CS 4412 : Algorithm Analysis

Homework Assignment #15

Show all work neatly.

Question 1: (5) You are given five matrices with the following dimensions:
- M_1: 20 x 5
- M_2: 5 x 10
- M_3: 10 x 12
- M_4: 12 x 6
- M_5: 6 x 25

You wish to compute the product of the matrix chain $M_1 M_2 M_3 M_4 M_5$. What is the optimal (minimal) number of scalar multiplications required to compute this product? Use dynamic programming to compute the answer and show your work.

Question 2: (5) For the following graph, step through Floyd's algorithm (Floyd-Warshall), showing the **D** matrix at each step, and report the resulting shortest paths between all pairs of vertices.