Software Requirement Specifications

D-MAT Trading Account Manager

1. General Instructions

- This project is aimed at testing the hands-on skills and programming attitude to a practical problem.

- The program can be evaluated on the following parameters.
    1. **Data structure design**
    2. **Modularity:** The code shall be properly modularized and divided into different files as required.
    3. **Implementation**
        - Functionality implemented
        - Quality of code (Good Programming Practices)
        - The delivered code should compile without any build errors right away.
    4. **Readability:** The code shall be easily readable and follow proper alignments and structure
    5. **Portability:** The code shall be completely portable and independent of the platform you are developing on.
    6. **Optimization:** The code shall be optimized to the extent possible. Take care of obvious cases like reducing the number of file writes, avoiding loss of data on unexpected program crashes, etc.

- Consider non-functional requirements within the scope of the Problem Statement. However, the primary focus should be on Engineered Code.

- Provide Design document.

- Provide Test Data that you have used to test your program.

- Please report bugs in your program by yourselves in an Excel sheet.

- Packaging and delivery of the implementation is as important as correct implementation.

2. Problem Statement

Implement a share trading account in Java that is basically a D-MAT (Dematerialized) account containing (equity) shares and transaction details regarding the same shares.

Following are the requirements for the D-MAT account:-

1. When the program starts it should give the user two options:
    a. Create a Demat account - Create a D-MAT account with needed details (Mentioned Below).
    b. Login - It should ask for the account number in order to login (The account number should be an integer value).

2. The account should have the following user details:
    a. User name
    b. Account number
    c. Money in the account (that can be used to buy shares or put into the account when shares are sold)
    d. Share name or ID (to identify the company name)
    e. Number of shares (of each company) held
    f. Value of each share

3. The transactions done in the account should contain the following details:
    a. Data & time the share was bought or sold
    b. Number of shares that were transacted
    c. Price at which it was bought or sold

4. Following are the additional details for each transaction-
    a. The money in the account should be adjusted based on the transactions.
    b. There will be a transaction charge of 0.5% (for both buying and selling) on the transacted value. Also the minimum transaction charge is Rs. 100.
    c. A STT (Securities Transfer Tax) of 0.1% of the overall transaction (not including the transaction charges) will be deducted.
    d. The transaction charges and taxation percentage should be easily configurable.

5. The main menu when you start the program should be as follows:
    0 – Quit
    1 – Display Demat account details
    2 – Deposit Money
    3 – Withdraw Money
    4 – Buy transaction
    5 – Sell transaction
    6 – View transaction report

6. **Command:** Display Demat account details
    a. A user should be able to view all of the details mentioned in requirement # 3 (details of Demat account).

7. **Command:** Deposit Money
    a. This is used to deposit money into the account.

8. **Command:** Withdraw Money
    a. This command is used to withdraw money from the account.

9. **Command:** Buy Transaction
    a. This is a way to add shares to the D-MAT account (provided there is money in the account).
    b. Once the buy transaction has been entered, the account balance and transaction details should be updated.

10. **Command:** Sell transaction
    a. This is a way to remove shares from the D-MAT account (provided there are sufficient shares).
    b. Once the buy transaction has been entered, the account balance and transaction details should be updated.

11. **Command:** View transaction report
    a. A user should be able to view a report of all transactions between a given date range.
    b. A user should be able to view a report of all transactions for a given share (company name or ID).

12. The account details should be maintained even after closing the program so that when the user logs in to the program the account details can be viewed again.

Assumptions

- Whatever is in the files is the current valid state of the account.
- The share price is static. **Note:** You can additionally try to handle dynamic prices. Handling dynamic share prices will give you extra credits.

- It is up to the candidate to decide how the date and time for a transaction should be entered (i.e. either manually or automatically by the system).
- The account and transaction details are expected to be stored in one or more files.
- All possible user inputs are handled by the system. Print warning messages wherever required.
- There is only one exchange (i.e. no multiple exchanges like NSE and BSE). So no need to do anything additional for multiple exchanges.