Stock Data Analysis Software

**Overview**

* Aim of learning: networking download and upload, data analysis
* Program will take stock data from an online source (live?), process data about it, display this information (live?) and upload processed data to an online source (retrievable to view and analyse). Graphical display, but no need to implement an interactable interface.
* Topics to research: sources of online data, how it can be received, elements to process about online data, where to upload processed information.
* Language: python, often used in finance.

**General Scope**

* Firstly, find a consistent source of data. Most will be paid due to web serve requests, so avoid this with web scraping if no other alternatives were found. Implement a web scraper not with hardcoding, possibly make a library for web understanding. The source should be able to provide data at roughly once per second.
* The visual will update in real time, as the data is received (use threading though), use a console as inputs (for stock input, types of outputs, timescale, etc.)
* The output will only processed when wanted to avoid any costs or overloading.

**Individual Research**

* Stock APIs: Alpha Vantage (500 per day, 5 times per minute), yahoo finance (60 per minute, 8000 per day), IEX API (up to 5 times per second?)
* Possibilities for Stock Scraping: google search (possible values in div), yahoo
* Use PyGame API - similar to OpenGL programming and makes sense
* Uploading endpoint – use AWS (good for portfolio) – use S3 (glacier is for archiving)

**Getting Stock Data**

* Yahoo Finance – Historical Stock Data Page – can either scrape from the website or download a CSV. Seemingly no download limit. Max date is not actual maximum if manually set. <https://finance.yahoo.com/quote/GOOG/history?p=GOOG>
* Google – image scrape from stock graph. Maximum 5 year back. No download limit although captcha may get you, may be slow. <https://www.google.com/search?q=amd+stock>
* Possibly: <https://www.nasdaq.com/market-activity/stocks/amd/latest-real-time-trades>

To Do

1. Create scraping code to find historical stock data for a desired ticker
2. Create scraping code to find live stock data for a given ticker
3. Add check to see if ticker is available from data source
4. Add check to see if market is open (for live data)
5. Get all data returned into a ‘graphable format’
6. Fix live data function to store all data apart from new data to prevent need for repeated function calls (dict?)
7. Add to live data function to access “more of the hour” by using multiple function calls & an offset
8. Simple live data visualizer
9. Simple historical data visualizer
10. Fix bug on live data view where points are connecting over other points
11. Find out what variables can/should be calculated about stock data
12. Create a good CLI to interact
13. Determine what to be uploaded, and to where
14. Possibly change to Nasdaq for historical (<https://www.nasdaq.com/market-activity/stocks/amd/historical>) same csv method
15. Possibly add compatibility for cryptocurrency (live + historical)
16. Fix bug where live stock graph to connect points
17. Add error checking in all places where needed – nonetypes for stock data, int for download choice
18. Clean code
19. Finalise by taking screenshots + (private) github upload