**Software Requirement Specification**

**Project : Virtual Stock Market**

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**Data Stored**

**Users:** A table for the entry of users involved in trade of securities in the stock exchange.

username, password, real name, email, phone number, address, account balance

**Equity:** Contains all the stock available for trade on the stock exchange

Stock Symbol, Stock Company, password, Last Traded Price

**Ownership**: This stores the information about the share owner and refer to the user table and the equity table for username and stock symbol respectively

username, Stock Symbol, Quantity

**Transactions:** It stores all the sales that took place in the stock market with the information about the seller and buyer and the stock traded

Stock Symbol, Traded Price, Quantity, Seller, Buyer, DateTime

**Buy Orders**: If a member wants to buy a stock of some company, he will place a buy order. Any limit buy order, if unmatched, will be stored in this table.

Stock Symbol, Bid Price, Quantity, DateTime

**Sell Orders:** To be placed when a user want to sell a stock he/she owns. Any limit sell order, if unmatched, will be stored in this table.

Stock Symbol, Ask Price, Quantity, DateTime

**Figures**

**No of stocks:** 1000

**Transaction per second :** 1000

**Response Time for orders** ~ 1s

*Please refer to last page for all the terminologies used in modelling the stock exchange*

**Interfaces**

**Users:**

We created an interface for the user to register, place orders and view the orders placed .

Functionality : User Registration, User Login, Place Orders (Market Orders, Limit Orders, Stop Orders)

**Admin:**

A central admin panel that simulate the working of the stock exchange

Functionality : Update user balance

**Stock Details:**

Contains all the information related to a given stock.

Last Traded Price, Order Book, Today’s Traded Volume, Today’s Traded Value, Total Traded Volume, Total Traded Value, Today’s High Price, Today’s Low Price, Previous Day Close, Yearly High Price, Yearly Low Price.

Graphical Output:

* Graph of today’s price movement
* Graph of year’s price movement

**Company:**

An interface for company to register, put stocks on the stock market and pay the benefits to the stockholders

Functionality : Company Registration, Company Login, Pay Dividend interface.

**Back End and Algorithms**

**Matching Engine for orders**

The most important task in the stock exchange is to match the buy orders and sell orders to make a transactions. To make it efficient we need to filter the table by stock symbol, then sort the table first along price, second along datetime, and then match the orders from the top of this sorted table.

**Market Orders :** These are the orders that have to be traded at current best price so for such kinds of order we will just sort the order tables and match the top most offer.

**Limit Orders :** Similar to market orders we will try to match the top most offer in limit with the price. If that is not possible, the order will be placed in the order table.

**Corresponding controllers for all the interfaces.**

*Please refer to last page for all the terminologies used in modelling the stock exchange*

**Terminology :**

Note : As the stock exchange model is full of new terms we thought that it would be useful to define all the terms in the specification document so that there is no gap between the reader and our model.

**Equity :** In finance, in general, you can think of equity as ownership in any asset after all debts associated with that asset are paid off.

**Orders :** An order is an instruction to buy or sell on a trading venue such as a stock market.Orders in a stock exchange can be of three types

* Market Orders : An order that an investor makes through a broker or brokerage service to buy or sell an investment immediately at the best available current price
* Limit Orders : A **limit order** is an order to buy a [security](http://en.wikipedia.org/wiki/Security_(finance)) at no more than a specific price, or to sell a security at no less than a specific price (called "or better" for either direction).
* Stop Orders : A stop order, also referred to as a stop-loss order, is an order to buy or sell a stock once the price of the stock reaches a specified price, known as the stop price.

**Dividend :** A distribution of a portion of a company's earnings, decided by the board of directors, to a class of its shareholders.

**Ask Price :** The price at which the owner of a stock wants to sell the stock

**Bid Price :** The price at which a buyer wants to buy a stock

**Last Traded Price** : The price of the last successful transaction of a stock