Code challenge

CRYPTO WALLET PERFORMANCE

Recommended time limit
4 hours

Senior level Java assignment

1. OBJECTIVE

Your assignment is to implement a Java program that given a collection of crypto assets with their positions, it must retrieve, concurrently, their latest prices from the Coincap API and return the updated total financial value of the wallet with performance data.

Input

CSV file representing the wallet with columns symbol, quantity, price

Output

Print a line with

total={},best_asset={},best_performance={},worst_asset={},worst_performance={}

Where

- total: total financial value in USD of the entire wallet
- best_asset: which asset had the best performance (value increase) from the input CSV compared to the latest price retrieved from the API
- best_performance: percentage of the performance of the best_asset
- worst_asset: which asset had the worst performance (value decrease) from the input CSV compared to the latest price retrieved from the API
- worst_performance: percentage of the performance of the worst_asset
- Values rounded to 2 decimal places, HALF_UP

2. TECHNICAL BRIEFING

Required environment, tools and languages:

- Java 11+
- Build the project with maven

- Write your code in English
- Read the CSV from src/main/resources and there is no need to validate the CSV, consider it will always be valid
- Feel free to use any additional Java framework or libraries you want.

Mandatory technical requirements:

- Write unit tests, it's up to you to mock or not the API for the unit tests
- Retrieve the prices simultaneously by groups of 3 assets concurrently, i.e., at any point, at most 3 threads will be active processing tasks – but never single-threaded (unless there is only one asset in the wallet). For example, if you process a wallet with more than 3 assets, and each API call takes 10s, your code should log something like:

```
Now is 10:00:00
Submitted request ASSET_A at 10:00:01
Submitted request ASSET_B at 10:00:01
Submitted request ASSET_C at 10:00:01
(program hangs, waiting for some of the previous requests
to finish)
Submitted request ASSET_D at 10:00:11
...
```

  Note: as you need to return the total value of the wallet, your program will have to wait until all assets have been processed.

- Use Coincap API: https://docs.coincap.io/
  - Assets: https://docs.coincap.io/#89deffa0-ab03-4e0a-8d92-637a857d2c91
    - Use the Assets API to lookup asset id by symbol
  - Assets history price on specific date: https://docs.coincap.io/#61e708a8-8876-4fb2-a418-86f12f308978
    - Use the following parameters so we can test with the same data: `interval=d1&start=1617753600000&end=1617753601000`

3. EXAMPLE

- GIVEN

```
symbol,quantity,price
BTC,0.12345,37870.5058
ETH,4.89532,2004.9774
```

- WHEN

    - Using Coincap Assets API, we get the asset ids “bitcoin” and “ethereum" respectively
    - Next, using the Coincap Assets History API, we get the prices “56999.9728252053067291” and “2032.1394325557042107” respectively
- THEN
  Current BTC position is 0.12345 * 56999.9728252053067291
  Current ETH position is 4.89532 * 2032.1394325557042107
  Total = Current BTC Position + Current ETH Position
  BTC had an increase of 150% compared to original price of “`37870.5058`” and ETH an increase of 101%

  ```
  total=16984.62,best_asset=BTC,best_performance=1.51,worst_asse
  t=ETH,worst_performance=1.01
  ```

4. DELIVERABLES

Please upload your code to a remote git repo and send the link. Alternatively, send us a zip file with the code.