Problem Set 5—Due Thrusday, 26 August 1999

Problem 14 You are given a string x in which each character is either a positive integer or the letter E. Moreover, you are told that each integer between 1 and n occurs exactly once in the string. Starting with the given string, the following operation is repeated until all the occurrences of E have been deleted:

Delete the leftmost E and the smallest integer, if any to its left.

For example, if the original string $264E5E3E1E$ then the strings occurring after each successive deletion would be $645E3E1E$, $653E1E$, $651E$ and 65.

Let e be the number of E's in the string x. Give the most efficient algorithm you can find which accepts such a string and computes the string that remains after all deletions. Compute the running time of your algorithm.