

CS 307

Product Backlog

Team 15

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

Project Name: Investify

Problem Statement

Learning how to invest can be challenging, especially for beginners or those unfamiliar with financial markets. Since there's no one-size-fits-all approach and each person's financial situation is unique, we aim to create an application that helps users explore various investment options like stocks, mutual funds, cryptocurrencies, bonds, and even life insurance policies, while also making the learning process simpler and more accessible.

Background Information

- Background

The financial market can be complex and intimidating, especially for beginners or individuals with limited knowledge in the field. Investment options range from stocks and mutual funds to more advanced opportunities like cryptocurrencies, bonds, and insurance policies. Each of these options comes with different risk levels, rewards, and long-term implications, making it difficult for new investors to choose the right path.

Moreover, these investment options require a significant amount of theoretical knowledge, which can take time to acquire. Building the necessary experience often comes through trial and error or through guidance from experts and peers. However, access to expert insights and opportunities to connect with like-minded individuals interested in similar investment options can be limited, further hindering a new investor's learning journey.

- Audience

The audience for this project includes, but is not limited to:

- 1) Individuals with little to no experience in financial markets who are interested in learning how to grow their wealth.
- 2) Recent graduates or entry-level professionals who are starting their careers and looking to invest their savings.
- 3) Students learning about finance and investments who want hands-on experience with different markets.

- Domain

The project focuses on stocks, bonds, mutual funds, real estate, cryptocurrencies, and life insurance policies. These markets operate based on different rules, regulations, and strategies, making it important for users to gain knowledge across the spectrum. Understanding these diverse markets is crucial for making informed investment decisions based on their financial goals, risk tolerance, and market conditions.

- Limitations of Similar Platforms and How we address them

- 1) Investopedia Simulator

Investopedia Simulator allows users to practice stock trading with live market data, similar to our planned trading game. While it offers stock

trading simulations, it focuses only on live market data and is limited to stocks, leaving out other investment options.

Our platform will provide support for multiple financial products, allowing users to explore a variety of investment options.

We also offer the ability to simulate historical examples of market conditions (part of the educational courses stretch goal), helping users learn how different market conditions affect prices over time (If time allows).

2) Wealthfront

Wealthfront provides robo-advisors to help users manage their investment portfolios, similar to our portfolio management feature. It doesn't focus on educating users or giving them hands-on experience in making investment decisions. It primarily emphasizes passive portfolio management rather than active learning and decision-making.

We offer an interactive learning experience, allowing users to actively simulate investments and make decisions

3) Robinhood

Robinhood facilitates real-time trading and includes some basic educational content, with a focus on active investments in stocks and cryptocurrencies. Its educational content is basic, and it lacks comprehensive learning resources for users who want to dive deeper into financial strategies across multiple asset classes.

We offer a structured learning system with expert-created courses to guide users through various strategies and market scenarios (If time allows).

Requirements

Functional:

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 profileS
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

Non-functional:

Usability:

The frontend website should be compatible with browserlist (<https://github.com/browserslist/browserslist>) defaults. This means that the frontend should be compatible with any browser with > 0.5% market share. For these browsers, backwards compatibility with the last 2 major versions should be achieved. Firefox ESR should be supported. Dead browsers like Internet Explorer need not be supported.

The user interface should be responsive to both mobile and larger screens allowing for a seamless experience on any device. There should be accessibility features such as aria labels so that users with disabilities can use the site.

Authentication and Security:

Users should have the ability to securely login to the site. After a user logs in, they should stay logged in for up to a week if they are inactive.

The server should be configured to only accept requests from the frontend, and no third-party domains. A user's personal information can only be accessed when the user is logged in. Sensitive information should be encrypted. Passwords should be salted and hashed.

Users' activity or portfolio data should not be used without their permission.

A rate limit should be enforced through a reverse proxy to prevent a DDOS attack. The rate limit should limit a user's max requests per second to 100.

There should also be measures taken to prevent cross-site scripting attacks to prevent user data leaks.

Scalability:

The website, server, and database should be hosted on the cloud. All user requests go to the backend server, where they should be processed in parallel with other user requests. The server should be able to handle at least 1,000 concurrent users and ~1,000 concurrent requests, and it should be running 24/7. Each request should take no more than 500ms to be completed. The server should scale during active market hours to support increased user traffic.

Maintainability:

The code should be well documented and commented. There should be unit tests in all parts of the code to prevent bugs in production. Google's style guides should be used to maintain code standards.