Progress Report
- Increment 2 -
Group #2

1) Team Members

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2) Project Title and Description

Money Mills

- We are planning on building a stock market application that fetches past stock data and utilizes it to calculate theoretical option prices. Additionally, the application should display suggestions on what stocks the user should consider investing in, and the risk involved in those investments. Overall, the application serves to help investors decide on what stocks to invest long term.
- Our implementation involves using the Black-Scholes-Merton Model (BSM) and other options pricing models such as binomial and trinomial cash flow modeling. The BSM is a theoretical pricing model for European-style Call options. The most useful characteristic is its inherent property to help predict future price movements. The accuracy of the BSM for predicting future price movements is roughly 68% or 1 standard deviation. We can leverage this to determine when to buy, sell, hold, or sell short a portfolio of stocks and options.
- Another thing to note is that during periods of sudden price movement, such as a market crash or an earnings announcement, the BSM and the options market tends to overstate the price movement of the underlying products. We can take advantage of this situation by suggesting our users sell short options to profit from this scenario (while making clear this is a risky trade). In fact, Barclays Bank has written a paper on this phenomenon suggesting it has been a profitable venture for them (Deshpande et al.).

3) Accomplishments and overall project status during this increment

-Working code using TD-Ameritrade API :

https://developer.tdameritrade.com/apis

-Able to filter through option chain data based on filters ex. Strike, Contract Type, Ticker, Expiration Date

3) Challenges, changes in the plan and scope of the project and things that went wrong during this increment

One of the problems found in this increment was determining which would be the best alternative to the Polygon.io API. The limited calls and expensive monthly premium version rate forced us to search for alternatives. We discovered that by having a TD Ameritrade investment account, you have free access to Market Data API's. For this reason we ended up using the TD Ameritrade API

4) Team Member Contribution for this increment

a) Marcelo completed the progress report document
b) Brian and Jeffrey completed the RD document
c) Roy completed the RD document
d) Brian wrote the original Polygon.io source code and Marcelo wrote the TDA source code
e) Roy recorded the video presentation

5) Plans for the next increment

- Input the output from the TDA option chain into a method that calculates the black scholes model for a specific contract. Use the calculation to find theoretical option yield for the specific contract and calculate the statistical probability of trades.

6) Link to video

https://drive.google.com/file/d/1-txfiNEbJ60x4lMqkDBxcs3xwft_eqCs/view?usp=sharing