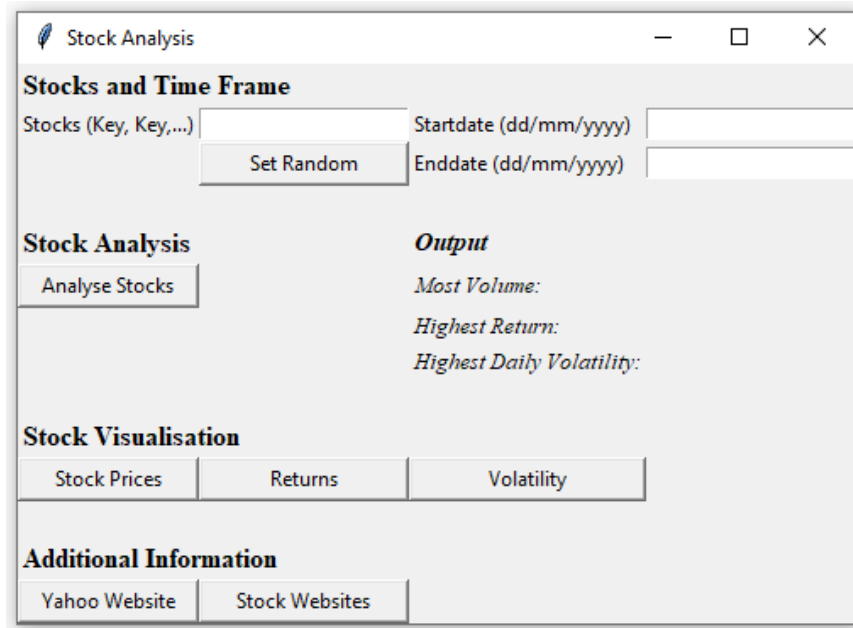


# Step-by-step user guide - Stock Analysis program

## Step 1:

Open stock\_analysis\_py and run the program. A console is going to open that looks like this:



The screenshot shows a window titled "Stock Analysis" with a standard Windows title bar (minimize, maximize, close buttons). The interface is divided into several sections:

- Stocks and Time Frame:** Contains a text input field labeled "Stocks (Key, Key,...)", a "Set Random" button, a "Startdate (dd/mm/yyyy)" text input field, and an "Enddate (dd/mm/yyyy)" text input field.
- Stock Analysis:** Contains an "Analyse Stocks" button.
- Output:** Displays three lines of text: "Most Volume:", "Highest Return:", and "Highest Daily Volatility:", each followed by a blank space for the result.
- Stock Visualisation:** Contains three buttons: "Stock Prices", "Returns", and "Volatility".
- Additional Information:** Contains two buttons: "Yahoo Website" and "Stock Websites".

## Step 2:

Add all the different stocks you want to analyze in the **input box 1** and type in the start- and end date for the period you want to cover in the **input boxes 2 and 3**.



This image shows the same "Stocks and Time Frame" section of the program, but with numbered annotations:

- 1** points to the "Stocks (Key, Key,...)" input field.
- 2** points to the "Startdate (dd/mm/yyyy)" input field.
- 3** points to the "Enddate (dd/mm/yyyy)" input field.
- 4** points to the "Set Random" button.

For **input box 1** – make sure to type the stocks with the right keys. For example, instead of writing Netflix you need to write NFLX in order for the program to work. You can look up the keys for each stock on Yahoo Finance. Also, if you want to add more than one stock, you can separate them with a comma like this: NFLX,FB,AAPL

For the **input boxes 2 and 3** – make sure to type the start- and end date in the right order. The right order is dd/mm/yyyy. An example would be 31/12/2017 as start date and 01/07/2019 as end date.

If you just want to quickly try out the program, you can also click on the '**Set Random**' (**4**) button. This will automatically fill out all three input boxes.

### Step 3:

After you typed in all the stocks you want to analyse and also the time frame you want to cover, you can click on the button 'Analyse Stocks' (5).

Stocks and Time Frame			
Stocks (Key, Key,...)	NFLX, FB, AAPL	Startdate (dd/mm/yyyy)	31/12/2017
	<button>Set Random</button>	Enddate (dd/mm/yyyy)	01/07/2019
<b>Stock Analysis</b>		<b>Output</b>	
<button>Analyse Stocks</button>	<b>5</b>	<i>Most Volume:</i>	
		<i>Highest Return:</i>	
		<i>Highest Daily Volatility:</i>	

This will do two things:

1. Firstly, it will open a graph which visualizes the stock with the highest return and also its 20-days/100-days simple moving average. In this example, out of Netflix, Facebook and Apple the Netflix stock had the highest return over the given period.



2. Secondly, it will automatically analyse all the stocks which you typed in the input box. This will show you the stock with the most volume, the stock with the highest return and the stock with the highest daily volatility. You can see this in the console under the 'Output' (6) section after you close the previous opened graph:

Stocks and Time Frame			
Stocks (Key, Key,...)	NFLX, FB, AAPL	Startdate (dd/mm/yyyy)	31/12/2017
	<button>Set Random</button>	Enddate (dd/mm/yyyy)	01/07/2019
<b>Stock Analysis</b>		<b>Output</b>	
<button>Analyse Stocks</button>		<b>6</b>	
		<i>Most Volume:</i>	AAPL
		<i>Highest Return:</i>	NFLX
		<i>Highest Daily Volatility:</i>	NFLX

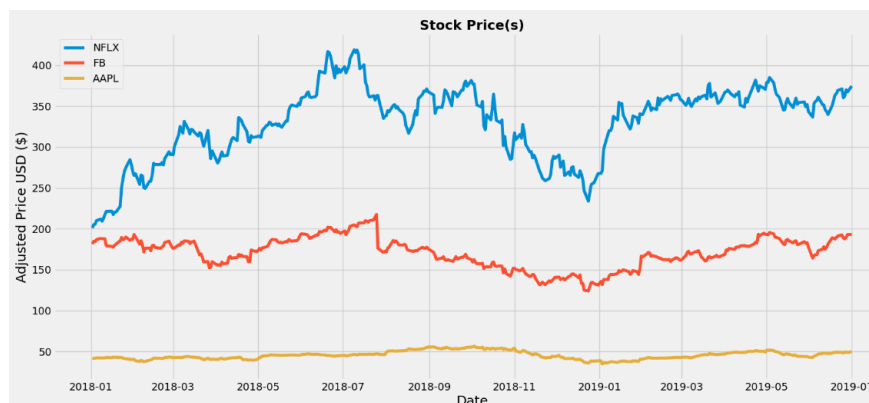
In our example the Apple stock has the most volume and the Netflix stock has the highest return as well as the highest daily volatility in the given time frame.

## Step 4:

If you want to see the differences in volume, return and daily volatility of the analysed stocks in detail, you can do this with the **buttons (7)** in the next section called '**Stock Visualisation**'.

Stocks and Time Frame	
Stocks (Key, Key,...)	NFLX, FB, AAPL
Startdate (dd/mm/yyyy)	31/12/2017
Enddate (dd/mm/yyyy)	01/07/2019
<input type="button" value="Set Random"/>	
Stock Analysis	
<input type="button" value="Analyse Stocks"/>	
Output	
Most Volume:	AAPL
Highest Return:	NFLX
Highest Daily Volatility:	NFLX
Stock Visualisation <b>7</b>	
<input type="button" value="Stock Prices"/>	<input type="button" value="Returns"/>
<input type="button" value="Volatility"/>	

The button '**Stock Prices**' opens the following graph where you will find the stock prices of the stocks over the analysed time frame:



The button '**Return**' opens the following graph where you will find the returns of the stocks over the analysed time frame:



Notes: In this graph, all stocks start on '1.0' and the percental changes are displayed.

The chart displays the daily percentage change in stock prices for three major technology companies: Netflix (NFLX), Facebook (FB), and Apple (AAPL). The x-axis represents the date from January 2018 to July 2019, and the y-axis represents the daily percentage change, ranging from -0.20 to 0.10. The chart shows that all three stocks exhibit high volatility, with significant fluctuations in their daily percentage changes. Facebook (FB) shows a particularly sharp decline in late 2018, reaching a low of approximately -0.18, followed by a recovery and a peak near 0.10 in early 2019. Netflix (NFLX) and Apple (AAPL) also show periods of high volatility, with NFLX reaching a peak near 0.10 in early 2019 and AAPL showing a sharp decline to approximately -0.10 in late 2018.

The chart displays the daily percentage change in stock prices for three companies: NFLX (blue line), FB (orange line), and AAPL (yellow line). The x-axis represents the date from January 2018 to July 2019. The y-axis represents the daily percentage change, ranging from -0.20 to 0.10. The chart shows high volatility for all three stocks, with a significant drop in FB's price around July 2018.

Lastly, if you want additional information of the stocks, you can open all their yahoo finance websites by simply clicking on the button **'Stock Websites' (10)** in the **'Additional Information'** section. If you only want to open the main yahoo finance website, you can do this by clicking on the **'Yahoo Website' (11)** button:

**11**                      **10**