Question 1:

My stock: RTX

1. for each of the 5 years, compute the mean and standard deviation for the sets R, R− and R+ of daily returns for your stock for each day of the week

--In code file:

2016- read\_stock\_data\_from\_file.py

2017-rebollo\_2017\_mystock

2018-rebollo\_2018\_mystock

2019-rebollo\_2019\_mystock

2020-rebollo\_2020\_mystock

2. summarize your results in the table as shown below (5 tables total).

--In code file:

2016- read\_stock\_data\_from\_file.py

2017-rebollo\_2017\_mystock

2018-rebollo\_2018\_mystock

2019-rebollo\_2019\_mystock

2020-rebollo\_2020\_mystock

3. are there more days with negative or non-negative returns?

There are more days with non-negative returns ex. In 2016 there were 131 non-negative days and 121 negative days.

4. does your stock lose more on a ”down” day than it gains on an ”up” days.

My stock gains more on up days than on down days as seen in 2017 data:

Total - 142

2017 Monday Positive Average: 0.004840133454219923

2017 Monday Standard Deviation: 0.003985756535257946

2017 Tuesday Positive Average: 0.005405526045182442

2017 Monday Standard Deviation: 0.005353533436892442

2017 Wednesday Positive Average: 0.006686365643814965

2017 Monday Standard Deviation: 0.005732847225218947

2017 Thursday Positive Average: 0.006067850775257422

2017 Monday Standard Deviation: 0.006222175862922758

2017 Friday Positive Average: 0.005364951563837946

2017 Monday Standard Deviation: 0.004754191973898182

Total - 109

2017 Monday Negative Average: -0.004544117651803205

2017 Monday Standard Deviation: 0.004978773344180773

2017 Tuesday Negative Average: -0.00814335578290803

2017 Monday Standard Deviation: 0.012514274936947642

2017 Wednesday Negative Average: -0.005630940888296025

2017 Monday Standard Deviation: 0.003670724533125156

2017 Thursday Negative Average: -0.006324559138433148

2017 Monday Standard Deviation: 0.004625276516671282

2017 Friday Negative Average: -0.004488765735222489

2017 Monday Standard Deviation: 0.0037859182766232548

5. are these results the same across days of the week?

2017 Monday Average: -5.5997557618230235e-05

2017 Monday Standard Deviation: 0.006519598435181235

2017 Tuesday Average: 0.0003579034033448154

2017 Tuesday Standard Deviation: 0.010919611141047458

2017 Wednesday Average: 0.0010014549366868157

2017 Monday Standard Deviation: 0.007849858339016094

2017 Thursday Average: 0.0009650937519730695

2017 Monday Standard Deviation: 0.008293376421281353

2017 Friday Average: 0.0013075385583424727

2017 Monday Standard Deviation: 0.006535701325365367

As seen from the above data, Mondays seem to have the worst returns while Tuesday is the best. There are fluctuations between the days.

Question 2: Examine your 5 tables.

2016 Monday Average: 0.0013323217075301853

2016 Monday Standard Deviation: 0.01057005262596098

2016 Tuesday Average: -0.0008254760964325161

2016 Monday Standard Deviation: 0.010348889954970844

2016 Wednesday Average: 0.001650768415956358

2016 Monday Standard Deviation: 0.00979920486031573

2016 Thursday Average: 0.002205256438829223

2016 Monday Standard Deviation: 0.011751584875964947

2016 Friday Average: -0.0007502955364022309

2016 Monday Standard Deviation: 0.011542742866225194

2017 Monday Average: -5.5997557618230235e-05

2017 Monday Standard Deviation: 0.006519598435181235

2017 Tuesday Average: 0.0003579034033448154

2017 Tuesday Standard Deviation: 0.010919611141047458

2017 Wednesday Average: 0.0010014549366868157

2017 Monday Standard Deviation: 0.007849858339016094

2017 Thursday Average: 0.0009650937519730695

2017 Monday Standard Deviation: 0.008293376421281353

2017 Friday Average: 0.0013075385583424727

2017 Monday Standard Deviation: 0.006535701325365367

2018 Monday Average: -0.0018295941858364518

2018 Monday Standard Deviation: 0.015905509963843795

2018 Tuesday Average: -0.0002876879852181788

2018 Monday Standard Deviation: 0.013927327129617745

2018 Wednesday Average: -0.0002999768093975197

2018 Monday Standard Deviation: 0.014530258765326265

2018 Thursday Average: 0.0006826103416995332

2018 Monday Standard Deviation: 0.014256101443022749

2018 Friday Average: -0.0009958932695315838

2018 Monday Standard Deviation: 0.011277693943116281

2019 Monday Average: -0.0011916699893330177

2019 Monday Standard Deviation: 0.012863492271964313

2019 Tuesday Average: 0.00015012033077985368

2019 Monday Standard Deviation: 0.013574451105350025

2019 Wednesday Average: 0.0018761499587778656

2019 Monday Standard Deviation: 0.013072680209613784

2019 Thursday Average: 0.003438359494033554

2019 Monday Standard Deviation: 0.013197607896550334

2019 Friday Average: 0.003275435042840229

2019 Monday Standard Deviation: 0.011968604674394293

2020 Monday Average: 0.0023364657626009436

2020 Monday Standard Deviation: 0.046695162709654334

2020 Tuesday Average: 0.0008563338074759106

2020 Monday Standard Deviation: 0.033389803766279286

2020 Wednesday Average: -0.0010516468562328752

2020 Monday Standard Deviation: 0.03969667110023343

2020 Thursday Average: -0.0031788376520232842

2020 Monday Standard Deviation: 0.030149712406405987

2020 Friday Average: -0.00039592379902389675

2020 Monday Standard Deviation: 0.027678372385888467

1. are there any patterns across days of the week?

Mondays seem to have the worst returns while Tuesday is the best while the remainder of the days fluctuate.

2. are there any patterns across different years for the same day of the week?

Monday and Friday average returns always seem to be negative across the years.

3. what are the best and worst days of the week to be invested for each year.

2016- Best: Thursday, Worst: Tuesday

2017- Best: Friday, Worst: Monday

2018- Best: Thursday, Worst: Monday

2019- Best: Thursday, Worst: Monday

2020- Best: Monday, Worst: Thursday

4. do these days change from year to year for your stock?

Yes, the best and worst days do fluctuate but there does seem to be a Trend of Thursday being the best and Monday the worst.

Question 3: Compute the aggregate table across all 5 years, one table for both your stock and one table for S&P-500 (using data for ”spy”).

five\_year Monday Average: 0.00010949401310449442

five\_year Monday Standard Deviation: 0.023686810411648312

five\_year Tuesday Average: 5.035598643126891e-05

five\_year Monday Standard Deviation: 0.018592234268443173

five\_year Wednesday Average: 0.0006378007207826096

five\_year Monday Standard Deviation: 0.020664388721889387

five\_year Thursday Average: 0.0007965466821727844

five\_year Monday Standard Deviation: 0.017508217592073088

five\_year Friday Average: 0.0004951611004170842

five\_year Monday Standard Deviation: 0.01552295279964810

SPY Monday Average: 0.0005085955311644492

SPY Monday Standard Deviation: 0.013913142652229125

SPY Tuesday Average: 0.001214939898119182

SPY Monday Standard Deviation: 0.011464603233184292

SPY Wednesday Average: 0.0009062964979459155

SPY Monday Standard Deviation: 0.011115269755175954

SPY Thursday Average: -1.3961376998699385e-06

SPY Monday Standard Deviation: 0.011657828449215866

SPY Friday Average: 0.0005557965596222493

SPY Monday Standard Deviation: 0.011110787529613772

1. what is the best and worst days of the week for each?

My stock- Best: Wednesday , Worst: Tuesday

SPY- Best: Tuesday , Worst: Thursday

2. are these days the same for your stock as they are for S&P- 500?

These days do not coincide with my stock and SPY.

Question 4: You listen to the oracle and follow its advice. How much much money will you have on the last trading day of 2019:

1. your stock?

Total Return $ 136149.04

2. S&P-500 stock?

Total Return $ 11802.26

Question 5: Consider ”buy-and-hold” strategy: you buy on the first trading day and sell on the last day. So you do not listen to your oracle at all. As before, assume that you start with $100 for both your stock and ”spy”.

1. how much money will you have on the last trading day of 2019?

My stock- The profit from buy and hold is: 34.37

SPY - The profit from buy and hold is: 104.85

2. how do these results compare with results obtained in question 4?

These results of buy and hold are minuscule in comparison to following the Oracle strategy on several orders of magnitude.

Question 6:

1. for each of the scenarios above (a,b and c), compute the final amount that you will have for both your stock and ”spy”
2. My Stock - $ 126410.81 , SPY- $ 10871.97
3. B. My Stock - $ 135929.73, SPY- $ 11791.73

C. My Stock - $ 136044.42 , SPY- $ 11796.34

2. do you gain more by missing the worst days or by missing the best days?

By missing the worst days, you gain more across my stock and SPY.

3. are the results in part (c) different from results that you obtained in question 4.

The value in part C are nearly the same as the results obtained in question 4 but they are different by significant values.