Progress Report
- Increment 1 -
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

-Black scholes model research

-API option chain data:

https://developer.tdameritrade.com/option-chains/apis/get/marketdata/chains

-API stock data:

https://polygon.io/docs/websockets/connect

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

Some challenges included which API was the best to use and which programming language to accompany it. We are also deciding whether to include an interface when the first running version is operational. We are considering using Polygon.io's options trade beta websocket stream since it doesn't include an options stream.

4) Team Member Contribution for this increment

a) Jefrey and Brian worked collaboratively on the project description and challenges section. Marcelo completed the accomplishments and plans for next sections.
b) Marcelo completed the diagram, operative environment and assumption sections. Roy completed the remaining sections.
c) Brian and Jeffrey worked collaboratively on the implementation and testing document.
d) We do not have any source code thus far, only the API repository we will use for data collection.
e) We all filmed the video together in person, Marcelo wrote the script, no edits had to be made.

5) Plans for the next increment

- Have a minimum viable product by the time of increment #2
- Apply black scholes model to find theoretical option yields
- Research methods that will calculate the statistical probability of trades
- Recommend https://github.com/polygon-io/client-python to use

6) Link to video

https://drive.google.com/file/d/1l8dhb5bqN5eTd5jxCjBOVw6xe02Ei7gr/view?usp=sharing