

Homework#5 Heapsort

Textbook:

- 4.5.** Give an efficient algorithm to test whether a given array $A[1..n]$ is a heap. What is the time complexity of your algorithm?
- 4.9.** How fast is it possible to find the *minimum* key in a max-heap of n elements?
- 4.19.** Give an algorithm to merge two heaps of the same size into one heap. What is the time complexity of your algorithm?

k-merge. Give an $O(n \lg k)$ time algorithm to merge k sorted lists into one sorted list, where n is the total number of elements in all the input lists.

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Dynamic median. Design a data type that supports insert in logarithmic time, find-the-median in constant time, and remove-the-median in logarithmic time.