
Four Pixels

**SmartBid
Software Requirements Specification
For Web Application**

Version <1.0>

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| SmartBid | Version: 1.0 |
| Software Requirements Specification | Date: 15/10/2024 |
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Revision History

| Date | Version | Description | Author |
|------------|---------|--|--|
| 15/10/2024 | 1.0 | Build the initial report, clarify the scope and purpose of the project, detail the specific and supplementary requirements, and identify the actors and use-case reports and models. | Sehr Abrar, Saanavi Goyal, Srewashi Mondal, Debasree Sen |
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Software Requirements Specification

1. Introduction

1.1 Purpose

The purpose of the E-Bidding System Software is to develop a fully functional platform that facilitates secure and efficient bidding transactions among its users. The system will allow users to create and manage personal accounts, bid on items and services, conduct secure transactions, and post listings for sale or rent. The software will incorporate role-based permissions, offering distinct profiles for visitors (V), users (U), and super-users (S), each with specific privileges and responsibilities on the platform. On the platform, key system behaviors will include bidding processes, rating mechanisms, and comprehensive account management. Overall, the system will ensure a seamless user experience, promoting safe transactions and fostering trust between participants.

1.2 Scope

The e-bidding system includes three types of users - visitors (V), users (U), and super-users (S) to facilitate safe, online transactions among the different user types. The visitors will have the ability to browse the listings and become users, the users will be able to post listings, bid on existing items and services, and manage their transactions. Lastly, the super-users will oversee the user approval, manage transnational disputes, and make decisions based on user ratings. Moreover, the project will have features to ensure user authentication, secure monetary transactions, ratings, and personalized feed based on user activity. Lastly, there will be VIP users who will be promoted based on a predetermined criteria based on the account activity. All in all, the details above outline the system's functionality and behaviors using a use-case model, detailing interactions such as bidding, account management, and complaint handling. It will guide the design, development, and testing phases to ensure the system meets all functional and non-functional requirements.

1.3 Definitions, Acronyms, and Abbreviations

- V - Visitor: a user type who can browse through the listings on the mini-bidding platform, but must apply to be a user.
- U - User: a user type with the ability to list and bid products and services, and conduct transactions.
- S - Super-User: a user type with admin responsibilities to approve visitors to be users, manage ratings, and handle complaints for a seamless user experience.
- VIP: a user role given to users who fulfill certain requirements defined later, and have additional privileges than a regular user.

1.4 References

IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications.

1.5 Overview

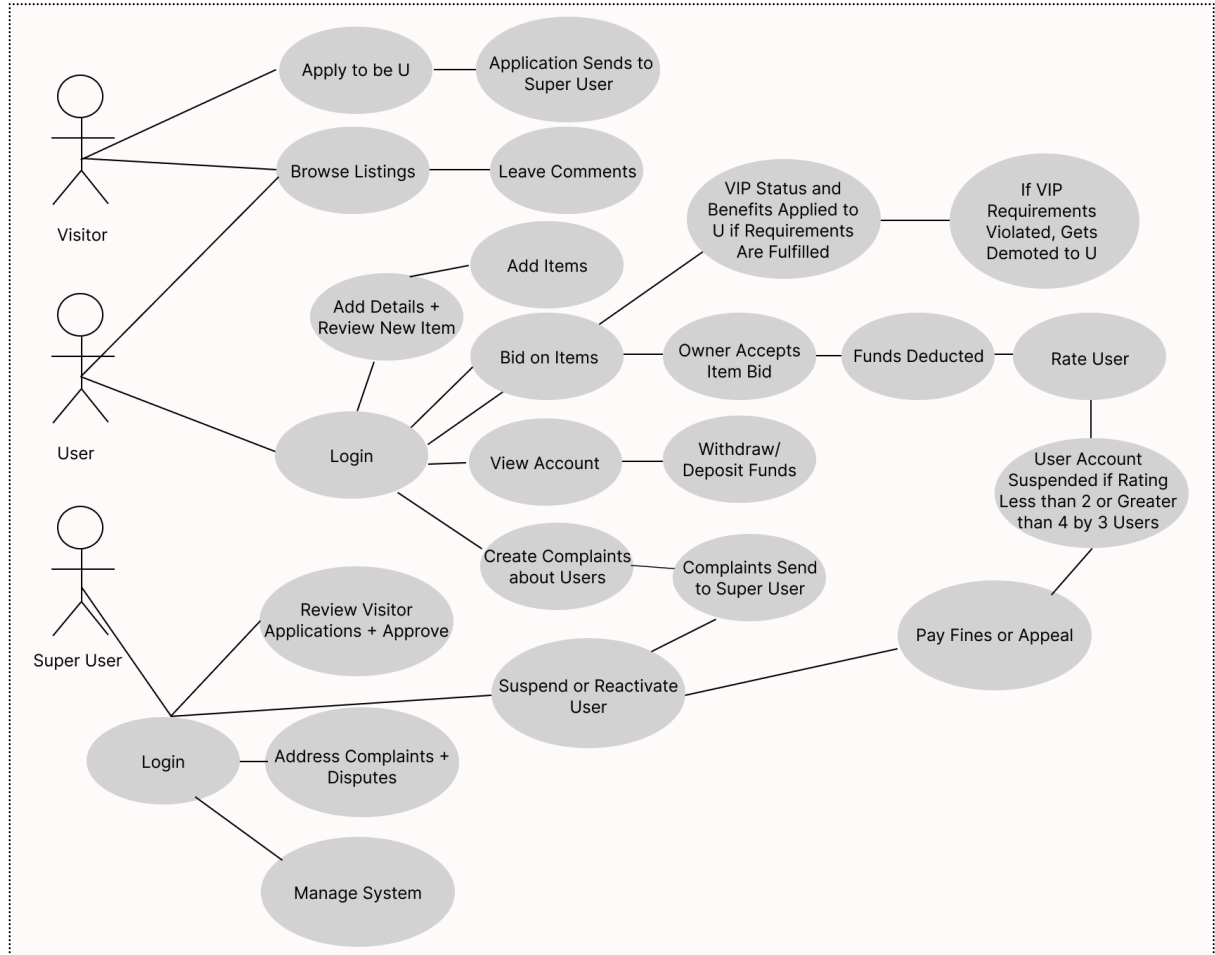
This Software Requirements Specification organizes four distinct sections to provide a comprehensive understanding of the e-bidding system, its requirements, and functionalities. These sections include an introduction to the project's purpose, scope, and overview, a detailed description of its use-case models and reports, the dependencies and assumptions, and specific and supplementary requirements. Each section focuses on key aspects such as design constraints and other essential details to aid in the successful development of the system. Overall, the document is designed to ensure that readers can easily navigate through the different sections and gain a clear understanding of the system's architecture and requirements.

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2. Overall Description

2.1 Use-Case Model Survey

Use-Case Model:



Actors:

- Visitor (V)
 - can browse through listings of items and/or services
 - can leave comments
 - can apply to become User (U) once they verify that they are not a robot
 - cannot perform transactions nor bid on items or services
- User (U)
 - can manage account balance (deposit and withdraw permissions)
 - can list items and services for sale with needed descriptions (price ranges)
 - can bid on available items or services
 - can accept or decline bids for their items or services
 - can finalize transactions when the item owner accepts the bid
 - can anonymously rate other Users post-transaction
 - can submit complaints about other users to super-users if they want
 - is suspended if rating falls below 2 based off of at least three users
 - can pay fines/appeal to super-user to be reactivated if suspended
- Super-User (S)

- can approve applications from visitors (V) to become users (U)
- can address complaints and disputes
- can suspend/reactivate users (U) from ratings or complaints
- can manage both system and user behavior
- VIP
 - demoted to User if suspended 3 times or ratings are less than 2
 - have completed at least five transactions
 - have more than \$5,000 in their account
 - have a complaint-free transaction history
 - are shielded from suspension
 - earn a 10% discount on transactions

2.2 Assumptions and Dependencies

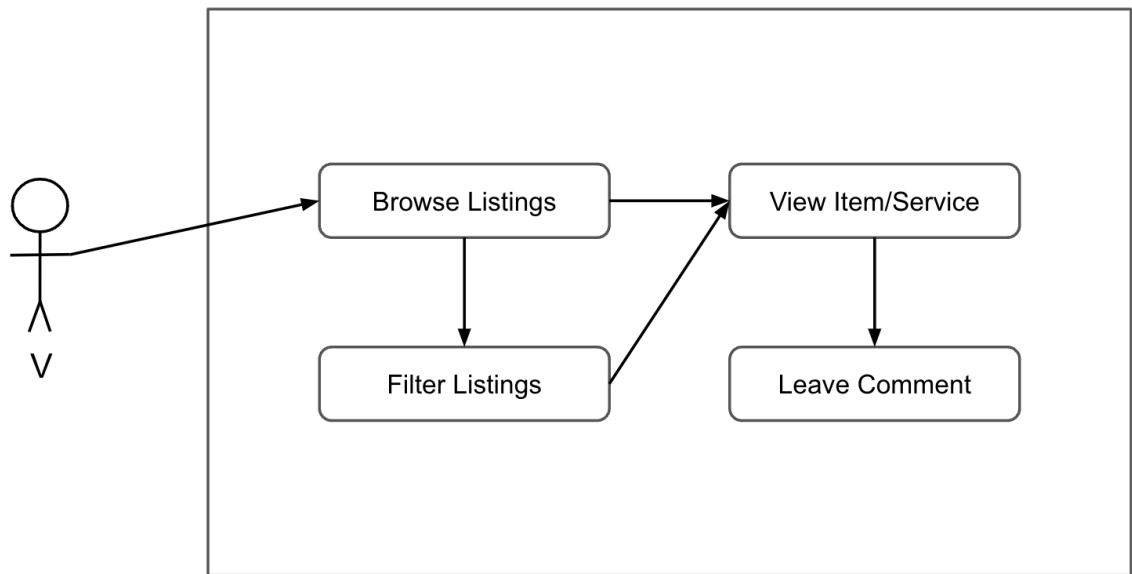
One assumption is that the system assumes users will act ethically and participate only in fair transactions. Any misconduct will be flagged by other users through the rating and complaint mechanisms. Another assumption is that visitors (V) who wish to become users (U) are expected to provide valid information during the registration process. One dependency is that the system relies on third-party payment providers to securely process financial transactions. Another dependency is an arithmetic equation/question that will be used to prevent bots during the visitor registration process.

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3. Specific Requirements

3.1 Use-Case Reports

**Use Case 1: Visitor Browses Listings
Diagram**



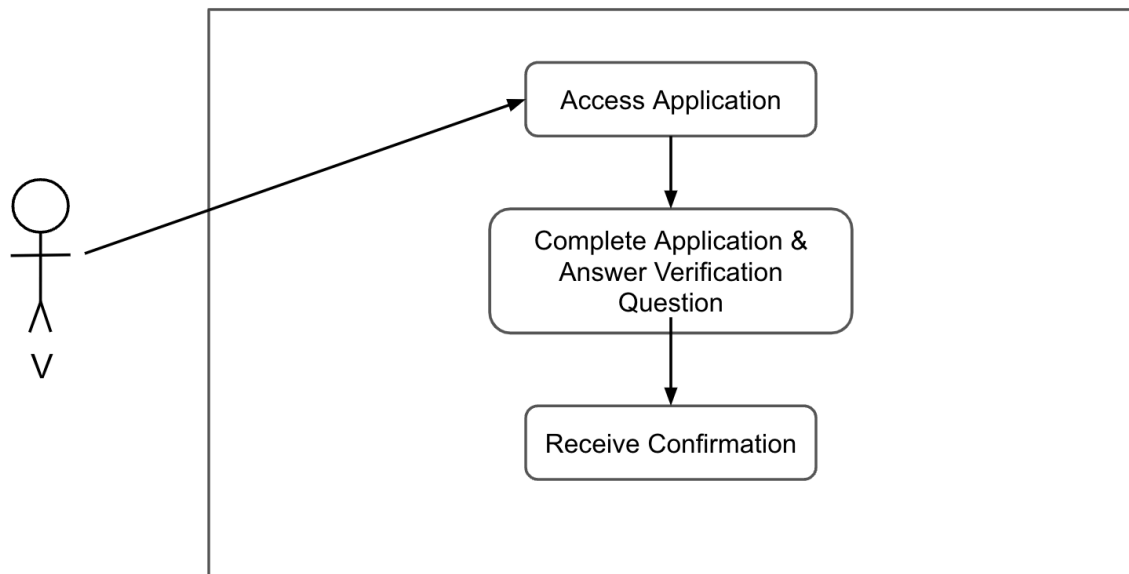
Brief Description & Precondition: A V navigates to the homepage, selects the “Browse Listings” option, and views a list of available items and services posted by U’s. The V can filter the listings, view detailed information about individual items, and leave comments. The precondition is that the V must have access to the internet and navigate to the system’s homepage.

Step-By-Step Description:

1. The V navigates to the homepage of the system.
2. The V selects the “Browse Listings” option, which initiates the display of available items/services.
3. The system retrieves and displays a list of available items/services posted by U.
4. The V can apply filters (e.g., categories, price range, location) to narrow down the listings to their preferences.
5. The V selects an individual listing to view its details, including information, pictures, price, and any other relevant details.
6. The V has the option to leave a comment on the item/service.
7. The V can return to the list of available items/services after viewing details.

Use Case 2: Visitor Applies to Become a User

Diagram



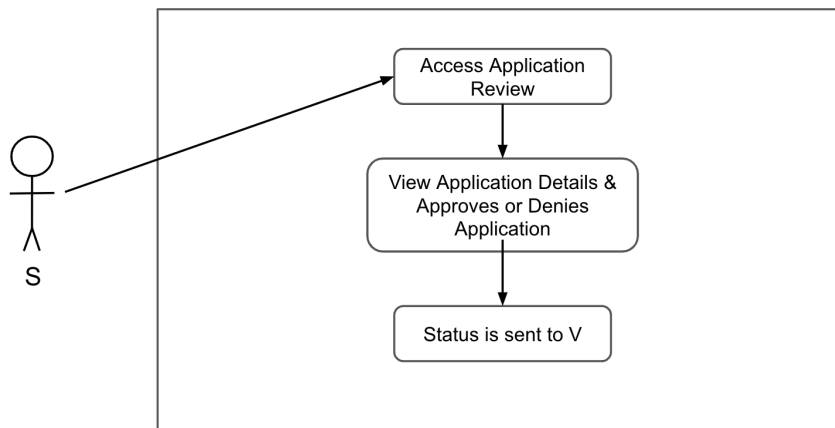
Brief Description & Precondition: A V can submit an application to become a U of the system. The application includes answering a random arithmetic question to verify the applicant is a human and not a robot. After submitting, the application is sent to a Super-User for review and approval or denial. The preconditions are the following: the V is not currently a registered U of the system, the V has access to the application form, and the V is able to answer the arithmetic question to prove that they're human.

Step-By-Step Description:

1. The V navigates to the application section of the website.
2. The V fills out the application form, providing necessary personal information (name, email), and then answers the random arithmetic question presented to confirm their human, before submitting.
3. Once the V submitted their application, the system displays a confirmation message that the application has been submitted successfully, notifying a Super-User that a new application is pending review.

Use Case 3: Super-User Approves or Denies Application

Diagram



Brief Description & Precondition: A S reviews a V's application to become a U of the system. The S evaluates the application details and makes a decision to either approve or deny the application. This outcome is then communicated to the V. The preconditions are the following: The S has access to the admin interface of the

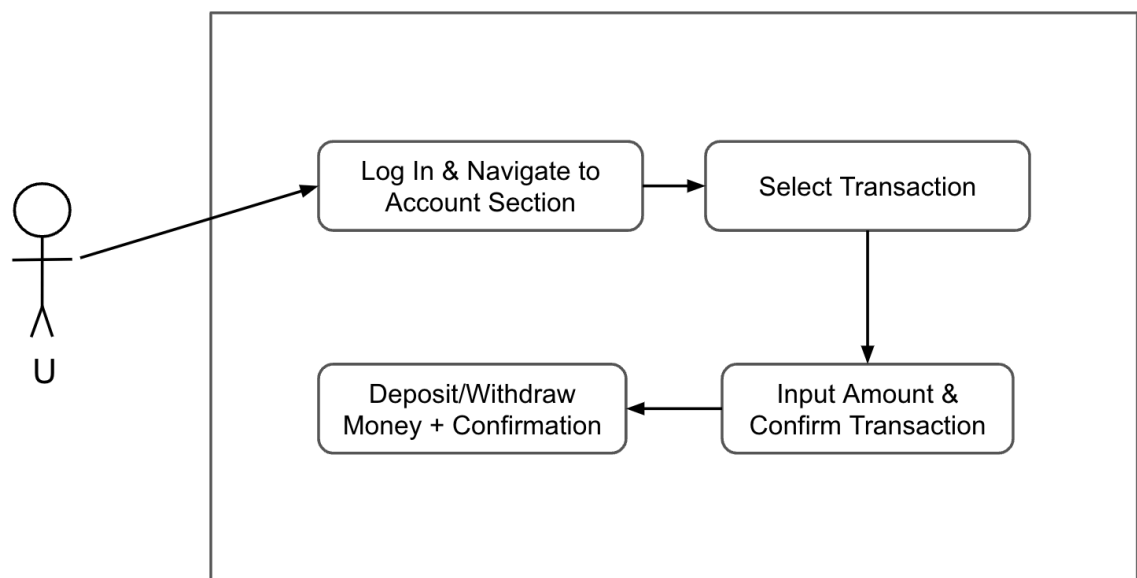
system, there is a pending application from a V awaiting review, and the S is authenticated and authorized to make decisions on applications.

Step-By-Step Description:

1. The S receives a notification about a new application pending approval from a V.
2. The S navigates to the application review section of their admin interface.
3. The S selects the application to review, accessing the V's personal information and answer to the verification question.
4. The S assess the application based on the information provided and makes a decision:
 - a. Approve: If the application meets the criteria, the S approves the application.
 - b. Deny: If the application does not meet the criteria, the S denies the application with feedback.
5. Then the system sends a notification to the V regarding the status of their application.

Use Case 4: User Deposits/Withdraws Money

Diagram



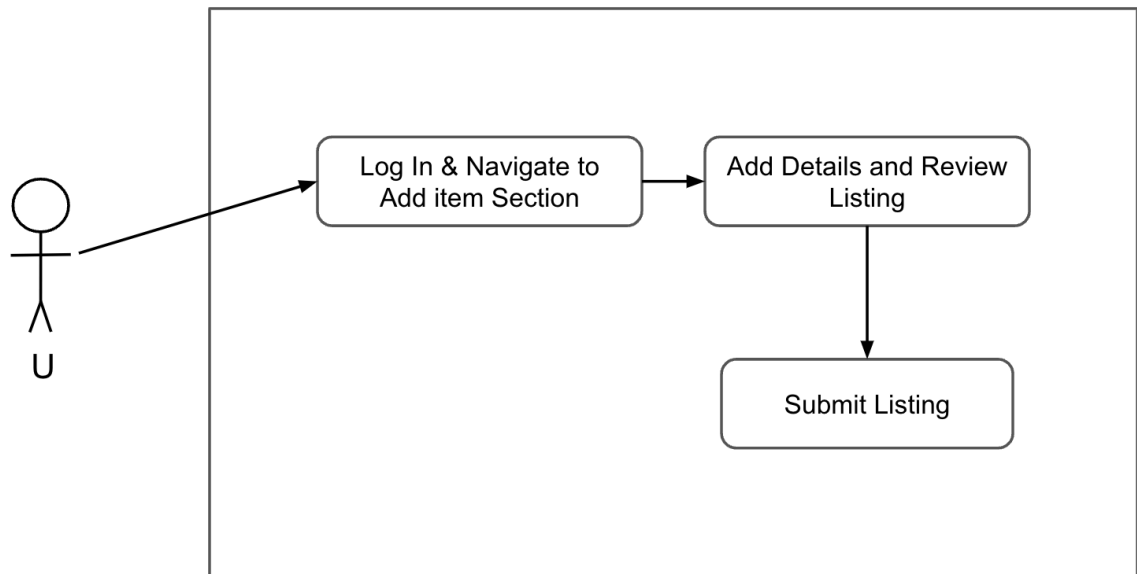
Brief Description & Precondition: A U deposits money into their account or withdraws money from it. The U can access their account balance, select the desired transaction type, input the amount, and confirm the transaction. The system updates the account balance accordingly and notifies the U of the successful transaction. The preconditions are as follows: the U must have an active account in the system, the U must be logged in to access their account, the U must have a valid payment method linked to their account for a deposit, the U must have sufficient funds in their account for a withdrawal.

Step-By-Step Description:

1. The U logs into their account and navigates to the account management section.
2. The U chooses to either deposit or withdraw money and enters the amount they wish to deposit or withdraw.
 - a. The U confirms the deposit, and the system processes the transaction.
 - b. The U confirms the withdrawal, and the system checks for sufficient funds before processing.
3. The system updates the U's account balance based on the transaction, and displays a message confirming the deposit or withdrawal with the updated balance.

Use Case 5: User Adds Item for Sale/Rent

Diagram



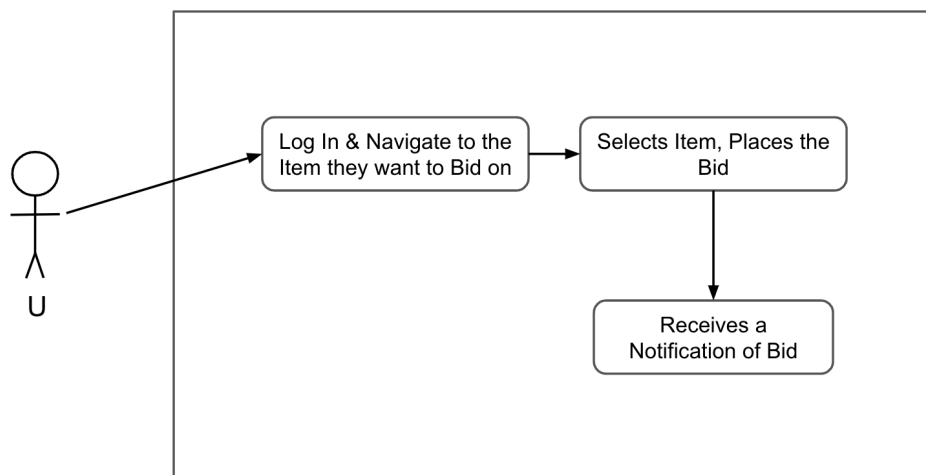
Brief Description & Precondition: The U can list an item or service for sale or rent on the platform by providing the necessary details, including a description, price, and any relevant conditions, and submits the listing for approval before it becomes visible to other U. The preconditions are as follows: the U must have an active account (and logged in), and the item or service listed must meet the platform-specific guidelines.

Step-By-Step Description:

1. The U logs into their account and navigates to the section for adding items/services for sale.
2. They add the item or service and enter the following: the title, detailed description, price, accepted price range, any relevant images of the item/service, deadline, and the category. Then they review their listing before submitting.
3. They receive a notification that their listing has been submitted.

Use Case 6: User Bids on Items

Diagram



Brief Description & Precondition: A U places bids on available items within the marketplace and must have sufficient funds in their account to participate in bidding. The preconditions are the following: the U must have

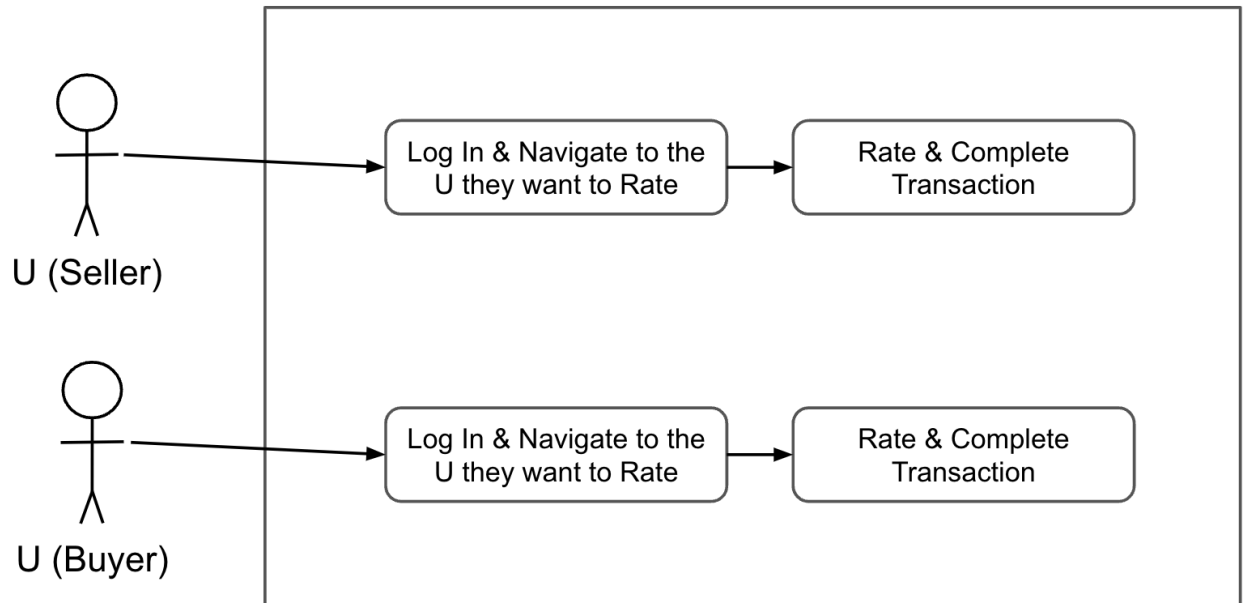
an active account (and be logged in), the item must be available for bidding, and the U must have sufficient funds in their account to place a bid.

Step-By-Step Description:

1. The U logs into their account and navigates to the list for bidding.
2. The U selects an item they wish to bid on,
3. The U enters their bid amount, confirms the bid, the system verifies they have sufficient funds, and the system updates the bid and notifies other U's on the bid amount.
4. The system notifies the U of a successful bid placement and updates the bidding status of the item.

Use Case 7: Transaction Ratings

Diagram



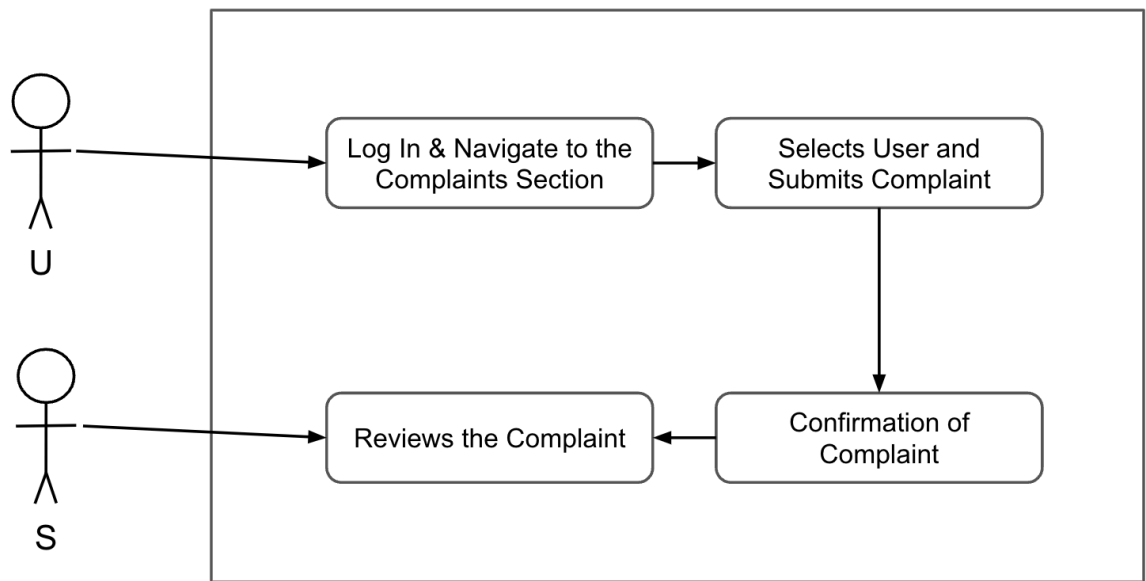
Brief Description & Precondition: The U's can rate their transaction experience after completing a purchase or a rental. Ratings are submitted anonymously to promote unbiased feedback. The preconditions are that the U must be active and logged in and the U must be completed for the U to rate it.

Step-By-Step Description:

1. The U logs into their account and completes a transaction.
2. The U who bought the item/service has the option to rate the seller and vice versa. They both rate their experience based on their experience (1 to 5 stars). Both ratings are submitted anonymously to the system.
3. The system then confirms that the ratings have been recorded.

Use Case 8: User Complains about Another User

Diagram



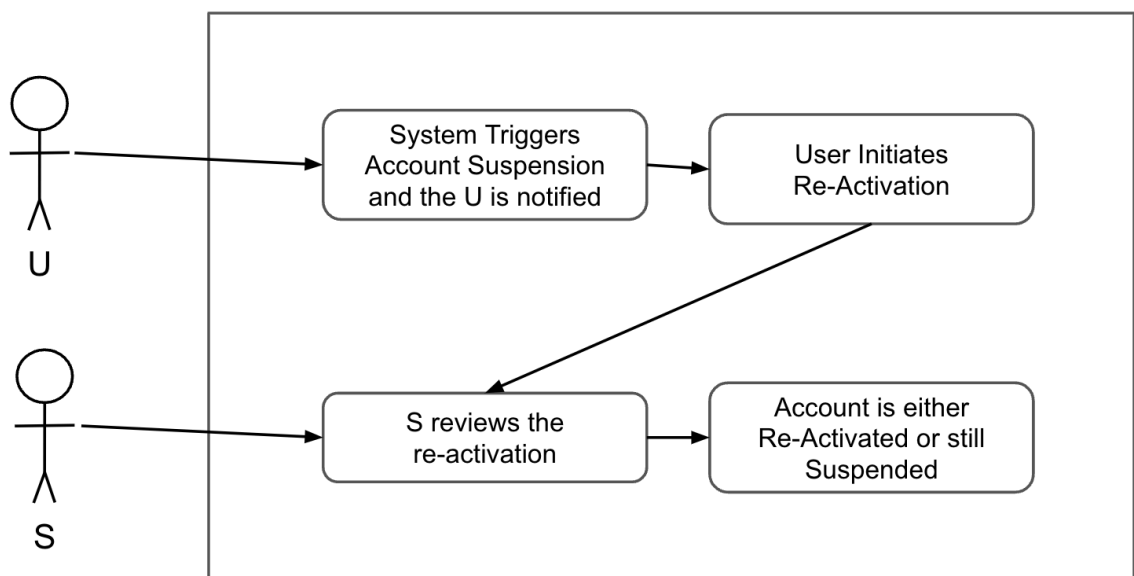
Brief Description & Precondition: A U can submit a complaint against another U regarding a transaction or behavior. The complaint is then reviewed by a S (system administrator). The preconditions are the following: the U must have an active account and be logged in, the U must have completed a transaction with the U they wish to complain about, the complaint must be on a specific criteria.

Step-By-Step Description:

1. The U logs into their account and navigates to the complaint list of their recent transactions.
2. The U submits a complaint form detailing their issue.
3. The system sends a receipt of the complaint and notifies it will be reviewed.
4. The S reviews the complaint and takes appropriate action based on the findings.

Use Case 9: Suspension and Re-Activation

Diagram



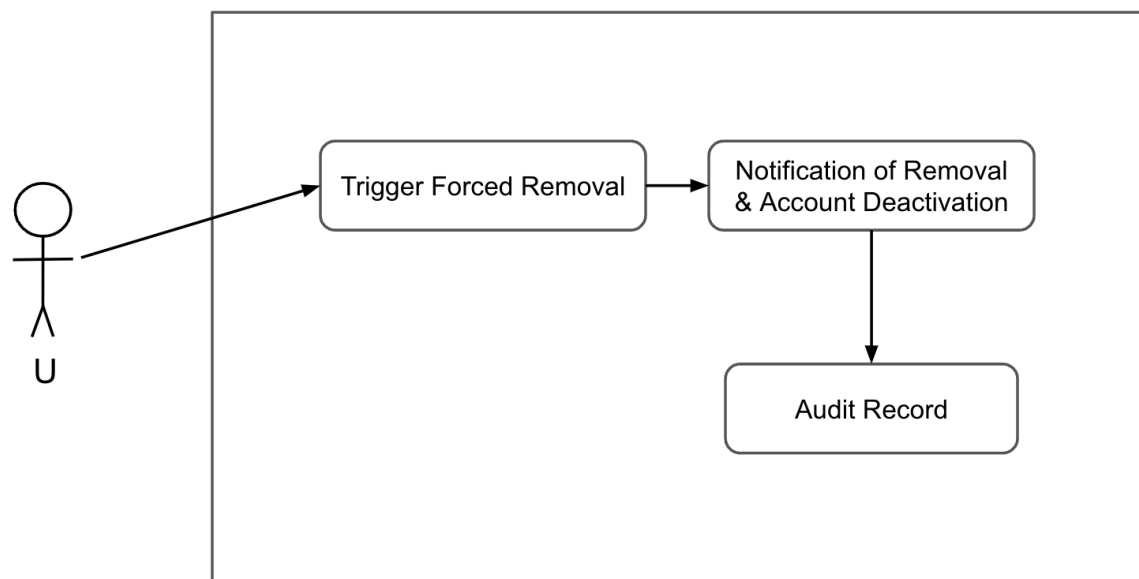
Brief Description & Precondition: The U is suspended from the system due to low ratings or violation of system rules. This will also outline the steps for re-activating their account after the suspension period or payment of fines. The preconditions are the following: the U must have been flagged for suspension due to low ratings (or too high ratings) or multiple complaints, the U must have an active account prior to suspension, and if the suspension is due to ratings, the U's average rating must be below the specified threshold.

Step-By-Step Description:

1. The system checks the ratings after a transaction, if the average rating is below 2 or above 4 (evaluated by at least three U's), the U is flagged for suspension.
2. The U is notified of their suspension status via notification which would include why they're suspended and how to initiate the reactivation process (via \$50 fine or S). When a U's account is suspended, they lose access to functionalities, including bidding or listing items. A record of their suspension is also created.
3. An S reviews the suspension case, checking for any additional information or complaints, and they decide either to approve or deny the reactivation request.
4. If approved, the U's account is reactivated, restoring full access and the U is notified. If denied, the U is informed of the decision and any further actions required.

Use Case 10: Forced Removal of User

Diagram

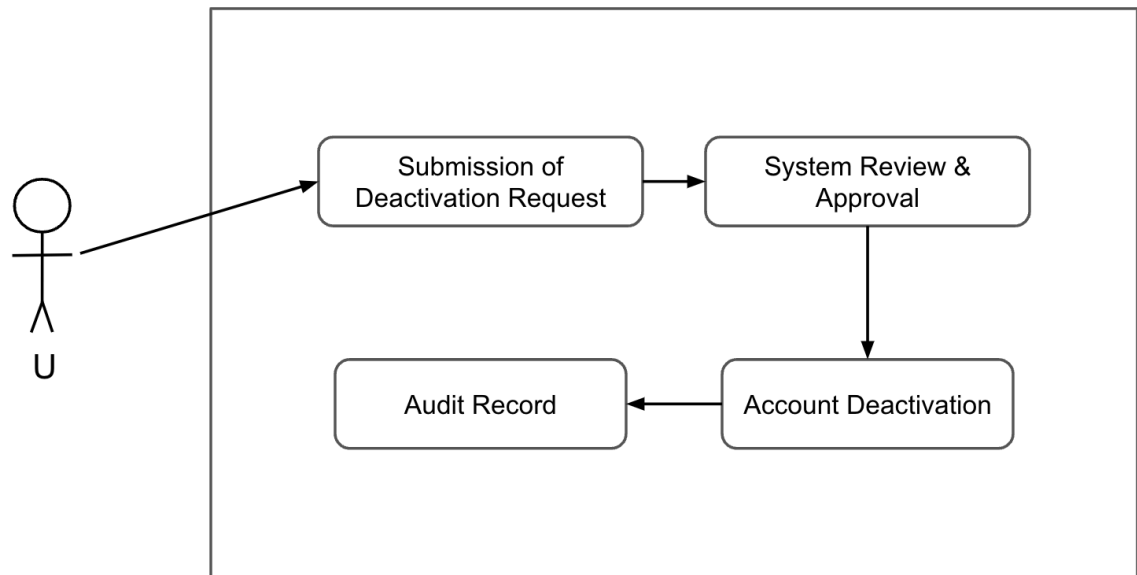


Brief Description & Precondition: The U is permanently removed from the system after repeated suspensions, The U's access to the platform is revoked, and their data may be handled according to privacy policies. The preconditions are the following: the U must have been suspended three times for low ratings or violations of the system rules, the U must have received notifications regarding their suspensions and the consequences, the U's account must be currently active prior to forced removal.

Step-By-Step Description:

1. The system identified U who have been suspended three times, and a record of these suspensions is verified by the system.
2. The U receives a notification informing them of the forced removal of the platform, this notification would list the reasons for removal and any information regarding their account status.
3. The system then deactivates the U's account, revoking all access and functionalities.
4. An audit record of the forced removal is created in the system.

Use Case 11: User Requests to Quit the System
Diagram

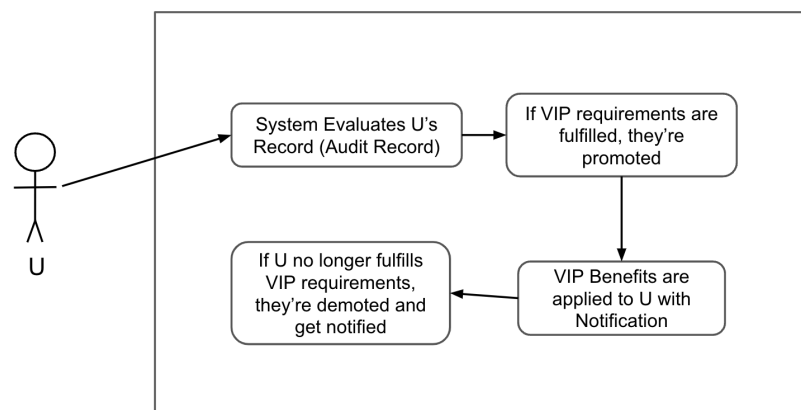


Brief Description & Precondition: The U voluntarily requests to leave the online marketplace system, in which their account will be deactivated. The preconditions are the following: the U must have an active account, the U must not be under suspension or forced removal, and the U must initiate the request through account settings.

Step-By-Step Description:

1. The U navigates to their account settings and selects the option to request to quit the system. A confirmation is followed shortly.
2. The U submits the request to quit, which is logged in the system for processing.
3. The system reviews the request for compliance with policies. If the U has any ongoing transactions, they will be notified to resolve these before proceeding.
4. If it's approved, the U receives a notification that their account is deactivated.
5. Then there is an audit recording this action.

User Case 12: VIP Status Achieved
Diagram



Brief Description & Precondition: The U could achieve VIP status within the online marketplace system, receiving special privileges and benefits as a reward for their loyalty and activity. The preconditions are as follows: the U must have an active account in the system, the U must achieve the criteria for VIP status, which includes having a balance of more than \$5,000, conducting more than 5 transactions, and not having any complaints against them.

Step-By-Step Description:

1. The system continuously monitors U accounts for eligibility based on predefined criteria (balance, transaction count, and complaint history).
2. Upon completion of the VIP requirements, the system updates the User's account status to VIP and assigns the necessary privileges such as the exclusive discount (10% off).
3. The U receives a notification of their status update.
4. The system continues to monitor their activity, if the U fails to meet any two of the VIP criteria, they would be demoted back to a regular U.
5. An audit record is kept of their activity status.

3.2 Supplementary Requirements

1. **Performance:** The system should deliver secure and efficient performance, handling key actions like transactions, browsing, and applications seamlessly.
2. **Security:** User data and sensitive actions should be encrypted to ensure privacy and security.
3. **User Interface:** The interface must be intuitive, providing easy navigation for common tasks such as browsing listings, placing bids, and managing accounts.
4. **Device Compatibility:** The system will be optimized for specific laptop devices, ensuring smooth usability, until future design changes are implemented.
5. **Reliability & Scalability:** The system should offer high reliability and be able to scale for future updates, allowing the addition of new features without disrupting existing functionalities.
6. **Error Handling:** Error handling should be clear and guide users toward resolving issues effectively.

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4. Supporting Information

Software Requirements Specification has:

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