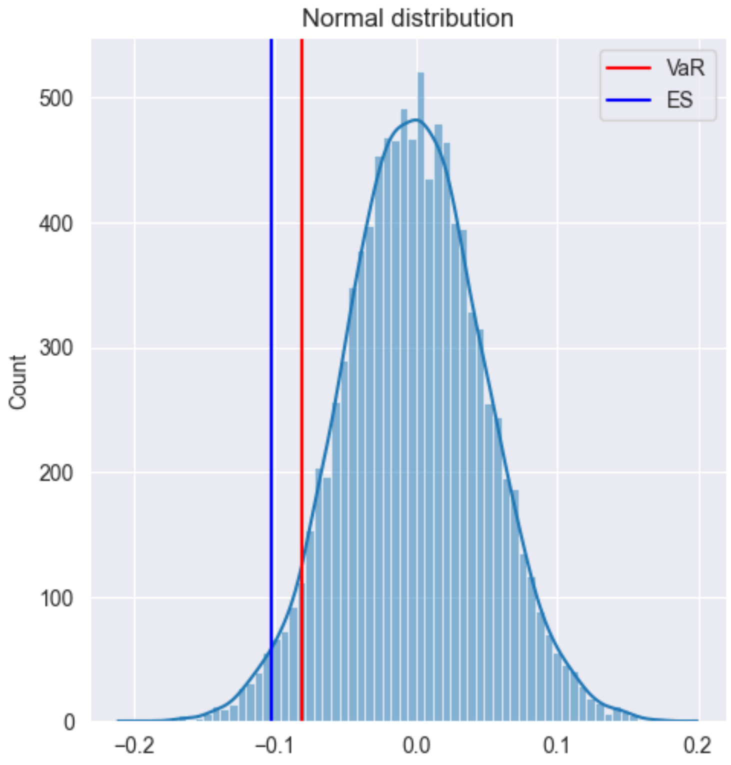
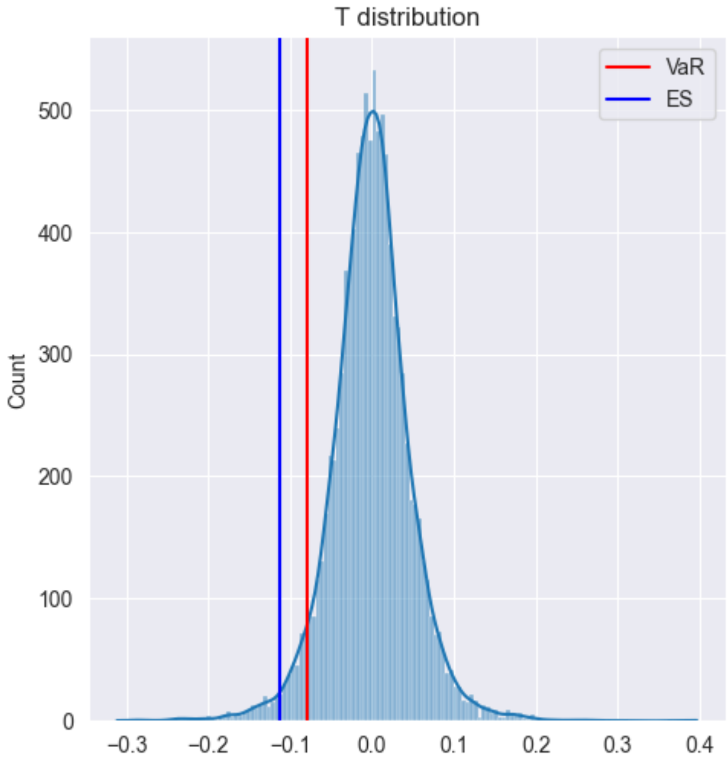
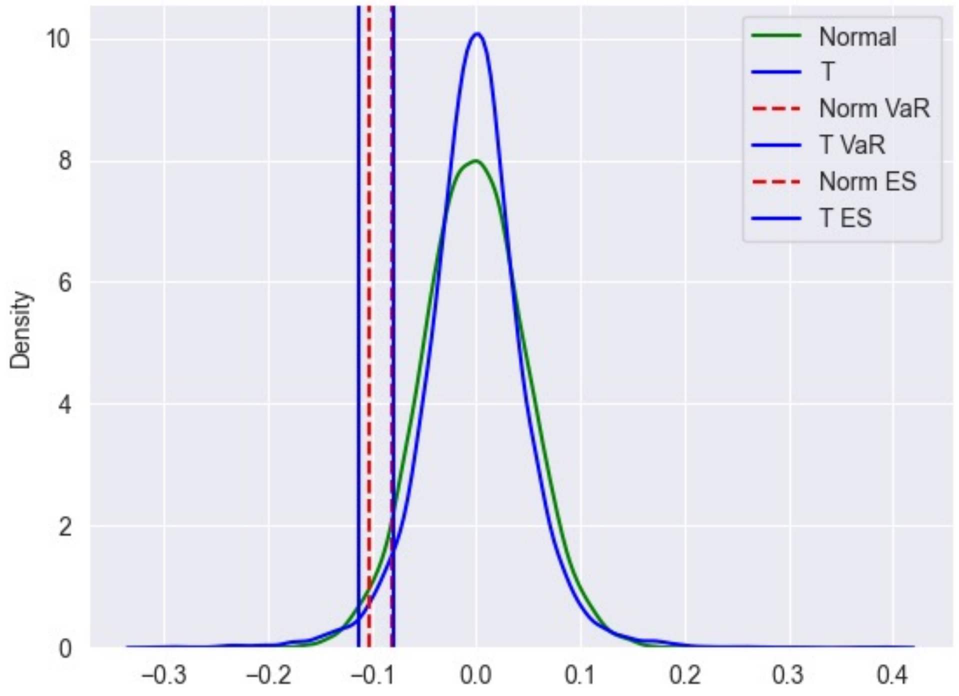
## Problem1:

| | Normal | Generalized T |
|---|---|---|
| VaR | 0.0806 | 0.0787 |
| ES | 0.1027 | 0.1133 |



## Problem2:

- **covar:** 4 methods of covariance calculation
- **riskstats:** VaR and ES calculation
- **fitted_model:** fit a normal or generalized t distribution to a given data and store the fitted results in the FittedModel Class
- **simulate:** Non-PSD fixes methods and PCA simulation
- **VaR:** Delta Normal, Monte Carlo and historical simulation to calculate VaR

# Problem3:

| | A | B | C | All |
|---|---|---|---|---|
| VaR | 8142.45 | 6752.62 | 5696.51 | 20286.75 |
| ES | 10543.91 | 8797.95 | 7469.78 | 26495.17 |

| | A | B | C | All |
|---|---|---|---|---|
| Delta Normal | 5670.2 | 4494.6 | 3786.59 | 13577.08 |
| Monte Carlo | 5605.31 | 4337.6 | 3769.5 | 13304.87 |
| Historic | 9138.87 | 7001.12 | 5558.72 | 20564.36 |