

## **Sprint 1 Planning Document**

CS 307

Team 15

Anirudh Kaza, Dev Patel, Praveer Sharan, Swastik Agarwala, Vikhyat Jagini

Investify

## Sprint Overview

In this sprint, we aim to set up the project's infrastructure by finalizing the core technologies and establishing the connection between the frontend, backend, and database. Our focus is on building the user account management system, including registration, login, password resets, and profile modifications. Additionally, we will implement the asset discovery feature, allowing users to view popular stocks, mutual funds, crypto, bonds, etc., as well as search for specific assets and access detailed asset pages with performance charts, key metadata, and financial updates. By the end of the sprint, we expect to have a functional foundation with basic user management and asset discovery capabilities.

**Scrum Master:** Dev Patel

**Risks and Challenges:** Risks and challenges for this sprint include the learning curve associated with Spring, as not all team members are familiar with its philosophies and structure, which could slow down development. Additionally, obtaining market data for free or at a low cost may present difficulties. While some data sources are under consideration, their implementation could reveal unexpected limitations or costs that may impact progress.

## Current Sprint Detail

### User Story #1

As a user, I would like to be able to create an account using an email, a username, and a password

#	Description	Estimated Time	Owner
1	Set up Postgres database and add user table	2 hr	Anirudh
2	Set up Postgres repo (Spring Data) in the backend	1 hr	Anirudh
3	Set up create account controller / endpoint	1 hr	Anirudh
4	Verify email address via confirmation email	2 hr	Anirudh
5	Create the UI for account creation	2 hr	Swastik
6	Add sign up endpoint integration on the front-end	1 hr	Swastik
7	Set up account creation success / error messages (email format validation, duplicate emails or usernames, weak passwords)	2 hr	Swastik, Anirudh
8	Do unit testing for each part and end-to-end testing for success and error cases	2 hr	Swastik, Anirudh

### Acceptance Criteria

- Given a user provides a valid email, username, and password on the signup form, when the form is submitted, then the user account is created successfully, and a confirmation email is sent.
- Given a user attempts to sign up with an email or username that is already in use, when the form is submitted, then an error message is shown indicating that the email or username is already taken.
- Given a user enters a weak password during account creation, when the form is submitted, then an error message is shown indicating that the password does not meet the strength criteria.
- Given a user enters an incorrectly formatted email, when the form is submitted, then an error message is shown indicating the email format is invalid.
- Given a user receives the account confirmation email, when they click on the confirmation link, then their account is verified and activated successfully, allowing them to log in.

- Given there is a server or network issue during the signup process, when the form is submitted. Then a generic error message is shown to the user, advising them to try again later.
- Given a properly filled signup form, when the user clicks on "Create Account," and sees a loading icon, then the appropriate success or error message is displayed based on the server response.

## User Story #2

As a user, I would like to be able to login to my account using an email/a username and a password

#	Description	Estimated Time	Owner
1	Create the UI for user login	2 hr	Vikhyat
2	Set up login controller / endpoint	1 hr	Anirudh
3	Set up login success / error messages (email format validation, correct password)	1 hr	Vikhyat, Anirudh
4	Do unit testing for login and end-to-end testing for success and error cases	1 hr	Vikhyat, Anirudh

## Acceptance Criteria

- Given that the user provides a valid email/username and password, when the login form is submitted, the user is successfully logged in and redirected to the homepage.
- Given that the user provides an invalid email/username or password, when the login form is submitted, an error message is displayed, indicating invalid login credentials.
- Given that the user enters an incorrectly formatted email, when the form is submitted, an error message is shown, indicating that the email format is invalid.
- Given that the user provides a valid email/username and password, when the login form is submitted, and there is a network or server issue, an error message is shown advising the user to try again later.
- Given that the user successfully logs in, their session is maintained until they log out or the session expires.

## User Story #3

As a user, I would like to be able to reset my password by sending a verification link to my email

#	Description	Estimated Time	Owner
1	Create the UI for resetting password	1 hr	Vikhyat
2	Set up reset password controller / endpoint	2 hr	Anirudh
3	Add reset password endpoint integration on the front-end	1 hr	Vikhyat
4	Set up reset password success / error messages (expired reset password link, strong password)	1 hr	Vikhyat, Anirudh
5	Test if recovering password works by using recovery link sent to the email	0.5 hr	Vikhyat, Anirudh

#### Acceptance Criteria:

- Given that the user enters a valid email address on the reset password form, a password reset email is sent with a verification link.
- Given that the user clicks on the reset password link, they are redirected to a page to enter a new password.
- Given that the user attempts to reset their password using an expired or invalid reset link, they are shown an error message indicating that the link is no longer valid.
- Given that the user enters a weak password during the reset process, an error message is displayed indicating the password does not meet the security criteria.
- Given that the user successfully resets their password, they are redirected to the login page and can log in using the new password.

#### User Story #4

As a user, I would like to be able to change the email linked to my account

#	Description	Estimated Time	Owner
1	Create the profile page and its profile information layout	2 hr	Vikhyat
2	Integrate UI for changing the user's account email to the profile page	1 hr	Vikhyat
3	Set up change email controller / endpoint	1 hr	Anirudh
4	Do unit testing for front-end, back-end, and	1 hr	Vikhyat, Anirudh

	end-to-end testing for success / error cases		
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### Acceptance Criteria:

- Given that the user is logged in, they should be able to navigate to their profile page to update their email address.
- Given that the user enters their new email and password, and the email format is valid, the email address is successfully updated in the system.
- Given that the new email is already associated with an existing account, an error message is displayed indicating that the email is already taken.
- Given that the user successfully updates their email, a confirmation email is sent to the new email address for verification.
- Given that the user attempts to submit the change with an incorrectly formatted email, an error message is displayed indicating the format is invalid.

### User Story #5

As a user, I would like to be able to modify my username

#	Description	Estimated Time	Owner
1	Integrate UI for changing the username to the profile page	1 hr	Vikhyat
2	Set up modify username controller / endpoint	1 hr	Anirudh
3	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	1 hr	Vikhyat, Anirudh

### Acceptance Criteria:

- Given that the user is logged in, they should be able to navigate to their profile page to update their username.
- Given that the user enters a valid new username, the system successfully updates the username in the account.
- Given that the new username is already taken by another user, an error message is displayed indicating that the username is unavailable.
- Given that the username change is successful, the user is notified with a confirmation message on the screen.
- Given that the user attempts to enter a username with invalid characters, an error message is displayed explaining the allowed character rules.

## User Story #6

As a user, I would like to be able to upload a photo for my profile picture

#	Description	Estimated Time	Owner
1	Integrate UI for uploading a profile picture on the profile page	1 hr	Vikhyat
2	Create media uploader for profile picture	2 hr	Vikhyat
3	Set up upload photo controller / endpoint	1 hr	Dev
4	Store profile picture in AWS S3 (need to set up S3)	3 hr	Dev
5	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	2 hr	Vikhyat, Dev

### Acceptance Criteria:

- Given that the user is on their profile page, they can click a button to upload a profile picture from their device.
- Given that the user selects an image file within the accepted format and size limits, the image is successfully uploaded and stored in AWS S3.
- Given that the image file exceeds the size limit or is in an unsupported format, an error message is displayed indicating the issue with the file.
- Given that the user successfully uploads their profile picture, it is displayed on their profile page.
- Given that there is a network or server issue during the upload, an error message is shown, and the user is prompted to try again later.

## User Story #7

As a user, I would like to input my age, income, and financial goals to my profile

#	Description	Estimated Time	Owner
1	Integrate UI for updating information (besides financial goals) to the profile page	1 hr	Vikhyat

2	Set up user information controller / endpoint	2 hr	Anirudh
3	Update user table, create table for financial goals and add key in user table	1 hr	Anirudh
4	Create UI for adding financial goals (including progress bar, pop-ups for progress updates)	3 hr	Vikhyat
5	Do unit testing for front-end UI and back-end API and end-to-end testing	2 hr	Vikhyat, Anirudh

#### Acceptance Criteria:

- Given that the user is logged in, they can navigate to their profile page and input their age, income, and financial goals.
- Given that the user enters valid inputs for age and income, the information is successfully saved and updated in their profile.
- Given that the user adds financial goals, the goals are displayed with a progress bar showing their current progress.
- Given that the user inputs financial goals, they should be able to update or delete them as needed.
- Given that the input data is successfully saved, the user is notified with a success message on their profile page.

#### User Story #8

As a user, I would like to be able to delete my account

#	Description	Estimated Time	Owner
1	Create UI for deleting user accounts. Includes a popup modal for the user to confirm if they want to delete their account.	1 hr	Vikhyat
2	Set up delete user controller / endpoint	1 hr	Anirudh
3	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	1 hr	Vikhyat, Anirudh

#### Acceptance Criteria:

- Given that the user is logged in, they can navigate to the settings page and delete their account.



- Given that the user clicks on the "Delete Account" button, a confirmation modal is displayed asking if they are sure about the action.
- Given that the user confirms account deletion, their account is successfully deleted, and they are logged out.
- Given that the account is successfully deleted, the user is notified with a success message and redirected to the homepage.
- Given that the account deletion fails, the user is shown an error message explaining the issue.

## User Story #9

As a user, I would like to view the names of the most popular stocks recently

#	Description	Estimated Time	Owner
1	Create the UI to display popular stocks information (stock logo, ticker, current price, day gain / loss)	4 hr	Vikhyat
2	Initial setup for Polygon.io API data services	3 hr	Dev
3	Set up API endpoint to get the popular stocks	2 hr	Dev
4	Integration with front-end sending / receiving the data requests	1 hr	Vikhyat
5	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	2 hr	Vikhyat, Dev

## Acceptance Criteria:

- Given that the user navigates to the stocks section, they can view a list of the most popular stocks.
- Given that the stock list is displayed, each stock includes its logo, ticker symbol, current price, and the day's gain or loss percentage.
- Given that the API call is successful, the stock data is updated in real-time.
- Given that the API call fails, the user is shown an error message indicating the failure.
- Given that the user clicks on a stock, they are routed to the detailed stock information page.

## User Story #10

As a user, I would like to view the day's highest gain and highest lost stock

#	Description	Estimated Time	Owner
1	Create the UI to display top gainer / loser stock of the day (stock logo, ticker, current price, day gain / loss)	3 hr	Vikhyat
2	Initial setup for TwelveData API data services	2 hr	Dev
3	Set up API endpoint to get the top gainer and loser stocks	2 hr	Dev
4	Integration with front-end sending / receiving the data requests	1 hr	Vikhyat
5	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	2 hr	Vikhyat, Dev

### Acceptance Criteria:

- Given that the user navigates to the stocks section, they can view the top gainer and top loser stocks of the day.
- Given that the top gainers and losers are displayed, each stock includes its logo, ticker symbol, current price, and the day's gain or loss percentage.
- Given that the API call is successful, the gainer and loser data are updated in real-time.
- Given that the API call fails, the user is shown an error message indicating the failure.
- Given that the user clicks on a gainer or loser stock, they are routed to the detailed stock information page.

### User Story #11

As a user, I would like to view a list of most popular and valued mutual funds

#	Description	Estimated Time	Owner
1	Create the UI to display popular mutual funds information (mutual fund name, performance, expenses)	4 hr	Praveer
2	Set up API endpoint to get the popular mutual funds	3 hr	Anirudh
3	Integration with front-end sending / receiving the data requests	1 hr	Praveer

4	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	2 hr	Praveer, Anirudh
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#### Acceptance Criteria:

- Given that the user navigates to the mutual funds section, they can view a list of the most popular mutual funds.
- Given that the mutual funds are displayed, each fund includes its name, performance data, and expenses ratio.
- Given that the API call is successful, the mutual fund data is updated in real-time.
- Given that the API call fails, the user is shown an error message indicating the failure.
- Given that the user clicks on a mutual fund, they are routed to the detailed mutual fund information page.

#### User Story #12

As a user, I would like to view a list of most popular and valued crypto

#	Description	Estimated Time	Owner
1	Create the UI to display popular cryptocurrency information (currency logo, ticker, current price, day gain / loss)	3 hr	Praveer
2	Set up API endpoint to get the most popular cryptocurrencies	3 hr	Dev
3	Integration with front-end sending / receiving the data requests	1 hr	Praveer
4	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	2 hr	Praveer, Dev

#### Acceptance Criteria:

- Given that the user navigates to the cryptocurrency section, they can view a list of the most popular cryptocurrencies.
- Given that the cryptocurrencies are displayed, each includes its logo, ticker symbol, current price, and the day's gain or loss percentage.
- Given that the API call is successful, the cryptocurrency data is updated in real-time.

- Given that the API call fails, the user is shown an error message indicating the failure.
- Given that the user clicks on a cryptocurrency, they are routed to the detailed cryptocurrency information page.

### User Story #13

As a user, I would like to view a list of bonds by time period and popularity

#	Description	Estimated Time	Owner
1	Create the UI to display popular bonds information (bond logo, symbol, name, yield)	4 hr	Praveer
2	Set up API endpoint to get the most popular bonds	3 hr	Anirudh
3	Integration with front-end sending / receiving the data requests	1 hr	Praveer
4	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	2 hr	Praveer, Anirudh

### Acceptance Criteria:

- Given that the user navigates to the bonds section, they can view a list of the most popular bonds.
- Given that the bonds are displayed, each includes its logo, symbol, name, and yield.
- Given that the API call is successful, the bond data is updated in real-time.
- Given that the API call fails, the user is shown an error message indicating the failure.
- Given that the user clicks on a bond, they are routed to the detailed bond information page.

### User Story #14

As a user, I would like to be able to click on an asset name (stock, mutual fund, or any other asset) and be routed to a page with information related to that asset (this will be called an asset page from now on)

#	Description	Estimated Time	Owner
1	Create UI links and handle routing for the popular assets lists	3 hr	Dev
2	Setup API request which sends the current asset's symbol to the backend for information lookup	1 hr	Anirudh
3	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	1 hr	Dev, Anirudh

### Acceptance Criteria:

- Given that the user clicks on an asset name (stock, mutual fund, bond, or cryptocurrency) in any list, they are routed to a detailed asset information page.
- Given that the asset information page is displayed, it includes the asset's relevant details, such as performance history, current value, and related news.
- Given that the API call for asset information is successful, the asset details are fetched and displayed in real-time.
- Given that the API call fails, the user is shown an error message explaining the failure.

### User Story #15

As a user, I would like to search an asset name and be routed to its asset page

#	Description	Estimated Time	Owner
1	Create the UI for search bar	2 hr	Swastik
2	Auto complete feature for search bar using the list of stocks	3 hr	Swastik
3	Set up API endpoint to get list of assets with their logos for auto complete functionality	2 hr	Anirudh
4	Set up content response error messages if searched asset wasn't found	1 hr	Swastik, Anirudh
5	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	1 hr	Swastik, Anirudh

### Acceptance Criteria:

- Given that the user enters a search query in the search bar, an autocomplete dropdown is displayed with matching asset names, logos, and tickers.
- Given that the user selects an asset from the search results, they are routed to that asset's detailed asset page.
- Given that the user enters an asset name that doesn't exist, an error message is displayed, stating that the asset could not be found.
- Given that the API call for the search completes successfully, the search results are fetched in real-time.
- Given that the API call for the search fails, the user is shown an error message explaining the failure.

### User Story #16

As a user, I would like to view a chart with an asset's performance on its asset page

#	Description	Estimated Time	Owner
1	Create the UI for a performance chart (for stocks, ETFs, crypto, and mutual funds) to the asset page (time series data of past prices, selections for different time period charts)	4 hr	Swastik
2	Create the UI for a performance chart (for bonds) to the asset page (time series data of past bond rates, selections for different time period charts)	2 hr	Swastik
3	Set up an API endpoint to get the asset's performance for the selected time period (1min, 5min, 15min, 1hr, 2hr, 4hr, daily, etc)	3 hr	Dev
4	Integration with front-end sending / receiving the data requests	1 hr	Swastik
5	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	3 hr	Swastik, Dev

### Acceptance Criteria:

- Given that the user navigates to an asset page, they can view a chart showing the asset's historical performance.
- Given that the user selects a time period (1min, 5min, 15min, 1hr, etc.), the chart updates to display the performance for that period.
- Given that the asset is a bond, the chart shows time series data of past bond rates instead of price performance.

- Given that the API call for performance data is successful, the chart is updated with the latest data in real-time.
- Given that the API call for performance data fails, the user is shown an error message explaining the failure.

### User Story #17

As a user, I would like to find key metadata about an asset on its asset page, including details: offering organization, all-time high, 52-week low & high, other performance indicators

#	Description	Estimated Time	Owner
1	Create the UI components to display asset information such as ATH, 52 Week Low / High, market capitalization, volume, asset summary (bonds will have different layout)	6 hr	Swastik
2	Create the UI layout for displaying all of the information components	4 hr	Swastik
3	Set up the API endpoint to get quote information about the asset	2 hr	Dev
4	Integration with front-end sending / receiving the data requests	1 hr	Swastik
5	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	3 hr	Swastik, Dev

### Acceptance Criteria:

- Given that the user navigates to an asset page, they can view key metadata such as the asset's all-time high (ATH), 52-week low and high, market capitalization, and volume.
- Given that the asset is a bond, the page layout adjusts to display bond-specific information, such as yield and maturity.
- Given that the API call for asset metadata is successful, the details are fetched and displayed in real-time.
- Given that the API call for asset metadata fails, the user is shown an error message explaining the failure.

### User Story #18

As a user, I would like to see links to the latest financial updates related to an asset on its asset page, scraped from popular news websites to base my investment decisions on

#	Description	Estimated Time	Owner
1	Create the UI component to display the article links / images.	3 hr	Praveer
2	Set up an API endpoint to return a list of article links related to the asset	2 hr	Praveer
3	Set up scraping service to generate the list of articles from popular news sources	8 hr	Praveer
4	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	2 hr	Praveer

#### Acceptance Criteria:

- Given that the user navigates to an asset page, they can view a list of the latest financial articles related to the asset.
- Given that the list of articles includes links and associated images from popular news websites.
- Given that the API call for articles is successful, the article links are fetched and displayed in real-time.
- Given that the API call for articles fails, the user is shown an error message explaining the failure.
- Given that the asset does not have any related articles, a message is displayed stating, "No recent news available for this asset."

#### User Story #19

As a user, I would like to have access to candle charts for 1 minute, 5 minutes, 1 hour time periods

#	Description	Estimated Time	Owner
1	Update the UI for the chart component to allow selection of candle chart timeframes	3 hr	Swastik
2	Set up API endpoint to send time series data for an asset for the past 1 minute, 5 minutes, and 1 hour	2 hr	Anirudh



3	Integration with front-end sending / receiving the data requests	2 hr	Swastik
4	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	2 hr	Swastik, Anirudh

#### Acceptance Criteria:

- Given that the user navigates to an asset page, they can select different time periods (1 minute, 5 minutes, and 1 hour) for candle charts.
- Given that the chart updates based on the selected time period, the relevant candle chart data is displayed.
- Given that the API call for candle chart data is successful, the candle chart updates with the requested data.
- Given that the API call for candle chart data fails, the user is shown an error message explaining the failure.

#### User Story #20

As a user, I would like to have access to moving averages (simple or exponential) for the asset

#	Description	Estimated Time	Owner
1	Update the UI for the chart component to allow selection of moving averages	5 hr	Vikhyat
2	Calculating the moving averages for different time periods and type (simple or EXP) on the backend	2 hr	Dev
3	Integration with front-end sending / receiving the data requests	2 hr	Vikhyat
4	Do unit testing for front-end, back-end, and end-to-end testing for success / error cases	2 hr	Vikhyat, Dev

#### Acceptance Criteria:

- Given that the user navigates to an asset page, they can select between different moving averages (simple or exponential) to be applied to the performance chart.
- Given that the user selects a time period for the moving average, the chart updates to display the correct moving average for the asset.

- Given that the API call to calculate moving averages is successful, the chart is updated with the calculated moving averages in real-time.
- Given that the API call to calculate moving averages fails, the user is shown an error message explaining the failure.

## Total Hours per person for sprint 1:

Member	Time
Dev	35 hrs
Anirudh	33.5 hrs
Swastik	39.5 hrs
Vikhyat	40 hrs
Praveer	32 hrs
<b>Total</b>	180 hrs

## Gantt Chart:

[https://docs.google.com/spreadsheets/d/1IgQYBYetQtOH9MPTOYJ0XyiuVolBmlpxlWNYJN\\_jCYw/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1IgQYBYetQtOH9MPTOYJ0XyiuVolBmlpxlWNYJN_jCYw/edit?usp=sharing)

## Remaining Backlog

### **A. User Account**

- ~~1. As a user, I would like to be able to create an account using an email, a username, and a password~~
- ~~2. As a user, I would like to be able to login to my account using an email/a username and a password~~
- ~~3. As a user, I would like to be able to reset my password by sending a verification link to my email~~
- ~~4. As a user, I would like to be able to change the email linked to my account~~
- ~~5. As a user, I would like to be able to modify my username~~
- ~~6. As a user, I would like to be able to upload a photo for my profile picture~~
- ~~7. As a user, I would like to input my age, income, and financial goals to my profile~~
- ~~8. As a user, I would like to be able to delete my account~~

### **B. Finding assets**

- ~~9. As a user, I would like to view the names of the most popular stocks recently~~
- ~~10. As a user, I would like to view the day's highest gain and highest lost stock~~
- ~~11. As a user, I would like to view a list of most popular and valued mutual funds~~

- ~~12. As a user, I would like to view a list of most popular and valued crypto~~
- ~~13. As a user, I would like to view a list of bonds by time period and popularity~~
- ~~14. As a user, I would like to view a list of most popular and valued life insurances~~
- ~~15. As a user, I would like to be able to click on an asset name (stock, mutual fund, or any other asset) and be routed to a page with information related to that asset (this will be called an asset page from now on)~~
- ~~16. As a user, I would like to search an asset name and be routed to its asset page~~

### **~~C. Asset pages~~**

- ~~17. As a user, I would like to view a chart with an asset's performance on its asset page~~
- ~~18. As a user, I would like to find key metadata about an asset on its asset page, including details: offering organization, all-time high, 52-week low & high, other performance indicators~~
- ~~19. As a user, I would like to see links to the latest financial updates related to an asset on its asset page, scraped from popular news websites to base my investment decisions on~~
- ~~20. As a user, I would like to have access to candle charts for 1 minute, 5 minutes, 1 hour time periods~~
- ~~21. As a user, I would like to have access to moving averages (simple or exponential) for the asset~~

### **D. Portfolio Insights**

- 22. As a user, I would like to be able to input my current portfolios manually
- 23. As a user, I would like to be able to upload brokerage statements to automatically load investments into my portfolio
- 24. As a user, I would like to be able to set a target savings goal to work towards
- 25. As a user, I would like to answer questions to determine my risk tolerance so that the system can recommend investments suited to my risk profile
- 26. As a user, I would like to see a risk assessment based on my current portfolio and risk preferences
- 27. As a user, I would like to see heat maps for financial assets
- 28. As a user, I would like to view risk-to-return plots for my portfolio
- 29. As a user, I would like to see sector and diversity pie-charts for my portfolio
- 30. As a user, I would like to receive suggestions on potential investment options based on my age, income, and financial goals
- 31. As a user, I would like to import investments by syncing brokerage account data directly through Fidelity and Robinhood's platform. (If time allows)

### **E. Investment Projections**

- 32. As a user, I would like to navigate to a projections page and create price projections for assets that I select
- 33. As a user, I would like to see a chart with a graph that shows the results of an investment projection I made
- 34. As a user, I would like the chart of the projection to be interactive so that I can see live updates

- 35. As a user, I would like to see an investment projection based on historical averages for individual stocks or crypto currencies that I select
- 36. As a user, I would like to see an investment projection based on selected mutual fund and set periodic contribution
- 37. As a user, I would like to see a bonds projection based on selected bond type, duration, and interest rates
- 38. As a user, I would like to see a life insurance value projection based on selected life insurance policy, premium payments, and duration
- 39. As a user, I would like to select assets from my portfolio to see a multi-asset portfolio projection
- 40. As a user, I would like to be able to modify expected return rates, inflation rates, investment fees, tax impacts and time periods for my projections
- 41. As a user, I would like to see the effects of recessions, bull markets, or inflationary periods on projected performances

#### **F. Interactive Learning, Competitions, and Friends**

- 42. As a user, I would like to engage in paper-trading with real-time market data
- 43. As a user, I would like to be able to create or join paper-trading competitions where participants start with equal funds
- 44. As a user, I would like to be able to trade assets during the competition period using my virtual funds
- 45. As a user, I would like to track the performance of my portfolio throughout the competition to monitor my progress
- 46. As a user, I would like to see a leaderboard that ranks participants by portfolio value to know my standing in the competition
- 47. As a user, I would like to collect participation badges from competitions
- 48. As a user, I would like to earn achievements (top 5, 10, 50) for placing on the leaderboard in competitions
- 49. As a user, I would like to be able to view other users' usernames, profile picture, badges, and achievements (the page that displays this info will be called user page from now on)
- 50. As a user, I would like to click on the username of another user and be routed to their user page
- 51. As a user, I would like to search and find users by username
- 52. As a user, I would like to add a user as a friend
- 53. As a user, I would like to remove/block friends
- 54. As a user, I would like to create private competitions of my own that are only joinable by my friends
- 55. As a user, I would like to review my past competitions and see my trading history/performance (if time allows)
- 56. As a user, I would like to receive notifications and updates during the competition, such as when rankings change or a milestone is reached (if time allows)

#### **G. Custom Chatbot (EVERYTHING here only if time allows)**

- 57. As a user, I would like to ask a chatbot simple questions that I have about investing or the meaning of the different investment options available

58. As a user, I would like to ask the chatbot questions about how I could use the application and its features
59. As a user, I would like to discuss recent financial news topics with the chatbot