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BuzzBid Data Types

User

Attribute	Data Type	Nullable
Username	String	Not Null
Password	String	Not Null
First	String	Not Null
Last	String	Not Null
Position	String	Null

Item

Attribute	Data Type	Nullable
Item ID	Integer	Not Null

Item Name	String	Not Null
Description	String	Not Null
Category	String	Not Null
Condition	String	Not Null
Returnable	Boolean	Not Null
Starting Bid	Float	Not Null
Minimum Sale	Float	Not Null
Start Datetime	Datetime	Not Null
Auction Length	Integer	Not Null
Get It Now Price	Float	Null

Bid

Attribute	Data Type	Nullable
Bid Amount	Float	Not Null
Bid Datetime	Datetime	Not Null

Rating

Attribute	Data Type	Nullable
Rating	Integer	Not Null
Comment	String	Null
Rating Datetime	Datetime	Not Null

Cancel Item

Attribute	Data Type	Nullable
Cancel Reason	String	Null
Cancel Datetime	Datetime	Not Null

BuzzBid Business Logic Constraints

User

- Users who are new to BuzzBid must register first.
- Users who already have a BuzzBid account cannot register again.
- Users registered through BuzzBid interface do not have administrative privileges. Administrative rights will be granted by the database administrator manually.

List Item

- Item's Starting Bid must be greater than 0.
- Item's Minimum Sale Price must be greater or equal to Starting Bid.
- Item's Get It Now Price must be greater or equal to Minimum Sale Price.

Search Item

- Items that can be searched for must be non-sold and currently available.

Item For Sale

- Users who list the item cannot bid on their own items.
- User Bid Amount input must be at least 1 dollar higher than the Current Highest Bid amount if there is one. If there is no Current Highest Bid, then the Bid Amount should be greater or equal to the Starting Bid.
- User Bid Amount cannot be equal or higher to the Get It Now Price.

Item Rating

- Only the user who wins the item bid can rate the item.
- A user may rate an item listing only once.
- A user can submit multiple ratings for different listings they have won, even if those listings have identical names (including case).

Rating Delete/Auction Cancel

- Users can only delete their own ratings.

Task Decomposition with Abstract Code

Log in

Task Decomp

Lock Types: Read-only on User table

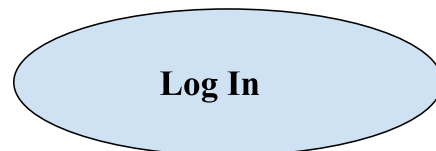
Number of Locks: Single

Enabling Conditions: None

Frequency: Low. The number of times a user logs into the application.

Consistency (ACID): not critical, order is not critical.

Subtasks: None



Abstract Code

- User enters *username*, *password* input fields.
- When **Register** button is clicked:
 - No need to validate user input, no need to store info
 - Go to **New User Registration** task
- When **Login** button is clicked:
 - If data validation is successful for both *username* and *password* input fields, then:
 - If user.username record is found but user.password != *password*:
 - Go back to **Login** form, with error message.
 - Else
 - Store login information as session variable *username*.
 - Go to the **Main Menu**.
 - Else *username* and *password* input fields are invalid, display **Login** form, with error message.

New User Registration

Task Decomp

Lock Types: Read and write on User table

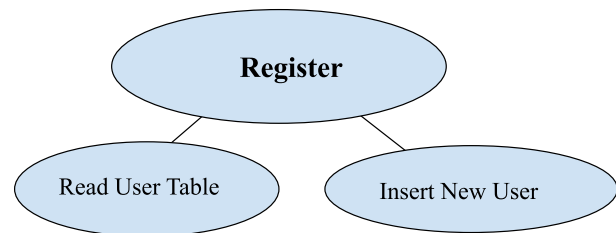
Number of Locks: Total 2, 1 read and 1 write lock

Enabling Conditions: Trigger by clicking **Register** button on **Login** form.

Frequency: Low. The number of times a user registers the application.

Consistency (ACID): not critical, order is not critical.

Subtasks: Decomposition into sub-tasks is needed. Mother Task is needed to coordinate subtasks. All tasks need to be done but Read User Table data should be looked-up and verified before Insert New User.



Abstract Code

- User enters *first name*, *last name*, *username*, *password*, and/or *confirm password* input fields.
- When **Register** button is clicked:
 - Perform data validation:
 - If any input field is null, data invalid
 - If *password* != *confirm password*, data invalid
 - When data invalid, display **New User Registration** form, with error message.
 - If data validation is successful for all input fields, then:
 - If user.username record is found in User table:
 - Go back to **New User Registration** form, with error message.
 - Else
 - Write registration information on User table.

- Go to **Main Menu**.
- When *Cancel* button is clicked:
 - Return to **Login** Form.

Main Menu

Task Decomp

Lock Types: Read-only.

Number of Locks: Single

Enabling Conditions: Trigger by successful login.

Frequency: Moderate. The number of times a user accesses the application.

Consistency (ACID): not critical, order is not critical.

Subtasks: None



Main Menu

Abstract Code

- Show User first name and last name.
- Show “*Search for Items*”, “*List Item*”, and “*View Auction Results*” tabs.
- If User.position is not null:
 - Show User position.
 - Show “*Category Report*”, “*User Report*”, “*Top Rated Items*”, “*Auction Statistics*”, and “*Canceled Auction Details*” tabs.
 - Upon:
 - Click *Category Report* button - Jump to the **Category Report** task.
 - Click *User Report* button - Jump to the **User Report** task.
 - Click *Top Rated Items* button - Jump to the **Top Rated Items** task.
 - Click *Auction Statistics* button - Jump to the **Auction Statistics** task.
 - Click *Cancelled Auction Details* button - Jump to the **Canceled Auction Details** task.
- Upon:
 - Click *Search for Items* button - Jump to the **Search for Items** task.
 - Click List Item button - Jump to the **Sell Item** task.
 - Click *View Auction Results* button - Jump to the **View Auction Results** task.

Selling Items

Task Decomp

Lock Types: Write-only

Number of Locks: Single

Enabling Conditions: Trigger by clicking *List Item* button on **Main Menu** form.

Frequency: High. The number of times a user lists an item in the application.

Consistency (ACID): not critical, order is not critical.

Subtasks: None



List Item

Abstract Code

- User clicked on **List Item** button from **Main Menu**.
- Display **New Item for Auction** Form.
- User enters *item name*, *description*, *starting auction bidding at \$*, *minimum sale price \$*, and *get it now price* input fields.
- User select *category*, *condition*, and *auction length in* input fields from drop down menu.
- User check or uncheck *returns accepted* input field.
- When **List My Item** button is clicked:
 - Perform data validation:
 - Except for *get it now price*, if any other input field == null, data invalid.
 - If *get it now price* != null and *minimum sale price \$* > *get it now price*, data invalid
 - When data invalid, show the error message and then display **New Item for Auction** form again.
 - If data validation is successful for all input fields, then:
 - Write item information on the Item table based on input fields with an assigned unique *Item ID*
 - Go to **Main Menu** Form.
- When **Cancel** button is clicked:
 - Return to **Main Menu** Form and do not save the item details.

Search for Items

Task Decomp

Lock Types: Look up Read-only

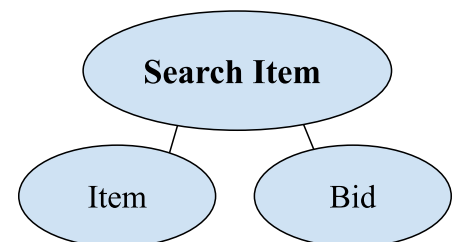
Number of Locks: Two

Enabling Conditions: Trigger by clicking **Search for Items** button on **Main Menu** form.

Frequency: High. The number of times a user searches items in the application.

Consistency (ACID): Not critical, order is not critical.

Subtasks: Decomposition into sub-tasks is needed, multiple tables read at the same time.



Abstract Code

- User clicked on **Search for Items** button from **Main Menu**.
- Display **Item Search** Form.
- Users have the option to enter *keyword*, *minimum price \$*, and/or *maximum price \$* input fields.
- Users have the option to select *category* and/or *condition at least* input fields from the drop down menu.
- When **Search** button is clicked:
 - If all input fields are null, return a listing of all items order by auction ends time with the item ending soonest on top.
 - Else perform data validation of input field:

- If *minimum price \$* != null, and *maximum price \$* != null, and *minimum price \$* > *maximum price \$*, return to Item Search Form with error message
- Once data validation is successful, run the **Search for Items** task, query for information about the item and its information where all criterias below are met:
 - If *keyword* != null:
 - Find Item.item_name or Item.description contains *keyword*
 - If *category* != null:
 - Find Item.category == *category*
 - If *condition* != null:
 - Find Item.condition >= *condition*
 - If *minimum price \$* != null:
 - Find Item.current_high_bid != null and Item.current_high_bid >= *minimum price \$*
 - Find Item.current_high_bid == null and Item.Starting_Bid_price >= *minimum price \$*
 - If *maximum price \$* != null:
 - Find Item.current_high_bid != null and Item.current_high_bid <= *maximum price \$*
 - Find Item.current_high_bid == null and Item.Starting_Bid_price <= *maximum price \$*
- Display **Search Result** Form with *ID*, *Item Name*, *Current Bid*, *High Bidder*, *Get it Now Price*, and *Auction Ends* information as well as a **Back to Search** Button
 - The search results display are sorted by auction end date in ascending order
 - When *Item Name* button is clicked:
 - Jump to the **Item for Sale** task.
 - When *Back to Search* button is clicked:
 - Return to **Item Search** Form
- When *Cancel* button is clicked:
 - Return to **Main Menu** Form.

Item for Sale

Task Decomp

Lock Types: Lookup Item, Read and Write Item Table.

Number of Locks: Five in total, 1 read lock (View Description), 4 write locks (Submit Bid, Edit Description, Git It Now, and Cancel Item)

Enabling Conditions: Trigger by clicking *Item Name* button on **Search Results** Form.



Frequency: High frequency except Cancel Item which is restricted to administrative users or the item listing user under certain conditions.

Consistency (ACID): This is critical to make sure the user is seeing the most updated items and descriptions before Submit Bid and Get it Now. So, it should have the most current data.

Subtasks: Mother task is required to coordinate subtasks. All tasks can be done in parallel. Order is not necessary. 1.View Description 2.Submit Bid 3.Edit Description 4.Get it now 5.Cancel Item

Abstract Code

User clicked on **Item Name** button on **Search Results** form.

- Query for item list and item bid information based on Item.item_id.
- Display **Item for Sale** Form with item details and Buttons as follow:
 - For all users, display **View Rating**, **Get It Now**, **Close**, and **Bid On This Item** Button.
 - If the current user is the item listing user, display **Edit Description** Button.
 - If the current user is Administrative User, display **Cancel This Item** Button.
- User enters *your bid* input field.
- When **View Rating** button is clicked, jump to the **View Ratings** task.
- **Edit Description** button is only visible to listing user and when it is clicked:
 - Edit **Description** on the original screen.
 - Update Item.description in Item table.
 - Return to **Item for Sale** Form.
- When **Get It Now** button is clicked:
 - If current user is the item listing user, show error message and return to **Item for Sale** Form
 - Else Write bid information on Bid table and return to **Search Results** Form.
- When **Bid On This Item** button is clicked:
 - If current user is the item listing user, show error message and return to **Item for Sale** Form
 - If item.get_it_now_price != null and *your bid* >= item.get_it_now_price
 - input field is invalid, display **Item for Sale** Form, with error message user should use Get It Now! Button
 - If *your bid* < item.starting_bid or *your bid* < (item.current_bid_amount + 1).
 - input field is invalid, display **Item for Sale** Form, with error message user should submit bid above current bid or starting bid.
 - If input field is valid,
 - Write bid information on Bid table.
 - Refresh and display **Item for Sale** Form.
- When **Cancel This Item** button is visible and is clicked:
 - Display pop up window for *cancellation reason* input field.
 - Delete item from **Item for Sale** form.
 - Return to **Search Results** Form.
- When **Close** button is clicked:
 - Return to **Search Results** Form.

View Rating

Task Decomp

Lock Types: Lookup Item Rating, Read and Write Item Table.

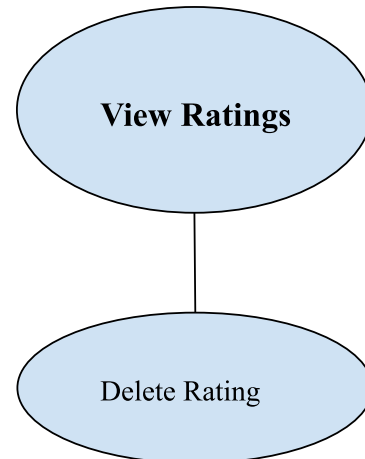
Number of Locks: Two

Enabling Conditions: Trigger by clicking *View Rating* button on Item for Sale Form or clicking *View Rating* button on Item Results Form.

Frequency: Moderate frequency for View Ratings and Low frequency for Delete Rating since it is restricted to administrative users or the item winner user under certain conditions.

Consistency (ACID): Not critical

Subtasks: Delete Rating By Administrator



Abstract Code

- User clicked *View Rating* button on Item for Sale Form or clicking *View Rating* button on Item Results Form.
- Query Item table and join with Rating table, sorted in rating datetime descending order, compute average rating.
- If the current user is the item winner and he/she has not submitted a rating for the item, Display Rate Item Form and Jump to **Add Ratings** Task.
- Else display Item Ratings Form with Buttons as follow:
 - For all users, display *Close* Button.
 - If the current user is an Administrative User, display *Delete* Button for each rating.
 - If the current user is the user who submitted a rating, display *Delete My Rating* Button.
- When *Delete* button is visible and is clicked:
 - Delete item.rating in Table.
 - Refresh the Item Ratings Form and show the updating rating.
- When *Delete My Rating* Button is visible and is clicked:
 - Delete Item.rating in Table.
 - Display Rate Item Form and Jump to **Add Ratings** Task.
- When *Close* button is clicked:
 - Return to previous form, Item for Sale Form or Item Results Form.

Add Ratings

Task Decomp :

Lock Types: Write-only

Number of Locks: Single

Enabling Conditions: Trigger by clicking *Rate This Items* button on Item Rating Form



Frequency: Low.

Consistency (ACID): Not critical

Subtasks: Auction winners can add new Rating

Abstract Code

- User clicked **Rate This Items** button on **Item Rating** Form.
- User fill out *My Rating* and/or *Comments* input field.
- When **Rate This Items** button is clicked
 - Write a new rating to Rating Table.
 - Return to **Item Rating** Form.
- When **Close** Button is clicked, return to previous Form, Item Results Form or Item Rating Form.

View Auction Results

Task Decomp

Lock Types: Look up Read-only

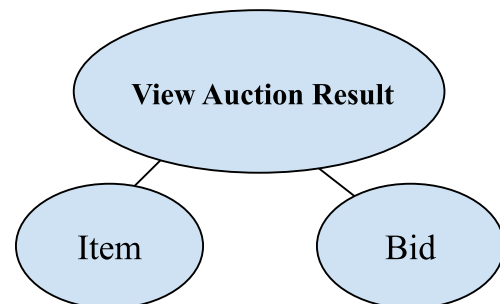
Number of Locks: two

Enabling Conditions: Trigger by clicking **View Auction Results** button on **Main Menu** Form.

Frequency: Moderate frequency because all participants in the auction and the user who lists the item will view the result.

Consistency (ACID): Not critical

Subtasks: Decomposition into sub-tasks is needed, multiple tables read at the same time.



Abstract Code

- User clicked **View Auction Results** button on **Main Menu** Form.
- Query information from Item and Bid, only return Item with auctions that have ended.
- Display **Auction Results** Form with the ID, **Item Name**, **Sale Price**, **Winner**, **Auction Ended**, and **Done** Button.
 - The Items are sorted by auction end time with most recent at first.
- When **Item Name** Button is clicked:
 - Query Item and Bid information based on Item.item_id.
 - Display **Item Results** Form with item information and **View Ratings** Button.
 - Informations include Item ID, Item Name, Description, Category, Condition, Return accepted, Get It Now Price, Auction End Date and Bid history. For the bid history, display all the bid amount, time of bid, and username.
 - When **View Ratings** Button is clicked, jump to **View Rating** Task.
- When **Done** Button is clicked, return to **Main Menu** Form.

Category Report

Task Decomp

Lock Types: Look up Read-only

Number of Locks: Single

Enabling Conditions: Trigger by clicking **Category Report** button on **Main Menu** Form.

Frequency: Low.

Consistency (ACID): Not critical

Subtasks: None

View Category Report

Abstract Code

- User clicked **Category Report** button on **Main Menu** Form.
- Query Item table for category and get it now price information for items that auction have ended or are still for sale (exclude canceled items).
- Calculate item counts in categories, as well as *minimum, maximum and average price of item get it now price*.
 - Items without get it now price should not be included in the minimum, maximum and average price calculation.
- Display **Category Report** Form:
 - Display *Category, Total Items, Min Price, Max Price and Average Price of the Get it Now Price*.
 - The Categories should be listed in alphabetical order.
 - Display **Done** Button.
- When **Done** Button is clicked, return to **Main Menu** Form.

User Report

Task Decomp

Lock Types: Look up Read-only

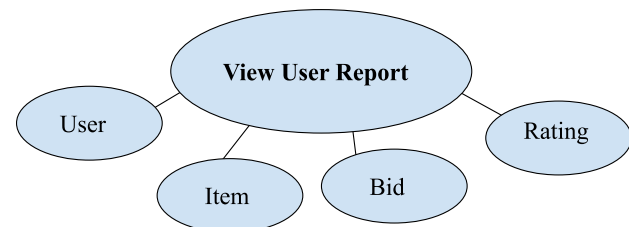
Number of Locks: Four

Enabling Conditions: Trigger by clicking **User Report** button on **Main Menu** Form.

Frequency: Low.

Consistency (ACID): Not critical

Subtasks: Decomposition into sub-tasks is needed, multiple tables read at the same time.



Abstract Code

- User clicked **User Report** button on **Main Menu** Form.
- Query User, Item, Bid, and Rating table and aggregate information based on user.username.
- Display **User Report** Form:

- Display *Username*, *total number of items listed, sold, won, rated by the user*, the *most frequent item condition*.
 - If user has no listing, the condition field will display N/A. Display **Done** Button.
- When **Done** Button is clicked, return to Main Menu Form.

Top Rated Items

Task Decomp

Lock Types: Look up Read-only

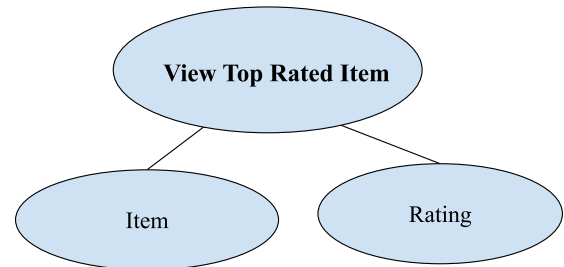
Number of Locks: Two

Enabling Conditions: Trigger by clicking **Top Rated Items** button on Main Menu Form.

Frequency: Moderate.

Consistency (ACID): Not critical

Subtasks: Decomposition into sub-tasks is needed, multiple tables read at the same time.



Abstract Code

- User clicked **Top Rated Items** button on Main Menu Form.
- Query Item and Rating Table to find the top 10 items with the highest average rating score.
- Display Top Rated Items Form:
 - Display the *name*, *average rating* and *count of rating of top 10 rated items*, sorted by rating descending, then name ascending.
 - Display **Done** Button.
- When **Done** Button is clicked, return to Main Menu Form.

Auction Statistics

Task Decomp

Lock Types: Look up Read-only

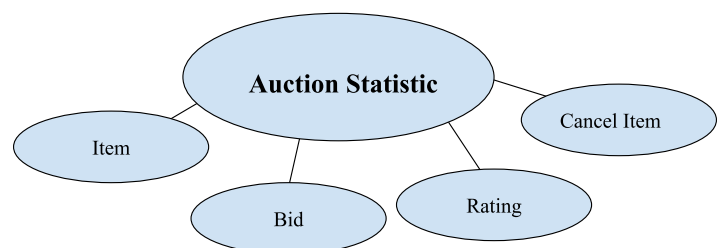
Number of Locks: Four

Enabling Conditions: Trigger by clicking **Auction Statistics** button on Main Menu Form.

Frequency: Low.

Consistency (ACID): Not critical

Subtasks: Decomposition into sub-tasks is needed, multiple tables read at the same time.



Abstract Code

- User clicked **Auction Statistics** button on Main Menu Form.
- Query Item, Rating, Cancel Item, and Bid table aggregate information based on item auction status, and item rating status.

- Display **Auction Statistics Form**:
 - Display all auction summary, the count of active auction, finished auction, won auction, canceled auctions, rated items, unrated items.
 - Display ***Done*** Button.
- When ***Done*** Button is clicked, return to **Main Menu** Form.

Canceled Auction Details

Task Decomp

Lock Types: Look up Read-only

Number of Locks: Single

Enabling Conditions: Trigger by clicking ***Canceled Auction Details*** button on **Main Menu** Form.

Frequency: Low.

Consistency (ACID): Not critical

Subtasks: None



View Canceled Auction

Abstract Code

- User clicked ***Canceled Auction Details*** button on **Main Menu** Form.
- Query Cancel Item table regarding Item Canceled and return all.
- Display **Canceled Auction Detail** Form:
 - Display the *Item ID, associated user, cancellation date/time, and cancellation reason* sorted by item ID descending.
 - Display ***Done*** Button.
- When ***Done*** Button is clicked, return to **Main Menu** Form.