Express Stocks Market

CS 441 Final Project Report

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Overview

Express Market will be a personal investment portfolio for anyone who would like to invest. This (currently) web-based application will notify you when it's time to invest and what you should invest in. The core functionality of this product will be its ability to scan news articles and press releases of companies that you select to invest in. The application will gather all this information and understand, based on our text parsing algorithms, whether to sell or buy the stock in question. We would also like it to understand how much money is appropriate to invest given a user's current finances.

Problem Statement:

Time, confusion, and risk are challenges that the average stock market trader will face. We aim to expand the market for both the beginning traders and the veterans. We want to simplify this process which in turn will make the market easier for people to take advantage of. Time is the universal resource that has us all wishing we had more. Having to read and analyze tens of articles to predict the market is painful and a huge time consumer. With the help of our processors and Express algorithms, we could have the needed information to make the right investment decision.

Target Users:

The target users for Express Market are primarily for Financial intermediaries, for those who seek to invest in the stock market and for those who already have stocks. Express Market is an excellent solution for investors who are looking for an easier way to help them to make decisions and to help investors save valuable time. Many investors dedicate an excessive amount of time looking through articles observing and searching for their stocks or stocks they wish to buy or sell. Express Market is the solution to help investors do the thorough searching for them, and offer investors advice about their stocks and stocks they are interested in to buy or sell in the future.

Expected Outcome:

Our expected outcome of Express Market will include the following:

· Full functional website.

- Database to check authenticity and to allow users to login securely.
- Allow users to build a personal stock portfolio.
- Stock sale/buy predictor.

The Team Structure

Team Member Roles:

Abisai Rodriguez - Database Developer
Jade Richardson - Web/Front End Developer
Omar Gonzalez - Web/Front End Developer

Team Contact Information:

Name	Email
Abisai Rodriguez	abisai.rodriguez13@gmail.com
Jade Richardson	richa103@cougars.csusm.edu
Omar Gonzalez	omargb22@gmail.com

Quality Assurance & Testers:

All team members worked collectively together to test and debug all facets of the project.

Technical Writer:

All team members worked collectively together to write and record for each part of the project.

Project Proposal

User Requirements:

The user requirements necessary to be able to use the product is a precursory understanding of how to use a website and an interest in investing money. The most straightforward mechanism for an end user to be able to use the integrated tools within the website to successfully predict the price of a particular stock is for the user to enter the stock symbol name from a drop-down menu accessible from the homepage. From there, the user will enter the time frame of the stock for which they would preferably like to predict the price of the stock. Be it three days from now or three months from now. After entering the information into the website, the user will have the option to see a projected graph of the price of the stock they chose over the timeline they picked. Other indicators for the stock such as P/E ratio will be displayed, along with a rudimentary risk factor for that certainty of the predicted stock price to be correct. Apart, from the simplicity for the user to be able to navigate the site, a similar objective in simplicity will be met by explicit descriptions of stocks and the risks included in predicting stock prices. In addition, to the ability for the user to predict the price of stocks; from the homepage, users will see a long-term projection of the Dow Jones, S&P 500, and NASDAQ, incrementally by one day, up to three months. A drop down side menu on the homepage will be present, to further customize the stocks they wish to see by industry. After picking an industry from the side menu, a collection of different stock symbols within that industry will be generated for which the user can select and see future projections. The generated stocks within the industry can be sorted by lowest/ highest risk factor and most promising return over three days or a three months prediction.

Scrum Product Backlog:

Scrum Product Backlog	Priority	Category	Accomplished	Item ID
As a user, I want easy to use navigation to find stock predictions	2	Front-end Website	Yes	1

As a user, I want to login using Username and email.	1	Full stack dev	Yes	2
As a system administrator, I want graphs to update on the site in real time	3	Front-end Website	Yes	3
As a backend Developer, I want the data parsing to automatically pull from different articles	4	Back-end Development	Yes	4

Project Objectives:

Our Objective for this project is to create an effective data parsing methods, that would allow us to make better predictions of the stock market and to help users make decisions.

Workflow:

All meetings are documentation of work put into to this project are compiled and referred to on our github commit messages and comment and also on your chat platform Slack. Some problems we have already begun to see is the factor of time. We all have very busy schedules and are not provided class time to collaborate with our groups. Another is fitting all the “puzzle” pieces together, for example interacts with our web server, the client, and other servers that we need to interact with is a new challenge for all of us. We have not ever done any serious web development work.

Methodology:

We will be using a Waterfall Model to complete our project within the given timeframe. To start, we will gather requirements to know how the project will function. Next, Analysis is required to generate the logic and business model that will be needed for the project. Once understanding the requirements and logic for our project, we can finally start designing our model. Coding is our next step, implementing all of the functions, logic, and design of the project. After coding, we will beta test our code to see if any bugs come up. If needed we will review our system and fix any bugs we find along

the way. Finally, we will deploy our project and will work on updates to keep the project up and running efficiently.

Scope:

For this group assignment, we will focus exclusively on creating and implementing our database and website. Our unique skill sets will help us determine the specifications and requirements to be used for this projects completeness. Throughout the process of building this project, we will gain a better understanding of what needs to be improved, whether it be user friendliness or functionality. By the end of this project, we will have an up and running stock market website predictor with a fully functioning database behind it.

Vision:

The team's vision for this project is to create a reliable, secure, well working website and database that will allow us to pitch it to investors and hopefully be a financially stable company one day

Constraints and Challenges:

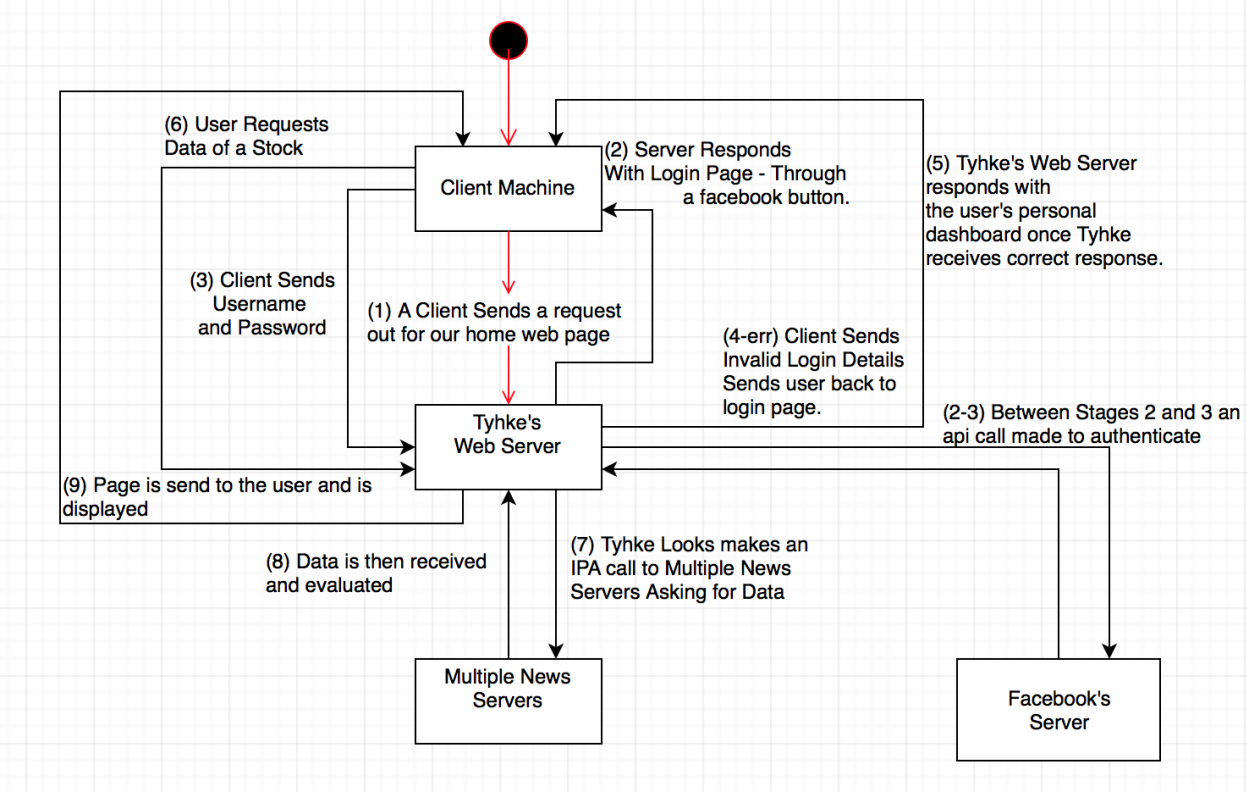
Somethings that we might run into are accuracy, problems with relying on other news outlets for data, and integration with those websites. We're aiming to have our programs receive ASCII characters as input. We must sift through what is essential and what can be dismissed, in both the news sources and the articles themselves. Another real-world constraint is our schedules. This project will consume a significant amount of our time.

We're not the only ones out there. We're going to need to be different and better than the competition.

System Design

Software Architecture:

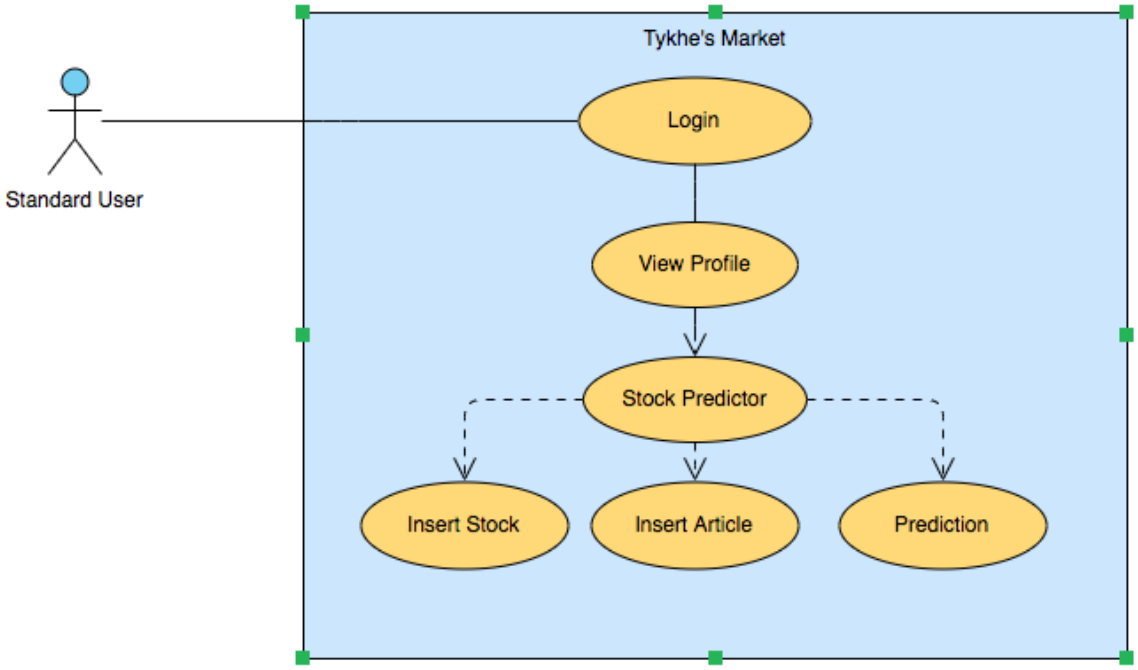
Our software architecture for this project would be web base. We will create a website for the users to access. And we will create a database to allow the users to log in to their profile and log out safely.

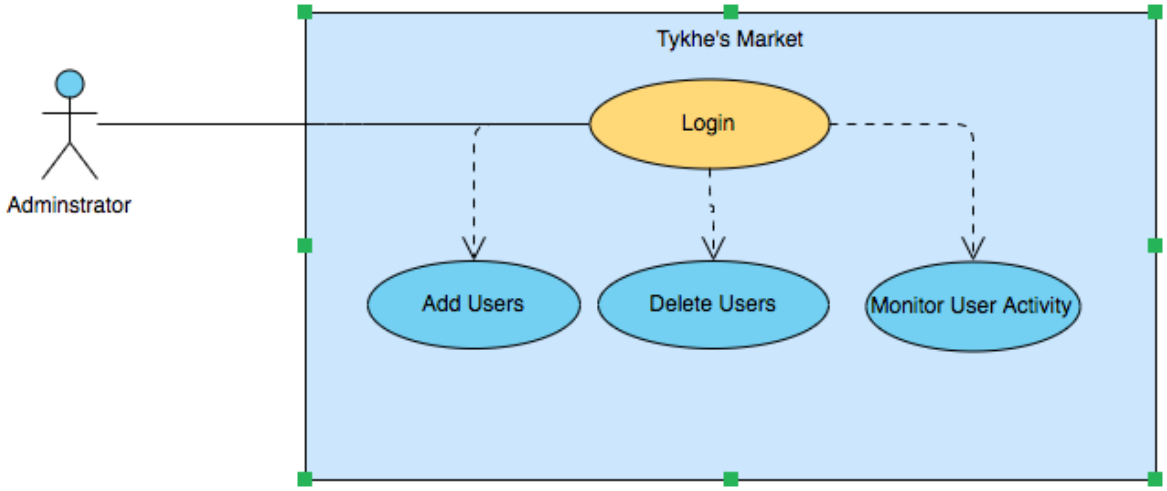


As of right now the main languages that will interact with each other will be Javascript for the implementation of the web server and interactions between other servers. HTML for user's display. Node Javascript to talk to Taffy Database.

Unified Modeling Language Diagram

Use Case Diagrams:





Formal Use Cases:

Standard User or Administrative User

Name: Login

Priority: High

Entry Condition: User has access to Express Market through web browser

Exit Condition: User successfully logs in

Flow of Events:

1. User has access to Express Market through web browser
2. User logs in using Username and Password
3. Validate login information, server checks with database
4. User gains access to Express Market through web server
5. Express Market displays user's profile

Standard User
Name: Stock Predictor
Priority: High
Entry Condition: User searches stock
Exit Condition: User receives information about stock

Flow of Events:

1. User has access to profile
2. User enters stock and article to search
3. Web-Server runs algorithm for the stock entered
4. User receives information about the stock searched

Administrative User
Name: Add User
Priority: High
Entry Condition: Enter User in Database
Exit Condition: User Saved in Database

Flow of Events:

1. Administrator adds user with username and password
2. Database checks if user exists, if user is new then save
3. New user is then added to user

Administrative User
Name: Delete User
Priority: High
Entry Condition: Delete User in Database
Exit Condition: User removed from Database

Flow of Events:

1. Administrator removes user with username
2. Database checks if user exists, if user exists then removes
3. User is then removed from Database

Partial Analysis Model

Class Case Diagram:

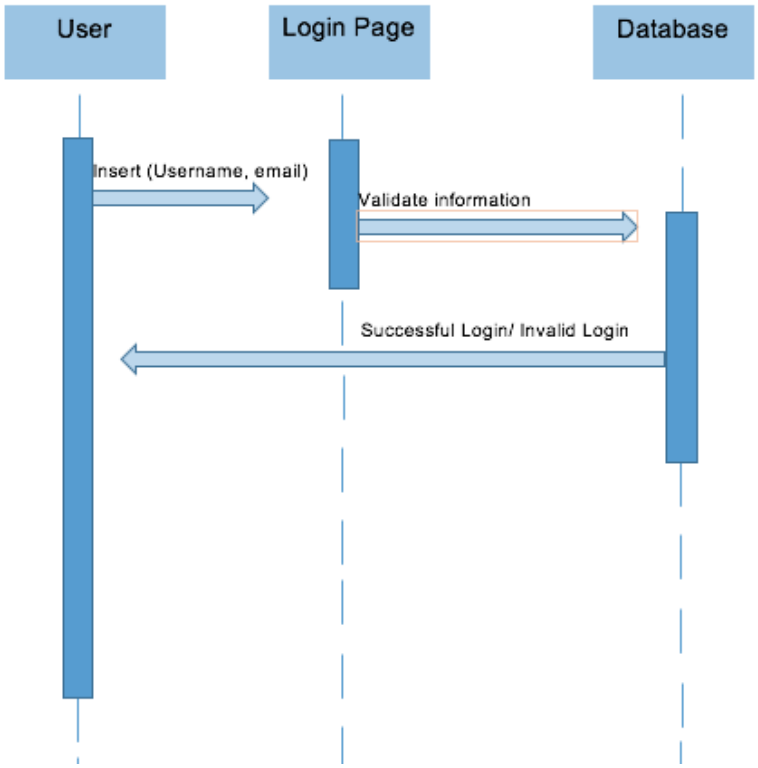
Express Market does not use an Object Oriented Programming paradigm. Therefore, we do not have any classes in our project. The base of Express Market is our web-server that interacts with our Taffy Database.

We have instead used a Model-View-Controller structure design. Where our web-server and database act as our Model. The Model is responsible for managing the data

of the application. It responds to the request from the view and it also responds to instructions from the controller to update itself. The view is all of our various HTML templates that help display the data in a specific format to the user. The javascript functions work as our controller helping to respond to the user input and perform interactions on the data model objects.

Sequence Diagram:

Diagram: *Sequence Diagram of Logging in*



Testing and Analysis

Functions for Test: User Login				
Applicable Users: Test cases for Administrator and Standard User				
ID #	**Test Cases**	**Input Data**	**Result**	**Satisfied**

1	Secure Login	-Username -Password	User and Administrator successfully login	Yes
2	Invalid Login	-Username -Password	User is unsuccessful in logging in	Yes

Functions for Test: Add, Delete Users				
Applicable Users: Test cases for Administrator				
ID #	**Test Cases**	**Input Data**	**Result**	**Satisfied**
3	Add User	-Username -Password	Administrator successfully adds User	Yes
4	Delete User	-Username	Administrator successfully deleted User	Yes

Functions for Test: Stock Predictions				
Applicable Users: Test cases for Standard User				
ID #	**Test Cases**	**Input Data**	**Result**	**Satisfie**

				d
5	Stock Predictor	-Stock -Article	Express Market successfully predicts the stock searched	Yes

Implementation Milestones

Milestone 1 - Design User Interface

- Determine Web Page Navigation

Milestone 2 - Database Design

- Determined to use Taffy DB
- Determined User Attributes

Milestone 3 - Create System Architecture

- Create Web Server using Node JS
- Create Database using Taffydb

Milestone 4 - Implement Initial Web Pages

- Created initial web pages with HTML
- Styled HTML with CSS
- Integrated Express
- Integrated Bootstrap

Milestone 5 - Implement Database

- Added Database to the Web Server

Milestone 6 - Connect Front-End with Back-End

- Connected the HTML Pages with the Web Server

Milestone 7 - Create Algorithm

- JS code that scans article and predicts to buy/sell stock

Milestone 8 - Retrieve and Display Data

- Retrieve data from article and display information to user on screen

Milestone 9 - Enhance Website Functionality

- Inner JS
- Integrated Ajax

Sprint Meeting Logs

Week 3 Meeting February 5th, 3:45pm-4:45pm		
Team Members	**Roles**	**Attended Meeting**
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 3 Agenda		
Agenda Item	**Completed**	**Summary of Accomplishments**
Determine Project Scope	Yes	Created a google doc to define scope of project
Define Preliminary Resources	Yes	Listed various resources to use
Begin Project Proposal	No	Initial outline of project

Week 4 Meeting February 12th, 3:45pm-4:45pm		
Team Members	**Roles**	**Attended Meeting**
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**

Omar Gonzalez	**Front-End Developer**	**Yes**

Week 4 Agenda		
Agenda Item	**Completed**	**Summary of Accomplishments**
Review Project Proposal Requirements	Yes	Summary of project requirements
Final Project Proposal	Yes	Finished project proposal
Practice Project Proposal	Yes	Practiced and went over finished project proposal

Week 5 Meeting February 19th, 3:45pm-4:45pm		
Team Members	**Roles**	**Attended Meeting**
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 5 Agenda		
Agenda Item	**Completed**	**Summary of Accomplishments**
Gather information for database	Yes	Gathered and uploaded info to google docs
Start user interface design	Yes	Made an outline of user interface
Review project requirements	Yes	Updated requirements

Week 6 Meeting February 26th, 3:45pm-4:45pm		
Team Members	**Roles**	**Attended Meeting**
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 6 Agenda		
Agenda Item	**Completed**	**Summary of Accomplishments**
Establish Team Roles	Yes	Every member was designated a role
Review Database Design	Yes	Updated design of Database

Week 7 Meeting March 5th, 3:45pm-4:45pm		
Team Members	**Roles**	**Attended Meeting**
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 7 Agenda

Agenda Item	Completed	Summary of Accomplishments
Meeting Summary	Yes	Review project goals
Create Use Case Diagram	No	Talked about use case diagrams
Report 2	Yes	Complete sections of report
Sprint Meet Logs	Yes	Tracking meetings

Week 8 Meeting March 12th, 3:45pm-4:45pm		
Team Members	**Roles**	**Attended Meeting**
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 8 Agenda		
Agenda Item	**Completed**	**Summary of Accomplishments**
Sprint Meet Logs	Yes	Update sprint meet logs
Bootstrap	Yes	Web Page Navigation
Finish Use Case Diagrams	Yes	User Cases
Update Project Plan	Yes	Review and update

Week 9 Meeting March 19th, 3:45pm-4:45pm		
Team Members	**Roles**	**Attended Meeting**

Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 9 Agenda		
Agenda Item	**Completed**	**Summary of Accomplishments**
Fill out week sprint meet logs	Yes	Update
Database Update	Yes	Update
Update Project Plan	Yes	Update

Week 10 Meeting March 26th, 3:45pm-4:45pm		
Team Members	**Roles**	**Attended Meeting**
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 10 Agenda		
Agenda Item	**Completed**	**Summary of Accomplishments**
Fill out week sprint meet logs	Yes	Update
Website Pages	No	Created HTML pages
Meeting Summary	Yes	Review and plan for next meeting

Week 11 Meeting April 2nd, 3:45pm-4:45pm		
Team Members	**Roles**	**Attended Meeting**
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 11 Agenda		
Agenda Item	**Completed**	**Summary of Accomplishments**
Fill out week sprint meet logs	Yes	Update
Website	No	Added CSS to format html
Meeting Summary	Yes	Review project, plan ahead

Week 12 Meeting April 9th, 3:45pm-4:45pm		
Team Members	**Roles**	**Attended Meeting**
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 12 Agenda		
Agenda Item	**Completed**	**Summary of Accomplishments**

Fill out week sprint meet logs	Yes	Update
Implement Web Server	No	Check how html pages work with local web server
Implement Database	Yes	Add DB to web server
Meeting Summary	Yes	Review project and plan ahead

Week 13 Meeting
April 16th, 3:45pm-4:45pm

Team Members	Roles	Attended Meeting
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 13 Agenda

Agenda Item	Completed	Summary of Accomplishments
Fill out week sprint meet logs	Yes	Update
Website	No	Web Server hosts html pages and hosts the DB
Meeting Summary	Yes	Review project and plan ahead

Week 14 Meeting
April 23rd, 3:45pm-4:45pm

Team Members	Roles	Attended Meeting
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 14 Agenda		
Agenda Item	**Completed**	**Summary of Accomplishments**
Fill out week sprint meet logs	Yes	Update
Website	No	Connecting html pages with DB
Meeting Summary	Yes	Review project and plan ahead

Week 15 Meeting April 30th, 3:45pm-4:45pm		
Team Members	**Roles**	**Attended Meeting**
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 15 Agenda		
Agenda Item	**Completed**	**Summary of Accomplishments**
Discuss Final Report	Yes	Talk about who writes it

Discuss Final Presentation	Yes	Talk about how and what to present
Review Website Functionality	Yes	Look at the methods of the website
Finalizing Website	No	Working out the kinks

Week 16 Meeting May 7th, 3:45pm-4:45pm		
Team Members	**Roles**	**Attended Meeting**
Abisai Rodriguez	**Database Developer**	**Yes**
Jade Richardson	**Front-End Developer**	**Yes**
Omar Gonzalez	**Front-End Developer**	**Yes**

Week 16 Agenda		
Agenda Item	**Completed**	**Summary of Accomplishments**
Fill out sprint log	Yes	Update
Finalize Website	Yes	Finished Website
Meeting summary	Yes	Planning for presentation

Closing

GIven the expansiveness and volatility of the stock market, it is easy to be lost in the rising and falling waves of prices. Express Market maintains an even prediction, be it a bullish rush, or a grim bear market. Our predictive model takes the emotion of the

stock market and extrapolates the current rise and fall given these speculative roller coasters.

References

Resources:

Resources used for this project will be our time, and creative brain power to overcome exciting and new challenges. The time spent on the project over the course of one semester should be more or less one hundred hours per person. Therefore the project should be the exponential creative factor of four hundred hours of work over the course of a semester by four people.

The hardware we will be using to get Express Market up and running is coding on three Apple Laptops and one Windows Laptop. From these computers, we will utilize our individual's skills in web development, front end and back end, our experience in database management, and machine learning. Most importantly, we will utilize our knowledge of the stock markets bullish and bearish tendencies. Various IDE's and Compilers such as Atom, Notepad++, Visual Studios, and Putty will be used to write our code. Other programs in the project used will be Amazon Web Services, Google Documents, Excel, Github, Slack, and various other learning sites to fill in our gaps of knowledge.

Official Links:

GitHub Express Market - https://github.com/omargb760/ExpressMarket

Change History

Date	Member	Changes Done
Project Requirements Report		
February 12, 2018	Abisai Rodriguez	Create google doc for team members
February 26, 2018	Omar Gonzalez	Slack Group Chat
February 26, 2018	Jade Richardson	Meeting times
March 5, 2018	Abisai Rodriguez	UML
March 5, 2018	Omar Gonzalez	Update Sprint logs
Design and Implementation		
March 12, 2018	Omar Gonzalez	Outline design of Web Pages
March 19, 2018	Abisai Rodriguez	Update Sprint logs
March 26, 2018	Jade Richardson	Creating HTML pages
April 2, 2018	Omar Gonzalez	Added CSS to html pages
April 9, 2018	Abisai Rodriguez	Update Sprint logs
April 9, 2018	Jade Richardson	Implement Web Server
April 16, 2018	Omar Gonzalez	Update WebSite
Final Report		
April 30, 2018	Abisai Rodriguez	Create Final Report
May 7, 2018	Group	Finalize Website

May 7, 2018	Abisai Rodriguez	Finalize Report