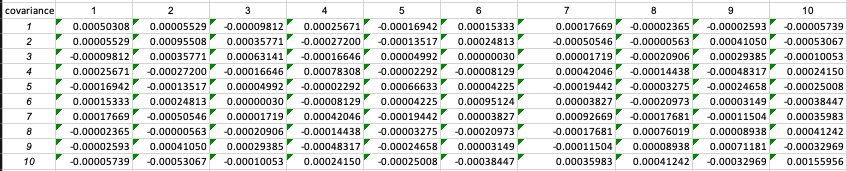
Yifu He 190003956

Homework 7

Problem 1

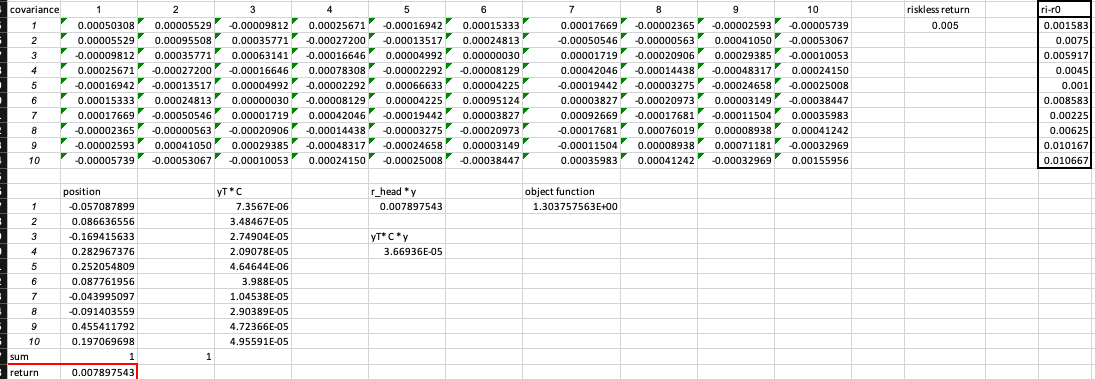
Q1. Mean and covariance

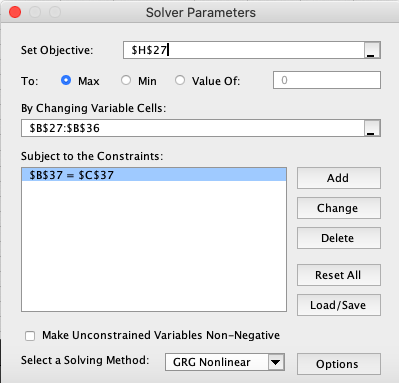




Q2. Describe the efficient frontier in one-fund theorem

The total excel is here

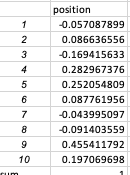




rj -r0:



Final portfolio:



Maximum sharpe ratio:



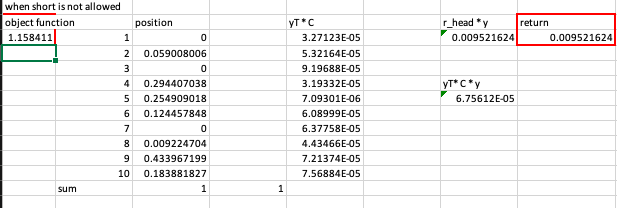
Return:

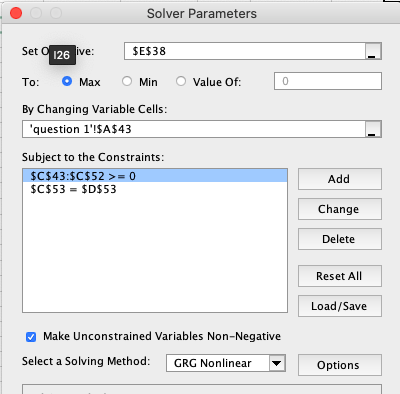


Q3:

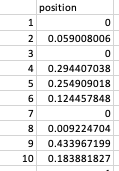
When short is now allowed: we add one more constrain that yi >= 0.

The whole excel:





Position:



Return:

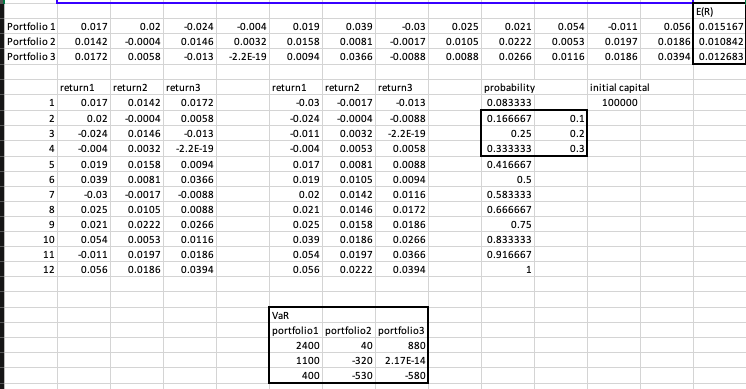


Construct frontier using different portion of riskless assets.

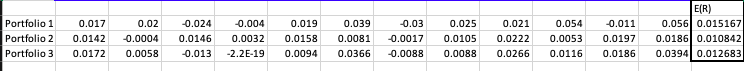
Problem 2

When the distribution of different scenario are equal to 1/12.

The whole excel is here:



The Expected return are:



The situation of alpha = 0.1, 0.2, 0.3 lies in

A screenshot of a cell phone

Description automatically generated

Calculate the VaR = return\*initial asset

A screenshot of a cell phone

Description automatically generated

Problem3

When the distribution of different assets are joint normal distribution,

The whole excel is here:

A close up of text on a white background

Description automatically generated

We got the standardized score:

A screenshot of a cell phone

Description automatically generated

We got the expected return and standard variation for different portfolio:

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Description automatically generated

Then we calculate the VaR = Mean – std\*standard score

A screenshot of a cell phone

Description automatically generated