

Exercise 1

Cost of construction. Determine empirically the percentage of time heapsort spends in the construction phase for $N = 103$, 106 , and 109 .

Exercise 2

Multiway heaps. Implement a version of heapsort based on complete heapordered 3-ary and 4-ary trees, as described in the text. Count the number of compares used by each and the number of compares used by the standard implementation, for randomly ordered distinct keys with $N = 10^3$, 10^6 , and 10^9 .

Exercise 3