Assignment: DMP-01 – Assignment - Strategy back testing using Python

**Instruction to be followed:**

**Due Date**:

* In case you submit it after this date, there will be no feedback/evaluation provided
* A .py file which will include the code and explanations for any descriptive questions (Please submit only one file (zip file containing .py file) which has the answers to all the below questions)

**Please write your explanations as comments in the .py file that you send. Please do not send a separate word document.**

The assignment is based on the DMP-1 session. Explanation wherever necessary should be preceded by #. Programming can be done in many ways so feel free to build your own approach.

I expect you to use a search engine to read up methods/techniques that you're not familiar with. The official documentation is great. And so is a lot of other stuff that you'll find online.

Q1: We'd created a list called 'wealth' in the modified Faber strategy. We also computed maWealth. Use the method cumprod() instead to get the same output. (Hint: You don't need to create maWealth).

Q2: The modified Faber's strategy has been implemented using 'for loop'. Implement the same strategy using dataframe.apply() method.

Q3: Write a customized function that computes returns for the modified Faber's strategy for different moving average durations. Try out different combinations to find one which is better than buy-and hold for any equity of your choice (except AAPL).

Q4: The moving average crossover (MAC) code is implemented where we always have an open position. Calculate returns where short selling is not allowed. Plot a graph comparing returns from buy-and-hold, no short selling, and the one we did in class. Comment on your results.

Q5: Download the data for any 5 stocks (using the code for automatically downloading multiple stocks) of your choice for the last 5 years.

For the above mentioned time period

a) Compute the daily returns (assuming you buy at open and sell at close) everyday.

b) Compute the hit ratio for each of them.

c) Compute the cumulative returns for each of them.

Plot them graphically and comment on your results.

**Optional: - Installations/Readings/Practice**

6) Install the TA-lib package. You can go through the attached document to get it installed.

Go through the link to get an overview of the features. https://mrjbq7.github.io/ta-lib/index.html

7) Read about exponential moving averages (EMA) and compare them to simple moving averages (SMA) that we've used so far. You can play around with changing to EMA for the strategies we've discussed to see how it differs from SMA. You can read about the pros and cons of using one v/s the other here

https://www.babypips.com/learn/forex/sma-vs-ema