Doubleclick -
Stock Picker Application

Project Part 4: Project Prototype

University of Nevada Reno

Computer Science and Engineering

CS 425 - Software Engineering

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1. Abstract :

In our project, Doubleclick, we aimed to address the issue of trading apps being overly complicated. With traditional brokerage platforms there is a prolific theme in the industry of complex UI's, an overabundance of information, and extremely unintuitive design to say the least. With Doubleclick we are striving to fix this problem by creating a web based application that serves the user in both content and design, and simplifies the trading process. Since the objective of this project is to fix the user experience that other platforms are lacking, we have focused our attention on making pages and dynamic components thus far. As of writing this, we have pages made for user login, account creation, settings, stock information and trade placing, as well as a landing page. In addition, we have also made significant progress with using the TD Ameritrade API and we are working towards connecting our database.

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2. Introduction:

The main goal of the project was to create a web application that would be able to suggest stocks of pseudorandomized companies based on an individual's preferences in risk tolerance, market sector, industry practices. The web application would also need to be able to create/save/store user accounts, link to a stock trading api to draw relevant stock data, visualize that stock data into graphs, and directly link stock trading requirements such as: being able to buy certain amounts of stocks, sell certain amounts of stocks, monitor current stocks, and have a setting menu where additional stock trading data could be toggled on/off . Since the last report, the team has worked on the: UI/graphical assets, basic user input in creating a user account, linking web pages together, and attempting to link a database to the account creation/storage.

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3. Prototype Objectives & Functionality:

We have many objectives for our overall project but for our initial prototype stage we focused on five key goals to build a good framework for success. Our first objective was to develop a navigational framework and get it on a localhost so it could be accessed in a browser. To run our program on a localhost we utilized WSL2 on the windows platform. By utilizing WSL2 instead of a virtual machine running an efficient flavor of linux, we are afforded more headroom for real time development work and are better enabled to do development on our mobile devices as well. To access our local website all you have to do is enter *localhost:3000* into a web browser and you can get a live view of the most recently saved version of the project. This goal was achieved by Loren Parvin and to a lesser extent Colin Comstock(visual navigation setup).

The second objective was to design our user interface and implement working assets for our website. This involved the creation of buttons, backgrounds, menus, layouts, etc. These assets are most prominently shown in Figure 5, but can be found in Figs 1, 2, 3, and 4 as well. The user interface and user experience is critical to our mission of simplifying trading so this is a very important part of our project. If a user is frustrated using our product then we have missed the bounds of our most important mission statement. Tools used to create these assets include Adobe Photoshop and Illustrator as well as proofing assets in the implemented vue.js based website. This goal was worked on solely by Colin Comstock. While not all assets are isolated and sorted into folders, assets will be viewable in the zip file submitted with this project.

Our third objective was to get a basic semi-functional draft for our login, preferences, and account pages. Getting the key pages of our website up and running in a draft state helped us visualize the future result of our efforts and better understand what we need to focus on going forward. While none of them are in their final state These pages were worked on by Loren Parvin (Figs 2 and 3) and Nick Rinehart (Figure 4).

The fourth objective of our prototype was to implement a draft of our main trading page (Fig 5). This page is the center of our UI and the part of the website where all of the interaction with the stock market will happen. Properly implementing this page is also one of the most important parts of the project. In our prototype we had a semi-complete layout of the key elements and were able to better visualize the more featured version going forward. This part of the project was worked on by Henry Shi.

The final objective of the prototype was to familiarize ourselves with Firebase and our TD Ameritrade API, and attempt to implement them in some fashion. These specific functions are important in allowing us to store user information, and to enable the application to pull stock data as well as place trades. This involved investigating methods of linking Firebase to our application, and while we weren't able to connect to firebase for the demo, we don't think this will be an issue moving forward. As for linking to the API, we began implementation of the authorization process to TD Ameritrade's API server. Once authorization is correctly implemented, the retrieval of stock data from the API will be more accessible, and we will be able to move forward with placing trades through our application as well. This part of the project may prove to be the most difficult and as a result, early attempts will be very important. This part of the project was worked on by Nick Rinehart (Firebase) and Henry Shi (TD Ameritrade API).

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4. Develop Prototype:

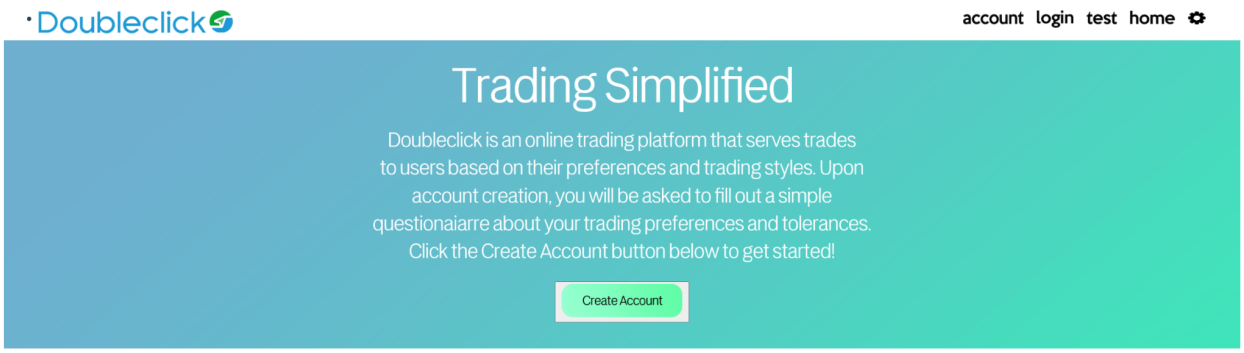

Figure 1: The home page of the Doubleclick web application, with some information about the application along with an option to create an account.

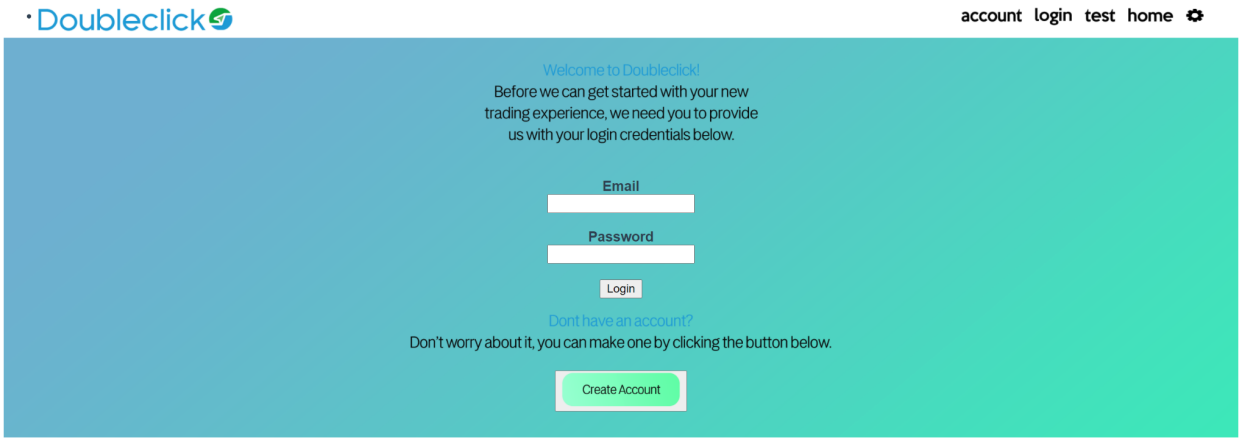

Figure 2: The login page to the site, with an email and password field, and option to create an account.

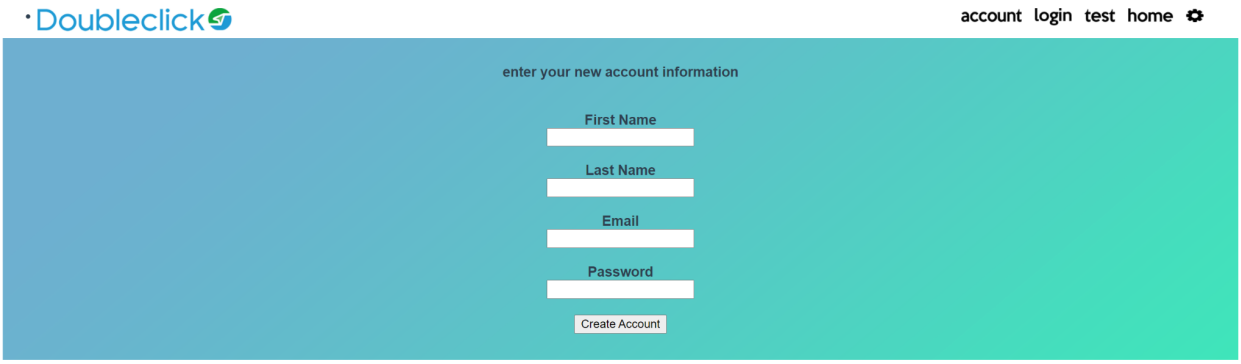

Figure 3: The account creation screen. This shows the required information to create an account, and is dynamically loaded into the page when the create account button from Figure 2 is clicked.

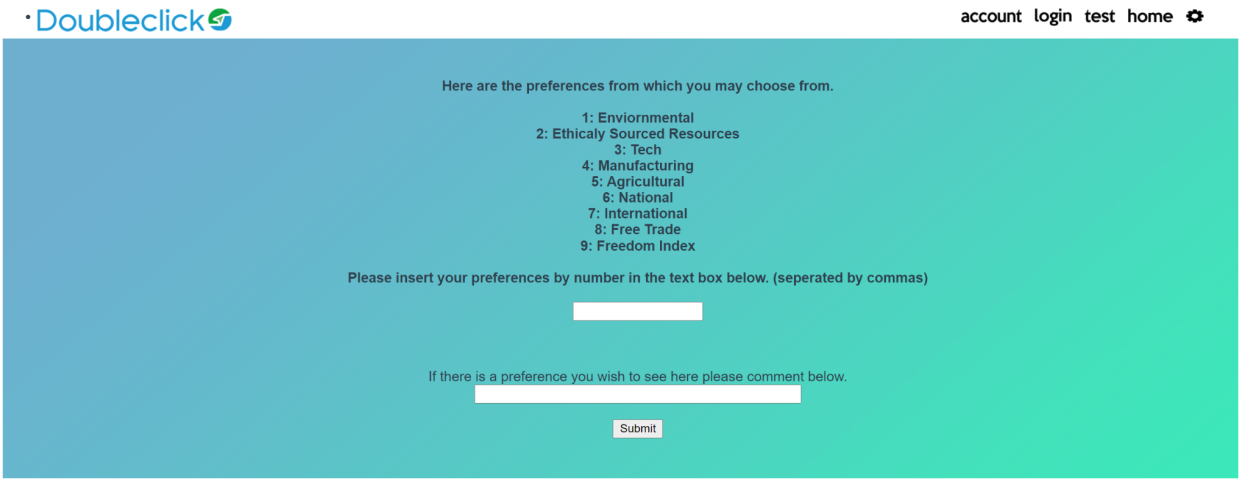

Figure 4: Stock industry preferences page which has a field for selecting preferences and a field for leaving feedback to the developers.

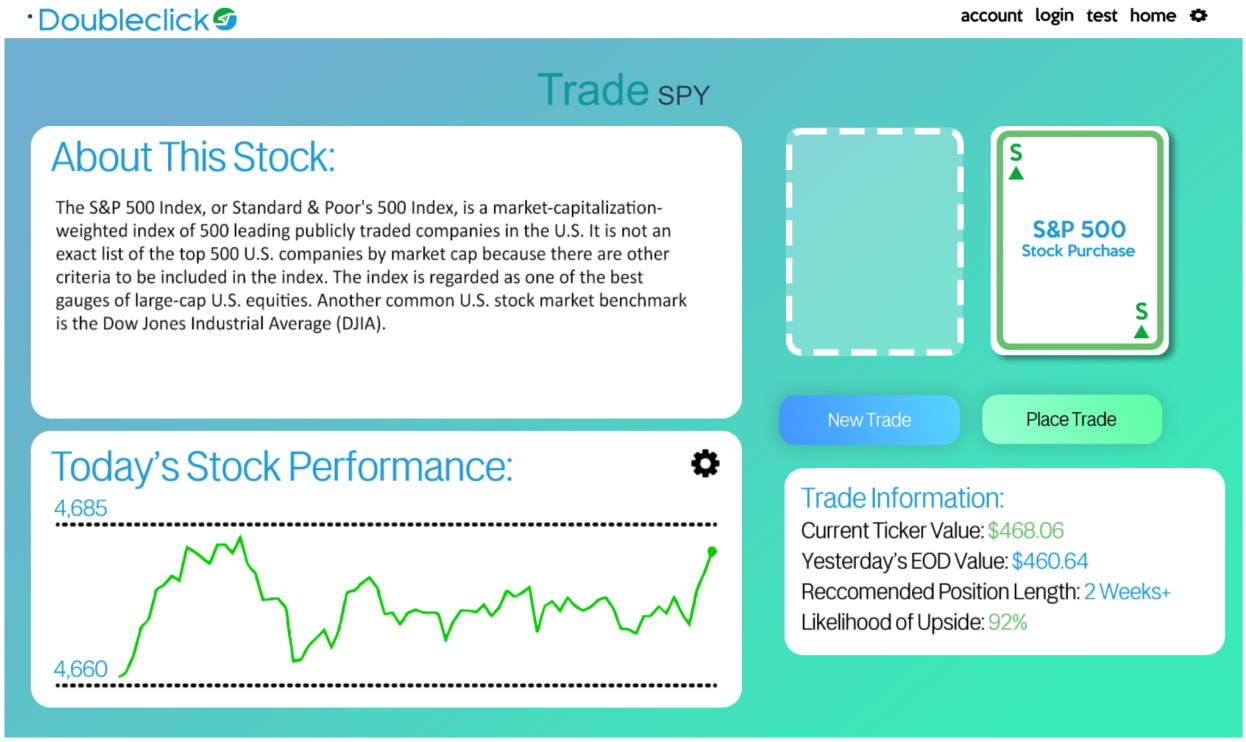

Figure 5: The trade page for the application on which suggested trades and their corresponding information will be presented. From here, users can place trades and prompt for new trades. Information about the suggested stock and its performance chart are shown as well.

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5. Demo Prototype:

We, Team 30, demonstrated our project prototype to the instructors on Monday, December 6th at 10:00am. There were a few recommendations that emerged during the demo. Overall, it was recommended that we should flesh out our website more, as it is currently fairly light in its development. Additionally, we were originally planning to use Firebase as the database for our website, but weren't able to implement it in time for the demo presentation. As such, we were given some suggestions for alternative databases in the case that we aren't able to connect to Firebase going forward. In general, we

were given the advice that if anything in the project proves too difficult to implement, or takes too long, to move on and try other alternatives.

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6. Team Contributions:

Member	Time (hrs)	Details
Colin Comstock	16	Created all visual assets from scratch, implemented visual assets in working prototype, formatted visual elements in code so that they matched our mockups, implemented button assets in a way that you could interact with them. Wrote majority of section 3 of the writeup and captured then inserted the screenshots of the project into our document
Loren Parvin	16	Created initial project framework, page routing structure, login and account creation forms with dynamic component logic, as well as quality of life development features like hot reload. Abstract and figure descriptions + in text citations.
Nicholas Rinehart	12	Created the account and settings pages for the program and linked them with the rest of the program. Attempted to link the program to firebase and have acquired research on the topic. Helped in the writing of section 3 and proofread the document.
Henry Shi	12	Created the trade page for the website. Wrote code to handle the websocket for login, and attempted to handle authentication to connect to TDAmeritrade's API server. Wrote the summary for section 5 Demo Prototype and some figure descriptions for section 4.
Eugene Eom	1	Part of Introduction

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7. Implemented Code:

Along with our project documentation is a zip file containing all of the code for our project thus far. Feel free to contact us with any questions about individual team contributions to code.