

The questions for this assignment were carried out on the NVDA stock data, the files have been attached along with this pdf, in the parent submission folder.

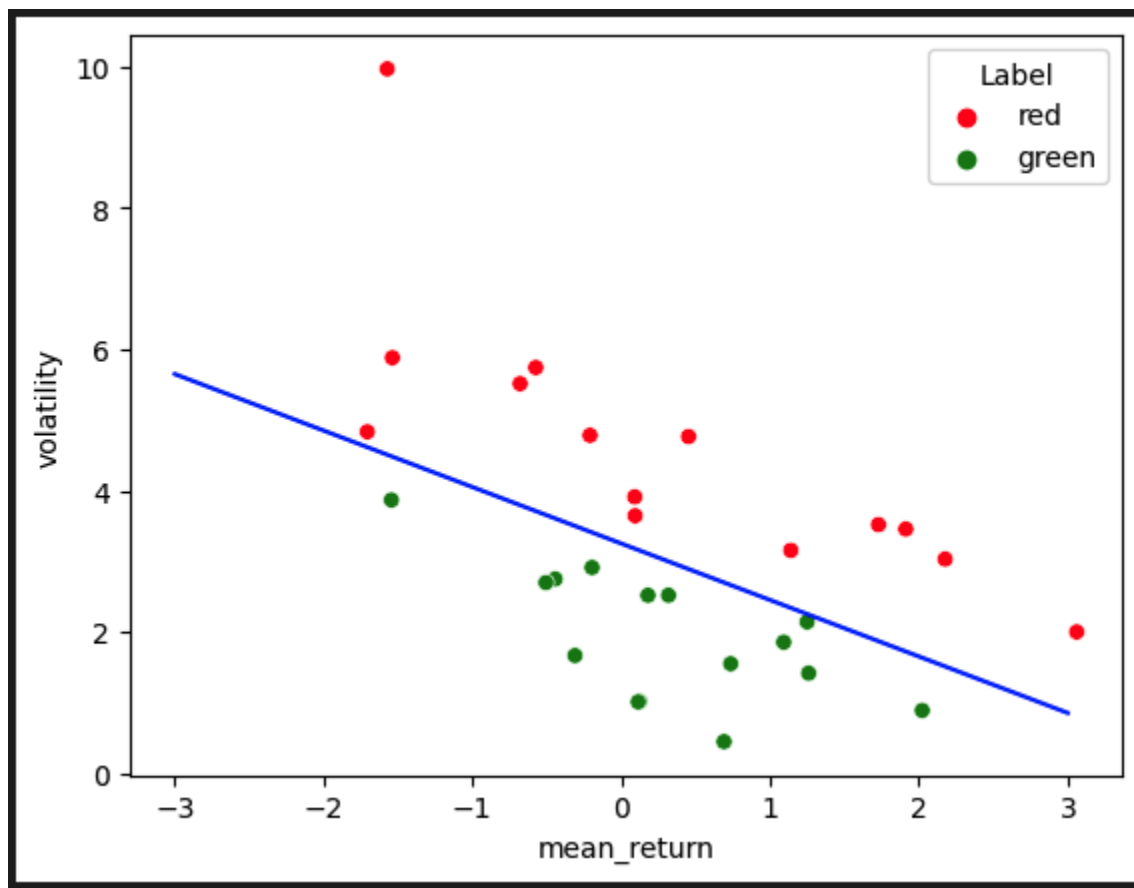
Question 1.

The plot below shows the linear separation I was able to achieve by reducing the number of points. Also adjusting the values for slope and intercept of the linear equation.

The equation of the line was found to be be:

$$Y = -0.8 * X + 3.25$$

Where Y denotes the volatility and X the mean_return.



Question 2.

Code snippet that shows how i used the linear equation to label data for year 2:

```
#Assigning green labels to year 2 based on previously established linear relation  $y = -0.8x + 3.25$ 
df_year_2_green = df_year_2[df_year_2["volatility"] < -0.8*df_year_2["mean_return"] + 3.25 ]
df_year_2_green["Label"] = "green"

#Assigning red labels to year 2 based on previously established linear relation  $y = -0.8x + 3.25$ 
df_year_2_red = df_year_2[df_year_2["volatility"] > -0.8*df_year_2["mean_return"] + 3.25 ]
df_year_2_red["Label"] = "red"

df_year_2 = pd.concat([df_year_2_green, df_year_2_red], ignore_index=True)
df_year_2.head()
```

Some of the results of the labeling are shown below:

Year	Day	Weekday	mean_return	volatility	Label
2021	11	Monday	-0.6178	2.158119	green
2021	12	Tuesday	-0.6178	2.158119	green
2021	13	Wednesday	-0.6178	2.158119	green
2021	14	Thursday	-0.6178	2.158119	green
2021	15	Friday	-0.6178	2.158119	green

Year	Day	Weekday	mean_return	volatility	Label
2021	17	Friday	-1.49980	5.942426	red
2021	20	Monday	1.63275	2.256175	red
2021	21	Tuesday	1.63275	2.256175	red
2021	22	Wednesday	1.63275	2.256175	red
2021	23	Thursday	1.63275	2.256175	red

Question 3.

The trading strategy that I have used is as follows:

I only trade when the label for the day is green and the percentage difference between current open and previous closing is greater than a threshold of 9.9% which I had found was an optimum threshold to trade in during my previous coursework.

If the label is red I do not invest.

I invest 100 dollars at the start of the year and continue trading with that money. The result I got after trading is shown below:

The Amount of money after trading using my strategy: 99.2 dollars