Title: Online Auction System

USE CASES

USE CASE - BUYERS

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1. **NAME: User Registration**

ACTORS: Buyer

GOAL : The buyer aims to create a new account in the system, enabling them to log in and participate in auctions.

PRECONDITION:
- The system is operational and accessible.
- The buyer does not have an existing account in the system.

DESCRIPTION:
- The buyer needs to provide necessary personal information, such as name, email and a password, to register an account. The system will validate the information and, upon success, create a new user profile that allows the buyer to log in and participate in auctions.

MAIN FLOW:
1. The buyer navigates to the registration page on the online auction system.
2. The buyer enters their username, full name, email address and a password.
3. The buyer clicks the "Sign Up" button.
4. The system validates the entered information:
   - Checks that all required fields are filled.
   - Ensures the email is in a valid format.
5. If the validation passes, the system creates a new user account and stores the information securely.
6. The system confirms the successful registration to the buyer.
7. The buyer is now able to log in using their credentials.

ALTERNATIVE FLOW:

1. If any of the required fields are empty, the system will display an error message indicating the missing information and prompt the buyer to complete the form.
2. If the email is in an invalid format, the system will notify the buyer and request a correct entry.
3. If the email is already associated with an existing account, the system will display an error message and prevent the registration.
4. If the system detects suspicious or illegal entries (e.g., SQL injection attempts), it will block the registration attempt and log the event for security review.
5. If the password and confirm password fields aren't matching the system will prompt the user to match them.

POST-CONDITION:
- The system stores the new buyer's account details securely.
- The buyer can now log in to the system using their registered email and password to participate in auctions.

2. NAME: User Login

ACTORS: Buyer

GOAL : The buyer aims to log into their account on the online auction system to participate in auctions, manage bids, and access personalized features.

PRECONDITION:
- The buyer has already registered and has a valid account in the system.
- The system is operational and accessible.

DESCRIPTION:
- The buyer needs to provide their registered email and password to log into the system. The system will authenticate the credentials and, if valid, grant access to the buyer's account.

MAIN FLOW:
1. The buyer navigates to the login page on the online auction system.
2. The buyer enters their registered email address and password.

3. The buyer clicks the "Login" button.
4. The system checks that both the email and password fields are filled.
5. The system validates the provided email and password against stored credentials:
   - Checks if the email exists in the database.
   - Verifies that the entered password matches the stored password for that email.
6. If the credentials are correct, the system logs the buyer into their account.
7. The system redirects the buyer to their account dashboard, where they can participate in auctions, view active bids, and manage account settings.

ALTERNATIVE FLOW:
1. If the email or password fields are empty, the system will display an error message and prompt the buyer to fill in the required information.
2. If the email is not found in the system, the system will notify the buyer that the account does not exist and prompt them to register or re-enter the correct email.
3. If the password does not match the one associated with the entered email, the system will display an error message indicating incorrect credentials and ask the buyer to try again.

POST-CONDITION:
- If the login is successful, the buyer is logged into the system and can access their account dashboard.
- If the login fails, the system remains on the login page with appropriate error messages, and the buyer is not granted access to the system.

3. NAME: Search and Filters

ACTOR: Buyer

GOAL: The buyer wants to search for upcoming auctions and filter the results by categories, auction timings, and other criteria to easily find desired items.

PRECONDITION:
- The buyer is logged into the system.
- The system has upcoming auctions listed, and the search and filter functionality is operational.

DESCRIPTION:
- The buyer uses the search function to find specific auctions and applies filters to narrow down the results. This allows the buyer to quickly locate auctions that match their interests and participate in them.

MAIN FLOW:
1. The buyer navigates to the auctions search page on the online auction system.
2. The buyer enters keywords related to the items or auctions they are interested in.
3. The buyer applies filters such as category (e.g., electronics, art) and subcategory, auction timing (recently added), or price range.
4. The buyer clicks the "Search" button.
5. The system processes the search query and filters to retrieve relevant auction results.
6. The system displays the list of upcoming auctions that match the buyer's search and filter criteria.
7. The buyer can review the search results, click on specific auctions to view details, and decide to participate.

ALTERNATIVE FLOW:
1. If the buyer enters abrupt or non-matching keywords, the system will return a message indicating no results were found and may suggest similar keywords or categories.
2. If no auctions match the applied filters, the system will notify the buyer that no results are available and suggest removing some filters or broadening the search criteria.

POST-CONDITION:
- If the search is successful, the buyer views the filtered list of auctions and can proceed to participate in the auctions of interest.
- If the search fails (no results or invalid filters), the buyer remains on the search page with suggestions or prompts to adjust their search and filter options.

4. NAME: Auction History

ACTORS: Buyer

GOAL: The buyer wants to view a detailed history of their participation in auctions, including the auctions they participated in, the number of bids placed, and the outcome of those bids, to keep track of their bidding activities.

PRECONDITION:
- The buyer is logged into the system.
- The buyer has participated in one or more auctions in the past.

DESCRIPTION:
- The buyer accesses their auction history to review past activities, including auctions they participated in, the number of bids they placed, and whether those bids were successful.

MAIN FLOW:
1. The buyer navigates to their account dashboard on the online auction system.
2. The buyer selects the "Auction History" option from the dashboard menu.
3. The system retrieves and displays the buyer's auction history in the user profile, including:
   - A list of auctions the buyer participated in.
   - **The number of bids placed in each auction.**
   - The outcome of the bids (e.g., whether the buyer won the auction).
4. The system highlights successful bids, showing which auctions the buyer won.
5. The buyer can click on any auction in the history to view more detailed information about that auction, including the item details, bidding timeline, and final bid amount.

ALTERNATIVE FLOW:
1. If an unregistered or unauthorized user attempts to access the auction history, the system will redirect them to the login page and display a message indicating that they need to log in to view this information.
2. If the buyer has no bidding activity or auction history, the system will display a message indicating that no auction history is available.

POST-CONDITION:
- The buyer has viewed their auction history, with clear visibility into their past bidding activities, including successful and unsuccessful bids.
- The system remains ready for the buyer to perform other actions, such as viewing current auctions or logging out.

5. **NAME: Real-Time Bidding**

ACTORS: Buyer

GOAL: The buyer wants to place bids on auction items in real-time and view updates on the current highest bid to stay competitive and increase their chances of winning the auction.

PRECONDITION:
- The buyer is logged into the system.
- The auction for the desired item is currently active and accepting bids.
- The system supports real-time data updates.

DESCRIPTION:
- The buyer participates in an active auction by placing bids on an item. The system updates the current highest bid in real-time.

MAIN FLOW:
1. The buyer navigates to the auction page for the desired item.
2. The buyer views the current highest bid on the item.
3. The buyer enters a bid amount higher than the current highest bid.
4. The buyer clicks the "Place Bid" button.
5. The system processes the bid and immediately updates the auction with the new highest bid, visible to all participants.
6. The system continuously updates the auction page with the current highest bid, reflecting any new bids from other users without requiring a page refresh.
7. The system confirms the buyer's bid with a notification if it is successful, ensuring the buyer knows their bid has been successfully placed.

ALTERNATIVE FLOW:
1. If the buyer places a bid below the current highest bid, the system will reject the bid and display an error message prompting the buyer to enter a higher amount.
2. If the auction time expires before the buyer places a bid, the system will notify the buyer that the auction has ended, and no further bids can be placed.
3. If there is a spam of consecutive bids from the same buyer, the system may temporarily block the bidding action and prompt the buyer to confirm they are not a bot.

4. If system overload occurs, the system may briefly delay updates but will process all bids in the correct order.

POST-CONDITION:

- The buyer's bid is placed and visible in the auction, contributing to the real-time bidding process.
- The auction page remains up-to-date with the current highest bid and the status of the auction, ensuring all participants have the latest information.

USE CASE : UNLOGGED USERS

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1. NAME: View Auctions

ACTORS:
- Unlogged User

GOALS:
- The unlogged user wants to browse and view auction listings on the website to gather information about available items and ongoing or upcoming auctions.

PRECONDITION:
- The system is operational and accessible.
- There are auctions available on the website.

DESCRIPTION:
- The unlogged user visits the auction website and views a list of auctions without needing to log in or register. They can see key details about each auction, such as item descriptions, start and end times, and current bids. The system also allows the user to filter, sort, and search for auctions.

MAIN FLOW:
1. The unlogged user navigates to the auction website's homepage.
2. The system displays a list of ongoing and upcoming auctions.
3. The user can view key details for each auction, such as:
   - Item description
   - Auction start and end times
   - Current highest bid
   - Number of bids placed
4. The user has options to filter auctions by categories (e.g., electronics, art) and subcategories, sort them by criteria such as recently added, and search for specific items.
5. The user can click on any product to view more detailed information.
6. If the user attempts to place a bid or perform other actions that require authentication, the system prompts them to log in or register.

ALTERNATIVE FLOW:

1. If the user tries to access product details during network errors or server downtime, the system displays an error message indicating the issue and suggests trying again later.
2. If the user applies filters or searches with no matching results, the system will display a message indicating no auctions match the criteria and may suggest broadening the search or clearing filters.
3. If there are issues with displaying auction details (e.g., missing information), the system will display a fallback message or a placeholder image to ensure the page remains functional.

POST-CONDITION:
- The unlogged user can view auction product listings and detailed information about specific products, helping them decide whether to register and participate.
- The system continues to display auctions and provide options for filtering, sorting, and searching, with prompts for login/registration as needed.

2. **NAME: Auction Notifications**

ACTORS:
- Buyer

GOALS:
- The buyer wants to receive notification in the case the buyer has succeeded in making the bid and has successfully purchased the product.

PRECONDITION:
- The buyer is logged into the system.
- The system supports notification through email.

DESCRIPTION:
- The buyer will receive a notification if they have successfully purchased the product.

MAIN FLOW:
1. When the auction ends, the buyer with the winning bid will receive notification about the same.

ALTERNATIVE FLOW:

1. If the buyer does not receive a notification due to incorrect settings or network issues, the system logs the event and may offer the buyer a chance to retry or check their notification settings.

POST-CONDITION:

- The system continues to monitor other product auctions to check for winning bids and subsequently sending notifications to the corresponding buyers.

USE CASE - ADMIN

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1. NAME: Audit User Activity

ACTORS:
- Admin
- System

GOALS:
The admin wants to review and audit user activities on the platform to ensure compliance with platform rules and investigate any suspicious behavior.

PRECONDITION:
The system is operational, and the admin is logged in with appropriate permissions to access user activity logs.

DESCRIPTION:
The admin accesses the system to view detailed logs of user activities, including login times, bidding history, and other interactions. This enables the admin to monitor compliance with platform rules and identify any unusual or suspicious activities that may require further investigation.

2. NAME: Manage Auction Categories

ACTORS:
- Admin
- System

GOALS:
The admin wants to create, edit, or delete auction categories to ensure that auctions are properly categorized and easily searchable by users.

PRECONDITION:

The system is running, and the admin is logged in with the appropriate permissions to manage auction categories.

DESCRIPTION:
The admin accesses the category management section within the system to add new categories, modify existing ones, or remove categories that are no longer needed. This ensures that all auctions are organized under the correct categories, enhancing the user experience during search and navigation.

MAIN FLOW:
1. The admin logs into the auction system.
2. The admin navigates to the "Manage Categories" section of the admin dashboard.
3. The admin views the list of existing categories.
4. The admin chooses to add a new category by entering the category name and description.
5. The system validates that the category name is unique and not empty.
6. The system adds the new category to the list and stores it in the database.
7. The admin selects an existing category to edit and updates the name or description.
8. The system validates the changes and updates the category in the database.
9. The admin selects a category to delete.
10. The system checks if any auctions are linked to this category.
11. If no auctions are linked, the system removes the category from the list and deletes it from the database.
12. The system confirms the successful addition, modification, or deletion of categories to the admin.

ALTERNATIVE FLOW:
- A1: If the category name is not unique or is empty:
  1. The system displays an error message indicating the issue.
  2. The admin corrects the input and resubmits the form.

- A2: If the admin attempts to delete a category linked to active auctions:
  1. The system prevents the deletion and notifies the admin that the category cannot be deleted due to active links.
  2. The admin can either cancel the deletion or reassign the auctions to a different category before retrying the deletion.

POST-CONDITION:
The auction categories are updated as per the admin's actions. The system reflects the new, edited, or deleted categories, and auctions are properly categorized and searchable by users.

3. NAME: Set Auction Start Time

ACTORS:

- Admin

GOALS: The admin will automatically start the auction on verifying the product.

PRECONDITION: There are products available for verification.

DESCRIPTION: This use case enables the admin to control when product auctions will start.

MAIN FLOW:

1. The admin logs into the online auction system.
2. The admin navigates to the products page.
3. The admin then checks the products to be verified and then verifies the product.
4. The auction for that product starts immediately after.

ALTERNATIVE FLOW:

1. The product is not deemed verified by the admin and remains unverified.

POST-CONDITION: The product auction starts and the system starts accepting bids.

4. Name: Create Product Auctions

ACTORS:

- **Seller**: The primary user who adds items for sale.
- **System**: The auction platform that handles the listing and display of items.

GOALS:

- **Primary Goal**: The seller can create a product auction with a description, reserve price, and images, making it visible to potential buyers.
- **Secondary Goal**: Ensure the product is accurately displayed to all users on the platform.

PRECONDITIONS:

- The seller must have a registered account on the auction platform.
- The seller must be logged into the auction platform with that account.
- The auction platform must support the creation of listings with descriptions, reserve prices, and images.

Description: This use case describes the process by which a seller adds an item for auction. The seller provides item details, including a description, reserve price, and images. The system validates the input, creates the listing, and displays it to other users on the platform.

TRIGGER: The use case is triggered when a seller decides to create a new auction listing.

MAIN FLOW:

1. The seller navigates to the auction platform's "Create Listing" page.
2. The system presents a form for entering the item's details.
3. The seller enters the item description, reserve price, and uploads images.
4. The system validates the inputs:
    - Checks that the description is not empty.
    - Verifies that the reserve price is a valid number.
    - Confirms that the images are in an acceptable format and size.
5. The seller submits the listing form.
6. The system creates the auction listing with the provided details.
7. The system displays a preview of the auction listing to the seller.
8. The seller confirms the preview, and the listing is made live on the platform.
9. The system displays the live listing to all users on the platform.

ALTERNATE FLOW:

- **Invalid Reserve Price**:
    1. If the reserve price is invalid, the system displays an error message.
    2. The seller corrects the price and resubmits the form.

- **Invalid Image Upload**:
    1. If the uploaded images are in an incorrect format or exceed size limits, the system displays an error message.
    2. The seller corrects the images and resubmits the form.

POSTCONDITIONS:

- The auction listing is visible to all users on the platform.
- The seller can view and edit the listing details as needed.
- Potential buyers can view and place bids on the item.

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3. Use Case Name: Profile

ACTORS:

- **User**: Logged user that participates in auctions or sells products.
- **System**: The auction platform that provides the display's profile.

GOALS:

- Provide the user with a comprehensive overview of all their auctions, including their actions as a buyer and seller, with displaying won auctions, lost auctions, active auctions (buyer) and sold and unsold products (seller).
- User's details will be displayed.
- Enable the users to easily track their auction activities.

PRECONDITIONS:

- The user must be logged into their account on the auction platform.

Description: This use case shows how in addition to viewing details of their profiles, users can track their auction activities by navigating to the profile page.

TRIGGER:

- The seller navigates to the "Profile" page from the header.

MAIN FLOW:

1. **User accesses the Profile**:
    - The user selects "Profile" from the header.
2. **System displays an overview of the user's auctions**:
    - The system retrieves and displays an overview of the user as seller's product auctions, categorized into sold and unsold products.
    - The system retrieves and displays the overview of the user's activities as a buyer by showing auctions won in the past, auctions lost, and auctions where they are active (have a bid placed).
3. **User views auction details**:
    - The user clicks on a specific product to view more detailed information.
4. **System shows detailed auction view**:
    - The system displays a detailed view of the selected product, including starting bid, current bid, and final outcomes (for completed auctions).
5. **User uses sorting and filtering options**:
    - The seller applies sorting options (e.g., by date, by bid amount) or filters the auctions (e.g., by status or keyword).
6. **System updates the auction list**:
    - The system processes the sorting and filtering criteria and updates the displayed auctions accordingly.
7. **User tracks auction status**:
    - The seller monitors the status indicators (e.g., ongoing, completed, or upcoming) for insights into their auction activities.

ALTERNATE FLOW:

- **AF1: No auctions available**:
    1. If the user has no auctions in any of the categories, the system displays a message indicating that no auctions are available.
- **AF2: User accesses a completed auction**:
    1. The user clicks on a completed auction.
    2. The system displays the auction summary, including the final bid.

POSTCONDITIONS:

- The system updates the user's profile based on any new auctions created or changes in auction status.
- The user can view, sort, and filter auctions effectively, gaining insights into their auction activities.

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4. Use Case Name: Auction Feedback

ACTORS:

- **Seller**: The user who has created auctions and wants to give and receive feedback.
- **Buyer**: The participants in the auctions who provide feedback.
- **System**: The auction platform that facilitates the feedback process, displaying, and managing feedback.

GOALS:

- Enable the seller to receive feedback from buyers after an auction has ended to understand buyer interest and improve future auctions.
- Allow the seller to give feedback to buyers, fostering a more interactive and responsive auction environment.

PRECONDITIONS:

- The seller and buyers must have participated in an auction that has concluded.
- The seller must be logged into their account on the auction platform.

DESCRIPTION: This use case description captures the process and potential scenarios for managing auction feedback, allowing sellers to gain valuable insights and interact with their buyers.

TRIGGER:

- The auction ends, and the system prompts both the seller and buyers to provide feedback.

MAIN FLOW:

1. **System prompts for feedback**:

    - After an auction concludes, the system automatically prompts the seller and buyers to provide feedback on the auction experience.
2. **Seller receives feedback from buyers**:
    - Buyers submit their feedback, which the system captures and displays on the seller's dashboard under the respective auction.
3. **System displays feedback on seller's dashboard**:
    - The system categorizes and displays all received feedback for the seller, with options to view, respond, or edit feedback.
4. **Seller views feedback**:
    - The seller accesses the feedback section for a specific auction from their dashboard.
5. **Seller responds to feedback**:
    - The seller can respond to individual feedback entries, providing clarifications, thanking buyers, or addressing any issues raised.
6. **System displays seller's response**:
    - The system logs the seller's response and makes it visible alongside the original feedback for all relevant parties.
7. **Seller gives feedback to buyers**:
    - The seller provides feedback on buyer behavior during the auction, such as communication and payment promptness.
8. **System saves and displays feedback**:
    - The system saves the feedback given by the seller and makes it visible to the respective buyers.
9. **Seller edits feedback (if necessary)**:
    - The seller may choose to edit their feedback or responses within a certain time frame.
10. **System processes feedback edits**:
    - The system updates the feedback based on the seller's edits and notifies the buyer of the changes.

ALTERNATE FLOW:

- **AF1: Feedback is not provided**:
    1. If the seller or buyers choose not to provide feedback, the system sends a reminder notification after a set period.
    2. If no feedback is provided within the reminder period, the system marks the feedback as "Not Provided."
- **AF2: Feedback is negative**:

1. If the seller receives negative feedback, the system allows the seller to dispute or request clarification through the feedback interface.
2. The system facilitates a dialogue between the seller and buyer to address the negative feedback.

- **AF3: Feedback visibility settings**:
  1. The seller may choose to make certain feedback private or only visible to specific parties.
  2. The system respects these settings and ensures feedback is displayed according to the seller's preferences.

POSTCONDITIONS:

- Feedback is recorded, saved, and displayed on the seller's dashboard for future reference and analysis.
- The seller and buyers have exchanged feedback, providing valuable insights for improving future auctions.
- The system logs all feedback and responses for tracking purposes and can generate reports based on this data.

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5. Use Case Name: Set Reserve Price

ACTORS:

- **Seller**: The user who is selling products and wants to set a minimum reserve price for the product.
- **System**: The auction platform that facilitates the auction process, including setting and enforcing the reserve price.

GOALS:

- Allow the seller to set a reserve price for their auction items, ensuring that the item is only sold if the bidding reaches or exceeds this minimum price.
- Ensure the auction process transparently handles scenarios where the reserve price is not met.

PRECONDITIONS:

- The seller must be logged into their account on the auction platform.

DESCRIPTION: This use case description covers the process of setting and handling a reserve price in an auction, including both the primary and alternate scenarios that may occur.

TRIGGER:

- The seller chooses to set or edit the reserve price for an auction item during the add product process.

MAIN FLOW:

1. The seller starts the process of creating a new auction for a product.
2. During the auction setup, the system prompts the seller to enter a reserve price for the item through the add product form.
3. The seller enters a specific reserve price that must be met for the item to be sold.
4. The system saves the reserve price as part of the auction details and confirms the setup with the seller.
5. The auction for the product starts, and bidders place bids on the item.
6. The system continuously monitors the highest bid to determine if it meets or exceeds the reserve price.

ALTERNATE FLOW:

- **AF1: Seller decides to remove reserve price**:
    1. During the auction setup, the seller opts to remove the reserve price before the auction starts.
    2. The system updates the auction settings to remove the reserve price requirement.
- **AF2: Reserve price is not met**:
    1. A buyer bids an amount less than the reserve price.
    2. The system won't accept the bid.

POSTCONDITIONS:

- If the reserve price is met, the auction is marked as successful, and the item is sold to the highest bidder.