Week 5 Project

Problem 1:

Here are the results:

文本

描述已自动生成

图表, 直方图

描述已自动生成

The ES and VaR values for the two distributions are close. The VaR for normal distribution is slightly larger than the VaR for generalized T distribution. This shows that generalized T distribution indicates a lower level of risk. The ES for normal distribution is slightly smaller than the ES of generalized T distribution. This shows that if the loss exceeds the VaR level and follow a generalized T distribution, the expected losses would be higher compared to the normal distribution.

Problem 2:  
The functions in the library riskmgmt come from the previous assignments. They are tested by the csv files in the previous projects. Some other testcases are in week5problem3.ipynb.

Problem 3:

图表, 直方图

描述已自动生成 图表, 直方图

描述已自动生成

图表, 直方图

描述已自动生成 图表, 直方图

描述已自动生成

For portfolio A:  
VaR for generalized T distribution: 7924.45

VaR for delta normal: 5670.20

VaR for historical simulation: 7109.30

For portfolio B:  
VaR for generalized T distribution: 6693.39

VaR for delta normal: 4494.60

VaR for historical simulation: 7273.70

For portfolio C:  
VaR for generalized T distribution: 5653.33

VaR for delta normal: 3786.59

VaR for historical simulation: 5310.07

Compare the results from problem 3 from week 4, we found that for the three portfolios, the VaR for using delta normal is the smallest, the VaR for using generalized T distribution is the largest. It shows that in this situation, generalized T distribution fit better for the data.