

DSCI 560 - Data Science Professional Practicum

Lab 3 Part 1

Team name: Cleanup Crew

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Introduction

This README provides instructions on how to set up and use the Stock Portfolio Management and Data Analysis application. This application allows users to manage their stock portfolios, add or remove stocks, view portfolio details, preprocess stock data, and display key stock metrics.

Requirements

- Python 3.x
- MySQL Server
- MySQL Connector Python
- pandas
- Yfinance
- phpmyadmin

Installation

Before running the application, ensure you have Python 3.x installed on your system along with the required libraries. You can install the necessary Python libraries using the following command:

- `pip install mysql-connector-python pandas yfinance`

Database Setup

1. Start your MySQL Server.
2. Open a terminal and navigate to the directory where the scripts are located.
3. Run `stock_data_fetcher` FIRST and then run `portfolio_management.py` to set up the initial database and tables using the following commands: (These scripts will create a new database named Stocks and set up the necessary tables.)
 - a. `python3 stock_data_fetcher.py`
 - b. `python3 portfolio_management.py`

Running the Application

Execute `cli.py` to start the command-line interface (CLI) of the application: (The main menu of the application will be displayed with several options.)

- `python3 cli.py`

Application Usage

Main Menu Options:

1. Add New Portfolio:
 - 1.1. Enter a name for your new portfolio.
 - 1.2. The portfolio will be created with the current date.
2. Delete a Portfolio:
 - 2.1. Enter the name of the portfolio you wish to delete.
 - 2.2. This action will remove the portfolio and its associated stock data.
3. Add Stock to Portfolio:
 - 3.1. Enter the name of the portfolio to which you want to add a stock.
 - 3.2. Enter the stock symbol (e.g., AAPL for Apple Inc.).
 - 3.3. Enter the start and end dates for the stock data.
 - 3.4. The stock data will be fetched from Yahoo Finance and stored in the portfolio.
4. Remove Stock from Portfolio:
 - 4.1. Enter the name of the portfolio from which you want to remove a stock.
 - 4.2. Enter the stock symbol to be removed.
5. View Portfolio Details:
 - 5.1. Enter the name of the portfolio to view its details.
 - 5.2. This option displays the portfolio's creation date and detailed stock data.
6. View Distinct Stocks in Portfolio:
 - 6.1. Enter the name of the portfolio to view distinct stocks.
 - 6.2. This option lists each unique stock in the specified portfolio.
7. Preprocess and Display Stock Data:
 - 7.1. Enter the name of the portfolio for data preprocessing.
 - 7.2. For each stock, enter the start and end dates.
 - 7.3. Choose to display metrics like Daily Returns, Moving Averages, Volatility, and Bollinger Bands.
8. Exit:
 - 8.1. Exit the application.

Notes

- Ensure that MySQL Server is running before using the application.
- Data preprocessing includes calculations for daily returns, moving averages, volatility, and Bollinger Bands.