The Paramount Investments League

Team 1:

David Patrzeba
Eric Jacob
Evan Arbeitman
Christopher Mancuso
David Karivalis
Jesse Ziegler

February 8, 2014

Hyperlinks:

Webapp Link
Project Repository
Reports Repository

Revision History:

Version No.	Date of Revision
v.1	2/7/2014

		Names					
Category	Points	David P	David K	Jesse Z	Evan B	Eric J	Chris M
Project Management	10 Points	0%	0%	0%	0%	0%	0%
Customer Requirements	9 Points	0%	0%	0%	0%	0%	0%
System Requirements	6 Points	0%	0%	0%	0%	0%	0%
Functional Requirements	30 Points	0%	0%	0%	0%	0%	0%
User Interface Specifications	15 Points	0%	0%	0%	0%	0%	0%
Domain Analysis	25 Points	0%	0%	0%	0%	0%	0%
Plan of Work	5 Points	0%	0%	0%	0%	0%	0%

Contents

1 Customer Statement of Requirements

1.1 Problem Statement

The stock market, more specifically the New York Stock Exchange(NYSE) and the Nasdaq play a pivotal role in the American economy today. Both are signals of the strength of the private sector and consumer confidence. It is thus no surprise that more and more people want to be involved in these markets and attempt to increase their own wealth.

There is however a barrier to entry for many people, both young and old in participating. That is why with Paramount Investments League we are interested in a platform for interacting with these markets and providing educational interfaces for breaking down these barriers. Users should be able to easily register with the system and begin participating immediately. They should be given an imaginary cash portfolio where they can perform basic market orders such as buy and sell. These orders to should mimic real market orders as closely as possible and should include a brokers fee. More sophisticated market maneuvers should be unlocked as the user progresses through an achievements ladder.

Paramount Investments League is geared towards a wide array of audiences and expects a variety of users with varying knowledge levels to participate. In order to maintain appeal amongst these users the platform should provide rewards to users for acheiving particular goals. We would like to replicate the idea of achievements or trophies similar to the Microsoft xBox and Sony Playstation family of systems. These achievements can award users with new abilities or additional cash to their portfolio as they rise up the achievements ladder. Users should also be able to create leagues to help further enhance the competitiveness of the game.

Leagues exist to allow multiple users to compete against a subset of the global user base with individual league rules. This allows leagues to set particular goals in order to be declared the winner. Leagues will require a cash buy-in that will be pooled together and distributed to the winner(s) as seen fit by the league creator. To help facilitate these leagues, a leader board will be created for each individual league such that users can see their progress. In addition to league leader boards, mutliple global leaderboards will be available providing specific metrics of comparison.

To help facilitate a better understanding of markets, market metrics should be available to the user through news feeds of companies in their portfolio, interactive charts, and a live ticker of current trades happening on our platform. Users should be able to have granular control of email and social media updates.

The entire experience should be unified across mobile, tablet, and the desktop and combined with the above features provide an enthralling core experience for users to learn about the stock market.

1.2   Glossary of Terms

Margin – Borrowed capital used to execute trades, i.e. "buy on margin". Although leveraging margin is possible for normal buy and sell orders, they are critical to short orders, in which the entire stock is sold without actually being owned. [**?**] Margin can refer to both the act of purchasing a stock on credit, and to the percentage of a stock's equity value required to be held in capital against the risk of the stock decreasing in value. [**?**]

League – an instance of a market simulation with a predefined rule-set and containing many *investors*. All leagues are created by a *League Manager* There are two types of leagues:

- **Public** – Any Investor can join this type of League

- **Private** – A private league can only be seen by its members and administrators. A User does not join this league, rather they are placed into it by a League Manager.

Order – An *investor* must place an order for the purchase or sale of a *stock*.

- **Stop Order** – A type of order used to protect gains or limit losses. Stop loss orders are activated if a stock drops below the stop price and buy stop orders are activated if a stock rises above the stop price. [**?**] When activated, a Stop Order becomes a *Market Order*.

- **Limit Order** – A type of order used to prevent trades from occurring except at indicated prices. Buy limit orders will only be executed at or below the indicated price, and sell limit orders will be executed at or above the indicated price. Limit orders are not guaranteed to ever be executed and expire after a specified duration. [**?**]

- **Market Order** – An order to be executed as soon as possible at current market prices.[**?**]

  - **Short Order** – A type of transaction in which an Investor symbolically borrows a certain number of stocks (using their existing Margin) and sells them at market price, expecting the stock value to decrease and to make a profit when exiting the position. Exiting is called a *cover*. [**?**]

  - **Cover Order** – A type of transaction in which an Investor purchases stocks to *cover* the symbolic loan of stocks created by a *short order*. [**?**]

Portfolio – A detailed account of the *stocks* associated with an *investor* in a given league. Portfolios are unique.

Stock – A type of asset that represents equity in a company.

- **Ask Price** – The price at which a trader is willing to sell a stock.

- **Bid Price** – The price a trader is willing to pay for a stock.

- **Bid-Ask Spread** – The bid-ask spread describes the difference in price between the bid and the ask. These two prices are marginally different, but always with the ask being the more expensive of the two. It represents the friction inherent in trading a stock. [**?**]

- **Ticker Symbol** – an abbreviation used to uniquely identify publicly traded shares of a particular stock on a particular stock market.

- **Symbol List** – a list of a market/several market's ticker symbols.

User Roles – Each user with an account can have one or more of the following roles:

- **Investor** – A instance of the User, who commits capital expecting to see it grow in value. Users Instances are referred to as *investors*.

- **League Manager** – A League Manager is an *investor*. A user does not necessarily have this role for every league they are in. Only ones in which they created the League or were given a League Manager role from another League Manager of that League. League Managers control settings of leagues.

- **Site Administrator** – This is the most powerful role. A Site Administrator is a user with elevated privileges, to ban users and delete offensive comments.

- **Suspended** – A user with this role is currently pending losing their Suspended Role, or granted a *Banned* role. While suspended an *Investor* cannot do anything with their Account other then login and view the duration of their suspension, The reasoning behind their ban, and an appeal form if the situation permits.

- **Banned** – A banned user can never be unbanned, this occurs after a rejected suspension appeal.

2 System Requirements

2.1 User Stories

Identifier	User Story	Weight
ST-1	As a user, I can create an account without registering with the website in order to participate in Paramount Investment League.	10 pts
ST-2	As a user, I can access the application across multiple platform paradigms so that I may continue to participate when I don't have access to a desktop computer.	10 pts
ST-3	As a user, I can join or create leagues with self-selected goals so that I may compete with others in a simulated stock market environment based on near real-time stock data.	10 pts
ST-4	As a user, I can search for companies by stock symbol and be presented with their current financial information so that I may research future investments.	6 pts
ST-5	As a user, I can browse a companies profile and view the performance data over a configurable span of time so that I may determine whether or not I want to invest in them.	6 pts
ST-6	As a user, I can buy or sell stocks so I may build my portfolio.	10 pts
ST-7	As a user, I can earn badges(achievements) that reward me with additional capital or new features for accomplishing predefined tasks.	10 pts
ST-8	As a user, I can manage my portfolio within a league to track my investments.	8 pts
ST-9	As a user, I can visually track my finances via graphs and charts so I may more easily manage my portfolio.	4 pts

ST-10	As a user new to the stock market, I will have access to an educational interface that teaches me about the stock market via pop-up dialogues.	6 pts
ST-11	As a user, I can see trades being made by all other users in real-time via a stock-ticker like marquee so I may have a quick overview of current trends.	3 pts
ST-12	As a user, I can see the performance of other users' portfolios so I may observe the investment habits of others.	2 pts
ST-13	As a user, I can view a portfolio leader board so I may have a summary of relative performance between users in my league.	1 pt
ST-14	As a user, I can opt to receive periodic e-mail notifications of my stock performance or trades so I may be kept up to date even when not actively viewing the site.	3 pts
ST-15	As a user, I can additionally link my account with social media sites so I may share my fantasy league experience with friends.	1 pt
ST-16	As a league manager, I can add league rules, a league name, and a league logo to personalize my league.	8 pts
ST-17	As a league manager, I may invit I want to join,and assign.	8 pts
ST-18	As a league manager, I can create league announcements.	4 pts
ST-19	As a site administrator, I can view reports of and delete leagues that are inactive.	2 pts
ST-20	As a site administrator, I may post front page news or announcements.	3 pts
ST-21	As a site administrator, I may have access to a user count, number of active leagues, total leagues, quantity of daily transactions, the most/least popular stocks, and newly created so I may have reliable site statistics.	9 pts

2.2 Nonfunctional Requirements

Functionality

Additional features for security will be enabled through the use of a OpenID and OAuth through a third-party library. There exists several packages for the purpose of authentication and authorization of users. Key authentication features are the ability to encrypt and store passwords, provide recovery options for users that have forgotten their password, and store a cookie to validate the session.

Usability

A key point in the design of this application is ease of use and appeal to the users. The application should be interactive, informative and consistent across multiple platform paradigms. Additionally the application will be used to provide the educational interfaces noted in ST-9 which should be able to be toggled on and off so that users can always view the information again.

Reliability

In order to ensure that there is no confusion to the user in the case of the internet or server failure, all transactions end with a final confirmation, and no changes to the account are made until after this confirmation. The user's portfolio will thus always be in a consistent state and will be restored when the user is able to log back in. A user that leaves the application and returns later will still be logged in. Server failure should also be dealt with by keeping backups of user data. Proper care should also be taken to handle a situation where a particular stock source is not available (i.e. Yahoo Finance).

Performance

In order to have a great performance, the website should be as lightweight as possible by keeping hardware demands to a minimum on both the client and server sides. For it to be efficient, any task initiated by the user should be completed in a timely manner. The web server should be able to serve concurrent requests especially when a large number of users are logged in. Any frameworks used should be lightweight but consideration should be taken not to prematurely optimize.

Supportability

It should be feasible to extend pr update any server components and include improved versions of modules which can be installed only by administrators. For scaling purposes, it should be made easy to include an additional number of servers to achieve load balancing. The system should be platform independent so that it is easy to move to newer technologies or the next versions of web server. The system itself should also be backed up to a remote server for the sole purpose of extending functionality and testing new features in a controlled environment.