# Phase 1 Report | CS 6400 - Spring 2024 | Team 008

## Table of Contents

# Data Types

**User**

| Attribute | Data type | Nullable |
|---|---|---|
| Username | string | Not NULL |
| Password | string | Not NULL |
| FirstName | string | Not NULL |
| LastName | string | Not NULL |
| Position | string | NULL |

**Auction**

| Attribute | Data type | Nullable |
|---|---|---|
| AuctionEnd | DateTime | Not NULL |
| AuctionLength | int | Not NULL |
| GetItNowPrice | float | NULL |
| MinSalePrice | float | Not NULL |
| StartBid | float | Not NULL |
| CancelReason | string | NULL |
| Winner | string | NULL |

**Item**

| Attribute | Data type | Nullable |
|---|---|---|
| ItemName | string | Not NULL |
| Description | string | Not NULL |
| Returnable | boolean | Not NULL |
| Condition | string | Not NULL |
| Category | string | Not NULL |

**Bid**

| Attribute | Data type | Nullable |
|---|---|---|
| BidAmount | float | Not NULL |
| BidTime | DateTime | Not NULL |

**Rating**

| Attribute | Data type | Nullable |
|---|---|---|
| RatingTime | DateTime | Not NULL |
| Stars | int | Not NULL |
| Comment | string | NULL |

# Business Logic Constraints

- New users must register. Users who have registered but have forgotten their password will not be able to log in; no password recovery feature is available.
- Bids must not be under an Auction's starting bid amount.
- Winning bid must meet the minimum sale price of an auction. Otherwise, the highest bidder will not be considered the winner.
- Bids must not be greater than the Get It Now price, if it exists.
- Only the owner of the item can edit the item description information.
- Users may not bid on their own items.
- Completed and canceled auctions cannot be edited or bid on.

# Task Decomp

### Register

Register

**Lock Types**: Read-only look up and write on User
**Number of Locks**: 2
**Enabling Conditions:** None
**Frequency**: Frequency varies, depending on number of users registering
**Consistency (ACID):** Not critical, order is not critical.
**Subtasks:** Mother Task is not needed. No decomposition needed.

Abstract Code
- User enters *username*, *password*, *first name*, and *last name* in the appropriate input fields. These must all be string data types
- If data validation is successful for all input fields, then:
    - When ***Register*** button is clicked:
        - If User record is found:
            - Go back to **Register** form, with the error message "Username exists!".
        - Else:
            - Insert an entry into User with the input fields.
            - Go to **Login** form.

    - Else if any input fields are invalid, display **Register** form, with error message

### Log In
Task Decomp

Log In

**Lock Types**: Read-Only on User
**Number of Locks**: Single
**Enabling Conditions:** None
**Frequency**: Frequency varies, depending on number of users logging in
**Consistency (ACID):** Not critical, order is not critical.

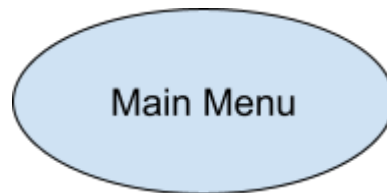**Subtasks:** Mother Task is not needed. No decomposition needed.

- User enters the appropriate information in the *username* and *password* input fields. These entries must be string data types.
- If data validation is successful for both *username* and *password* input fields, then:
    - When ***Log in*** button is clicked:
        - If User record is not found or password is not valid:
            - Go back to **Login** form, with the error message "Username or password incorrect!"
    - Else:
        - Store login information as session variable '$UserID'.
        - Go to the **BuzzBid Main Menu** form.

- Else *username* and *password* input fields are invalid, display **Login** form, with error message.

## Main Menu

**Lock Types**: Read-only on User
**Number of Locks:** Single
**Enabling Conditions:** Trigger by successful login
**Frequency:** High frequency
**Consistency (ACID)**: Not critical, order is not critical.
**Subtasks:** Mother Task is not needed. No decomposition needed.

- Show Auction Options for all users, and Reports only if the current user is the admin user
- Upon:
    - Click ***Search for Items*** link: Jump to the **Search For Item** task
    - Click ***List Item*** button: Jump to the **List Item** task
    - Click ***View Auction Results*** link: Jump to the **Auction Results** task
    - 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 Report** task
    - Click ***Auction Statistics*** button: Jump to the **Auction Statistics Report** task
    - Click ***Canceled Auction Details*** button: Jump to the **Canceled Auction Details** task

## List Item

Task Decomp



**Lock Types**: Write locks on Item and Auction
**Number of Locks**: 2
**Enabling Conditions:** Triggered by a User listing an Item
**Frequency**: High frequency
**Consistency (ACID):** Order is critical, consistency is critical.
**Subtasks:** No decomposition. No mother task.

Abstract Code

- Upon user clicking on *List Item* from *BuzzBid Main Menu*:
  - Display **New Item** form
  - User can then:
    - Fills in the *Item Name* (string), *Description* (string), *Category* (select), *Condition* (select), *Starting Price* (float), *Minimum Sale Price* (float), *Auction End* (select), *Get It Now Price* (float), and *Returns Accepted* (boolean) fields, then click the **List My Item** button, or
    - Click on the *Cancel* button to close the **New Item** form
  - Upon listing an item, user is taken to the **Item For Sale** form, where the item information is displayed
  - Upon clicking on *Cancel*, the user is taken back to the **BuzzBid Main Menu** form

## Search For Item

Task Decomp



**Lock Types**: Lookup on Item, Bid, and Auction, all Read-only
**Number of Locks**: 3
**Enabling Conditions:** User search for items
**Frequency**: High, Item and Auction have the same frequency
**Consistency (ACID):** Not critical, order is not critical.
**Subtasks:** No decomposition. No mother task.

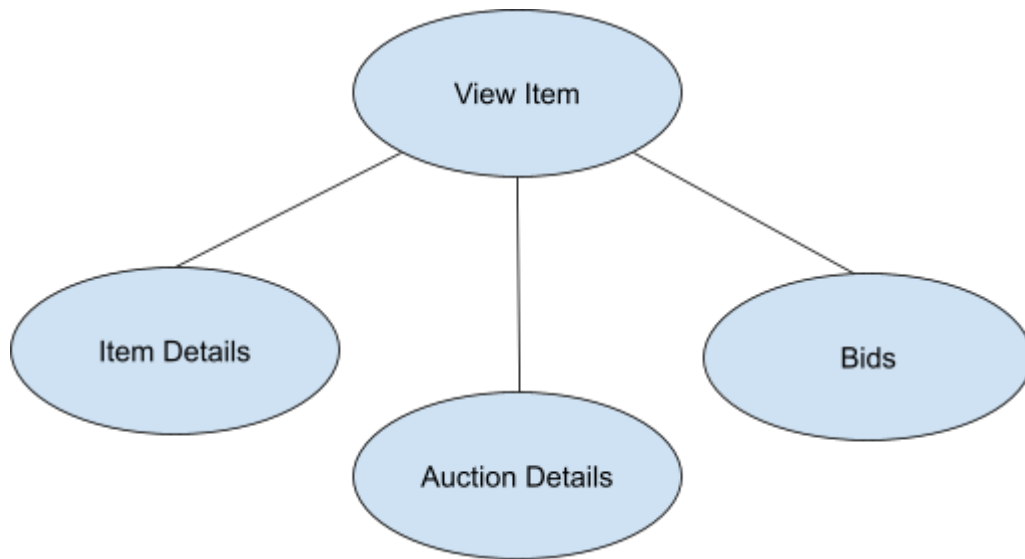Abstract Code

- Upon user clicking on *Search for Items* from **BuzzBid Main Menu**

- Search items based on several fields including *keyword* (string), *category* (select)*, minimum price* (float)*, maximum price* (float)*,* and *condition at least* (select).
- Upon clicking **Search** button, display items that meet the supplied criteria in the **Search Results** form
- Upon clicking **Cancel** button, return to **BuzzBid Main Menu**

## View Item

Task Decomp



**Lock Types:** Read-only lookups of needed on Item, Auction, and Bid
**Number of Lock:** 3
**Enabling Conditions:** All 3 are enabled by viewing an item
**Frequency:** High, all 3 have the same frequency
**Consistency (ACID):** Not critical, even if item is edited/purchased while user is viewing it
**Subtasks:** All subtasks must be done, but can be done in parallel. Mother task is required to coordinate subtasks. Order is not necessary.

Abstract Code

- User clicked on item name from **Item Results**:
- Query information about the item, the details of the auction, and the bids on the item (if any)
    - Find the current item using the item's ID; display the item's information including Item ID, Item Name, Description, Category, Condition, and Returns Accepted
    - Find the Auction associated with the item using the item's ID and the username of the user who listed the item; display the auction's information including Get It Now Price, Auction End, Minimum Sale Price, and Starting Bid fields. Additionally display the Cancel Reason and Winner, if applicable, for ended/canceled auctions
    - For each Bid on the Auction:
        - Display the bid's information in Bid Amount, Time of Bid, and the Username user who made the bid in their respective fields

- ■ Bids are displayed ordered by the latest time of bid
- ● Upon:
  - ○ Click **Close** button: Jump to the **Search For Item** task
  - ○ Click *Edit Description* link: Jump to the **Edit Item** task
  - ○ Click *View Ratings* link: Jump to the **View Rating** task
  - ○ Click *Get It Now* button: Jump to the **Buy Item** task
  - ○ Click *Bid On This Item* button: Jump to the **Buy Item** task
  - ○ Click *Cancel This Auction* button: Jump to the **Cancel Item** task

**Edit Item**

Task Decomp



**Lock Types:** Write to the database if an item's description is updated
**Number of Lock:** Single
**Enabling Conditions:** Enabled when clicking on *Edit Description* button and saving a new description for an item
**Frequency:** Low
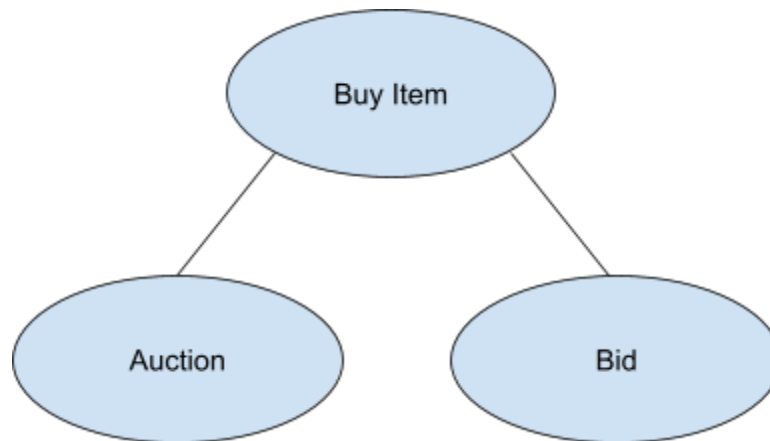**Consistency (ACID):** Not critical, even if users are viewing the item
**Subtasks:** Mother task is not needed. No decomposition needed

Abstract Code

- ● User that listed the item clicked on the *Edit Description* button:
  - ○ Display pop-up allowing user to enter new item description, which must be string data type
    - ■ When *Save* button is clicked:
      - ● Validate that input is a string
        - ○ If not valid, display error message
      - ● Update the item's description
      - ● Close pop-up window.
      - ● Return to **Item For Sale** form

<u>**Buy Item**</u>
Task Decomp



**Lock Types:** Write to database on Auction and Bid
**Number of Lock:** 2
**Enabling Conditions:** Enabled when a user bids on an item, or clicks on the ***Get It Now*** button
**Frequency:** High
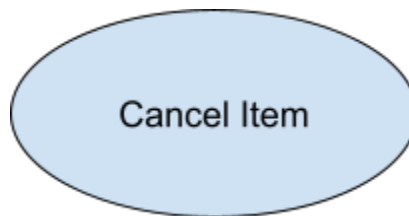**Consistency (ACID):** Not critical, even if users are viewing the item
**Subtasks:** One or both subtasks may be done. Mother task is required to coordinate subtasks. Order is not necessary.

Abstract Code

- User can purchase Item by:
  - Bidding:
    - If there are no other bids on the item, then the bid amount must be greater than or equal to Auction's starting bid. The user who listed the item may not bid on the item; do not display ***Bid On This Item*** button. Bid amount must be a float.
      - Display error message if bid amount does not validate
    - Else, user's bid amount must be greater than the current highest bid
    - Bid amount must be less than the auction's Get It Now Price. If the user's bid amount is greater than the Get It Now Price, then display an error message suggesting the user click on the ***Get It Now*** button instead of bidding.
    - If item is bid on, refresh the **Item For Sale** form and run the **View Item** task
  - Get It Now: User clicks on the ***Get It Now*** button, which ends the auction immediately and sets the user's username as the auction's winner.
    - Direct the user to the **Item Results** form and run the **Item Results** task

## Cancel Item

Task Decomp



**Lock Types:** Write to database if Auction is canceled and a cancel reason is provided, and the auction's end time is updated to the date and time of the cancellation
**Number of Lock:** Single
**Enabling Conditions:** Enabled when clicking on *Cancel This Auction* button
**Frequency:** Low
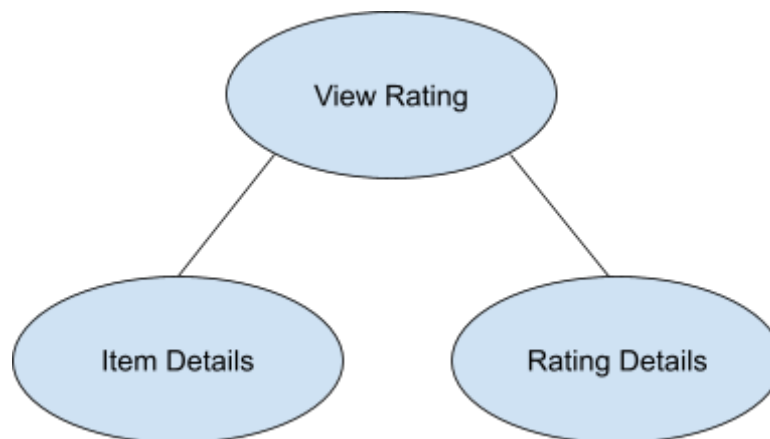**Consistency (ACID):** Not critical, even if users are viewing the item
**Subtasks:** Mother task is not needed. No decomposition needed.

Abstract Code

- Administrative user clicked on the *Cancel This Auction* button:
- Prompt for cancellation reason with pop-up window
  - On clicking the *Cancel* button:
    - Auction ends immediately, and the auction end date is set to the date and time of cancellation
    - Optional cancellation reason is stored in the database, which must be a string data type
    - Close pop-up window
    - Direct the user to the **Item Results** form

## View Rating

Task Decomp



**Lock Types:** Read-only lookups on Item and Rating

**Number of Lock:** 2
**Enabling Conditions:** Triggered by user viewing an item's rating
**Frequency:** High - all have the same frequency
**Consistency (ACID):** Consistency is not critical if a new rating is being added or existing rating is being deleted while a user is viewing it.
**Subtasks:** Should be decomposed into 2 subtasks. All subtasks must be done and can be done in any order. A Mother task is needed to coordinate subtasks.

- User clicked on *View Ratings* from **Item for Sale** or from **Item Results** (if a bid is completed, expired or canceled)
- Query information about the item and its ratings
  - Find the current Item using the item's ID; display the item's information in Item ID and the Item Name fields
  - Find the Rating associated with the item using the item's ID; display the appropriate information in the Average Rating (round up to one decimal place), username of the user who rated the item (Rated by), Date, the star rating, and Comments fields
    - Ratings are sorted in the order with the most recent rating listed first
  - Display *Delete* button link the rating if the current user is an administrator, or display *Delete My Rating* button for the author of the rating
  - Display My Rating and Comments field at the bottom of the **Rate Item** form for the current user to add their rating if the current user is the winner of the item and has not left a rating for the item yet
  - Upon clicking *Close* button, return the user to the **Item Results** form

## Add/Delete Rating

Task Decomp



**Lock Types:** Write lock needed for adding/deleting a rating
**Number of Lock:** Single
**Enabling Conditions:** Triggered by a user adding or deleting a rating on an item
**Frequency:** High
**Consistency (ACID):** Consistency is not critical if a new rating is being added or existing rating is being deleted while the user is viewing it
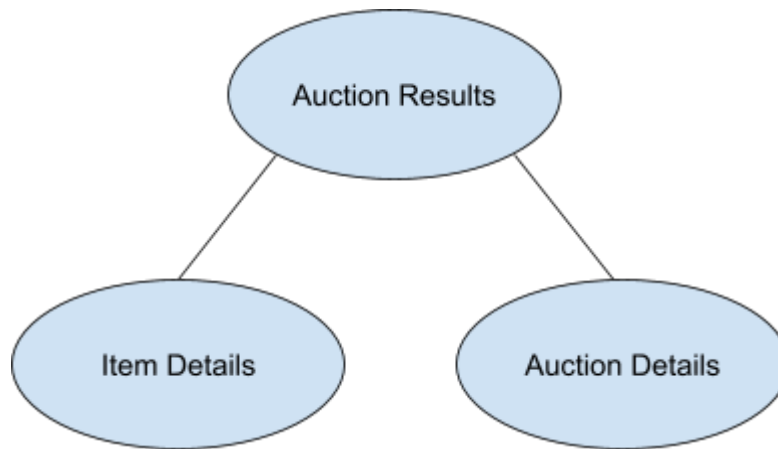**Subtasks:** Mother task is not needed. No decomposition needed.

Abstract Code

- User clicked on *Rate This Item* from **Item Ratings** form:
  - Validate that a rating was entered, display error message if not; comments are optional

- ○ Refresh the form and run the **View Rating** task to update the displayed ratings
- ● User clicked on *Delete My Rating* from **Item Ratings** form:
  - ○ Remove rating from the item
  - ○ Refresh the form and run the **View Rating** task to update the displayed ratings, and allow the user to add a new rating if that user is the winner of the auction
- ● Upon clicking on *Close* button, direct user to **Item For Sale** form and run the **View Item** task for current auctions, or direct user to **Item Results** form and run the **Item Results** task for ended auctions

## Auction Results

Task Decomp



**Lock Types:** Read-only lookups of Item, Auction, and Bid
**Number of Lock:** 3
**Enabling Conditions:** Triggered by viewing the results of an auction
**Frequency:** Low - all have the same frequency
**Consistency (ACID):** Consistency is not critical if additional auctions are ended when the user is viewing the Auction Results.
**Subtasks:** Should be decomposed into 2 subtasks. All subtasks must be done and can be done in any order. A Mother task is needed to coordinate subtasks.
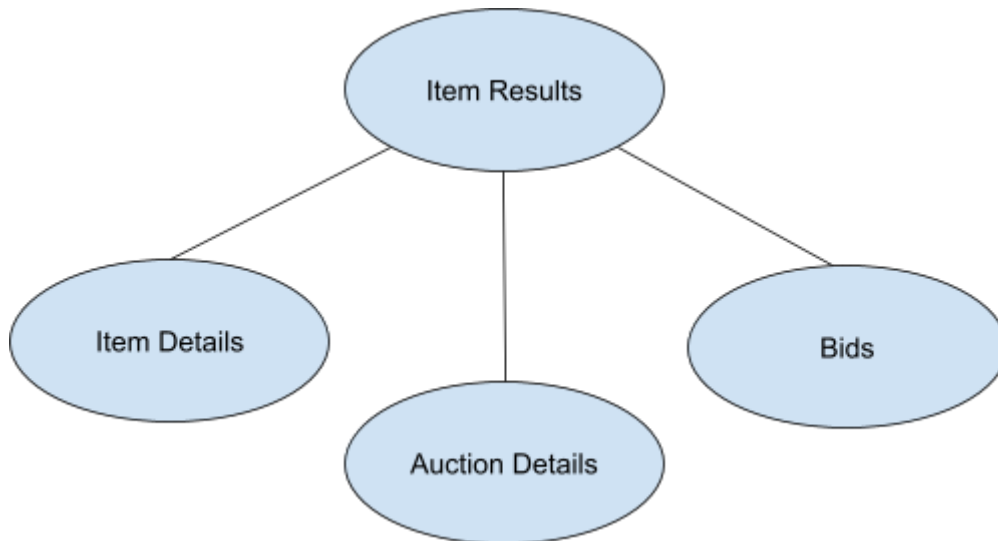
Abstract Code

- ● User clicked on *View Auction Results* button link
- ● Query information about auctions that have already ended, and item and bids associated with each auction.
  - ○ Find the item associated with the auction using the item's ID, and the bids associated with that auction. Display the appropriate information in the ID, Item Name, Sales Price, Winner, and Auction Ended fields
    - ■ Item Name is also a link to **Item Results** form
  - ○ Find all auctions that have ended, using AuctionEnd where AuctionEnd is prior to the datetime when the user chooses to view the auction results
    - ■ Auctions are sorted in the order with the most recently ended auction listed first

- For auctions without a winner being declared, update those auctions with the winner (if there is any)
- Upon clicking ***Done*** button, return to **BuzzBid Main Main Menu**

## Item Results

Task Decomp



**Lock Types:** Read-only lookups of Item, Auction, and Bid
**Number of Lock:** 3
**Enabling Conditions:** Triggered by click on ***Item name*** in **Auction Results** form
**Frequency:** Low - all have the same frequency
**Consistency (ACID):** Not critical
**Subtasks:** Should be decomposed into 3 subtasks. All subtasks must be done and can be done in any order. A Mother task is needed to coordinate subtasks.

Abstract Code

- Upon user clicking on ***Item name*** link from **Auction Results**
    - Query for information about the item, auction, and bids
    - Display item details in the Item ID, Item Name, Description, Category, Condition, and Returns Accepted fields
    - Display auction details in the Get It Now Price and Auction Ended fields
    - Display bid information:
        - If there was a winner for the auction, then the bid history should highlight the winning bid's row in green
        - If there were bids, but no winner, then the bid history should highlight the last bid's row in yellow
        - For canceled items, the cancellation date and time should be listed, showing "Canceled" as the bid amount, the cancellation date and time in place of the bid time, and "Administrator" as the user, with the cancellation row highlighted in red

● Upon user clicking ***Close*** button, return to **Auction Results** form

## Category Report

Task Decomp



**Lock Types**: 1 read-only lookups for Item
**Number of Locks:** Single
**Enabling Conditions:** Triggered by clicking on ***Category Report*** button
**Frequency**: Low- same frequency
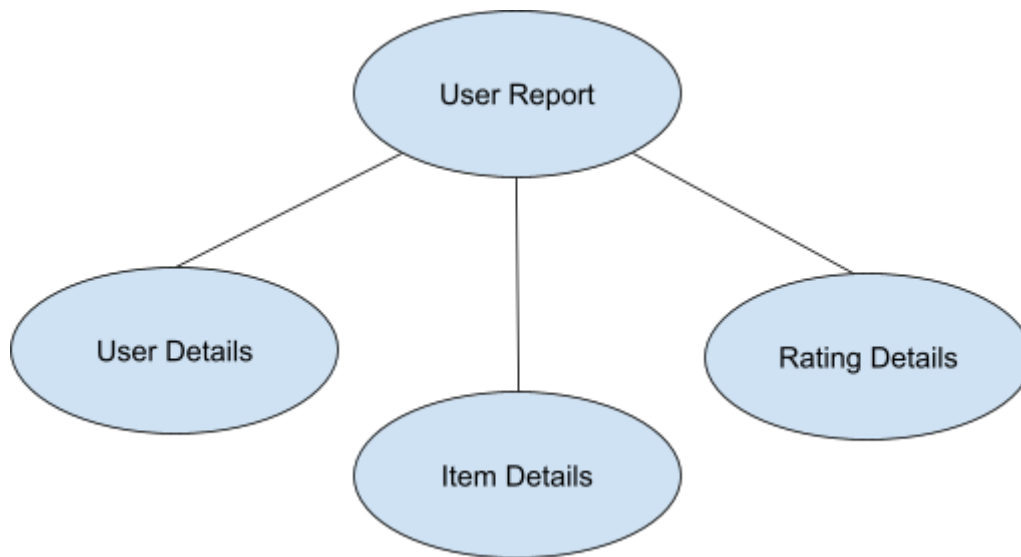**Consistency (ACID):** Not critical
**Subtasks:** Mother task is not needed. No decomposition needed.

Abstract Code

● Upon admin user clicking on ***Category Report*** button from **BuzzBid Main Menu**:
  ○ Query for information about the item and aggregate data about items by Category
  ○ Find all Categories; display Category names in 1st column
  ○ Find the total number of items in the category; display total item count in 2nd column
  ○ Find the minimum Get It Now Price across all items in the category; display the minimum Get It Now Price in 3rd column
  ○ Find the maximum Get It Now Price across all items in the category; display the maximum Get It Now Price in 4th column
  ○ Calculate the Average Price; display the Average Price in 5th column
  ○ Sort and display each row in alphabetically by category name
  ○ If an item does not have a Get it now price, they should be included in the item count, but their prices should not be part of the min, max, or average prices.
  ○ This report should include both items that have already been sold (the auction has ended) or that are still for sale, but not canceled auctions.
● Upon clicking ***Done*** button, return to **BuzzBid Main Menu**

## User Report

**Lock Types**: 3 read-only lookups User, Item, and Rating
**Number of Locks**: 3
**Enabling Conditions**: Triggered by clicking on *User Report* button
**Frequency**: Low- same frequency
**Consistency (ACID)**: Not critical
**Subtasks**: Mother task is needed. All tasks must be done, but can be done in parallel. Order is not necessary.

Abstract Code

- Upon admin user clicking on *User Report* button from **BuzzBid Main Menu**:
    - Query for information about all users and aggregate information about users' listed, sold, won, rated items, and most frequent item condition
    - Find all users*;* display username in 1st column
    - Find the total number of items listed by the user (whether sold or not); display total item number in 2nd column
    - Find the total number of items sold by the user (either via Get It Now or auction); display total item number in 3rd column
    - Find the total number of items won by the user (either via Get It Now or auction); display total item number in 4th column
    - Find the total number of items rated by the user; display total item number in 5th column
    - Find the most frequent condition across all items purchased by the user (in the event of a tie, the lowest-quality condition should be used); display the condition in 6th column
        - If the user has no listings the 6th column should display "N/A".
    - Upon clicking *Done* button, return to **BuzzBid Main Menu**

## Top Rated Item Report

Task Decomp



**Lock Types**: Read-only lookups on Item and Rating
**Number of Locks:** 2
**Enabling Conditions:** Triggered by clicking on *Top Rated Items* button
**Frequency**: Low- same frequency
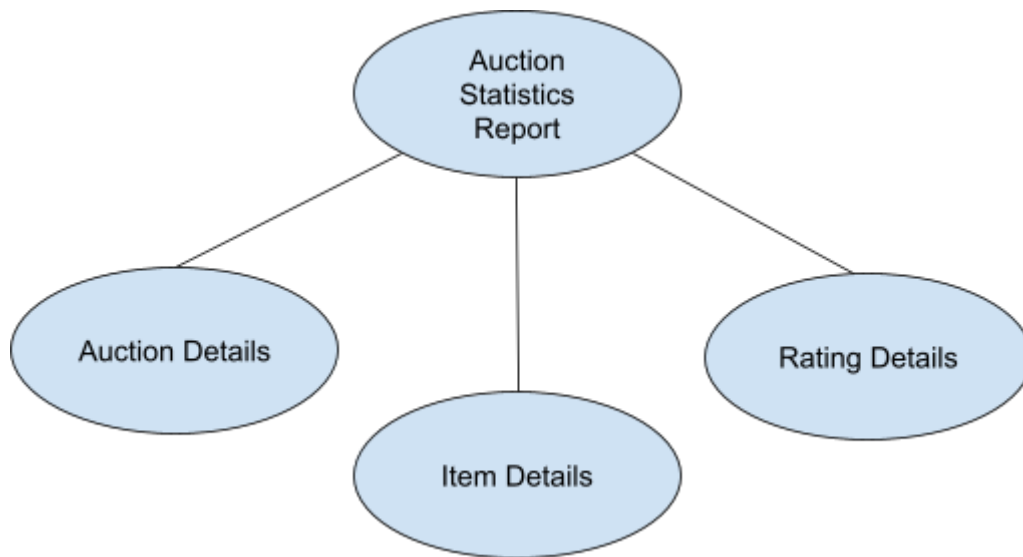**Consistency (ACID):** Not critical
**Subtasks:** Mother task needed. All tasks must be done, but can be done in parallel. Order is not necessary.

Abstract Code

- Upon clicking on *Top Rated Report* button from **BuzzBid Main Menu**:
  - Query for data about the items and their ratings
  - Calculate the average of all items with ratings (item listings without ratings should not be included in the average rating calculation)
  - Display the top 10 rated items sorted by average rating (rounded up to one decimal place) descending, by Item Name in the 1st column, Average Rating in the 2nd column, and Rating Count in the 3rd column
    - If there is the event of a tie, sort by name ascending
  - In the event multiple items have the same average ratings, the results should still be limited to 10 items
- Upon clicking *Done* button, return to **BuzzBid Main Menu**

## Auction Statistics Report
Task Decomp



**Lock Types**: Read-only lookups on Item, Auction, and Rating
**Number of Locks:** 3
**Enabling Conditions:** Triggered by clicking on *Auction Statistics* button
**Frequency**: Low- same frequency
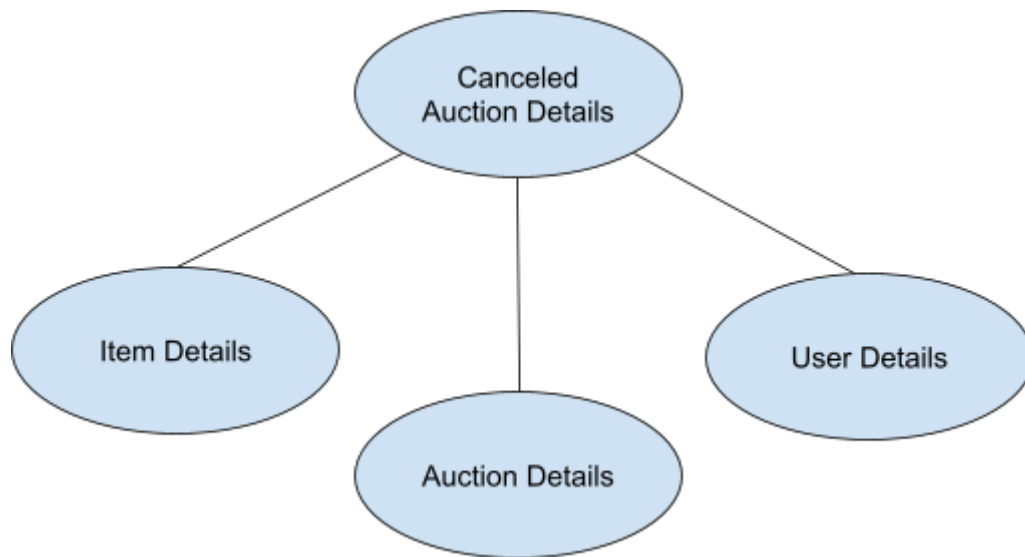**Consistency (ACID):** Not critical
**Subtasks:** Mother task needed. All tasks must be done, but can be done in parallel. Order is not necessary.

Abstract Code

- Upon clicking on *Auction Statics Report* button from **BuzzBid Main Menu:**
    - Query for information about all items, their ratings, and their associated auctions
    - Aggregate the number of active auctions (auctions which have not closed); display total count of active auctions in the 1st row
    - Aggregate the number of finished auctions (auctions that have ended with or without a winner but were not canceled); display total count of finished auctions in the 2nd row
    - Aggregate the number of won auctions (auctions which have successful winners); display total count of  auctions won in the 3rd row
    - Aggregate the number of canceled auctions (auctions which have been canceled); display total count of canceled auctions in the 4th row
    - Aggregate the number of rated items; display total count of rated items in the 5th row
    - Aggregate the number of unrated items; display total count of unrated items in the 6th row
- Upon clicking *Done* button, return to **BuzzBid Main Menu**

## Canceled Auction Details

Task Decomp



**Lock Types**: Read-only lookups on Item, Auction, and User
**Number of Locks:** 3
**Enabling Conditions:** Triggered by clicking on *Canceled Auction Details* button
**Frequency**: Low- same frequency
**Consistency (ACID):** Not critical
**Subtasks:** Mother task needed. All tasks must be done, but can be done in parallel. Order is not necessary.

Abstract Code

- Upon clicking on *Canceled Auction Details* button from **BuzzBid Main Menu:**
    - Query for information about canceled items and their associated auction and users
        - Results are sorted by the item ID in descending order
    - Display canceled item's ID in 1st Column
    - Display username of the user who listed the item in 2nd Column
    - Display date the auction was canceled on in 3rd Column
    - Display cancellation reason given in the auction, if any, in 4th Column
- Upon clicking *Done* button, return to **BuzzBid Main Menu**