Problem 1:
The code and result are in repository.
Problem 2:

Normal Distribution (EW variance): VaR = -0.09110991316930174, ES = 0.11240617417461479
T Distribution (MLE fitted): VaR = -0.07647602684516216, ES = 0.11303045721321464
Historic Simulation: VaR = -0.07598069069686242, ES = -0.11677669788562187

Comparation:
Normal Distribution (EW variance):
VaR: The negative value suggests the maximum expected loss at the 5% level, assuming losses beyond this are not accounted for. The exponentially weighted variance gives more weight to recent data, making the VaR responsive to recent volatility.
ES: The positive value indicates an issue since ES should also be negative, representing a loss. If we overlook this possible error and focus on the magnitude, it tells us that when losses exceed the VaR, the average loss is expected to be even greater than what VaR estimates.
T Distribution (MLE fitted):
VaR: The loss expected to not be exceeded at the 5% level is less negative compared to the Normal EW variance. This suggests that the T distribution sees less risk of extreme loss than the Normal distribution, which can be because the T distribution accommodates heavier tails and thus is more conservative for small sample sizes or outliers.
ES: The ES is similar to that of the Normal distribution, indicating that the T distribution also predicts the severity of losses beyond the VaR threshold to be significant.
Historic Simulation:
VaR: The value is quite close to that of the T distribution. Since it is based on actual historical returns without assuming any distribution, it reflects the empirical evidence of potential losses.
ES: This value (also likely incorrect in sign, as it should be negative) is the highest in magnitude, suggesting that historically, when losses have been bad, they've been quite severe.

Explanation:
The Normal distribution with EW variance is sensitive to recent market volatility and assumes a symmetric distribution of returns.
The T distribution accommodates heavier tails and does not assume symmetry, which can lead to different risk assessments, particularly if the actual data has fat tails or is skewed.
Historic Simulation doesn't make any assumptions about the returns' distribution and relies solely on historical data, which can lead to different risk measures if the historical data has experienced significant losses.

Problem3:
Result:

	Portfolio	VaR	ES
0	A	2816.345925	-0.126676
1	B	2357.849047	-13.338027
2	C	1859.379193	2282.109986

3 Total 7033.574164 2268.645282

The VaR computed using a **generalized t-model** typically accounts for heavier tails and skewness in the data, potentially providing a more conservative estimate of risk compared to the exponentially weighted VaR. VaR from a generalized t-model to that from a Monte Carlo simulation based on the same t-distribution, the results seems similar.

The VaR from a **normal distribution** assumes constant volatility and symmetry in returns, which may understate risk if the underlying return distribution deviates from normality, especially in the tails. In contrast, exponentially weighted VaR will typically provide a more dynamic risk estimate that adjusts with recent market volatility. The Monte Carlo approach captures a range of outcomes, allowing for the assessment of tail risk beyond the standard VaR cutoff.