**Assignment no. 6**

**Title**: Dynamic programming 1

**Problem statement**:

Implement the standard matrix chain multiplication problem

The dimensions of a chain of n matrices $M_1$, $M_2$, …, $M_n$ that are to be multiplied, are given as a sequence $A = <a_0, a_1, a_2, \ldots, a_{n+1}>$. The dimension of the matrix $M_i$ is $a_{i-1} X a_i$. The goal is to find the most efficient way to multiply these matrices together such that the total number of element multiplications is minimum.

**Tasks**:

a. Solve the problem using dynamic programming techniques.
b. Print the sequence of multiplications by clearly placing parenthesis around the matrices.

**Example**:

Input: A = {10, 20, 30}
Output: 6000
Explanation: There are only two matrices of dimensions 10×20 and 20×30. So, there is only one way to multiply the matrices, the cost of which is 10*20*30 = 6000.

Input: A= {40, 20, 30, 10, 30}
Output: 26000
Explanation: 20*30*10 + 40*20*10 + 40*10*30 = 26000.