

SchoolNova Computer Science 202  
**Homework 21**

*Due 3/20/2021 on Google Classroom*

**Task 1**

Install pandas-datareader (PDR): <https://pypi.org/project/pandas-datareader/>

**Task 2**

Create a free Tiingo account: <https://www.tiingo.com/> to obtain your API token:  
<https://www.tiingo.com/account/api/token>

**Task 3**

Using PDR and your Tiingo API token, download stock prices for several companies from the Dow Jones Industrial Average: <https://www.cnbc.com/dow-30/>. Hint: create your own 'mystocks' list in advance (it's up to you how many companies to include).

Note that at the present time you can import PDR as follows:

```
import pandas_datareader as pdr  
df = pdr.get_data_tiingo()
```

Source: [https://pandas-datareader.readthedocs.io/en/latest/remote\\_data.html#remote-data-tiingo](https://pandas-datareader.readthedocs.io/en/latest/remote_data.html#remote-data-tiingo)

This is slightly different from our class code (import pandas\_datareader.data as pdr).

**Task 4**

Notice that the downloaded dataset has a default start value, which is 5 years before the current date. You can change the start date by adding the start option to pdr.get\_data\_tiingo() – for example, start = "JAN-01-2010".

**Task 5**

Save your dataframe as a pickle object (so that you can access the data later, without using the Tiingo API).

**Task 6**

Plot the adjusted closing prices for all your stocks. Instead of plotting each stock on a separate line, try using a for loop together with 'mystocks' list. This is especially convenient if you have a lot of stocks to plot.

**Task 7**

Use dataframe method .to\_numpy() to convert your dataframe data to numpy array. Since you have multiple stocks, the dataframe will be converted into one big array. Can you create separate numpy arrays for each stock? (hint: explore the class code for a hint on how to focus on individual cross sections). Alternatively: instead of a separate numpy array for each stock, can you create a single three dimensional numpy array to store all dataframe data?