

Fundamental Algorithms

WS 2017

Exercise Sheet 3

Exercise 1:

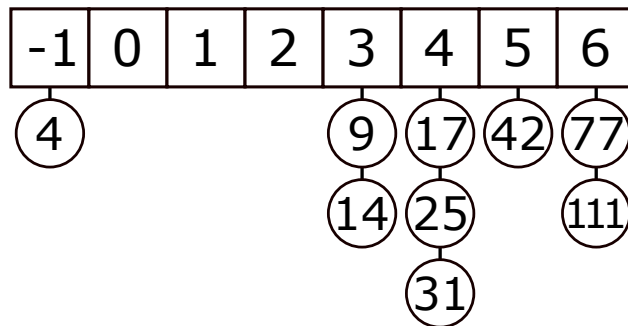
For every $n > 0$ give a sequence of operations that results in a Fibonacci heap consisting of only one tree that is a linear chain of n nodes.

Exercise 2:

Show that in a Radix heap the amortized runtime of the `deleteMin()`-operation is $O(1)$ and the amortized runtime of the `insert()`-operation is $O(\log(C))$.

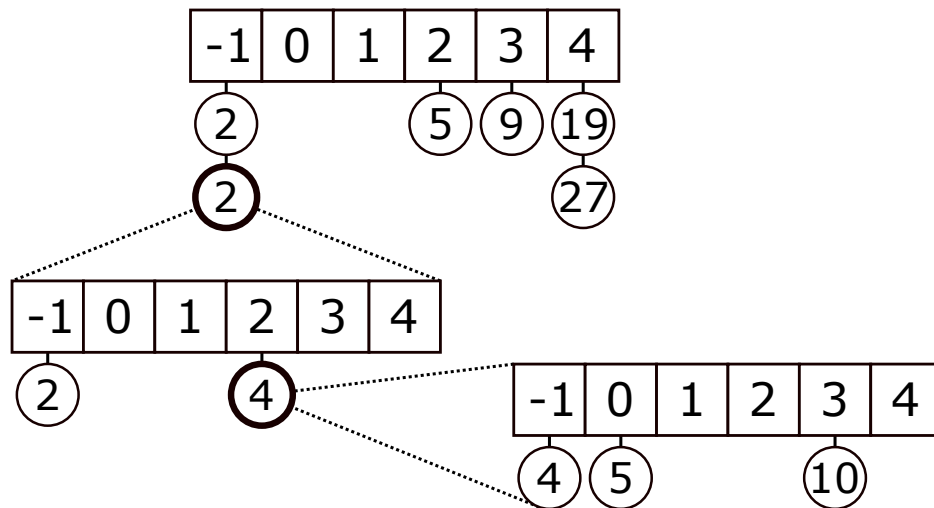
Hint: Use a potential function Φ that sums up the positions of the elements in the Radix heap.

Exercise 3:



a) Execute 4 consecutive `deleteMin()`-operations on the Radix heap above.

Please turn the page...



b) Execute 4 consecutive deleteMin()-operations on the Extended Radix heap above.

Exercise 4:

Perform the operations search(2), search(31), and search(99) (in this order) on following Splay tree:

