Pre-Interview Coding Challenge

Challenge 2: Backend – Predict next 3 values of Stock price (timeseries data)

Objective

For each stock exchange, select the specified number of files, and for each file provided, predict the next 3 values of stock price for that specific file.

Requirements

Your solution should utilize 2 APIs/Functions

- 1st API/Function that, for each file provided, returns 10 consecutive data points starting from a random timestamp.
- 2nd API/function that gets the output from 1st one and predicts the next 3 values in the timeseries data.

Data & Inputs

Sample data is provided as a set of folders, one for each exchange, .csv files. Each file has

- Stock-ID, Timestamp (dd-mm-yyyy), stock price value.

Input parameter to your solution: The recommended number of files to be sampled for each Stock Exchange. Possible input values are 1 or 2. If there aren't enough files present for a given exchange, process whatever number of files are present even if it is lower. E.g., input is 2 but only 1 file is present, so you process 1 file.

Prediction Logic: You can write your own prediction algorithm (in such case pls provide the logic and rationale) or go by below for the sake of simplicity:

- first predicted (n+1) data point is same as the 2nd highest value present in the 10 data points
- n+2 data point has half the difference between n and n +1
- n+3 data point has 1/4th the difference between n+1 and n+2

Output Format

One .csv output file for each file processed. Each .csv file should have 3 columns on each row as shown below. Timestamp & stock price have same format as input file

```
Stock-ID, Timestamp-1, stock price 1
..
Stock-ID, Timestamp-n, stock price n
Stock-ID, Timestamp-n+1, stock price n+1
Stock-ID, Timestamp-n+2, stock price n+2
Stock-ID, Timestamp-n+3, stock price n+3
```

Error Handling

The application should gracefully handle exceptions, such as no files, empty files etc., feel free to include as much exception handling as possible. It provides insights into your ability to anticipate what can go wrong.

Documentation

Include a README file explaining how to set up and run your application.

Optional Enhancements

Feel free to add enhancements that could improve the extensibility/maintainability for future enhancement, user experience etc., Some suggestions include:

- additional functionality or checks (e.g., your own prediction algorithm using AIML etc.)
- more insights added in the report you generate
- optimizations for performance and scalability

Submission Instructions & FAQ

How to submit your challenge

Please submit your code via a publicly accessible GitHub repository created specifically for this challenge.

- It is expected that you will know how to create a repository on GitHub and check your code into it.
- Do not share your repository with anybody else other than the reviewer.
- You should ensure your repository is read-only to everybody except yourself, this is so nobody can interfere with your submission after you have completed it. .
- The code for the challenge should be the only code in the repository except for the README file, explaining how to set up and run your application, and providing any access related information.
- Estimated Time spent on the challenge should be ~2hours, if you do not finish , include any additional information in the README file.
- Ensure your code is well-commented and follows good coding practices.

Frequently Asked Questions

Q: Can I use external libraries or frameworks?
A: Yes, you can use any libraries or frameworks you find appropriate.
Q: Is it required to deploy the application online?
A: No, it's not required. However, if you choose to do so, please include access details in your README.
Q: What if I have questions during the challenge?
A: Document any assumptions you make in your README file.
Q: Are there any specific coding standards or practices I should follow?
A: While there are no enforced coding standards, your code should be readable, well-organized, and demonstrate good software development practices.
Q: Is it okay to use code snippets or libraries from the internet?
A: Yes, but ensure you understand and can explain any code you use. Also, respect code licensing and give credit where it is due.
Q: What will this challenge be assessing?
A: We are looking at your coding skills, problem-solving abilities, creativity, and how you approach and structure a project.
Q: Can I use online resources for help?
A: Yes, you can use online resources but make sure you understand and can explain any code you use. Plagiarism will disqualify your submission.
Q. Can I use AI generated code to complete the challenge?
A. No, the challenges are designed to test your skills and understanding of the problem presented, if we detect AI generated solutions it will be treated the same as we would treat “Plagiarism”.
Q: For the UI related exercise, in case of time crunch should I prioritize look and feel or the functionality?
A: Functionality has higher precedence than look and feel, in case you must compromise on one of them.