Week05

Problem1

The VaR of normal distribution is 0.07993, the ES of normal distribution is 0.10025. The VaR of t distribution is 0.07518, the ES of t distribution is 0.11176. This indicates that the normal distribution has a higher potential loss but a lower expected loss than the t-distribution.

The difference between the two distributions can be explained by the heavier tails of the t-distribution compared to the normal distribution. The t-distribution has a higher probability of extreme events, which increases the probability of incurring losses beyond the VaR level. This leads to a lower VaR for the t-distribution compared to the normal distribution. However, the heavier tails also imply that the expected loss beyond the VaR level is higher for the t-distribution, resulting in a higher ES for the t-distribution compared to the normal distribution.

Problem2

Based on the results of test suite, these functions are performed as expected. Details of the tests can be found on the slide file.

Problem3

The historical data yields a result that is quite similar to that of Problem 3 from Week 4. However, for the simulated data, where we employed a Generalized T distribution, the results are generally smaller compared to Week 4's Problem 3.