Info

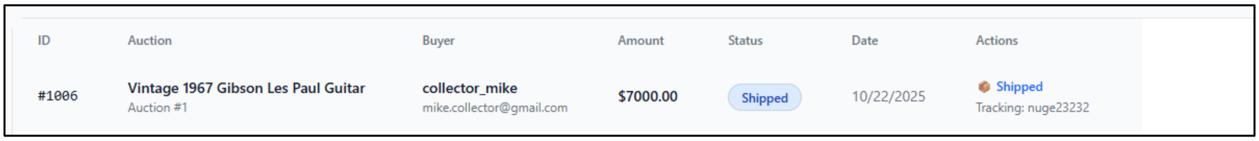
Transaction #1006 - Vintage 1967 Gibson Les Paul Guitar

Shipping Address
8.park lane, nugegoda

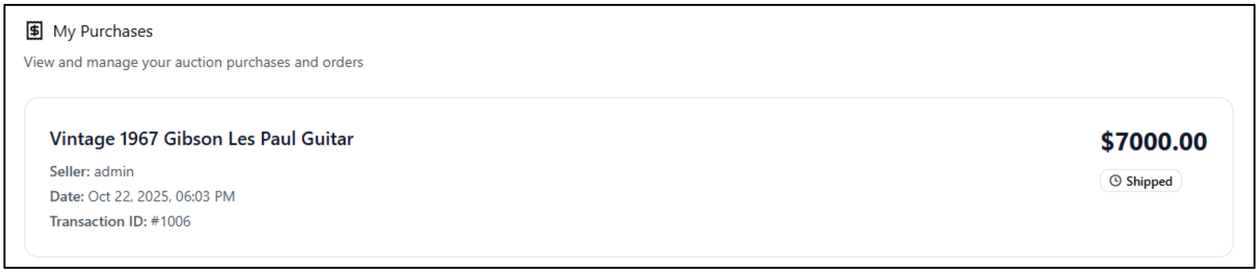
Tracking Number
nuge23232

Shipping Method
ups

Admin Notes
packed securely



ID	Auction	Buyer	Amount	Status	Date	Actions
#1006	Vintage 1967 Gibson Les Paul Guitar Auction #1	collector_mike mike.collector@gmail.com	$7000.00	Shipped	10/22/2025	Shipped Tracking: nuge23232



My Purchases

View and manage your auction purchases and orders

Vintage 1967 Gibson Les Paul Guitar

Seller: admin

Date: Oct 22, 2025, 06:03 PM

Transaction ID: #1006

$7000.00

Shipped

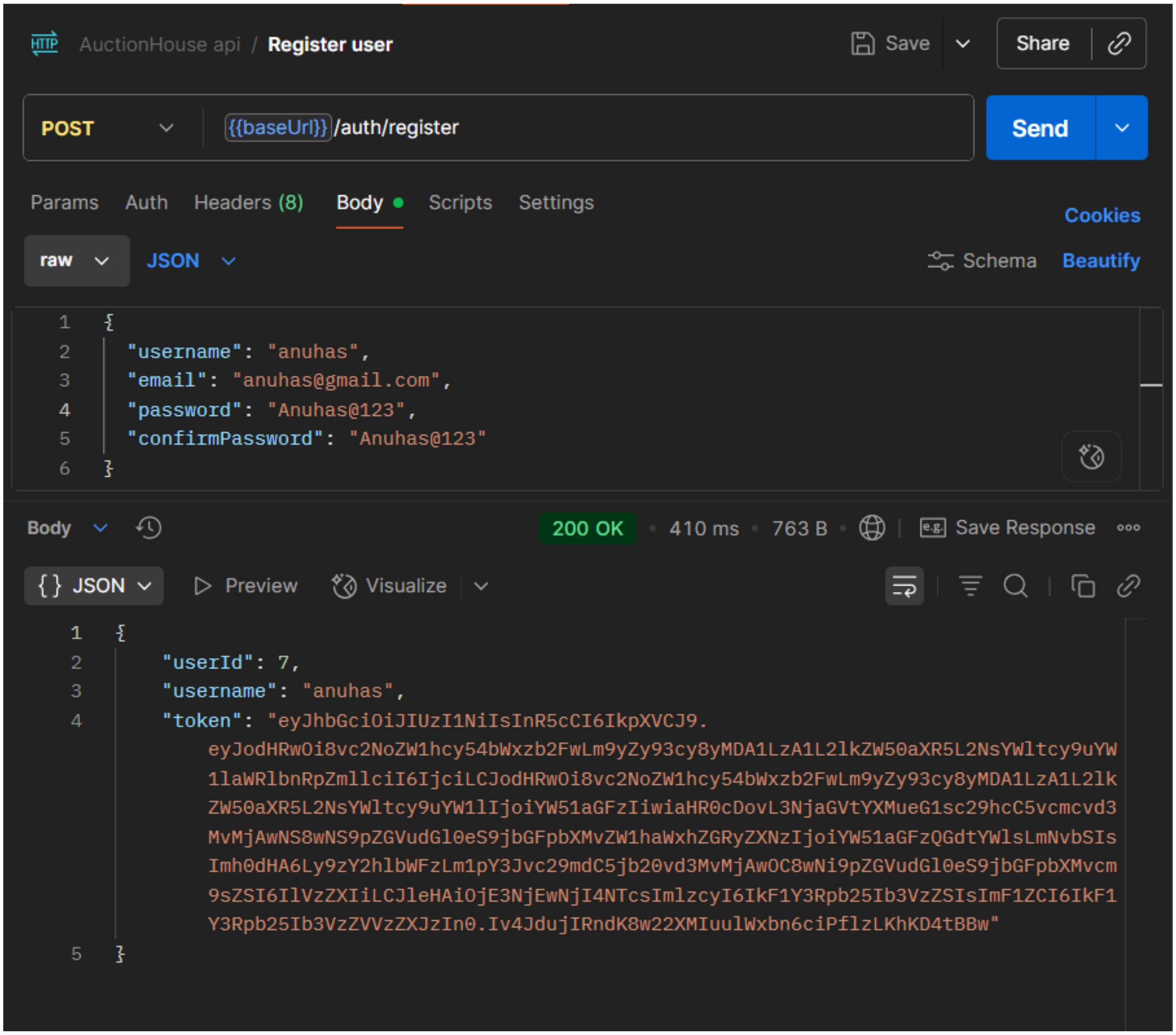
10. Testing and Evaluation

Multiple testing methods were applied during the development phase:

- **Unit Testing:** Conducted with xUnit for backend functions.
- **Integration Testing:** Verified data flow between frontend and backend using Postman.
- **Manual Testing:** Ensured the UI was responsive and user-friendly.

Post man testing screenshots

1. User registration



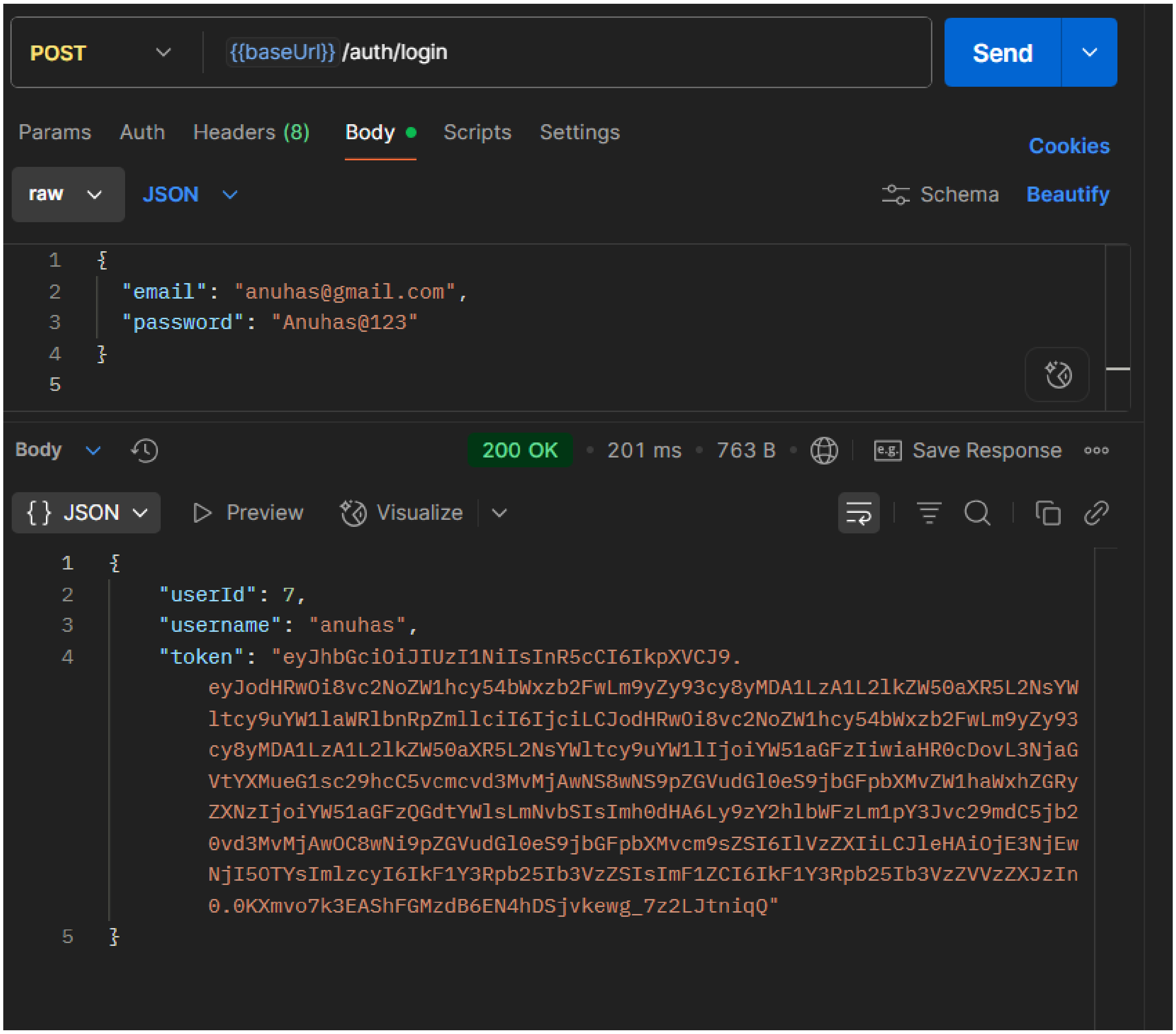
POST {{baseUrl}}/auth/register

```
{
  "username": "anuhas",
  "email": "anuhas@gmail.com",
  "password": "Anuhas@123",
  "confirmPassword": "Anuhas@123"
}
```

200 OK • 410 ms • 763 B

```
{
    "userId": 7,
    "username": "anuhas",
    "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.
        eyJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9yZy93cy8yMDA1LzA1L2lkZW50aXR5L2NsYWltcy9uYW
        1laWRlbnRpZmllciI6IjciLCJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9yZy93cy8yMDA1LzA1L2lk
        ZW50aXR5L2NsYWltcy9uYW1lIjoiYW51aGFzIiwiaHR0cDovL3NjaGVtYXMueG1sc29hcC5vcmcvd3
        MvMjAwNS8wNS9pZGVudGl0eS9jbGFpbXMvZW1haWxhZGRyZXNzIjoiYW51aGFzQGdtYWlsLmNvbSIs
        Imh0dHA6Ly9zY2hlbWFzLm1pY3Jvc29mdC5jb20vd3MvMjAwOC8wNi9pZGVudGl0eS9jbGFpbXMvcm
        9sZSI6IlVzZXIiLCJleHAiOjE3NjEwNjI4NTcsImlzcyI6IkF1Y3Rpb25Ib3VzZSIsImF1ZCI6IkF1
        Y3Rpb25Ib3VzZVVzZXJzIn0.Iv4JdujIRndK8w22XMIuulWxbn6ciPflzLKhKD4tBBw"
}
```

2. User login

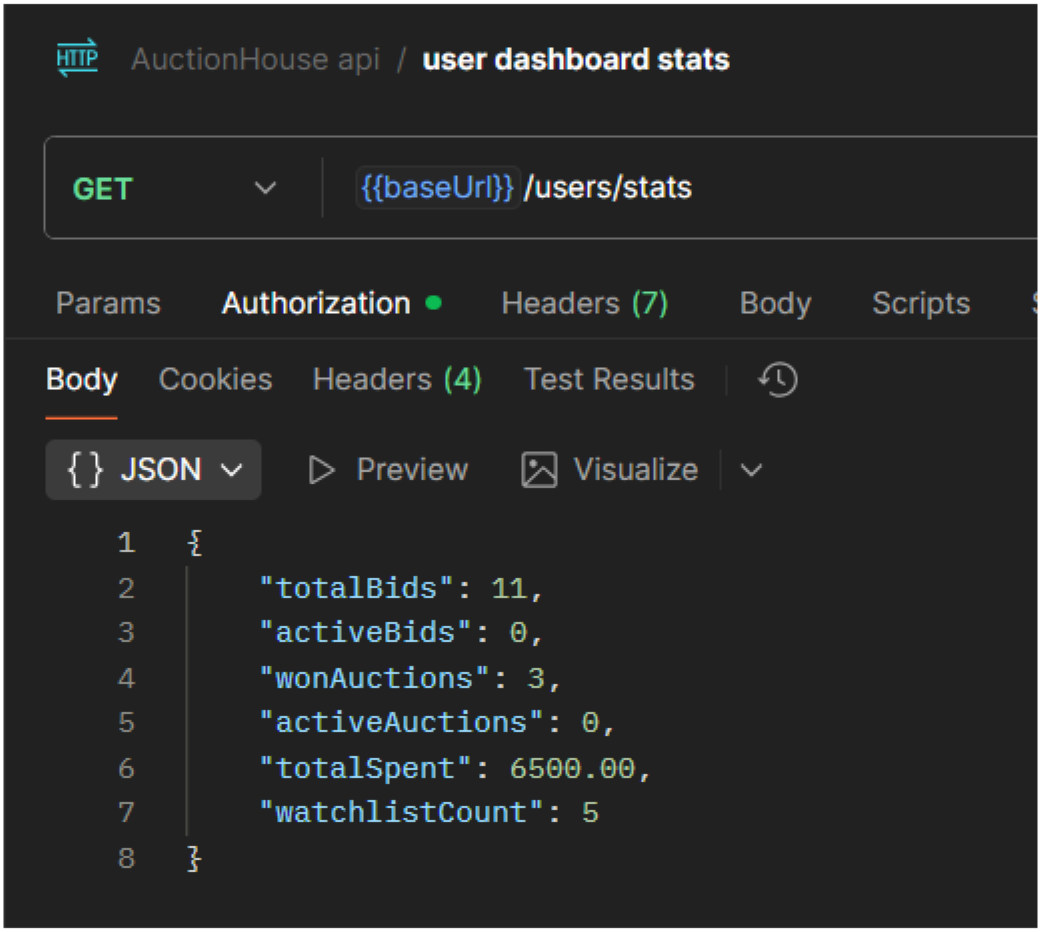


```
{
  "email": "anuhas@gmail.com",
  "password": "Anuhas@123"
}

```

```
{
    "userId": 7,
    "username": "anuhas",
    "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.
        eyJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9yZy93cy8yMDA1LzA1L2lkZW50aXR5L2NsYW
        ltcy9uYW1laWRlbnRpZmllciI6IjciLCJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9yZy93
        cy8yMDA1LzA1L2lkZW50aXR5L2NsYWltcy9uYW1lIjoiYW51aGFzIiwiaHR0cDovL3NjaG
        VtYXMueG1sc29hcC5vcmcvd3MvMjAwNS8wNS9pZGVudGl0eS9jbGFpbXMvZW1haWxhZGRy
        ZXNzIjoiYW51aGFzQGdtYWlsLmNvbSIsImh0dHA6Ly9zY2hlbWFzLm1pY3Jvc29mdC5jb2
        0vd3MvMjAwOC8wNi9pZGVudGl0eS9jbGFpbXMvcm9sZSI6IlVzZXIiLCJleHAiOjE3NjEw
        NjI5OTYsImlzcyI6IkF1Y3Rpb25Ib3VzZSIsImF1ZCI6IkF1Y3Rpb25Ib3VzZVVzZXJzIn
        0.0KXmvo7k3EAShFGMzdB6EN4hDSjvkewg_7z2LJtniqQ"
}
```

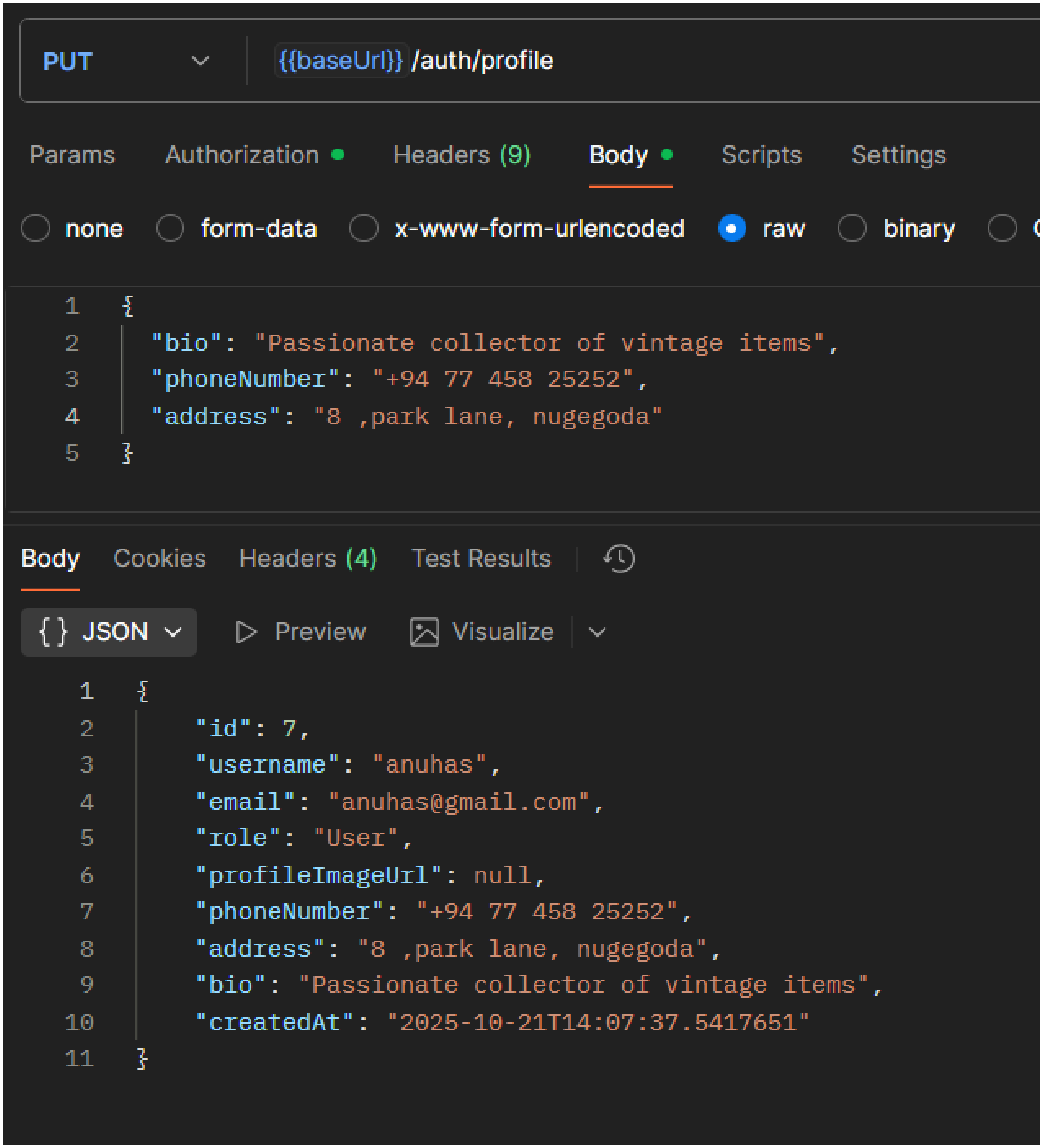
2. User stats



GET {{baseUrl}} /users/stats

```
{
    "totalBids": 11,
    "activeBids": 0,
    "wonAuctions": 3,
    "activeAuctions": 0,
    "totalSpent": 6500.00,
    "watchlistCount": 5
}
```

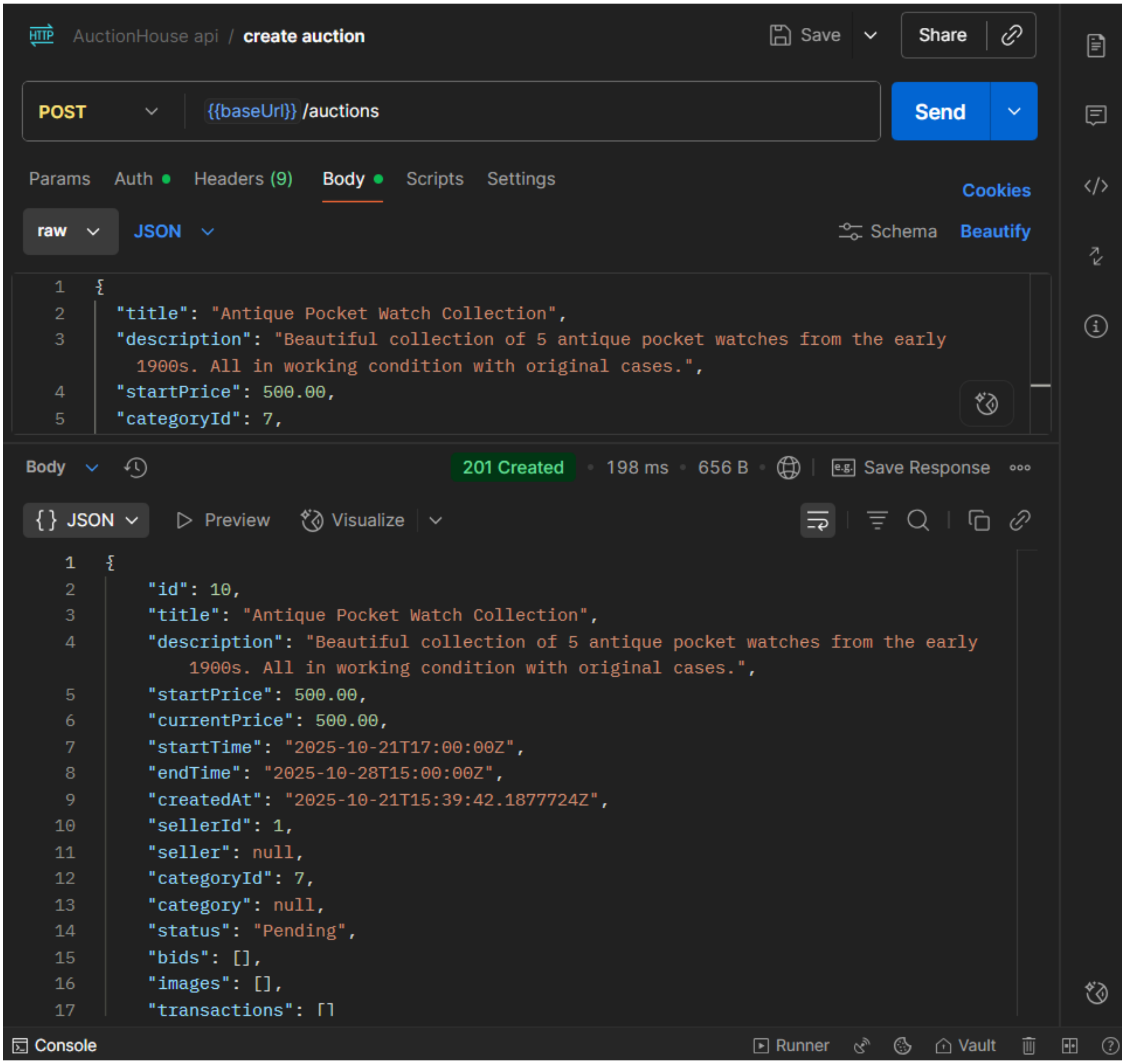
3. User bio update



```
{
  "bio": "Passionate collector of vintage items",
  "phoneNumber": "+94 77 458 25252",
  "address": "8 ,park lane, nugegoda"
}
```

```
{
    "id": 7,
    "username": "anuhas",
    "email": "anuhas@gmail.com",
    "role": "User",
    "profileImageUrl": null,
    "phoneNumber": "+94 77 458 25252",
    "address": "8 ,park lane, nugegoda",
    "bio": "Passionate collector of vintage items",
    "createdAt": "2025-10-21T14:07:37.5417651"
}
```

4. Create auction



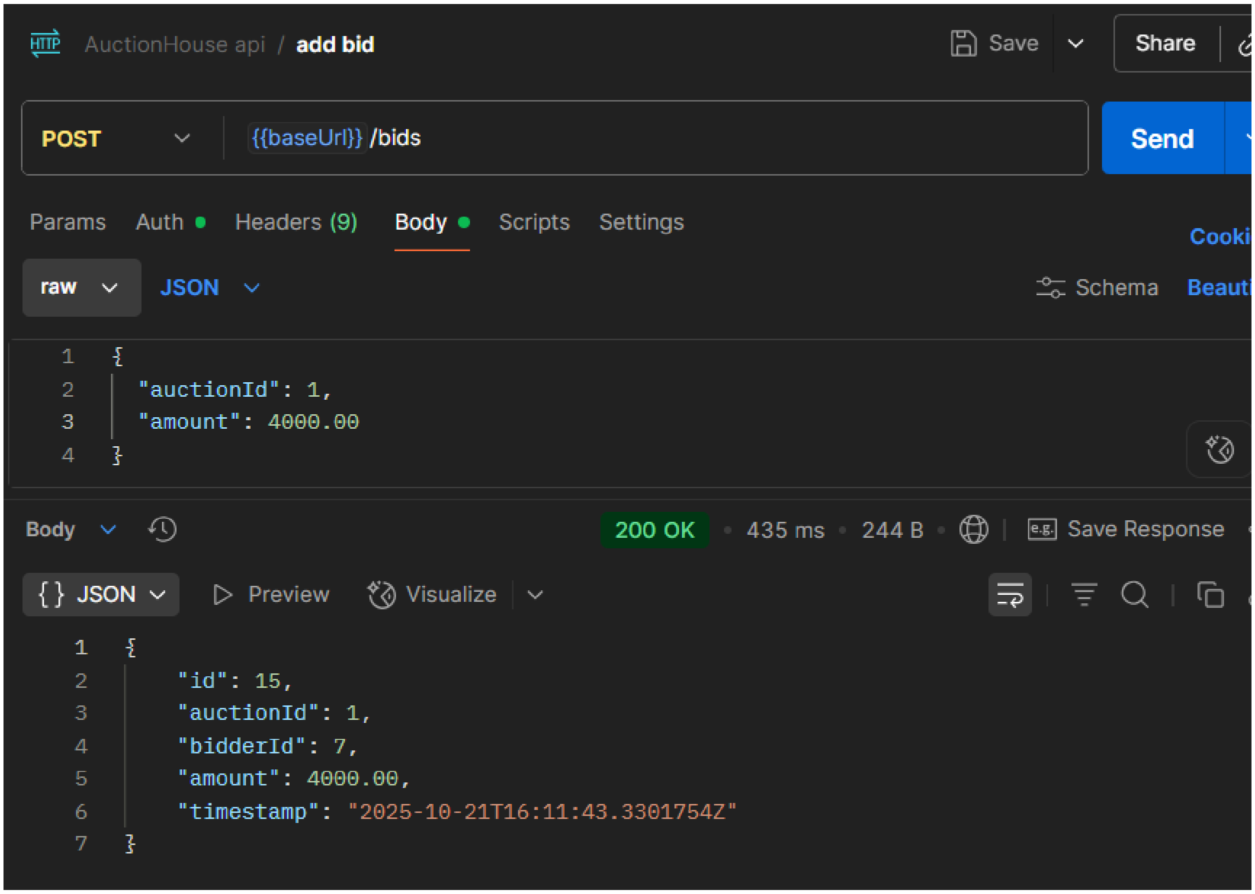
POST {{baseUrl}} /auctions

```
{
  "title": "Antique Pocket Watch Collection",
  "description": "Beautiful collection of 5 antique pocket watches from the early
    1900s. All in working condition with original cases.",
  "startPrice": 500.00,
  "categoryId": 7,
```

201 Created • 198 ms • 656 B

```
{
    "id": 10,
    "title": "Antique Pocket Watch Collection",
    "description": "Beautiful collection of 5 antique pocket watches from the early
        1900s. All in working condition with original cases.",
    "startPrice": 500.00,
    "currentPrice": 500.00,
    "startTime": "2025-10-21T17:00:00Z",
    "endTime": "2025-10-28T15:00:00Z",
    "createdAt": "2025-10-21T15:39:42.1877724Z",
    "sellerId": 1,
    "seller": null,
    "categoryId": 7,
    "category": null,
    "status": "Pending",
    "bids": [],
    "images": [],
    "transactions": []
```

5. Place bid

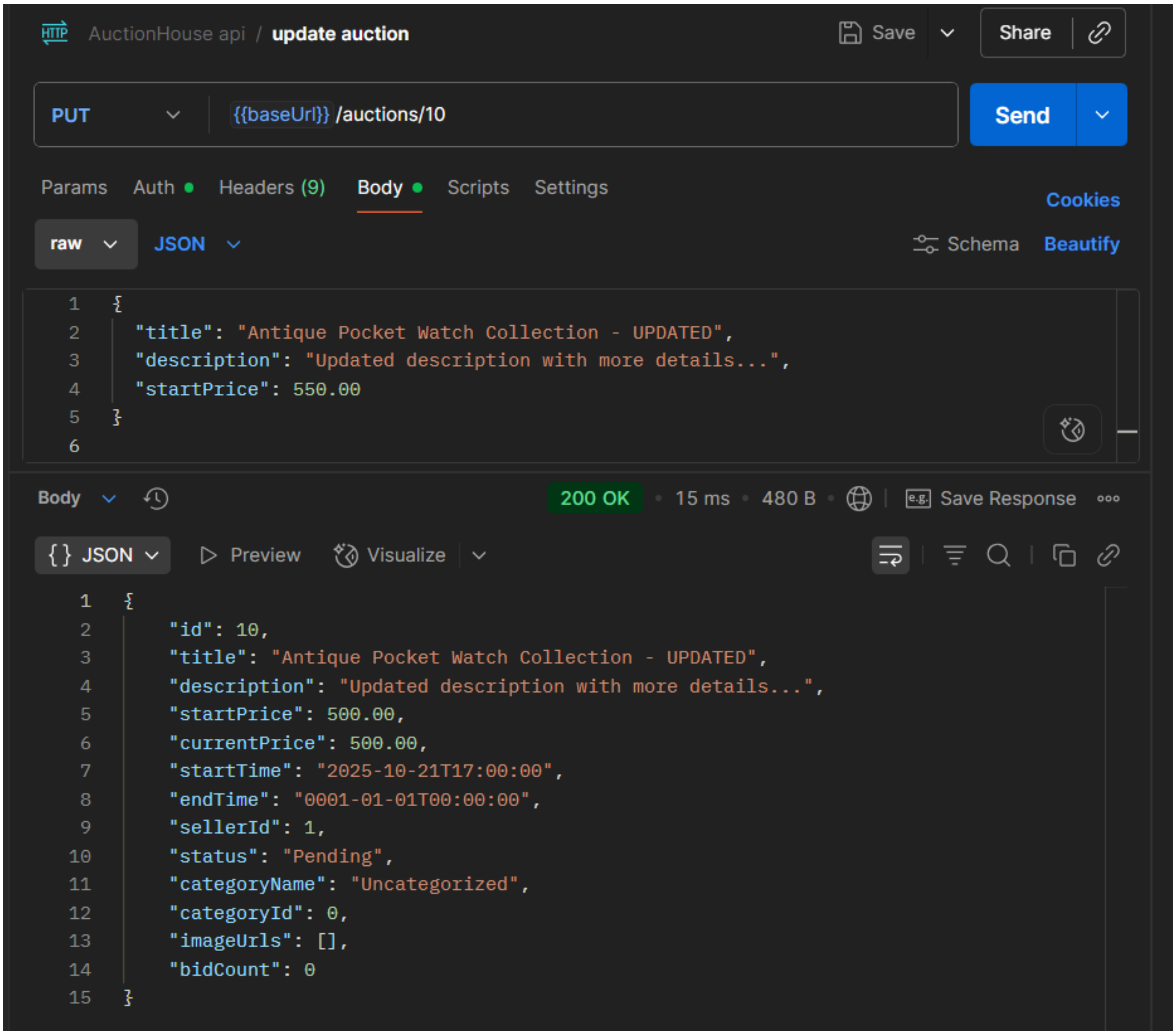


{{baseUrl}} /bids

```
{
  "auctionId": 1,
  "amount": 4000.00
}
```

```
{
    "id": 15,
    "auctionId": 1,
    "bidderId": 7,
    "amount": 4000.00,
    "timestamp": "2025-10-21T16:11:43.3301754Z"
}
```

6. Update auction



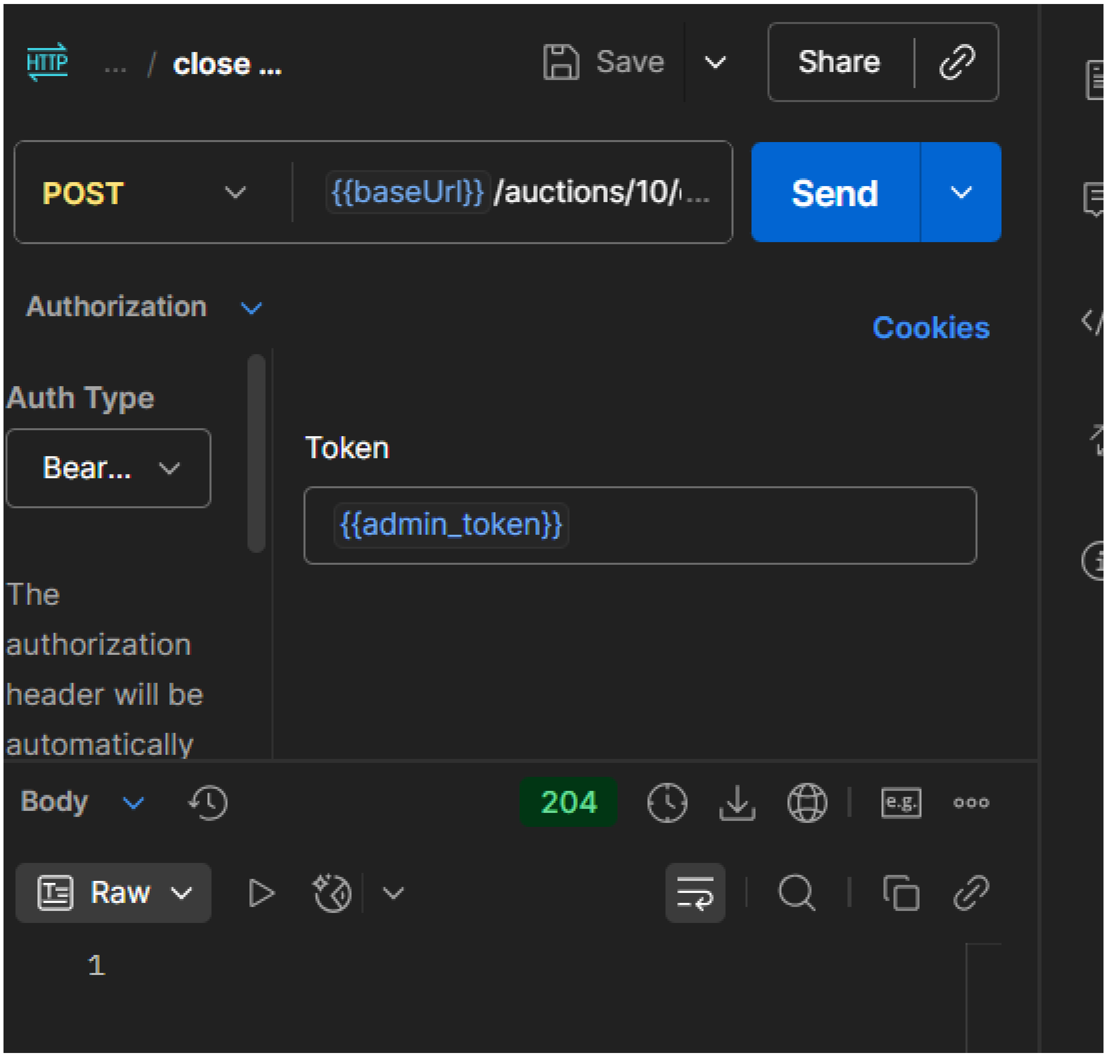
PUT {{baseUrl}} /auctions/10

```
{
  "title": "Antique Pocket Watch Collection - UPDATED",
  "description": "Updated description with more details...",
  "startPrice": 550.00
}
```

200 OK • 15 ms • 480 B

```
{
    "id": 10,
    "title": "Antique Pocket Watch Collection - UPDATED",
    "description": "Updated description with more details...",
    "startPrice": 500.00,
    "currentPrice": 500.00,
    "startTime": "2025-10-21T17:00:00",
    "endTime": "0001-01-01T00:00:00",
    "sellerId": 1,
    "status": "Pending",
    "categoryName": "Uncategorized",
    "categoryId": 0,
    "imageUrls": [],
    "bidCount": 0
}
```

7. Close auction



POST {{baseUrl}} /auctions/10/...

Authorization

Auth Type

Bear...

Token

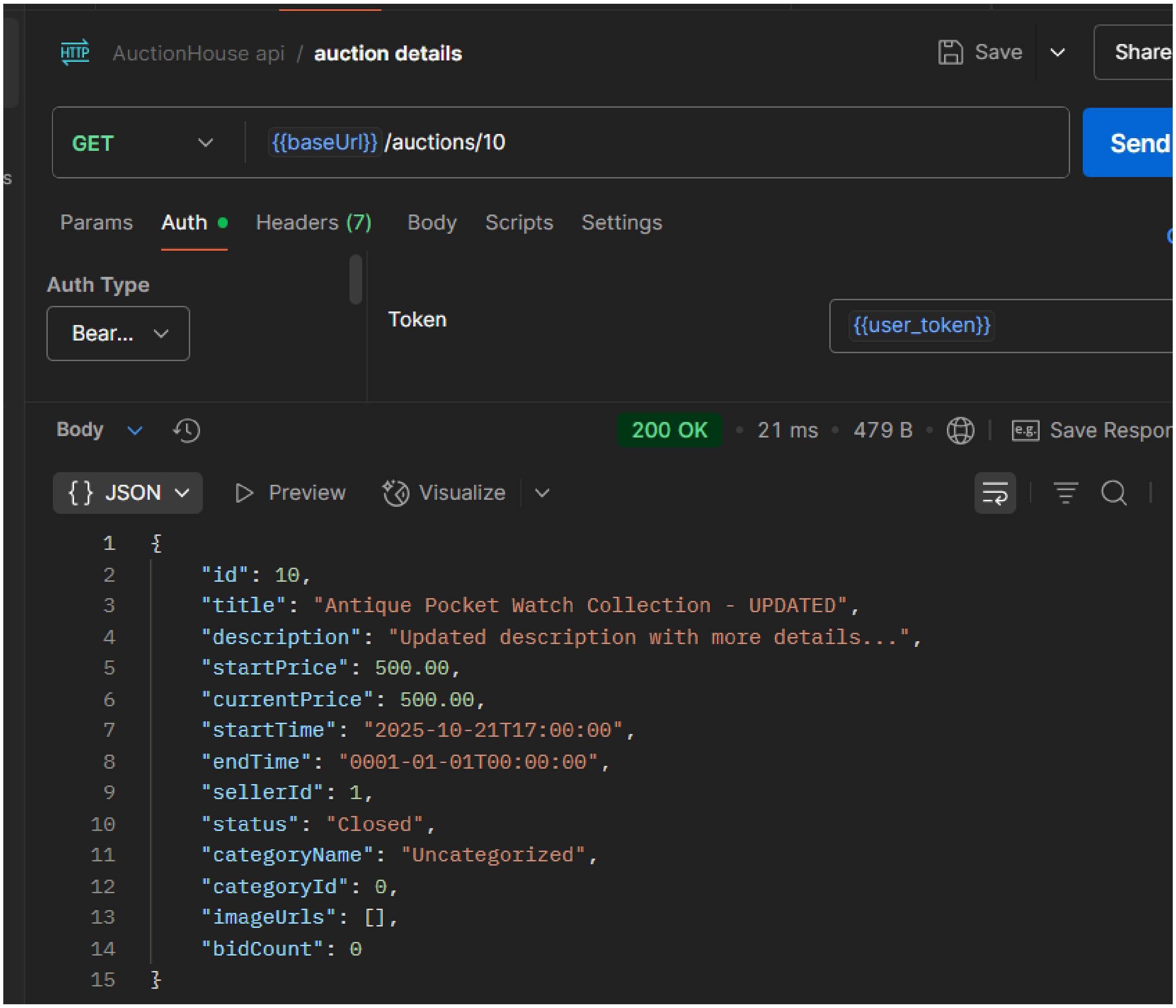
{{admin_token}}

The authorization header will be automatically

Body 204

Raw

```
1
```

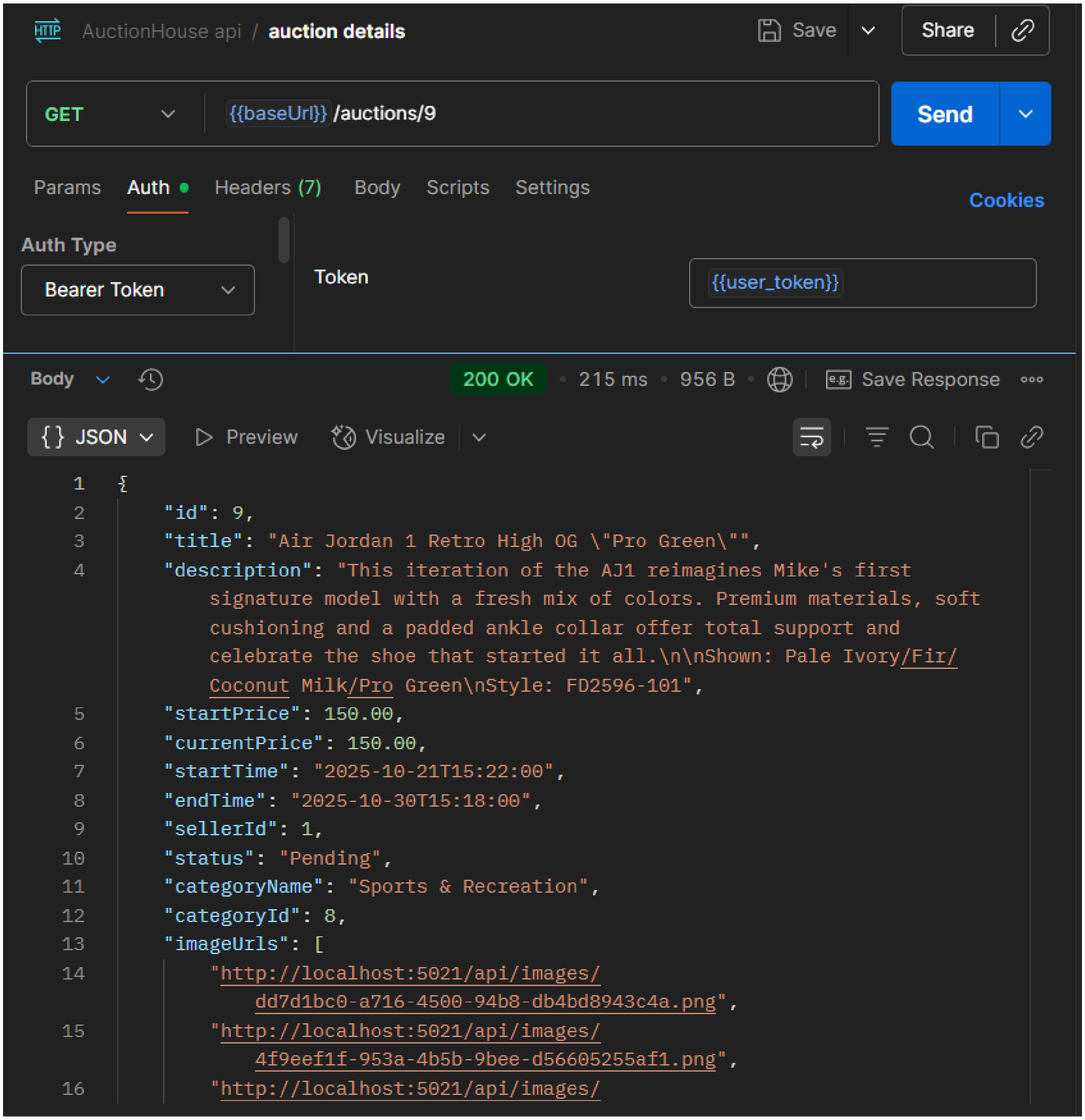


{{baseUrl}} /auctions/10

Token {{user_token}}

```
{
    "id": 10,
    "title": "Antique Pocket Watch Collection - UPDATED",
    "description": "Updated description with more details...",
    "startPrice": 500.00,
    "currentPrice": 500.00,
    "startTime": "2025-10-21T17:00:00",
    "endTime": "0001-01-01T00:00:00",
    "sellerId": 1,
    "status": "Closed",
    "categoryName": "Uncategorized",
    "categoryId": 0,
    "imageUrls": [],
    "bidCount": 0
}
```

8. Auction details



AuctionHouse api / **auction details**

GET {{baseUrl}} /auctions/9

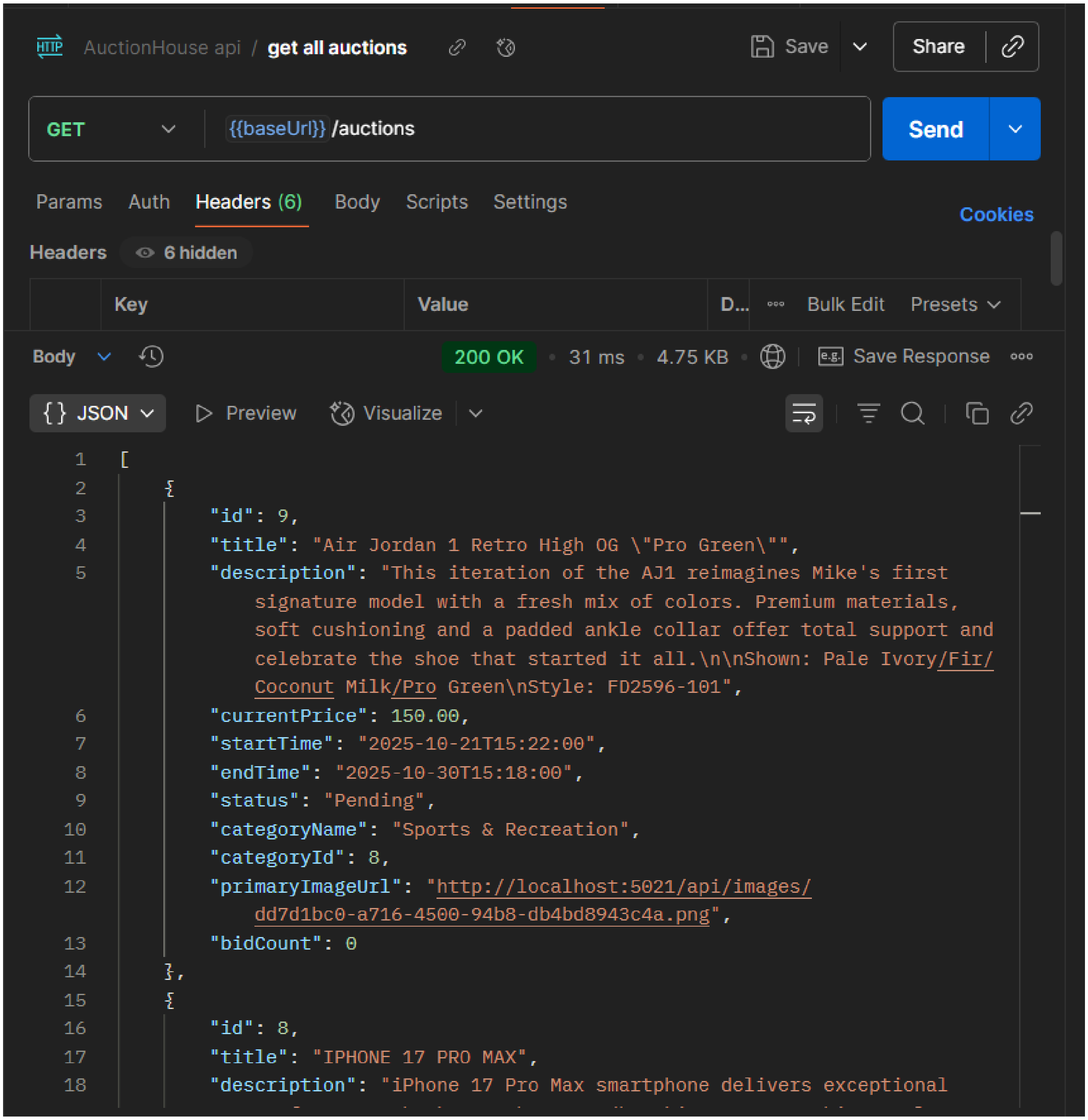
Auth Type
Bearer Token

Token {{user_token}}

200 OK • 215 ms • 956 B

```
{
    "id": 9,
    "title": "Air Jordan 1 Retro High OG \"Pro Green\"",
    "description": "This iteration of the AJ1 reimagines Mike's first
        signature model with a fresh mix of colors. Premium materials, soft
        cushioning and a padded ankle collar offer total support and
        celebrate the shoe that started it all.\n\nShown: Pale Ivory/Fir/
        Coconut Milk/Pro Green\nStyle: FD2596-101",
    "startPrice": 150.00,
    "currentPrice": 150.00,
    "startTime": "2025-10-21T15:22:00",
    "endTime": "2025-10-30T15:18:00",
    "sellerId": 1,
    "status": "Pending",
    "categoryName": "Sports & Recreation",
    "categoryId": 8,
    "imageUrls": [
        "http://localhost:5021/api/images/
            dd7d1bc0-a716-4500-94b8-db4bd8943c4a.png",
        "http://localhost:5021/api/images/
            4f9eef1f-953a-4b5b-9bee-d56605255af1.png",
        "http://localhost:5021/api/images/
```

9. All auctions

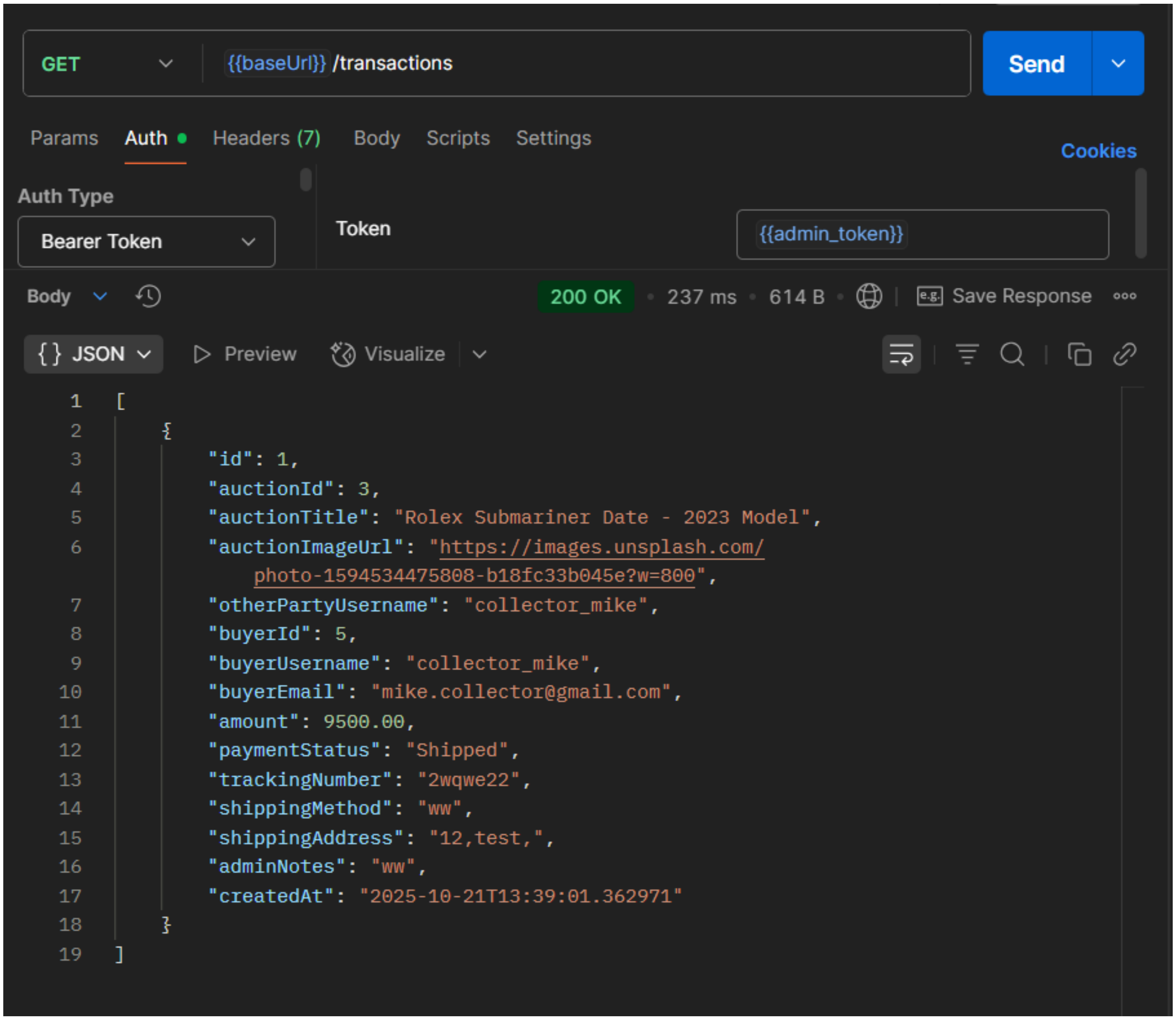


GET {{baseUrl}} /auctions

200 OK • 31 ms • 4.75 KB

```
[
    {
        "id": 9,
        "title": "Air Jordan 1 Retro High OG \"Pro Green\"",
        "description": "This iteration of the AJ1 reimagines Mike's first signature model with a fresh mix of colors. Premium materials, soft cushioning and a padded ankle collar offer total support and celebrate the shoe that started it all.\n\nShown: Pale Ivory/Fir/Coconut Milk/Pro Green\nStyle: FD2596-101",
        "currentPrice": 150.00,
        "startTime": "2025-10-21T15:22:00",
        "endTime": "2025-10-30T15:18:00",
        "status": "Pending",
        "categoryName": "Sports & Recreation",
        "categoryId": 8,
        "primaryImageUrl": "http://localhost:5021/api/images/dd7d1bc0-a716-4500-94b8-db4bd8943c4a.png",
        "bidCount": 0
    },
    {
        "id": 8,
        "title": "IPHONE 17 PRO MAX",
        "description": "iPhone 17 Pro Max smartphone delivers exceptional
```

10. All transactions



{{baseUrl}} /transactions

Auth Type

Bearer Token

Token

{{admin_token}}

```
[
    {
        "id": 1,
        "auctionId": 3,
        "auctionTitle": "Rolex Submariner Date - 2023 Model",
        "auctionImageUrl": "https://images.unsplash.com/photo-1594534475808-b18fc33b045e?w=800",
        "otherPartyUsername": "collector_mike",
        "buyerId": 5,
        "buyerUsername": "collector_mike",
        "buyerEmail": "mike.collector@gmail.com",
        "amount": 9500.00,
        "paymentStatus": "Shipped",
        "trackingNumber": "2wqwe22",
        "shippingMethod": "ww",
        "shippingAddress": "12,test,",
        "adminNotes": "ww",
        "createdAt": "2025-10-21T13:39:01.362971"
    }
]
```

All tests confirmed that the application's functionality, including real-time updates and data consistency, worked as expected.

11. Results and Discussion

The Auction House System successfully achieved its primary goal providing a **real-time, secure, and scalable auction platform**.
The use of layered architecture improved maintainability, while SignalR enabled smooth real-time communication. Applying design patterns helped maintain clean code organization and reduced technical complexity.

12. Conclusion

The developed system demonstrates the effective combination of **modern web technologies** and **solid architectural principles**. It provides users with efficient and engaging auction experience.
Future enhancements could include **AI-based analytics**, and **mobile application extensions** to improve user accessibility and engagement.

References

1. Microsoft Documentation – *ASP.NET Core & SignalR*.
2. React Official Documentation – https://react.dev.
3. Entity Framework Core Official Guide.
4. Tailwind CSS Documentation – https://tailwindcss.com.
5. Bass, L., Clements, P., & Kazman, R. (2012). *Software Architecture in Practice*. Addison-Wesley.