CS 110 Project- Stock Analysis

Overview and Summary of Project

This program analyzes the stock performance of 15 technology sector stocks from Nov 15, 2019 - Nov 15, 2020, demonstrating how the stocks performed before the Coronavirus pandemic, during the pandemic, and after 9 months in the pandemic. The program takes the stock data that the user stored in a file called "csv", reads the csv file, creates a graph with the data, and closes the csv file. Then, the program takes the data from the performance of NASDAQ (used as a benchmark), and compares the performance of the tech sector stocks to the performance of the NASDAQ. Next, the program calculates the mean price of the NASDAQ and compares the prices of the tech stocks during each of the 12 months. If the stock was being sold at a price greater than or equal to the NASDAQ average, the program prints a statement, telling the user that the stock did well through the pandemic because it beat the NASDAQ. If the stock price never reached this average, the program tells the user that the stock did not do well. The user can manipulate this program by downloading new stock data into the csv folder.

Target Audience

The target audience is anyone interested in investing in the tech sector stocks, anyone researching stock performance throughout the pandemic, and anyone working in the tech industry. It is important to analyze how the stocks were doing before the pandemic, how they did in the beginning of the pandemic, and how they are doing now, so we can see the price fluctuations and see whether the stock has started recovering from potential losses. The program shows that the tech industry was not drastically impacted by the pandemic. This analysis is therefore useful to investors and CEOs of companies within the tech sector.

Specific Programming Techniques Used

This program uses object oriented programming and plots a graph using the objects in the script. The data for this program was downloaded from Yahoo Finance and stored as a CSV

file in the same folder as my program. The program reads the csv file and converts the data so that it may be graphed. In the project, I defined 5 different functions. The function "get_csv_files()" gets each individual csv file from the designated folder and returns a list of csv file.s The function "get_ticker_from_file(file)" splits the file by the string "csv/" to get the last four characters which represent the name of the stock. The function "get_date_and_price_list_from_csv" creates two blank lists and then appends the dates from row 0 of the file and then the closing prices from row 4 of the file. The functions "graph_xlist_and_ylist(x, y, CompanyName)" and "show_graph()" plot the graph of the data and edit the graph to make it more legible and visibly pleasing. The main function then runs all of these defined functions with the proper variables. I used the csv.reader function to iterate over the lines in the given csv file. I imported matplotlib.pyplot as "graph" to graph the data. I then imported the mean function from numpy to find the mean price of the NASDAQ.

Challenges

A big challenge for me was making sure that I properly named all of my variables so that I knew the purpose of each variable and did not make mistakes when referring back to each variable. Because there were multiple functions and so many variables that I had to define, I ran into problems because there were times where I was not referring to the proper variable or function. Another problem was figuring out the simplest way to find the average of the NASDAQ data. I researched how to download the mean built-in function so I would not have to find the sum of the data and then divide.

Future Extensions

One possible future extension is adding a different function that will download the stock data from Yahoo Finance on its own. This would keep the stock information more up-to-date and save time for the user since they do not have to download data on their own. Another way to improve this program is to include the high and low stock prices and compare those with the high and low prices of the NASDAQ. The third way to extend this

program is to simply download more tech sector stock data and possibly compare all stocks in the tech sector. If the user wants to analyze a variety of sectors through the pandemic, different sector stocks can be downloaded as well.