1. Use the same datafile as HW1 (HSI.xlsx), and construct the same monthly return series as dataframe like HW1.

2. Assuming the expected return to be the same as the stocks' simple average returns, follow the equations in Lecture 2, find A, B, C

3. Assuming Hong Kong risk-free rate at 2% (per annum), using a range of μ_p from 0.5% to 10% (step each 0.5%), find the corresponding λ and γ for each μ_p, the weights of the portfolio (for each stock) for each μ_p, and the corresponding standard deviation of the efficient portfolios. ENSURE you keep a list of the weights for each μ_p as you will need to output them in Q5. Plot the efficient frontier with correct x-label and y-label. Color the curved efficient frontier as 'red'

4. With the presence of risk-free rate, construct the efficient frontier using the same range of μ_p as Q3. Plot the efficient frontier on the same graph as Q3 (a straight efficient frontier). Color it with 'Blue'

5. Output the weights of the portfolio for each of μ_p (20 weight vectors) under Q3 and Q4 as dataframes and save the csv files as weights_withoutRf.csv and weights_withRf.csv.