

### Problem Set 5

CPSC 629 Analysis of Algorithms  
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**The assignment is due next Tuesday (11/12/2002), before class.**

A common subsequence of two strings  $A$  and  $B$  is a subsequence of  $A$  and a subsequence of  $B$ . We know how to write programs to determine the length of the longest common subsequence. Define the edit distance between the two strings  $A$  and  $B$  to be the smallest number of deletions and insertions of single letters to change  $A$  into  $B$ .

**Q1** Consider the two strings  $A = \text{minimum}$  and  $B = \text{maximum}$ . Determine the length  $m$  of the longest common subsequence of  $A$  and  $B$ . Determine the edit distance  $d$  between  $A$  and  $B$  (use the definition above).

**Q2** Suppose that you have two input strings  $A$  and  $B$ , both of length  $n$ . Suppose that your program determines the length  $m$  of the longest common subsequence of  $A$  and  $B$ . Determine the edit distance between  $A$  and  $B$  using this information.

**Q3** Prove the result that you have given in the previous exercise.

**Reading Assignment:** Read chapter 15 in [CLRS].