Readme:

Main class for starting the Trading System project resides inside /src folder named ***TradingMain.java*** , you can use default (14.0.2) JDK to build and run. As you run the main class, you would see prompts asking you to login that resides in class StartMenuSystem.java, and you will be direct to 3 different login/signup menu given your input to command line and will see different aspect in terms of user functionality of the program.

1. Sign in
    a. you will be asked to enter username, password and type of account to access the full functionality for a client user (main interface implemented in class ClientUserSystem.java) or admin user(main interface implemented in class AdminSystem.java). Note that all user input information in this project will be case sensitive and space sensitive.
    Before proceeding, I suggest to create your own account via #2. But I have provided a list of username and passwords that you can log into in the UserAccounts.txt file.
    b. After login with a Client User account, you will see a list of prompts for you to react:
        i. Look for things to trade (I will explain the detail for Trading System later)
        ii. Browse Pending Transactions : browse current user's pending transactions (confirmed appointment), need to be confirmed by both users to proceed to a completed transaction.
        iii. View Recently Traded Items: view 3 recently traded items (here I list all transaction info)
        iv. View Most Frequent Trade Partners: 3 most frequent trade partners
        v. Browse Pending Appointments: browsing user initiated appointment requests, need to be confirmed by the other user to transfer to a pending transaction.
        vi. Browse Inventory : all users inventories (items for lending).
        vii. View your wish list
        viii. View your lending list: view your confirmed items (by admin) for lending
        ix. Request to add an item: need to be approved by an admin to become part of lending list
        x. Request admin to unfreeze account: set current user status to pending and admin would be able to review pending user list and decide whether to freeze/unfreeze.
        xi. View your Threshold limits: Phase 2. Not finished completely.
        xii. Recommended Items to Lend: Phase 2. Upon entering item id you are interested in, the system will return the item's owner's wishlist for your reference. If the owner does not have a wishlist, the system will return a

message. Ideally we will calculate the frequency of items in wishlist or other algorithms to give a “cold-start” solution for this functionality, but a simple message indicating the user does not have any wishlist would be informative enough.

xiii. Get user history: all transaction histories
xiv. temporarily take down account: user controlled status change for phase2
xv. set status back to active (only from temporary_left status)
xvi. Get Date time
xvii. Log Out

c. after login with a Admin User account (regardless of initial or subsequent admin user), you will see the following prompt.
    i. View Pending Users: view users in status pending. The pending status can be one of the following:
        1. frozen, to be confirmed
        2. requested to unfrozen by user
    ii. View Pending Items: view items that are requested by users to add to their lending list (can be undone)
    iii. Review Pending Transactions: view all pending transaction (can be undone)
    iv. Change Thresholds: Phase 2 change threshold value in csv files (database/thresholds.csv)
    v. View all client users: pull all client user information
    vi. Unfreeze User
    vii. Freeze User
    viii. Display All Admins: pull all admin user information
    ix. View User Threshold: view threshold values for users
    x. Add New Admin User: will only work if its a initial admin user
    xi. Undo Pending Appointments: Phase 2. Delete pending appointments initiated by a user.
    xii. Undo Pending Items: Phase 2. Delete pending items requested by a user
    xiii. Show date time
    xiv. Log Out

2. Sing up
    a. Will prompt messages that ask you to enter username and password. username cannot be the same of any existing user.
3. Look around (Visitor Mode for Phase2)
    a. No sign in required, will directly enter a new prompt menu for visitors. have the following functionality/options:
        i. Browse Inventory
        ii. View All registered Client Users
        iii. View Threshold Values

iv. Return to Main Menu

Note that all functionality above corresponds to signed-in users.

Below is a more detailed explanation in the trading system implementation:
On entering the trading menu mentioned above in client user interface menu, you will see the following prompt:
1. Add an item to wishlist: add items to wishlist
2. Request to Trade: request a two-way trade
3. Request to Borrow: request a one-way trade
4. Confirm an Appointment: confirm pending appointment and will move the appointment to transaction ticket with same information but different id. after both users involved have confirmed. Also users will be able to edit the appointment here for up to 3 times (threshold can be changed by admin).
5. Confirm a Transaction. Both users will need to confirm before the transaction is completed. if one of the users does not respond to the transaction, it will count towards the user's incomplete transaction list and send the user to frozen account status if it exceeds the limit.
6. Return to Client menu

Detailed implementation documentation for features implemented for Phase2:

1. Admin ability to undo actions: I was able to implement 2 undo actions, one for delete pending items requested by user. Another is to delete pending appointments initiated by a client user. This is done through calling functions in AdminSystem.java which removes pendingAppointList and PendingItemList maintained in client user entity.
2. Automatically Suggest Items to lend: This is done through the user menu in ClienUserSystem.java which pulls all inventory information for users to view and select items. Once an item is selected, the system roots the user with that item and provides his/her wish list. If no items in the wishlist the system will output corresponding information instead.
3. Visitor Account: visitor account is done through simply adding a visitor account and new visitor interface menu with less functionality. Once a look around request triggers, the system will automatically log in the visitor account. This design is to ensure we can easily extend the functionality a visitor can do through new implementation or an admin account.
4. Threshold Value Adjustment: admin users are able to manually change threshold values in database/thresholds.csv. All changes will automatically apply for future trading activities.
5. New account status: A new account status VIP was created for awarding users who have more than 3 items in the lending list. VIP status have all features as a usual client user but can also be seen by other users while initiating appointments etc. I also added a "temporary_left" status for users to indicate they are on vocation and will notify those who would like to trade with the user. User can change the status themselves.