Lab Assignment 3: Optimization for Machine Learning

Dr. Md Abu Talhamainuddin Ansary

Write python codes of the following problems:

(1) Suppose covariance matrix and mean values of 3 stocks are given by $\begin{bmatrix} 2 & 1 & 0 \\ 1 & 2 & 1 \\ 0 & 1 & 2 \end{bmatrix}$ and $\begin{bmatrix} 0.4 \\ 0.4 \\ 0.8 \end{bmatrix}$ respectively. Construct and solve a quadratic problem to minimize risk with minimum return $R/100$, where R is last two digits of your roll number.

(2) Using the 50 days data from 2 stocks, construct and solve quadratic problem to find minimum risk with return at least $R/100$, where R is last two digits of your roll number.

(3) Using the 50 days data from 4 stocks, construct and solve quadratic problem to find minimum risk with return at least $R/100$, where R is last two digits of your roll number.