Auction Arena
Use Case Specifications

Complete Use Case Documentation – UC-001 to UC-014

Use Case ID:	UC-001
Use Case Name:	Register User
Primary Actor:	Buyer / Seller
Description:	A new user registers an account on Auction Arena by providing their name, email address, and password.
Preconditions:	User has not previously registered. System is accessible.
Postconditions:	A new user account is created and stored in the Users DB. The user can now log in.
Normal Flow:	1.1 User navigates to the registration page. 1.2 User enters name, email address, and password. 1.3 System validates that the email is not already registered. 1.4 System validates that all required fields are filled correctly. 1.5 System creates the account and stores it in D1: Users DB. 1.6 System displays a registration success message.
Alternative Flows:	A-1: If the email is already registered, the system displays an error and prompts the user to log in or use a different email. A-2: If required fields are missing or invalid, the system highlights the errors and requests correction. A-3: If the password does not meet strength requirements, the system prompts the user to choose a stronger password.
Exceptions:	If the database is unavailable, the system displays a service error and the registration is not saved.
Priority:	High
Frequency of Use:	Frequently
Business Rules:	Email addresses must be unique across the system. Passwords must be at least 8 characters.
Assumptions:	The user has a valid email address and access to the internet.

Use Case ID:	UC-002
Use Case Name:	Login
Primary Actor:	Buyer / Seller / Admin
Description:	A registered user logs into the Auction Arena system using their email and password credentials.
Preconditions:	User has a registered account in D1: Users DB. User is not currently logged in.
Postconditions:	User is authenticated and redirected to their role-specific dashboard.
Normal Flow:	1.1 User navigates to the login page. 1.2 User enters their registered email address and password. 1.3 System validates credentials against D1: Users DB. 1.4 System checks if the user account is active and not banned. 1.5 System grants access and redirects the user to their dashboard.
Alternative Flows:	A-1: If the email is not found in the system, display an error message: 'Account not found.' A-2: If the password is incorrect, display an error message and allow retry. A-3: If the account is banned, display a ban notice and deny access. A-4: After 5 failed attempts, temporarily lock the account for 15 minutes.
Exceptions:	If the authentication service is unavailable, the system displays an error and prevents login.
Priority:	High
Frequency of Use:	Frequently
Business Rules:	Admin accounts are authenticated through the same login page but redirected to the admin dashboard.
Assumptions:	The user remembers their registered email and password.

Use Case ID:	UC-003
Use Case Name:	Search Item
Primary Actor:	Buyer
Description:	A logged-in buyer searches for auction items using keywords or category filters to find items of interest.
Preconditions:	User is logged in. Items exist in D2: Auctions DB.
Postconditions:	A list of items matching the search criteria is displayed to the buyer.
Normal Flow:	1.1 Buyer enters a keyword or selects a category on the catalog page. 1.2 System queries D2: Auctions DB with the provided filters. 1.3 System retrieves and displays matching items with details (name, image, current bid, time remaining). 1.4 Buyer can click any item to view its full details.
Alternative Flows:	A-1: If no items match the search query, the system displays 'No items found' and suggests broadening the search. A-2: If the search input is empty, the system displays all active auction items.
Exceptions:	If D2: Auctions DB is unavailable, the system displays an error and cannot show results.
Priority:	High
Frequency of Use:	Frequently
Business Rules:	Only active auction items are shown in search results. Expired auctions are excluded.
Assumptions:	The buyer knows keywords or categories related to the item they seek.

Use Case ID:	UC-004
Use Case Name:	Add to Favorites
Primary Actor:	Buyer
Description:	A buyer adds a category or item to their favorites list to receive alerts when new matching items are posted.
Preconditions:	User is logged in. At least one category exists in the system.
Postconditions:	The selected category is saved to the user's favorites. Future alerts will be triggered for matching items.
Normal Flow:	1.1 Buyer navigates to a category or item listing. 1.2 Buyer clicks the 'Add to Favorites' or 'Set Alert' button. 1.3 System saves the selected category to the buyer's preferences in D1: Users DB. 1.4 System confirms the addition with a success message. 1.5 System will trigger alerts (UC-008) when new items appear in the favorited category.
Alternative Flows:	A-1: If the category is already in favorites, the system notifies the buyer and offers to remove it instead.
Exceptions:	If saving preferences fails, the system displays an error and the favorite is not stored.
Priority:	High
Frequency of Use:	Frequently
Business Rules:	A buyer may add multiple categories to favorites. Favorites are persistent across sessions.
Assumptions:	The buyer has interest in receiving notifications for specific item categories.

Use Case ID:	UC-005
Use Case Name:	Place Bid
Primary Actor:	Buyer
Description:	A buyer places a bid on an active auction item. The system records the bid and updates the current highest bid if valid.
Preconditions:	User is logged in as a Buyer. The auction is active and has not expired. The buyer is not the seller of the item.
Postconditions:	The bid is recorded in D3: Bids/Cart DB and the highest bid is updated if the new bid qualifies.
Normal Flow:	1.1 Buyer views an active auction item. 1.2 Buyer enters a bid amount higher than the current highest bid. 1.3 System validates the bid amount against the current highest bid. 1.4 System records the bid in D3: Bids/Cart DB. 1.5 System updates the displayed highest bid for the item. 1.6 System notifies the previous highest bidder that they have been outbid.
Alternative Flows:	A-1: If the bid amount is lower than or equal to the current highest bid, the system rejects the bid and shows the minimum required amount. A-2: If the auction has expired during the bidding process, the system rejects the bid and informs the buyer. A-3: If the buyer is the seller of the item, the system prevents bidding.
Exceptions:	If D3: Bids/Cart DB is unavailable, the bid cannot be processed and the buyer is informed.
Priority:	High
Frequency of Use:	Frequently
Business Rules:	Each new bid must exceed the current highest bid. Bids cannot be retracted once placed.
Assumptions:	The buyer has sufficient intent to purchase the item at the bid price if they win.

Use Case ID:	UC-006
Use Case Name:	Buy Item
Primary Actor:	Buyer
Description:	The winning buyer completes the purchase of an auction item after the auction has ended.
Preconditions:	The auction has ended. The buyer is the highest bidder. The buyer is logged in.
Postconditions:	Ownership of the item is transferred to the buyer. The transaction is recorded.
Normal Flow:	1.1 System notifies the winning buyer that the auction has ended. 1.2 Buyer navigates to the 'Won Auctions' section. 1.3 Buyer confirms the purchase and proceeds to checkout. 1.4 System processes the payment and records the transaction. 1.5 System updates the item status to 'Sold' in D2: Auctions DB. 1.6 System notifies the seller of the completed sale.
Alternative Flows:	A-1: If the buyer does not complete the purchase within the allowed timeframe, the system may re-list or escalate the item. A-2: If payment fails, the system notifies the buyer and provides retry options.
Exceptions:	If the payment gateway is unavailable, the transaction cannot be completed and both parties are notified.
Priority:	High
Frequency of Use:	Frequently
Business Rules:	Only the highest bidder at auction close may purchase the item. The purchase must be completed within the stipulated timeframe.
Assumptions:	The buyer has a valid payment method ready.

Use Case ID:	UC-007
Use Case Name:	Post Item
Primary Actor:	Seller
Description:	A seller lists a new item for auction by providing item details, uploading an image, and setting a starting price and auction duration.
Preconditions:	User is logged in as a Seller. User account is active and not banned.
Postconditions:	The item is listed in D2: Auctions DB and is visible to buyers in the catalog.
Normal Flow:	1.1 Seller navigates to the 'Post Item' page. 1.2 Seller enters item name, description, category, starting price, and auction end date. 1.3 Seller uploads one or more item images. 1.4 System validates all required fields and image formats. 1.5 System creates the item record in D2: Auctions DB. 1.6 System confirms successful listing and displays the item in the catalog.
Alternative Flows:	A-1: If required fields are missing, the system highlights errors and prevents submission. A-2: If the uploaded image format is unsupported, the system requests a valid image format (JPG, PNG). A-3: If the starting price is zero or negative, the system displays a validation error.
Exceptions:	If D2: Auctions DB is unavailable, the item cannot be listed and the seller is informed to try again.
Priority:	High
Frequency of Use:	Frequently
Business Rules:	Sellers may not bid on their own items. Items must have a positive starting price and a future end date.
Assumptions:	The seller has legal ownership of the item being listed.

Use Case ID:	UC-008
Use Case Name:	Trigger Alerts
Primary Actor:	Buyer
Description:	The system automatically sends notifications to buyers when new items are posted in their favorited categories.
Preconditions:	Buyer is registered and has added at least one category to favorites (UC-004). A new item has been posted in that category.
Postconditions:	The buyer receives an alert/notification about the new item.
Normal Flow:	1.1 Seller posts a new item in a category (UC-007). 1.2 System checks D2: Auctions DB for the new item's category. 1.3 System queries D1: Users DB to find all buyers who have favorited that category. 1.4 System sends an alert notification to each matching buyer. 1.5 Buyer receives the notification and can click it to view the item.
Alternative Flows:	A-1: If no buyers have favorited the category, no alerts are sent. A-2: If the buyer's notification preferences are disabled, the alert is suppressed.
Exceptions:	If the notification service fails, alerts are queued and retried. Buyers may not receive real-time alerts.
Priority:	Medium
Frequency of Use:	Frequently
Business Rules:	Alerts are only sent for newly listed active items. Alerts are not sent for re-listed or edited items.
Assumptions:	The buyer has a valid email or in-app notification channel configured.

Use Case ID:	UC-009
Use Case Name:	Manage Users
Primary Actor:	Admin
Description:	The admin reviews flagged users, manages bans, and monitors the overall user base to maintain platform integrity.
Preconditions:	Admin is logged in. D1: Users DB and D4: Feedback DB are accessible.
Postconditions:	User accounts are updated (banned/unbanned/reviewed). Changes are reflected in D1: Users DB.
Normal Flow:	1.1 Admin navigates to the User Management dashboard. 1.2 System retrieves and displays a list of users from D1: Users DB. 1.3 Admin views report counts for flagged users from D4: Feedback DB. 1.4 Admin selects a user with more than 3 reports to review. 1.5 Admin issues a ban command. 1.6 System updates the user's ban status in D1: Users DB. 1.7 System notifies the banned user.
Alternative Flows:	A-1: If a user has fewer than 3 reports, the admin may still manually review or issue a warning. A-2: If the admin decides not to ban, the report counter is acknowledged and the case is closed. A-3: Admin may unban a previously banned user, restoring their account access.
Exceptions:	If D1: Users DB is unavailable, ban actions cannot be applied and the admin is notified.
Priority:	High
Frequency of Use:	Frequently
Business Rules:	Users with more than 3 valid reports are automatically flagged for admin review. Only admins may issue or lift bans.
Assumptions:	Reports submitted by users are genuine and have been reviewed before banning.

Use Case ID:	UC-010
Use Case Name:	Manage Auctions
Primary Actor:	Admin
Description:	The admin monitors all active and completed auctions, intervening when necessary to remove or modify listings that violate platform rules.
Preconditions:	Admin is logged in. D2: Auctions DB is accessible.
Postconditions:	Auction records are updated as required. Problematic listings are removed or flagged.
Normal Flow:	1.1 Admin navigates to the Auction Management dashboard. 1.2 System retrieves all active and recent auctions from D2: Auctions DB. 1.3 Admin reviews auction listings for policy violations or reported items. 1.4 Admin takes action: remove listing, extend duration, or flag for review. 1.5 System updates D2: Auctions DB to reflect admin changes. 1.6 System notifies the relevant seller of the action taken.
Alternative Flows:	A-1: If the auction has already ended, the admin can only view historical data and cannot modify bids. A-2: If the admin removes a listing, all associated bids are voided and bidders are notified.
Exceptions:	If D2: Auctions DB is unavailable, the admin cannot view or modify auctions.
Priority:	High
Frequency of Use:	Frequently
Business Rules:	Admins may not place bids. Admin actions on auctions are logged for audit purposes.
Assumptions:	Admins have reviewed reports or complaints before taking action on an auction.

Use Case ID:	UC-011
Use Case Name:	Rate Seller
Primary Actor:	Buyer
Description:	After completing a purchase, the buyer submits a rating and comment to evaluate the seller's performance.
Preconditions:	Buyer has successfully completed a purchase from the seller (UC-006). Buyer is logged in.
Postconditions:	The rating and comment are stored in D4: Feedback DB and displayed on the seller's profile.
Normal Flow:	1.1 Buyer navigates to their completed transactions. 1.2 Buyer selects a completed purchase and clicks 'Rate Seller'. 1.3 Buyer selects a star rating (1–5) and optionally enters a comment. 1.4 Buyer submits the rating. 1.5 System stores the rating and comment in D4: Feedback DB. 1.6 System updates the seller's average rating.
Alternative Flows:	A-1: If the buyer tries to rate the same seller for the same transaction twice, the system prevents a duplicate rating. A-2: If the comment contains prohibited content, the system rejects it and asks for revision.
Exceptions:	If D4: Feedback DB is unavailable, the rating cannot be saved and the buyer is asked to try again.
Priority:	Medium
Frequency of Use:	Frequently
Business Rules:	Only buyers who have completed a transaction with the seller may submit a rating. Each transaction allows one rating.
Assumptions:	The buyer has had sufficient interaction with the seller to provide a meaningful rating.

Use Case ID:	UC-012
Use Case Name:	Report User
Primary Actor:	Buyer / Seller
Description:	A user reports another user for suspicious, fraudulent, or policy-violating behavior. The report is logged for admin review.
Preconditions:	The reporting user is logged in. The reported user exists in D1: Users DB.
Postconditions:	The report is stored in D4: Feedback DB. The reported user's report count is incremented. If count exceeds 3, the user is flagged for admin review.
Normal Flow:	1.1 User navigates to the reported user's profile or listing. 1.2 User clicks 'Report User' and selects a reason from the list. 1.3 User optionally provides additional details. 1.4 User submits the report. 1.5 System stores the report in D4: Feedback DB. 1.6 System increments the reported user's report count. 1.7 If the count exceeds 3, the system flags the user for admin review (UC-009).
Alternative Flows:	A-1: If the user has already reported the same person for the same reason, the system prevents a duplicate report. A-2: If no reason is selected, the system requires one before allowing submission.
Exceptions:	If D4: Feedback DB is unavailable, the report is not saved and the user is notified.
Priority:	High
Frequency of Use:	Occasionally
Business Rules:	Users may not report themselves. Reports require a reason to be selected. Three or more reports trigger an admin flag.
Assumptions:	The reporting user has a legitimate concern and is not misusing the report feature.

Use Case ID:	UC-013
Use Case Name:	View Bid History
Primary Actor:	Buyer
Description:	A buyer views the history of all bids they have placed, including active and completed auctions.
Preconditions:	Buyer is logged in. At least one bid has been placed by the buyer.
Postconditions:	A list of the buyer's bid history is displayed, showing item names, bid amounts, and auction statuses.
Normal Flow:	1.1 Buyer navigates to 'My Bids' or 'Bid History' in their dashboard. 1.2 System queries D3: Bids/Cart DB using the buyer's User ID. 1.3 System retrieves all bids placed by the buyer. 1.4 System displays the bid history including item name, bid amount, bid date, and current status.
Alternative Flows:	A-1: If the buyer has no bid history, the system displays a message: 'You have not placed any bids yet.'
Exceptions:	If D3: Bids/Cart DB is unavailable, the system cannot retrieve history and displays an error.
Priority:	Medium
Frequency of Use:	Frequently
Business Rules:	Bid history is read-only. Buyers cannot delete or modify bid records.
Assumptions:	The buyer wishes to track their bidding activity and auction outcomes.

Use Case ID:	UC-014
Use Case Name:	Manage Cart
Primary Actor:	Buyer
Description:	A buyer adds items to their cart for review before completing a purchase after an auction ends.
Preconditions:	Buyer is logged in. An auction the buyer won has ended.
Postconditions:	The selected items are stored in the buyer's cart session in D3: Bids/Cart DB.
Normal Flow:	1.1 Buyer navigates to 'Won Auctions'. 1.2 Buyer selects items they wish to proceed with purchasing. 1.3 Buyer clicks 'Add to Cart'. 1.4 System stores the cart session in D3: Bids/Cart DB. 1.5 Buyer proceeds to checkout (UC-006).
Alternative Flows:	A-1: If the buyer removes an item from the cart, the system updates the cart session. A-2: If the cart session expires, items are removed and the buyer is notified.
Exceptions:	If D3: Bids/Cart DB is unavailable, cart actions cannot be saved.
Priority:	Medium
Frequency of Use:	Frequently
Business Rules:	Only won auction items can be added to the cart. Cart sessions expire after a defined period of inactivity.
Assumptions:	The buyer intends to complete the purchase of items in the cart.