**Equal-Weight S&P 500 Index Fund¶**

**Introduction & Library Imports¶**

The S&P 500 is the world's most popular stock market index. The largest fund that is benchmarked to this index is the SPDR® S&P 500® ETF Trust. It has more than US$250 billion of assets under management.

The goal of this section of the course is to create a Python script that will accept the value of your portfolio and tell you how many shares of each S&P 500 constituent you should purchase to get an equal-weight version of the index fund.

**Adding Our Stocks Data to a Pandas DataFrame¶**

The next thing we need to do is add our stock's price and market capitalization to a pandas DataFrame. Think of a DataFrame like the Python version of a spreadsheet. It stores tabular data.

|  | **Ticker** | **Price** | **Market Capitalization** | **Number Of Shares to Buy** |
| --- | --- | --- | --- | --- |
| **0** | AAPL | 132.97 | 2218377462776 | N/A |

**Looping Through The Tickers in Our List of Stocks¶**

Using the same logic that we outlined above, we can pull data for all S&P 500 stocks and store their data in the DataFrame using.

|  | **Ticker** | **Price** | **Market Capitalization** | **Number Of Shares to Buy** |
| --- | --- | --- | --- | --- |
| **0** | A,AAL,AAP,AAPL,ABBV,ABC,ABMD,ABT,ACN,ADBE,ADI,... | 101.6 | 79896403029 | N/A |
| **1** | CME,CMG,CMI,CMS,CNC,CNP,COF,COG,COO,COP,COST,C... | 101.6 | 79896403029 | N/A |
| **2** | GIS,GL,GLW,GM,GOOG,GOOGL,GPC,GPN,GPS,GRMN,GS,G... | 101.6 | 79896403029 | N/A |
| **3** | MCK,MCO,MDLZ,MDT,MET,MGM,MHK,MKC,MKTX,MLM,MMC,... | 101.6 | 79896403029 | N/A |
| **4** | ROL,ROP,ROST,RSG,RTX,SBAC,SBUX,SCHW,SEE,SHW,SI... | 101.6 | 79896403029 | N/A |
| **5** | YUM,ZBH,ZBRA,ZION,ZTS | 101.6 | 79896403029 | N/A |

**Improve Of Performance¶**

We then splite the data into batches or chunks and see how it responds and then we can be able to deal with the data in a more easier fashion. Because chunked data allows better performance A stock’s performance needs to be placed in the right context to understand it properly. The stock has returned 20% since the beginning of the year when viewing the starting price versus the ending price. It was a bit depressed from the first day.

**Calculating the Number of Shares to Buy¶**

As you can see in the DataFrame above, we stil haven't calculated the number of shares of each stock to buy.

We'll do that next. We shall use a portfolio of 1000000

|  | **Ticker** | **Price** | **Market Capitalization** | **Number Of Shares to Buy** |
| --- | --- | --- | --- | --- |
| **0** | A | 128.35 | 39931359792 | 15 |
| **1** | AAL | 22.14 | 13807230299 | 89 |
| **2** | AAP | 163.60 | 10965207157 | 12 |
| **3** | AAPL | 132.72 | 2242852134384 | 14 |
| **4** | ABBV | 113.38 | 196021920613 | 17 |
| **...** | ... | ... | ... | ... |
| **500** | YUM | 106.24 | 31863028584 | 18 |
| **501** | ZBH | 164.00 | 35269766310 | 12 |
| **502** | ZBRA | 536.99 | 28010190743 | 3 |
| **503** | ZION | 55.42 | 9169913166 | 35 |
| **504** | ZTS | 162.49 | 75834150774 | N/A |