# Assignment 3

# Due at the end of your lab

1. Implement the algorithm for figuring out the best bracketing of a sequence of k matrices which are to be multiplied in that order. It is assumed that multiplication of the chain is legal. In other words the number of columns in each matrix except the last in the sequence is equal to the number of rows of the next matrix. The input is the dimensions of the matrices in the legal sequence provided as a list of k+1 positive integers where the first k entries are the number of rows of the k matrices while the last entry is the number of columns of the last matrix. The number of columns in other matrices may be inferred from the knowledge that the chain is legal and the number of rows of the succeeding matrix.
2. Now consider the following modified question. You are provided the dimensions of k matrices (both rows and columns) because it is not assumed that they are in a legal sequence from the perspective of multiplication. Thus the entry consists of k 2-dimensional vectors corresponding to the number of rows and columns of the respective matrices. You need to develop an algorithm to order pick as many matrices as possible (the entire chain may not be legally multipliable) and assign an order to them such that the matrices in the chain selected by your algorithm are multipliable. The input is of the form (m1,n1), (m2,n2),…,(mk,nk) and you have to find a list of them together with an order such that it is legally multipliable and as long as possible.