INTRO TO PYTHON FOR FINANCE

Introducing the dataset

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Instructor

Overall Review

- Python shell and scripts
- Variables and data types
- Lists
- Arrays
- Methods and functions
- Indexing and subsetting
- Matplotlib

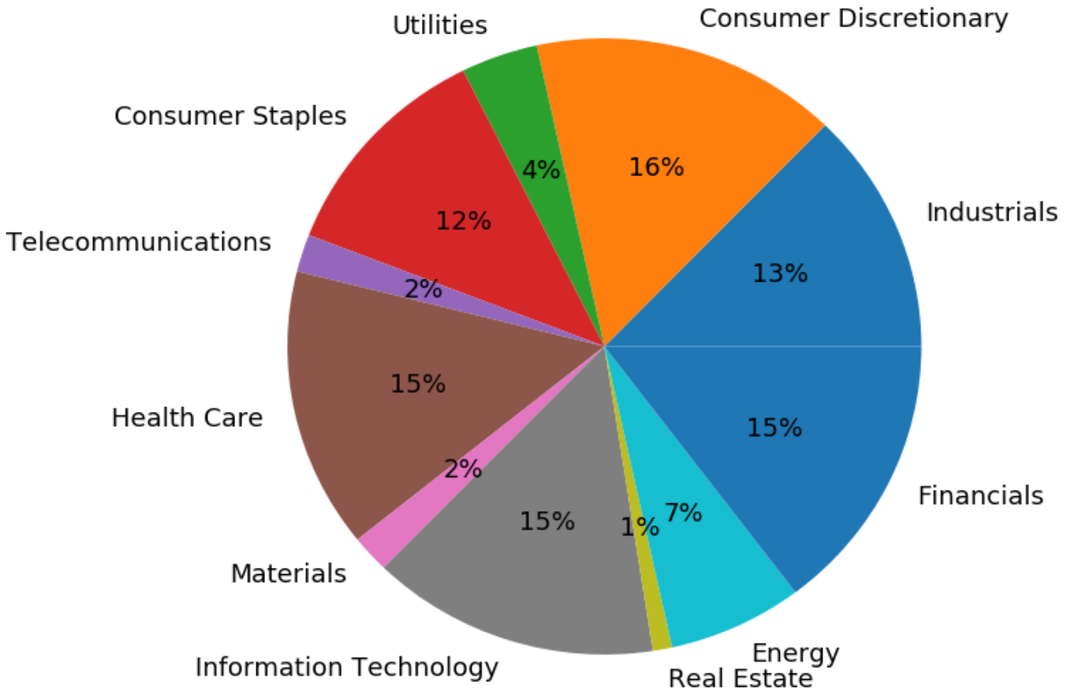
S&P 100 Companies

Standard and Poor's S&P 100:

- made up of major companies that span multiple industry groups
- used to measure stock performance of large companies

S&P 100 Case Study

Sectors of Companies within the S&P 100 in 2017



The data

Name	Sector	Price	EPS
Apple Inc	Information Technology	170.12	9.2
Abbvie Inc	Health Care	93.29	5.31
Abbott Laboratories	Health Care	55.28	2.41
Accenture Plc	Information Technology	145.3	5.91
Allergan Plc	Health Care	171.81	15.42
American International Group	Financials	59.5	2.51
Allstate Corp	Financials	100.5	6.79
Amgen	Health Care	168.93	12.58
...	...	...	...
Visa Inc	Information Technology	110.27	3.48
Verizon Communications Inc	Telecommunications	45.85	3.75
Walgreens Boots Alliance	Consumer Staples	70.25	5.1
Wells Fargo & Company	Financials	54.02	4.14
Wal-Mart Stores	Consumer Staples	96.08	4.36
Exxon Mobil Corp	Energy	80.31	3.56

Price to Earnings Ratio

$$\text{Price to earning ratio} = \frac{\text{Market price}}{\text{Earnings per share}}$$

- The ratio for valuing a company that measures its current share price relative to its per-share earnings
- In general, higher P/E ratio indicates higher growth expectations

Your mission

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Lists of data describing the S&P 100: names, prices, earnings, sectors

OBJECTIVE PART I

Explore and analyze the S&P 100 data, specifically the P/E ratios of S&P 100 companies

Step 1: examine the lists

```
In [1]:  my_list = [1, 2, 3, 4, 5]

# first element
In [2]: print(my_list[0])
1
# last element
In [3]: print(my_list[-1])
5
# range of elements
In [4]: print(my_list[0:3])
[1, 2, 3]
```

Step 2: Convert lists to arrays

```
# Convert lists to arrays
import numpy as np
my_array = np.array(my_list)
```

Step 3: Elementwise array operations

```
# Elementwise array operations
array_ratio = array1 / array2
```

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Let's analyze!

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A closer look at the sectors

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Your mission

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Numpy arrays of data describing the S&P 100: names, prices, earnings, sectors

OBJECTIVE PART II

Explore and analyze sector-specific P/E ratios within companies of the S&P 100

Step 1: Create a boolean filtering array

```
In [1]: stock_prices = np.array([100, 200, 300])
In [2]: filter_array = (stock_prices >= 150)
In [3]: print(filter_array)
[ False True  True]
```

Step 2: Apply filtering array to subset another array

```
In [1]: stock_prices = np.array([100, 200, 300])
In [2]: filter_array = (stock_prices >= 150)
In [3]: print(stock_prices[filter_array])
[200 300]
```

Step 3: Summarize P/E ratios

Calculate the average and standard deviation of these sector-specific P/E ratios

```
In [1]: import numpy as np
In [2]: average_value = np.mean(my_array)
In [3]: std_value = np.std(my_array)
```

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Let's practice!

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Visualizing trends

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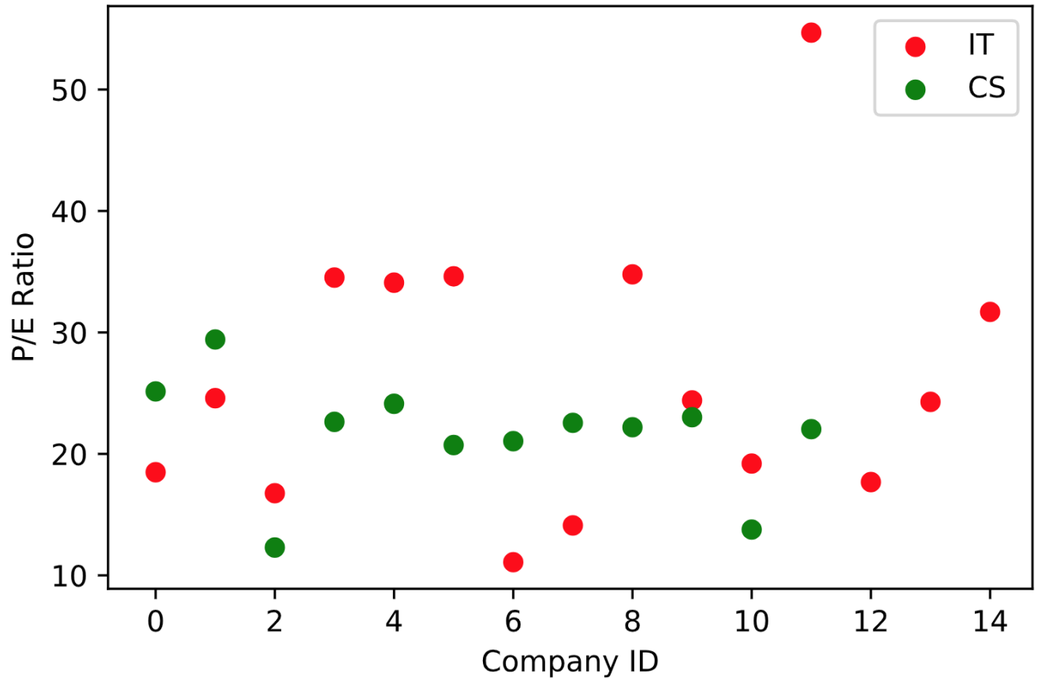
Your mission - outlier?



Step 1: Make a histogram

```
import matplotlib.pyplot as plt
plt.hist(hist_data, bins = 8)
plt.show()
```

Step 2: Identify the Outlier

- Identify the outlier P/E ratio
- Create a boolean array filter to subset this company
- Filter out this company information from the provided datasets

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Let's practice!