Software Requirements and Design Document

For

Group <2>

Money Mills

Version 2.0

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1. Overview (5 points)

The project revolves around querying the API from a service called *TD Ameritrade* to gather, sort, and organize the data and input them into an algorithm called the *Black-Scholes Model*. The UI will be terminal based and ideally, the user would enter a desired stock ticker and data will be formatted to determine the optimal entry/exit points if the pre-existing trends show a possibility of success.

2. Functional Requirements (10 points)

The high priority requirements would most likely involve being able to access the options chain and stock data from the API that is chosen and store them temporarily in an easily readable format. This is an integral part of the program and without any data, no algorithms can be run to determine an appropriate output.

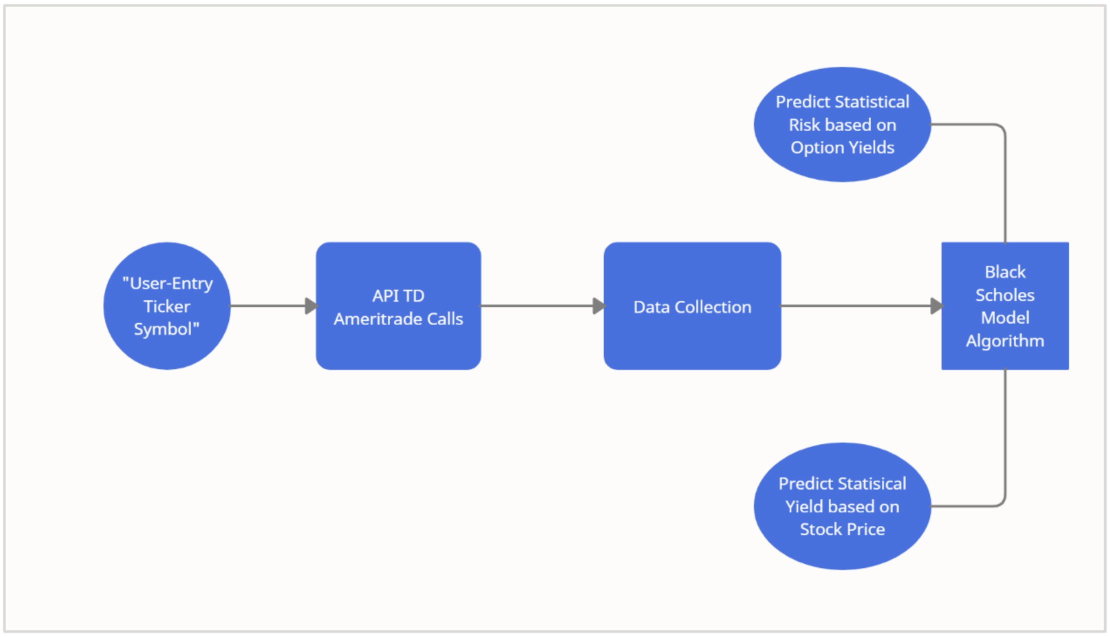
A medium priority requirement would be to utilize the data and input them into the Black Scholes Model as well as reformat the results into a comprehensive description for which option has the highest probability of success. Establishing a matrix or graph of the options chain would also be considered to enhance readability and comparisons.

The lowest priority requirement mostly involves the interface and its aesthetics. Because most of the back-end framework is still underdeveloped, there is almost no reason to begin “polishing” the front-end since it provides little to no substance to the actual program.

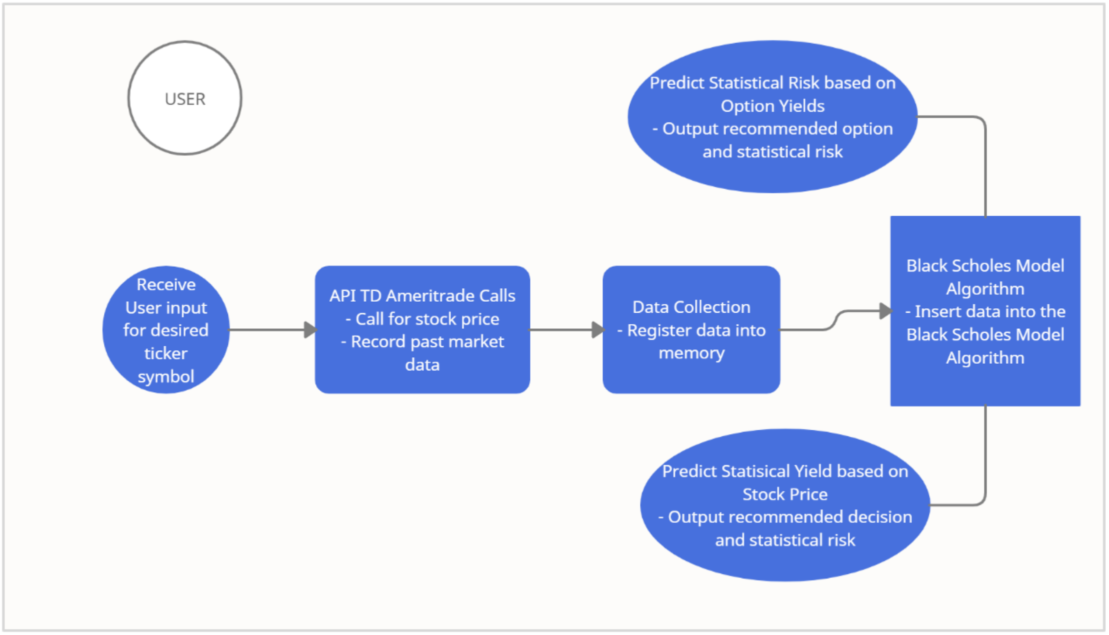
3. Non-functional Requirements (10 points)

Because the data is all accessible relatively easily (albeit unorganized and scattered), the security of the program mostly resides in the ability to keep API keys hidden or inaccessible to the user since the keys are given to one person who has private information tied to it. As for performance and mainly reliability, this will not be a concern because the API key we will be using currently allows 120 calls per minute, which is basically one call every half a second. This makes it reliable for fast, day trading users since our limit is very high. Regarding software quality, the requirement will simply involve efficient and simple code that follows with the original program proposal/plan.

4. Use Case Diagram (10 points)


"User-Entry Ticker Symbol"
API TD Ameritrade Calls
Data Collection
Black Scholes Model Algorithm
Predict Statistical Risk based on Option Yields
Predict Statisical Yield based on Stock Price

5. Class Diagram and/or Sequence Diagrams (15 points)


USER
Predict Statistical Risk based on Option Yields - Output recommended option and statistical risk
Receive User input for desired ticker symbol
API TD Ameritrade Calls - Call for stock price - Record past market data
Data Collection - Register data into memory
Black Scholes Model Algorithm - Insert data into the Black Scholes Model Algorithm
Predict Statisical Yield based on Stock Price - Output recommended decision and statistical risk

6. Operating Environment (5 points)

The program will be written in Python and the user will be able to access the program via the website. The website will have a basic user interface where the user will be able to enter their desired ticker symbol.

7. Assumptions and Dependencies (5 points)

Compared to our previously selected API Polygon.io, TD Ameritrade's API is more efficient since it allows for 120 calls per minute. As we previously mentioned in our first RD document, we wanted to search for a better API in order to obtain better and faster information for our stock program. Now that we utilizing TD Ameritrade, hopefully we can get more reliable and up to date stock information.