# PROJECT 7

**DYNAMIC PROGRAMMING with MATRIX CHAIN MULTIPLICATION**

Using Matrix Chain Multiplication algorithm Implement a Program in any language you desire (preferably java) to implement dynamic programming,

1. The purpose of the program is to use the dynamic programming technique to do application for Matrix Chain Multiplication problem. Matrix chain multiplication is an optimization problem which can be solved using dynamic programming. Given a sequence of matrices, we have to find the most efficient way to multiply these matrices together. The problem is not actually to perform the matrix multiplications, but merely to decide which way is the best way to perform the chain multiplications.
2. The program should take the dimension of the matrices as input and the output is the m[i,j] and s[i,j] upper triangular matrices as discussed in the class together with the dimensions of all matrices.
3. (a) Display the matrix dimensions you select and the resulting m[i,j]

and s[i,j] in upper triangular format for a matrix chain using dynamic programming.

(b) Display the total number of scalar multiplication of the matrix chain if dynamic programming technology is **not** used.

(c) Compare the number of scalar multiplications of (a) and (b)

Repeat the same process for 5 sets of matrix chains.

(You must include the one example discussed in class and in the book.)

**Your program output must show proper information to be understood well**

**by the reader/viewer.**