

MyStock

Software Requirements Specification

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Document Approval

The following Software Requirements Specification has been accepted and approved by the following:

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1 Introduction

This chapter provides an overview of all the information described in this Software Requirement Specification (SRS) including the purpose and scope description. This chapter also provides list of abbreviations and definitions used in this document.

1.1 Purpose

The purpose of this SRS is to provide a detailed overview of the system and its goals by presenting the requirements that defines the system. This document focuses on specific requirements and describes the system's functionality and design. The document also covers constraints, user interface and interaction with external applications. The document will help the target audience and client to visualize the system and its functionality. The document is also intended to be a reference for developers in developing this system.

1.2 Scope

The "MyStock" is a web-based application which enables customer and its manager to view price of any stock and provide the feature to sell and purchase stock. The customer needs to register to the application to search stocks. The system provides customer the facility to add interested stocks to his watchlist, sell and/or purchase stocks of his choice. In addition, the customer can select a manger to manage his stocks and can request his/her manager to sell and/or purchase stock on customer's behalf. The customer can view stocks added in the watchlist, and can select stocks to view current price and history price of the stock. Customer can view account balance and account history. Customer can contact manager to communicate any messages. Furthermore, the customer can update his profile and can also view his account balance and account history.

The manager needs to register to access the application. The manager can also play the role of customer in this application, and can add interested stocks to his watchlist, sell and/or purchase stocks of his choice. In addition, the manager can fulfil a customer's request to sell and/or purchase stock on customer's behalf. The manager can contact customer to communicate any messages. The manager can update his profile and can also view his account to check commission gained.

The system administrator can also access the web application. The main responsibility of administrator is to verify manager's registration. The administrator also has rights to view all activities carried out by users and managers.

MyStock application is composed of three components: user interface, web server and database. The system requires internet connection to fetch and display user's data from database. All user related information is stored in MySql database. The application requests the Alpha vantage API to provide data related to stock. The MyStock application can be accessed by entering the URL of the application in the web browser's search bar.

1.3 Definitions, Acronyms and Abbreviations

Term	Definition
Customer	Someone who interacts with application to watch, sell and purchase stocks
Manager	Someone who helps customer and interacts with application to manage stocks on customer's behalf
Admin/Administrator	System administrator who is given specific permission for managing the activities of system
System/Product	'MyStock' web application which offers specific functionalities to customer, manager and admin
User(s)	Particularly customer, manager and admin
Transaction	The action of selling and purchasing stocks
Desc	Description
Rat	Rationale
Dep	Dependency

1.4 References

<http://www.volere.co.uk/requirementdownload.htm>
https://en.wikipedia.org/wiki/Software_requirements_specification

1.5 Overview

This SRS is divided into 3 subsections. Chapter 1 introduces Purpose, Scope, Definition, Acronyms, Abbreviations, References and Overview of the document. The remainder of this document includes two chapters.

Chapter 2 provides product perspective, functions, different types of users and their interaction with the system. It also provides constraints and dependencies of the system.

Chapter 3 provides detail description of functional and data requirements of the product and discusses different external interfaces with the system. It provides specific requirements of the system.

2 General Description

The 'MyStock' application is an online system for customer and managers interested to sell and purchase stocks. This section provides general overview of the system and functionalities delivered by the system. interacts with other system. Also, this section describes type of user who will use the system and functionality is available for each user. This section also includes constraints, assumptions and dependencies for the system.

2.1 Product Perspective

The 'MyStock' application is a system that delivers functionality mentioned in section 2.2. The system has interfaces to external systems such as database to perform the action of fetching data and storing data from and to the data storage system respectively. The system thus, maintains a connection with database and accesses the information using JDBC drivers. The detailed list of external interfaces is describes in section 3.1. The system is divided into three parts namely View, where user can view the user interface of the system and can perform actions. The second subsystem is Web server where the system is deployed, and third part is database server where the data resides and web server communicates to database server for accessing information.

2.2 Product Functions

The following are the main features included in Mystock web application

- **User Account Management:** System allows customer and manager to register into the system and provide the feature to update personal details in their profile
- **Search Stock:** MyStock web application will help customer and manager to search stocks and view price of stocks.
- **Personalized watchlist:** Customer can add interested stocks to watchlist and view current and history price of stocks in watchlist.
- **Buy and/or Sell Stocks:** Customer can sell and/or purchase stocks. Customer can request manager to sell and/or purchase stocks. A manager can sell and/or purchase stocks on customer's behalf.
- **View stocks prices:** Customer and manager can view current and history price of any stock listed in his watchlist.
- **Manager selection:** A customer can select a manager to manage stocks on customer's behalf. A manager can fulfil customer's request by charging a commission on each transaction.
- **Message communication:** Customer can contact manager and communicate by sending messages. Similarly, manager can post messages to customer to communicate. Both customer and manager can view messages received.
- **View Account:** User can view his account balance and history of previous transaction. Manager can view his account to check commissions gained
- **Validate manager's registration:** The system administrator approves or decline a manager's registration
- **Administrating user's activity:** The system administrator can view all activities of users and manager
- **System support:** The system provides supports to operate on known and commercial operating systems like Windows 7 and above, MAC and UNIX

2.3 User Characteristics

There are three types of users that interact with the 'MyStock' application: customer, manager and administrator. Each of these three types of users use the system differently, so each of them has their own requirements. The characteristics of each user interacting with the system are as follows:

- **Customer:** A customer on successful registration can login to interact with the system to perform various tasks. A customer can select stock to view its price and can add interested stocks to watchlist to view later. Customer can view current and history price of stock from his watchlist. Customer can sell and purchase stocks and can view account balance and previous history of transaction. A customer can view profiles of all registered managers in the application and can select a manager to manage stocks. Customer can request manager to sell or purchase stocks on his behalf. A customer can communicate with his manager by posting message. A customer can also update his profile.
- **Manager:** A manager on successful registration can interact with application to sell and purchase stocks upon customer's request. A manager can manage his profile by entering necessary details. Manager can view his account to check commission gained from transactions. A manager can contact his client by posting messages. Additionally, a manager can also perform all tasks of a customer by switching the role to customer.
- **Admin:** The admin can interact with the system to view all activities carried by the customer and manager in the system. The admin has the authority to view Manager's registration to the system and to approve or decline the registration upon scrutiny.

2.4 General Constraints

The users should have Java and JavaScript compatible web browser like IE, Chrome, Firefox on the device they will be interacting with the system for satisfactory user experience.

It is constrained to have continuous internet connection for the system to run without interruptions. And it also required for the device to have Apache Tomcat Server installed.

The organization providing the system will be responsible for maintaining the system

2.5 Assumptions and Dependencies

One assumption is that user is familiar with English language to operate the system. It is also assumed that the hardware of devices meets specific requirement on which the system is implemented. Apache Tomcat Server will be used to deploy the application and it is assumed that the server is up and running whenever user uses the system. Another assumption is that the Alpha vantage API server which provides real time data about the stocks is always running.

3 Specific Requirements

This section provides detailed description of system and its features. It also comprises of all external interface requirement, functional requirements and data requirements for the system. It provides use case scenario for the system.

3.1 External Interface Requirements

3.1.1 User Interfaces

The user should first see the home page where user can select to login as customer, manger or admin. Accordingly it will redirect to respective pages. If the user is visiting the application for the first time and has not registered, then user should register themselves to the application via registration page and set username and password to login in to the system later. Every registered user should have a profile page where user can view and edit personal and security information.

The customer after logging in to the system should see a search bar to enter name of stock he wishes to view and a menu list. The menu list shall consist options such as 'View profile', 'View account', 'My watchlist', 'My stocks list', 'Message manager'. Alternatively, he can also see list of stocks and can choose any stocks to add to his watchlist to view later. When the customer accesses the watchlist, he can choose a stock to view his current price and history price. The customer can select a stock from watchlist to purchase it or can request a manager to purchase the stock on customer's behalf. The purchased stocks can be viewed in a list available in the menu option. Customer can select a stock from 'My stock list' to sell it or can send a request to manager to sell it by clicking button 'Request manager' on same page. The customer can select 'View account' to view his current balance and history. The customer should be able to access resources in menu list.

The manager, after logging in to the system should see a menu list. The menu list shall consist options such as 'View profile', 'View account', 'My customers', 'My watchlist', 'Requests', 'Message customer'. The manager can select a customer request from 'Requests' which will redirect to different page to perform necessary action of purchasing or selling the stocks. The manager should be able to access resources in menu list. The manager can view commission gained by clicking the 'View account'. A manager can also communicate to the customer by clicking 'Message customer'.

The administrator should be able to log-in to the application, after he should redirect to page have two options 'View activity records', 'View Manager registration'. On selecting 'View activity records' where he/she could view the list of activities performed by customer and manager in a different page. The admin should also be able to view list of managers registered for the system in a different page on clicking 'View Manager registration' and should approve and decline the registration by verifying the details.

3.1.2 Hardware Interfaces

This subsection describes the logical and physical characteristics of each interface between the software product and the hardware components of the system. The proposed system runs on any devices that include following hardware component:

User device	Windows, MAC and Unix
RAM	1 GB (32 bit) RAM or 2 GB(64 bit)
Processor	x 86 Dual core 1.6GHz or faster
Screen resolution	1024 x 768
Hard Disk	500 MB of free secondary storage

3.1.3 Software Interfaces

This subsection describes necessary software interface requirements for system to accomplish connection with database and various software components. The MyStock application communicates with database and API to get information about the users and stocks respectively and the resources accessed by user.

Operating system	Windows 7/8/10, MAC and Unix
Database	MySql 5.7
Browser	HTML5, Java and JavaScript compatible browsers like Chrome, IE, Firefox,Opera
Web Server	Apache Tomcat Server 7.0
API	Alpha vantage Stock time series

3.1.4 Communications Interfaces

This subsection describes protocols required by the system to communicate with various subsystem of application and to database. Network protocols for system to communicate are as follows:

- HTTP
- HTTPS
- SSH

3.2 Functional Requirements

This section includes requirements that specify the functionality and operations performed by ‘MyStock’ application.

3.2.1 Functional requirement 1

ID: FR1

Title: Customer registration

Desc: Given that the user wants to use the facilities of the web application. System should register the customer to the application. System should accept following details from customer such as name, email, phone, username, password

Rat: For customer to register on the web application

Dep: None

3.2.2 Functional requirement 2

ID: FR2

Title: Manager registration

Desc: Given that the Manager wants to use the facilities of the web application. System should register the manager to the application. System should accept following details from manager such as name, email, license number, phone, username, password

Rat: For Manager to register on the web application

Dep: None

3.2.3 Functional requirement 3

ID: FR3

Title: Customer Log-in to the application

Desc: The system should allow customer to login to the web application. Customer needs to provide system with username and password. System will authenticate username and password for customer to log in customer into the application

Rat: For customer to login to the web application

Dep: FR1

3.2.4 Functional requirement 4

ID: FR4

Title: Admin Log-in to the application

Desc: The system should allow admin to login to the web application. Admin needs to provide the system with username and password to login the application. System will authenticate username and password for admin to log in admin into the application

Rat: For admin to register on the web application

Dep: None

3.2.5 Functional requirement 5

ID: FR5

Title: Verify Manager's registration

Desc: The system should successfully register manager to the web application. Admin needs to approve or decline Manager's registration after verifying license number. The system will send an approval or decline notification to the manager on his valid email address.

Rat: For manager to successfully register to the web application

Dep: FR2, FR4

3.2.6 Functional requirement 6

ID: FR6

Title: Manager Log-in to the application

Desc: The system shall allow manager to login to the web application. Manager needs to provide the system with username and password to login the application. System will authenticate username and password for manager to log in manager into the application

Rat: For manager to login to the web application

Dep: FR2, FR5

3.2.7 Functional requirement 7

ID: FR7

Title: Retrieve password

Desc: System shall send an email to the user of the application with the password when user select 'Forget password'.

Rat: For user to login to the web application incase user forget password.

Dep: For customer – FR3, For manager – FR6

3.2.8 Functional requirement 8

ID: FR8

Title: Retrieve username

Desc: System shall send an email to the user of the application with the username when user select 'Forget username'

Rat: For user to login to the web application incase user forget username.

Dep: For customer – FR3, For manager - FR6

3.2.9 Functional requirement 9

ID: FR9

Title: Customer profile page

Desc: System shall provide customer with profile page to view name, phone, email address, username, hired manager if any. System should allow customer to enter credit card details to perform transaction. System shall allow customer to edit these details and password as well.

Rat: For customer to have profile page in the web application

Dep: FR3

3.2.10 Functional requirement 10

ID: FR10

Title: Manager profile page

Desc: System shall provide manager with profile page to view name, phone, email address, license number, commission to be charged, username, customers if any. System shall allow manger to edit these details and password also.

Rat: For manager to have profile page in the web application

Dep: FR7

3.2.11 Functional requirement 11

ID: FR11

Title: Search Stock

Desc: The system shall allow customer and Manager to search stock by keyword to view stocks. System shall present search result in a list view

Rat: For user and manager to search stocks

Dep: FR3, FR6

3.2.12 Functional requirement 12

ID: FR12

Title: Add stocks to watch list

Desc: System shall provide customer and Manager to add interested stock to the watchlist. System will display stocks in a list view.

Rat: For user and manager to bookmark and save the interested stocks in a personalized list

Dep: FR11

3.2.13 Functional requirement 13

ID: FR13

Title: View current price of stock from watchlist

Desc: The system shall display current price of the stock from the watchlist, when customer or manager select stock to view from watchlist.

Rat: For user and manager to view stock details like current price from watchlist.

Dep: FR12

3.2.14 Functional requirement 14

ID: FR14

Title: View price history of stock from watchlist

Desc: The system shall display price history of the stock from the watchlist, when customer or manager select stock to view from watchlist.

Rat: For user and manager to view stock details like price history from watchlist.

Dep: FR12

3.2.15 Functional requirement 15

ID: FR15

Title: View manager's profile

Desc: The system shall provide customer with a list of registered managers. The system should allow customer to view manager's profile.

Rat: For customer who needs to view manager's profile

Dep: FR 3

3.2.16 Functional requirement 16

ID: FR16

Title: Select manager to manage customer's account

Desc: The system shall allow customer to select a manager from a list of registered managers.

Rat: For customer who needs a manager to manage stocks.

Dep: FR 3

3.2.17 Functional requirement 17

ID: FR17

Title: Customer purchase stocks

Desc: Given that the customer needs to purchase stock, the application should allow customer to select stock from watchlist or search menu to purchase

Rat: For customer wants to purchase stock

Dep: FR 3, customer to have sufficient balance in the account to purchase stocks

Scenario: customer needs to purchase stocks from watchlist

Dep: FR12

3.2.18 Functional requirement 18

ID: FR18

Title: MyStock list to save purchased stocks

Desc: The application should display the stocks customer purchased.

Rat: For customer to view stocks he purchased

Dep: FR 17

3.2.19 Functional requirement 19

ID: FR19

Title: Customer sell stocks

Desc: Given that the customer needs to sell stock, the application should allow customer to select stock from MyStock list to sell.

Rat: For customer who needs to sell stocks.

Dep: FR18

3.2.20 Functional requirement 20

ID: FR20

Title: Customer request manager to sell stocks

Desc: Given that the customer needs to sell stock, the application should allow customer to request his manager to sell specific stock as mentioned by customer.

Rat: For customer who needs to sell stocks.

Dep: FR16, FR17

3.2.21 Functional requirement 21

ID: FR21

Title: Customer request manager to purchase stocks

Desc: Given that the customer needs to purchase stock, the application should allow customer to request his manager to purchase specific stock as mentioned by customer.

Rat: For customer who needs to purchase stocks.

Dep: FR16, FR17

3.2.22 Functional requirement 22

ID: FR22

Title: Manager sell stocks on behalf of customer

Desc: The system should allow manager to sell specific stock as mentioned by customer.

Rat: For Manager who needs to sell stocks as requested by customer

Dep: FR16, FR20

3.2.23 Functional requirement 23

ID: FR23

Title: Manager purchase stocks on behalf of customer

Desc: The system should allow manager to purchase specific stock as mentioned by customer.

Rat: For Manager who needs to purchase stocks as requested by customer

Dep: FR16, FR21

3.2.24 Functional requirement 24

ID: FR24

Title: Customer view account balance

Desc: The system shall display a logged in customer his account balance, by selecting view account balance from menu.

Rat: For customer who need to view account balance.

Dep: None

3.2.25 Functional requirement 25

ID: FR25

Title: Customer view account history

Desc: The system shall display a logged in customer his account history, by selecting view account history from menu.

Rat: For customer who need to view account history.

Dep: None

3.2.26 Functional requirement 26

ID: FR26

Title: Manager view account for commission

Desc: The system shall display a logged in manager his account to view commission gained, by selecting view 'My account' from menu.

Rat: For manager who need to view account for commission gained.

Dep: None

3.2.27 Functional requirement 27

ID: FR27

Title: Admin to view all activity records

Desc: The system shall display the admin all activities carried by customer and manager.

Rat: For admin to view activity records of customer and manager. And to take necessary actions in case of suspicious activity.

Dep: FR4

3.2.28 Functional requirement 28

ID: FR28

Title: User log-out

Desc: The system shall log out the user and invalidate the session

Rat: For users to log out from the system after performing the actions.

Dep: All users need to log in to the system

3.3 Data Requirements

The Data Requirements specifies the necessary required data that needs to be provided by each different user who are interacting with the certain operation in the application. The following data is required by each user.

- Customer: The customer needs to provide following data:
 - Name – Characters
 - Email address – alphanumeric
 - Phone – numeric
 - Username – alphanumeric
 - Password – alphanumeric with at least 8 characters
 - Credit card details – alphanumeric
- Manager: The manager needs to provide following data:
 - Name – Characters
 - Email address – alphanumeric
 - Phone – numeric
 - Username – alphanumeric
 - Password – alphanumeric with at least 8 characters
 - License number – alphanumeric
- Admin: The admin needs to provide following data:
 - Username – alphanumeric
 - Password – alphanumeric with at least 8 characters

3.4 Use cases

This section provides use case diagram for ‘MyStock’ application. The diagram states there are three actors namely customer, manager and admin. It is assumed that a manager can switch its role to customer and hence can override the features of customer. All the use cases connected to Customer except ‘Register as customer’ and ‘logout’ are included to ‘login’ use case. All the use cases connected to Manager except ‘Register as manager’ and ‘logout’ are included to ‘login’ use case.



3.5 Class / Object

It should contain the class diagrams of every module in the system with different design patterns that you will use.

- *This need to be updated for Next Lab*

3.6 Non-Functional Requirements

The Non-Functional Requirements are the operations and activities that a system is supposed to do. It includes descriptions of the operation such as qualities, quality goals, quality of service and non-behavioral requirements.

- *This need to be updated for Next Lab*

3.7 Inverse Requirements

It should contain list of all inverse requirements that the project is restricted to.

- *This need to be updated for Next Lab*

3.8 Design Constraints

It should contain list of all the design constraints that are limiting the project.

- *This need to be updated for Next Lab*

3.9 Logical Database Requirements

It should contain list of all the logical database requirements that are needed for the project.

- *This need to be updated for Next Lab*

3.10 Other Requirements

It should contain list of any other requirements not covered elsewhere in the SRS. This might include internationalization requirements, legal requirements, reuse objectives for the project, and so on.

- *This need to be updated for Next Lab*

4 Analysis Models

List all analysis models used in developing specific requirements previously given in the SRS. Each model should include an introduction and a narrative description. Furthermore, each model should be traceable the SRS's requirements.

4.1 Sequence Diagrams

It should contain the Sequence Diagrams of every module that shows the flow of logic within your system in a visual manner, enabling you both to document and validate your logic, and are commonly used for both analysis and design purposes.

- *This need to be updated for Next Lab*

4.2 State-Transaction Diagrams

It should contain the State Transition Diagrams of each state (The flow of each user from the beginning of interaction with the system).

- *This need to be updated for Next Lab*

4.3 Data Flow Diagrams

It should contain all the Data Flow Diagrams of each flow of data in a graphical representation.

- *This need to be updated for Next Lab*