hw07

October 12, 2022

1 hw07

1.1 Metadata

```
Name:    hw07
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Course:  DS 5100
Term:    Fall 2022 Online
Module:  M07: Python Classes
Topic:   Stock Class
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Net ID:  tsl2b
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```

1.2 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 data frame.

1.3 Setting Up

[1]:
```python
import numpy as np
import pandas as pd
```

1.4 Preparing the Data

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

[2]:
```python
data_frame_of_date_and_adjusted_closing_price = pd.read_csv('apple_data.csv')
print(data_frame_of_date_and_adjusted_closing_price.shape[0])
data_frame_of_date_and_adjusted_closing_price
```

```
135
```

[2]:
```
             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 x 2 columns]
```

1.5 Task 1

(5 points)

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.

[3]:
```python
class Stock():

    def __init__(self, ticker_to_use, sector_to_use, prices_to_use):
        self.ticker = ticker_to_use
        self.sector = sector_to_use
        self.prices = prices_to_use

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

    def get_row_count(self):
        self.price_records = self.prices.shape[0]
        return self.price_records
```

2 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.

```
[4]: apple_stock = Stock('AAPL', 'technology',␣
       ↪data_frame_of_date_and_adjusted_closing_price)
     apple_stock.ticker
```

```
[4]: 'AAPL'
```

3 Task 3

(1 PT)

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

```
[5]: apple_stock.print_sector()
```

```
technology
```

4 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.

```
[6]: print(apple_stock.get_row_count())
     apple_stock.price_records
```

```
135
```

```
[6]: 135
```

5 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 date string and keep the second element.

```
[7]: get_month_number = lambda series_of_date_and_adjusted_closing_price:␣
       ↪int((series_of_date_and_adjusted_closing_price['date'].split('-'))[1])
     apple_stock.prices['month'] = apple_stock.prices.apply(get_month_number, axis =␣
       ↪1)
     apple_stock.prices
```

```
[7]:          date    adj_close  month
     0    2020-01-02  298.829956      1
     1    2020-01-03  295.924713      1
     2    2020-01-06  298.282715      1
```

```
3    2020-01-07  296.879883      1
4    2020-01-08  301.655548      1
..          …          …    …
130  2020-07-09  383.010010      7
131  2020-07-10  383.679993      7
132  2020-07-13  381.910004      7
133  2020-07-14  388.230011      7
134  2020-07-15  390.899994      7

[135 rows x 3 columns]
```

6 Task 6

(1 PT)

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

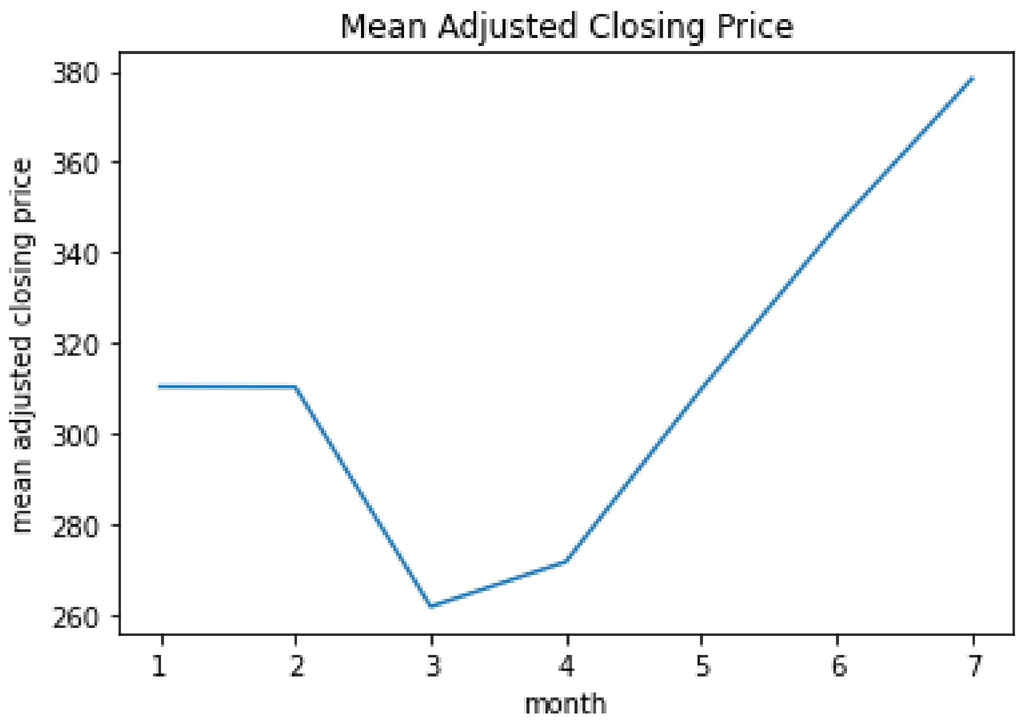
[8]:
```
data_frame_of_month_and_mean_adjusted_closing_price =␣
 ↪data_frame_of_date_and_adjusted_closing_price.groupby(['month']).mean()
data_frame_of_month_and_mean_adjusted_closing_price =␣
 ↪data_frame_of_month_and_mean_adjusted_closing_price.rename(columns =␣
 ↪{'adj_close': 'mean_adjusted_closing_price'})
```

7 Task 7

(1 PT)

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

[9]:
```
data_frame_of_month_and_mean_adjusted_closing_price.plot(
    kind = 'line',
    title = 'Mean Adjusted Closing Price',
    ylabel = "mean adjusted closing price",
    legend = None
)
import matplotlib.pyplot as plt
plt.show()
```


Mean Adjusted Closing Price
mean adjusted closing price
380
360
340
320
300
280
260
1
2
3
4
5
6
7
month

```
[ ]:
```