Homework 3

Price a maximum rainbow option with the payoff max(max(S_{1*T}, S_{2*T}, ..., S_{n*T}) − K, 0) using the Monte Carlo simulation.

(Inputs: K, r, T, number of simulations, number of repetitions, n, S_{10}, S_{20}, ..., S_{n0}, q_1, q_2, ..., q_n, \sigma_1, \sigma_2, ..., \sigma_n, \rho_{ij}. Outputs: Option value and 95% confidence interval.)

• The basic requirement (80 points):
  Apply the Cholesky decomposition method to pricing the above rainbow option.

• Bonus 1 (5 points):
  Combine the antithetic variate approach and moment matching method to price the above rainbow option.

• Bonus 2 (10 points):
  Implement the inverse Cholesky method in Wang (2008) to price the above rainbow option.

• Reference