Project Charter
CS 307 Team 15
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1. Problem Statement

It's difficult for beginners or people with no knowledge about financial markets to learn about how they can invest their money. There is no one right way and each person's situation is likely to be different so we want to solve this problem by creating an application that encourages users to learn about the different investment options available to grow their money.

Our application will be different from other existing services because we want to give exposure to all the common types of investments such as stocks, mutual funds, cryptocurrencies, bonds, and even life insurance policies. Also, unlike popular trade simulators like InvestopediaSimulator that only support live trading, we want to give users the opportunity to simulate trades during specific time frames as well so that they could learn the effects of different market conditions.

2. Project Objectives

Centralize Investment Learning Across Multiple Markets:
Our platform will offer users a comprehensive learning experience. We will expose users to various investment options, including stocks, bonds, mutual funds, cryptocurrencies, real estate, and life insurance policies. This approach will ensure users gain a holistic understanding of different financial markets. We will address the gap left by existing platforms that focus on a single market.

Develop a Comprehensive Portfolio Management System:
Our tool will allow users to input or link their current investments. The system will provide projections, risk assessments, and performance comparisons against various indexes and investment types. Users will be able to adjust key parameters such as return rates, inflation, and fees to explore different financial scenarios.

Enable Interactive Investment Simulations and Competitions:
We will design an investment simulation tool for paper trading, allowing users to practice making investment decisions in real-time market conditions without financial risk. Additionally, we will implement a competitive mode where users can engage in trading competitions. Users will earn badges and recognition for their performance.

Integrate Real-Time Financial News and Anailysis Tools:
Our platform will provide users with real-time financial news updates from credible sources. Users will also have access to technical analysis tools, such as moving averages and candlestick charts. This will empower users to make better-informed investment decisions based on current market conditions.

Stretch Goals:

Deliver Engaging Educational Content with Expert Insights:
We will establish a structured learning system that includes expert-created courses, tutorials, and quizzes. These resources will help users build foundational knowledge in investing and advanced strategies. The courses will cover various market scenarios and historical examples to offer practical insights.

Enhance User Engagement with AI-Powered Assistance:
We will utilize the OpenAI API to create a custom chatbot. The chatbot will assist users with course content, answer financial questions, and provide updates on market news. It will enhance user engagement and act as an accessible source of knowledge throughout their learning journey.

3. Stakeholders

Users: Users consist of individuals interested in learning about investing and different financial markets. This includes business students or young professionals starting entry-level jobs who want to understand how to invest their money.

Customers: The organization funding the project, such as an educational institution or a financial firm. This organization consists of professionals skilled in financial markets who aim to monetize their expertise by providing educational resources and guidance to beginners in investing.

Software developers: The team developing the software, consisting of 5 developers: Dev Patel, Swastik Agarwala, Anirudh Kaza, Vikhyat Jagini, Praveer Sharan.

Development Managers: Rob C. Dickerson, the project coordinator, is responsible for ensuring that weekly progress is made and that each team member is actively contributing to the project.

4. Deliverables

We are creating a web-based application using React.js for the frontend and Spring (Spring Boot, Spring Data, Spring Security) + PostgreSQL for the backend. The frontend and backend will be dockerized and deployed on AWS. The following features will be supported:

Investment Projections and Tools

- Allows users to create investment projections for stock, mutual fund, cryptocurrency, bond, and insurance markets for a wide variety of user-specified starting conditions and assumptions, displayed through interactive UIs
- A portfolio page will allow users to input their current portfolios manually or parse brokerage statements
    - Stretch Goal: Linking to compatible retirement or brokerage accounts.
- Once users set up their portfolio, they can see personalized insights and recommendations based on various factors of their user profiles/investments

Interactive Learning and Competitions

- Develop an investing game where users engage in paper trading with real-time market data. Market data will be pulled from an API such as Polygon.io or Yahoo finance and will be processed on the backend.
- There will be a competition mode where users start with equal funds and trade over a set period. The user with the highest portfolio value at the end wins.
- Users can add friends and join public or private games.
- We will provide links to the latest financial updates for users to base their investment decisions on. These updates will come from popular news sources obtained using web scraping performed on the backend.
- Include technical analysis tools like 5-minute candles and moving averages which will be displayed through the UI.

Stretch Goals:

Educational Courses

- Offer a courses page where users can learn about trading strategies and financial advice through historical data examples, pulled from an API such as Polygon.io or Yahoo finance.
- Courses will be created by financial experts from our customers, and each course will include a description of objectives and an estimated time commitment.

- An admin panel (built using React and Spring as well) will allow customer companies to create and manage courses, including the ability to integrate historical examples.

Custom Chatbot

- Plan to use the OpenAI API to develop a custom chatbot that is knowledgeable about course content and can answer user questions.
- The chatbot will stay up-to-date with the latest financial news through GPT actions, providing relevant information in real time.