

Do NP-completeness homework, Part 5.

1. (a) Assume you have an alphabet of letters from “o” to “u”. Illustrate the operation of radix sort on the following list of English words:
tort, soup, post, pout, tour, sups, tors, opts, trot, toot
(b) Use “tor” and “tort” in an English sentence that shows that you understand the meaning of both words.

2. Give an $O(n+k)$ algorithm to print the index of the s th smallest number in an unsorted list, A , of n integers, in the range 0 to $k-1$. To be consistent, the numbers in A are indexed $1, \dots, n$. Print the index assuming that the list was *stable sorted*. For example, if the list is 5, 3, 4, 3, 1, 0, 3, 1, 0, 3, 4 and $s = 6$, you must print 4, which is the index of the second 3. The algorithm should be in the spirit of counting sort. Avoid doing extra computation associated with the full sorting algorithm.