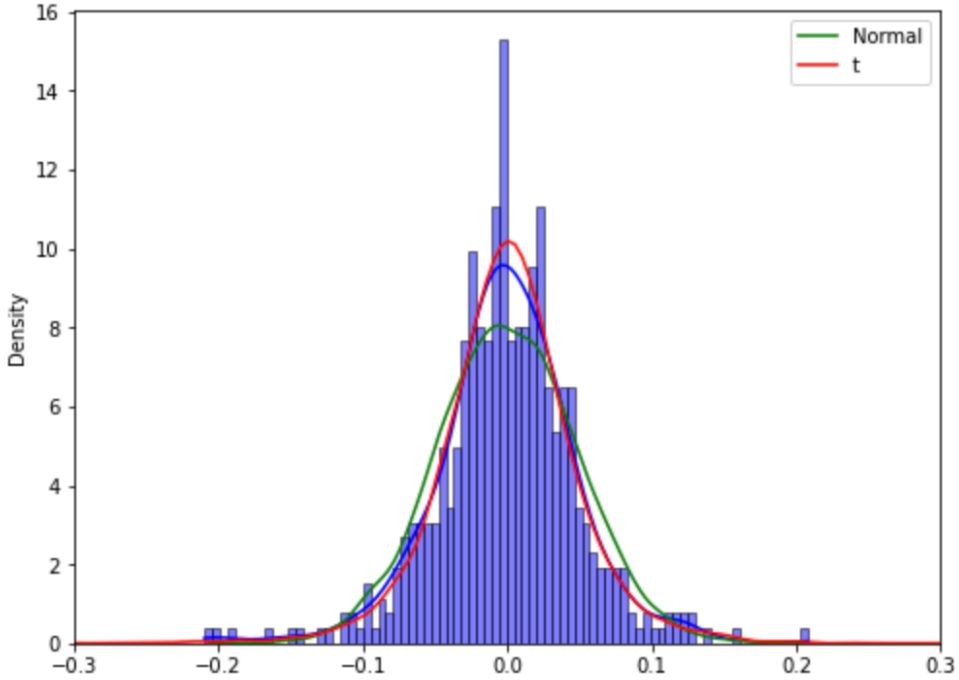
Problem 1

Fitted distributions:

```
VaR_norm = 0.07993, ES_norm = 0.10025
VaR_t = 0.07518, ES_t = 0.11176
```

Plot:



Problem2

2.1

```
(249,)
(249, 249)
```

2.2

```
Sigma with near_psd():  True
Sigma with Higham_psd():  True
```

2.3

```
(500, 25000)
(500, 25000)
```

2.4

```
Normal VaR: 37.2251497585685
Exponentially Weighted Normal VaR: 0.0
Student's t VaR: 36.97691114169762
Historical VaR: -0.09661060033085396
```

2.5

```
-1.0
```

Problem3

Historical:

```
/tmp/ipykernel_3203/7812330.py:31: FutureWarning: The frame.append metho
eprecated and will be removed from pandas in a future version. Use panda
at instead.
  portfolios = portfolios.append(total_holdings)
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

Portfolio Total VaR: 21076.418322771402
Portfolio Total ES: 26687.791306205952
```

Simulated:

```
Portfolio A VaR: 1877.1408461763208
Portfolio A ES: 1877.1408461763208

Portfolio B VaR: 1869.1578218921422
Portfolio B ES: 1869.1578218921422

Portfolio C VaR: 1589.7015996204807
Portfolio C ES: 1589.7015996204807

Portfolio Total VaR: 3083.318415961621
Portfolio Total ES: 3083.318415961621
```