Project Overview

For this project, you will assume the role of a Data Scientist / Data Analyst working for a new startup investment firm that helps customers invest their money in stocks. Your job is to extract financial data like historical share price and quarterly revenue reportings from various sources using Python libraries and webscraping on popular stocks. After collecting this data you will visualize it in a dashboard to identify patterns or trends. The stocks we will work with are Tesla, Amazon, AMD, and GameStop.

**Dashboard Analytics Displayed**

A dashboard often provides a view of key performance indicators in a clear way. Analyzing a data set and extracting key performance indicators will be practiced. Prompts will be used to support learning in accessing and displaying data in dashboards. Learning how to display key performance indicators on a dashboard will be included in this assignment. We will be using Plotly in this course for data visualization and is not a requirement to take this course.

**Watson Studio**

In the Python for Data Science, AI and Development course you utilized Skills Network Labs for hands-on labs.

For this project you will use Skills Network Labs and Watson Studio. Skills Network Labs is a sandbox environment for learning and completing labs in courses. Whereas Watson Studio, a component of IBM Cloud Pak for Data, is a suite of tools and a collaborative environment for data scientists, data analysts, AI and machine learning engineers and domain experts to develop and deploy your projects.

**Review criteria**

There are two hands-on labs on Extracting Stock Data and one assignment to complete. You will be judged by completing two quizzes and one peer review assignment. The quizzes will test you based on the output of the hands-on labs. In the peer review assignment you will share and take screen shots of the outcomes of your assignment.

Stock shares

A company's [stock](https://www.investopedia.com/terms/s/stock.asp) share is a piece of the company; more precisely:

*A stock (also known as equity) is a security that represents the ownership of a fraction of a*[*corporation*](https://www.investopedia.com/terms/c/corporation.asp)*. This entitles the owner of the stock to a proportion of the corporation's*[*assets*](https://www.investopedia.com/terms/c/core-assets.asp)*and profits equal to how much stock they own. Units of stock are called "shares." [*[*1*](https://www.investopedia.com/terms/s/stock.asp)*]*

An investor can buy a stock and sell it later. If the stock price increases, the investor profits, If it decreases, the investor with incur a loss. Determining the stock price is complex; it depends on the number of outstanding shares, the size of the company's future profits, and much more. People trade stocks throughout the day. The **stock ticker** is a report of the price of a certain stock, updated continuously throughout the trading session by the various **stock** market exchanges. In this lab, you will use the y-finance API to obtain the stock ticker and extract information about the stock. You will then be asked questions about your results.

# Extracting Stock Data Using a Python Library

In this lab, you will use a Python library to obtain financial data. You will extract historical stock data using yfinance. A graded quiz will follow to test you on the results in the lab.

To complete this lab you will utilize JupyterLab running on the Cloud in Skills Network Labs environment. To launch the lab notebook in a new browser tab check the box below and click on the **Open Tool** button.

In case you need to download the lab notebook (.ipynb file) click [HERE](https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0220EN-SkillsNetwork/labs/project/Final_Assignment%20Library.ipynb) to download the lab notebook. (Final\_Assignment Library.IPYNB)

# Extracting Stock Data Using Web Scraping

**Please ensure you have completed Hands-on Lab: Intro to Webscraping using BeautifulSoup and are comfortable with extracting data from HTML tables into DataFrames before attempting this one.** Click [HERE](https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0220EN-SkillsNetwork/labs/project/WebScraping_Review_Lab.ipynb) to download the Intro to Webscraping Using BeautifulSoup lab notebook (WebScraping\_Review\_Lab.ipynb file).

Not all stock data required for this project is available via a library. In this lab you will use web scraping to obtain financial data. You will extract historical stock data from a web-page using beautiful soup. A graded quiz follows to test you on the results in this lab.

To complete this lab you will utilize JupyterLab running on the Cloud in Skills Network Labs environment. To launch the lab notebook in a new browser tab check the box below and click on the **Open Tool** button.

In case you need to download the lab notebook (Final Assignment Webscraping.ipynb file) click [HERE](https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0220EN-SkillsNetwork/labs/project/Final%20Assignment%20Webscraping.ipynb) to download the lab notebook.

Optional: Gamestop stock vs Tesla

Determining the price of a stock is complex; it depends on the number of outstanding shares, the size of the company's future profits, and much more. An essential factor is the company's profit and growth of profits; if the company's profit is increasing, the stock price should increase. If you suspect the company's profit increases, you should buy the stock as the stock should increase, But what happens if you think the stock price will decrease.

Short selling is how you make money if the stock decreases. An investor borrows a stock, sells the stock, and then repurchases it to return it to the lender. Typically stocks fall faster than they rise, so you can make a profit more quickly. Usually, experienced investors such as hedge funds partake in short selling. One problem is if the stock price increases, the investor can lose money.

Sometimes short sellers get it wrong; for example, Tesla. A few years ago, many short sellers targeted Tesla. Then Tesla started becoming profitable, and profits were increasing; thus, the company stock went up. This was based on the companies performance, so the stock should continue to rise, and the short seller should sell the stock. Recently shorted stocks can increase for reasons that are not based on fundamentals; this is less sustainable.

Individual investors using the forum on the Reddit online community named WallStreetBets, started buying into shares of GameStop, a video and computer-game retailer losing money. The influx of demand caused GameStop shares to soar. All this produced billions of dollars in losses for hedge funds who had sold the stock short. [ [1](https://www.latimes.com/business/story/2021-02-01/gamestop-takes-wrong)] GameStop's share price should fall eventually, so the Hedge funds should hold on to the short positions. As a data scientist working for a hedge fund, you will extract the profit data for Tesla and GameStop and build a dashboard to compare the price of the stock vs the profit for the hedge fund.

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Jupyter Notebook to complete your final project

In order to complete the final project you will need to add this notebook to your Watson Studio project. Copy the link below. You will need to paste it in the next lab:

<https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0220EN-SkillsNetwork/labs/project/Final%20Assignment.ipynb>

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Hands-on Lab: Analyzing Historical Stock/Revenue Data and Building a Dashboard

In the previous lab you added the Jupyter notebook for this project to Watson Studio. Now complete the tasks in the notebook.

Please ensure you have completed the two earlier hands-on labs: *Extracting Stock Data using a Python Library* and *Extracting Stock Data using Web Scraping* before you attempt the final assignment.

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