Red Trade Investments

REPORT #1, Part 1

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csci 441 va Software Engineering

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Repository: <https://github.com/jnair1993/CSCI-441-Software-Engineer-project-RedTrade>

Shared Google Drive: <https://drive.google.com/drive/folders/1P2a4BUPlheVONdbzUB5T61HSl6d4yJso?usp=sharing>

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# Custom Problem Statement

## Problem Statement

The financial exchange, more explicitly the New York Stock Exchange (NYSE) and the NASDAQ play a critical job in the American economy today. Both are signs of the quality of the private segment and what's more, buyer certainty.

It is in this manner nothing unexpected that an ever-increasing number of individuals need to be associated with these business sectors and endeavor to build their own riches. There is a boundary for some individuals; both youthful and old in taking an interest. At Red Trade Investments, we are committed to not only being able to provide our veteran clients with real investments portfolios, but to be able to service all clientele with varying amounts of knowledge in investments. To be able to provide this level of service, we want to develop a fantasy trading league so that those who are not ready to invest any sum of money with real financial liability. Clients will be able to learn how to get into stock market trading via the league and other educational resources and materials that will be available to them. Education is essential to trading successfully and having a platform like a trading league will open the doors for more people to become investors or home in on their trading skills with different investment strategies.

In Red Trade Investments fantasy league, clients should have the option to interactively enroll with the framework and start taking an interest right away. They will be given a fanciful money portfolio where they can perform fundamental market requests such as purchasing and selling. These requests should mirror genuine market arranges as intently as could be expected under the circumstances and incorporate an intermediary charge. Increasingly complex market moves should be opened to the client as they advance through the league. Red Trade Investments will use real-time data by retrieving real-world data and prices for these stocks will be based on this data.

Once the client signs up, they will see their trading portfolio that shows the stock they own and other information like how much they own, what the current price is, how much they have made in profit off of the stock, etc. Clients will also have the opportunity to see links to other pages that house the trading request platform, stock history and research information, and a help page. The trading request platform will allow the client to make trades in real time just like they would be able to in the actual market and trades will be cutoff at the same time as the market closes. Stock research will allow the client to understand the history of stocks, which stocks are currently active, and what the most active stocks are in the market. Also, as education is extremely important, there will be a place that investors and look at tutorials and documents for how to trade, how investments work, and the basics of stock market trading. Lastly, they will also be able to see their rankings in the league so that they are able to understand their performance in reference to others.

To keep up requests among these clients, prizes are given to clients who reach or achieve their goal. We might want to repeat the possibility of accomplishments or trophies like the Microsoft Xbox and Sony PlayStation group of frameworks. These accomplishments can grant clients with new capacities or extra money to their portfolio as they ascend the accomplishments stepping stool. Clients have the option to make associations to help further improve the seriousness of the game. Classes exist to permit numerous clients to contend with a subset of the worldwide client base with singular alliance rules.

This permits alliances to set specific objectives to be announced the champ. Alliances will require a money purchase in that will be pooled together and dispersed to the winner(s) as seen fit by the class maker. To help encourage these alliances, a pioneer board will be made for every individual association with the end goal that clients can see their improvement. Notwithstanding alliance pioneer sheets, multiple worldwide leaderboards will be accessible giving explicit measurements of correlation. To help encourage a superior comprehension of business sectors, advertise measurements ought to be accessible to the client through news channels of organizations in their portfolio, intelligent diagrams, and a live ticker of current exchanges occurring on our foundation. Clients have the option to have granular control of email furthermore, web-based life refreshes.

To keep with the current times, we will also introduce Google Ads onto the pages to support using the clients new learned skills by linking them to real investment companies. We will also allow for social media integration so that clients are able to share their league on social media sites to promote competition and interest. Both integrations will allow us to spread education further and allow more clients the opportunity to learn trading and investment strategies.

Lastly, and perhaps the most exciting feature, this fantasy league will be designed as a website. By encapsulating this in a website, clients will be able to use this wherever they are with multiple devices. With modern technology, clients will be able to access the website via computer, tablet, or phone devices and will be able to attain the same experience with no degradation or limitation. This will set Red Trade Investments apart from other competitors as most lose functionality between devices.

## Glossary of Terms

The following terms give a small overview of some of the items which will be necessary for fully understanding of the purpose of this software’s design. The details provided should encapsulate the ideology which is important to gaining full understanding of the goals and processes within the software designed. Further, the terms will also describe features and functionality as well as the important financial terms which are crucial to comprehension of the software and how it works.

**Achievement** – Any set goal reached by an investor. Achievement rewards can be managed by a league manager and may include badges, capital, equity, etc.

**Buy** – User has elected to purchase a stock and has placed a bid for that stock

**Fantasy League -** a game where participants act as the owners/manager of a team and compete against other owners based on the statistics generated by the real individual players.

**Investment portfolio -** An investment portfolio is a basket of assets that can hold stocks, bonds, cash and more. Investors aim for a return by mixing these securities in a way that reflects their risk tolerance and financial goals.

**NASDAQ -** Nasdaq is a global electronic marketplace for buying and selling securities.

**New York Stock Exchange (NYSE) -** The New York Stock Exchange (NYSE) is a stock exchange located in New York City that is considered the largest equities-based exchange in the world, based on the total market capitalization of its listed securities

**Option** – Gives the user the option to buy or sell an asset at a specified price on or before a given date. The buyer and seller are both obligated to fulfill the transaction on the given date if the option is taken.

**Sell** – User has elected to sell a stock and has posted an ask price for it.

**Stock Market -** The stock market refers to the collection of markets and exchanges where regular activities of buying, selling, and issuance of shares of publicly held companies take place.

# System Requirements

## Enumerated Functional & Nonfunctional Requirements

The user stories written and elaborated below demonstrate several instances and requirements for program functionality, yet as a weight to live relative importance of every requirement. It's important to note that these cases are going to be elaborated on and referenced in further sections of this document. The subsequent are told from the angle of the user from his or her view with the intention of fully encapsulating what he or she should expect to be able to see or do upon entering and frequently using the referenced software.

|  |  |  |
| --- | --- | --- |
| Identifier | User Statements | Points |
| REQ-1 | As a user, I can create an account without registering with the website in order to participate in Paramount Investment League. | 5 |
| REQ-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. | 5 |
| REQ-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. | 5 |
| REQ-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. | 2 |
| REQ-5 | As a user, I can browse a company’s profile and view the performance data over a configurable span of time so that I may determine whether I want to invest in them. | 4 |
| REQ-6 | As a user, I can buy or sell stocks so I may build my portfolio. | 5 |
| REQ-7 | As a user, I can earn badges(achievements) that reward me with additional capital or new features for accomplishing predefined tasks. | 1 |
| REQ-8 | As a user, I can manage my portfolio within a league to track my investments. | 3 |
| REQ-9 | As a user, I can visually track my finances via graphs and charts so I may more easily manage my portfolio | 3 |
| REQ-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. | 5 |
| REQ-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. | 4 |
| REQ-12 | As a user, I can see the performance of other users’ portfolios so I may observe the investment habits of others. | 4 |
| REQ-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. | 4 |
| REQ-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. | 2 |
| REQ-15 | As a user, I can additionally link my account with social media sites so I may share my fantasy league experience with friends. | 3 |
| REQ-16 | As a league manager, I can add league rules, a league name, and a league logo to personalize my league. | 1 |
| REQ-17 | As a league manager, I may invite who I want to join | 4 |
| REQ-18 | As a league manager, I can create league announcements. | 1 |
| REQ-19 | As a site administrator, I can view reports of and delete leagues that are inactive | 2 |
| REQ-20 | As a site administrator, I may post front page news or announcements. | 1 |
| REQ-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. | 1 |
| REQ-22 | As a league manager, I can choose the specific victory conditions for a game (ex: first to a certain capital, net gain, or overall gain within a time). As a user I can view this condition and my progress toward victory. | 3 |

The above requirements outline a general list of requirements which we expect to reflect the core functionality of our software (with higher weighted items acting as higher priority and being implemented first). The goal of the software is to simulate that of a real-world stock market with users having the options to perform and carry out the important and basic trading actions. We plan to add increased functionality when compared to years prior, however. With the addition of achievements, varied victory conditions, as well as increased leaderboard functionality Paramount Investments will appeal to a larger audience than that of years past. Notice that items such as administrative privileges as well as league creation and stock execution are prioritized with substantially higher priority with relation to our newly added functionality. This is because the core functionality of the software is crucial to it working. We will expand on the core as well Supplement requirements.

Core requirements

These requirements are crucial to the viability and progression of the software. That is the user can create and log into an account daily. We will use a basic authentication system to implement this. Importantly the user will be able to access this UI on multiple different platforms to ensure complete and smooth transitional access to the system with zero down time.

The user will be able to access his or portfolio. From this portfolio, they can view their currently owned stocks as well as monitor the performance of their portfolio. They can view progress toward goal requirements and badges. From this location they can take action to buy and sell stock or perform short, stop, limits, etc.

League managers will have access to a specific configuration setup where they can choose victory conditions, league settings, and monitor progress of investors within the league. This functionality is core to the formation of leagues within the game.

This project will NOT be its own market. In order to maintain the idea of perfect competition and unbiased market prices, all data will be taken from Yahoo! Finance to submit data and trades will be taken from here. This software is not intended to be a way for people to trade actual stock, rather just a resource for learning the market and tools of trade.

Supplemental Requirements

The user will be able to access social media integrated applications and decide whether to keep their social media profile updated and informed with updates on progress from their fantasy league. They may also receive email updates with various progressions in the game.

The user will be kept updated on the progress of other users to view their trades as well as recent market trades and trends.

Users will also have access to on-site term explanation like that seen-on Wikipedia. That is, they may scroll over an underlined term to find a brief definition and additional resources.

Functionality

Additional features for security will be enabled using an OpenID and OAuth through a third-party library. There exist 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 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 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 many 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 or 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.

## User Interface Requirements

The user interface stories written and elaborated below demonstrate several instances and requirements for program functionality, yet as a weight to live relative importance of every requirement. It's important to note that these cases are going to be elaborated on and referenced in further sections of this document. The subsequent are told from the angle of the user from his or her view with the intention of fully encapsulating what he or she should expect to be able to see or do upon entering and frequently using the referenced software.

There are a few user interface requirements that will be universal to the entire site:

|  |  |  |
| --- | --- | --- |
| Identifier | Requirement | Points |
| UIR-1 | Every page has navigational links across the top, the user’s login id, the Red Trade logo and their current position in the leaderboard | 5 |
| UIR-2 | Every page has a consistent static Google Ad area. | 3 |

There are also the following requirements for specific pages:

|  |  |  |
| --- | --- | --- |
| Identifier | Requirement | Points |
| UIR-1 | On the portfolio page, users will find currently owned stocks, trade history and transactions, league standings, and more. | 5 |
| UIR-2 | On the Stock Research page, users will be able to view most active stocks and have search functionality to view stock information. | 4 |
| UIR-3 | On the Trade page, users will be able to see a form to submit trades. | 5 |
| UIR-4 | On the Trade page, users will be able to see a table with open trades, successful trades and failed trades. | 3 |
| UIR-5 | On the Rankings page, the user will be able to see their current ranking in the global and local league. | 4 |
| UIR-6 | On the Profile page, the user will be able to see their profile information with a form and submit those changes. | 5 |
| UIR-7 | On the Profile page, the user will be able to edit their profile information with a form and submit those changes. | 1 |
| UIR-8 | On the Help page, users will be able to see and click links to relevant trade tutorials and documentation. | 5 |
| UIR-9 | On the Help page, if links that are clicked on are broken a 404 page will appear. | 1 |

The below images give an overall view of the user interface requirements. This is just the general design and all images will be put in during demos and final release. This should demonstrate the framework and give an overall idea of what the website will look like.

A screenshot of a cell phone

Description automatically generatedA screenshot of a cell phone

Description automatically generatedA screenshot of a cell phone

Description automatically generatedA picture containing screenshot

Description automatically generated

# Project Management

## Project Management

As this project has evolved, our contributions and interactions are more complex and intertwined. It would be impossible for us to break down the work and contributions that everyone did. It is for these reasons that we feel as a team it is safe to say that we equally contributed to the project and therefore request that equal contributions be applied for all members of this project. We have weekly meetings where we discuss the overall projects, edit the report documentation, and divide work. Additionally, we all share a Google drive account and GitHub repository where we all always make edits to the documents and scripting and changes are hard to track.

# References

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<https://smartasset.com/investing/what-is-an-investment-portfolio>

<https://www.investopedia.com/terms/s/stockmarket.asp>

<https://betoclock.com/fantasy-sport-league/>