Metadata

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Course:  DS 5100
Module:  07 Python Classes
Topic:   HW 07 Stock Class
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Date:    7 July 2023
```

Student Info

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- URL of this file in GitHub: https://github.com/lukeschneider7/DS5100-vrd9sd/blob/main/lessons/M07/M07-HW-2-1.ipynb

Instructions

In your **private course repo on Rivanna**, use this Jupyter notebook and the data file described to write code that performs the tasks below.

Save your notebook in the `M07` directory.

Remember to add and commit these files to your repo.

Then push your commits to your repo on GitHib.

Be sure to fill out the **Student Info** block above.

To submit your homework, save the notebook as a PDF and upload it to GradeScope, following the instructions.

TOTAL POINTS: 12

Overview

In this assignment you will define a class and use it to perform the requested tasks.

Before answering the questions, read the market data from `apple_data.csv` into a Pandas dataframe. The file is in the HW for this module in the course repo.

Setting Up

In [54]:
```
import pandas as pd
import numpy as np
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
Cell In[54], line 3
      1 import pandas as pd
      2 import numpy as np
----> 3 help(pd.groupby())

AttributeError: module 'pandas' has no attribute 'groupby'
```

Prepare the Data

Read in the dataset from the attached file `apple_data.csv` using `pd.read_csv()`.

In [9]:
```
# CODE HERE
apple_data = pd.read_csv('apple_data.csv')
apple_data.head(5)
```

Out[9]:

	date	adj_close
0	2020-01-02	298.829956
1	2020-01-03	295.924713
2	2020-01-06	298.282715
3	2020-01-07	296.879883
4	2020-01-08	301.655548

Task 1

(5 PTS)

Define a class with these features:

Class Name: `Stock`

Attributes:

- `ticker`: a string to hold the stock symbol
- `sector`: a string to hold the sector name
- `prices`: a dataframe to hold the prices for the stock

Methods:

- `print_sector` to just print out the sector string.
- `get_row_count` to count the number of rows in the price dataframe. Set an attribute "price_records" equal to this count.

- `__init__` to build objects. Initialize with the three attribute values passed to the constructor.

In [29]:
```
# CODE HERE - 1. Stock Class
class Stock:
    def __init__(self, ticker, sector, prices):
        self.ticker = ticker
        self.sector = sector
        self.prices = prices

    def print_sector(self):
        print(self.sector)

    def get_row_count(self):
        price_records = len(self.prices)
        print(price_records)
```

Task 2

(1 PT)

Create an instance of your class with the these initial values:

- `ticker` : 'AAPL'
- `sector` : 'technology'
- `prices` : *the imported price dataframe*

Then Use the dot operator to print the stock's ticker.

In [32]:
```
# CODE HERE
stock_1 = Stock('AAPL', 'technology', apple_data) # Instantiate stock_1, a s
print(stock_1.ticker)
```

```
AAPL
```

Task 3

(1 PT)

Use the `print_sector()` method to print the sector.

In [35]:
```
# CODE HERE
stock_1.print_sector() # Use print_sector() method
```

```
technology
```

Task 4

(2 PTS)

Use the `get_row_count()` method to compute the number of price records and set price_records.

Use the dot operator to access the stock's price_records, printing the result.

In [56]:
```
# CODE HERE
print(stock_1.get_row_count())
stock_1.prices
```

```
135
None
```

Out[56]:

	date	adj_close
0	2020-01-02	298.829956
1	2020-01-03	295.924713
2	2020-01-06	298.282715
3	2020-01-07	296.879883
4	2020-01-08	301.655548
...	...	...
130	2020-07-09	383.010010
131	2020-07-10	383.679993
132	2020-07-13	381.910004
133	2020-07-14	388.230011
134	2020-07-15	390.899994

135 rows × 2 columns

Task 5

(1 PT)

Add a new column called `'month'` to the `prices` attribute and put the month number there.

Hint: You can use `.apply()` with a lambda function to split the month string and keep the second element.

In [72]:
```
# CODE HERE -
stock_1.prices['month'] = stock_1.prices['date'].str[5:7]
stock_1.prices
```

Out[72]:

	date	adj_close	month
0	2020-01-02	298.829956	01
1	2020-01-03	295.924713	01
2	2020-01-06	298.282715	01
3	2020-01-07	296.879883	01
4	2020-01-08	301.655548	01
...	...	...	...
130	2020-07-09	383.010010	07
131	2020-07-10	383.679993	07
132	2020-07-13	381.910004	07
133	2020-07-14	388.230011	07
134	2020-07-15	390.899994	07

135 rows × 3 columns

Task 6

(1 PT)

Use `.groupby()` to compute the mean `adj_close` by month. Save your result is a dataframe, not a series.

In [78]:
```
# CODE HERE
mean_df = stock_1.prices.groupby('month').mean('adj_close')
mean_df
```

Out[78]:

month	adj_close
01	310.337596
02	310.271843
03	261.735581
04	271.650839
05	309.785164
06	345.806360
07	378.385999

In [40]:
```
# Another method
# my_stock.prices.groupby('month').agg({'adj_close':'mean'})
```

Task 7

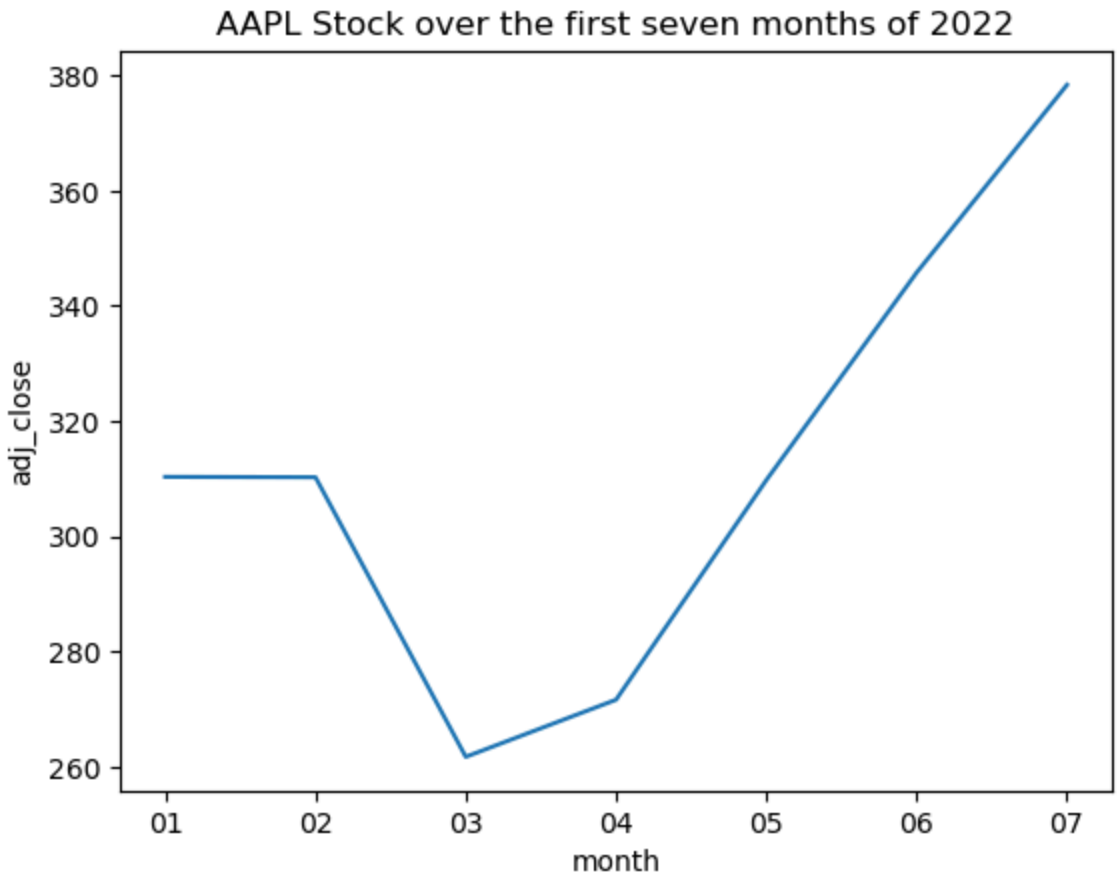
(1 PT)

Plot the mean `adj_close` by month using a simple line plot.

In [91]:
```
# CODE HERE - plotting adj_close by month
import seaborn as sns
import matplotlib.pyplot as plt

sns.lineplot(x='month', y='adj_close', data=mean_df)
plt.title("AAPL Stock over the first seven months of 2022")
plt.show()
```

```
/opt/anaconda3/lib/python3.11/site-packages/seaborn/_oldcore.py:1119: FutureWarning: use_inf_as_na option is deprecated and will be removed in a future version. Convert inf values to NaN before operating instead.
  with pd.option_context('mode.use_inf_as_na', True):
/opt/anaconda3/lib/python3.11/site-packages/seaborn/_oldcore.py:1119: FutureWarning: use_inf_as_na option is deprecated and will be removed in a future version. Convert inf values to NaN before operating instead.
  with pd.option_context('mode.use_inf_as_na', True):
```


AAPL Stock over the first seven months of 2022
adj_close
380
360
340
320
300
280
260
01
02
03
04
05
06
07
month

In [ ]: