Progress Report
- Increment 3 -
Group #2

1) Team Members

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2) Project Title and Description

Money Mills

- We built a stock market application that fetches past stock data and utilizes it to calculate theoretical option prices. Overall, the application serves to help investors decide on what stocks to invest long term, but it only serves as a factor in deciding which stocks are worth buying as other factors should be taken into consideration.
- Our implementation involves using the Binomial Option Pricing Model. The BOPM is an options valuation method which uses an iterative procedure, allowing for the specification of nodes, or points in time, during the time span between the valuation date and the option's expiration date. The most useful characteristic is its inherent property to help value American options using an iterative procedure over multiple periods. The accuracy of the BOPM for predicting future price movements is even more accurate than the previous Black Scholes Model we used. 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 BOPM 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

- Built a running program using the Binomial Pricing Model instead of Black Scholes

- Deciphered the information for the option chain from the JSON file

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 an alternative to the Black Scholes Model. This is because upon further testing, we realized that this model is mainly applied to European stocks, not American stocks. Therefore, we needed an alternative model to fully utilize the API we had. We discovered that by using the Binomial Option Pricing Model, we can get reliable information regarding American stocks while fully utilizing the API. For this reason we ended up using the Binomial Option Pricing Model in our final iteration.

4) Team Member Contribution for this increment

a) Brian completed the progress report document
b) Jeffrey completed the RD document
c) Roy completed the IT Iteration document
d) Marcelo edited and retouched the TDA source code
e) Roy recorded the video presentation

5) Plans for the next increment

- N/A

6) Link to video *https://youtu.be/07vwvpirdhc*