

CLRS 15.3-3

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September 12, 2008

Unlike longest simple path, MATRIX-CHAIN-ORDER-MAX does evince subproblem optimality; whose recurrence is:

$$m[i, j] = \begin{cases} 0 & \text{if } i = j, \\ \max_{i \leq k < j} \{m[i, k] + m[k + 1, j] + p_{i-1}p_kp_j\} & \text{if } i < j \end{cases}$$