CMSC 122 Project Proposal

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GOAL:

Given an investment strategy, our program will create a visualizer of the returns within a specified range of years by pulling the companies associated with that strategy from the S&P 500 and displaying 1, 5, 10, or 15 year returns.

More specifically, the user will choose the strategy desired, of which we hope to have 10 of the most popular such as volatility, size of company, etc. They will also choose the time period of the returns – 1, 5, 10, or 15 years – and a desired range of years to display. Our program will then pull the appropriate companies for every year within the timeframe and display the desired returns in a graph and possibly also in a table with the raw values.

We hope to have an option to compare the returns with the overall S&P 500 as well.

DATA SOURCES:

1. Historical component list of S&P 500
    - Siblis Research – $100 fee
2. Historical stocks of companies and overall S&P 500
    - Yahoo finance – can download data for a company

SKETCH OF WORK & TIMELINE:

Step 1: Obtaining data, due Jan 29

1. A dictionary with year (integer) as key and a list of abbreviations (strings) of S&P 500 companies in that year as values
2. Program to obtain stock price of a particular company on a given date from Yahoo finance
    a. Potential idea: since Yahoo provides the option to download a table of historical data, perhaps we can store all this data rather than pulling it when needed.

Step 2: Selecting a bucket of companies, due Feb 10

1. Research and choose top 10 investment strategies
2. Create functions that:
    a. Take investment strategy (string), beginning and ending year (integers), and investing period (integer in years) as inputs
    b. Generate a dictionary with years as keys and the list of abbreviations (string) of companies as values corresponding to the appropriate companies for the strategy for the year.

Step 3: Calculating the returns of the companies, due Feb 17

1. Create functions that:
    a. Take the above dictionary as input
    b. Generate a list of floats that display the returns over the desired period of time for each bucket of companies (each value in the dictionary).

Step 4: Visualizing historical returns, due Mar 3

1. Create functions that:
    a. Take the above list of floats as an input
    b. Generate a graph with years as x-axis and returns as y-axis

Additional features, if there is time:

1. Compare investment strategies across indices like S&P 500, DJIA, etc.
2. Output the optimal strategy given a time frame and time period of returns
3. Mix and match strategies