Extracting Stock Data Using a Python Library

A company's stock 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. This entitles the owner of the stock to a proportion of the corporation's assets and profits equal to how much stock they own. Units of stock are called "shares." [1]

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.

You are a data scientist working for a hedge fund; it's your job to determine any suspicious stock activity. In this lab you will extract stock data using a Python library. We will use the yfinance library, it allows us to extract data for stocks returning data in a pandas dataframe. You will use the lab to extract.

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Estimated Time Needed: **30 min**

In [15]:
```
!pip install yfinance==0.2.4
#!pip install pandas==1.3.3
```

```
Requirement already satisfied: yfinance==0.2.4 in /home/jupyterlab/conda/envs/python/lib/python3.7
/site-packages (0.2.4)
Requirement already satisfied: pandas>=1.3.0 in /home/jupyterlab/conda/envs/python/lib/python3.7/s
ite-packages (from yfinance==0.2.4) (1.3.5)
Requirement already satisfied: numpy>=1.16.5 in /home/jupyterlab/conda/envs/python/lib/python3.7/s
ite-packages (from yfinance==0.2.4) (1.21.6)
Requirement already satisfied: requests>=2.26 in /home/jupyterlab/conda/envs/python/lib/python3.7/
site-packages (from yfinance==0.2.4) (2.29.0)
Requirement already satisfied: multitasking>=0.0.7 in /home/jupyterlab/conda/envs/python/lib/pytho
n3.7/site-packages (from yfinance==0.2.4) (0.0.11)
Requirement already satisfied: lxml>=4.9.1 in /home/jupyterlab/conda/envs/python/lib/python3.7/sit
e-packages (from yfinance==0.2.4) (5.1.0)
Requirement already satisfied: appdirs>=1.4.4 in /home/jupyterlab/conda/envs/python/lib/python3.7/
site-packages (from yfinance==0.2.4) (1.4.4)
Requirement already satisfied: pytz>=2022.5 in /home/jupyterlab/conda/envs/python/lib/python3.7/si
te-packages (from yfinance==0.2.4) (2023.3)
Requirement already satisfied: frozendict>=2.3.4 in /home/jupyterlab/conda/envs/python/lib/python
3.7/site-packages (from yfinance==0.2.4) (2.4.0)
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n3.7/site-packages (from yfinance==0.2.4) (38.0.2)
Requirement already satisfied: beautifulsoup4>=4.11.1 in /home/jupyterlab/conda/envs/python/lib/py
thon3.7/site-packages (from yfinance==0.2.4) (4.12.2)
Requirement already satisfied: html5lib>=1.1 in /home/jupyterlab/conda/envs/python/lib/python3.7/s
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ite-packages (from beautifulsoup4>=4.11.1->yfinance==0.2.4) (2.3.2.post1)
Requirement already satisfied: cffi>=1.12 in /home/jupyterlab/conda/envs/python/lib/python3.7/site
-packages (from cryptography>=3.3.2->yfinance==0.2.4) (1.15.1)
Requirement already satisfied: six>=1.9 in /home/jupyterlab/conda/envs/python/lib/python3.7/site-p
ackages (from html5lib>=1.1->yfinance==0.2.4) (1.16.0)
Requirement already satisfied: webencodings in /home/jupyterlab/conda/envs/python/lib/python3.7/si
te-packages (from html5lib>=1.1->yfinance==0.2.4) (0.5.1)
Requirement already satisfied: python-dateutil>=2.7.3 in /home/jupyterlab/conda/envs/python/lib/py
thon3.7/site-packages (from pandas>=1.3.0->yfinance==0.2.4) (2.8.2)
Requirement already satisfied: charset-normalizer<4,>=2 in /home/jupyterlab/conda/envs/python/lib/
python3.7/site-packages (from requests>=2.26->yfinance==0.2.4) (3.1.0)
Requirement already satisfied: idna<4,>=2.5 in /home/jupyterlab/conda/envs/python/lib/python3.7/si
te-packages (from requests>=2.26->yfinance==0.2.4) (3.4)
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hon3.7/site-packages (from requests>=2.26->yfinance==0.2.4) (1.26.15)
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Requirement already satisfied: pycparser in /home/jupyterlab/conda/envs/python/lib/python3.7/site-
packages (from cffi>=1.12->cryptography>=3.3.2->yfinance==0.2.4) (2.21)
```

In [16]:
```
import yfinance as yf
import pandas as pd
```

Using the yfinance Library to Extract Stock Data

Using the `Ticker` module we can create an object that will allow us to access functions to extract data. To do this we need to provide the ticker symbol for the stock, here the company is Apple and the ticker symbol is `AAPL`.

In [17]:
```
apple = yf.Ticker("AAPL")
```

Now we can access functions and variables to extract the type of data we need. You can view them and what they represent here https://aroussi.com/post/python-yahoo-finance.

In [18]:
```
!wget https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetworl
```

```
--2024-01-16 19:34:37--  https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDev
eloperSkillsNetwork-PY0220EN-SkillsNetwork/data/apple.json
Resolving cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud (cf-courses-data.s3.us.cloud-
object-storage.appdomain.cloud)... 169.63.118.104, 169.63.118.104
Connecting to cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud (cf-courses-data.s3.us.cl
oud-object-storage.appdomain.cloud)|169.63.118.104|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 5699 (5.6K) [application/json]
Saving to: 'apple.json.1'

apple.json.1        100%[===================>]   5.57K  --.-KB/s    in 0s

2024-01-16 19:34:37 (48.7 MB/s) - 'apple.json.1' saved [5699/5699]
```

Stock Info

Using the attribute `info` we can extract information about the stock as a Python dictionary.

In [19]:
```python
import json
with open('apple.json') as json_file:
    apple_info = json.load(json_file)
    # Print the type of data variable
    #print("Type:", type(apple_info))
apple_info
```

Out[19]:
{'zip': '95014',
 'sector': 'Technology',
 'fullTimeEmployees': 100000,
 'longBusinessSummary': 'Apple Inc. designs, manufactures, and markets smartphones, personal comp
uters, tablets, wearables, and accessories worldwide. It also sells various related services. In
addition, the company offers iPhone, a line of smartphones; Mac, a line of personal computers; iP
ad, a line of multi-purpose tablets; AirPods Max, an over-ear wireless headphone; and wearables,
home, and accessories comprising AirPods, Apple TV, Apple Watch, Beats products, HomePod, and iPo
d touch. Further, it provides AppleCare support services; cloud services store services; and oper
ates various platforms, including the App Store that allow customers to discover and download app
lications and digital content, such as books, music, video, games, and podcasts. Additionally, th
e company offers various services, such as Apple Arcade, a game subscription service; Apple Musi
c, which offers users a curated listening experience with on-demand radio stations; Apple News+,
a subscription news and magazine service; Apple TV+, which offers exclusive original content; App
le Card, a co-branded credit card; and Apple Pay, a cashless payment service, as well as licenses
its intellectual property. The company serves consumers, and small and mid-sized businesses; and
the education, enterprise, and government markets. It distributes third-party applications for it
s products through the App Store. The company also sells its products through its retail and onli
ne stores, and direct sales force; and third-party cellular network carriers, wholesalers, retail
ers, and resellers. Apple Inc. was incorporated in 1977 and is headquartered in Cupertino, Califo
rnia.',
 'city': 'Cupertino',
 'phone': '408 996 1010',
 'state': 'CA',
 'country': 'United States',
 'companyOfficers': [],
 'website': 'https://www.apple.com',
 'maxAge': 1,
 'address1': 'One Apple Park Way',
 'industry': 'Consumer Electronics',
 'ebitdaMargins': 0.33890998,
 'profitMargins': 0.26579002,
 'grossMargins': 0.43019,
 'operatingCashflow': 112241000448,
 'revenueGrowth': 0.112,
 'operatingMargins': 0.309,
 'ebitda': 128217997312,
 'targetLowPrice': 160,
 'recommendationKey': 'buy',
 'grossProfits': 152836000000,
 'freeCashflow': 80153247744,
 'targetMedianPrice': 199.5,
 'currentPrice': 177.77,
 'earningsGrowth': 0.25,
 'currentRatio': 1.038,
 'returnOnAssets': 0.19875,
 'numberOfAnalystOpinions': 44,
 'targetMeanPrice': 193.53,
 'debtToEquity': 170.714,
 'returnOnEquity': 1.45567,
 'targetHighPrice': 215,
 'totalCash': 63913000960,
 'totalDebt': 122797998080,
 'totalRevenue': 378323009536,
 'totalCashPerShare': 3.916,
 'financialCurrency': 'USD',
 'revenuePerShare': 22.838,
 'quickRatio': 0.875,
 'recommendationMean': 1.8,
 'exchange': 'NMS',
 'shortName': 'Apple Inc.',
 'longName': 'Apple Inc.',
 'exchangeTimezoneName': 'America/New_York',
 'exchangeTimezoneShortName': 'EDT',
 'isEsgPopulated': False,
 'gmtOffSetMilliseconds': '-14400000',
 'quoteType': 'EQUITY',
 'symbol': 'AAPL',
 'messageBoardId': 'finmb_24937',

```
'market': 'us_market',
'annualHoldingsTurnover': None,
'enterpriseToRevenue': 7.824,
'beta3Year': None,
'enterpriseToEbitda': 23.086,
'52WeekChange': 0.4549594,
'morningStarRiskRating': None,
'forwardEps': 6.56,
'revenueQuarterlyGrowth': None,
'sharesOutstanding': 16319399936,
'fundInceptionDate': None,
'annualReportExpenseRatio': None,
'totalAssets': None,
'bookValue': 4.402,
'sharesShort': 111286790,
'sharesPercentSharesOut': 0.0068,
'fundFamily': None,
'lastFiscalYearEnd': 1632528000,
'heldPercentInstitutions': 0.59397,
'netIncomeToCommon': 100554997760,
'trailingEps': 6.015,
'lastDividendValue': 0.22,
'SandP52WeekChange': 0.15217662,
'priceToBook': 40.38392,
'heldPercentInsiders': 0.0007,
'nextFiscalYearEnd': 1695600000,
'yield': None,
'mostRecentQuarter': 1640390400,
'shortRatio': 1.21,
'sharesShortPreviousMonthDate': 1644883200,
'floatShares': 16302795170,
'beta': 1.185531,
'enterpriseValue': 2959991898112,
'priceHint': 2,
'threeYearAverageReturn': None,
'lastSplitDate': 1598832000,
'lastSplitFactor': '4:1',
'legalType': None,
'lastDividendDate': 1643932800,
'morningStarOverallRating': None,
'earningsQuarterlyGrowth': 0.204,
'priceToSalesTrailing12Months': 7.668314,
'dateShortInterest': 1647302400,
'pegRatio': 1.94,
'ytdReturn': None,
'forwardPE': 27.099087,
'lastCapGain': None,
'shortPercentOfFloat': 0.0068,
'sharesShortPriorMonth': 108944701,
'impliedSharesOutstanding': 0,
'category': None,
'fiveYearAverageReturn': None,
'previousClose': 178.96,
'regularMarketOpen': 178.55,
'twoHundredDayAverage': 156.03505,
'trailingAnnualDividendYield': 0.004833482,
'payoutRatio': 0.1434,
'volume24Hr': None,
'regularMarketDayHigh': 179.61,
'navPrice': None,
'averageDailyVolume10Day': 93823630,
'regularMarketPreviousClose': 178.96,
'fiftyDayAverage': 166.498,
'trailingAnnualDividendRate': 0.865,
'open': 178.55,
'toCurrency': None,
'averageVolume10days': 93823630,
'expireDate': None,
'algorithm': None,
```

```
 'dividendRate': 0.88,
 'exDividendDate': 1643932800,
 'circulatingSupply': None,
 'startDate': None,
 'regularMarketDayLow': 176.7,
 'currency': 'USD',
 'trailingPE': 29.55445,
 'regularMarketVolume': 92633154,
 'lastMarket': None,
 'maxSupply': None,
 'openInterest': None,
 'marketCap': 2901099675648,
 'volumeAllCurrencies': None,
 'strikePrice': None,
 'averageVolume': 95342043,
 'dayLow': 176.7,
 'ask': 178.53,
 'askSize': 800,
 'volume': 92633154,
 'fiftyTwoWeekHigh': 182.94,
 'fromCurrency': None,
 'fiveYearAvgDividendYield': 1.13,
 'fiftyTwoWeekLow': 122.25,
 'bid': 178.4,
 'tradeable': False,
 'dividendYield': 0.005,
 'bidSize': 3200,
 'dayHigh': 179.61,
 'regularMarketPrice': 177.77,
 'preMarketPrice': 178.38,
 'logo_url': 'https://logo.clearbit.com/apple.com'}
```


We can get the `'country'` using the key country

In [20]:
```
apple_info['country']
```

Out[20]:
```
'United States'
```

Extracting Share Price

A share is the single smallest part of a company's stock that you can buy, the prices of these shares fluctuate over time. Using the `history()` method we can get the share price of the stock over a certain period of time. Using the `period` parameter we can set how far back from the present to get data. The options for `period` are 1 day (1d), 5d, 1 month (1mo) , 3mo, 6mo, 1 year (1y), 2y, 5y, 10y, ytd, and max.

In [21]:
```
apple_share_price_data = apple.history(period="max")
```

The format that the data is returned in is a Pandas DataFrame. With the `Date` as the index the share `Open` , `High` , `Low` , `Close` , `Volume` , and `Stock Splits` are given for each day.

In [22]:
```
apple_share_price_data.head()
```

Out[22]:

Date	Open	High	Low	Close	Volume	Dividends	Stock Splits
1980-12-12 00:00:00-05:00	0.099319	0.099750	0.099319	0.099319	469033600	0.0	0.0
1980-12-15 00:00:00-05:00	0.094569	0.094569	0.094137	0.094137	175884800	0.0	0.0
1980-12-16 00:00:00-05:00	0.087659	0.087659	0.087228	0.087228	105728000	0.0	0.0
1980-12-17 00:00:00-05:00	0.089387	0.089818	0.089387	0.089387	86441600	0.0	0.0
1980-12-18 00:00:00-05:00	0.091978	0.092410	0.091978	0.091978	73449600	0.0	0.0

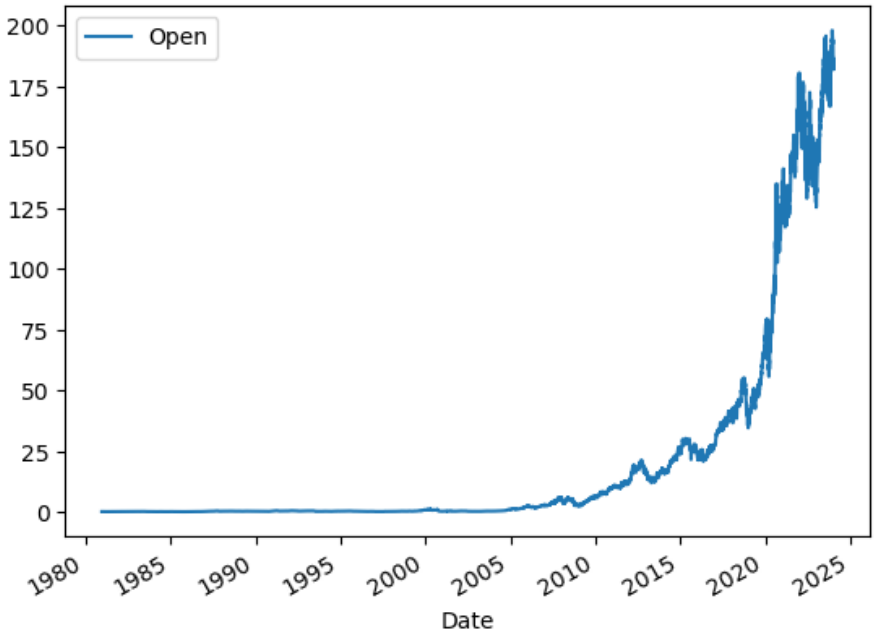
We can reset the index of the DataFrame with the `reset_index` function. We also set the `inplace` paramter to `True` so the change takes place to the DataFrame itself.

In [23]:
```
apple_share_price_data.reset_index(inplace=True)
```

We can plot the `Open` price against the `Date` :

In [24]:
```
apple_share_price_data.plot(x="Date", y="Open")
```

Out[24]: <AxesSubplot:xlabel='Date'>



Extracting Dividends

Dividends are the distribution of a companys profits to shareholders. In this case they are defined as an amount of money returned per share an investor owns. Using the variable `dividends` we can get a dataframe of the data. The period of the data is given by the period defined in the 'history` function.

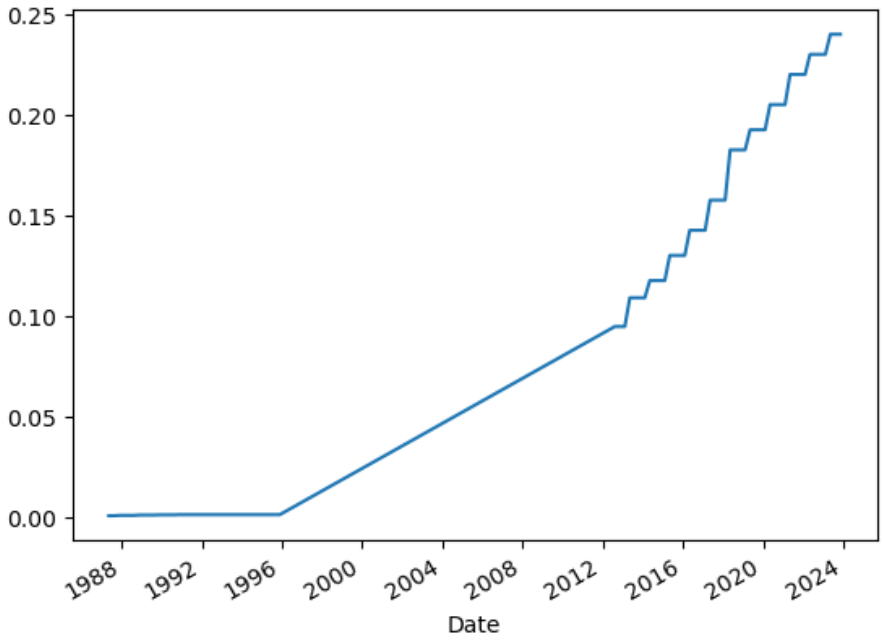
In [25]:
```
apple.dividends
```

Out[25]:
```
Date
1987-05-11 00:00:00-04:00    0.000536
1987-08-10 00:00:00-04:00    0.000536
1987-11-17 00:00:00-05:00    0.000714
1988-02-12 00:00:00-05:00    0.000714
1988-05-16 00:00:00-04:00    0.000714
                               ...
2022-11-04 00:00:00-04:00    0.230000
2023-02-10 00:00:00-05:00    0.230000
2023-05-12 00:00:00-04:00    0.240000
2023-08-11 00:00:00-04:00    0.240000
2023-11-10 00:00:00-05:00    0.240000
Name: Dividends, Length: 81, dtype: float64
```

We can plot the dividends overtime:

In [26]:
```
apple.dividends.plot()
```

Out[26]: <AxesSubplot:xlabel='Date'>



Exercise

Now using the `Ticker` module create an object for AMD (Advanced Micro Devices) with the ticker symbol is `AMD` called; name the object `amd`.

In [ ]:

In [27]:
```
!wget https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetworl
```

```
--2024-01-16 19:34:39--  https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDev
eloperSkillsNetwork-PY0220EN-SkillsNetwork/data/amd.json
Resolving cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud (cf-courses-data.s3.us.cloud-
object-storage.appdomain.cloud)... 169.63.118.104, 169.63.118.104
Connecting to cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud (cf-courses-data.s3.us.cl
oud-object-storage.appdomain.cloud)|169.63.118.104|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 5838 (5.7K) [application/json]
Saving to: ‘amd.json.1’

amd.json.1          100%[===================>]   5.70K  --.-KB/s    in 0s

2024-01-16 19:34:39 (44.7 MB/s) - ‘amd.json.1’ saved [5838/5838]
```

In [28]:
```
import json
with open('amd.json') as json_file:
    amd_info = json.load(json_file)
    # Print the type of data variable
    #print("Type:", type(apple_info))
amd_info
```

Out[28]:
{'zip': '95054',
 'sector': 'Technology',
 'fullTimeEmployees': 15500,
 'longBusinessSummary': 'Advanced Micro Devices, Inc. operates as a semiconductor company worldwide. The company operates in two segments, Computing and Graphics; and Enterprise, Embedded and Semi-Custom. Its products include x86 microprocessors as an accelerated processing unit, chipsets, discrete and integrated graphics processing units (GPUs), data center and professional GPUs, and development services; and server and embedded processors, and semi-custom System-on-Chip (SoC) products, development services, and technology for game consoles. The company provides processors for desktop and notebook personal computers under the AMD Ryzen, AMD Ryzen PRO, Ryzen Threadripper, Ryzen Threadripper PRO, AMD Athlon, AMD Athlon PRO, AMD FX, AMD A-Series, and AMD PRO A-Series processors brands; discrete GPUs for desktop and notebook PCs under the AMD Radeon graphics, AMD Embedded Radeon graphics brands; and professional graphics products under the AMD Radeon Pro and AMD FirePro graphics brands. It also offers Radeon Instinct, Radeon PRO V-series, and AMD Instinct accelerators for servers; chipsets under the AMD trademark; microprocessors for servers under the AMD EPYC; embedded processor solutions under the AMD Athlon, AMD Geode, AMD Ryzen, AMD EPYC, AMD R-Series, and G-Series processors brands; and customer-specific solutions based on AMD CPU, GPU, and multi-media technologies, as well as semi-custom SoC products. It serves original equipment manufacturers, public cloud service providers, original design manufacturers, system integrators, independent distributors, online retailers, and add-in-board manufacturers through its direct sales force, independent distributors, and sales representatives. The company was incorporated in 1969 and is headquartered in Santa Clara, California.',
 'city': 'Santa Clara',
 'phone': '408 749 4000',
 'state': 'CA',
 'country': 'United States',
 'companyOfficers': [],
 'website': 'https://www.amd.com',
 'maxAge': 1,
 'address1': '2485 Augustine Drive',
 'industry': 'Semiconductors',
 'ebitdaMargins': 0.24674,
 'profitMargins': 0.19240999,
 'grossMargins': 0.48248002,
 'operatingCashflow': 3520999936,
 'revenueGrowth': 0.488,
 'operatingMargins': 0.22198,
 'ebitda': 4055000064,
 'targetLowPrice': 107,
 'recommendationKey': 'buy',
 'grossProfits': 7929000000,
 'freeCashflow': 3122749952,
 'targetMedianPrice': 150,
 'currentPrice': 119.22,
 'earningsGrowth': -0.454,
 'currentRatio': 2.024,
 'returnOnAssets': 0.21327,
 'numberOfAnalystOpinions': 38,
 'targetMeanPrice': 152.02,
 'debtToEquity': 9.764,
 'returnOnEquity': 0.47428,
 'targetHighPrice': 200,
 'totalCash': 3608000000,
 'totalDebt': 732000000,
 'totalRevenue': 16433999872,
 'totalCashPerShare': 3.008,
 'financialCurrency': 'USD',
 'revenuePerShare': 13.548,
 'quickRatio': 1.49,
 'recommendationMean': 2.2,
 'exchange': 'NMS',
 'shortName': 'Advanced Micro Devices, Inc.',
 'longName': 'Advanced Micro Devices, Inc.',
 'exchangeTimezoneName': 'America/New_York',
 'exchangeTimezoneShortName': 'EDT',
 'isEsgPopulated': False,
 'gmtOffSetMilliseconds': '-14400000',
 'quoteType': 'EQUITY',
 'symbol': 'AMD',

```
'messageBoardId': 'finmb_168864',
'market': 'us_market',
'annualHoldingsTurnover': None,
'enterpriseToRevenue': 8.525,
'beta3Year': None,
'enterpriseToEbitda': 34.551,
'52WeekChange': 0.51966953,
'morningStarRiskRating': None,
'forwardEps': 4.72,
'revenueQuarterlyGrowth': None,
'sharesOutstanding': 1627360000,
'fundInceptionDate': None,
'annualReportExpenseRatio': None,
'totalAssets': None,
'bookValue': 6.211,
'sharesShort': 27776129,
'sharesPercentSharesOut': 0.0171,
'fundFamily': None,
'lastFiscalYearEnd': 1640390400,
'heldPercentInstitutions': 0.52896,
'netIncomeToCommon': 3161999872,
'trailingEps': 2.57,
'lastDividendValue': 0.005,
'SandP52WeekChange': 0.15217662,
'priceToBook': 19.194977,
'heldPercentInsiders': 0.00328,
'nextFiscalYearEnd': 1703462400,
'yield': None,
'mostRecentQuarter': 1640390400,
'shortRatio': 0.24,
'sharesShortPreviousMonthDate': 1644883200,
'floatShares': 1193798619,
'beta': 1.848425,
'enterpriseValue': 140104957952,
'priceHint': 2,
'threeYearAverageReturn': None,
'lastSplitDate': 966902400,
'lastSplitFactor': '2:1',
'legalType': None,
'lastDividendDate': 798940800,
'morningStarOverallRating': None,
'earningsQuarterlyGrowth': -0.453,
'priceToSalesTrailing12Months': 11.805638,
'dateShortInterest': 1647302400,
'pegRatio': 0.99,
'ytdReturn': None,
'forwardPE': 25.258476,
'lastCapGain': None,
'shortPercentOfFloat': 0.0171,
'sharesShortPriorMonth': 88709340,
'impliedSharesOutstanding': 0,
'category': None,
'fiveYearAverageReturn': None,
'previousClose': 123.23,
'regularMarketOpen': 123.04,
'twoHundredDayAverage': 116.6998,
'trailingAnnualDividendYield': 0,
'payoutRatio': 0,
'volume24Hr': None,
'regularMarketDayHigh': 125.66,
'navPrice': None,
'averageDailyVolume10Day': 102167370,
'regularMarketPreviousClose': 123.23,
'fiftyDayAverage': 115.95,
'trailingAnnualDividendRate': 0,
'open': 123.04,
'toCurrency': None,
'averageVolume10days': 102167370,
'expireDate': None,
```

```
 'algorithm': None,
 'dividendRate': None,
 'exDividendDate': 798940800,
 'circulatingSupply': None,
 'startDate': None,
 'regularMarketDayLow': 118.59,
 'currency': 'USD',
 'trailingPE': 46.389107,
 'regularMarketVolume': 99476946,
 'lastMarket': None,
 'maxSupply': None,
 'openInterest': None,
 'marketCap': 194013855744,
 'volumeAllCurrencies': None,
 'strikePrice': None,
 'averageVolume': 102428813,
 'dayLow': 118.59,
 'ask': 117.24,
 'askSize': 1100,
 'volume': 99476946,
 'fiftyTwoWeekHigh': 164.46,
 'fromCurrency': None,
 'fiveYearAvgDividendYield': None,
 'fiftyTwoWeekLow': 72.5,
 'bid': 117.24,
 'tradeable': False,
 'dividendYield': None,
 'bidSize': 900,
 'dayHigh': 125.66,
 'regularMarketPrice': 119.22,
 'preMarketPrice': 116.98,
 'logo_url': 'https://logo.clearbit.com/amd.com'}
```


Question 1 Use the key `'country'` to find the country the stock belongs to, remember it as it will be a quiz question.

In [29]:
```
country_of_stock = apple_info.get('country', 'Country not found')
```

In [30]:
```
print("Country of stock:", country_of_stock)
```

```
Country of stock: United States
```

Question 2 Use the key `'sector'` to find the sector the stock belongs to, remember it as it will be a quiz question.

In [ ]:
```

```

Question 3 Obtain stock data for AMD using the `history` function, set the `period` to max. Find the `Volume` traded on the first day (first row).

In [34]:
```
import yfinance as yf

# Get AMD stock data
amd = yf.Ticker("AMD")

# Get historical data for AMD
amd_history = amd.history(period="max")

# Get the first row of the dataframe
first_day_data = amd_history.iloc[0]

# Get the volume traded on the first day
first_day_volume = first_day_data['Volume']


print("Volume traded on the first day:", first_day_volume)
print(amd)
print(amd_history)
print(first_day_data)
```

```
Volume traded on the first day: 219600.0
yfinance.Ticker object <AMD>
                                 Open        High         Low       Close  \
Date
1980-03-17 00:00:00-05:00    0.000000    3.302083    3.125000    3.145833
1980-03-18 00:00:00-05:00    0.000000    3.125000    2.937500    3.031250
1980-03-19 00:00:00-05:00    0.000000    3.083333    3.020833    3.041667
1980-03-20 00:00:00-05:00    0.000000    3.062500    3.010417    3.010417
1980-03-21 00:00:00-05:00    0.000000    3.020833    2.906250    2.916667
...                               ...         ...         ...         ...
2024-01-09 00:00:00-05:00  145.949997  149.860001  145.080002  149.259995
2024-01-10 00:00:00-05:00  150.070007  150.880005  146.649994  148.539993
2024-01-11 00:00:00-05:00  148.520004  150.380005  143.690002  148.020004
2024-01-12 00:00:00-05:00  148.039993  148.750000  145.000000  146.559998
2024-01-16 00:00:00-05:00  150.360001  159.714996  149.979996  157.289902

                             Volume  Dividends  Stock Splits
Date
1980-03-17 00:00:00-05:00    219600        0.0           0.0
1980-03-18 00:00:00-05:00    727200        0.0           0.0
1980-03-19 00:00:00-05:00    295200        0.0           0.0
1980-03-20 00:00:00-05:00    159600        0.0           0.0
1980-03-21 00:00:00-05:00    130800        0.0           0.0
...                             ...        ...           ...
2024-01-09 00:00:00-05:00  67875700        0.0           0.0
2024-01-10 00:00:00-05:00  56951200        0.0           0.0
2024-01-11 00:00:00-05:00  62764600        0.0           0.0
2024-01-12 00:00:00-05:00  48250800        0.0           0.0
2024-01-16 00:00:00-05:00  90790539        0.0           0.0

[11051 rows x 7 columns]
Open                 0.000000
High                 3.302083
Low                  3.125000
Close                3.145833
Volume          219600.000000
Dividends            0.000000
Stock Splits         0.000000
Name: 1980-03-17 00:00:00-05:00, dtype: float64
```

About the Authors:

Joseph Santarcangelo has a PhD in Electrical Engineering, his research focused on using machine learning, signal processing, and computer vision to determine how videos impact human cognition. Joseph has been working for IBM since he completed his PhD.

Azim Hirjani

Change Log

Date (YYYY-MM-DD)	Version	Changed By	Change Description
2020-11-10	1.1	Malika Singla	Deleted the Optional part
2020-08-27	1.0	Malika Singla	Added lab to GitLab
