HOMEWORK 3

DESCRIPTION

1. You are given a script called homework3.
2. The script shows you how to fetch stock prices for multiple tickers and save them into on csv document.
3. It then shows you how to calculate percentage change for each ticker and plot diagrams to showcase your results.
4. Review and run that script to understand how it works.

You can find more information about “Percentage Change” here:
https://www.investopedia.com/terms/p/percentage-change.asp

TASK

1. Choose ANY OTHER 4 stocks (not the ones provided) and run the script to fetch, save data and plot new diagrams.

2. Write no more than 500 words describing you results, explaining your diagrams and things that you observe.

WHAT ARE WE LOOKING FOR:

1. Your ability to interpret analysis results.
2. Your ability to interpret and explain diagrams .

HW3 Explained:

What does the data all about?

- The data shows fetching API stock prices historical data for multiple tickers:
    - Novartis AG (NVS)
    - Roche Holding AG (RHHBY)
    - UBS Group AG (UBS)
    - Credit Suisse Group AG (CS)
- For a period of time from 1st of January 2020 to 1st of July 2021.
- This also presents calculating the percentage change for each ticker and plot diagrams results.

How is it processed to analyze?

1. Import the necessary libraries:
    - **Datetime** - to be able to work with date and time for the stocks historical data
    - **Pandas_datareader** - for manipulating realtime stock price datasets and enables us to construct a pandas DataFrame object
    - **Pandas** - for data analysis and manipulation
    - **Matplotlib** - for data visualization and graphical plotting
2. Fetch data using API key from tiingo, assign company codes at ticker, read the dataset, print and run
3. Show histogram result for daily percentage change of the column adjusted close price under the 4 stocks which are **NVS**, **RHHBY**, **UBS**, and **CS**.
    - **Daily Percentage Change** - gives us the value report of percentage gain or loss. To find the percent change between two prices, subtract the original price from the new price, then divide by the original price. Multiply this result by 100 to get a percentage.
    - **Histogram** - we use this diagram to show the shape and frequency distribution for the daily percentage change result. This tells us how volatile a stock is.
    - **Volatility** - measures how much a stock's price fluctuates over time. A stock with high volatility will see its price swing widely from day to day, while a stock with low volatility will see only small changes in price. We are able to analyze if the stock is more stable or not.
    - **Bell diagram** - how the curve shapes in the diagram, the fatness of it is directly related to volatility. The width of the bell corresponds to the standard deviation of the distribution, and the higher it is, the greater the variance.
    - **Variance** - is simply another name for standard deviation - it's just that variation is measured as a squared value. So when we say that something has high variance, all we're really saying is that its standard deviation values are relatively large; in other words, it's more volatile than something with lower variance. Looking at differences in curve shape corresponding to different companies can give us an idea of which ones are more volatile overall.

What is my observation based on the diagram result?

- The stocks of Credit Suisse and UBS are comparable in terms of their return distributions over the period from January 1st 2020 to July 1st 2021, when the Covid-19 pandemic hit. We can see that they are both more volatile compared to the other two stocks - Novartis AG and Roche Holding AG, which have narrower curves and less volatility. This makes them a better choice for investors looking for higher returns during this time period.