

TRADITION
CSC648 SOFTWARE ENGINEERING
SPRING 2020
TEAM 01

Milestone	Date
M5	05/21/2020
M4 Version V2	05/21/2020
M4 Version V1	05/10/2020
M3 Version V2	05/17/2020
M3 Version V1	04/23/2020
M2 Version V2	04/10/2020
M2 Version V1	03/26/2020
M1 Version V2	03/09/2020
M1 Version V1	03/05/2020

<u>Team members:</u>	<u>SFSU email</u>
Brian Lim – Team lead	blim6@mail.sfsu.edu
May Naing – Front-end Lead	mnaing1@mail.sfsu.edu
Sanjay Mirani – Back-end Lead	smirani1@mail.sfsu.edu
Dibs Bharati – GitHub Master	dbharati@mail.sfsu.edu
Zike Xian – Database master 1	zxian@mail.sfsu.edu
Benjamin Fletes – Database Master 2	bfletes1@mail.sfsu.edu

Table of Contents:

Product Summary	4
Compilation of Milestone Documents	9
M1_V2	9
M2_V2	10
M3_V2	11
M4_V2	12
Screenshots of Website	13
Screenshots of Database Tables	14
Screenshots of Task Management Tools	15
Email	15
Slack	16
TeamGantt	17
Trello	18
Zoom	18
Team Member Contributions	20
Ben	20
Email Approval	20
Contribution	20
Brian	21
Email Approval	21
Contribution	21
Dibs	25
Email Approval	25
Contribution	25
May	26
Email Approval	26
Contribution	26
Sanjay	27
Email Approval	27
Contribution	28
Zike	30
Email Approval	30
Contribution	30

Product Summary

Tradiction

UNREGISTERED USERS: -

1. Shall be able to create a new account as a trader.
 - 1.1. Shall be able to enter an email address of choice during registration.
 - 1.2. Shall be able to enter a password during registration.
 - 1.3. Shall have minimum password requirement of letters, numbers and special characters.
 - 1.4. Shall be able to enter the address during registration.
 - 1.5. Shall be able to enter contact number during registration.
 - 1.6. Shall be able to enter Social Security Number during registration.
 - 1.7. Shall be able to link a bank account during registration.
 - 1.8. Shall be able to upload bank statements during registration.
 - 1.9. Shall receive an Email verification upon registration.
2. Shall be able to create a new account as an expert.
 - 2.1. Shall be able to enter an email address of choice during registration.
 - 2.2. Shall be able to enter a password during registration.
 - 2.3. Shall have minimum password requirement of letters, numbers and special characters
 - 2.4. Shall be able to enter the address during registration.
 - 2.5. Shall be able to enter contact number during registration.
 - 2.6. Shall be able to enter Social Security Number during registration.
 - 2.7. Shall receive an Email verification upon registration.
 - 2.8. Shall be required to upload an expert certificate.
3. Shall be able to view Stock lists.
 - 3.1. Shall be able to sort the list alphabetically.
 - 3.2. Shall be able to search for a list of particular stocks.

- 3.2.1. Shall be able to enter text into a search field
 - 3.2.2. Shall be able to modify text in a search field.
4. Shall be able to view a particular stock in detail.
 - 4.1. Shall be able to click on the individual stock.
 - 4.2. Shall be redirected to a detailed stock page.
5. Shall be able to view news feeds.
 - 5.1. Shall be able to click on news articles.
 - 5.2. Shall be able to open another tab with an article.
6. Accounts shall be put on hold for verification from admin.

REGISTERED TRADERS: -

1. Shall be able to login.
 - 1.1. Shall be able to enter an email address.
 - 1.2. Shall be able to enter a password.
 - 1.3. Shall have minimum password requirement of letters, numbers and special characters.
 - 1.4. Shall be authenticated during login.
 - 1.5. Shall have the account blocked for a few hours, incase of multiple incorrect login attempts.
 - 1.6. Shall be prompted with a message if credentials are incorrect.
 - 1.7. Shall be able to recover password through mail by clicking on "Forgot Password".
2. Shall be able to edit personal information.
 - 2.1. Shall be able to change their password.
 - 2.2. Shall be able to update their phone number.
 - 2.3. Shall be able to update their address.
3. Shall be able to logout.
4. Shall be able to view news feeds.
 - 4.1. Shall be able to click on news articles.
 - 4.2. Shall be able to open another tab with an article.

5. Shall be able to view the Stock list.
 - 5.1. Shall be able to sort the list alphabetically.
 - 5.2. Shall be able to search for a list of particular stocks.
 - 5.2.1. Shall be able to enter text into a search field
 - 5.2.2. Shall be able to modify text in a search field.
 - 5.3. Shall be able to add stock to the watchlist.
6. Shall be able to view a particular stock in detail.
 - 6.1. Shall be able to click on the individual stock.
 - 6.2. Shall be redirected to a detailed stock page.
7. Shall be able to view the portfolio.
 - 7.1. Shall be able to show a summary of the portfolio for the day.
 - 7.1.1. Shall be able to show all stocks owned.
 - 7.1.2. Shall be able to show gains and losses from purchase price.
 - 7.2. Shall be able to sell stock.
 - 7.2.1. Shall be able to enter a quantity of stock to sell.
8. Shall be able to buy stocks by clicking on the buy button on the stock details page.
 - 8.1. Shall be able to enter quantities of stocks to buy.
9. Shall be able to view the transaction history.
 - 9.1. Shall be able to view the stock name of the stock bought.
 - 9.2. Shall be able to view the purchasing price of stock bought.
 - 9.3. Shall be able to view the quantity of stock bought.
 - 9.4. Shall be able to view the date of stock bought.
 - 9.5. Shall be able to view the time of stock bought.
10. Shall be able to add interested stocks to a watchlist.

REGISTERED EXPERTS: -

1. Shall be able to login.
 - 1.1. Shall be able to enter an email address.

- 1.2. Shall be able to enter a password.
 - 1.3. Shall be authenticated during login.
 - 1.4. Shall be prompted with a message if credentials are incorrect.
 - 1.5. Shall be able to recover password through mail by clicking on "Forgot Password".
2. Shall be able to edit personal information.
 - 2.1. Shall be able to change their password.
 - 2.2. Shall be able to update their phone number.
 - 2.3. Shall be able to update their address.
3. Shall be able to logout.
4. Shall be able to view news feeds.
 - 4.1. Shall be able to click on news articles.
 - 4.2. Shall be able to open another tab with an article.
5. Shall be able to view the Stock list.
 - 5.1. Shall be able to sort the list alphabetically.
 - 5.2. Shall be able to search for a list of particular stocks.
 - 5.2.1. Shall be able to enter text into a search field
 - 5.2.2. Shall be able to modify text in a search field.
 - 5.3. Shall be able to add stock to the watchlist.
6. Shall be able to view a particular stock in detail.
 - 6.1. Shall be able to click on the individual stock.
 - 6.2. Shall be redirected to a detailed stock page.
7. Shall be able to add interested stocks to a watchlist.

ADMIN: -

1. Shall be able to login.
 - 1.1. Shall be able to enter an email address.
 - 1.2. Shall be able to enter a password.
 - 1.3. Shall be authenticated during login.
2. Shall be able to logout.

3. Shall be able to view details entered by traders.
4. Shall be able to view details entered by experts.
5. Shall be able to put traders' accounts on hold for verification.
6. Shall be able to put experts' accounts on hold for verification.
7. Shall be able to accept trader accounts.
8. Shall be able to reject trader accounts.
9. Shall be able to accept expert accounts.
10. Shall be able to reject expert accounts.

Tradiction is a stock trading app that allows users the ability to browse recent stock-related news articles while also giving them the ability to buy, sell, and view stocks. Unlike other stock trading apps, Tradiction implements a proprietary sentimental analysis algorithm that analyzes twitter comments to keep users up to date on the latest trending market chatter. Tradiction also provides a feature allowing traders to communicate directly with stock experts, giving the trader the best market advice and information related to the stock possible. Tradiction can be found at <http://ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000>.

Compilation of Milestone Documents

M1_V2

See next page

TRADITION
CSC648 SOFTWARE ENGINEERING
SPRING 2020
TEAM 01

Milestone:	Last Modified Date:
M1 Version V2	3/11/2020
M1 Version V1	3/5/2020

<u>Team members:</u>	<u>SFSU email:</u>
Brian Lim – Team Lead	blim6@mail.sfsu.edu
May Naing – Front-end Lead	mnaing1@mail.sfsu.edu
Sanjay Mirani – Back-end Lead	smirani1@mail.sfsu.edu
Dibs Bharati – GitHub Master	dbharati@mail.sfsu.edu
Zike Xian – Database Master 1	zxian@mail.sfsu.edu
Benjamin Fletes – Database Master 2	bfletes1@mail.sfsu.edu

Table of Contents

Executive Summary:	3
Use Cases and User Profiles:	5
List of Main Data Items and Entities:	9
Functional Requirements:	10
List of Non-functional Requirements:	16
Competitive Analysis:	21
High-level System Architecture:	24
Team:	25
Checklist:	26

Executive Summary:

A **stock market**, **equity market** or **share market** is the aggregation of buyers and sellers of stocks (also called shares), which represent ownership claims on businesses. Stock price forecasting is a popular and important topic in financial and academic studies. Share Market is an untidy place for predicting since there are no significant rules to estimate or predict the price of the share in the share market. Many methods like technical analysis, fundamental analysis, time series analysis, and statistical analysis, etc. are all used to attempt to predict the price in the share market but none of these methods are proved as a consistently acceptable prediction tool.

With our application, users or more precisely traders will be able to open a trading account and upload necessary documents related to it like bank statements, valid ID, SSN, etc. The main feature of this project is to generate an approximate forecasting output and create a general idea of future values based on the previous data by generating a pattern. The scope of this project does not exceed more than a generalized suggestion tool. To make it more user-friendly, an easy to use GUI for the basic understanding of first-time users will also be implemented. Traders can also view the stocks and choose to look at its details and decide whether to buy using an integrated payment gateway or not. Also, they can view the stocks they invested in viewing their own portfolio page. Users can add their interesting stocks in Wishlist and get notified when the prices go up or down through mobile messages and mail. News Feeds for the latest news related to the stock market will be displayed. Twitter analysis for a particular stock will be displayed on the stock page which will help the user decide to buy the stock or not.

To generate traction for the site, we will market our site by buying ads on social media sites and other sites that we deem to have similar interest. Tradition plans on collecting interest from

customer's cash and stocks as well as rebates from market makers and trading venues. In addition, a premium account option will be implemented where the user will be able to access additional features such as investment advice from professionals, or the AI Stock Price Predictor.

Use Cases and User Profiles:

User Profiles:

Joanna is a junior-standing business student at SFSU. While she is a great business student, her use and understanding of technology is not so great. Joanna often runs into issues when using her computer and requires frequent assistance. She is enrolled in an investment class where as an individual project, her instructor has tasked her to create a fake portfolio. Given a certain amount of money, she needs to create a portfolio that will net her the largest return on investment. With no experience in stock-trading applications, she runs across an advertisement for Tradiction on Facebook, a social media platform, and decides to use the web application for her project.

John is a stay-at-home dad that makes his money investing. He is very literate on many different trading platforms. Over the years, he has made several hundred-of-thousands in profit, lives comfortably, and supports his family. His portfolio is diverse and uses several trading-applications to diversify. He uses Etrade for mutual funds, Fidelity for bonds, and Robinhood for individual stocks. After learning about Tradiction from his friends who are also day-traders, he decided to give it a shot and realized how easy, informative, and responsive Tradiction was. John decides to buy and sell individual stocks on Tradiction instead of Robinhood.

Karen is a software engineer and is a hobbyist investor. She works at a large tech company in the Bay Area and is very busy. She has two kids, a 5-year-old and a 14-year-old, and a husband. She takes care of most of the housework and works from home 2 days a week. While doing housework, she watches the news and keeps an eye out for reports on the stock market. She has been working on building up her investment profile for about a year and is looking to invest in some new stocks. As she is somewhat new to investing, she constantly consults her friends and coworkers on what to do next.

Kevin is a young engineer who recently earned a high position in his company in Texas. He lives alone and doesn't have to support anyone else for the time being. With his position, he now makes a stable income and is interested in investing some of his money. He has no experience in investing nor has he been taught how the stock market works. Because of this, he tries to do his research and learn from what others have written online. He is constantly browsing sites like Reddit and Investopedia for tips and tricks. Upon doing this, he comes across a forum post about a site called Tradiction that is easy to use and is good for beginners.

Sanjay is new to investing and is scared to lose his money. To minimize his loss, he puts all his extra money into the bank. Over a few years, Sanjay experiences little returns from the bank. In conversation, he brings this up with one of his friends, who suggests he try Tradiction. After hearing the amount of return his friend made, Sanjay is inspired to give Tradiction a go.

Use Cases

1. Joanna is relieved that she does not need to create an account to monitor stocks. By searching for stocks and adding them to her dashboard, she monitors the status of each of her stocks independently and looks at the past performance of the company before deciding on which stocks to purchase.
2. John looks to see how the market is moving. He checks out which companies earned the most and which earned the least last week and the weeks prior.
3. Karen wants to monitor the status of the stocks in her portfolio. After looking at her stock portfolio breakdown from her trading account, she registers for an account and adds each stock individually so that she can monitor the status of each of her stocks independently to assist with trading decisions.
4. Karen's friend recommends investing in a couple of small companies, but Karen wants to check how they're performing first. She searches each of them up and compares how they all did. Upon deciding which ones were most optimal, she creates an account to purchase stocks in each one.

5. Kevin closely monitors several companies in Big Tech over the last two weeks and is unsure how to invest his money. He creates a Tradiction account and uses the support functionality to chat with a stock expert to get her advice.
6. Sanjay is new to investing but he wants to learn and start investing. He registers as a new user and creates a trading account in Tradition. He selects a stock and then goes to the expert category. He selects an expert. The expert starts discussing his choice of stocks. The expert tells him various aspects associated with his choice.
7. Sanjay scrolls through some stocks on Tradition. He wants to buy some stocks but they are above his budget. So, he keeps the stocks in the wishlist category of his trading account. After a week, Sanjay returns to Tradition. He sees the stock in the wishlist and then buys it.
8. Sanjay uses Tradition's accurate price prediction functionality to invest in the right stock and finds his way to regular investors in the field.

Use Case Diagram:



List of Main Data Items and Entities:

- **New User:** Users visiting site for the very first time. They can create an account, view stock lists, know details of a particular stock, but cannot buy/sell stocks or chat with an expert.
- **Traders:** Registered Users with an account, who can view stocks, buy/sell stocks, update personal details, view transaction history, update portfolio, chat with an expert.
- **Experts:** Registered Stock experts. Can view, analyze and chat with users to provide them best advice and guidance for buying/selling stock.
- **Admin:** A registered person having full access to the site. Also, the one reviewing and approving accounts of the traders and experts.
- **Customer Support:** Dedicated 24/7 service available for the customers to answer and resolve their queries.
- **Prediction Tab:** A dedicated tab for accurate prediction of prices of a stock just by entering a stock symbol.
- **Newsfeeds:** Displaying top news related to the stock market.
- **Chat-Bot:** Traders communicate with stock experts through a chat-bot.
- **Sentiment-Analysis:** This is the part which analyzes the tweets of stock companies on twitter and returns the answer whether people are interested in companies or not.

Functional Requirements:

UNREGISTERED USERS: -

1. Shall be able to create a new account as a trader.
 - 1.1. Shall be able to enter a username of choice during registration.
 - 1.2. Shall be able to enter a password during registration.
 - 1.3. Shall be able to enter the address during registration.
 - 1.4. Shall be able to enter contact number during registration.
 - 1.5. Shall be able to enter Social Security Number during registration.
 - 1.6. Shall be able to link a bank account during registration.
 - 1.7. Shall be able to upload bank statements during registration.
 - 1.8. Shall receive an Email verification upon registration.
2. Shall be able to create a new account as an expert.
 - 2.1. Shall be able to enter a username of choice during registration.
 - 2.2. Shall be able to enter a password during registration.
 - 2.3. Shall be able to enter the address during registration.
 - 2.4. Shall be able to enter contact number during registration.
 - 2.5. Shall be able to enter Social Security Number during registration.
 - 2.6. Shall be able to upload bank statements during registration.
 - 2.7. Shall receive an Email verification upon registration.
 - 2.8. Shall be required to upload an expert certificate.
3. Shall be able to view news feeds.
 - 3.1. Shall be able to click on news articles.
 - 3.2. Shall be redirected to another site in a popup window.
 - 3.3. Shall be able to exit out of the popup window.
4. Shall be able to view Stock lists.
 - 4.1. Shall be able to sort the list alphabetically.
 - 4.2. Shall be able to search for a list of particular stocks.
 - 4.2.1. Shall be able to enter text into a search field

- 4.2.2. Shall be able to modify text in a search field.
 - 4.2.3. Shall be able to click on the search button to view results.
5. Shall be able to view a particular stock in detail.
 - 5.1. Shall be able to click on the individual stock.
 - 5.2. Shall be redirected to a detailed stock page.
 - 5.3. Shall be able to refine parameters for graph
 - 5.3.1. Shall be able to refine the length of time displayed on graph.
 - 5.3.2. Shall be able to refine the graph to show the open prices.
 - 5.3.3. Shall be able to refine the graph to show the close prices.
6. Accounts shall be put on hold for verification from admin.
7. Shall be able to contact customer support for queries.
 - 7.1. Shall be able to click on the customer support tab.
 - 7.1.1. Shall be able to contact via phone.
 - 7.1.2. Shall be able to contact via mail.
 - 7.1.2.1. Shall be able to enter email address in email field.
 - 7.1.2.2. Shall be able to enter a message in the message field.
 - 7.1.2.3. Shall be able to receive an acknowledgment email.
 - 7.1.3. Shall be able to contact via chat support.
 - 7.1.3.1. Shall be able to see the number of people waiting in the queue.
 - 7.1.3.2. Shall be able to see an estimated waiting time for response.
 - 7.1.3.3. Shall be able to see the time spent in the queue.
 - 7.1.3.4. Shall be able to send a message to the support agent.
 - 7.1.3.5. Shall be able to receive a message from the support agent.

REGISTERED TRADERS: -

1. Shall be able to login.
 - 1.1. Shall be able to enter user name.
 - 1.2. Shall be able to enter password.
 - 1.3. Shall be able to save credentials by clicking “Remember me” checkbox.

- 1.4. Shall be authenticated during login.
 - 1.5. Shall be prompted with a message if credentials are incorrect.
 - 1.6. Shall be able to recover password through mail by clicking on “Forgot Password”.
2. Shall be able to edit personal information.
 - 2.1. Shall be able to change their password.
 - 2.2. Shall be able to update their phone number.
 - 2.3. Shall be able to update their address.
3. Shall be able to logout.
4. Shall be able to view news feeds.
 - 4.1. Shall be able to click on news articles.
 - 4.2. Shall be redirected to another site in a popup window.
 - 4.3. Shall be able to exit out of the popup window.
5. Shall be able to view the Stock list.
 - 5.1. Shall be able to sort the list alphabetically.
 - 5.2. Shall be able to search for a list of particular stocks.
 - 5.2.1. Shall be able to enter text into a search field
 - 5.2.2. Shall be able to modify text in a search field.
 - 5.2.3. Shall be able to click on the search button to view results.
6. Shall be able to view a particular stock in detail.
 - 6.1. Shall be able to click on the individual stock.
 - 6.2. Shall be redirected to a detailed stock page.
 - 6.3. Shall be able to refine parameters for graph
 - 6.3.1. Shall be able to refine the length of time displayed on graph.
 - 6.3.2. Shall be able to refine the graph to show the open prices.
 - 6.3.3. Shall be able to refine the graph to show the close prices.
7. Shall be able to chat with an expert.
 - 7.1. Shall be able to see the number of people waiting in the queue.
 - 7.2. Shall be able to see an estimated waiting time for response.
 - 7.3. Shall be able to see the time spent in the queue.

- 7.4. Shall be able to send a message to the expert.
 - 7.5. Shall be able to receive a message from the expert.
8. Shall be able to view portfolio.
 - 8.1. Shall be able to show a summary of the portfolio for the day.
 - 8.1.1. Shall be able to show all stocks owned.
 - 8.1.2. Shall be able to show gains and losses from purchase price.
 - 8.2. Shall be able to sell stock.
 - 8.2.1. Shall be able to enter a quantity of stock to sell.
9. Shall be able to buy stocks by clicking on the buy button on the stock details page.
 - 9.1. Shall be able to enter quantity of stocks to buy.
10. Shall be able to access the payment gateway.
 - 10.1. Shall be able to purchase using a credit card.
 - 10.1.1. Shall be able to enter credit card information.
 - 10.2. Shall be able to purchase using a bank account on record.
 - 10.2.1. Shall be needed to verify bank account information.
11. Shall be able to view the transaction history.
 - 11.1. Shall be able to view the stock name of the stock bought.
 - 11.2. Shall be able to view the purchasing price of stock bought.
 - 11.3. Shall be able to view the quantity of stock bought.
 - 11.4. Shall be able to view the date of stock bought.
 - 11.5. Shall be able to view the time of stock bought.
12. Shall be able to add interested stocks to a wishlist.
 - 12.1. Shall be able to receive email notifications if stocks reach a certain price threshold.
13. Shall be able access prediction tab to know the estimated price for a stock.
 - 13.1. Shall be able to enter a symbol of stock.
 - 13.2. Shall be able to click on a predict button.
 - 13.2.1. Shall be shown the predicted opening price for the stock the following day.

REGISTERED EXPERTS: -

1. Shall be able to login.
 - 1.1. Shall be able to enter user name.
 - 1.2. Shall be able to enter password.
 - 1.3. Shall be able to save credentials by clicking “Remember me” checkbox.
 - 1.4. Shall be authenticated during login.
 - 1.5. Shall be prompted with a message if credentials are incorrect.
 - 1.6. Shall be able to recover password through mail by clicking on “Forgot Password”.
2. Shall be able to edit personal information.
 - 2.1. Shall be able to change their password.
 - 2.2. Shall be able to update their phone number.
 - 2.3. Shall be able to update their address.
3. Shall be able to logout.
4. Shall be able to view news feeds.
 - 4.1. Shall be able to click on news articles.
 - 4.2. Shall be redirected to another site in a popup window.
 - 4.3. Shall be able to exit out of the popup window.
5. Shall be able to view the Stock list.
 - 5.1. Shall be able to sort the list alphabetically.
 - 5.2. Shall be able to search for a list of particular stocks.
 - 5.2.1. Shall be able to enter text into a search field
 - 5.2.2. Shall be able to modify text in a search field.
 - 5.2.3. Shall be able to click on the search button to view results.
6. Shall be able to view a particular stock in detail.
 - 6.1. Shall be able to click on the individual stock.
 - 6.2. Shall be redirected to a detailed stock page.
 - 6.3. Shall be able to refine parameters for graph
 - 6.3.1. Shall be able to refine the length of time displayed on graph.

- 6.3.2. Shall be able to refine the graph to show the open prices.
 - 6.3.3. Shall be able to refine the graph to show the close prices.
7. Shall be able to chat with traders.
- 7.1. Shall be able to navigate to the chat tab.
 - 7.1.1. Shall be able to view all traders in the queue.
 - 7.1.2. Shall be able to communicate with the trader that is first in the queue.
 - 7.1.2.1. Shall be able to send messages to the trader.
 - 7.1.2.2. Shall be able to receive messages from the trader.
 - 7.1.2.3. Shall be able to end the session with the trader.
8. Shall be able access prediction tab to know the estimated price for a stock.
- 8.1. Shall be able to enter a symbol of stock.
 - 8.2. Shall be able to click on a predict button.
 - 8.2.1. Shall be shown the predicted opening price for the stock the following day.

ADMIN: -

- 1. Shall be able to login.
 - 1.1. Shall be able to enter a username.
 - 1.2. Shall be able to enter a password.
 - 1.3. Shall be authenticated during login.
- 2. Shall be able to logout.
- 3. Shall be able to view details entered by traders.
- 4. Shall be able to view details entered by experts.
- 5. Shall be able to put traders' accounts on hold for verification.
- 6. Shall be able to put experts' accounts on hold for verification.
- 7. Shall be able to accept trader accounts.
- 8. Shall be able to reject trader accounts.
- 9. Shall be able to accept expert accounts.
- 10. Shall be able to reject expert accounts.

List of Non-functional Requirements:

1. Security

- 1.1. Login shall be required to make purchases.
- 1.2. User's shall verify their emails when registering an account.
- 1.3. User's shall be able to set a display name different from their email.
- 1.4. User's emails shall not be displayed by default.
- 1.5. Passwords shall be encrypted before storing in the database.
- 1.6. User's session timeout limit shall be decided by the administrator.
- 1.7. User's session shall only be ended by code design.
- 1.8. Content uploaded by users shall be audited by the administrator.
- 1.9. User's payment information shall be encrypted.
- 1.10. This site shall not accept any third-party cookies.
- 1.11. User will be required to enter a code sent to their email if login is from a new device

2. Audit

- 2.1. New registrations shall be audited by the administrator.
- 2.2. New registrations shall be approved by the administrator.
- 2.3. Users shall not be able to login to administrator accounts.

3. Performance

- 3.1. The site loading time shall be less than 2 seconds for all screens.
- 3.2. Application shall be able to retrieve information from the database and react in a timely manner.
- 3.3. The site shall handle requests asynchronously following a REST format.

4. Capacity

- 4.1. The total data storage for the site shall not exceed 80% of the server's capacity for this site.
- 4.2. The website shall be capable of handling at least 50 users.
- 4.3. The website shall be scalable, so that new features can be added easily.

5. Reliability

- 5.1. Downtime for maintenance shall be less than 3 hours per month.
- 5.2. Downtime for maintenance shall not affect the site's main functionality.
- 5.3. In all cases, users shall be informed of downtime for maintenance, either via an announcement on the main page, or e-mail.

6. Recovery

- 6.1. In case of a total site failure, the whole site shall be shut down for revision.
- 6.2. If the site is broken, the mean time to recovery shall not exceed one day.
- 6.3. User data is the most valuable aspect and priority will be placed on recovering such data in case of total failure.

7. Data Integrity

- 7.1. Database tables shall be backed up weekly.
- 7.2. Administrator shall be able to execute a recovery if needed.
- 7.3. Image sizes shall be restricted to at most 1 megabyte.
- 7.4. Images shall be uploaded in jpg, jpeg, or png formats.
- 7.5. Images will be saved on Amazon's s3 storage server.
- 7.6. URLs to image will be stored on the database.

8. Compatibility

- 8.1. The site shall be compatible with the last version of the Safari browser version 11.1.2

- 8.2. The site shall be compatible with the last version of the Firefox browser version 70
- 8.3. The site shall be compatible with the last version of the Chrome browser version 80
- 8.4. Third party applications shall not be able to modify any content that may affect the site compatibility.
- 8.5. Content should be able to be ignored by most popular ad-block services.
- 8.6. The site shall be able to account for any other compatibility issues created as a result of browser updates in the future.
- 8.7. The site should be compatible to escalate to new databases.

9. Conformance with Coding Standards

- 9.1. Architecture and design standards shall meet all the requirements listed under the High-level system architecture and technologies used section of this document.
- 9.2. Design pattern is to be strictly enforced with all aspects of the site.
- 9.3. Appropriate documentation must be created for all code that is individually written for future maintenance.
- 9.4. Production code shall not have any log or output to the console.
- 9.5. All errors must not halt the web application without appropriate error handling.
- 9.6. Only working code that meets all code standards shall be submitted to the main branch of the project repository.
- 9.7. Code shall be thoroughly tested and debugged before being considered working code.
- 9.8. All internal errors and exceptions encountered when writing or modifying code shall be stored in a log.
- 9.9. Any error that can affect the site's functionality shall be reported to the user.
- 9.10. Errors shall be handled in a way that does not affect site functionality.

- 9.11. The whole production cycle of the site shall be finished at least one week before the delivery date.
- 9.12. The site shall be tested and debugged as a whole product at least one week before the delivery date.
- 9.13. The site shall not be launched without all priority one features finished and working.
- 9.14. All major changes to the application shall be discussed by the team and communicated to the class CTO.

10. Look and Feel Standards

- 10.1. The application and its layouts shall look professional.
- 10.2. The site shall be simple, so that it is usable to a wide range of users, and all previously mentioned parties.
- 10.3. Targeted users will be the main priority for ensuring usability and readability.
- 10.4. Elements on screen shall meet the compatibility standards of all supported browsers.
- 10.5. Elements on screen shall meet the compatibility standards of all supported browsers on mobile devices.
- 10.6. Elements on screen shall be aesthetically pleasing.
- 10.7. The site shall be able to work correctly without mouse interaction.
- 10.8. The site shall be able to work correctly without keyboard interaction.
- 10.9. Elements in screen shall be resized automatically without user interaction when being loaded in all the different platforms supported by the site.
- 10.10. Application's user interface shall make it easy for users to find what they are looking for.

11. Scalability

- 11.1. The CPU instance and storage capacity shall be updated to be able to handle a large number of users if needed.

12. Web Site Policies

- 12.1. A link to the policies of this site shall be always visible in all its pages to be accessible by all the parties.
- 12.2. The site will not store any payment information.
- 12.3. User's shall agree to the application's privacy policy before using the product.

Competitive Analysis:

Features/Company	Yahoo Finance	ETrade	Robinhood
Strengths	Provides lots of information and news about the market	Large variety of features, 24/7 live support	Very sleek and clean design, low cost
Weaknesses	Dashboard feature hidden behind paywall, cluttered design	So many options which makes it difficult to navigate.	Limited number of features. The color for a white background makes it a little hard for the eyes.
Pricing	Free for standard use, \$34.99/month or \$349.99/year for premium features	Free for standard use, but prices range from \$0.65-\$1.50 by contract	Free for standard use, \$5/month for premium features
Social Media	Facebook, Twitter, Instagram, Tumblr	Facebook, Twitter, Instagram, LinkedIn, YouTube	Blog posts, Facebook, Twitter, Instagram, LinkedIn
Onboarding Experience and Usability	Account not required to read articles or view stocks.	Straightforward to open account, difficult to navigate	Clutter free UI and easy to sign up/log in for an account.

Features/Company	Yahoo Finance	ETrade	Robinhood	Tradiction
View Performance of individual stocks	+	+	+	+
Purchase stocks	-	+	+	+
AI Stock Price Predictor	-	-	-	+
Sentimental Analysis on Twitter comments	-	-	-	++
Chatting with stock market experts	-	-	-	+

Performance of Individual Stocks:

Compared to our competitors, Tradiction's monitoring of individual stocks will display both a simplified dashboard, showing all the stocks that the user adds, with the addition of a detailed analysis page where the user can see high-level information such as opening and closing prices, open and close 52, other important statistics, as well as a large graph portraying the price performance over a long period.

Purchasing Stocks:

Like other stock trading applications, Tradiction will allow the user to purchase stocks. Stocks that are purchased will be added to a dashboard, where they can easily be monitored. These features are similar to two rival stock-trading applications, ETrade and Robinhood.

AI Stock Price Predictor:

The most important feature of Tradiction is to display our users the most accurate price of the

stock for the next day which can allow traders to rethink their trade for the stock.

Sentimental Analysis on Twitter Comments:

Sentiment analysis or formally twitter analysis is used in the project where comments related to the particular stock are fetched from twitter and sentiment analysis is done on every single one and are averaged and results maps to one of the three outputs: - Positive, Negative and Neutral and this result is displayed on the stock page and will also be used in AI Stock Price Predictor.

Chatting with Stock Market Experts:

Our users will have an option to chat with a stock expert where they can get best advice from the experts and invest in the best stock.

High-level System Architecture:

- Server Host: AWS 1 vCPU 1 GiB RAM
- Operating System: Ubuntu Server 18.04 LTS (HVM), SSD Volume Type
- Database: MySQL 8.0.18
- Web server: None
- Server-Side Language: Python 3.8.1
- Front-End Language: HTML5, CSS, JavaScript
- Additional Technologies:
 - Web framework: Django 3.0.2
 - IDE: PyCharm 2019.3.3

Team:

Engineer	Role
Brian Lim	Team Lead
May Naing	Front-end Lead
Sanjay Mirani	Back-end Lead
Dibs Bharati	Github Master
Zike Xian	Database Master 1
Benjamin Fletes	Database Master 2

Checklist:

- **Team found a time slot to meet outside of class**
 - DONE
- **GitHub master chosen**
 - DONE
- **Team decided and agreed together on using the listed SW tools and deployment server**
 - DONE
- **Team ready and able to use the chosen back and front-end frameworks and those who need to learn are working on learning and practicing**
 - DONE
- **Team lead insured that all team members read the final M1 and agree/understand it before submission**
 - DONE
- **GitHub organized as discussed in class (e.g. master branch, development branch, folder for milestone documents, etc.)**
 - DONE

M2_V2

See next page

TRADITION
CSC648 SOFTWARE ENGINEERING
SPRING 2020
TEAM 01

Milestone	Date
M2 Version V2	04/19/2020
M2 Version V1	03/26/2020
M1 Version V2	03/09/2020
M1 Version V1	03/05/2020

Team members:

SFSU email

Brian Lim – Team lead

blim6@mail.sfsu.edu

May Naing – Front-end Lead

mnaing1@mail.sfsu.edu

Sanjay Mirani – Back-end Lead

smirani1@mail.sfsu.edu

Dibs Bharati – GitHub Master

dbharati@mail.sfsu.edu

Zike Xian – Database master 1

zxian@mail.sfsu.edu

Benjamin Fletes – Database Master 2

bfletes1@mail.sfsu.edu

Table of Contents

Data Definitions V2:	2
Functional Requirements V2:	5
Priority 1:	5
Priority 2:	8
Priority 3:	10
UI Mockups and Storyboards (High level only):	12
High-level Database Architecture and Organization:	16
High-level APIs and Main Algorithms	20
High-level UML Diagrams	21
High-level Deployment and Network Diagrams:	22
Key Risks	24
Project Management	25

Data Definitions V2:

- **New User:** Users visiting the site for the very first time. They can create an account, view stock lists, know details of a particular stock, but cannot buy/sell stocks or chat with an expert.
- **Traders:** Registered Users with an account, who can view stocks, buy/sell stocks, update personal details, view transaction history, update portfolio, chat with an expert.
- **Experts:** Registered Stock experts. Can view, analyze and chat with users to provide them best advice and guidance for buying/selling stock.
- **Admin:** A registered person having full access to the site. Also, the one reviewing and approving accounts of the traders and experts.
- **Customer Support:** Dedicated 24/7 service available for the customers to answer and resolve their queries. Customers can have questions answered such as payment problems, report issues and bugs with the website, and report inappropriate or incorrect articles .
- **Prediction Tab:** A dedicated tab for accurate prediction of prices of a stock just by entering a stock symbol. This section uses a special prediction algorithm to predict open prices of the stock for the next day.
- **Newsfeeds:** Displaying top news related to the stock market. It will have multiple news articles separated by containers. Each article container will contain important information to get the user to click on the article. This information includes the name of the article, a picture, and the date the article was published.

- **Expert Chat:** Traders communicate with stock experts through a chatting service. When a trader wants a greater amount of information regarding a stock, they can communicate directly with an expert of that stock to get advice.
- **Sentiment-Analysis:** This is the part which analyzes the tweets of stock companies on twitter and returns the answer whether people are interested in companies or not. This part uses a special API which fetches twitter comments related to the companies, analyzes them and outputs results to positive, negative or neutral eventually helping users in deciding whether they should invest in the stock or not.

Functional Requirements V2:

Priority 1:

UNREGISTERED USERS: -

1. Shall be able to create a new account as a trader.
 - 1.1. Shall be able to enter an email address of choice during registration.
 - 1.2. Shall be able to enter a password during registration.
 - 1.3. Shall have minimum password requirement of letters, numbers and special characters.
 - 1.4. Shall be able to enter the address during registration.
 - 1.5. Shall be able to enter contact number during registration.
 - 1.6. Shall be able to enter Social Security Number during registration.
 - 1.7. Shall be able to link a bank account during registration.
 - 1.8. Shall be able to upload bank statements during registration.
 - 1.9. Shall receive an Email verification upon registration.
2. Shall be able to create a new account as an expert.
 - 2.1. Shall be able to enter an email address of choice during registration.
 - 2.2. Shall be able to enter a password during registration.
 - 2.3. Shall have minimum password requirement of letters, numbers and special characters
 - 2.4. Shall be able to enter the address during registration.
 - 2.5. Shall be able to enter contact number during registration.
 - 2.6. Shall be able to enter Social Security Number during registration.
 - 2.7. Shall receive an Email verification upon registration.
 - 2.8. Shall be required to upload an expert certificate.
3. Shall be able to view news feeds.

- 3.1. Shall be able to click on news articles.
 - 3.2. Shall be redirected to another site in a popup window.
 - 3.3. Shall be able to exit out of the popup window.
4. Shall be able to view Stock lists.
 - 4.1. Shall be able to sort the list alphabetically.
 - 4.2. Shall be able to search for a list of particular stocks.
 - 4.2.1. Shall be able to enter text into a search field
 - 4.2.2. Shall be able to modify text in a search field.
 - 4.2.3. Shall be able to click on the search button to view results.
5. Accounts shall be put on hold for verification from admin.

REGISTERED TRADERS: -

1. Shall be able to login.
 - 1.1. Shall be able to enter an email address.
 - 1.2. Shall be able to enter a password.
 - 1.3. Shall have minimum password requirement of letters, numbers and special characters.
 - 1.4. Shall be able to save credentials by clicking “Remember me” checkbox.
 - 1.5. Shall be authenticated during login.
 - 1.6. Shall have the account blocked for a few hours, incase of multiple incorrect login attempts.
 - 1.7. Shall be prompted with a message if credentials are incorrect.
 - 1.8. Shall be able to recover password through mail by clicking on “Forgot Password”.
2. Shall be able to edit personal information.
 - 2.1. Shall be able to change their password.
 - 2.2. Shall be able to update their phone number.
 - 2.3. Shall be able to update their address.
3. Shall be able to logout.

4. Shall be able to view news feeds.
 - 4.1. Shall be able to click on news articles.
 - 4.2. Shall be redirected to another site in a popup window.
 - 4.3. Shall be able to exit out of the popup window.
5. Shall be able to view the Stock list.
 - 5.1. Shall be able to sort the list alphabetically.
 - 5.2. Shall be able to search for a list of particular stocks.
 - 5.2.1. Shall be able to enter text into a search field
 - 5.2.2. Shall be able to modify text in a search field.
 - 5.2.3. Shall be able to click on the search button to view results.

REGISTERED EXPERTS: -

1. Shall be able to login.
 - 1.1. Shall be able to enter an email address.
 - 1.2. Shall be able to enter a password.
 - 1.3. Shall be able to save credentials by clicking “Remember me” checkbox.
 - 1.4. Shall be authenticated during login.
 - 1.5. Shall be prompted with a message if credentials are incorrect.
 - 1.6. Shall be able to recover password through mail by clicking on “Forgot Password”.
2. Shall be able to edit personal information.
 - 2.1. Shall be able to change their password.
 - 2.2. Shall be able to update their phone number.
 - 2.3. Shall be able to update their address.
3. Shall be able to logout.
4. Shall be able to view news feeds.
 - 4.1. Shall be able to click on news articles.
 - 4.2. Shall be redirected to another site in a popup window.
 - 4.3. Shall be able to exit out of the popup window.
5. Shall be able to view the Stock list.

- 5.1. Shall be able to sort the list alphabetically.
- 5.2. Shall be able to search for a list of particular stocks.
 - 5.2.1. Shall be able to enter text into a search field
 - 5.2.2. Shall be able to modify text in a search field.
 - 5.2.3. Shall be able to click on the search button to view results.

ADMIN: -

1. Shall be able to login.
 - 1.1. Shall be able to enter an email address.
 - 1.2. Shall be able to enter a password.
 - 1.3. Shall be authenticated during login.

Priority 2:

UNREGISTERED USERS: -

1. Shall be able to view a particular stock in detail.
 - 1.1. Shall be able to click on the individual stock.
 - 1.2. Shall be redirected to a detailed stock page.
 - 1.3. Shall be able to refine parameters for graph
 - 1.3.1. Shall be able to refine the length of time displayed on the graph.
 - 1.3.2. Shall be able to refine the graph to show the open prices.
 - 1.3.3. Shall be able to refine the graph to show the close prices.

REGISTERED TRADERS: -

1. Shall be able to view a particular stock in detail.
 - 1.1. Shall be able to click on the individual stock.
 - 1.2. Shall be redirected to a detailed stock page.
 - 1.3. Shall be able to refine parameters for the graph.
 - 1.3.1. Shall be able to refine the length of time displayed on the graph.

- 1.3.2. Shall be able to refine the graph to show the open prices.
 - 1.3.3. Shall be able to refine the graph to show the close prices.
2. Shall be able to view the portfolio.
 - 2.1. Shall be able to show a summary of the portfolio for the day.
 - 2.1.1. Shall be able to show all stocks owned.
 - 2.1.2. Shall be able to show gains and losses from purchase price.
 - 2.2. Shall be able to sell stock.
 - 2.2.1. Shall be able to enter a quantity of stock to sell.
3. Shall be able to buy stocks by clicking on the buy button on the stock details page.
 - 3.1. Shall be able to enter quantities of stocks to buy.
4. Shall be able to access the payment gateway.
 - 4.1. Shall be able to purchase using a bank account on record.
 - 4.1.1. Shall be needed to verify bank account information.
5. Shall be able to view the transaction history.
 - 5.1. Shall be able to view the stock name of the stock bought.
 - 5.2. Shall be able to view the purchasing price of stock bought.
 - 5.3. Shall be able to view the quantity of stock bought.
 - 5.4. Shall be able to view the date of stock bought.
 - 5.5. Shall be able to view the time of stock bought.
6. Shall be able to add interested stocks to a wishlist.
 - 6.1. Shall be able to receive email notifications if stocks reach a certain price threshold.
7. Shall be able access the prediction tab to know the estimated price for a stock.
 - 7.1. Shall be able to enter a symbol of stock.
 - 7.2. Shall be able to click on a predict button.
 - 7.2.1. Shall be shown the predicted opening price for the stock the following day.

REGISTERED EXPERTS: -

1. Shall be able to view a particular stock in detail.
 - 1.1. Shall be able to click on the individual stock.
 - 1.2. Shall be redirected to a detailed stock page.
 - 1.3. Shall be able to refine parameters for graph
 - 1.3.1. Shall be able to refine the length of time displayed on the graph.
 - 1.3.2. Shall be able to refine the graph to show the open prices.
 - 1.3.3. Shall be able to refine the graph to show the close prices.

ADMIN: -

1. Shall be able to logout.
2. Shall be able to view details entered by traders.
3. Shall be able to view details entered by experts.
4. Shall be able to put traders' accounts on hold for verification.
5. Shall be able to put experts' accounts on hold for verification.
6. Shall be able to accept trader accounts.
7. Shall be able to reject trader accounts.
8. Shall be able to accept expert accounts.
9. Shall be able to reject expert accounts.

Priority 3:

UNREGISTERED USERS: -

1. Shall be able to contact customer support for queries.
 - 1.1. Shall be able to click on the customer support tab.
 - 1.1.1. Shall be able to contact via phone.
 - 1.1.2. Shall be able to contact via mail.
 - 1.1.2.1. Shall be able to enter an email address in the email field.
 - 1.1.2.2. Shall be able to enter a message in the message field.
 - 1.1.2.3. Shall be able to receive an acknowledgment email.
 - 1.1.3. Shall be able to contact via chat support.

- 1.1.3.1. Shall be able to see the number of people waiting in the queue.
- 1.1.3.2. Shall be able to see an estimated waiting time for response.
- 1.1.3.3. Shall be able to see the time spent in the queue.
- 1.1.3.4. Shall be able to send a message to the support agent.
- 1.1.3.5. Shall be able to receive a message from the support agent.

REGISTERED TRADERS: -

- 1. Shall be able to chat with an expert.
 - 1.1. Shall be able to see the number of people waiting in the queue.
 - 1.2. Shall be able to see an estimated waiting time for response.
 - 1.3. Shall be able to see the time spent in the queue.
 - 1.4. Shall be able to send a message to the expert.
 - 1.5. Shall be able to receive a message from the expert.

REGISTERED EXPERTS: -

- 1. Shall be able to chat with traders.
 - 1.1. Shall be able to navigate to the chat tab.
 - 1.1.1. Shall be able to view all traders in the queue.
 - 1.1.2. Shall be able to communicate with the trader that is first in the queue.
 - 1.1.2.1. Shall be able to send messages to the trader.
 - 1.1.2.2. Shall be able to receive messages from the trader.
 - 1.1.2.3. Shall be able to end the session with the trader.
- 2. Shall be able access the prediction tab to know the estimated price for a stock.
 - 2.1. Shall be able to enter a symbol of stock.
 - 2.2. Shall be able to click on a predict button.
 - 2.2.1. Shall be shown the predicted opening price for the stock the following day.

ADMIN: -

No Priority 3 functional requirements for admin

UI Mockups and Storyboards (High level only):

1. HOME

CLICKING WILL ALWAYS TAKE BACK TO HOME

LOGO SEARCH Q LOGIN SIGNUP

STOCKS NEWS PORTFOLIO TRADING HISTORY WATCHLIST HELP

INVEST WITH US!

RECENT NEWS: ARTICLE 1, ARTICLE 2, ARTICLE 3, ARTICLE 4, ARTICLE 5

TRENDING: Top trending stocks

ABOUT/INTRO TO SITE

2. NEWS

LOGO SEARCH Q LOGIN SIGNUP

STOCKS NEWS PORTFOLIO TRADING HISTORY WATCHLIST HELP

PHOTO ARTICLES BY NAME DATE

Cards will have a preview of the articles

3. STOCKS

LOGO SEARCH Q LOGIN SIGNUP

STOCKS NEWS PORTFOLIO TRADING HISTORY WATCHLIST HELP

SEARCH Q

WEEKLY PRICE DAY HIGH DAY LOW ~

Search by name or symbol

Users will be able to add to watchlist and buy from the list.

List of stocks

4. PORTFOLIO

LOGO SEARCH Q Hi, My Name!

STOCKS NEWS PORTFOLIO TRADING HISTORY WATCHLIST HELP

Graph of stocks in portfolio

SERIAL NO. NAME BUYING PRICE CURRENT PRICE DATE & TIME QUANTITY TOTAL

LST OF STOCKS IN PORTFOLIO

User will be able to sell from the list.

Graph of stocks in portfolio

Unregistered users will be redirected to login page. User must be logged in.

5. TRADING HISTORY

LOGO SEARCH Q Hi, My Name

STOCKS NEWS PORTFOLIO TRADING HISTORY WATCHLIST HELP

SEARCH Q

SERIAL NO. NAME SELLING PRICE DATE & TIME QUANTITY TOTAL

Line of stocks last bought by user

Users must be logged in.

6. WATCHLIST

LOGO SEARCH Q Hi, My Name

STOCKS NEWS PORTFOLIO TRADING HISTORY WATCHLIST HELP

SEARCH Q

ID NAME CURRENT PRICE DAY HIGH DAY LOW ~

Users will also be able to buy them

List of stocks users want to keep an eye on

7. HELP

LOGO SEARCH Q Hi, My Name

STOCKS NEWS PORTFOLIO TRADING HISTORY WATCHLIST HELP

How can we help you?

SEARCH Q

FAQ FORUMS 24/7 LIVE SUPPORT CONTACT US

Chat Bot

Social Media links Email Phone

Users will not have to be logged in to access this page.

8. LOG IN

LOG IN

EMAIL

PASSWORD

REMEMBER ME

LOGIN

Don't have an account yet?

SIGN UP

Links to sign up page

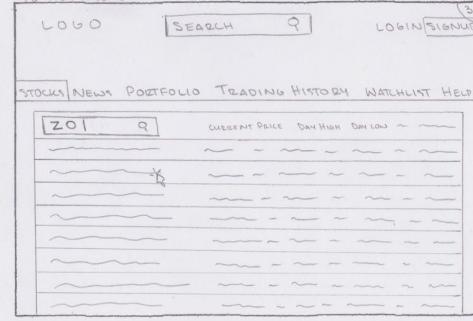
Joanna is a student in an investment class. Her professor assigns the class to create fake portfolios given a certain amount of money. Her goal is to get the largest return on investment.



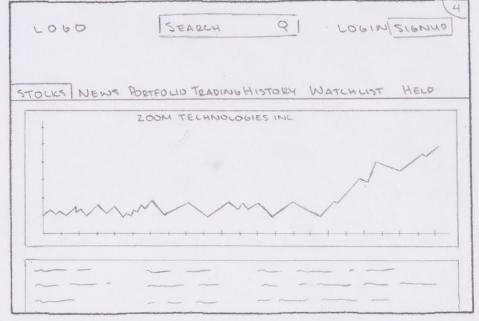
Joanna borrows Facebook when she comes across an ad for Tradition. She thinks it might be good to use as it looks clean and easy to use.



Joanna searches for each stock and clicks on them to check the details. Once she decides which ones to choose, she adds them to her dashboard.



Joanna sees the details of an individual stock.



John discusses stocks with his friend over the phone. His friend recommends a site called Tradition, and John decides to check it out.



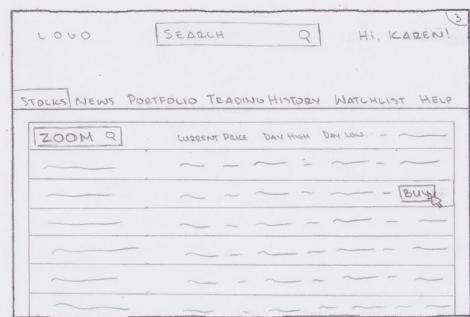
John goes to Tradition and checks the stocks list. On the site, he is able to sort the list by different categories. He decides to sort by top earners and top losers.



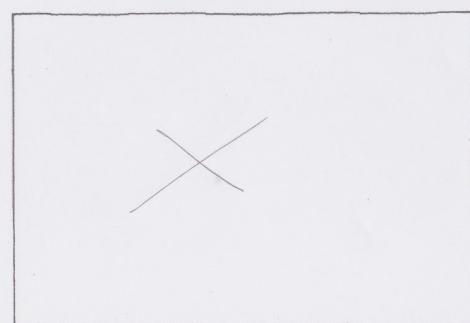
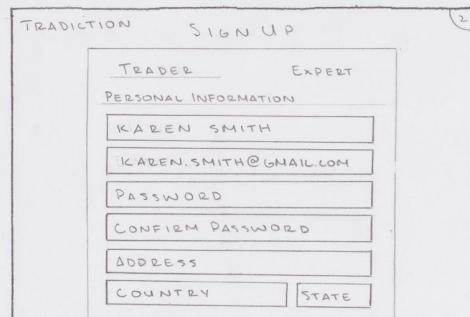
Karen talks to her friend on the phone. Her friend recommends she invests in a company called Zoom.



Karen wants to add some stocks to her portfolio so she searches each of them and adds them from the list.



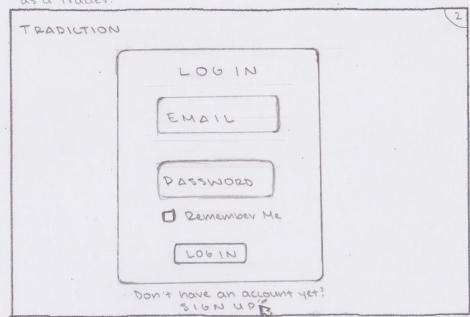
Karen creates an account so she can start investing.



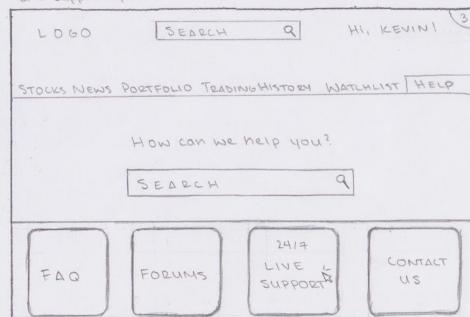
Kevin is browsing online when he comes across an interesting forum post. He clicks on it because he's curious and wants to get into investing.



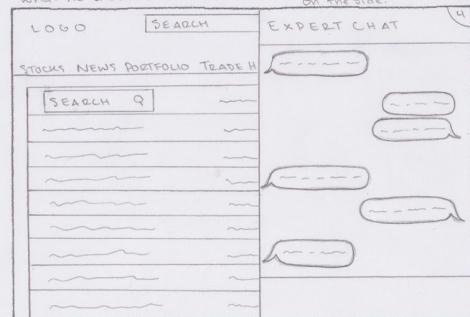
He gets redirected to the login page, so he clicks "sign up" underneath to get to the right page. He then signs up as a trader.



Kevin navigates to the Help page and chooses the 24/7 Live Support option.



Kevin chats with an expert and asks for advice on what he should do. He multitasks with the chat window on the side.



Sanjay discusses with his friend about wanting to get into investing. His friend recommends using Tradiction and tells him how much he's made investing with them.



After hearing of his friend's success, Sanjay decides to make an account.

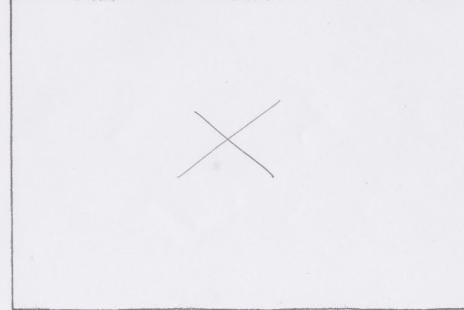
Sanjay navigates to the stock list and selects a stock. He clicks on the expert category to chat with an expert.

Sanjay discusses with an expert on his selections and asks questions on what he should do.

Sanjay scrolls through some stocks and can't buy some of them because they are above his budget. He adds the ones he's interested in to his watchlist by clicking the plus sign.

1 week later, Sanjay comes back and checks on the stocks on his watchlist. He decides which ones he wants to buy and clicks "buy".

Sanjay navigates to his watchlist and selects 'predict' to use the prediction functionality.



High-level Database Architecture and Organization:

Business Rules

1. A user can create one trader account.
2. A user can create one expert account.
3. Users can login using many browsers.
4. Traders may buy one or more stocks.
5. Traders may sell one or more stocks.
6. A user can view one stock in detail at a time.
7. A trader can add one stock to the wishlist at a time.
8. A trader can view one prediction of a stock at a time.
9. An expert can view one prediction of a stock at a time.
10. An expert can write one review of a stock at a time.

Entities, Attributes, and Relationships

- **Strong Entities:**

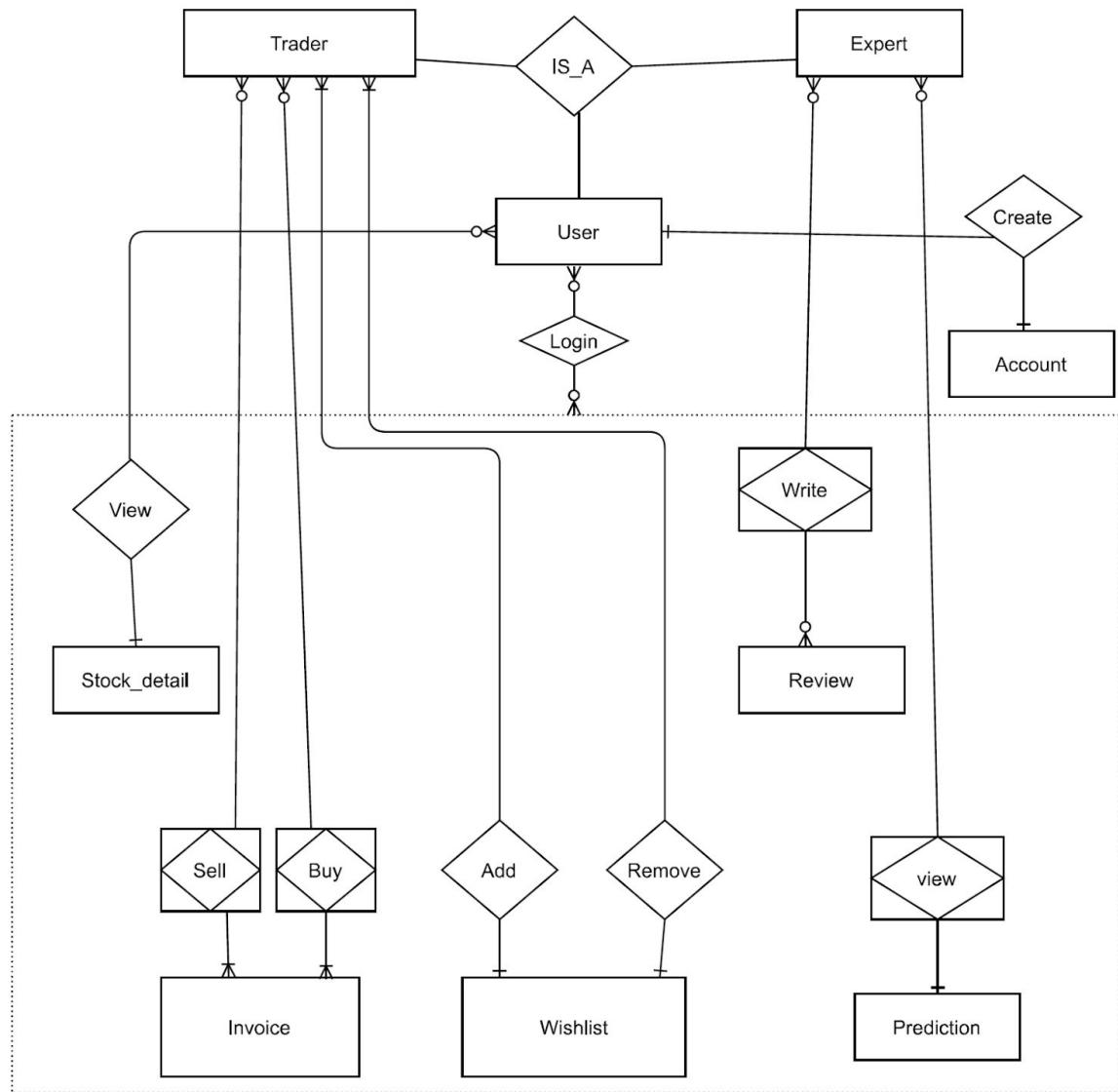
- Trader
 - trader_id: PK
 - name: composite (first name, last name)
 - bank_statement
 - routing_number
 - account_number
 - address: composite (house number, street name, street type, city, state, postal code)
 - phone_number: composite (area code, prefix, line number)
 - email_address: composite (local part, domain)
 - password
 - SSN
- Expert
 - expert_id: PK
 - name: composite (first name, last name)
 - address: composite (house number, street name, street type, city, state, postal code)
 - phone_number: composite (area code, prefix, line number)
 - email_address: composite (local, domain)
 - password
 - expert_cert
 - SSN

- **Weak Entities:**

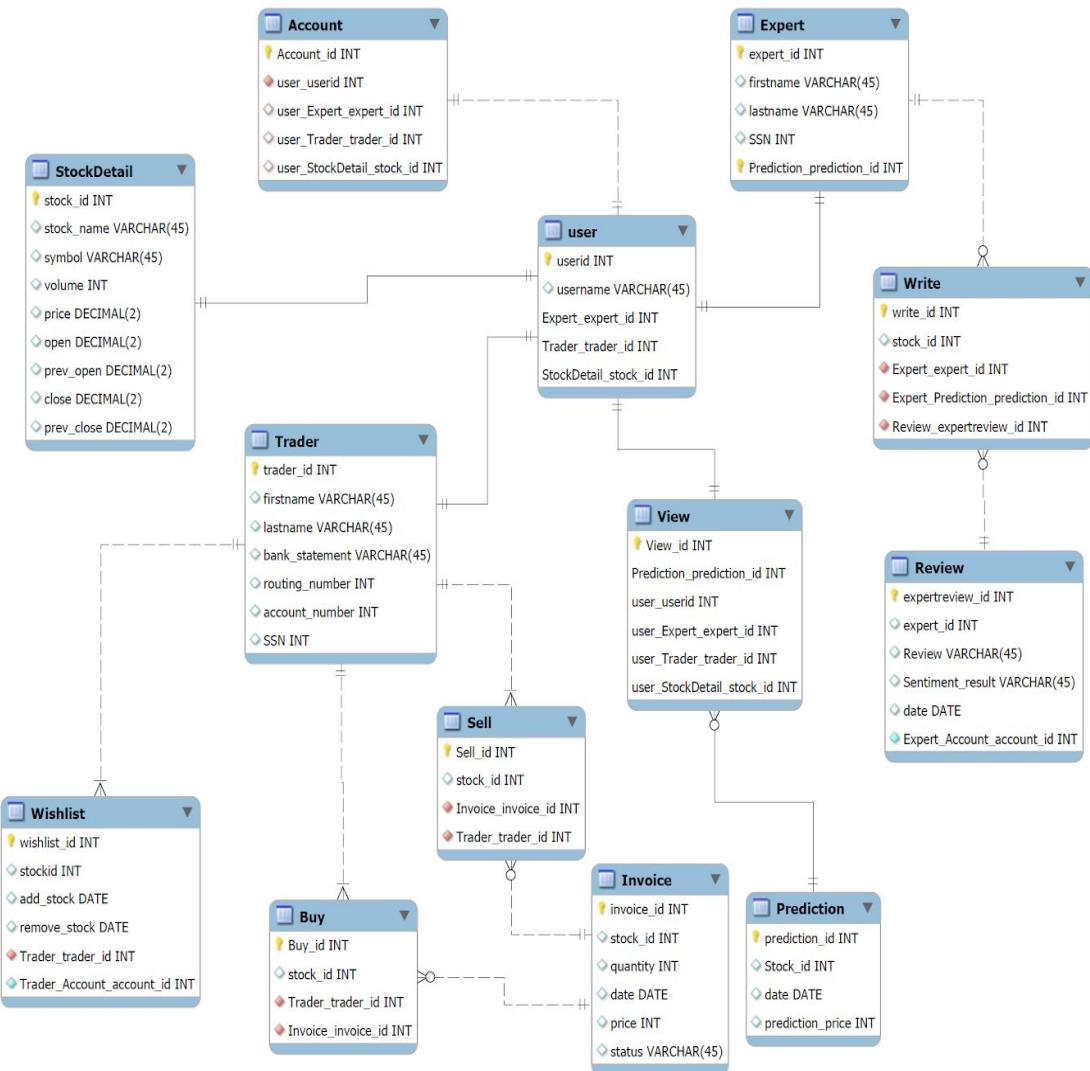
- Detail
 - stock_id: PK

- stock_name
 - symbol
 - volume
 - price
 - open
 - prev_open
 - close
 - prev_close
- Wishlist
 - wishlist_id: PK
 - stock_id: FK
 - add_stock
 - remove_stock
- Prediction
 - prediction_id: PK
 - Stock_id: FK
 - date: multi-value (month, day, year)
 - predicted_price
- Review
 - expertreview_id: PK
 - expert_id: FK
 - Review
 - Sentiment_result
 - date: multi-value (month, day, year)
- Invoice
 - invoice_id: PK
 - stock_id: FK
 - quantity
 - date: multi-value (month, day, year)
 - price
 - status
- **Relationships:**
 - create, login, buy, sell, view, add, remove, write, is_a

Entity Relationship Diagram (ERD)



Database Model (DBM)



Reasoning for DBMS

The DBMS that we have decided to use is MySQL because it is a DBMS that I have familiarity with.

Media storage

The URL to the files will be stored in the database.

Search/filter architecture and implementation

The filter functionality will be implemented on the stock list page where users can enter a search string (generally, a stock name or stock symbol), and will get back the result of the stock list from the database with matching substring to that search string. Then, the user can select a stock of his/her choice.

High-level APIs and Main Algorithms

API : -

Payment: Payment gateway for the traders and experts interested in buying stocks. Can buy a particular stock from its detailed page by clicking on the “BUY” button, redirecting the user to a new tab where the user can select the quantity of stocks to buy.

Newsfeeds: The home page displays links to the trending stock news in the market and when clicked, redirects users to a tab with detailed information about the news.

Twitter: This API fetches twitter comments related to the particular stock and performs sentiment analysis giving out results of how the stock is performing for past days.

Chatbot: It uses socket I/O to enable communication traders and experts.

Email: Important updates regarding wishlisted stocks will be sent to users via Email.

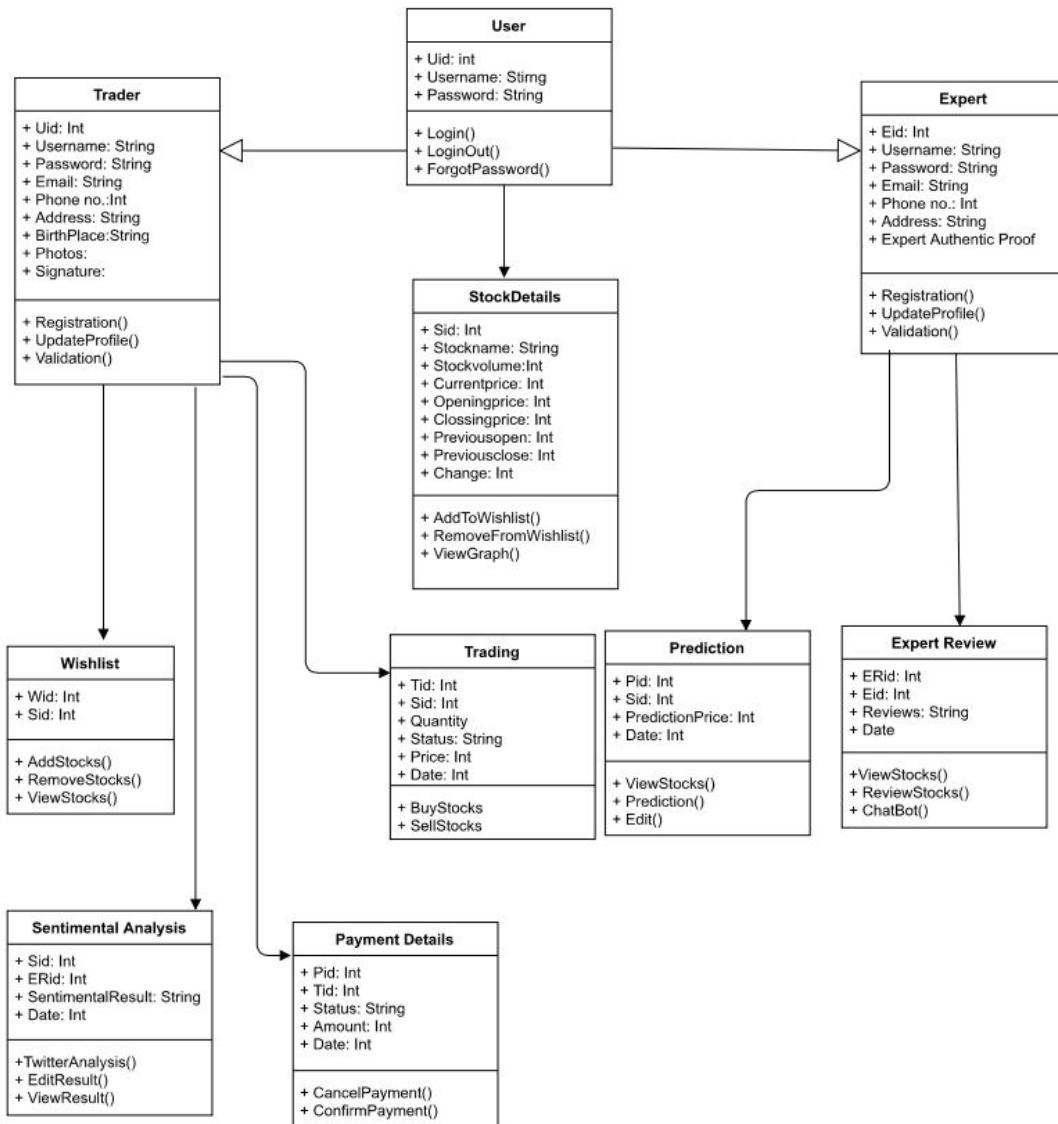
Main Algorithms: -

Prediction: We will be implementing machine learning algorithms on stock data collected for the past few years and will be predicting the opening price of the stock for the next day.

Sentiment Analysis: Collected twitter comments for the stock will be passed through this algorithm for supporting the predicted price, displaying the output as positive, negative or neutral.

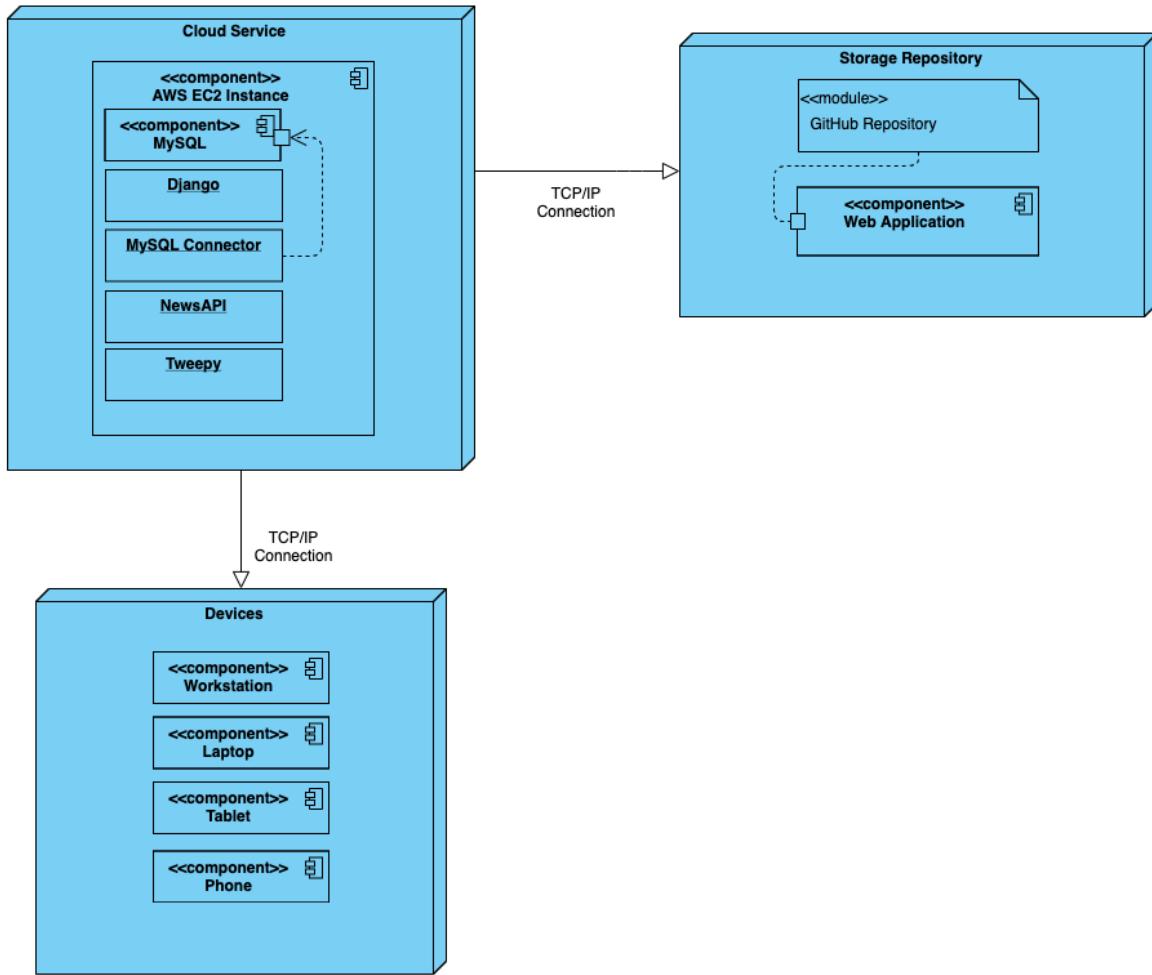
High-level UML Diagrams

Class Diagram

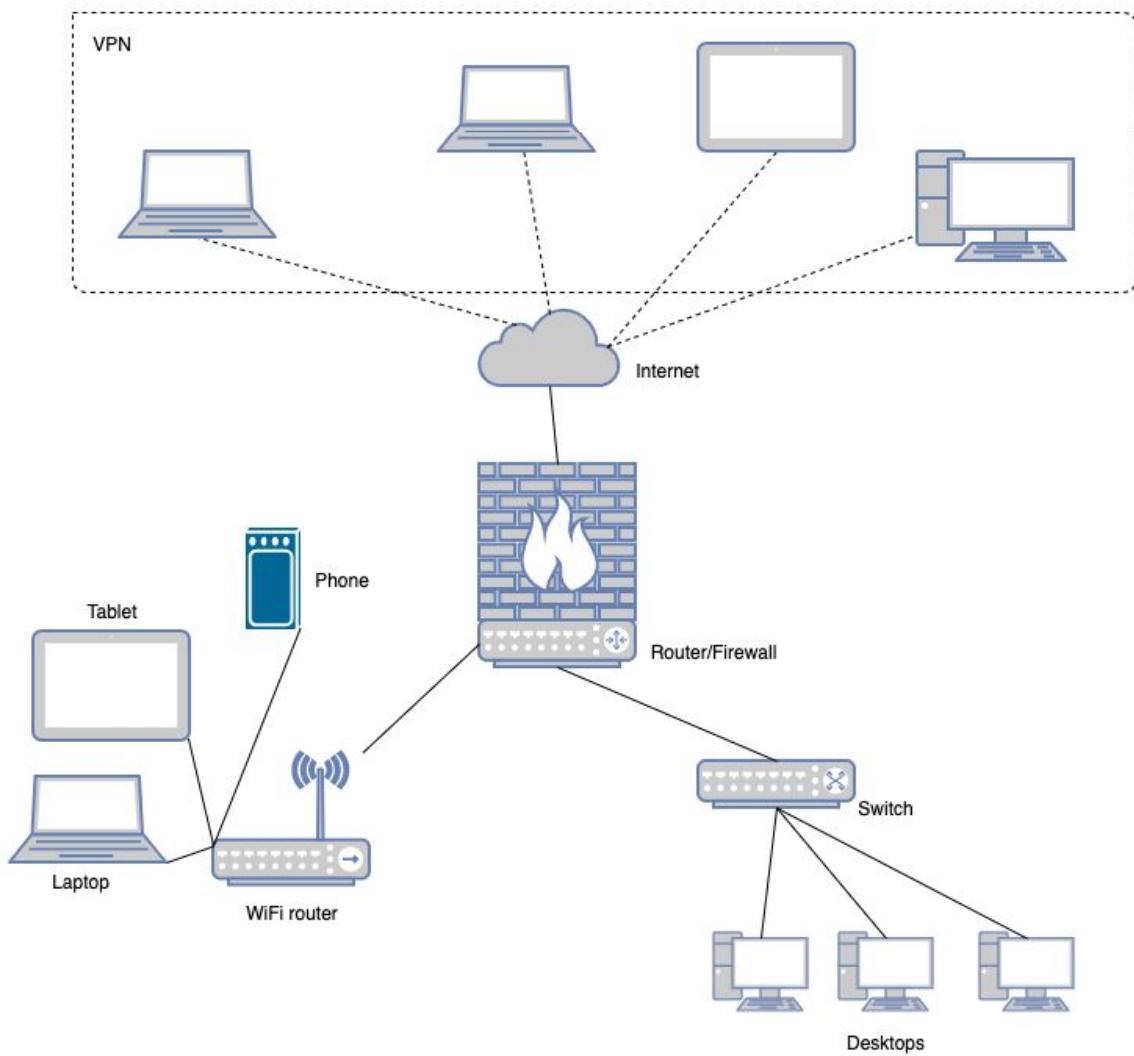


High-level Deployment and Network Diagrams:

Deployment Diagram



Network Diagram



Key Risks

Schedule risk:

Given the difficulty and amount of work required to have a functional stock market app, we may have difficulties creating a fully functional stock market application, including all priority 1, priority 2, and some priority 3's.

To resolve this risk, we plan on scheduling bi-weekly meetings on Zoom to discuss our implementation strategy, and implementing weekly sprints for building out our application functionality. We plan on starting with all of priority 1 before moving on to priority 2. If there is enough time, we plan on implementing features from priority 3.

Teamwork risk:

Given the Covid-19 pandemic, we are forced to work at home and collaborate primarily using Zoom. Not having face-to-face meetings may introduce complacency, reduce productivity, and may produce a lower quality of work.

To resolve this risk, the team lead will implement bi-weekly meetings, in addition to meetings within small teams that are designated for the application implementation. The team lead will have a set list of requirements for each meeting and require meeting minutes to ensure that we align with our itinerary and can deliver a working product by the end of the scheduled timeline.

Project Management

A combination of Trello, Slack, Zoom, and in-person meetings were used to manage the progress of milestone 2. Trello was utilized by showing progress of sub-tasks by their assignees. Those with specific roles were informed to leave comments and questions on their cards and moved the cards as they progressed with the task. Slack was used as the primary form of communication within the team. An individual slack channel was used to schedule any meetups or discuss any questions or issues. In-person meetups were the primary form of group interaction between people sharing the same sub-tasks. If the team lead/project manager wasn't present, the group sent meeting minutes to the lead so that he was on the same page. In addition to the in-person meetups, weekly zoom meetings were conducted to align all team members. Specifically, Zoom was used to answer any questions that people may have had, rebalance the workload if necessary, and to set goals for the upcoming week.

Moving forward, we will likely use the same tools mentioned above. There were no issues with the way things are running and the tools used were successful in streamlining the collaboration process.

M3_V2

See next page

TRADITION
CSC648 SOFTWARE ENGINEERING
SPRING 2020
TEAM 01

Milestone	Date
M3 Version V2	05/17/2020
M3 Version V1	04/23/2020
M2 Version V2	04/10/2020
M2 Version V1	03/26/2020
M1 Version V2	03/09/2020
M1 Version V1	03/05/2020

Team members:

SFSU email

Brian Lim – Team lead

blim6@mail.sfsu.edu

May Naing – Front-end Lead

mnaing1@mail.sfsu.edu

Sanjay Mirani – Back-end Lead

smirani1@mail.sfsu.edu

Dibs Bharati – GitHub Master

dbharati@mail.sfsu.edu

Zike Xian – Database master 1

zxian@mail.sfsu.edu

Benjamin Fletes – Database Master 2

bfletes1@mail.sfsu.edu

Table of Contents

Data Definitions	3
Functional Requirements	5
Priority 1:	5
Priority 2:	9
Priority 3:	11
Wireframes	13
Login and Sign Up	13
Navigation Bar (Stocks, News, and Portfolio Pages)	14
Navigation Bar (Trading History, Watchlist, and Help Pages)	15
Stock Details and Buy Pages	16
Edit Profile Page	16
Sell Page	17
Help Page	17
Database Architecture	18
High Level Diagrams	19
UML Diagram	19
Deployment Diagram	20
Network Diagram	21

Data Definitions

- **New User:** Users visiting the site for the very first time. They can create an account, view stock lists, know details of a particular stock, but cannot buy/sell stocks or chat with an expert.
- **Traders:** Registered Users with an account, who can view stocks, buy/sell stocks, update personal details, view transaction history, update portfolio, chat with an expert.
- **Experts:** Registered Stock experts. Can view, analyze and chat with users to provide them best advice and guidance for buying/selling stock.
- **Admin:** A registered person having full access to the site. Also, the one reviewing and approving accounts of the traders and experts.
- **Customer Support:** Dedicated 24/7 service available for the customers to answer and resolve their queries. Customers can have questions answered such as payment problems, report issues and bugs with the website, and report inappropriate or incorrect articles .
- **Prediction Tab:** A dedicated tab for accurate prediction of prices of a stock just by entering a stock symbol. This section uses a special prediction algorithm to predict open prices of the stock for the next day.
- **Newsfeeds:** Displaying top news related to the stock market. It will have multiple news articles separated by containers. Each article container will contain important information to get the user to click on the article. This information includes the name of the article, a picture, and the date the article was published.

- **Expert Chat:** Traders communicate with stock experts through a chatting service. When a trader wants a greater amount of information regarding a stock, they can communicate directly with an expert of that stock to get advice.
- **Sentiment-Analysis:** This is the part which analyzes the tweets of stock companies on twitter and returns the answer whether people are interested in companies or not. This part uses a special API which fetches twitter comments related to the companies, analyzes them and outputs results to positive, negative or neutral eventually helping users in deciding whether they should invest in the stock or not.

Functional Requirements

Priority 1:

UNREGISTERED USERS: -

1. Shall be able to create a new account as a trader.
 - 1.1. Shall be able to enter an email address of choice during registration.
 - 1.2. Shall be able to enter a password during registration.
 - 1.3. Shall have minimum password requirement of letters, numbers and special characters.
 - 1.4. Shall be able to enter the address during registration.
 - 1.5. Shall be able to enter contact number during registration.
 - 1.6. Shall be able to enter Social Security Number during registration.
 - 1.7. Shall be able to link a bank account during registration.
 - 1.8. Shall be able to upload bank statements during registration.
 - 1.9. Shall receive an Email verification upon registration.
2. Shall be able to create a new account as an expert.
 - 2.1. Shall be able to enter an email address of choice during registration.
 - 2.2. Shall be able to enter a password during registration.
 - 2.3. Shall have minimum password requirement of letters, numbers and special characters
 - 2.4. Shall be able to enter the address during registration.
 - 2.5. Shall be able to enter contact number during registration.
 - 2.6. Shall be able to enter Social Security Number during registration.
 - 2.7. Shall receive an Email verification upon registration.
 - 2.8. Shall be required to upload an expert certificate.
3. Shall be able to view Stock lists.
 - 3.1. Shall be able to sort the list alphabetically.
 - 3.2. Shall be able to search for a list of particular stocks.
 - 3.2.1. Shall be able to enter text into a search field

- 3.2.2. Shall be able to modify text in a search field.
4. Shall be able to view a particular stock in detail.
 - 4.1. Shall be able to click on the individual stock.
 - 4.2. Shall be redirected to a detailed stock page.
 5. Shall be able to view news feeds.
 - 5.1. Shall be able to click on news articles.
 - 5.2. Shall be able to open another tab with an article.
 6. Accounts shall be put on hold for verification from admin.

REGISTERED TRADERS: -

1. Shall be able to login.
 - 1.1. Shall be able to enter an email address.
 - 1.2. Shall be able to enter a password.
 - 1.3. Shall have minimum password requirement of letters, numbers and special characters.
 - 1.4. Shall be authenticated during login.
 - 1.5. Shall have the account blocked for a few hours, incase of multiple incorrect login attempts.
 - 1.6. Shall be prompted with a message if credentials are incorrect.
 - 1.7. Shall be able to recover password through mail by clicking on "Forgot Password".
2. Shall be able to edit personal information.
 - 2.1. Shall be able to change their password.
 - 2.2. Shall be able to update their phone number.
 - 2.3. Shall be able to update their address.
3. Shall be able to logout.
4. Shall be able to view news feeds.
 - 4.1. Shall be able to click on news articles.
 - 4.2. Shall be able to open another tab with an article.
5. Shall be able to view the Stock list.

- 5.1. Shall be able to sort the list alphabetically.
- 5.2. Shall be able to search for a list of particular stocks.
 - 5.2.1. Shall be able to enter text into a search field
 - 5.2.2. Shall be able to modify text in a search field.
- 5.3. Shall be able to add stock to the watchlist.
6. Shall be able to view a particular stock in detail.
 - 6.1. Shall be able to click on the individual stock.
 - 6.2. Shall be redirected to a detailed stock page.
7. Shall be able to view the portfolio.
 - 7.1. Shall be able to show a summary of the portfolio for the day.
 - 7.1.1. Shall be able to show all stocks owned.
 - 7.1.2. Shall be able to show gains and losses from purchase price.
 - 7.2. Shall be able to sell stock.
 - 7.2.1. Shall be able to enter a quantity of stock to sell.
8. Shall be able to buy stocks by clicking on the buy button on the stock details page.
 - 8.1. Shall be able to enter quantities of stocks to buy.
9. Shall be able to view the transaction history.
 - 9.1. Shall be able to view the stock name of the stock bought.
 - 9.2. Shall be able to view the purchasing price of stock bought.
 - 9.3. Shall be able to view the quantity of stock bought.
 - 9.4. Shall be able to view the date of stock bought.
 - 9.5. Shall be able to view the time of stock bought.
10. Shall be able to add interested stocks to a watchlist.

REGISTERED EXPERTS: -

1. Shall be able to login.
 - 1.1. Shall be able to enter an email address.
 - 1.2. Shall be able to enter a password.

- 1.3. Shall be authenticated during login.
 - 1.4. Shall be prompted with a message if credentials are incorrect.
 - 1.5. Shall be able to recover password through mail by clicking on “Forgot Password”.
2. Shall be able to edit personal information.
 - 2.1. Shall be able to change their password.
 - 2.2. Shall be able to update their phone number.
 - 2.3. Shall be able to update their address.
3. Shall be able to logout.
4. Shall be able to view news feeds.
 - 4.1. Shall be able to click on news articles.
 - 4.2. Shall be able to open another tab with an article.
5. Shall be able to view the Stock list.
 - 5.1. Shall be able to sort the list alphabetically.
 - 5.2. Shall be able to search for a list of particular stocks.
 - 5.2.1. Shall be able to enter text into a search field
 - 5.2.2. Shall be able to modify text in a search field.
 - 5.2.3. Shall be able to click on the search button to view results.
 - 5.3. Shall be able to add stock to the watchlist.
6. Shall be able to view a particular stock in detail.
 - 6.1. Shall be able to click on the individual stock.
 - 6.2. Shall be redirected to a detailed stock page.
7. Shall be able to add interested stocks to a watchlist.

ADMIN: -

1. Shall be able to login.
 - 1.1. Shall be able to enter an email address.
 - 1.2. Shall be able to enter a password.
 - 1.3. Shall be authenticated during login.
2. Shall be able to logout.

3. Shall be able to view details entered by traders.
4. Shall be able to view details entered by experts.
5. Shall be able to put traders' accounts on hold for verification.
6. Shall be able to put experts' accounts on hold for verification.
7. Shall be able to accept trader accounts.
8. Shall be able to reject trader accounts.
9. Shall be able to accept expert accounts.
10. Shall be able to reject expert accounts.

Priority 2:

UNREGISTERED USERS: -

1. Shall be able to view a particular stock in detail
 - 1.1. Shall be able to refine parameters for graph
 - 1.2. Shall be able to refine the length of time displayed on the graph.
 - 1.3. Shall be able to refine the graph to show the open prices.
 - 1.4. Shall be able to refine the graph to show the close prices.
2. Shall be able to contact customer support for queries.
 - 2.1. Shall be able to click on the customer support tab.
 - 2.1.1. Shall be able to contact via phone.
 - 2.1.2. Shall be able to contact via mail.
 - 2.1.2.1. Shall be able to enter an email address in the email field.
 - 2.1.2.2. Shall be able to enter a message in the message field.
 - 2.1.2.3. Shall be able to receive an acknowledgment email.

REGISTERED TRADERS: -

1. Shall be able to view a particular stock in detail
 - 1.1. Shall be able to refine parameters for graph

- 1.2. Shall be able to refine the length of time displayed on the graph.
- 1.3. Shall be able to refine the graph to show the open prices.
- 1.4. Shall be able to refine the graph to show the close prices.
- 1.5. Shall be able to enter a symbol of stock.
- 1.6. Shall be able to click on a predict button.
 - 1.6.1. Shall be shown the predicted opening price for the stock the following day.
2. Shall be able to receive email notifications if stocks reach a certain price threshold in watchlist.
3. Shall be able to contact customer support for queries.
 - 3.1. Shall be able to click on the customer support tab.
 - 3.1.1. Shall be able to contact via phone.
 - 3.1.2. Shall be able to contact via mail.
 - 3.1.2.1. Shall be able to enter an email address in the email field.
 - 3.1.2.2. Shall be able to enter a message in the message field.
 - 3.1.2.3. Shall be able to receive an acknowledgment email.

REGISTERED EXPERTS: -

1. Shall be able to view a particular stock in detail
 - 1.1. Shall be able to refine parameters for graph
 - 1.2. Shall be able to refine the length of time displayed on the graph.
 - 1.3. Shall be able to refine the graph to show the open prices.
 - 1.4. Shall be able to refine the graph to show the close prices.
2. Shall be able to receive email notifications if stocks reach a certain price threshold in watchlist.
3. Shall be able to contact customer support for queries.
 - 3.1. Shall be able to click on the customer support tab.
 - 3.1.1. Shall be able to contact via phone.
 - 3.1.2. Shall be able to contact via mail.

- 3.1.2.1. Shall be able to enter an email address in the email field.
- 3.1.2.2. Shall be able to enter a message in the message field.
- 3.1.2.3. Shall be able to receive an acknowledgment email.

ADMIN: -

Priority 3:

UNREGISTERED USERS: -

- 1. Shall be able to contact customer support for queries.
 - 1.1. Shall be able to contact via chat support.
 - 1.1.1. Shall be able to see the number of people waiting in the queue.
 - 1.1.2. Shall be able to see an estimated waiting time for response.
 - 1.1.3. Shall be able to see the time spent in the queue.
 - 1.1.4. Shall be able to send a message to the support agent.
 - 1.1.5. Shall be able to receive a message from the support agent.

REGISTERED TRADERS: -

- 1. Shall be able to chat with an expert.
 - 1.1. Shall be able to see the number of people waiting in the queue.
 - 1.2. Shall be able to see an estimated waiting time for response.
 - 1.3. Shall be able to see the time spent in the queue.
 - 1.4. Shall be able to send a message to the expert.
 - 1.5. Shall be able to receive a message from the expert.

REGISTERED EXPERTS: -

- 1. Shall be able to chat with traders.
 - 1.1. Shall be able to navigate to the chat tab.
 - 1.1.1. Shall be able to view all traders in the queue.
 - 1.1.2. Shall be able to communicate with the trader that is first in the queue.

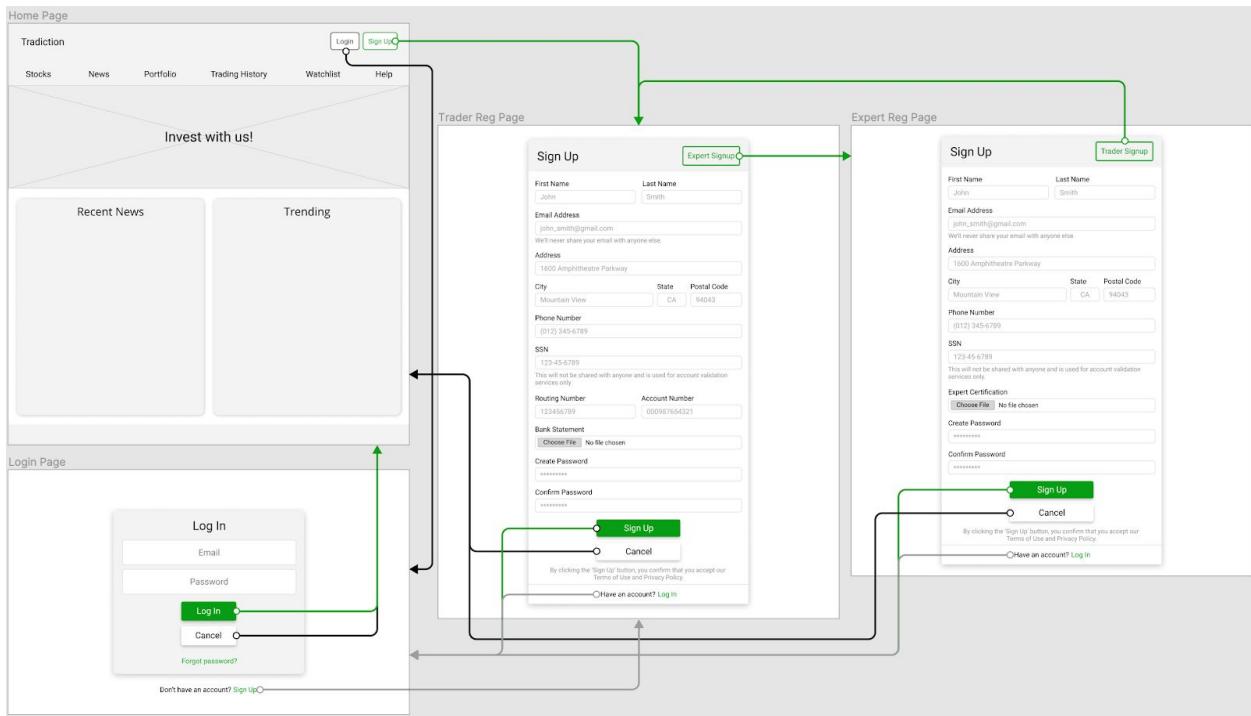
- 1.1.2.1. Shall be able to send messages to the trader.
- 1.1.2.2. Shall be able to receive messages from the trader.
- 1.1.2.3. Shall be able to end the session with the trader.

ADMIN: -

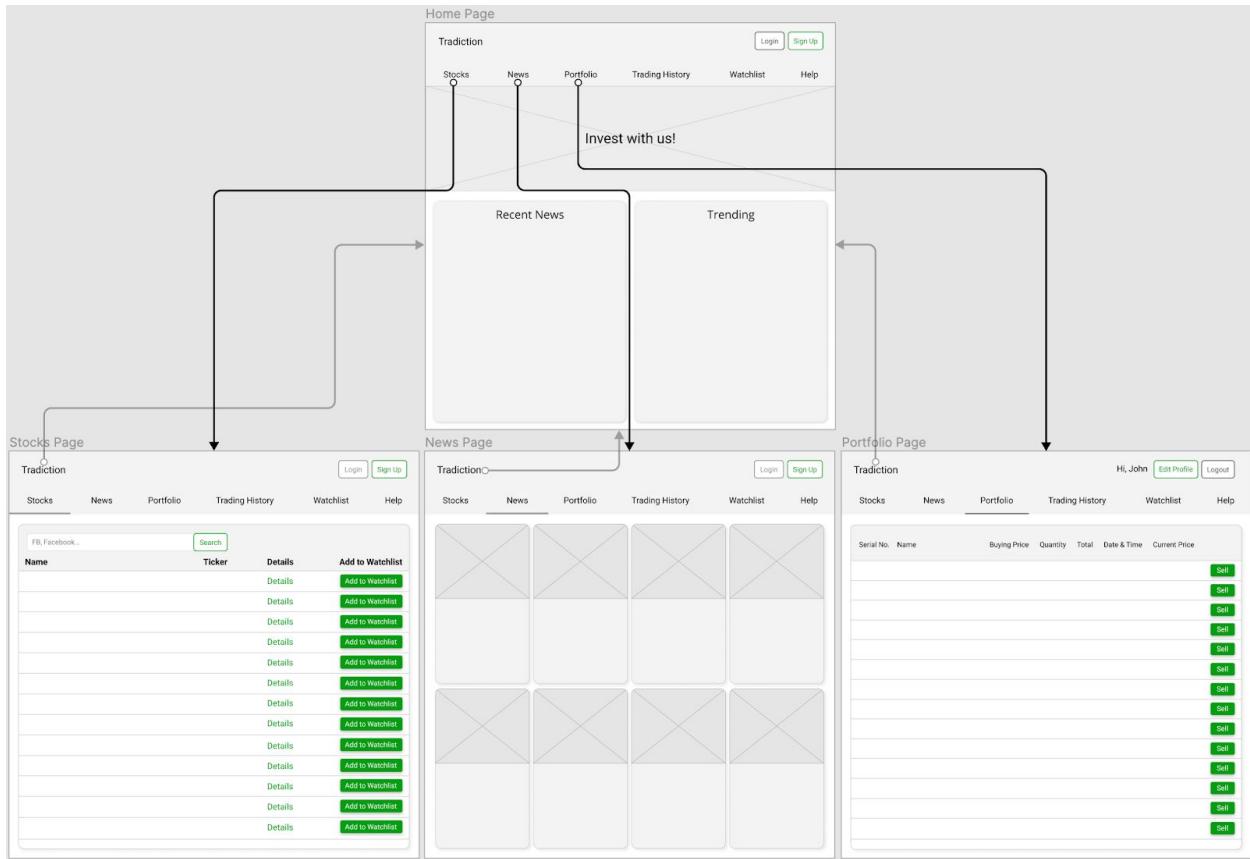
No Priority 3 functional requirements for admin

Wireframes

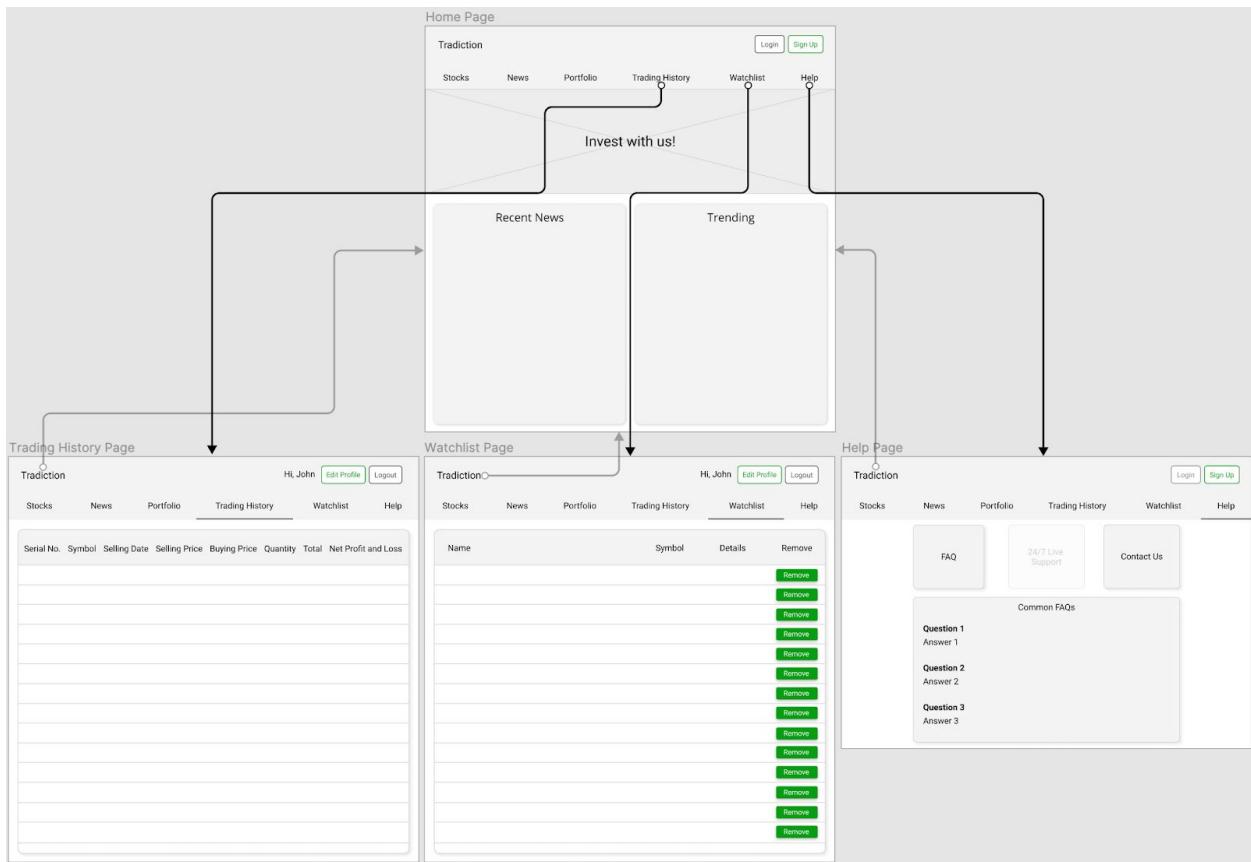
Login and Sign Up



Navigation Bar (Stocks, News, and Portfolio Pages)



Navigation Bar (Trading History, Watchlist, and Help Pages)



Stock Details and Buy Pages

The diagram illustrates the user flow between three pages:

- Stocks Page:** Shows a list of stocks with a search bar and navigation links. A red arrow points from the "Add to Watchlist" button in the first row to the "Advanced Micro Devices, Inc (AMD)" page.
- Stock Details Page:** Displays detailed information for Advanced Micro Devices, Inc (AMD). A red arrow points from the "Buy" button to the "Buy Page".
- Buy Page:** Allows users to purchase stocks. It shows the stock details and a "Buy" button.

Edit Profile Page

The diagram illustrates the user flow between three edit profile pages:

- Edit Profile Page 1:** Shows sections for Personal Information, Banking Information, and Change Password. A red arrow points from the "Change Password" section to the second page.
- Edit Profile Page 2:** Shows sections for Personal Information, Banking Information, and Change Password. A red arrow points from the "Change Password" section to the third page.
- Edit Profile Page 3:** Shows sections for Personal Information, Banking Information, and Change Password. A red arrow points from the "Change Password" section to the third page.

Sell Page

The diagram illustrates the user flow from the Portfolio Page to the Sell Page.

Portfolio Page: The user is on the 'Tradiction' website. They are viewing their portfolio, which includes a table of stocks with columns: Serial No., Name, Buying Price, Quantity, Total, Date & Time, and Current Price. To the right of the table is a vertical column of green 'Sell' buttons. An arrow points from the last 'Sell' button on the Portfolio Page to the 'Sell Stocks' section on the Sell Page.

Sell Page: The user has initiated the sell process. A modal window titled 'Sell Stocks' is open. It contains fields for Name (3M Company), Buying Price (139.95), Date & Time (Mon May 4, 2020 05:25:02), Selling Price (159.35), and Quantity (5). The total value is calculated as 796.75. A large green 'SELL' button is at the bottom of the modal.

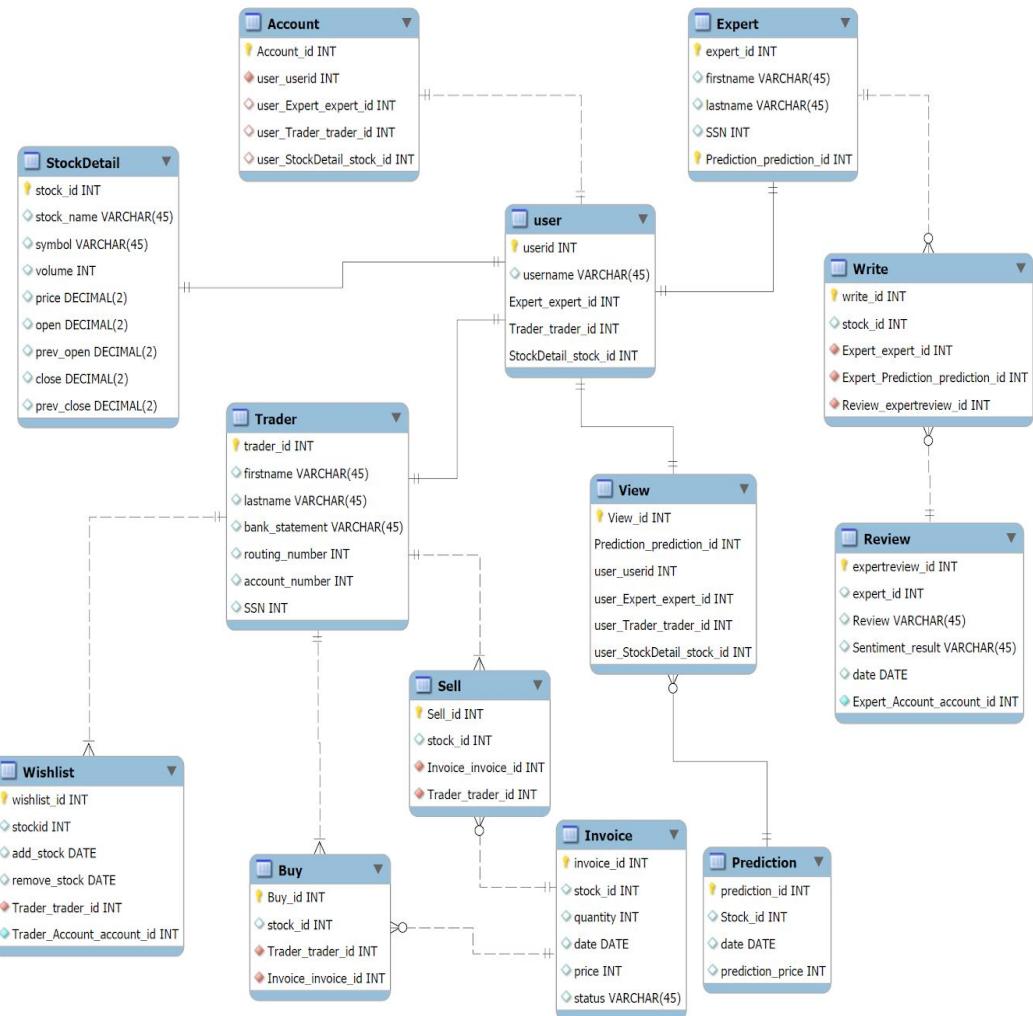
Help Page

The diagram illustrates the user flow from the Help Page to the Contact Us section.

Help Page: The user is on the 'Tradiction' website. They are in the 'Help' section, which includes links for FAQ, 24/7 Live Support, and Contact Us. A callout arrow points from the 'Contact Us' link to the 'Contact Us' section on the right side of the page.

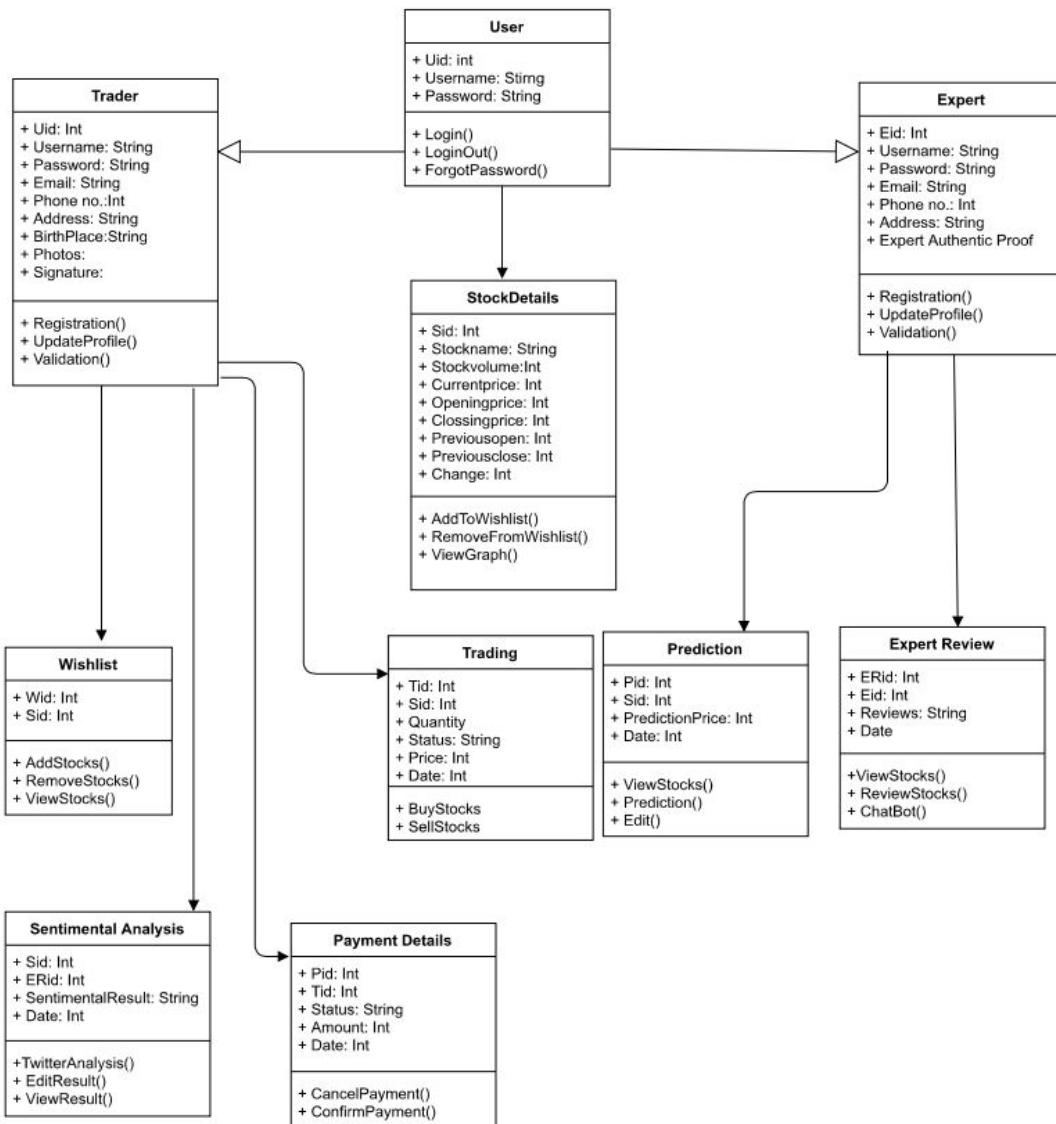
Contact Us Section: This section is titled 'Here's how to reach us!'. It features input fields for 'Your Email Address' and 'Your message', and a large green 'SEND' button.

Database Architecture

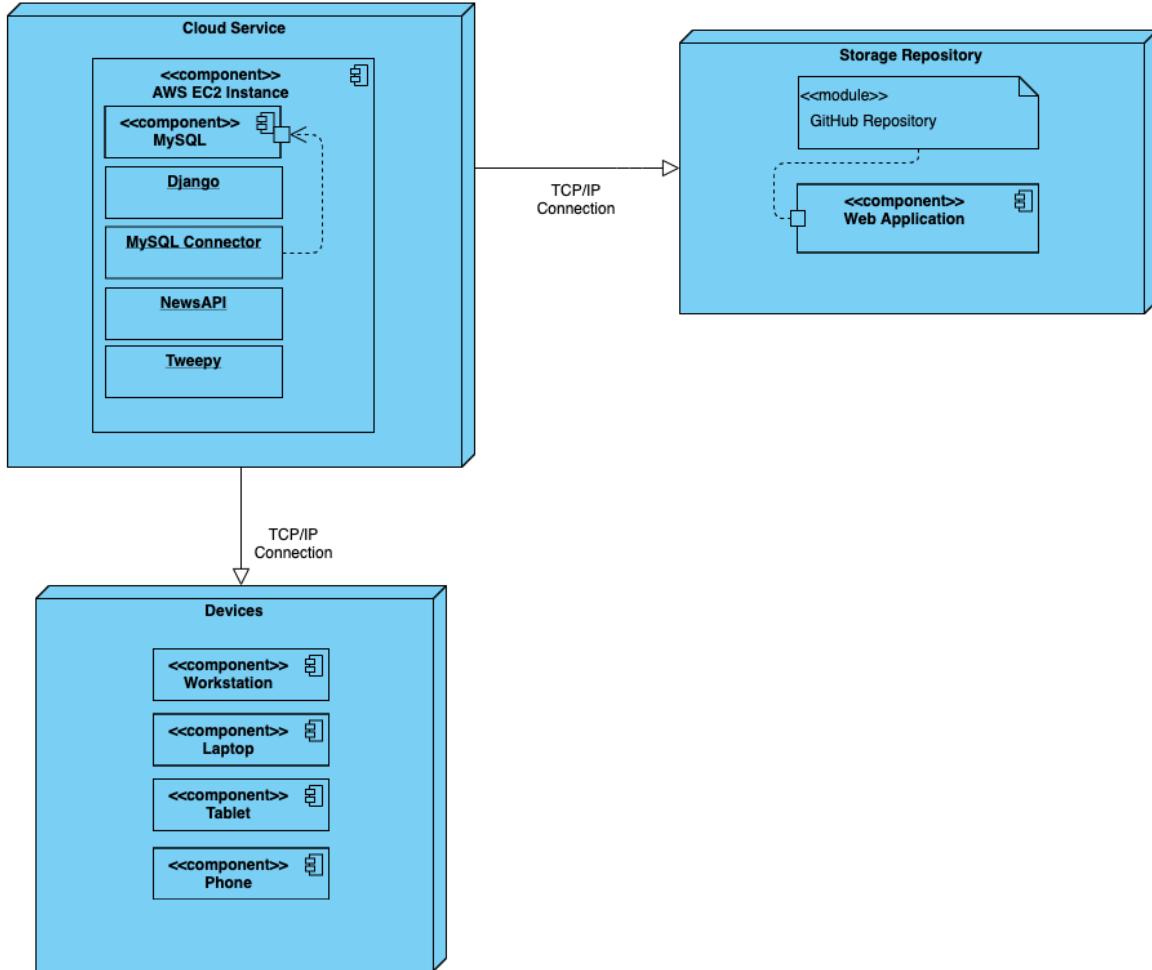


High Level Diagrams

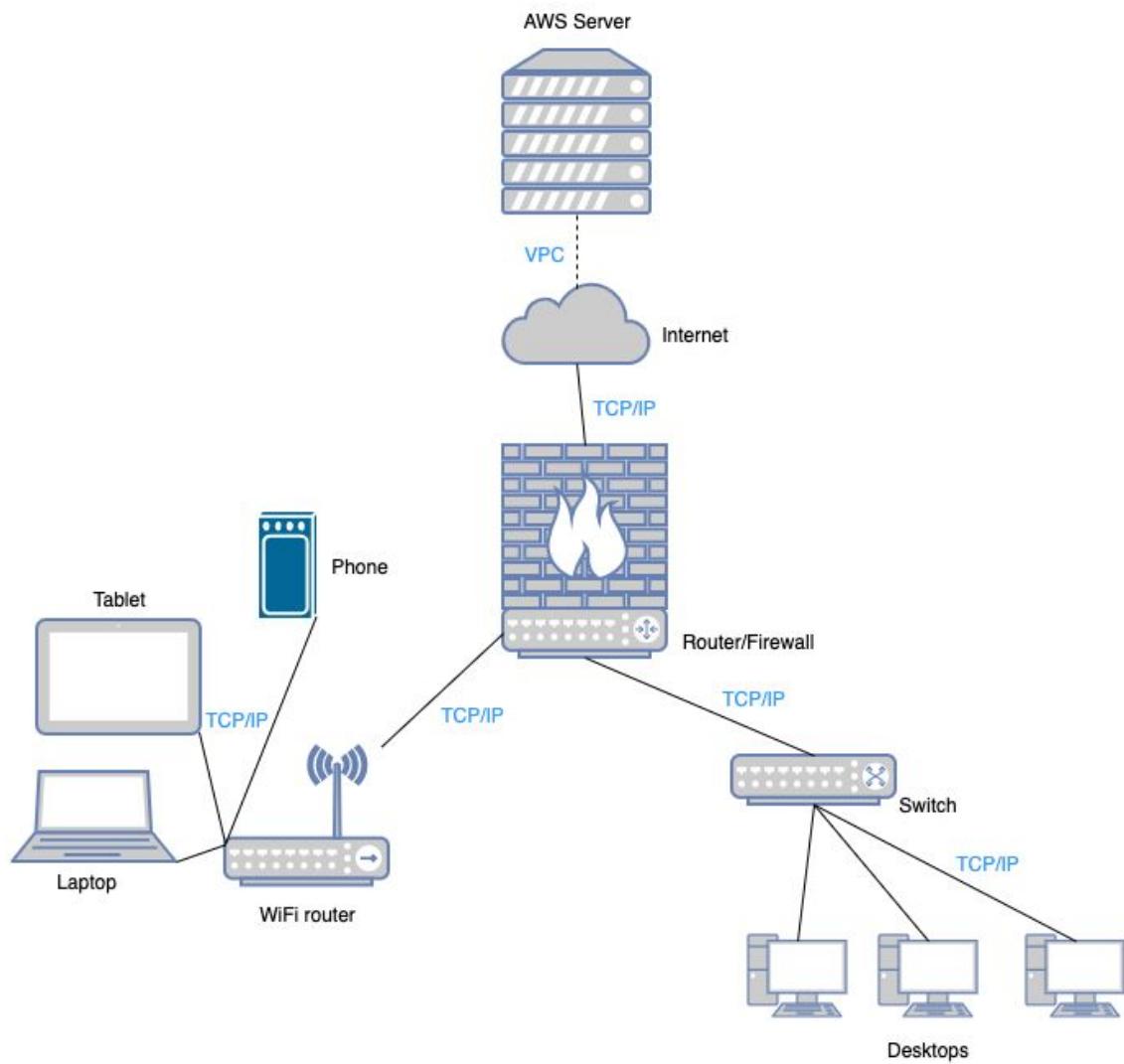
UML Diagram



Deployment Diagram



Network Diagram



M4_V2

See next page

TRADITION
CSC648 SOFTWARE ENGINEERING
SPRING 2020
TEAM 01

Milestone	Date
M4 Version V2	05/20/2020
M4 Version V1	05/10/2020
M3 Version V2	05/17/2020
M3 Version V1	04/23/2020
M2 Version V2	04/10/2020
M2 Version V1	03/26/2020
M1 Version V2	03/09/2020
M1 Version V1	03/05/2020

Team members:

SFSU email

Brian Lim – Team lead

blim6@mail.sfsu.edu

May Naing – Front-end Lead

mnaing1@mail.sfsu.edu

Sanjay Mirani – Back-end Lead

smirani1@mail.sfsu.edu

Dibs Bharati – GitHub Master

dbharati@mail.sfsu.edu

Zike Xian – Database master 1

zxian@mail.sfsu.edu

Benjamin Fletes – Database Master 2

bfletes1@mail.sfsu.edu

Table of Contents

Product Summary	4
Usability Test Plan	9
Test Objectives	9
Test Description	9
System Setup	9
Starting Point	9
Intended Users	9
URL of the system	9
What is Measured	9
Usability Task Description	10
Sentimental Twitter Analysis	10
Add Stocks into Watchlist (Registered Traders)	10
Filter Stock Information Alphabetically (A-Z) by Name	11
Search for Stock Information	11
Purchase Stocks (Registered Traders)	12
Usability Test Table	12
Questionnaire	13
QA Test Plan	14
Test objectives	14
HW and SW setup	14
Passwords shall be encrypted before storing in the database.	14
QA test plan	14
Users payment information shall be encrypted before storing in the database.	15
QA test plan	15
New registrations shall be audited by the administrator.	16
QA test plan	16
New registrations shall be approved by the administrator.	16
QA test plan	16
Application shall be able to retrieve information from the database and react in a timely manner.	17
QA test plan	17
Code Review	19
Coding Style	19
Peer Review	19
Applicant Verification	19
Twitter Analysis	20

Stock Database Retrieval	20
Stock Search Filtering	21
Purchasing Stocks	21
Data Encryption	22
Add to Watchlist	22
Accept/Reject Applicants	23
Self-check: Best Practices For Security	24
Major Assets Protected:	24
Processing of Encrypting Major Assets in DB:	24
Input Data Validation:	25
Email Address	25
Password	25
Self-check: Adherence To Original Non-functional Specs	27
Security	27
Audit	28
Performance	28
Capacity	29
Reliability	29
Recovery	29
Data Integrity	30
Compatibility	31
Conformation with Coding Standards	32
Look and Feel Standards	34
Scalability	35
Web Site Policies	36

Product Summary

Tradiction

UNREGISTERED USERS: -

1. Shall be able to create a new account as a trader.
 - 1.1. Shall be able to enter an email address of choice during registration.
 - 1.2. Shall be able to enter a password during registration.
 - 1.3. Shall have minimum password requirement of letters, numbers and special characters.
 - 1.4. Shall be able to enter the address during registration.
 - 1.5. Shall be able to enter contact number during registration.
 - 1.6. Shall be able to enter Social Security Number during registration.
 - 1.7. Shall be able to link a bank account during registration.
 - 1.8. Shall be able to upload bank statements during registration.
 - 1.9. Shall receive an Email verification upon registration.
2. Shall be able to create a new account as an expert.
 - 2.1. Shall be able to enter an email address of choice during registration.
 - 2.2. Shall be able to enter a password during registration.
 - 2.3. Shall have minimum password requirement of letters, numbers and special characters
 - 2.4. Shall be able to enter the address during registration.
 - 2.5. Shall be able to enter contact number during registration.
 - 2.6. Shall be able to enter Social Security Number during registration.
 - 2.7. Shall receive an Email verification upon registration.
 - 2.8. Shall be required to upload an expert certificate.
3. Shall be able to view Stock lists.
 - 3.1. Shall be able to sort the list alphabetically.
 - 3.2. Shall be able to search for a list of particular stocks.

- 3.2.1. Shall be able to enter text into a search field
 - 3.2.2. Shall be able to modify text in a search field.
4. Shall be able to view a particular stock in detail.
 - 4.1. Shall be able to click on the individual stock.
 - 4.2. Shall be redirected to a detailed stock page.
5. Shall be able to view news feeds.
 - 5.1. Shall be able to click on news articles.
 - 5.2. Shall be able to open another tab with an article.
6. Accounts shall be put on hold for verification from admin.

REGISTERED TRADERS: -

1. Shall be able to login.
 - 1.1. Shall be able to enter an email address.
 - 1.2. Shall be able to enter a password.
 - 1.3. Shall have minimum password requirement of letters, numbers and special characters.
 - 1.4. Shall be authenticated during login.
 - 1.5. Shall have the account blocked for a few hours, incase of multiple incorrect login attempts.
 - 1.6. Shall be prompted with a message if credentials are incorrect.
 - 1.7. Shall be able to recover password through mail by clicking on "Forgot Password".
2. Shall be able to edit personal information.
 - 2.1. Shall be able to change their password.
 - 2.2. Shall be able to update their phone number.
 - 2.3. Shall be able to update their address.
3. Shall be able to logout.
4. Shall be able to view news feeds.
 - 4.1. Shall be able to click on news articles.
 - 4.2. Shall be able to open another tab with an article.

5. Shall be able to view the Stock list.
 - 5.1. Shall be able to sort the list alphabetically.
 - 5.2. Shall be able to search for a list of particular stocks.
 - 5.2.1. Shall be able to enter text into a search field
 - 5.2.2. Shall be able to modify text in a search field.
 - 5.3. Shall be able to add stock to the watchlist.
6. Shall be able to view a particular stock in detail.
 - 6.1. Shall be able to click on the individual stock.
 - 6.2. Shall be redirected to a detailed stock page.
7. Shall be able to view the portfolio.
 - 7.1. Shall be able to show a summary of the portfolio for the day.
 - 7.1.1. Shall be able to show all stocks owned.
 - 7.1.2. Shall be able to show gains and losses from purchase price.
 - 7.2. Shall be able to sell stock.
 - 7.2.1. Shall be able to enter a quantity of stock to sell.
8. Shall be able to buy stocks by clicking on the buy button on the stock details page.
 - 8.1. Shall be able to enter quantities of stocks to buy.
9. Shall be able to view the transaction history.
 - 9.1. Shall be able to view the stock name of the stock bought.
 - 9.2. Shall be able to view the purchasing price of stock bought.
 - 9.3. Shall be able to view the quantity of stock bought.
 - 9.4. Shall be able to view the date of stock bought.
 - 9.5. Shall be able to view the time of stock bought.
10. Shall be able to add interested stocks to a watchlist.

REGISTERED EXPERTS: -

1. Shall be able to login.
 - 1.1. Shall be able to enter an email address.

- 1.2. Shall be able to enter a password.
 - 1.3. Shall be authenticated during login.
 - 1.4. Shall be prompted with a message if credentials are incorrect.
 - 1.5. Shall be able to recover password through mail by clicking on "Forgot Password".
2. Shall be able to edit personal information.
 - 2.1. Shall be able to change their password.
 - 2.2. Shall be able to update their phone number.
 - 2.3. Shall be able to update their address.
3. Shall be able to logout.
4. Shall be able to view news feeds.
 - 4.1. Shall be able to click on news articles.
 - 4.2. Shall be able to open another tab with an article.
5. Shall be able to view the Stock list.
 - 5.1. Shall be able to sort the list alphabetically.
 - 5.2. Shall be able to search for a list of particular stocks.
 - 5.2.1. Shall be able to enter text into a search field
 - 5.2.2. Shall be able to modify text in a search field.
 - 5.3. Shall be able to add stock to the watchlist.
6. Shall be able to view a particular stock in detail.
 - 6.1. Shall be able to click on the individual stock.
 - 6.2. Shall be redirected to a detailed stock page.
7. Shall be able to add interested stocks to a watchlist.

ADMIN: -

1. Shall be able to login.
 - 1.1. Shall be able to enter an email address.
 - 1.2. Shall be able to enter a password.
 - 1.3. Shall be authenticated during login.
2. Shall be able to logout.

3. Shall be able to view details entered by traders.
4. Shall be able to view details entered by experts.
5. Shall be able to put traders' accounts on hold for verification.
6. Shall be able to put experts' accounts on hold for verification.
7. Shall be able to accept trader accounts.
8. Shall be able to reject trader accounts.
9. Shall be able to accept expert accounts.
10. Shall be able to reject expert accounts.

Tradiction is a stock trading app that allows users the ability to browse recent stock-related news articles while also giving them the ability to buy, sell, and view stocks. Unlike other stock trading apps, Tradiction implements a proprietary sentimental analysis algorithm that analyzes twitter comments to keep users up to date on the latest trending market chatter. Tradiction also provides a feature allowing traders to communicate directly with stock experts, giving the trader the best market advice and information related to the stock possible. Tradiction can be found at <http://ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000>.

Usability Test Plan

Test Objectives

For our usability test plan, we decided to test five features: the sentimental twitter analysis, adding stocks into the watchlist, filtering stock information, searching for stock information, and purchasing stocks. First, we want to gauge the user's feedback on having a tool that provides the user with relevance of stocks being discussed. Second, we want to see how the user responds to adding stocks to the watchlist. Third, we want to see how intuitive it is for users to filter stock information. Fourth, we want to see how the user reacts to the iterative search functionality. Lastly, we want to see how the user feels about purchasing stocks.

Test Description

System Setup

The website is deployed on AWS on an EC2 instance. The database is on mysql and is also running on the same EC2 instance. The site is compatible with the last version of the Safari browser 11.1.2, the last version of Firefox version 70, and the last version of Chrome version 80.

Starting Point

The starting point for the website is the home page, where the user navigates to all other sections of the website using the navbar. From the home page, the user will also have the ability to create an account or log in.

Intended Users

The intended users are those interested in investing or those who would like to find out more information about the latest stock or investment related news.

URL of the system

The url to access the system is:

<http://ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000>

What is Measured

The usability test plan aims to measure user's satisfaction (ease of use) for each of the five features.

<http://ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000/>

Usability Task Description

1. *Sentimental Twitter Analysis*

First, the user will have to navigate to the stock page. Next, the user will have to navigate to the detailed stock page from one of the stocks on the table. From there, the user will be able to view the

Task	Description
Task	View the sentimental twitter analysis in the detailed stock section.
Machine State	Homepage of Tradition
Successful Completion Criteria	Successfully navigates to the detailed stock section and views the results of the sentimental twitter analysis.
Benchmark	~ = 1 minute

2. *Add Stocks into Watchlist (Registered Traders)*

Taking the assumption that the user already has an account, the user will first need to login. Then the user will navigate to the stocks page, where they can add stocks into the watchlist. They can then navigate to the watchlist to ensure that the stock was successfully added to the watchlist.

Task	Description
Task	Add a stock into the watchlist from the stock page and navigate to the watchlist page to ensure the stock was successfully added.

Machine State	Homepage of Tradition
Successful Completion Criteria	User navigates to the watchlist page and confirms that the stock they added is present.
Benchmark	<= 5 minutes

3. *Filter Stock Information Alphabetically (A-Z) by Name*

The user will navigate to the stock page and filter the table by name by increasing order.

Task	Description
Task	Filter the table of stocks alphabetically (A-Z)
Machine State	Homepage of Tradition
Successful Completion Criteria	Table of stocks successfully in order from (A-Z)
Benchmark	<= 2 minutes

4. *Search for Stock Information*

The user will navigate to the stock page and search for a stock using the search bar next to the table.

Task	Description
Task	Search for a specific stock using the search bar.
Machine State	Homepage of Tradition

Successful Completion Criteria	Searching for the stock name on the search bar yields the proper stock information.
Benchmark	<= 2 minutes

5. Purchase Stocks (*Registered Traders*)

Taking the assumption that the user already has an account, the user will first need to login. Next, the user will have to go to the stock page and navigate to a stock in detail. From there, the user will purchase a stock using the buy button. The user will be directed to a buy page, where they can select a quantity of the stock that they would like to purchase. Once the purchase has been complete, they should go to the transaction history page to verify that the purchase was successful.

Task	Description
Task	Purchase any number of given stocks and verify that the stock has been successfully purchased by viewing the trading history section.
Machine State	Homepage of Tradition
Successful Completion Criteria	Trading history section successfully shows stock purchased.
Benchmark	<= 5 minutes

Usability Test Table

Test/Use Case	% Completed	Errors	Comments
View sentimental twitter analysis	100%	None	Easy to navigate to sentimental twitter analysis.

Add stocks into watchlist	100%	None	Easy to add stocks to the watchlist.
Filter stock information alphabetically, (A-Z)	100%	None	Users had no issues with this functionality.
Search for stock information	100%	None	Users had no issues with this functionality.
Purchase stocks	100%	None	Some users struggled with purchasing stocks due to the amount of navigating that needed to take place.

Questionnaire

Please mark only one x for each question.

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I found the system unnecessarily complex.			x		
2. I found the system very cumbersome to use.		x			
3. I thought the system was easy to use.				x	

QA Test Plan

Test objectives

First, we will be testing to ensure that confidential user information (passwords and user payment information) is properly being encrypted before being stored in the database. Next, we will be testing to see if an administrator can audit and approve new registrations. Lastly, we will test to ensure that the application can retrieve information from the database in a timely manner.

HW and SW setup

AWS EC2 free tier eligible running Ubuntu and mysql. Django is the web framework to ensure that the user can visit the website. Mysqlworkbench will be used to access the database locally. Users will test on Chrome and Firefox. Link to test is:

<http://ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000/>.

1. Passwords shall be encrypted before storing in the database.

QA test plan

Test #	Title	Description	Test Input	Expected Corrected Output	Test Results
1	Password field hidden	When user tries entering text in password field, it should display as ****.	Test123.	*****	Pass
2	Password complexity not met	When the user does not fulfill the password complexity requirement, prevent the user from continuing and prompt the user that the password provided was incorrect.	Test	Message in red prompting the user that the password did not meet complexity requirements. Reject the password provided.	Pass
3	Login successful	When the user	User	Redirect to the	Pass

		enters login information for an account that exists, allow the user to login.	enters correct login information.	home page. Will display the user name on top right.	
--	--	---	-----------------------------------	---	--

2. Users payment information shall be encrypted before storing in the database.

QA test plan

Test #	Title	Description	Test Input	Expected Corrected Output	Test Results
1	Create a trader account.	User creates a trader account.	Fill out all forms correctly.	Prompt notifying the user that the account creation is under review by an administrator.	Pass
2	Failure to provide SSN when creating a trader account.	User leaves the SSN field blank when creating a trader account.	Fills out form correctly except leaving SSN field blank.	Prompt notifying the user that the account cannot be created because one or more required fields were left blank.	Pass
3	Failure to provide Routing Number when creating a trader account.	User leaves the routing number field blank when creating a trader account.	Fills out form correctly except leaving routing number field blank.	Prompt notifying the user that the account cannot be created because one or more required fields were left blank.	Pass

3. New registrations shall be audited by the administrator.

QA test plan

Test #	Title	Description	Test Input	Expected Corrected Output	Test Results
1	Email confirmation for registered user	When a registered account has been created, an automated email will let the user know that their account is under review.	Enter all fields in registration correctly and click Register.	Popup letting the user know that their account is pending approval. Redirect to the home page.	Fail
2	Unapproved account login	User tries logging in before the account has been approved	Enter correct information while account is under approval.	An error message for the user letting them know that their account is still under review.	Pass
3	Send help message to administrator	An unregistered user can navigate to the help page and leave an email for the administrator.	Enter proper email and message in the contact us section.	A message letting the user know that the message has successfully been sent.	Fail

4. New registrations shall be approved by the administrator.

QA test plan

Test #	Title	Description	Test Input	Expected Corrected Output	Test Results
1	Email confirmation for account approval.	When a registered account has been approved, an automated response	None	The user will receive an email letting them know that their account	Pass

		will be sent by the administrator.		has been approved.	
2	Registered user can login	Once the account has been approved, the user can login successfully.	User enters correct login information.	The user will be redirected from the login page to the home page. The user's name will be displayed on the top right.	Pass
3	Unapproved account login	When the user tries logging in before the account has been approved, there will be an error message for the user letting them know that their account is still under review.	Enter correct information while the account is under approval.	An error message for the user letting them know that their account is still under review.	Pass

5. Application shall be able to retrieve information from the database and react in a timely manner.

QA test plan

Test #	Title	Description	Test Input	Expected Corrected Output	Test Results
1	Visit home page	Load the home page	Enter the URL: http://ec2-18-222-193-100.us-east-2.com:8000	Page loads successfully in >= 3 seconds.	Pass

2	Login successful	From the login page, enter correct credentials.	User enters correct login information.	Page loads successfully in >= 3 seconds. Redirect to the home page.	Pass
3	Visit news page	From the home page, click on the news tab.	Click on the news tab.	Page loads successfully in >= 3 seconds.	Pass

Code Review

Coding Style

- All code will be properly indented using tabs.
- All code will have understandable variable and function names.
- All algorithms that are complex will have comments embedded for easier understandability.
- All front-end code will adhere to the styling guidelines provided in the styling chart.

Peer Review

Below are the email chains for specific sections of code:

Applicant Verification

CSC 648 - Code Review (Applicant Verification) ➔ [Inbox](#)

 Brian Lim <blimz92@gmail.com>
to miranisanjay417, dibs bharati, benjamin.fletes, may.naing97, xianzike ↗

Hi Everyone,

This is the code that Sanjay wrote for the administrator to verify applicants. Please take a look at it and give him your feedback.

Thanks,
Brian

 [verification.txt](#)

 **dibs bharati** 8:48 PM (1 hour ago)
The function definitions make sense and the error handling in this sections seems to be done well.

 **Benjamin Fletes** 8:57 PM (1 hour ago)
> <verification.txt> It is good just the naming like verifyExpert should be verifyExpert just to make it easy for people to read and for me when two words in wh

 **Kevin Sym** 9:27 PM (34 minutes ago)
The code is easy to read and understandable. I think it is no senior issue here.

 **Brian Lim** <blimz92@gmail.com>
to Kevin, Benjamin, miranisanjay417, dibs bharati, May ↗
These functions are simple as is and do not require any changes or comments.

Twitter Analysis

CSC 648 - Code Review (Twitter Analysis)

Brian Lim <blm292@gmail.com>
to dibbharati, miransanjay417, xianzike, benjamin.fletes, may.naing97 <...>

Hi Everyone,

This is the code that Sanjay wrote for the sentimental twitter analysis on the detailed stock page. Please take a look at it and give him your feedback.

Thanks,
Brian

[twitteranalysis.txt](#)

dibs bharati The code looks good. The "if statement" is easy to understand and seems to follow the principles of procedural programming utilizing the computer resources eff! 8:45 PM (1 hour ago)

Benjamin Fletes > <twitteranalysis.txt> From the twitter it is good but the naming got me confused and realized it was negative or positive best if names it positive and negati 8:53 PM (1 hour ago)

Kevin Syn I am not easy to read on this part since it has not commented on the analysis and variables. But it still looks good to me for now. 9:49 PM (10 minutes ago)

Brian Lim I would def. try to include comments for this. Reading through it, comments would def. help with understanding what is happening. 9:55 PM (4 minutes ago)

May Naing I think since you're using an api here, comments would really help understand what's going on. Other than that, everything looks good. 9:59 PM (0 minutes ago)

...

Stock Database Retrieval

CSC 648 - Code Review (Stock Database Retrieval)

Brian Lim <blm292@gmail.com>
to miransanjay417, dibbharati, benjamin.fletes, may.naing97, xianzike <...>

Hi Everyone,

This is the code that Sanjay wrote to retrieve information from the database in a timely manner. Please take a look at it and give him your feedback.

Thanks,
Brian

[stocksdbaseretrieval.txt](#)

dibs bharati Please add few lines of comment whenever necessary. Beside that everything looks good. 8:40 PM (1 hour ago)

Benjamin Fletes > <stocksdbaseretrieval.txt> There could a small explanation for symbols on what they are taking and I is not a good naming convention maybe row would be bet 8:48 PM (1 hour ago)

Kevin Syn No need to change at me for this part. 9:40 PM (16 minutes ago)

Brian Lim The code was easy to understand, probably don't need to change anything, but feel free to add some comments if you want. 9:44 PM (12 minutes ago)

May Naing to me, miransanjay417, dibbharati, benjamin.fletes, xianzike <...>

Everything looks good here. Nothing needs to be changed.
...

Great, thanks! Thanks! Looks good to me.

Stock Search Filtering

CSC 648 - Code Review (Stock Search Filtering) [Inbox X](#)

Brian Lim <blim292@gmail.com>
to miranisanjay417, dibs Bharati, benjamin.fletes, may.naing97, xianzike ▾
Hi Everyone,

This is the code that Sanjay wrote to filter the stocks table using the search bar. Please take a look at it and give him your feedback.

Thanks,
Brian



dibs Bharati The code looks beautiful. The alignment and spacing are perfect. 8:38 PM (1 hour ago) ☆

Benjamin Fletes > <search.txt> It looks good. Not sure if there is a mapping but there is no mapping then use indexing. But my question to this is what are they searching? 8:44 PM (1 hour ago) ☆

May Naing I don't think there's anything that needs changing here. Looks good to me. 9:29 PM (30 minutes ago) ☆

Kevin Syn Looks good to me at this part. 9:31 PM (28 minutes ago) ☆

Brian Lim <blim292@gmail.com>
to Kevin, May, miranisanjay417, dibs Bharati, Benjamin ▾
The code is concise. I would probably look to add some comment above the script to know exactly what the script does.
*** 9:35 PM (24 minutes ago) ☆ ↗ ⓘ

Purchasing Stocks

CSC 648 - Code Review (Purchasing Stocks) [Inbox X](#)

Brian Lim <blim292@gmail.com>
to dibs Bharati, miranisanjay417, benjamin.fletes, may.naing97, xianzike ▾
Hi Everyone,

This is the code that Sanjay wrote for the registered trader to buy stocks. Please take a look at it and give him your feedback.

Thanks,
Brian



dibs Bharati The code looks nice and clean. Few more lines of comment would be helpful. 8:37 PM (1 hour ago) ☆

Benjamin Fletes > <purchase.txt> The code is good I do not see anything that is a problem. I do not see anything that brings to my concern. The only suggestion would be the var 8:39 PM (1 hour ago) ☆

May Naing This is a pretty large chunk of code. I think comments could be added here as well to explain what's going on. 9:26 PM (34 minutes ago) ☆

Kevin Syn It looks good for the purchase and understandable. Since it has lot of variables, more comments about the details should be better. 9:30 PM (29 minutes ago) ☆

Brian Lim <blim292@gmail.com>
to Kevin, May, dibs Bharati, miranisanjay417, Benjamin ▾
This function has a lot of content. However, variable names are easy to understand. I would probably look to add some comments within each section so that when you refer to your code in the future, it'll be easier to digest and understand.
*** 9:40 PM (20 minutes ago) ☆ ↗ ⓘ

Data Encryption

CSC 648 - Code Review (Data Encryption)

Brian Lim <blim292@gmail.com>
to dibsharati, miransanjay417, benjamin.tietes, may.naing97, xianzike ▾
Hi Everyone,

This is the code that Sanjay wrote to encrypt data before storing it in the database. Please take a look at it and give him your feedback.

Thanks,
Brian

[dataencryption.txt](#)

Benjamin Tietes
> <dataencryption.txt> It is good and there is nothing to worry. 8:31 PM (1 hour ago)

dibs bharati
The code is well written. The general names for the various request methods have followed. All the loop are efficiently executed. 8:53 PM (1 hour ago)

May Naing
Naming conventions here are a little shorter, making it slightly harder to understand. Also, not sure if this part is important but I think you're missing the p 8:56 PM (1 hour ago)

Kevin Syn
pretty good on this adding database code but I can't see if the code has some point need to worry about. 9:36 PM (22 minutes ago)

Brian Lim <blim292@gmail.com>
to Kevin, May, dibsharati, miransanjay417, Benjamin ▾
Looks good. I would look to put some comments to better show what this code does:

```
routing = "/*" + AESCipher(key).encrypt(routingno) + "/*"  
eaccount = "/*" + AESCipher(key).encrypt(acctno) + "/*"  
essn = "/*" + AESCipher(key).encrypt(ssnno) + "/*"
```

Add to Watchlist

CSC 648 - Code Review (Add to Watchlist)

Brian Lim <blim292@gmail.com>
to miransanjay417, dibsharati, benjamin.tietes, may.naing97, xianzike ▾
Hi Everyone,

This is the code that Sanjay wrote for a trader to add stocks to the watchlist. Please take a look at it and give him your feedback.

Thanks,
Brian

[addtowatchlist.txt](#)

Benjamin Tietes
> <addtowatchlist.txt> I do see it as good and there is no problem. 8:29 PM (1 hour ago)

dibs bharati
The function addtowatchlist is done well with careful executions of the "if else" statement with precise coding. 8:50 PM (1 hour ago)

May Naing
Everything looks good here. Code is pretty straight forward. I don't think there's anything that needs fixing other than adding comments. 9:15 PM (44 minutes ago)

Brian Lim
Nothing needs to be changed. The code is readable and easy to understand. 9:25 PM (34 minutes ago)

Kevin Syn
to me, May, miransanjay417, dibsharati, Benjamin ▾
This one is easy to read. Looks good to me.

Accept/Reject Applicants

CSC 648 - Code Review (Accept/Reject Applications)

Brian Lim <blim292@gmail.com>
to miransanjay417, dbsharati, benjamin_fletes, xianike, may.naing77 ▾
Hi Everyone,

This is the code that Sanjay wrote for the administrator to accept or reject applicants. Please take a look at it and give him your feedback.

Thanks,
Brian



Benjamin Fletes 8:27 PM (1 hour ago)
> <acceptrejectapplications.txt> Based on looking at this code, I believe it is good and the only thing is reduce some of the lines in my case. Some of the line

May Naing 8:43 PM (1 hour ago)
I think everything looks good. Naming conventions are clear and concise, making it easier to understand what each function does. I think you could add short com

dbsharati 8:59 PM (59 minutes ago)
I believe this program, which accepts or rejects user application is good enough. The error handling makes sense. Maybe a suitable printout message when the use

Kevin Syn 9:38 PM (19 minutes ago)
This part looks pretty clear to me. If more comments here will be easier to read.

Brian Lim <blim292@gmail.com>
to Kevin, May, miransanjay417, dbsharati, Benjamin ▾
For the acceptrejecter function, I would probably add a comment for what this does:

```
e = rows[0][0]  
  
Otherwise, code is understandable and does not require comments.  
***
```

Self-check: Best Practices For Security

Major Assets Protected:

- Trader Registration Information
 - SSN
 - Bank Statement
 - Routing Number
 - Account Number
 - Password
- Expert Registration Information
 - SSN
 - Password
- Portfolio
 - Purchasing Stocks
 - Selling Stocks

Processing of Encrypting Major Assets in DB:

To encrypt the data, we used an API called AESCipher. By providing a 16-bit key, we are able to encrypt the data using the AESCipher object and an encrypt method. Once the strings have been encrypted, they are uploaded into the database where they can later be retrieved and decrypted using the same key.

Encrypted Trader Table:

Result Grid											Filter Rows:		Search	Edit:		Export/Import:	
tid	firstname	lastname	address	city	state	phonenumber	ssnno	bankst	routingno	accountno	lid	status					
5	Sanjay	Mirani	200 33rd Avenue	San Francisco	California	4154259203	xbFRmVd+XS+Jv8VjDASPv/oeVP9wYmcqYj...	/media/SanjayMirani_bankstatement.jpg	E1xDfFjeX6iZNySXLWjs+L0gkLb3QZaR2...	2EhJAUNDizYEi7Am+Tp8Qxy499i5gt15Phb...	31	Accepted					

Encrypted Login Table:

Result Grid				Filter Rows:		Search	Edit:		Export/Import:	
lid	username	password	role							
30	admin	admin	admin							
31	miranisanjay417@gmail.com	JP/lgWpWA1q0+7r6Kvm/wUKbpYyKAYJLV2S72...	trader							

Input Data Validation:

The email and password validations were done using the javascript functionality. The minimum amount of requirements were set for both of them.

- *Email Address*

1. The input email can't be empty. If it is empty, suggestive text will appear in red color.
2. If the email has numbers, letters, '@' symbol and the name of the site issuing the email, it is valid. In this case, a text will appear showing the approval of input.

The code is presented below:

```
21   <script>
22
23     function validate()
24   {
25       var Email = document.myform.email.value;
26       var password1 = document.myform.cpwd1.value;
27       var password2 = document.myform.cpwd2.value;
28       var regularExpression = /^(?=.*\d)(?=.*[a-zA-Z])[a-zA-Z0-9]{7,}$/;
29       var status=false;
30       if (Email === "") 
31       {
32           document.getElementById("mail").innerHTML = "Enter the correct email address";
33           document.getElementById("mail").style.color = "Red";
34           status=false;
35       }
36       else if(Email.match(/^([A-Za-z0-9]+@[gmail.com|yahoo.com|yahoo.in|gtu.edu.in|mail.sfsu.edu])$/))
37       {
38           document.getElementById("mail").innerHTML = "Ok input";
39           document.getElementById("mail").style.color = "green";
40           status=true;
41       }
42
43
44       if (!regularExpression.test(password1)) {
45           document.getElementById("psw1").innerHTML = "The password doesn't fulfill the requirement";
46           document.getElementById("psw1").style.color = "Red";
47
48       status=false;
49   }
50 }
```

- *Password*

1. The input password must have a lowercase letter, an uppercase letter, a number and should be at least seven characters long. Suggestive text will appear in red color if the requirement is not met.
2. The user will be asked to input their password twice. If the passwords don't match, suggestive text will appear in red color.
3. When all the conditions are met, a text will appear in green color saying the requirements are fulfilled.

The code is presented below:

```
44
45     if (!regularExpression.test(password1)) {
46         document.getElementById("psw1").innerHTML = "The password doesn't fulfill the requirement";
47         document.getElementById("psw1").style.color = "Red";
48
49         status=false;
50     }
51     else if (password1 !== password2) {
52         document.getElementById("psw1").innerHTML = "The password doesn't match";
53         document.getElementById("psw1").style.color = "Red";
54         document.getElementById("psw2").innerHTML = "The password doesn't match";
55         document.getElementById("psw2").style.color = "red";
56         status=false;
57     }
58     else
59     {
60         document.getElementById("psw1").innerHTML = "Password requirements satisfied";
61         document.getElementById("psw1").style.color = "green";
62         document.getElementById("psw2").innerHTML = "Password requirements satisfied";
63         document.getElementById("psw2").style.color = "green";
64     }
65 }
66
67     return status;
68 }
69
70 </script>
```

Self-check: Adherence To Original Non-functional Specs

Security

Non-Functional Requirement	Status	Additional Information
Login shall be required to make purchases.	DONE	
User's shall verify their emails when registering an account.	DONE	
User's shall be able to set a display name different from their email.	DONE	
User's emails shall not be displayed by default.	DONE	
Passwords shall be encrypted before storing in the database.	DONE	
User's session timeout limit shall be decided by the administrator.	DONE	
User's session shall only be ended by code design.	DONE	
Content uploaded by users shall be audited by the administrator.	DONE	
User's payment information shall be encrypted.	DONE	
This site shall not accept any third-party cookies.	ISSUE	Time issue to implement.

Audit

Non-Functional Requirement	Status	Additional Information
New registrations shall be audited by the administrator.	DONE	
New registrations shall be approved by the administrator.	DONE	
Users shall not be able to login to administrator accounts.	DONE	

Performance

Non-Functional Requirement	Status	Additional Information
The site loading time shall be less than 2 seconds for all screens.	ISSUE	Stock API loading takes up time.
Application shall be able to retrieve information from the database and react in a timely manner.	DONE	
The site shall handle requests asynchronously following a REST format.	ISSUE	Not enough time to implement.

Capacity

Non-Functional Requirement	Status	Additional Information
The total data storage for the site shall not exceed 80% of the server's capacity for this site.	DONE	
The website shall be capable of handling at least 50 users.	DONE	
The website shall be scalable, so that new features can be added easily.	DONE	

Reliability

Non-Functional Requirement	Status	Additional Information
Downtime for maintenance shall be less than 3 hours per month.	DONE	
Downtime for maintenance shall not affect the site's main functionality.	ISSUE	Not sure how downtime would not impact the site functionality.
In all cases, users shall be informed of downtime for maintenance, either via an announcement on the main page, or e-mail.	DONE	

Recovery

Non-Functional Requirement	Status	Additional Information
In case of a total site failure, the whole site shall be shut down for revision.	DONE	
If the site is broken, the mean time to recovery shall not exceed one day.	DONE	
User data is the most valuable aspect and priority will be placed on recovering such data in case of total failure.	DONE	

Data Integrity

Non-Functional Requirement	Status	Additional Information
Database tables shall be backed up weekly.	DONE	
Administrator shall be able to execute a recovery if needed.	DONE	
Image sizes shall be restricted to at most 1 megabyte.	ISSUE	Time limit to implement this.
Images shall be uploaded in jpg, jpeg, or png formats.	DONE	
Images will be saved on Amazon's s3 storage server.	ISSUE	After further discussion we decided not to use s3 as it would overcomplicate our deployment strategy and so

		we decided on storing images in the project repository itself.
URLs to image will be stored on the database.	DONE	

Compatibility

Non-Functional Requirement	Status	Additional Information
The site shall be compatible with the last version of the Safari browser version 11.1.2	DONE	
The site shall be compatible with the last version of the Firefox browser version 70	DONE	
The site shall be compatible with the last version of the Chrome browser version 80	DONE	
Third party applications shall not be able to modify any content that may affect the site compatibility.	DONE	
Content should be able to be ignored by most popular ad-block services.	DONE	
The site shall be able to account for any other compatibility issues created as a result of browser updates in the future.	ISSUE	Time limit. Can't test with all the web browsers available.

The site should be compatible to escalate to new databases.	DONE	
--	-------------	--

Conformation with Coding Standards

Non-Functional Requirement	Status	Additional Information
Architecture and design standards shall meet all the requirements listed under the High-level system architecture and technologies used section of this document.	DONE	
Design pattern is to be strictly enforced with all aspects of the site.	DONE	
Appropriate documentation must be created for all code that is individually written for future maintenance.	DONE	
Production code shall not have any log or output to the console.	ISSUE	Not done for developers convenience
All errors must not halt the web application without appropriate error handling.	ISSUE	We will look to find as many bugs as possible to account for them, but there will always be the possibility that there will be a bug that takes down the

		page (Will not kill the web server).
Only working code that meets all code standards shall be submitted to the main branch of the project repository.	DONE	
Code shall be thoroughly tested and debugged before being considered working code.	DONE	
All internal errors and exceptions encountered when writing or modifying code shall be stored in a log.	ISSUE	Did not implement this as in the development process. Internal errors and exceptions encountered were discussed as a team using slack and zoom.
Any error that can affect the site's functionality shall be reported to the user.	DONE	
Errors shall be handled in a way that does not affect site functionality.	DONE	
The whole production cycle of the site shall be finished at least one week before the delivery date.	DONE	
The site shall be tested and debugged as a whole product	DONE	

at least one week before the delivery date.		
The site shall not be launched without all priority one features finished and working.	DONE	
All major changes to the application shall be discussed by the team and communicated to the class CTO.	DONE	

Look and Feel Standards

Non-Functional Requirement	Status	Additional Information
The application and its layouts shall look professional.	DONE	
The site shall be simple, so that it is usable to a wide range of users, and all previously mentioned parties.	DONE	
Targeted users will be the main priority for ensuring usability and readability.	DONE	
Elements on screen shall meet the compatibility standards of all supported browsers.	DONE	

Elements on screen shall meet the compatibility standards of all supported browsers on mobile devices.	ISSUE	Not enough time until due date to get mobile compatible code.
Elements on screen shall be aesthetically pleasing.	DONE	
The site shall be able to work correctly without mouse interaction.	ISSUE	A mouse will be required to navigate through the website.
The site shall be able to work correctly without keyboard interaction.	DONE	
Elements in screen shall be resized automatically without user interaction when being loaded in all the different platforms supported by the site.	ISSUE	Not enough time to get bootstrap working effectively for all web pages.
Application's user interface shall make it easy for users to find what they are looking for.	DONE	

Scalability

Non-Functional Requirement	Status	Additional Information
The CPU instance and storage capacity shall be updated to be able to handle a large number of users if needed.	DONE	

Web Site Policies

Non-Functional Requirement	Status	Additional Information
A link to the policies of this site shall be always visible in all its pages to be accessible by all the parties.	DONE	
The site will not store any payment information.	DONE	
User's shall agree to the application's privacy policy before using the product.	DONE	

Screenshots of Website

The screenshot shows a web browser window for the Tradiction website. The address bar indicates the site is not secure (Not Secure) and is located at ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000. The page title is "Tradiction". The navigation menu includes links for Stocks, News, Portfolio, Trading History, Watchlist, and Help. A prominent dark banner in the center features the text "Invest with us!" and a subtext: "Tradiction offers the latest in stock news, as well as a platform to easily view, buy, and sell stocks. Sign up today to take advantage of everything this site has to offer!". Below this banner, there are two main sections: "RECENT NEWS" on the left and "TRENDING STOCKS" on the right.

RECENT NEWS

- WATCH LIVE: Fed Chairman Jerome Powell speaks on U.S. economy and Covid-19 — 5/21/2020 - CNBC Television
- Coronavirus MS: Biloxi, Gulfport Gulf Coast casinos reopen - Biloxi Sun Herald
- Another 4.4 million Americans file for unemployment, bringing pandemic total over 40 million - CBS News
- Zuckerberg says employees moving out of Silicon Valley may face pay cuts - CNBC
- Coronavirus vaccine: U.S. commits \$1.2 billion to AstraZeneca production of Oxford vaccine - CBS News
- Oil prices extend climb toward highest level since March as demand and supply seen taking steps toward recovery - MarketWatch
- Netflix will start canceling long-dormant subscriptions - Engadget
- Bill to delist Chinese stocks moving at 'warp speed' as a crackdown gains bipartisan support - CNBC
- Macy's Forecasts \$11 Billion Loss As Pandemic Batter Sales : Coronavirus Live Updates - NPR
- Cincinnati caps third-party food delivery fees at 15% - WLWT Cincinnati
- This Analyst Sees Carnival, Norwegian Cruise Line, and Royal Caribbean as Good Bets - Motley Fool
- Dow Jones Cuts Sharp Losses On Jobless Data As Stock Market Losses Mount; Boeing Soars 8% On Analyst Upgrade - Investor's Business Daily
- Two NFL players sue United Airlines, alleging they were sexually assaulted on a flight - The Washington Post
- Buy Southwest and Spirit Stock, Analyst Says: Domestic Air Travel Could Perk Up Soon - Barron's
- Drivers fired after posting video of confrontation with FedEx customer - CNBC
- Kohl's announces reopening dates of Wisconsin stores - WISN Milwaukee

TRENDING STOCKS

Name	Day High	Day Low	Open	Previous Close	Details
Facebook, Inc.	237.2	231.201	234.72	229.97	Details
Apple Inc.	320.89	315.87	318.86	319.23	Details
Netflix, Inc.	448.96	430.25	448.56	447.67	Details
Alphabet Inc.	1416.37	1394.39	1410.99	1409.16	Details
Amazon.com, Inc.	2525.45	2442.57	2500	2497.94	Details
Microsoft Corporation	186.67	183.29	185.4	185.66	Details
Uber Technologies, Inc.	35	33.48	34.45	34.48	Details
Twitter, Inc.	32.01	31.39	32.1	32.23	Details
Tesla, Inc.	832.5	796	816	815.56	Details
Dell Technologies Inc.	45.04	43.54	44.69	44.66	Details

Home Page

The screenshot shows a web browser window for the Tradiction website. At the top, there is a modal dialog box with the message: "...193-100.us-east-2.compute.amazonaws.com:8000 says You are about to leave the page!! Are you sure?". Below the modal, there is a navigation bar with links for Stocks, News, Portfolio, History, Watchlist, and Help. A large dark banner in the center of the page contains the text "Invest with us!" and a subtext: "Tradiction offers the latest in stock news, as well as a platform to easily view, buy, and sell stocks. Sign up today to take advantage of everything this site has to offer!". Below this banner, there are two sections: "RECENT NEWS" on the left and "TRENDING STOCKS" on the right. The "RECENT NEWS" section lists various news items from sources like CNBC, CBS News, and The Washington Post. The "TRENDING STOCKS" section displays a table with columns for Name, Day High, Day Low, Open, Previous Close, and Details. The table includes rows for Facebook, Inc., Apple Inc., Netflix, Inc., Alphabet Inc., Amazon.com, Inc., Microsoft Corporation, Uber Technologies, Inc., Twitter, Inc., Tesla, Inc., and Dell Technologies Inc.

Name	Day High	Day Low	Open	Previous Close	Details
Facebook, Inc.	237.2	231.201	234.72	229.97	Details
Apple Inc.	320.89	315.87	318.66	319.23	Details
Netflix, Inc.	448.96	430.25	448.56	447.67	Details
Alphabet Inc.	1416.37	1394.39	1419.99	1409.18	Details
Amazon.com, Inc.	2525.45	2442.57	2500	2497.94	Details
Microsoft Corporation	186.67	183.29	185.4	185.66	Details
Uber Technologies, Inc.	35	33.48	34.45	34.48	Details
Twitter, Inc.	32.61	31.39	32.1	32.23	Details
Tesla, Inc.	832.5	796	816	815.56	Details
Dell Technologies Inc.	45.04	43.54	44.69	44.66	Details

Navigation Prompt to News article

The screenshot shows a web browser window for the 'Tradition' application. The URL in the address bar is 'ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000/myprofile?'. The page has a dark header with tabs for 'Stocks', 'News', 'Portfolio', 'Trading History', 'Watchlist', and 'Help'. On the right side of the header are 'My profile' and 'Logout' buttons. Below the header, there's a navigation menu with 'Personal Information' highlighted in green. The main content area contains form fields for 'My Profile': First name (Brian), Last name (Lim), Email address (blm292@gmail.com), Address (88), City (Daly), State (CALIFORNIA), and Phone Number (4152603533). A green 'Save' button is at the bottom of the form.

Tradition

Not Secure | ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000/myprofile?

Stocks News Portfolio Trading History Watchlist Help

My profile Logout

Personal Information

My Profile

First name: Brian Last name: Lim

Email address: blm292@gmail.com

Address: 88

City: Daly State: CALIFORNIA

Phone Number: 4152603533

Save

Personal Information Page

The screenshot shows a user interface for managing banking information. On the left, there is a vertical navigation menu with options: 'My Profile' (disabled), 'Personal Information' (disabled), 'Banking Information' (highlighted in green), and 'Change Password' (disabled). The main content area is titled 'Banking Information Page'. It contains three input fields: 'Social Security Number' with value '123121234', 'Routing Number' with value '123', and 'Account Number' with value '123'. Below these fields is a green 'Save' button. A large, empty rectangular box is positioned at the bottom right of the content area.

My Profile	Social Security Number 123121234
Personal Information	Routing Number 123
Banking Information	Account Number 123
Change Password	

Save

Banking Information Page

The screenshot shows a user interface for changing a password. At the top left, there is a sidebar with three sections: 'My Profile' (selected), 'Personal Information', and 'Banking Information'. Below the sidebar, the main content area has three input fields: 'Current Password' (containing 'Brianlim123'), 'New Password' (containing '*****'), and 'Confirm Password' (containing '*****'). A green button labeled 'Change Password' is at the bottom left, and a green button labeled 'Save' is at the bottom right. The entire form is enclosed in a light gray rounded rectangle.

My Profile	Current Password Brianlim123
Personal Information	New Password *****
Banking Information	Confirm Password *****

Change Password

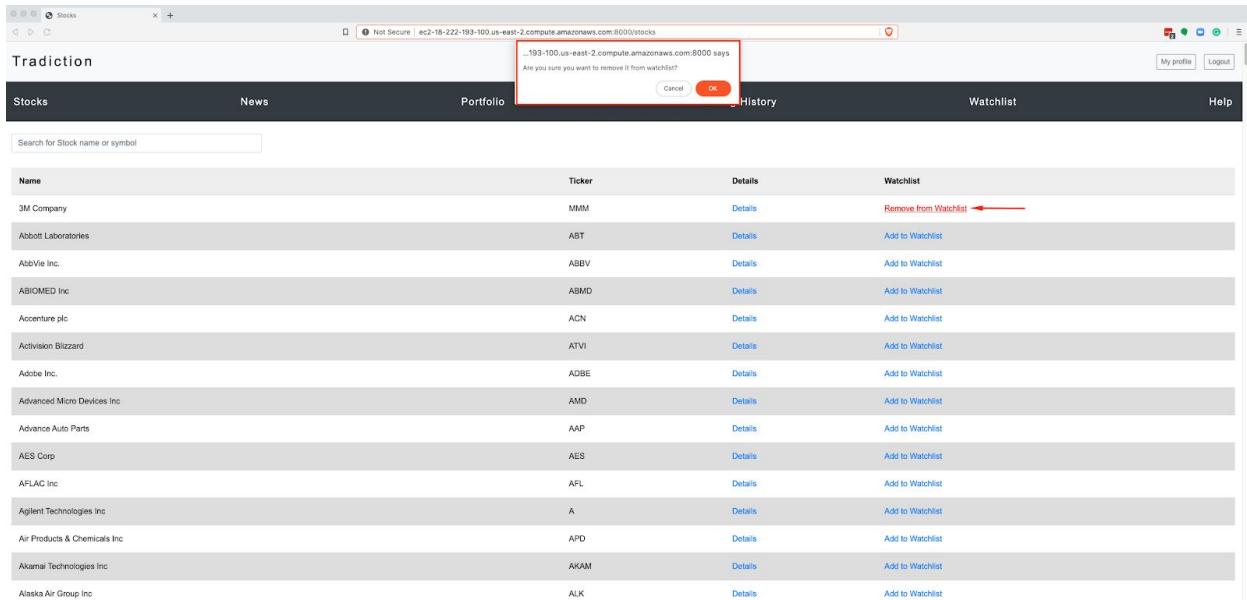
Save

Change Password form

The screenshot shows a web application interface for managing a stock portfolio. At the top, there's a header bar with the title "Tradiction". Below it is a navigation menu with tabs for "Stocks", "News", "Portfolio", "Trading History", "Watchlist", and "Help". On the far right of the header are "My profile" and "Logout" buttons. The main content area contains a table with the following data:

Name	Ticker	Details	Watchlist
3M Company	MMM	Details	Remove from Watchlist
Abbott Laboratories	ABT	Details	Add to Watchlist
AbbVie Inc.	ABBV	Details	Add to Watchlist
ABIOMED Inc	ABMD	Details	Add to Watchlist
Accenture plc	ACN	Details	Add to Watchlist
Activision Blizzard	ATVI	Details	Add to Watchlist
Adobe Inc.	ADBE	Details	Add to Watchlist
Advanced Micro Devices Inc	AMD	Details	Add to Watchlist
Advance Auto Parts	AAP	Details	Add to Watchlist
AES Corp	AES	Details	Add to Watchlist
AFLAC Inc	AFL	Details	Add to Watchlist
Agilent Technologies Inc	A	Details	Add to Watchlist
Air Products & Chemicals Inc	APD	Details	Add to Watchlist
Akamai Technologies Inc	AKAM	Details	Add to Watchlist

Stock Lists Page



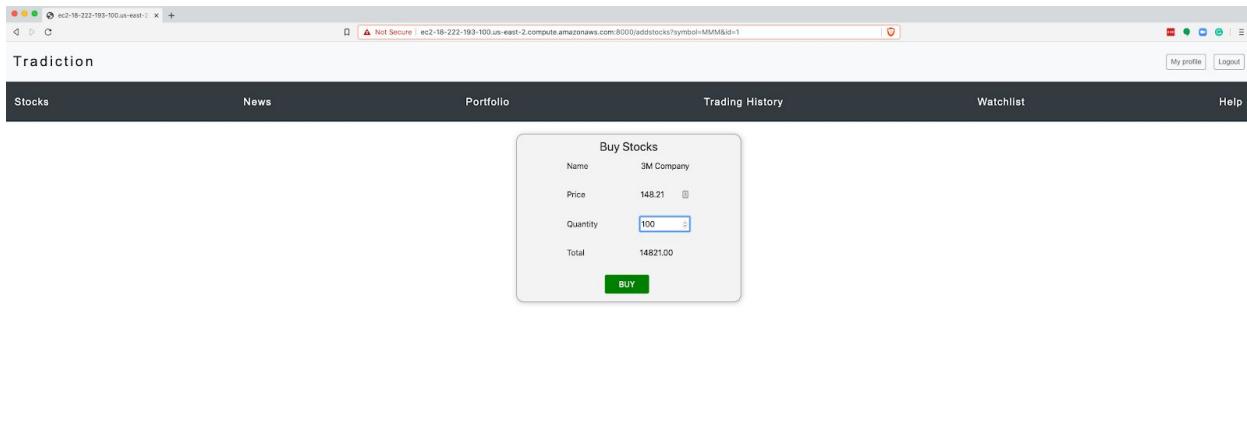
Confirmation prompt if user wants to remove stock from watchlist

The screenshot shows a web browser window titled "Detailed Stocks" with the URL "ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000/stockdetails?stock=MMM". The page header includes links for "Stocks", "News", "Portfolio", "Trading History", "Watchlist", "My profile", "Logout", and "Help". Below the header, the stock symbol "3M Company (MMM)" is displayed, along with "Remove from Watchlist" and "BUY" buttons. The main content area contains a table with the following data:

Previous Close	148.21	Market Cap	83869336552
Open	147.74	Beta	0.996613
Bid	145.95 x 800	Ask	145.95 x 800
Day's Range	145.34 - 148.64	52 Week Range	114.04 - 187.72
Volume	2582465	Avg. Volume	5132961

At the bottom of the page, a note states: "'3M Company' is 46.67% Neutral".

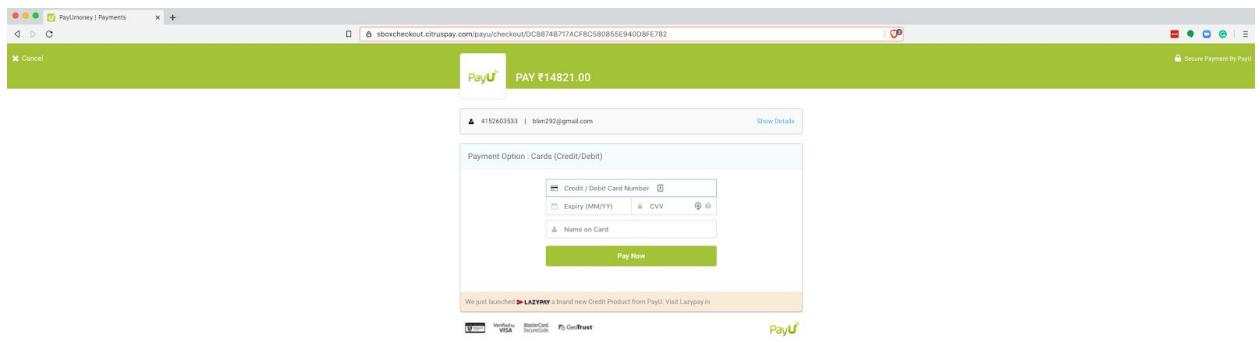
Detailed Stock Page



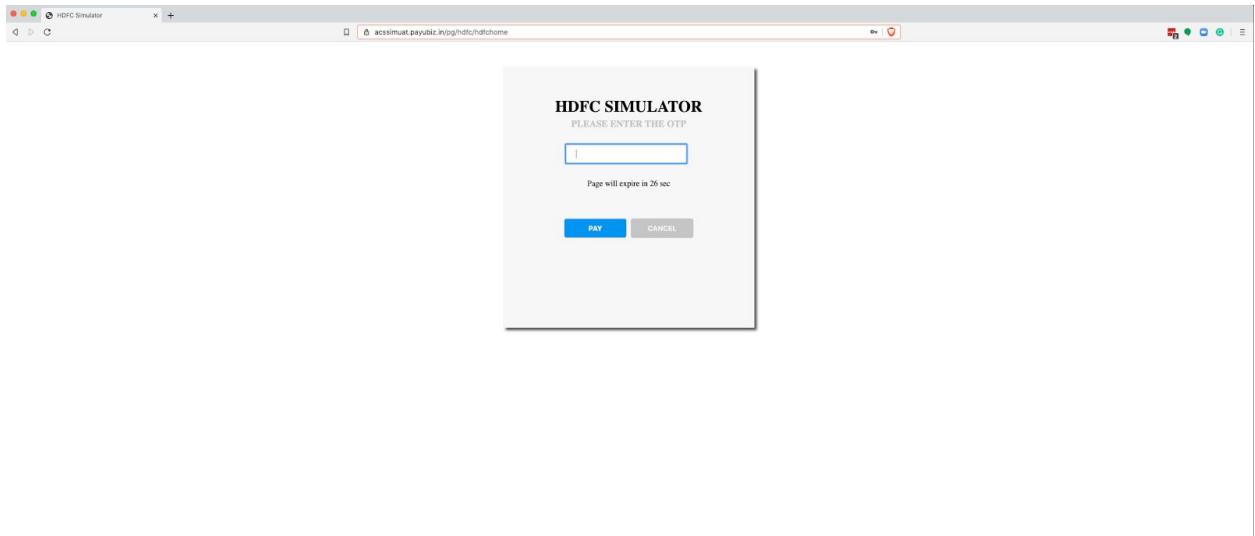
Buy Stocks Page

The screenshot shows a web browser window titled "Tradiction". The address bar indicates the site is not secure, with the URL "ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000/home". The page header includes "Tradiction", "My profile", and "Logout". A navigation bar at the top has links for "Stocks", "News", "Portfolio", "Trading History", "Watchlist", and "Help". Below the navigation bar, the text "PayU Form" is displayed. A section titled "Mandatory Parameters" contains four input fields: "Amount" (14821.00), "First Name" (Brian), "Email" (brian292@gmail.com), and "Phone" (4152603533). A "Submit" button is located at the bottom left of this section.

Details Confirmation Page (from Payment API)



Test Payment page(Dummy credit card details)



OTP Prompt

The screenshot shows a web browser window titled "Tradiction". The address bar indicates the site is not secure, with the URL "ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000/portfolio". The main content area is titled "Tradiction" and features a navigation bar with links for "Stocks", "News", "Portfolio", "Trading History", "Watchlist", and "Help". Below the navigation bar, a message reads "Below is a list of your purchased stocks". A table follows, listing two stocks: "3M Company" and "Facebook, Inc.". The table columns include "Serial #", "Name", "Buying Price", "Quantity", "Total", "Date and Time", "Current Price", and "Sell".

Serial #	Name	Buying Price	Quantity	Total	Date and Time	Current Price	Sell
1	3M Company	148.21	100	14821.00	Thu May 21 20:35:04 2020	148.21	SELL
2	Facebook, Inc.	229.97	100	22997.00	Thu May 21 20:37:41 2020	229.97	SELL

Portfolio Page

The screenshot shows a web browser window with the address bar displaying a URL starting with "Not Secure". The main content area is titled "Sell Stocks" and contains the following information:

Name	3M Company
Buying Price	148.21
Buy Quantity	100
Date And Time	Thu May 21 2
Selling Price	148.21
Quantity	<input type="text" value="12"/>
Total	

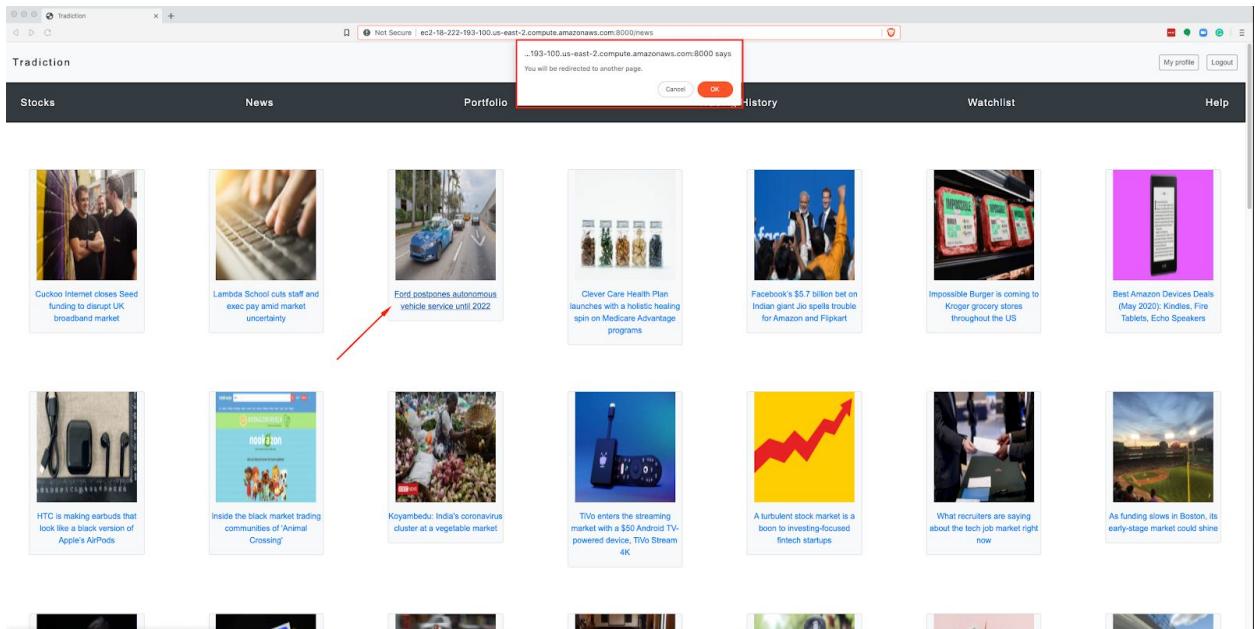
A green "SELL" button is located at the bottom right of the form.

Sell Stocks Page

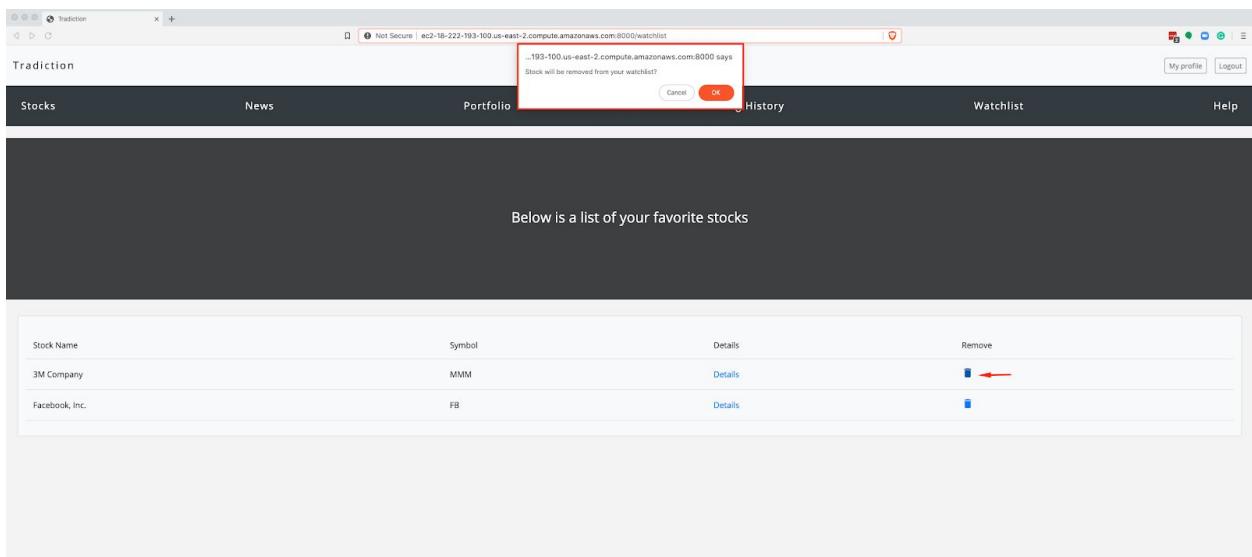
The screenshot shows a web browser window with the title "Trading History". The address bar indicates a "Not Secure" connection to "ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000/tradinghistory". The page header includes the logo "Tradiction" and navigation links for "Stocks", "News", "Portfolio", "Trading History" (which is the active tab), "Watchlist", and "Help". On the right side of the header are "My profile" and "Logout" buttons. Below the header, a message states: "Below is a list of the stocks that you have sold." A table follows, displaying one row of data:

Sr No.	Symbol	Selling Date	Selling Price	Buying Price	Sell Quantity	Total	Net Profit or Loss
1	3M Company	Thu May 21 20:47:12 2020	148.21	148.21	0	1482.00	0

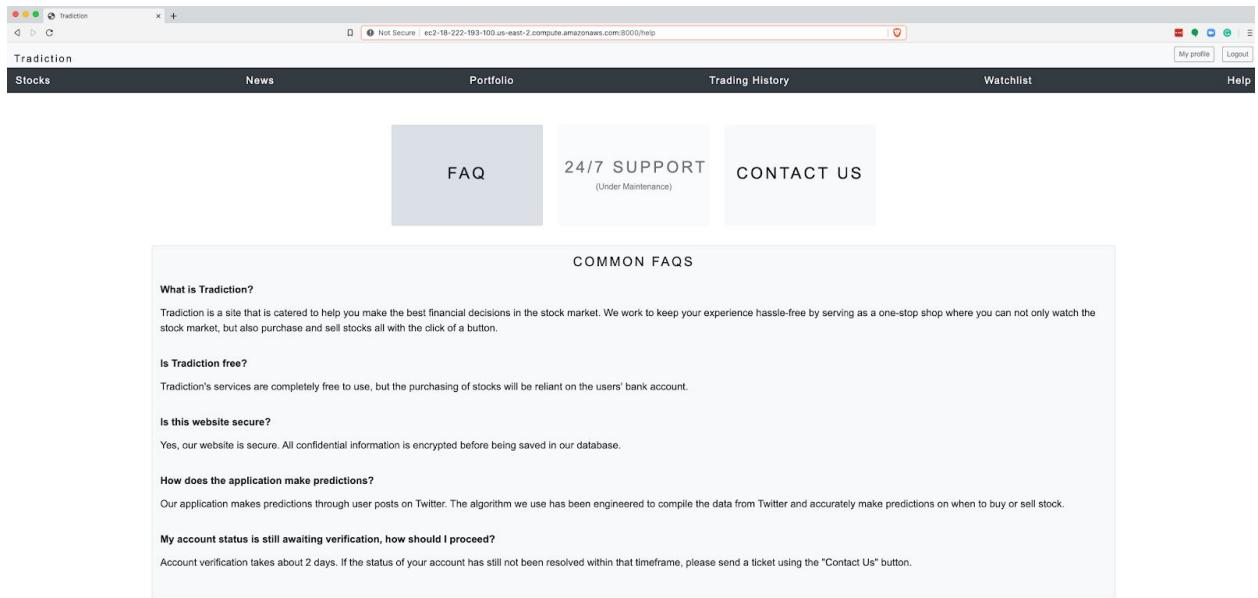
Trading History Page



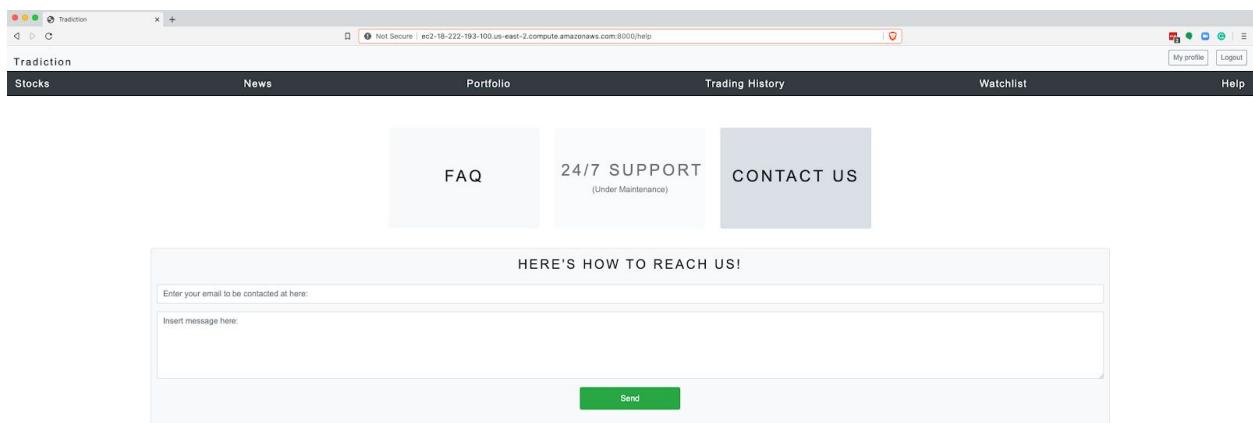
News Page with prompt if user wants to leave the site to the article



Watchlist Page with user's favourite stock



Help Page



Help Page

Trader Account Creation

Not Secure | ec2-18-222-193-103.us-east-2.compute.amazonaws.com:8000/registration

Sign Up

First name Last name

Email address
We will never share your email with anyone else.

Address

City State Postal Code

Phone Number

Social Security Number

This will not be shared with anyone and is used for account validation purposes only.

Bank Statement

Routing Number Account Number

Create password
The password should be at least 7 characters, and include at least one uppercase letter, one lowercase letter and one digit.

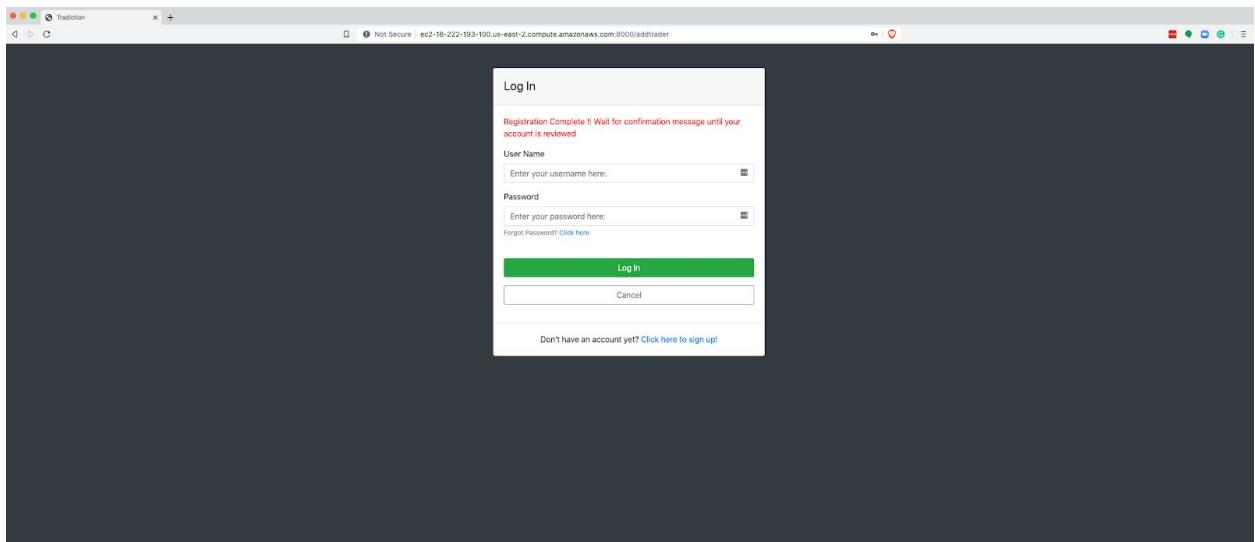
Confirm password
The password should be at least 7 characters, and include at least one uppercase letter, one lowercase letter and one digit.

Signup Page

The screenshot shows a web application window titled "Tradiction". The address bar indicates the URL is "ec2-18-222-193-100.us-east-2.compute.amazonaws.com:8000/verifytrader". The page has a header with a search bar and a "Logout" button. Below the header is a table with the following data:

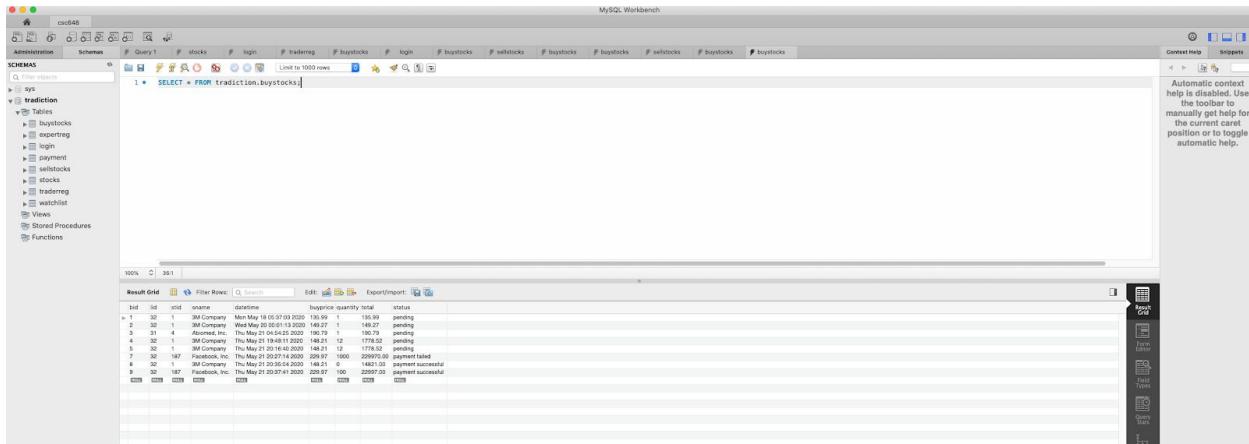
Trader ID	First Name	Last Name	Address	City	State	Mobile Number	SSN Number	Routing Number	Account Number	Accept	Reject
7	Brian	Test	12 test ave.	Test	CA	123 123 1234	123-12-1234	123456	1234	Accept	Reject

Admin Panel



Login page just after user sign ups

Screenshots of Database Tables



The screenshot shows the MySQL Workbench interface with the schema 'tradition' selected. A query window displays the results of a SELECT statement on the 'buystocks' table. The table has columns: id, uid, date, company, buyprice, quantity, total, and status. The data shows several entries for 3M Company, with varying dates and statuses (pending or payment successful).

id	uid	date	company	buyprice	quantity	total	status
1	32	Mon May 18 00:37:03 2020	3M Company	136.59	1	136.59	pending
2	32	Wed May 20 00:01:13 2020	3M Company	146.27	1	146.27	pending
3	32	Thu May 21 00:01:13 2020	3M Company	148.21	12	1778.52	pending
4	32	Thu May 21 19:48:11 2020	3M Company	148.21	12	1778.52	pending
5	32	Thu May 21 20:14:40 2020	3M Company	148.21	12	1778.52	pending
7	32	147	3M Company	148.21	12	1778.52	payment failed
8	32	1	3M Company	148.21	0	14821.00	payment successful
9	32	1	3M Stock, Inc.	148.21	0	14821.00	payment successful

buystocks table

The screenshot shows the MySQL Workbench interface. In the top left, the 'Schemas' tree view shows a database named 'tradiction' containing tables like 'stocks', 'login', 'buystocks', 'sellstocks', 'watchlist', and 'expertreg'. A query editor window at the top displays the SQL command: 'SELECT * FROM tradiction.expertreg;'. Below it, the 'Result' tab shows the 'expertreg' table with columns: id, firstname, lastname, address, city, state, zipcode, phone, ssn, expertcertific., void, and status. The table has 14 rows. On the right side, there's a toolbar with various icons and a vertical pane with icons for 'Field Check', 'Table Check', 'Object Stat', and 'Execution Plan'.

expertreg table

The screenshot shows the MySQL Workbench interface. In the left sidebar, under the 'Schemas' section, the 'tradiction' schema is selected. Within the 'tradiction' schema, the 'login' table is highlighted. The main pane displays the results of the query: 'SELECT * FROM tradiction.login;'. The result grid shows four rows of data:

id	username	password	role
10	admin	admin	admin
21	mrwade1941@gmail.com	1f897a9b0d2446e6a405a79a11279272	trader
22	123456@123456.com	1f897a9b0d2446e6a405a79a11279272	trader
23	bmed@mail.atsu.edu	e3a2200181a9f1a120209004a497fe1e2v...	trader

login table

The screenshot shows the MySQL Workbench interface. In the top left, the schema 'cxd848' is selected. The top right displays the title 'MySQL Workbench'. Below the title bar are several tabs: 'Query1', 'stocks', 'login', 'tradereg', 'buystocks', 'sellstocks', 'buystocks', 'sellstocks', 'buystocks', 'sellstocks', 'reporting', 'login', and 'payment'. The 'payment' tab is currently active. A tooltip on the right side of the interface states: 'Automatic context help is disabled. Use the toolbar to manage help for the current caret position or to toggle automatic help.' The main area shows a query editor with the command 'SELECT * FROM tradition.payment;'. Below the query editor is a results grid titled 'Result Grid' containing the following data:

pid	lid	lrid	status	date
4	6	029118ew0502854900	success	Thu May 21 20:23:17 2000
5	7	029118ew0502854900	success	Thu May 21 20:28:58 2000
6	8	029118ew0502854900	success	Thu May 21 20:38:37 2000
7	9	029118ew0502854900	success	Thu May 21 20:44:26 2000

payment table

The screenshot shows the MySQL Workbench interface. In the top navigation bar, there are tabs for Databases, Query, Schema, and others. The Schema tab is selected, showing the 'tradition' schema. Under the 'tradition' schema, the 'sellstocks' table is highlighted. A query window at the top displays the SQL command: 'SELECT * FROM tradition.sellstocks;'. Below the schema tree, a 'Result Grid' shows the data from the 'sellstocks' table. The table has four columns: 'id', 'id', 'sellingservice_settingids', and 'sellquantity'. There is one row of data with values: 4, 50, 148.21, and 100. The right side of the interface features a toolbar with various icons for database management.

sellstocks table

The screenshot shows the MySQL Workbench interface with the following details:

- Schemas:** transaction
- Tables:** stocks
- Query Editor:** Contains the SQL query: `SELECT * FROM transaction.stocks;`
- Result Grid:** Displays the contents of the stocks table.

stocks table Data:

id	stockname
3	AIRV
4	ARIMED Inc
5	ARM
6	ATV
7	AVB
8	AMD
9	Advanced Micro Devices Inc
10	AFP
11	AFI
12	AFI AC Inc
13	AFD
14	AI Products & Chemicals Inc
15	AK
16	Alaska Air Group Inc
17	ARE
18	Aeron Real Estate Eq.
19	ALXN
20	ALL
21	ALLIANCE ONE INC
22	ADS
23	Alliance Data Systems
24	ALLC
	Allied Corp

stocks table

The screenshot shows the MySQL Workbench interface with the 'traderreg' table selected. The table has columns: id, fname, lname, address, city, state, phone, email, bankid, midimage, attachment, id, and status. The data is as follows:

	fname	lname	address	city	state	phone	email	bankid	midimage	attachment	id	status
1	Sergey	Miron	2900 30th Avenue	San Francisco	California	4154233020	ksf@FerviaXisJAVVDAPIvsaVYBw7meyT...	media/SergeyMiron_bankstatement.jpg	EUu4mfjAx002N9v5XkN2n+e5gk4A3QzQ9d...	2013-01-01 00:00:00	51	Accepted
2	Brian	Lin	88 Bellview Court	Only City	CALIFORNIA	4152623533	Ad-wLjwAbekK2094Wf72313HnY7hQ...	media/Brian_Lin_bankstatement.png	mAb3MsfWg9fIMtSAQc+vckgkC8fIq...	p-9B9Wxh1ycAtODTWgDViZfz8Chz257...	32	Accepted
3	John	Doe	123 Main St.	CA	CA	555 123 4567	4321-3210-9876-5432	media/John_Doe_bankstatement.pdf	7bae41f78591a27c9f9f1d95233...	MDA-02QyhyU7H279vAh-nwHhGZ-01m...	33	Pending

traderreg table

The screenshot shows the MySQL Workbench interface. In the top navigation bar, the schema 'tradition' is selected. The left sidebar displays the database structure with the 'watchlist' table highlighted under the 'Tables' section of the 'tradition' schema. The main pane shows the results of the query: 'SELECT * FROM tradition.watchlist;'. The result grid contains two rows of data:

ID	Symbol
8	MAM
9	PB

A tooltip on the right side of the interface states: 'Automatic Context help is disabled. Use the toolbar to manually get help for the current context at position or to toggle automatic help.'

watchlist table

Screenshots of Task Management Tools

Email

Stock Details Page   [Inbox](#) 



May Naing

to me, miranisanjay417, dibsbbharati, xianzike, benjamin.fletes 

Hey guys,

I've attached the mockup of the stock details page. Let me know if you have any questions or concerns.

Thanks,
May

The mockup shows a stock details page with the following data:

Previous Close	\$13.75	Market Cap	\$113B6882
Open	\$14.04	Beta	2.10740
High	\$21.90	ATM	\$21.900
Daily Range	\$12.295 - \$13.32	52 Week Range	\$8.03 - \$19.27
Volume	75001111	Avg. Volume	82111292

Advanced Micro Devices, Inc is 53.07% Positive

 [Reply](#)

 [Reply all](#)

 [Forward](#)

Slack

The screenshot shows the Slack application interface. On the left, there's a sidebar with various sections: Threads, Mentions & reactions, Drafts, Saved items, People, Apps, Files, and a 'Show less' option. Below these are Channels (# general, # milestones, # random), Direct messages (Slackbot, Brian Lim (you)), and a list of team members (Benjamin Fletes, Dibs Bharati, Jorge Landaverde, Jose, Lionel Wong, May Naing, Mitul Savani, Sanjay Mirani, Zilke Xian). A red box highlights this list of team members. At the bottom of the sidebar are 'Invite people' and 'Apps' sections.

The main area shows a message in the 'team1' channel. The message is dated Friday, May 15th, and contains:

Milestone 1:
Milestone 2:
Milestone 3:
Milestone 4:
Milestone 5:
The number of submissions I made to the Github branch are:
Thanks,

Below this message, there's a reply from 'Dibs Bharati' at 7:21 PM: "Got it".

Further down, two messages from 'Brian Lim' are shown:

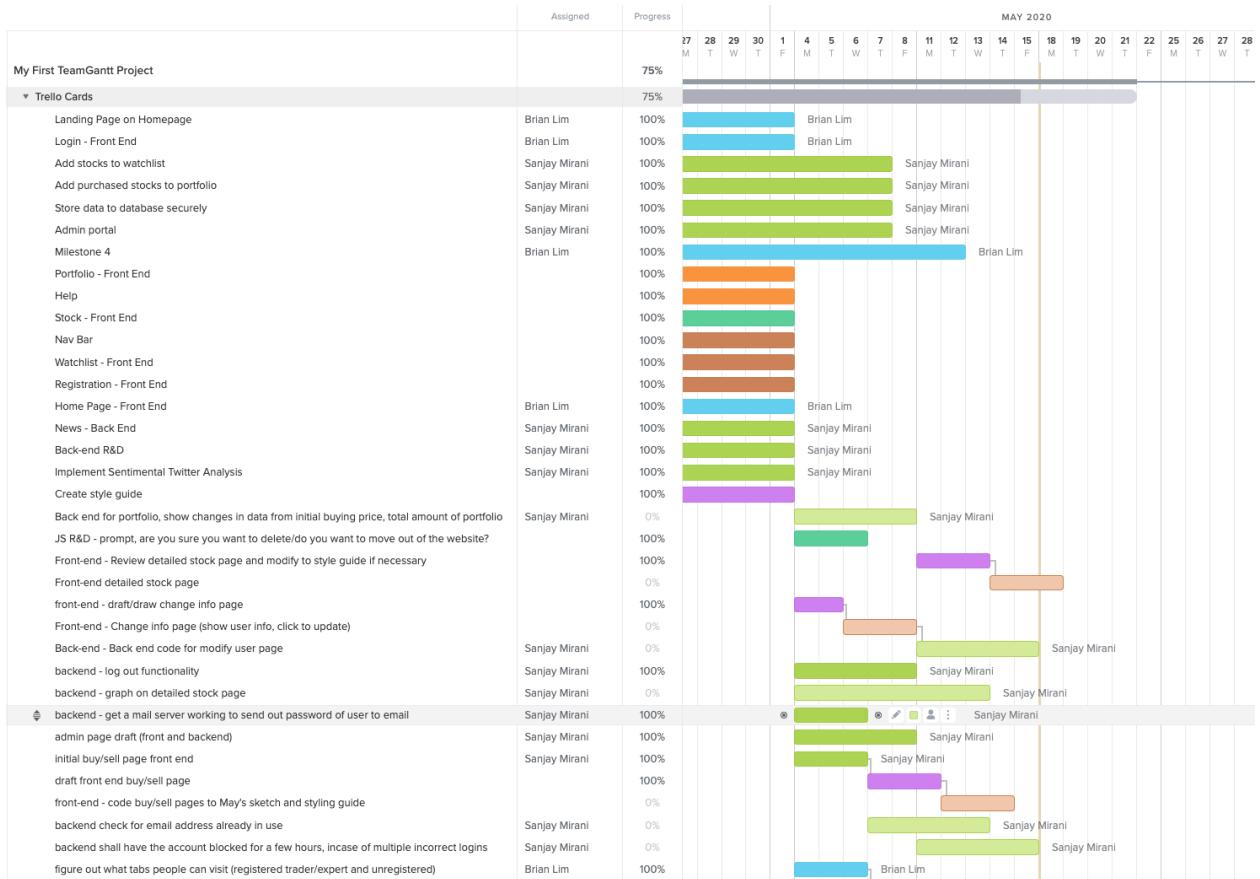
meeting at 2
meeting is done, just make sure you fill out the team contribution email and send it to the group
also move your completed cards on trello as well
i need to screenshot that for the professor

At the bottom of the message list is a text input field labeled "Message team1" with a rich text editor toolbar above it.

To the right of the message list is a "Downloads" section containing several files:

- database tables.zip (3 kB Zip)
- watchlist.html (6 kB HTML)
- CSC648-848 Spring 2019 Milestone4V2 Team4.docx (870 kB Word Document)
- csc648APril23.txt (1 kB Plain Text)
- Dump20200405.zip (10 kB Zip)
- M2fUML.pdf (141 kB PDF)
- Image from iOS (751 kB JPEG)
- Midterm4.jpg (97 kB JPEG)
- Midterm2.jpg (112 kB JPEG)
- Midterm1.jpg (93 kB JPEG)
- csc600hw1.docx (352 kB Word Document)

TeamGantt



Trello

The Trello board is organized into several lists:

- To Do:**
 - Back end - for portfolios, show changes in data from initial buying price, total amount of portfolio
 - backend - graph on detailed stock page
 - backend check for email address already in use
 - Backend - Back end code for modify user page
 - backend shall have the account blocked for a few hours, incase of multiple incorrect logins
 - backend code to restrict pages that someone can visit
 - Front-end detailed stock page
- In Progress:**
 - Portfolio - Front End
 - Help
 - Front-end - Change info page (show user info, click to update)
 - front-end - code buy/sell pages to May's sketch and styling guide
 - Milestone4
 - Revise all other milestones
 - AWS working and ready for submission
- Postponed:**
 - + Add a card
- Bugs (Include priority to fix):**
 - + Add a card
- In review:**
 - + Add a card
- Done:**
 - front-end - draft/draw change info page
 - front-end - draft/draw change info page
 - front-end - draft/draw change info page
 - draft front end buy/sell page
 - initial buy/sell page front end
 - admin page draft (front and backend)
 - backend - get a mail server working to send out password of user to
 - backend - log out functionality
- Cards to Implement:**
 - + Add another card
- Pinned Items:**
 - MS3 - high-level db architecture
 - MS3 - high-level db architecture
 - MS3 - wireframes
 - MS3 - function requirements
 - MS3 - data definition
 - Vertical Prototype: Back-end
 - UI Mockups and Storyboards
 - High-level Database Architecture
 - High-level UML Diagrams
 - High-level API's and Main Algorithms
 - Identify key risks for the project

Zoom

The screenshot shows the Zoom web interface. At the top, there are three colored dots (red, yellow, green) followed by navigation icons for Home, Chat, Meetings (which is selected), Contacts, and a search bar. A user profile icon 'BL' is in the top right.

Below the header, there are tabs for 'Upcoming' (selected) and 'Recorded'. A '+' button is also present.

Today

CSC 648 - Recurring Meeting A
2:00 PM - 3:00 PM
Host: blim292@gmail.com
Meeting ID: 961 9923 9674

Recurring

CSC 648 - Recurring Meeting A
Host: Brian Lim
Meeting ID: 961 9923 9674

CSC 648 - Recurring Meeting B
Host: Brian Lim
Meeting ID: 913 1160 7358

CSC648 Team1 Recurring Meeting...
Host: Brian Lim
Meeting ID: 396 225 964

My Personal Meeting ID (PMI)

734 737 3171

[Start](#) [Copy Invitation](#) [Edit](#) [Join from a Room](#)

[Show Meeting Invitation](#)

Team Member Contributions

Ben

Email Approval

Contributions > Issues

Benjamin Fletes
to me, maynaig7, mirani, Kevin, dibasharati ▾
I have attended every meeting except for one because I had to take care of something personal but was able to make a one to one with the team leader on the tasks.
I made sure to take notes for things that I need to complete.

Milestone 0:
I contributed the personal aboutme page

Milestone 1:
I was able to provide the drawing sample from [draw.io](#)

Milestone 2: Because there was a lockdown I had to deal with important things.

Milestone 3:
I contributed to the portfolio.html and help.html

Milestone 4:
I was able to provide some sources such as the graph and encryption.
I did a code review and gave my opinion of the code and its structure.

Milestone 5: I was making updates to the help.html and provided screenshots
I have made 4 commits to the GitHub

Brian Lim
to Benjamin, May, mirani, Kevin, dibasharati ▾
Approved

Reply Reply all Forward

8:09 PM (7 minutes ago) ⚡ ↗

Brian Lim
to Benjamin, May, mirani, Kevin, dibasharati ▾
Approved

Reply Reply all Forward

8:14 PM (1 minute ago) ⚡ ↗

Contribution

I have attended every meeting except for one because I had to take care of something personal but was able to make a one to one with the team leader on the tasks.

I made sure to take notes for things that I need to complete.

Milestone 0:

I contributed the personal aboutme page

MileStone 1:

I was able to provide the drawing sample from draw.io

Milestone 2: Because there was a lockdown I had to deal with important things.

MileStone 3:

I contributed to the portfolio.html and help.html.

MileStone 4:

I was able to provide some sources such as the graph and encryption.

I did a code review and gave my opinion of the code and its structure.

MileStone 5: I was making updates to the help.html and provided screenshots

I have made 4 commits to the GitHub

Brian

Email Approval

The screenshot shows an email inbox with several messages from Brian Lim:

- May 18, 2020, 5:48 PM (2 days ago)**
Hello Everyone,
I hope the finals week is treating you well. Attached is
Best,
Brian

peer review.docx
- May 18, 2020, 8:31 PM (2 days ago)**
dibbharati@gmail.com
I agree with your list of contributions, Brian. Sent from Mail for Windows 10
- May 19, 2020, 4:59 PM (1 day ago)**
miranisanjay@gmail.com
to me +
Approved.
...

Hello team,
- May 19, 2020, 6:44 PM (2 minutes ago)**
Brian Lim
to dibbharati, Benjamin, May, Kevin, miranisanjay17 ~
Hello team,

Here are my contributions for this project:

Overall Contributions:
 - Created and maintained Trello board.
 - Created and maintained TeamGantt chart.
 - Created and maintained Zoom meetings. (Biweekly team meetings)
 - Tested all code on AWS.
 - Pushed all code from AWS to deployment branch.
 - Merged functional code from deployment branch to master branch.
 - Initiated all email queries/submissions to the professor.Milestone 0:
 - Setup AWS.
 - Created HTML template for about me pages.
 - Created software stack renewal.

Contribution

Hello team,

Here are my contributions for this project:

Overall Contributions:

- Created and maintained Trello board.
- Created and maintained TeamGantt chart.
- Created and maintained Zoom meetings. (Biweekly team meetings)
- Tested all code on AWS.
- Pushed all code from AWS to the deployment branch.
- Merged functional code from deployment branch to master branch.
- Initiated all email queries/submissions to the professor.

Milestone 0:

- Setup AWS.
- Created HTML template for about me pages.
- Created software stack renewal.
- Created AWS/MySQL credential info.

Milestone 1:

- Documentation
- Created and formatted milestone document with proper section headers.
- Created one use case.
- Revised data items and entities.
- Collaborated on functional requirements.
- Completed the high-system architecture section.
- Completed the team section.
- Completed the checklist section.
- Prepared external database connection via MySQL workbench.

Milestone 2:

- Documentation
- Created and formatted milestone document with proper section headers.
- Copied data definitions from milestone 1.
- Copied functional requirements from milestone 1.
- Revised high-level database architecture.
- Created high-level deployment and network diagrams.
- Completed key risks section.
- Completed project management section.
 - Vertical Prototype

- o Setup virtual environment on AWS.
- o Created a simple home page to test backend code.

Milestone 3:

- Documentation
- o Created and formatted milestone document with proper section headers.
- o Copied and expanded on data definitions from milestone 2.
- o Collaborated with the team on an in-depth list of functional requirements.
- o Copied high-level database architecture from milestone 2.
- o Copied high-level UML diagram from milestone 2.
- o Copied high-level deployment and network diagrams from milestone 2.
 - Horizontal Prototype
- o Assisted team with creating horizontal prototype front-end.
- o Tested and fixed any bugs with the horizontal prototype on AWS.

Milestone 4:

- Documentation
- o Created and formatted milestone document with proper section headers.
- o Completed the product summary section.
- o Completed the usability test plan section.
- o Created the QA test plan section.
- o Documented the coding style.
- o Facilitated the code review by sending Sanjay's back end code to all team members for feedback.
- o Created the security practices section.
- o Created the adherence to non-function requirements section.
 - Prototype
- o Installed dependencies on AWS.
- o Assisted and provided suggestions for questions with code.
- o Tested and fixed any bugs with a prototype on AWS.

Milestone 5:

- Documentation
- o Created and formatted milestone document with proper section headers.
- o Copied the product summary from milestone 4.
- o Compiled all milestone documents into milestone 5.
- o Took and included screenshots of the final product.
- o Took and included screenshots of key DB tables.
- o Took and included screen shots of all task management systems.
- o Took and compiled screen shots of team member contributions.
- o Approved other team members contributions.
- o Completed the post analysis section.
 - Project

- o Revised and bug-fixed the help page front-end.
- o Provided feedback and assistance with work from other team members.
- o Tested and fixed any bugs with the project on AWS.

The number of commits I made to the Github branch on 5/18/20 are: 44

Thanks,
Brian

Dibs

Email Approval

 dibsblarati@gmail.com
to Sanjay, May, Benjamin, Kevin, me +
xxx

Hello team

Here are my contributions for this project:

Milestone 0:
Created a basic list of git commands for using git.
Created the personal intro page.

Milestone 1:
Created the Project Info and List of contents page for this milestone.
Helped Benjamin with github issues.

Milestone 2:
Worked on High-level Database Architecture and Organization.
Made changes to business rules and entities, attributes and relationships.
Created the ERD diagram.
Created the Database model.
Created the high-level UML diagram.
Helped with Zile with github issues.

Milestone 3:
Worked on High-level Database Architecture and Organization.
Made changes to business rules and entities, attributes and relationships.
Created the ERD diagram, Databasemodel and the high-level UML diagram.
Did the initial hard coded Watchlist page for our website.
Did the initial hard coded Trading history page for our website.
Helped Brian with github issues.

Milestone 4:
Did the validation sections for the documentation in this milestone.
Did the input validations for User and Expert Signup page.
Created the User login page for our website.
Created the Navigation bar for our website.
Created Expert Sign Up page for our website.
Created the Home page for our website.
Helped Brian with github issues.

Milestone 5:
Created the myprofile page based on the style guide from May.
Created the buy stock page based on the style guide from May.
Created the sell stock page based on the style guide from May.

The number of commits that I made for this project is 6 for master, 11 for deployment, 12 for Dibs branch.

Sent from [Mail](#) for Windows 10

 Brian Lim
to dibsblarati, Sanjay, May, Benjamin, Kevin +
Approved

Contribution

Hello team

Here are my contributions for this project:

Milestone 0:

- Created a basic list of git commands for using git.
- Created the personal intro page.

Milestone 1:

- Created the Project Info and List of contents page for this milestone.
- Helped Benjamin with github issues.

Milestone 2:

- Worked on High-level Database Architecture and Organization.
- Made changes to business rules and entities, attributes and relationships.
- Created the ERD diagram.
- Created the Databasemodel.
- Created the high-level UML diagram.
- Helped with Zike with github issues.

Milestone 3:

- Created the ERD diagram, Databasemodel and the high-level UML diagram.
- Did the initial hard coded Watchlist page for our website.
- Did the initial hard coded Trading history page for our website.
- Helped Brian with github issues.

Milestone 4:

- Did the validation sections for the documentation in this milestone.
- Did the input validations for User and Expert Signup page.
- Created the User login page for our website.
- Created the Navigation bar for our website.
- Created Expert Sign Up page for our website.
- Created Watchlist page for our website.
- Helped Brian with github issues.

Milestone 5:

- Created the myprofile page based on the style guide from May.
- created the buy stock page based on the style guide from May.
- created the sell stock page based on the style guide from May.

The number of commits that I made for this project is 9 for master, 11 for deployment, 12 for Dibs branch.

May

Email Approval

Team Contributions - May ➔ [Inbox](#)



May Naing

to me, miranisanjay417, dibsbbharati, xianzike, benjamin.fletes ▾

Hello team,

Here are my contributions:

Overall Contributions:

- Front end lead
- Oversaw the design of the website throughout the project
- Continuously revised wireframes throughout latter half of the project
- Created a general style guide for website components
- Created a tool-based drafts for pages added after initial wireframes
- Completed tasks assigned on Trello
- Showed up on time to bi-weekly meetings

Milestone 0:

- Completed personal about me page

Milestone 1:

- Contributed to competitive analysis section
- Contributed to use case section
- Contributed to user profiles within use case section

Milestone 2:

- Drew up UI mockups for main pages
- Drew up storyboards for all use cases
- Started research on UI and UX

Milestone 3:

- Created tool-based wireframes for all initial pages
- Continuously revised wireframes to be up to date
- Created style guide as requested by team lead
- Continued research on UI and UX

Milestone 4:

- Participated in code review for main features
- Continued to work with the team on the design of the website
- Continued research on UI and UX

Milestone 5:

- Cleaned up the look of overall website
- Finalized wireframes and revised milestone 3 to reflect the current state of the project

The number of commits I have made as of sending this email on 5/20/2020: 1

Thanks,
May



Brian Lim

to May, mirani, dibsbbharati, Kevin, Benjamin ▾

Approved. Noted that May only has 1 commit because the tasks assigned to her were design focused (wireframes, mockups, style guide, etc.)

Contribution

Hello team,

Here are my contributions:

Overall Contributions:

- Front end lead
- Oversaw the design of the website throughout the project
- Continuously revised wireframes throughout latter half of the project
- Created a general style guide for website components
- Created a tool-based drafts for pages added after initial wireframes
- Completed tasks assigned on Trello
- Showed up on time to bi-weekly meetings

Milestone 0:

- Completed personal about me page

Milestone 1:

- Contributed to competitive analysis section
- Contributed to use case section
- Contributed to user profiles within use case section

Milestone 2:

- Drew up UI mockups for main pages
- Drew up storyboards for all use cases
- Started research on UI and UX

Milestone 3:

- Created tool-based wireframes for all initial pages
- Continuously revised wireframes to be up to date
- Created style guide as requested by team lead
- Continued research on UI and UX

Milestone 4:

- Participated in code review for main features
- Continued to work with the team on the design of the website
- Continued research on UI and UX

Milestone 5:

- Cleaned up the look of overall website
- Finalized wireframes and revised milestone 3 to reflect the current state of the project

The number of commits I have made as of sending this email on 5/20/2020: 1

Thanks,
May

Sanjay

Email Approval

- Documentation
 - Collaborated with team to prioritize the functional requirements.
 - Contributed in High-Level database architecture sections like media storage and search/filter architecture and implementation.
 - Drafted High-Level APIs and main algorithm section.
 - Contributed in making of High-level deployment diagram.
- Back-End
 - Successfully completed back-end code for the vertical prototype for signup, login and retrieving data from the database created by database leads.

Milestone 3:

- Documentation
 - Collaborated with the team to draft a more detailed functional requirement section.
- Back-End
 - Linked all the pages to be displayed for horizontal prototype.
 - Successfully completed research on APIs and started integrating them onto the platform. (yahoo finance, PayUMoney and NewsAPI)
 - Started research on how to fetch twitter comments for the stocks and do sentimental analysis on them.
 - Started research and implementation of sending mail to the users according to the context. (Forgot password, account approval, etc.)

Milestone 4:

- Documentation
 - Contributed to complete the non-functional requirements details.
- Back-End
 - Set up some bugs on the local machine and corrected accordingly on AWS.
 - Implemented yahoo finance – a stock market API, and fetched and displayed stock data according to user needs.
 - Implemented news API.
 - Integrated payment gateway to the project for buying and selling of stocks.
 - Implemented sentimental analysis on the twitter comments.
 - Started implementation according to the pages submitted by the front-end leads and connecting them to the back-end. (portfolio, watchlist, trading history, etc.)

Milestone 5:

- Back-End
 - Tweaking the project to provide good user experience.
 - Fixed bugs on the local system and AWS.

The number of submissions I made to the Github branch are: 10

Thanks,

Sanjay



9:10 PM (0 minutes ago) ⭐

Contribution

Hello team,

Here are my contributions for this project:

Overall Contributions:

- Back-End lead.
- Maintaining Trello boards and completing tasks assigned on them.
- Maintaining TeamGantt charts and completing tasks assigned on them.
- Showing up with assigned tasks on zoom meetings.
- Reviewing data dictionary and tables submitted by database leads and testing with backend.
- Reviewing front-end pages and syncing them up with the back-end code.
- Testing code on AWS.

Milestone 0:

- Contribution in Selection of backend technologies (python + Django).
- Contributed by providing HTML page of personal information.

Milestone 1:

- Documentation
 - Drafted Executive Summary.
 - Created one Use-case.
 - Contributed in listing main data-items and entities.
 - Contributed in drafting functional requirements.
 - Contributed in competitive analysis section.
- Back-End
 - Started the work on looking for stock market, payment APIs and News.

Milestone 2:

- Documentation
 - Collaborated with team to prioritize the functional requirements.
 - Contributed in High-Level database architecture sections like media storage and search/filter architecture and implementation.
 - Drafted High-Level APIs and main algorithm section.
 - Contributed in making of High-level deployment diagram.
- Back-End

- Successfully completed back-end code for the vertical prototype for signup, login and retrieving data from the database created by database leads.

Milestone 3:

- Documentation
 - Collaborated with the team to draft a more detailed functional requirement section.
- Back-End
 - Linked all the pages to be displayed for horizontal prototype.
 - Successfully completed research on APIs and started integrating them onto the platform. (yahoo finance, PayuMoney and NewsAPI)
 - Started research on how to fetch twitter comments for the stocks and do sentimental analysis on them.
 - Started research and implementation of sending mail to the users according to the context. (Forgot password, account approval, etc.)

Milestone 4:

- Documentation
 - Contributed to complete the non-functional requirements details.
- Back-End
 - Fixed some bugs on the local machine and corrected accordingly on AWS.
 - Implemented yahoo finance – a stock market API, and fetched and displayed stock data according to user needs.
 - Implemented news API.
 - Integrated payment gateway to the project for buying and selling of stocks.
 - Implemented sentimental analysis on the twitter comments.
 - Started implementation according to the pages submitted by the front-end leads and connecting them to the back-end. (portfolio, watchlist, trading history, etc.)

Milestone 5:

- Back-End
 - Tweaking the project to provide good user experience.
 - Fixed bugs on the local system and AWS.

The number of submissions I made to the Github branch are: 10

Thanks,

Sanjay

Zike

Email Approval

 Kevin Syn
to Benjamin, me, miransarajay417, dibashvarati, May 21, 2020

Hello team,

Here are my contributions:

Overall Contributions:

- Do research on front end and back end code.
- Create stock page and news page follow the style guide
- Create the prompt code
- Implement user lock out when incorrect password entered multiple times
- Completed tasks assigned on Trello
- Showed up and discuss to bi-weekly meetings

Milestone 0:

- Completed personal about me page

Milestone 1:

- Contributed to use case and user profiles section
- Contributed to data items and entities section
- Discuss with the functional and non-functional requirements.

Milestone 2:

- Create the entity relationship diagram
- Discuss with the database architecture and organization
- Discuss with the functional and non-functional requirements

Milestone 3:

- Create the stocks.html and news.html
- Research on html and python code

Milestone 4:

- Revised the stock page
- Create the prompt.html
- Work with teammate on the test plan.
- Review the code with team.
- Continued research on html, JS and python

Milestone 5:

- Implement user lock out when incorrect password entered multiple times
- Discuss with the bug and problem on the web site.

The number of commits I have made as of sending this email on 5/20/2020: 4

10:06 PM (2 minutes ago)    

 Brian Lim
to Kevin, Benjamin, miran, dibashvarati, May 21, 2020

Approved

10:08 PM (0 minutes ago)    

Contribution

Hello team,

Here are my contributions:

Overall Contributions:

- Do research on front end and back end code.
- Create stock page and news page follow the style guide
- Create the prompt code
- Implement user lock out when incorrect password entered multiple times
- Completed tasks assigned on Trello
- Showed up and discuss to bi-weekly meetings

Milestone 0:

- Completed personal about me page

Milestone 1:

- Contributed to use case and user profiles section
- Contributed to data items and entities section
- Discuss with the functional and non-functional requirements.

Milestone 2:

- Create the entity relationship diagram
- Discuss with the database architecture and organization
- Discuss with the functional and non-functional requirements

Milestone 3:

- Create the stocks.html and news.html
- Research on html and python code

Milestone 4:

- Revised the stock page
- Create the prompt.thml
- Work with teammate on the test plan.
- Review the code with team.
- Continued research on html, JS and python

Milestone 5:

- Implement user lock out when incorrect password entered multiple times
- Discuss with the bug and problem on the web site.

The number of commits I have made as of sending this email on 5/20/2020: 4

Post Analysis - Lessons Learned

The challenges I faced when tasked as a team lead were not having enough structure in the beginning of the semester, enforcing everyone to submit quality work, getting the team to adhere by deadlines, getting the team to actively participate in meetings, and having the team attend our scheduled meetings on time.

As a team lead, I should have implemented a stronger structure from the beginning of the semester. In the beginning, I had not set explicit times for scheduled meetings and my task assignments to the team were not well defined. As the semester progressed and the workload increased, I found that my lack of leadership and structure was starting to affect our quality of work and output, and thus, I implemented measures to circumvent as many of these issues as I could. This included things such as creating a roles and expectations document so that the whole team was on the same page as to what was expected of them, scheduling biweekly meetings where the team would go over their progress of the work they were tasked with, and assigning new tasks, and encouraging one-on-one meetings where I would be able to work out any personal or technical issues that team member was having. I noticed that after I put this in effect, contributions from everyone improved and overall, the morale of the team was better.

The second issue that I faced was having everyone put in quality work that matched my expectations. At first, I was concerned by some of the work I was seeing, but I realized that this is to be expected of a college course. Unlike industry, where there are consequences for insufficient performance and people are motivated to work hard to keep food on the table, the

effort varies in a school environment where some students may just want to pass the class, or need to divide their time among other classes and extra-curricular activities they may have.

The third issue I had was not adhering by deadlines. As the lead, I had set up deadlines on Trello for the team to follow, as well as meetings, where we would review the progress of tasks and its deadlines. There were many instances where tasks assigned weren't completed when they were due. Again, I understand that this is a class and not industry. Everyone has their own obligations. I understand that the team has other classes with assignments that coincided with the due date of the task. I understand that these assignments were graded and that my due dates did not affect grades. In retrospect, I feel like I could have done a better job at enforcing hard deadlines instead of being lax and allowing extensions. Missed deadlines ended up pushing back subsequent work and overall delaying and reducing the time for people down the chain to finish their tasks.

The last issue I had was timely attendance and participation in meetings. In the beginning of the semester, there was no structure/agenda for meetings and that was my fault. After creating recurring biweekly meetings, this issue should have been resolved. In addition, I sent notifications to the team over slack reminding them of meeting times. I understand that people may have other obligations and be late or miss meetings from time to time. I was understanding of those who let me know in advance. In retrospect, I should have been more assertive with the importance of timely attendance for meetings. In regards to actively participating in meetings, I feel like I should have been clearer. From experience, I know how difficult it may be to speak up in a meeting when there are others who voice their opinion

more. I could have fixed this issue if I had asked people personally for their opinions and suggestions instead of asking if anyone had opinions.

In conclusion, overall the team performed at a level that was expected of a college course. I tried to emulate industry as much as possible as a team lead, and I learned that those expectations are not applicable in the classroom environment. I understand that everyone has their own competing priorities, and I do not fault them on this. Knowing this, I tried implementing rules and expectations that fell somewhere between industry and a college course, and I feel like overall, the team did a good job at meeting me halfway.