Tutorial 06: February 27

**1.** [E] Suppose we have *n* English words (26-letter alphabet), where the combined length of all words is  $\ell$ . Give an algorithm to sort the strings in  $O(\ell)$  time in lexicographical ordering, e.g., "*a*" < "*ab*" < "*b*".

2. [M] Suppose we have an array  $\mathcal{A}$  of numbers such that  $\mathcal{A}[i] = t\sqrt{i}$  for  $0 \le i \le n-1$  and some positive number t. Show that, using interpolation search, searching for t in  $\mathcal{A}$  takes  $O(\log \log n)$  time.

**3.** [H] In this problem, we will explore an alternate implementation of a min-ordered priority queue. That is, design a data structure such that inserting a new element into the priority queue takes  $O(\log n)$  expected time, while deleting the minimum element from the priority queue takes O(1) expected time.