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CMSC 12200: Group Project

Goal: Create a Robo-Investment Advisor designed for long-term investors (at least 10 years investment horizon).

- A user will input certain financial information and complete a questionnaire, and the program will create a long-term focused investment portfolio designed for the person.
- The program will explain why each asset (US stocks, US bonds, international developed stocks, etc.) is part of the portfolio, how the assets perform together, the historical performance of the portfolio, the risks involved, and forward projections of the potential investment performance based on past trends and current data.

Investments:
We will use Vanguard mutual funds, index funds, and exchange traded funds (ETFs) for the specific investments for each asset allocation.

- Individual, inexperienced investors should focus on three main aspects for an investment portfolio: asset allocation, diversification, and cost management.
    o Vanguard has fund / ETF offerings in practically every important market sector, allowing us to create nearly any asset allocation.
    o Most Vanguard funds / ETFs have hundreds of securities, providing diversification to minimize performance of individual securities and instead get exposure to certain market segments.
    o Additionally, Vanguard funds / ETFs are typically among the lowest in cost in their specific market sectors, while also allowing investors to trade Vanguard funds / ETFs for free. For most ETFs and some funds, Vanguard does not require a minimum investment, meaning that essentially all investors can use Vanguard.

Data:
Data will come from Yahoo Finance, as all historical price and distribution information for Vanguard funds / ETFs can be easily found through Yahoo. We are planning to store at least 20 years of information for each fund / ETF into SQLite3 tables.

Key Features:
- Multiple-choice based questionnaire of long-term financial and behavioral questions to determine the proper asset allocation
    o We will provide a weight to each question, and a score to each potential answer. An algorithm will calculate a score based on the questionnaire, which will correspond to one of general asset allocations (from least to most risky)

- 6 potential investment portfolios based on Vanguard funds / ETFs
    o Six general asset allocations are 0% Equity 100% Fixed Income, 20% E 80% FI, 40% E 60% FI, 60% E 40% FI, 80% E 20% FI, 100% E 0% FI

- Table of correlations, standard deviations, historical returns, etc. of each fund / ETF in the recommended portfolio

- Graphs of historical long-term performance of the recommended investment portfolio / asset allocation based on the user's current investable income, as well as various projections of potential future performance based on user's current investable income and future additions
    - Potentially user-adjustable long-term rates of return for future performance

Important Tasks:
- Create questions and important financial information that users must answer / input, and create the weights to determine the score for deciding which asset allocation to choose.

- Develop a user interface clearly explaining the product and potential features.
    - Look at Wealthfront and Betterment for interface examples.

- Scrape Yahoo Finance for historical pricing and distribution info for Vanguard investments, and create all relevant graphs and text.
    - Biggest hurdle is properly incorporating distribution (dividends, capital gains, etc) into the performance of the funds.

General Timeline:
- Weeks 5-6: Get investment data from Yahoo Finance stored into SQLite3 tables. Develop questionnaire, as well as scores corresponding to each asset allocation. Specify investments for each asset allocation. General ideas for user-friendly interface. Develop graphs and tables for each asset allocation. Have rough copy of interface cover page created.

- Weeks 7-8: Have rough copies for interfaces of each asset allocation page created. Ensure questionnaire can be answered and submitted, leading to a specific asset allocation recommended.

- Week 9: Have working, easy-to-use interface, and submitted questionnaire leading to one of the asset allocations. Add important features relating to graphs, tables, and text relevant for the user to understand why asset allocation was chosen.

- Week 10: Completed version of the Robo-Advisor.