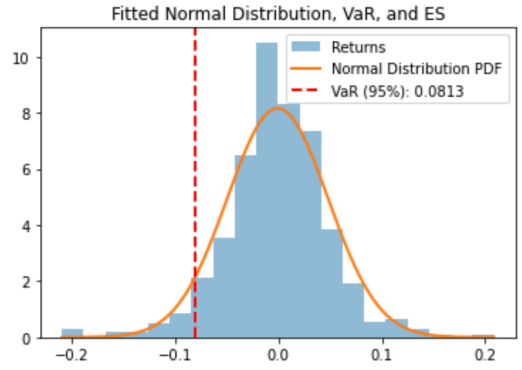
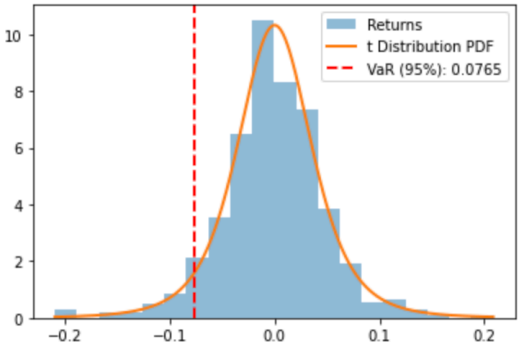
Problem1

Normal Distribution:
mu = -0.00, std = 0.05
VaR at 95% confidence level: 8.13%
ES at 95% confidence level: 10.13%




T distribution :
df = 4.25, loc = -0.00, scale = 0.04
VaR at 95% confidence level: 7.65%
ES at 95% confidence level: 11.26%




I notice that T distribution can better fit the original data. VaR is smaller in T distribution and ES is smaller in normal distribution.

Problem 2 is in the code document.

Problem 3

The result is below:

Portfolio A VaR: 8805.507754785509
Portfolio A ES: 10438.09016614881

Portfolio B VaR: 6981.307577790557
Portfolio B ES: 8945.79531744502

Portfolio C VaR: 5496.294533012176
Portfolio C ES: 7436.626667146727

So we can calculate the total VaR and ES by summing them up. VaR is approximately 21282, and ES is approximately 26819.

To compare the results from this to VaR from Problem 3 from Week 4. The results here are very similar to the result from Problem 3 from Week 4.