

Software Requirements Specification

for

Stock Exchange

Version 1.0 approved

Prepared by Navneet Kishan, Kaivan Shah, Saumya Bahukhandi

MIT Manipal

1-MAR-2017

Table of Contents

Table of Contents	ii
Revision History	ii
1. Introduction	1
1.1 Purpose	4
1.2 Document Conventions	4
1.3 Intended Audience and Reading Suggestions	4
1.4 Product Scope	4
1.5 References	4
2. Overall Description	5
2.1 Product Perspective	5
2.2 Product Functions	5
2.3 User Classes and Characteristics	6
2.4 Operating Environment	6
2.5 Design and Implementation Constraints	6
2.6 User Documentation	6
2.7 Assumptions and Dependencies	7
3. External Interface Requirements	7
3.1 User Interfaces	7
3.2 Hardware Interfaces	7
3.3 Software Interfaces	8
3.4 Communications Interfaces	8
4. System Features	8
4.1 Secure Login to Interface	8
4.2 Landing Page	9
4.3 Trading Page	9
4.4 User Portfolio	9
5. Other Nonfunctional Requirements	10
5.1 Performance Requirements	10
5.2 Safety Requirements	10
5.3 Security Requirements	10
5.4 Software Quality Attributes	10
5.5 Business Rules	11
6. Other Requirements	11
Appendix A : Analysis Models	12
1. Activity Diagram	12
2. Use Case Diagram	13
3. Sequence Diagram	14
4. State Diagram	15
5. Class Diagram	16

Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

Portfolio tool that tracks stock investments all in one place. A solution that not only caters to the need of a Stock Broking firm but is also scalable without compromising on performance. This project will provide a platform for users to trade stocks at a personal level and they wouldn't have to depend on their broker for trading of their stocks. They can do it at their

own ease. The UI is easy to operate for even a novice user. It will help a user keep track of the present price of the stocks and also help him get news related to the company whose stocks he has purchased.

1.2 Document Convention

This document follows MLA Format. Bold-faced text has been used to emphasize section and sub-section headings. Highlighting is to point out words in the glossary and italicized text is used to label and recognize diagrams.

1.3 Intended Audience and Reading Suggestions

This document is to be read by the development team, the project managers, marketing staff and the documentation writers.

The SRS has been organized approximately in order of increasing specificity. The developers and project managers need to become intimately familiar with the SRS. Others involved need to review the document as such:

Overall Description – Marketing staff have to become accustomed to the various product features in order to effectively advertise the product.

System features – Testers need an understanding of the system features to develop meaningful test cases and give useful feedback to the developers.

External Interface Requirements – The hardware developers need to know the requirements of the device they need to build. The marketing staff also needs to understand the external interface requirements to sell the product by describing the user-friendly features.

Nonfunctional and Functional Requirements – The hardware developers.

1.4 Product Scope

From an end user's perspective, this project is simple and capable enough to operate and learn the basics of trading stocks.

1.5 References

Used Google for reference and in general some content has been taken from sites like stackoverflow

and some definitions and finance related doubts have been cleared from investopedia.com. Most of the technical doubts have been cleared from google.

2. Overall Description

2.1 Product Perspective

The product mainly caters to serve stock trading problems at a personal level. It helps the user to get updated values of the current stock prices and help him track the gains or losses that he is making for an individual stock as well as the total portfolio. He can also have a look at the statistics of the stock companies and their performance over a fiscal year. Statistics can be looked at using real time graphs. Also a news column is provided for the user to look at the recent activity happening in the stock market.

2.2 Product Functions

- **Login Page**

A Login page is created where the username and password of the user is used to log into the account and start the operations. Helps validate the user and prevents misuse of the account.

- **Validation**

The user will have to be validated whenever he logs into his account using his username and password. The validation will be done by checking the username and the corresponding password from the database.

- **Real Time Graph**

A real time graph will be plotted indicating the stock prices of a particular company. It will help compare the previous prices and the current prices and thus making it easy for the buyer to decide on the status and valuation of the company.

- **Session tracking**

Session tracking is the capability of a server to maintain the current state of a single client's sequential requests.

- **Drop Down Menu and Graph Linking**

A drop down menu is provided, which is linked to the graph. As the company is selected from the drop down menu, the graph of the selected company is displayed.

- **News Updates of the Company**

A news column is provided which gives recent news about the market prices and the company's performance and recent news. The results released by the companies can also be found here. News can be found in the same place which gives the ease of comparing and deciding on the transaction.

- **Marquee display of current market prices of stocks**

Current prices of some of the most popular stocks will be circulated on the top in one of the rows like we see on TV's and actual stock markets.

- **Net Profit/Loss of the whole portfolio.**

The net profit and loss of a particular portfolio is calculated and displayed. A certain amount is deposited as the trading amount within which the user has to trade. So the net worth of the whole portfolio is calculated and the profit/loss is displayed.

- **Colour Scheme for Profit/Loss is Green/Red.**

The net profit/loss calculated is then displayed and is coloured green if there is a profit, else it is coloured red.

- **Table depicting the whole portfolio of a user, and enabling trading of stocks within the table.**

A table is created and displayed which will be having all the entries and a list of all the companies and the amount of stocks bought by the user. The value at which they bought it and the current value is also displayed for each company bought.

- **A separate table depicting all stocks and enabling the user to trade.**

A table where the user can actually sell and buy stocks. A list is present and the number of available stocks for that company. The user can buy stocks within that constraint.

- **Depicting the balance of a user's account for buying/selling stocks, modified at every transaction.**

As the user buys or sells his stocks, the balance that he has, gets updates according to his transaction. This available amount that has been left is the balance of the user and can be used by him for further trading or savings.

2.3 User Classes and Characteristics

Customer:

Customer will use the platform to access his portfolio and keep track of stock prices. The customers are not expected to have a high educational and proficiency level or technical expertise. Hence, the user interface needs to be simple and friendly.

DBA:

The DBA is expected to have a field appropriate college degree and experience of at least 2 years as a DBA and an additional 5 years in the IT field. He/She has the privilege to update information in the database and technical expertise in database management.

2.4 Operating Environment

The software will operate with the following software components and applications:

The software being developed will be running in windows 7 and above. Operating system must have current version of java, netbeans and mysql installed.

2.5 Design and Implementation Constraints

- **Synchronization:** compatible only on Windows 7 and above.
- **API Linking:** The linking of the API for the Graph might be a problem. Data format could be a reason. Compatibility issue between the platform and API.
- **Fetching Current stock Prices:** Fetching current stock prices and updating them at a regular time interval might give some constraint problems.

2.6 User Documentation

A user guide will be provided which will include the instructions for a new user to refer to and get

accustomed to the software. It will contain the basic installation instructions and how to get accustomed to the software to start trading.

Online helpline service will also be provided to solve the queries of customers.

2.7 Assumptions and Dependencies

It is assumed that the platform designed will work correctly with the other third-party operating system. Because the device acquires database updates through internet, the customer must have a computer with a working internet connection.

3. External Interface Requirements

3.1 User Interfaces

The User Interface will be designed fully using Java Swings. The User Interface will consist of :

Login Page: Whenever the user opens the software, he will have to enter his username and password to log into his account. The credentials will be validated by the system and access will then be allowed.

Trade Center Screen: The Trade center screen will consist of all the existing stocks of the user and will allow him to either BUY/SELL stocks based on the money present in his wallet.

Main Screen: The main screen will mainly show all the stocks the user has purchased and whether he is gaining or losing money in that particular stock. Also a graph will be shown for a particular stock which will be refreshed after regular intervals and its value will be updated every time it is refreshed so as for the user to analyze and predict the stock's value. There will also be a news section which will update the latest news from the stock market.

Logout: Finally when the user hits the LOGOUT button, he will be directed to this page and a message stating his successful logout will be displayed.

3.2 Hardware Interfaces

Minimum Requirements:

Processor: 800MHz Intel Pentium III or equivalent

Memory: 512 MB

Disk space: 750 MB of free disk space

Recommended Requirements:

Processor: 2.6 GHz Intel Pentium IV or equivalent

Memory: 2 GB

Disk space: 1 GB of free disk space

3.3 Software Interfaces

The data will mainly be user information, integers(stock prices) and a lot of mathematical operations will be done on those numbers.

The values of the stocks will be taken from the internet and updated regularly.

The graph will be updated regularly from the internet using API's.

The news will be linked in a similar way as the graph and will be updated on every session.

A database (database1) will be maintained for storing all the values at which the stocks were bought and sold so as to calculate the profit/loss.

Another database (database2) will be maintained for storing the login credentials of the users so that they can be used during validation.

The profit/loss will be indicated using green/red respectively and that will be handled using Swings.

The tables of the purchased stocks by the user will be directly linked with the database1.

3.4 Communications Interfaces

Client (customer) will be using HTTP/HTTPS protocol for accessing internet.

Client (system user) will be using HTTP/HTTPS protocol for accessing internet.

API will be using internet to fetch live data

4. System Features

4.1 Secure Login to interface

4.1.1 Description and Priority

This page is responsible for authentication of users and restricts unauthorised access. Login handles all possible inputs, to prevent any improper logging in, which might cause unexpected errors, and therefore limiting the system's capabilities.

4.1.2 Stimulus/Response Sequences

It will consist of two basic fields, Username and Password. There are two buttons: Login and Lost or register . Login will submit the entered data for approval followed by access, and the register will direct the user to a user registration page.

4.1.3 Functional Requirements

The most important function is to only grant access to users that are listed in the database. To implement the security, the platform must check the database to see if the Username and Password are valid. If they are not, the user will receive an "Invalid login. Please try again." response.

4.2 Landing page

4.1.1 Description and Priority

This feature will allow the user to select option they wish to perform, users can watch news feeds and current stock prices and stock graphs here.

4.1.2 Stimulus/Response Sequences

This interface will consists of two buttons: trade and portfolio. Trade button will redirect user to the trading page and portfolio to his portfolio. This page also contains the stock information and a drop down menu, stock price and graphs will be displayed upon selecting a particular stock.

4.1.3 Functional Requirements

To use this interface there will be many functional requirements. The main function will use APIs to pull stock prices and graphs from internet and user information from database.

4.3 Trading page

4.1.1 Description and Priority

This feature will allow the user to select a stock and buy/sell desired quantity at current market price.

4.1.2 Stimulus/Response Sequences

This interface will consists of placeholders to input stock information, quantity and buy sell option. Submit button will perform transaction successfully.

4.1.3 Functional Requirements

The main function will use APIs to pull stock prices from internet, order details will be stored in the database, and user's balance and stock quantity will be updated accordingly.

4.4 User Portfolio

4.1.1 Description and Priority

This feature will not only provide the user with the general information of the stocks

they have in their portfolio, but also allow them to keep track of the profit/loss on the purchased stocks.

4.1.2 Stimulus/Response Sequences

This interface will consist of a table containing information of stocks purchased and stock price change. Interface will also support color schemes for the stocks : Red for loss making stocks and green for profit making stocks. Interface also allows user to go to trading page and sell/buy more stocks.

4.1.3 Functional Requirements

To use this interface there will be many functional requirements. The main function will use APIs to pull stock prices from internet and calculate loss/profit percentages. Previous transaction and stock information are fetched from database.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

The system must be interactive and the delays involved must be less. So in every action-response of the system, there are no immediate delays. In case of opening windows/forms, of popping success/error messages and saving the settings or sessions there is delay much below 2 seconds, in case of opening databases, fetching stock prices, quantities there are no delays.

5.2 Safety Requirements

The username and password of the user must be encrypted and used. The database should be safe enough to prevent hacking. The personal details and payment details of the customer are encrypted too and transactions are done using a safe platform.

5.3 Security Requirements

Information transmission should be securely transmitted to server without any changes in information. The bank and payment details of the user must be kept secured in the database.

5.4 Software Quality Attributes

Availability: The platform shall be available to users 99.9% of the time

Robustness: If the connection between the user and the system is broken prior to an order being either confirmed or canceled, the platform shall enable the user to recover an incomplete order.

5.5 Business Rules

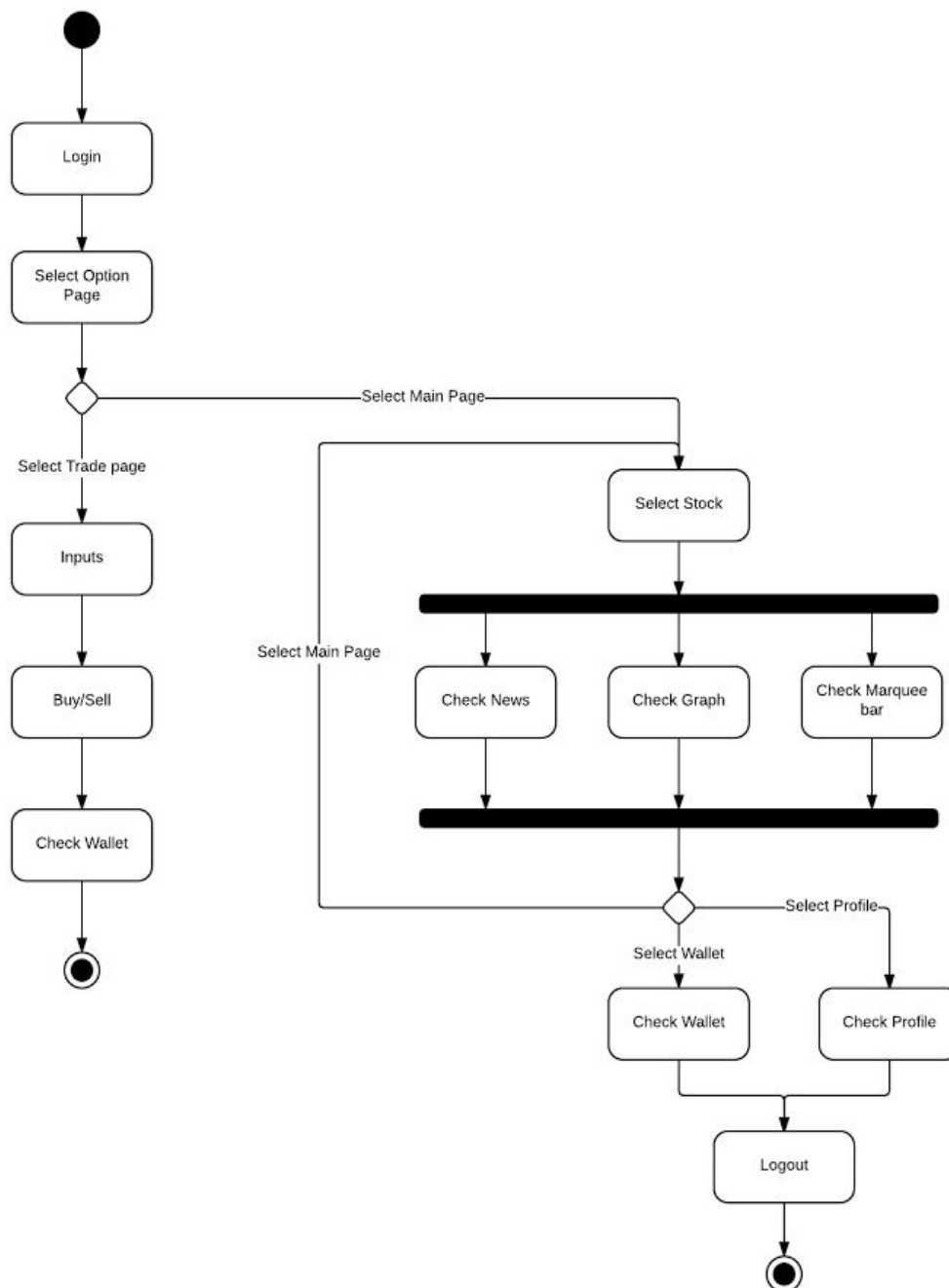
The product is developed by our team comprising of the three of us. Suggestions and recommendations will be made by all three of us but it could be implemented or changed only on the consent of all three of us. No change could be done without the consent of all the three members.

6. Other Requirements

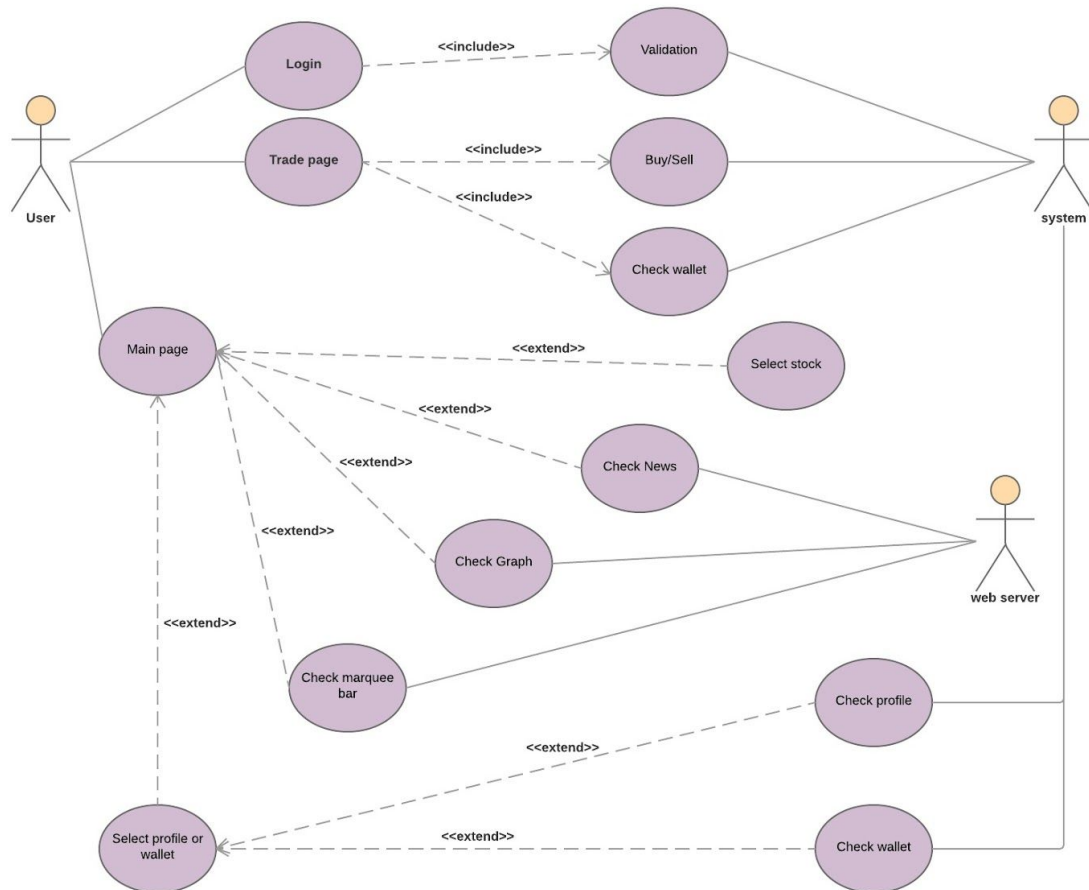
1. A database is to be used to maintain the:
 - Login credentials of the users for the validation during login.
 - Used to maintain and update the current stock prices from the internet.
 - Change the prices at which the customer sells and buys stocks.
 - Maintain the valuation of the portfolio and the prices at which the stocks were sold or bought.

Appendix A: Analysis Models

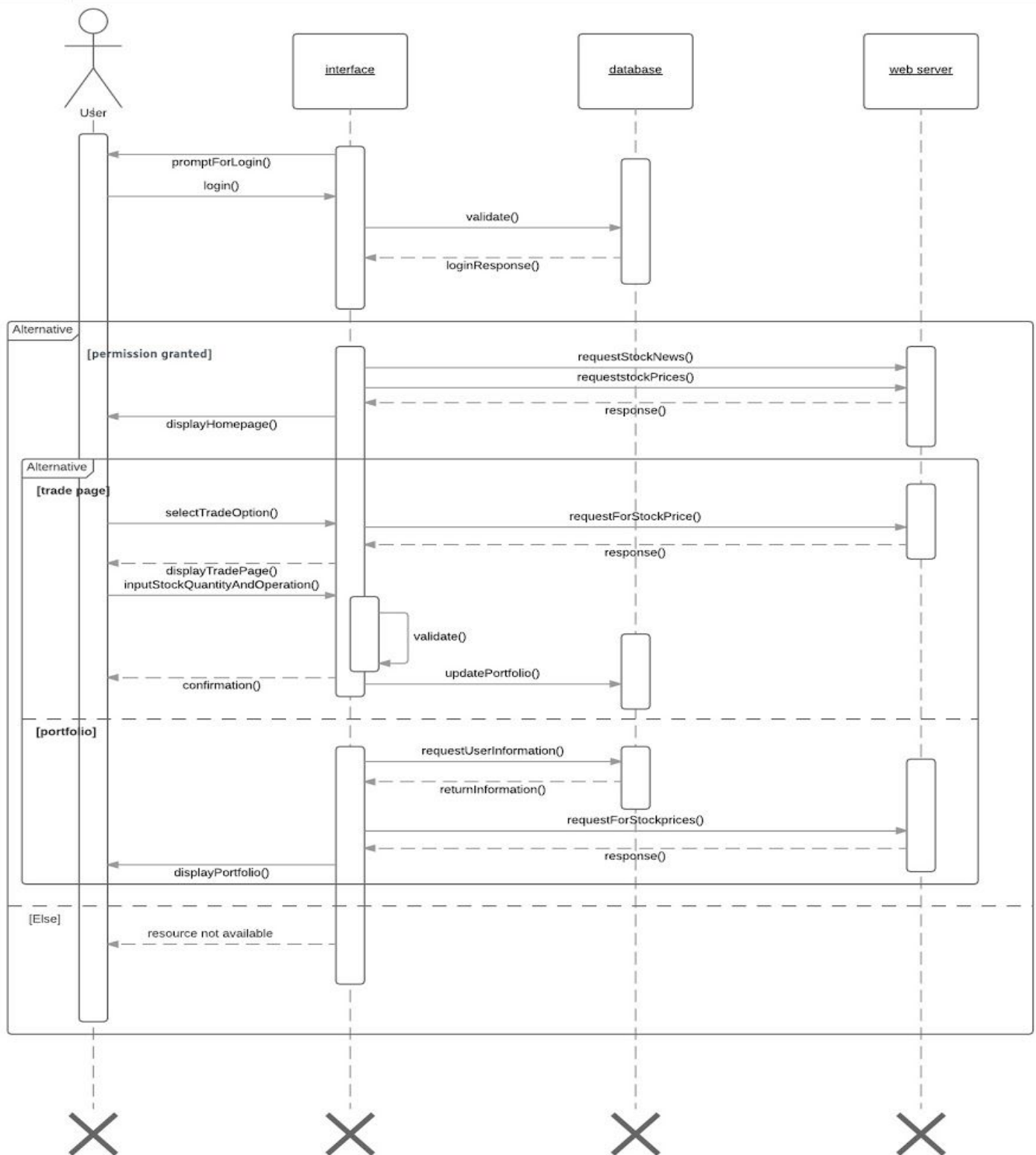
Activity Diagram :



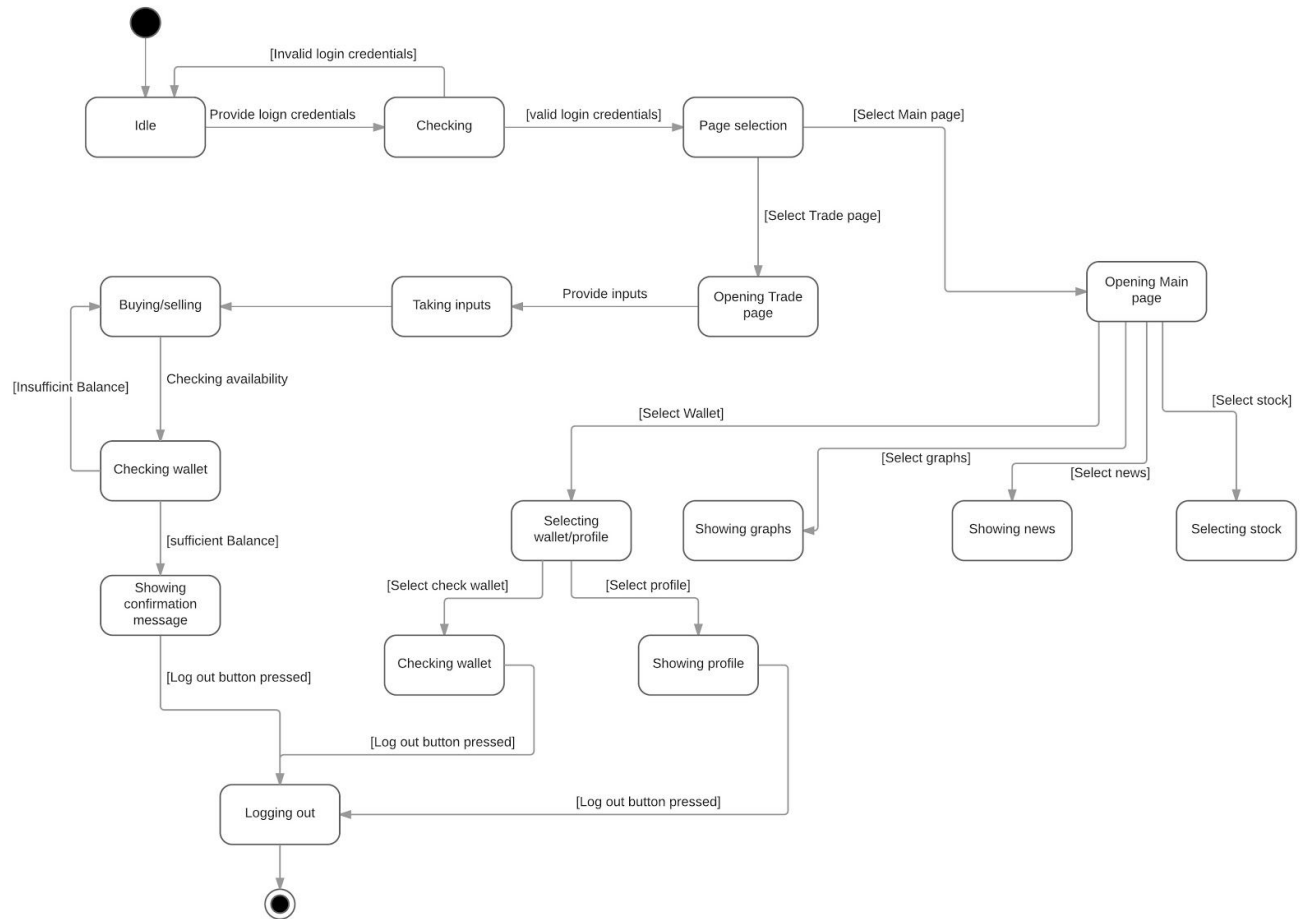
Use case Diagram :



Sequence Diagram :



State Diagram :



Class Diagram :

