Software Engineering Project Proposal and Report:

Red Trade Investments

Fort Hays State University

CSCI 441 VA Software Engineering

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Contents

Table of Contents Page

Team Profile

1.1 Taylor Pressley ------------------------------------------------------------------------ 4

1.2 Jayesh Nair ----------------------------------------------------------------------------- 4

1.3 Gideon Lal ------------------------------------------------------------------------------ 4

1.4 Shin Hyunsook -------------------------------------------------------------------------4

1.5 Michael Nguyen -----------------------------------------------------------------------4

Project Proposal

2.1 Registration ------------------------------------------------------------------------------5

2.2 Social Media Integration --------------------------------------------------------------5

2.3 Unified interface ------------------------------------------------------------------------5

2.4 Portfolio Management ----------------------------------------------------------------5

2.5 Email Update -----------------------------------------------------------------------------5

* 1. Graphs and News -----------------------------------------------------------------------5
  2. Educational Interfaces -----------------------------------------------------------------5
  3. Leagues------------------------------------------------------------------------------------6
  4. Achievements----------------------------------------------------------------------------6

Product Ownership

3.1 Registration Functionality -------------------------------------------------------------7

3.2 Social Media Integration Functionality ---------------------------------------------7

3.3 Unified Interface Functionality -------------------------------------------------------7

3.4 Portfolio Management Functionality -----------------------------------------------7

3.5 Email Update Functionality------------------------------------------------------------7

3.6 Graphs and News Functionality ------------------------------------------------------7

Project Management

4.1 FHSU group email -----------------------------------------------------------------------8

4.2 Discord App -------------------------------------------------------------------------------8

4.3 Github --------------------------------------------------------------------------------------8

4.4 Goolge Docs ------------------------------------------------------------------------------8

Customer Problem Statements-----------------------------------------------------------9-10

System Requirements ----------------------------------------------------------------------11-14

5.1 Core Requirements ---------------------------------------------------------------------12

5.2 Supplemental Requirements ---------------------------------------------------------13

5.3 Functionality ------------------------------------------------------------------------------13

5.4 Usability ------------------------------------------------------------------------------------13

5.5 Reliability -----------------------------------------------------------------------------------13

5.6 Performance -------------------------------------------------------------------------------13

5.7 Supportability ----------------------------------------------------------------------------- 14

Glossary -----------------------------------------------------------------------------------------15

Team Profile

For this project, we will be working on creating a [insert here]. We have decided to name the project [insert here] in which we intend to focus on how we built and created this software primarily focusing on design and functionality.

For this project, Tyler Pressley has decided to be our team leader as well as our technical leader. All members have constructed a schedule as well as a form of communication with each other such as discord and a phone text group.

* 1. Taylor Pressley

Tyler Pressley will be our team leader. He is proficient in HTML, CSS, Bootstrap, and JavaScript. He has experience in using JavaScript as well as C++. With his experience and knowledge, he integrates his knowledge into our project.

* 1. Jayesh Nair

Jayesh Nair has experience with HTML, CSS, and JavaScript. He has knowledge and experience working with React as well as EmberJs front-end frameworks. He is also familiar with Python scripting and RESTful API architecture.

* 1. Gideon Lal

Gideon is proficient in Java, C++, and Visual Basic. He has an Associates degree in programming from KCC. Gideon also has experience with HTML, CSS, PHP, and SQL database.

* 1. Shin Hyunsook

Hyunsook Shin is proficient with JavaScript, SQL, Java, HTML, and CSS. He is also familiar with SpringBoot, RESTful API, Angular, and Bootstrap.

* 1. Michael Nguyen

Michael Nguyen is proficient in hardware, Microsoft Operating System, EXSI, and AWS servers.

Project Proposal

As Red Trade Fantasy Investment League has decided to work on Project #5 Stock Market Investment Fantasy League with an end goal of building a software that serves the audience of investors a visual to the tradable assets. As investors come from all ages but tend to fall in line with the younger generation; by creating this software, not only can you manage investing but as well as observe.

2.1 Registration

The users can create an account and log into the system in a basic and simplistic manner. The system will use the least amount of information necessary but in a straightforward manner.

2.2 Social Media Integration

The users should be able to send push notifications or messages to their social media to indicate or show their achievements and personal goals the user as was able to make. They will have complete control of when, how, and who they send it too.

2.3 Transactions Ticker

When a new user visits the website, there will be a subtle but noticeable ticker that indicates the most recent trades near the top of their screen in a speed that they can read and process information. It can be a short popup or a scroll across text.

2.4 United Interfaces

The application can be experienced cross-platform. It can be used Mobily as well as on a desktop including the use on major browsers such as Chrome and Firefox.

2.5 Portfolio Management

Users should be able to purchase, shop, and sell as well as limit any trades. Users will also be able to cancel any purchases had they been made by mistake if the purchase has not been completed.

2.6 Email Updates

Users will receive updates via email in which they choose to subscribe to or not like a newsletter. Receipts for trades will also be emailed to keep a copy of.

2.7 Educational Interfaces

When hovering over some terms, a popup will appear to give a definition and a brief explanation.

2.8 Leagues

Users can participate in a competition that is customizable in which a winner can be determined.

2.9 Achievements

Users should be able to be recognized for their accomplishments and be rewarded with either additional play, stocks, or either rewards available.

Product Ownership

This project consists of multiple core components to make the application work. Each team member is assigned a component to work on and is assigned (X AMOUNT COMPONENTS) being responsible in creating each functionality.

3.1 Registration Functionality

Taylor Pressley, Jayesh Nair, Gideon Lal, Shin Hyunsook, Michael Nguyen

3.2 Social Media Integration Functionality

Taylor Pressley, Jayesh Nair, Gideon Lal, Shin Hyunsook, Michael Nguyen

3.3 Transaction Ticker Functionality

Taylor Pressley, Jayesh Nair, Gideon Lal, Shin Hyunsook, Michael Nguyen

3.4 Unified Interface Functionality

Taylor Pressley, Jayesh Nair, Gideon Lal, Shin Hyunsook, Michael Nguyen

3.5 Portfolio Management Functionality

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3.6 Graphs and News Functionality

Taylor Pressley, Jayesh Nair, Gideon Lal, Shin Hyunsook, Michael Nguyen

3.7 Email Update Functionality

Taylor Pressley, Jayesh Nair, Gideon Lal, Shin Hyunsook, Michael Nguyen

3.8 Educational Interface Functionality

Taylor Pressley, Jayesh Nair, Gideon Lal, Shin Hyunsook, Michael Nguyen

3.9 League Functionality

Taylor Pressley, Jayesh Nair, Gideon Lal, Shin Hyunsook, Michael Nguyen

3.10 Achievements Functionality

Taylor Pressley, Jayesh Nair, Gideon Lal, Shin Hyunsook, Michael Nguyen

Project management

Red Trade Team communicate to each other thru various means:

* 1. FHSU group email

Red Trade Team have a group email that we communicate to each other if we have any concerns or questions for the next project.

* 1. Discord app - (<https://discordapp.com/channels/>)

Team Lead Taylor Pressley setup a meeting with team to talk about the next project. Every Tuesday at 7:30PM CST, the Red Trade team join the conference call to discuss strategy for the next portion of the project due date.

* 1. Github

We use Github to store documents and program that we submit to Dr. Vu for grading

* 1. Google Docs

We use Google Docs for Red Trade Team to review before submitting. Everybody in the Red Trade Team have access.

Customer 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 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. The reason we are working with other investors is that we are keen on working with them and connecting with these business sectors giving instructive interfaces to separating the obstructions.

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 to 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 software or website. 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.

System 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. Specifically, these functions aren't necessarily written so as of weight or functional precedence but are simply a listing of user story requirements and relative weighted importance. it's important to look at 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. |  |
| 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. |  |
| 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. |  |
| 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. |  |
| REQ-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. |  |
| REQ-6 | As a user, I can buy or sell stocks so I may build my portfolio. |  |
| REQ-7 | As a user, I can earn badges(achievements) that reward me with additional capital or new features for accomplishing predefined tasks. |  |
| REQ-8 | As a user, I can manage my portfolio within a league to track my investments. |  |
| REQ-9 | As a user, I can visually track my finances via graphs and charts so I may more easily manage my portfolio |  |
| 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. |  |
| 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. |  |
| REQ-12 | As a user, I can see the performance of other users’ portfolios so I may observe the investment habits of others. |  |
| 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. |  |
| 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. |  |
| 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. |  |
| REQ-16 | As a league manager, I can add league rules, a league name, and a league logo to personalize my league. |  |
| REQ-17 | As a league manager, I may invite who I want to join |  |
| REQ-18 | As a league manager, I can create league announcements. |  |
| REQ-19 | As a site administrator, I can view reports of and delete leagues that are inactive |  |
| REQ-20 | As a site administrator, I may post front page news or announcements. |  |
| 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. |  |
| 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. |  |

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.

Glossary

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.

**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.

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

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