The A-Team

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Salutorg.com Mini E-Bidding System Design Report

Version <1.0>

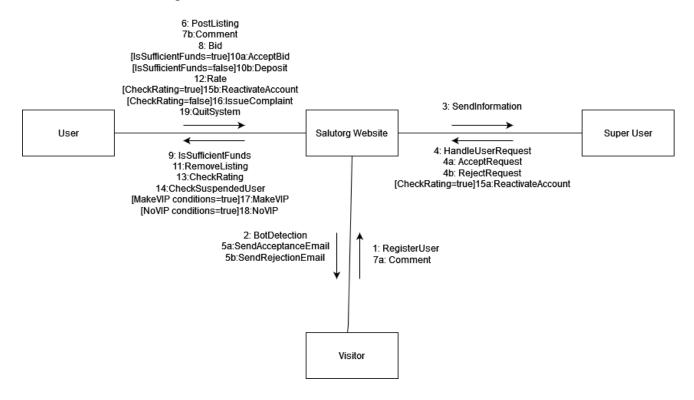
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1. Introduction

Collaboration Class Diagram

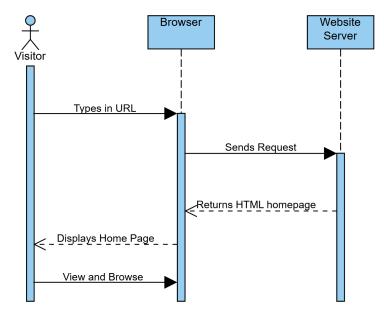


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2. Use-Case Model

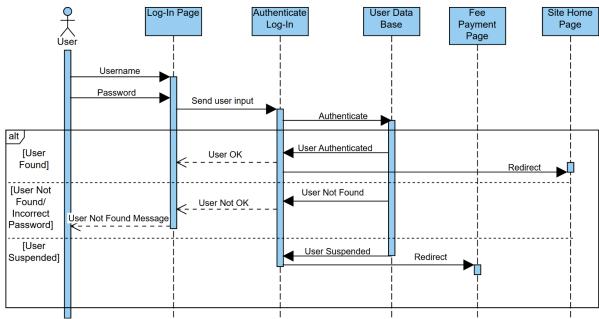
1. Viewing

Anyone who doesn't have an account with the bidding system is labeled a visitor. Visitors have access to the site and can view/browse all listings.



2. Logging In:

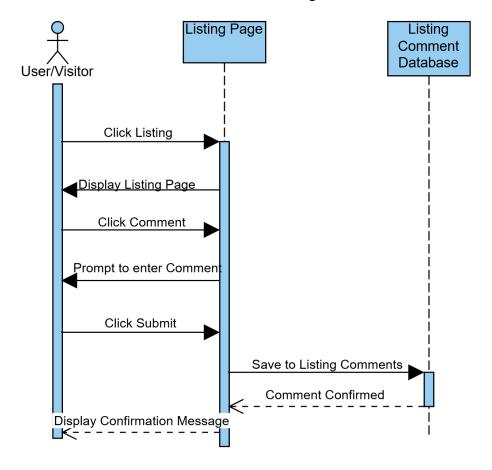
Users need to provide accurate login information (Username and Password) to gain access to their accounts. If a suspended user tries to log in, they'd be prompted to pay the \$50 fine. If the user is not found, a user not found message is displayed.



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3. Commenting:

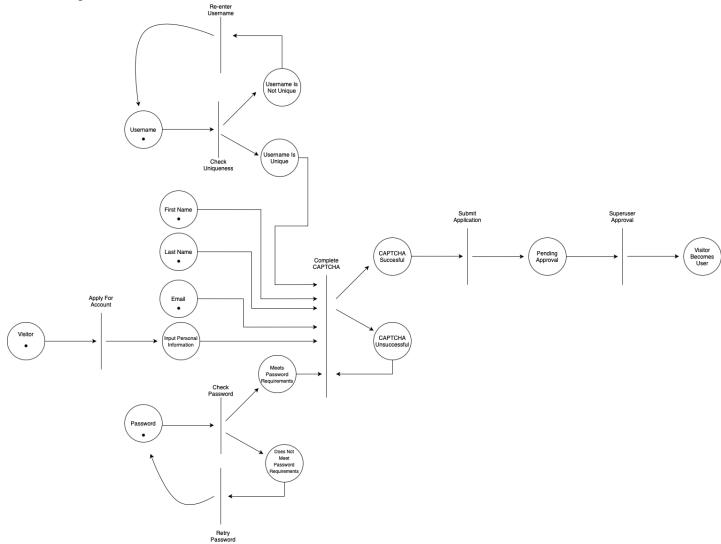
Visitors and Users are allowed to comment on all listings.



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4. Signing Up/Application Process:

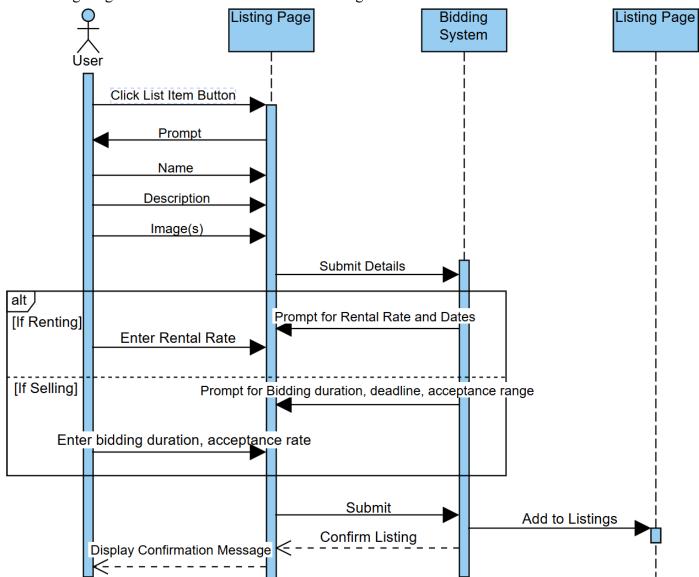
Visitors can apply to become users of the site. They must provide personal information (First/Last Name, Username, Email, and Password). Passwords must have 8 characters, at least 1 uppercase letter, and at least 1 number. When all application requirements are met, the visitor must complete a CAPTCHA. The application is submitted and only when approved by a superuser will the visitor become a User.



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5. Listing Items:

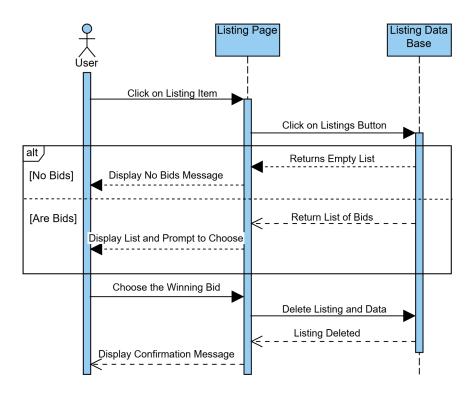
Users are the only ones who can list items. To list, the user has to choose whether the item is up for sale or rent. **For both:** The user has to input the item name, at least one image, the asking price, the acceptable price range, and a description of the item. **For Rent:** Provide renting range and rate. **For Sale:** Provide a bidding deadline.



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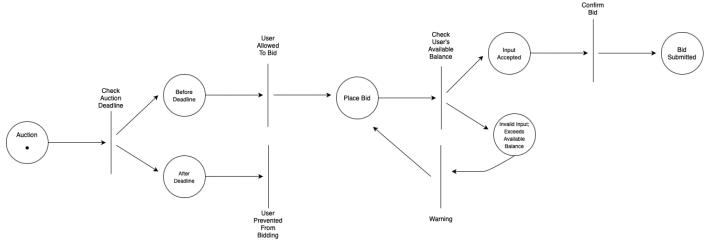
6. Selling/Choosing who to rent/sell to:

The User can choose which bid to accept. If there are no bids by the deadline, there are no bids to choose Else, the user accepts whichever bid they want. The listing is taken down once the transaction is complete and the money is processed.



7. Bidding:

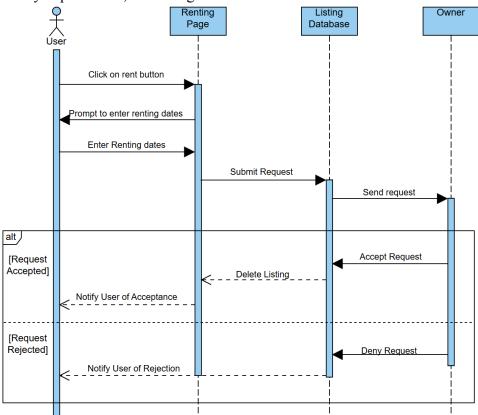
When a user decides to bid on an item, the user must have enough money in the account to bid. The user must enter an amount within the acceptance range. If after the deadline no bids can be taken. If an amount out of that range is entered the screen will output an error message and the user will be prompted to enter an amount again until an acceptable amount is entered. Once a user hits submit, they are agreeing to buy the item.



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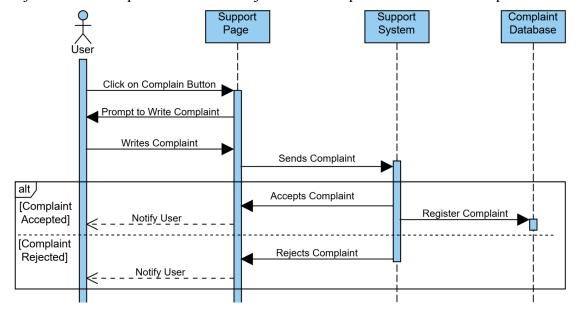
8. Renting:

Renting an item requires a user to specify start and end dates. When 'submit' is pressed, the user must agree and there must be adequate funds in the user's account. Once the user accepts and the money is processed, the listing is taken down.



9. Complaints

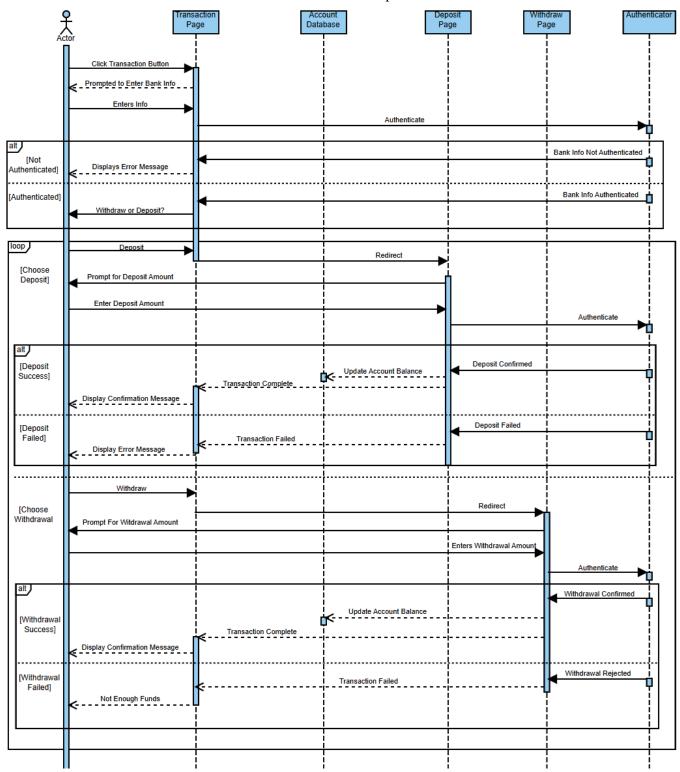
If a user complains about someone they haven't had a transaction with, the complaint will be rejected. The complaint can also be rejected if the superuser deems the complaint dismissable.



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10. Depositing/Withdrawing Money

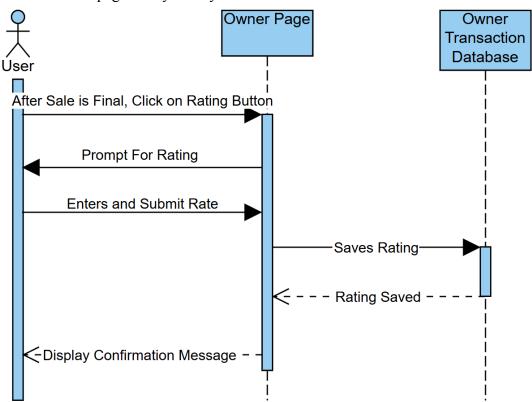
Users can Withdraw/Deposit money into the account. A user must have an authenticated account to transfer money. After the account is confirmed, the user can deposit or withdraw. Accounts must have sufficient funds to Withdraw/Deposit the entered amount.



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11. Rating

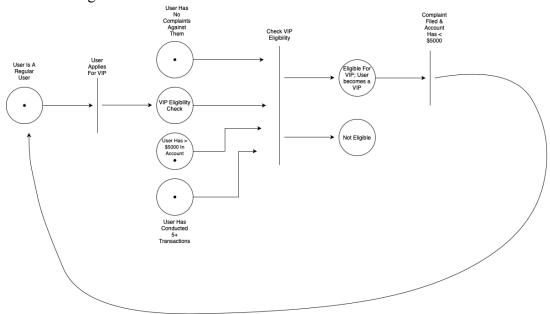
Rating a seller will only be available to users who have bought/rented something from that specific seller. Users can choose a rating from 1-5. Once submitted, the rating will be posted to the seller's rate page anonymously.



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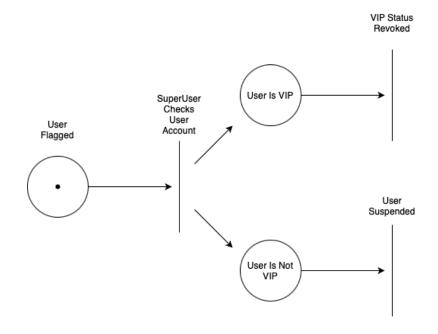
12. VIP

After each transaction and rating, a user is observed to see if they are qualified to become a VIP. A user must have more than \$5000 in the account, conducted 5+ transactions, and have no complaints. When requirements are met, the user becomes a VIP. After becoming a VIP, if a complaint is brought in and the user has less than \$5000 in their account, the VIP user becomes a regular user.



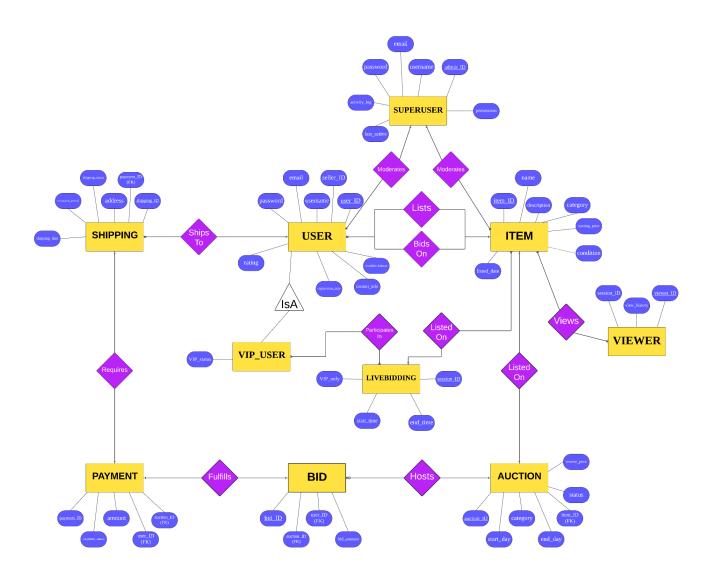
13. Suspension

If a user is suspended, the user's account must be checked first. If the user is a VIP, their VIP status is rescinded and they return to a regular user. Else, the user is suspended.



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3. Entity Relationship Diagram



Explanation of Diagram

- Viewer
 - o Users who have yet to make an account/aren't logged in
 - Can only view listings! Cannot make or bid on auctions
 - o Attributes:
 - <u>viewer ID</u> (Primary Key)
 - view history
 - session ID
 - o Cardinality
 - Viewer:Item \rightarrow N:N
- SuperUser

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- Functions like an administrator, being able to moderate and take down any inappropriate or fraudulent listings
- Able to moderate and ban users who violate the terms of the website
- o Attributes:
 - admin_ID (Primary Key)
 - permissions
 - username
 - email
 - password
 - activity_log
 - last active
- Cardinality
 - SuperUser:User \rightarrow 1:N
 - SuperUser:Item \rightarrow 1:N
- User
 - All users are able to bid on and create auctions, should they choose to do so
 - Users can leave reviews for sellers, rating their customer service, item quality, shipping, etc.
 - o Attributes:
 - <u>user_ID</u> (*Primary Key*)
 - seller ID
 - username
 - email
 - password
 - registration_date
 - rating
 - contact info
 - Cardinality
 - User:Shipping \rightarrow 1:N
 - User:Item $\rightarrow 1/N:1$
- VIP User
 - Attributes
 - Subclass of User! Has all attributes User has, with the addition of:
 - VIP Status (A Boolean statement, which checks whether the user is a VIP)
 - Cardinality
 - VIP User:LiveBidding \rightarrow N:N
- Live Bidding
 - A live bidding session where only VIPs can auction and bid on items
 - o Attributes
 - VIP_only (Boolean statement. Ensures that only VIP users are allowed to participate)
 - start time
 - end time
 - session ID
 - o Cardinality
 - LiveBidding:Item \rightarrow 1:N

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- Shipping
 - Attributes
 - <u>shipping ID</u> (*Primary Key*)
 - payment ID (Foreign Key, links to Payment)
 - address
 - shipping_date
 - shipping status
 - estimated arrival
 - Cardinality
 - Shipping:Payment \rightarrow 1:1
- Payment
 - o Attributes
 - payment ID (Primary Key)
 - user ID (Foreign Key, links to User)
 - auction ID (Foreign Key, links to Auction)
 - payment status
 - amount
 - Cardinality
 - Payment:Bid \rightarrow 1:1
- Bid
 - Attributes
 - <u>bid_ID</u> (Primary Key)
 - user_ID (Foreign Key, links to User)
 - auction ID (Foreign Key, links to Auction)
 - bid amount
 - Cardinality
 - Bid:Auction \rightarrow 0/N:1
 - Bid:Payment \rightarrow 1:1
- Auction
 - o Attributes
 - auction ID (Primary Key)
 - item ID (Foreign Key, links to Item)
 - category
 - start day
 - end day
 - reserve price
 - status
 - Cardinality
 - Auction:Item \rightarrow 1:1
- Item
 - Attributes
 - <u>item ID</u> (Primary Key)
 - name
 - description
 - condition

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- category
- starting price
- listed date

4. Detailed Design

Here is a list of all functions that we plan to implement into our project:

4.1 RegisterUser

```
define RegisterUser(username, password, age):
    # System gathers username, password, and age of the visitor.
    # Send information to super-user
    if BotDetection == True:
        SendInformation(username, password, age)
```

4.1.1 BotDetection

```
define BotDetection():
    # System prompts visitor to complete CAPTCHA.
    # Returns True or False value
    captcha = GenerateCaptcha()
    captchaResult = CaptchaAnswer(captcha)
    return captchaResult
```

4.2 HandleUserRequest

- # Super-user may reject or deny user application.
- # If accepted, the user is added to the Users database and acceptance email is sent.
- # Otherwise, the user is sent a rejection email.

define HandleUserRequest(email, username, password, age):

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if request denied:

RejectRequest()

else:

AcceptRequest()

4.2.1 AcceptRequest

define AcceptRequest(email, username, password, age):

AddToUsersDB(email, username, password, age)

SendAcceptanceEmail()

4.2.2 RejectRequest

define RejectRequest():

SendRejectionEmail()

4.3 WithdrawMoney

System transfers money from the user's bank account to their website account.

define WithdrawMoney(moneyToWithdraw):

userBalance += moneyToWithdraw

4.4 DepositMoney

System transfers money from the user's account on the website to their bank account.

System first checks if the amount the user wants to transfer is permissible.

define DepositMoney(moneyToDeposit):

if IsSufficientFunds:

userBalance -= moneyToDeposit

else:

print ERROR

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4.4.1 IsSufficientFunds

define IsSufficientFunds(moneyToDeposit):

if moneyToDeposit > userBalance:

return ERROR

4.5 PostListing

```
# Adds listing to Listings database

# Subsequently posts the listing upon its addition to the database.

define PostListing(image, name, description, price):

AddToListings(image, name, description, price)
```

4.6 Comment

```
# Uploads visitor/user comment into the comment's section of the item.
# If the commenter is not a user, the name displayed is "Anonymous"

# Initialize an in-memory dictionary to store listings and comments
listings = {}

function Comment(listingID, userID, commentText):

# Check if user is a commenter

if isCommenterUser(userID):

# Simulate an API call to retrieve the username from userID

user = getUserName(userID)

comment = user.username + ": " + commentText + " - " +
getCurrentDateTime()

else:

comment = "Anonymous: " + commentText + " - " + getCurrentDateTime()
```

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```
# Check if the listing already exists in the dictionary
if listingID not in listings:
       listings[listingID] = [] # Initialize a new list for comments if listing is new
       # Add the comment to the listing's comments list
       listings[listingID].append(comment)
       return "Comment added successfully."
function displayComment(item ID):
       if listingID in listings:
               print("Comments for listing " + listingID + ":")
       for comment in listings[listingID]:
               print(comment)
       else:
               print("No comments for this listing.")
function isCommenterUser(userID):
       # Function to check if userID belongs to a valid commenter
       # For example, checking if the userID exists
       return userID in validUserList
```

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```
function getUserName(userID):
       # Function to retrieve the user's username based on userID
       # Simulated with a dictionary lookup or hardcoded data
       return userDatabase[userID]
function getCurrentDateTime():
       # Function to return the current date and time as a string
       return "2024-11-11 10:45 AM"
Bid
# System records the user's bid and shares it to the website.
define Bid(priceBid):
       if IsSufficientFunds(priceBid):
              message = "User" + username + "bid" priceBid + "at" + dateAndTime
              DisplayMessage(message)
       else:
              print ERROR
4.7.1 IsSufficientFunds
# Same idea as 4.4.1
define IsSufficientFunds(priceBid):
       if priceBid > userBalance:
              return False
       else:
```

return True

4.7

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4.8 RemoveListing

Removes specified listing from the Listings database, thereby removing it from the website. define RemoveListing(listing):

DeleteFromListings(listing)

4.8.1 PastDeadline

Removes listing if the bidding deadline has passed.

define PastDeadline(listing):

if listing.deadline has passed:

RemoveListing(listing)

4.9 AcceptBid

```
# Function is invoked when a seller accepts a bid.
```

define AcceptBid(priceBid, listing, buyer, seller):

seller.balance += priceBid

buyer.balance -= priceBid

seller.numOfTransactions += 1

MakeVIP(seller) # See 4.15

RemoveListing(listing)

4.10 Rate

Function for when a user gives a rating to a user and vice-versa.

define Rate(rating, account):

account.sumOfRatings = rating

account.numOfRatings += 1

account.rating = account.sumOfRatings / account.numOfRatings

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CheckSuspendUser(account) # See 4.11

4.11 CheckSuspendUser

Checks if a user should be suspended, which happens when a user's average rating is less than 2 or greater than 4.

When a user is suspended, they are marked as suspended and thus cannot log in successfully into their account.

define SuspendUser(user):

```
if CheckRating(user) == True:
    SendSuspensionEmail()
    user.isSuspended = True
```

4.11.1 CheckRating

```
# Checks the user's rating.

define CheckRating(user):

if user.rating < 2 or user.rating > 4:

return True

else:

return False
```

4.12 ReactivateAccount

A suspended user may reactivate their account if a super-user does it or if the suspended user pays \$50.

define ReactiveAccount(user):

user.isSuspended = False

4.12.1 PayFee

Function is invoked if the user pays their suspension fee.

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define PayFee(user):

user.balance -= 50

ReactivateAccount(user)

4.13 QuitSystem

A user may ask to be removed from the system, which a super-user is able to do.

The user is deleted from the Users database and thus can no longer access their account.

define QuitSystem(user):

DeleteFromUsersDB(user)

4.14 IssueComplaint

A user may issue a complaint to a super-user concerning an item bought.

define IssueComplaint(message, seller):

SendMessage(message)

seller.numOfComplaints += 1

4.15 MakeVIP

A user may become VIP if they meet the following criteria: if they have more than \$5000 in their account, if they have conducted more than five transactions, and if they have never received any complaints.

define MakeVIP(user):

if user.balance > 5000 and user.numOfTransactions > 5 and user.numOfComplaints ==

0:

user.isVIP = True

4.16 NoVIP

A VIP user may lose their VIP status by either meeting the criteria to be suspended or by violating the original criteria for VIPs.

define NoVIP(user):

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```
if user.isVIP = True:
       if not(user.balance > 5000 and user.numOfTransactions > 5 and
user.numOfComplaints == 0:)
              user.isVIP = False
       else if CheckRating(user):
              user.isVIP = False
```

4.17 PersonalizedGUI

```
define PersonalizedGUI():
       # Initialize variables to store user data
       username = null
       listings = []
       bids = []
       # Function to retrieve user data on component load
       onComponentLoad:
              retrieveUserData()
       # Function to retrieve user data
       # API call to fetch user data
       function retrieveUserData:
               userData = fetchUserDataFromAPI()
              # Set user data to local variables
```

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```
username = userData.username
       listings = userData.listings
       bids = userData.bids
# Display UI elements
# Display welcome message with username
display:
       display "Welcome, " + (username or "Guest")
# Section: User Listings
display "Your Listings"
       if listings is not empty:
              for each listing in listings:
                      display ListingCard with listing information
       else:
              display "No listings available."
# Section: User Bids
display "Your Bids"
       if bids is not empty:
               for each bid in bids:
                      display BidCard with bid information
       else:
```

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display "No bids placed yet."

```
# Component: ListingCard

function ListingCard:

input: listing data

display:

display listing.title

display listing.description

# Component: BidCard

function BidCard:

input: bid data

display:

display "Bid Amount: " + bid.amount

display "Item: " + bid.item
```

4.18 LiveBidding

Function defines our live bidding functionality, where VIPs can participate in a "King of the Hill" style auction. Bidders have 10 seconds to outbid the highest bid, and if no new offer is made within that time frame, the item is given to the highest bidder.

define LiveBidding():

```
highestBid = 0
kingOfTheHill = None
timer = 10 # 10-second timer for bids
activeBidding = True
```

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```
while activeBidding:
              if kingOfTheHill is not None:
                     countdownTimer(timer)
       if timer == 0:
              announce Winner (king Of The Hill) \\
              activeBidding = False
       else:
              wait for newBid()
       else:
              wait for firstBid()
function countdownTimer(seconds):
       while seconds > 0:
       sleep(1) # Sleep for 1 second
       seconds -= 1
function newBid():
       bid = getBidAmount()
       if bid > highestBid:
```

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```
highestBid = bid
       kingOfTheHill = getBidder()
       resetTimer(10) # Reset timer to 10 seconds
function resetTimer(seconds):
       timer = seconds
       displayCountdown(timer)
function getBidAmount():
       # Retrieve bid amount from current user
       return userInput
function getBidder():
       # Retrieve current user as the bidder
       return currentUser
function announceWinner(bidder):
       display("The winner is " + bidder + " with a bid of $" + highestBid)
function displayCountdown(seconds):
       display("Time remaining: " + seconds + " seconds")
function wait for firstBid():
```

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```
display("Waiting for first bid...")
  while kingOfTheHill is None:
      if getBidAmount() > highestBid:
            newBid()

function wait for newBid():
      display("Waiting for new bid... Time left: " + timer + " seconds")
      sleep(1)
```

5. System Screens

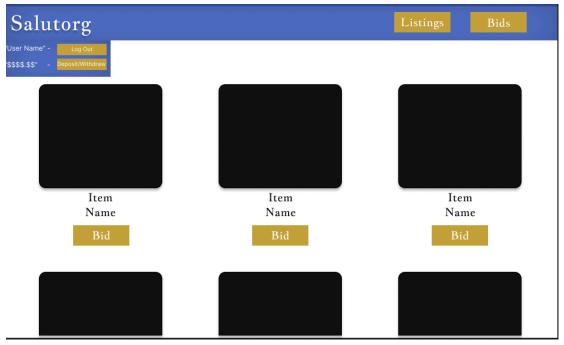
Visitor Home



The home page for visitors of the site, buttons to either login or register as a user, can also view listings.

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<u>User Home</u>



The home page for users, shows their name and balance. Buttons to view their listings or bids and to log out or change their balance.

Item Listing

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This shows how an item would be listed, with its name, description, deadline to bid, etc. Also shows the comments posted by users and visitors below it.

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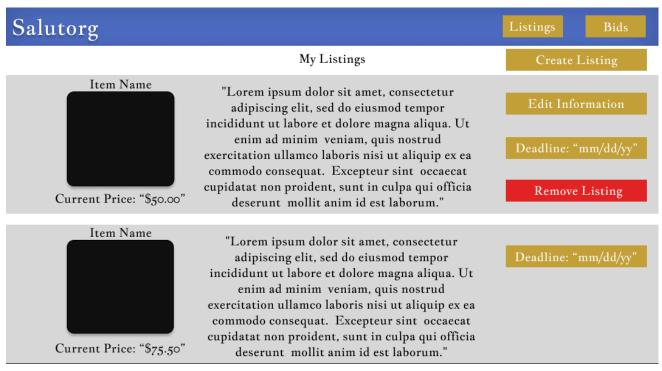
User Bids



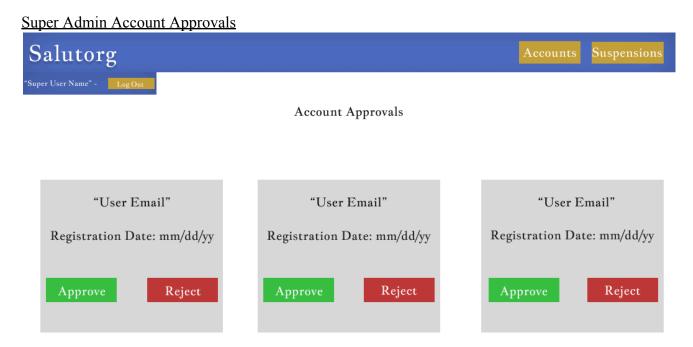
This shows the page that holds the information on bids the user has made. Includes if their currently the top bid, what the deadline is, and gives them the option to remove their bid.

User Listings

<pre><project name:="" salutorg.com=""></project></pre>	Version: <1.0>
Software Requirements Specification	Date: <17/10/24>
Design Report	Date: <12/11/24>



This shows listings made by the user. Allows the user to edit information like the price or deadline or just remove it entirely.



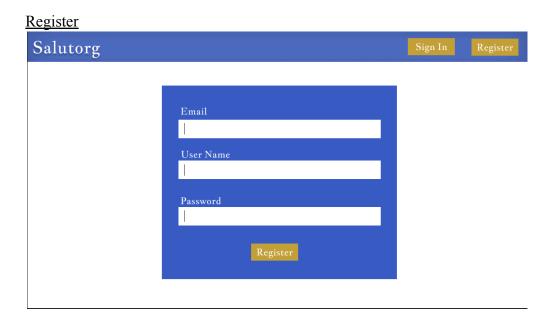
The page for super users to accept or reject new registrations. Shows the email someone registered with and the date they registered.

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Super User Suspension Appeals



This page shows the users who have been suspended, the reason for their suspension, and allows the super user to revoke or keep their suspension.



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This is the register page with an input field for an email, username, and password.

Log In



This is the login page whose only difference compared to register is that you don't need to input an email.

Prototype - (CreateListing)



User is able to create a listing by pressing the "Create Listing" button on the "Listings page"

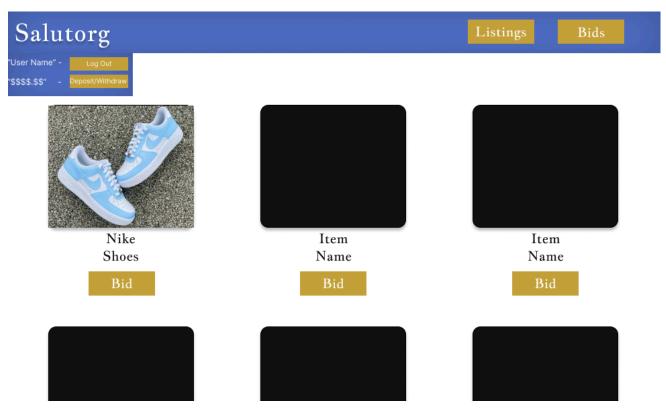
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Form appears for User to fill out with relevant information.



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Listing gets added to "Listings" page of user with information they added and to "Home" page

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6. Group Meeting Memos

Oct. 26, 2024

1. Created a github repository

Oct. 27, 2024

1. Created website homepages using Figma, showcasing the potential overall design of the website

Nov. 8, 2024

- 1. Further discussed the overall design and functionalities of the website
- 2. Gave clear responsibilities on who does what on the website
- 3. Further discussed the details of the report

Nov. 11, 2024

- 1. Completed section 5 of the report concerning major GUI screens and provided a prototype example of one of the functionalities. Completed the collaboration class diagram for section 1 using functions found in section 4.
- 2. Redesigned the ER diagram with more entities and attributes that better represent the project requirements
- 3. Further discussed the overall design and functionalities of the website
- 4. Began coding various functionalities, such as the overall UI and how a visitor can register to become a user

7. Github Address

https://github.com/israelpina004/Salutorg SEFP.git