

CP 321 - Data Visualization

Assignment 3

Check dropbox for due date

Please check and follow the submission instructions at the end of this document

Tools/Software Requirement

- An IDE for writing Python code
- Use Numpy, Pandas and **Matplotlib** libraries to complete this assignment. You **cannot** use other plotting libraries like seaborn etc. in this assignment.
- This assignment may require some concepts that are not covered in the class. Students are expected to research those topics on their own and use them to complete the assignment. Self-learning will be a goal for all the assignments and the project in this course.
- All the tasks must be complete programmatically. Use Jupyter notebook for this assignment.

All charts / visualizations you create should be easy to understand and must include all necessary components like labels for all axis, legends, color coding, title etc. This is a requirement for every task in this assignment.

Task 1 A: [4]

Complete this task in cell 2 of your notebook (Cell 1 will be used for any libraries you may need to import).

Write a function called **data_download**. This function takes three parameters (**ticker**, **date**, **interval**) and uses yfinance to download stock data according to the parameters. The downloaded data is returned by the function.

ticker is the code for a company like "AAPL", "GOOG" etc.

interval is the granularity of the data and can be "1m", "5m", "15m"

Task 1 B: [1]

Complete this task in cell 3 of your notebook.

Write code to test **data_download** using two tickers, two dates and two intervals. You can accomplish this using two test cases. For each test, print the first 5 rows of the downloaded data.

Task 2 A: [4]

Complete this task in cell 4 of your notebook.

Write a function called **volume_analysis**. This function takes **data**, **ticker**, **date** and **interval** as parameters and displays the **Volume** column in the **data** as a bar chart.

Task 2 B: [1]

Complete this task in cell 5 of your notebook.

Write code to test **volume_analysis** using two tickers, two dates and two intervals. First download data using a call to **data_download** and then use the function to plot.

Task 3 A: [4]

Complete this task in cell 6 of your notebook.

Write a function called **price_analysis** which takes **data**, **ticker**, **date** and **interval** as parameters. It calculates the mean of the prices (**Close**, **High**, **Low**, and **Open**) for each row and displays that as a line chart. It also displays **Close** price as a separate line in the same graph. This function will plot two lines in a single graph.

Task 3 B: [1]

Complete this task in cell 7 of your notebook.

Write code to test **price_analysis** using two tickers, two dates and two intervals. First download data using a call to **data_download** and then use the function to plot.

Task 4 A: [4]

Complete this task in cell 8 of your notebook.

Write a function called **violin_plots** which takes **data**, **ticker**, **date** and **interval** as parameters. It draws a violin plot for each of the following columns in your data:

Close, **Open**, **Low**, **High**

All the violin plots are in a single figure.

Task 4 B: [1]

Complete this task in cell 9 of your notebook.

Write code to test **voilen_plots** using two tickers, two dates and two intervals. First download data using a call to **data_download** and then use the function to plot.

Submission Details.

1. Create a folder named: FIRSTNAME_LASTNAME.
2. Place your code file (.ipynb) in that folder.
3. Compress the folder into a zip file. Please make sure that your folder is appropriately named (See step 1 above) before creating the zip file. Do not rename the zip file after creating it.
4. Upload the zip file in the appropriate dropbox on MLS.
5. Redownload the file you submitted and confirm if you uploaded the correct file on MLS.