Jacob Aylmer - CS110 Final Project

Section 1: Overview and Summary

My project recommends for the user whether a stock is a good investment or not. My recommendation is based on the PE and Dividend Yield of a given stock. The user is prompted to input the ticker of a stock that has a PE and a Dividend Yield when the program is run, and my program then either fully recommends, partially recommends or does not recommend buying the stock based on the PE and Dividend Yield. The stock must meet a certain criteria in order to be recommended by me. If the PE is under 30 and the Dividend Yield is between 3% and 6% then I will fully recommend the stock. If the PE is under 30 or the Dividend Yield is either below 3% or above 6%, then I recommend it based on PE but not Dividend Yield. If the Dividend Yield is between 3% and 6% but the PE is over 30, then I recommend it based on Dividend Yield but not PE. If the PE is above 30 and the Dividend Yield is either below 3% or above 6% then I do not recommend buying the stock at all.

When the program is run, the user is prompted to enter the ticker symbol for the stock they want a recommendation for. After this, the PE and Dividend Yield are both printed, followed by my recommendation. The graph of the price of the stock over the past year is displayed as well, to show if the price is trending upward or downward.

Jacob_Aylmer_CS110_Final_Project.py - /Users/jacobaylmer/Desktop/cs110/Jacob_Aylmer_CS110_Final_Project.py (3.8.5)

```
import yfinance as yf
import matplotlib.pyplot as plt

def main():
    stock_input = input("Enter a ticker of a stock with a PE and Dividend Yield you would like a recommendation for: ")
    stock = yf.Ticker(stock_input)

    trailing_PE = stock.info["trailingPE"]
    print("The PE of", stock_input, "is:", trailing_PE)
    div_yield = stock.info["dividendYield"] * 100
    print("The Dividend Yield of", stock_input, "is:", div_yield, "%")

    if trailing_PE < 30 and 3 < div_yield < 6:
        print("I fully recommend buying this stock based on both PE and Dividend Yield.")
    elif trailing_PE < 30 and (3 > div_yield or 6 < div_yield):
        print("I recommend buying this stock based on PE but not Dividend Yield.")
    elif trailing_PE > 30 and 3 < div_yield < 6:
        print("I recommend buying this stock based on Dividend Yield but not PE.")
    else:
        print("I do not recommend buying this stock based on PE or Dividend Yield.")

    print()

    print("The graph of the price of your stock over the past year:")
    df = stock.history(period="1y")
    plt.plot(df.index, df["Close"], label="Close")
    plt.plot(df.index, df["Open"], label="Open")
    plt.plot(df.index, df["High"], label="High")
    plt.xlabel("Date")
    plt.ylabel("Price")
    plt.xticks(rotation=90)
    plt.title("{}Stock Prices".format(stock_input.upper()))
    plt.legend(loc="upper left")
    plt.grid()
    plt.show()


main()
```

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Python 3.8.5 Shell

```
Python 3.8.5 (v3.8.5:580fbb018f, Jul 20 2020, 12:11:27)
[Clang 6.0 (clang-600.0.57)] on darwin
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: /Users/jacobaylmer/Desktop/cs110/Jacob_Aylmer_CS110_Final_Project.py
Enter a ticker of a stock with a PE and Dividend Yield you would like a recommendation for: JPM
The PE of JPM is: 15.590037
The Dividend Yield of JPM is: 3.01 %
I fully recommend buying this stock based on both PE and Dividend Yield.

The graph of the price of your stock over the past year:

============ RESTART: /Users/jacobaylmer/Desktop/cs110/Jacob_Aylmer_CS110_Final_Project.py ============
Enter a ticker of a stock with a PE and Dividend Yield you would like a recommendation for: AAPL
The PE of AAPL is: 37.32012
The Dividend Yield of AAPL is: 0.67000003 %
I do not recommend buying this stock based on PE or Dividend Yield.

The graph of the price of your stock over the past year:

============ RESTART: /Users/jacobaylmer/Desktop/cs110/Jacob_Aylmer_CS110_Final_Project.py ============
Enter a ticker of a stock with a PE and Dividend Yield you would like a recommendation for: XOM
The PE of XOM is: 56.2982
The Dividend Yield of XOM is: 7.95 %
I do not recommend buying this stock based on PE or Dividend Yield.

The graph of the price of your stock over the past year:

============ RESTART: /Users/jacobaylmer/Desktop/cs110/Jacob_Aylmer_CS110_Final_Project.py ============
Enter a ticker of a stock with a PE and Dividend Yield you would like a recommendation for: WMT
The PE of WMT is: 21.212122
The Dividend Yield of WMT is: 1.47 %
I recommend buying this stock based on PE but not Dividend Yield.

The graph of the price of your stock over the past year:
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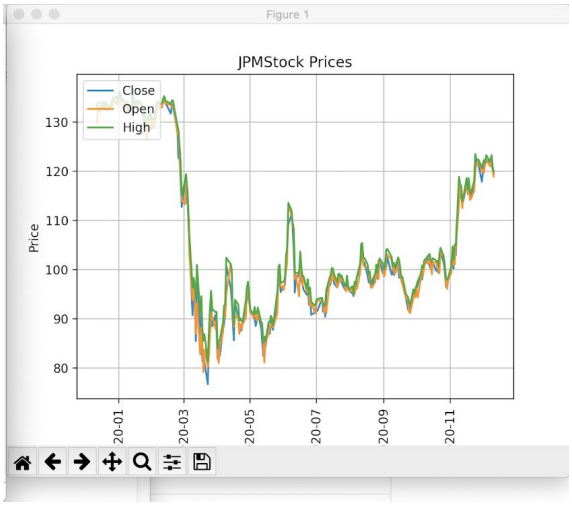

Section 2: Target Audience

The program is meant for people that need help with investing. I help them by getting the PE and Dividend Yield of a stock and suggesting if they should invest in it or not. Anyone could use it if they want to get into investing or if they want to get a second opinion before buying it.

Section 3: Specific Programming Techniques Used

I used two libraries for my project; yfinance and matplotlib. Yfinance was used to get the information on the stock that was inputted into the program. It gave me the PE and the Dividend Yield for the stock so I could analyze it and make a recommendation. I used matplotlib to graph the stock price over the past year to show the trends of it and if it is going up or down.

I used an if, elif, else statement to determine if the stock was a good investment. There were different scenarios depending on the PE and Dividend Yield of the stock so I had to make 4 different situations and levels of recommendation for each of them.

Section 4: Challenges

Some of the challenges I encountered were just with getting used to using the libraries of yfinance and matplotlib. I did not really know how to use the libraries correctly until I had a meeting with my TA, Eric, which ended up being very helpful. I had a problem importing matplotlib to my project but that was because I forgot that it had to be imported as matplotlib.pyplot instead of just matplotlib. Once I figured these things out it was pretty smooth for the rest of the project.

Section 5: Future Extensions

This project could definitely be expanded and made more complex. There are so many different statistics that could go into recommending a stock for purchase but I decided to choose the two that I think are the most important to assessing a company's value. I could have added in more data but there is nothing that's as important as PE and Dividend Yield in my opinion. Another extension to the project could be getting recommendations for multiple stocks at one time. The stocks could be ranked in order of recommendation or grouped into different categories depending on how much I like them. This project could be extended a few different ways but these are a couple examples.