Computer Science 50
Introduction to Computer Science I

Harvard College

Week 7

David J. Malan
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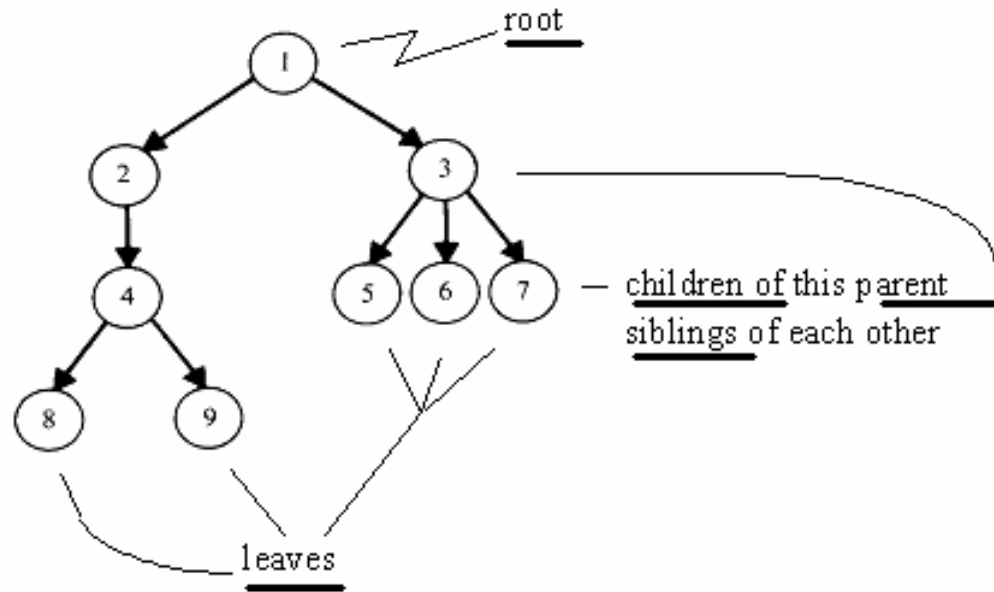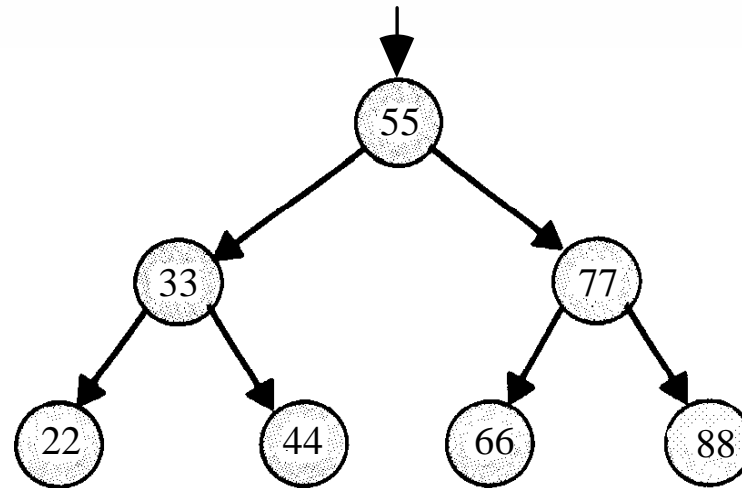
Trees

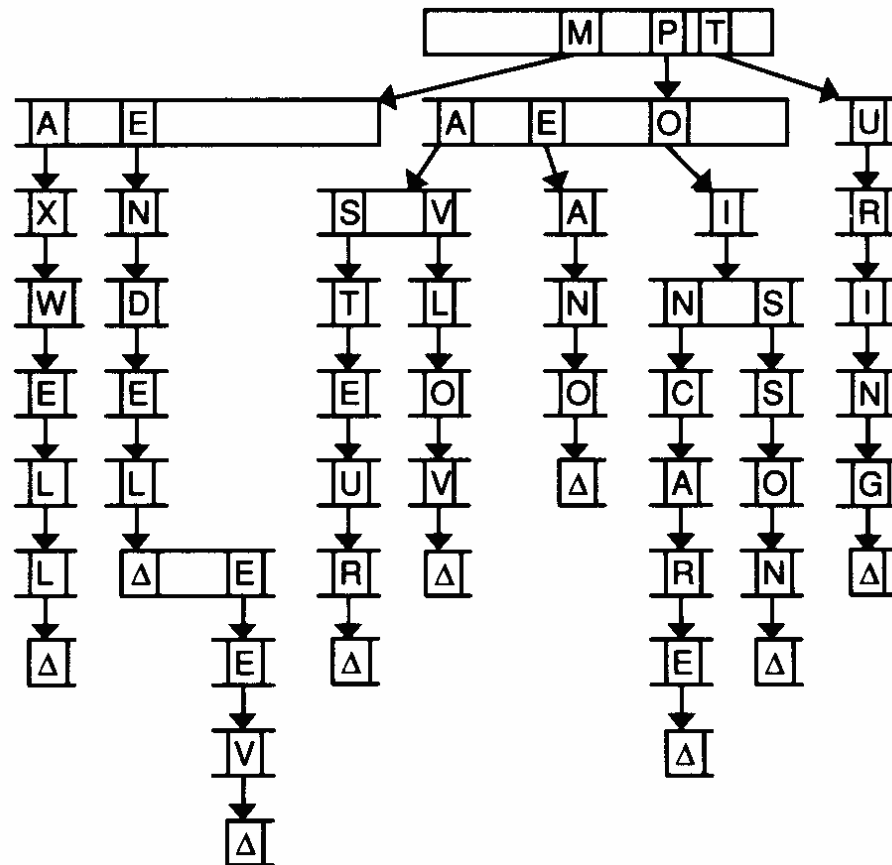Figure by Larry Nyhoff.

Binary Search Trees

Tries

Figure from Lewis and Denenberg's *Data Structures & Their Algorithms*.

3

Heaps

:: A **heap** is a binary tree that

    :: is **complete** (*i.e.*, every level of the tree is completely filled with nodes except for, perhaps, the bottommost level, whose nodes are in the leftmost locations)

    :: satisfies the **heap-order property** (*i.e.*, each node's value is greater than or equal to that of each of its children, if any)
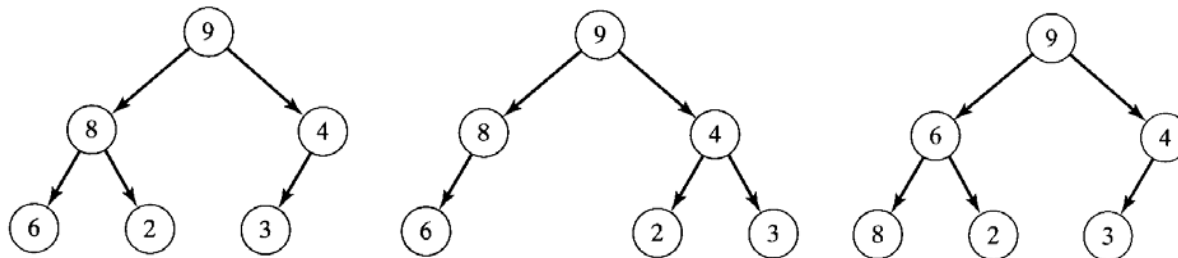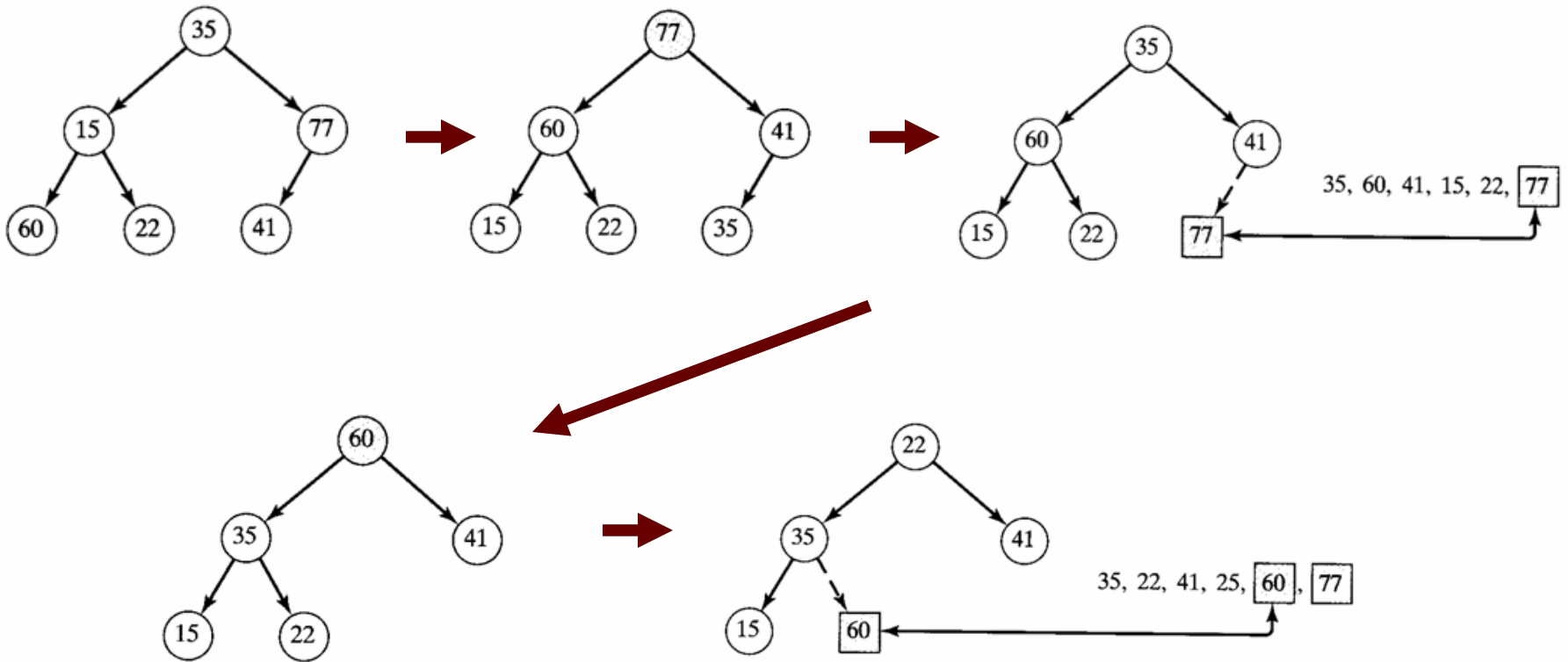
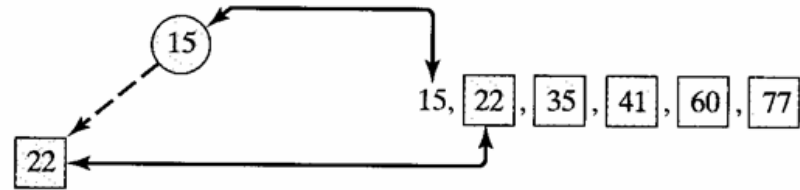# Heapifying an Almost Heap
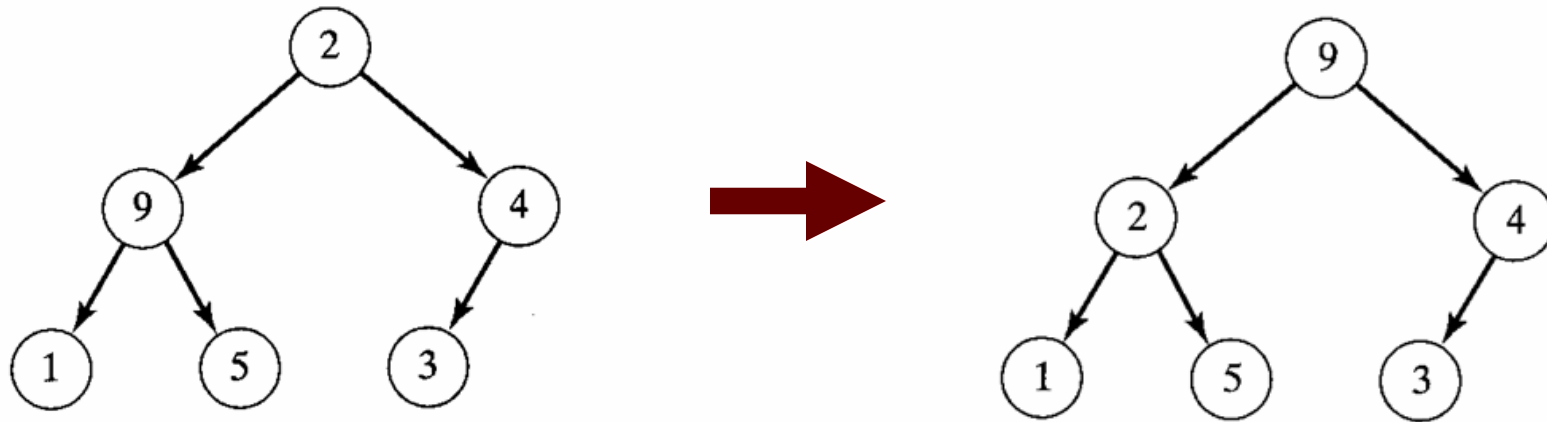
Heapifying a Binary Tree

Heapsort
35 15 77 60 22 41

35, 60, 41, 15, 22, 77

35, 22, 41, 25, 60, 77
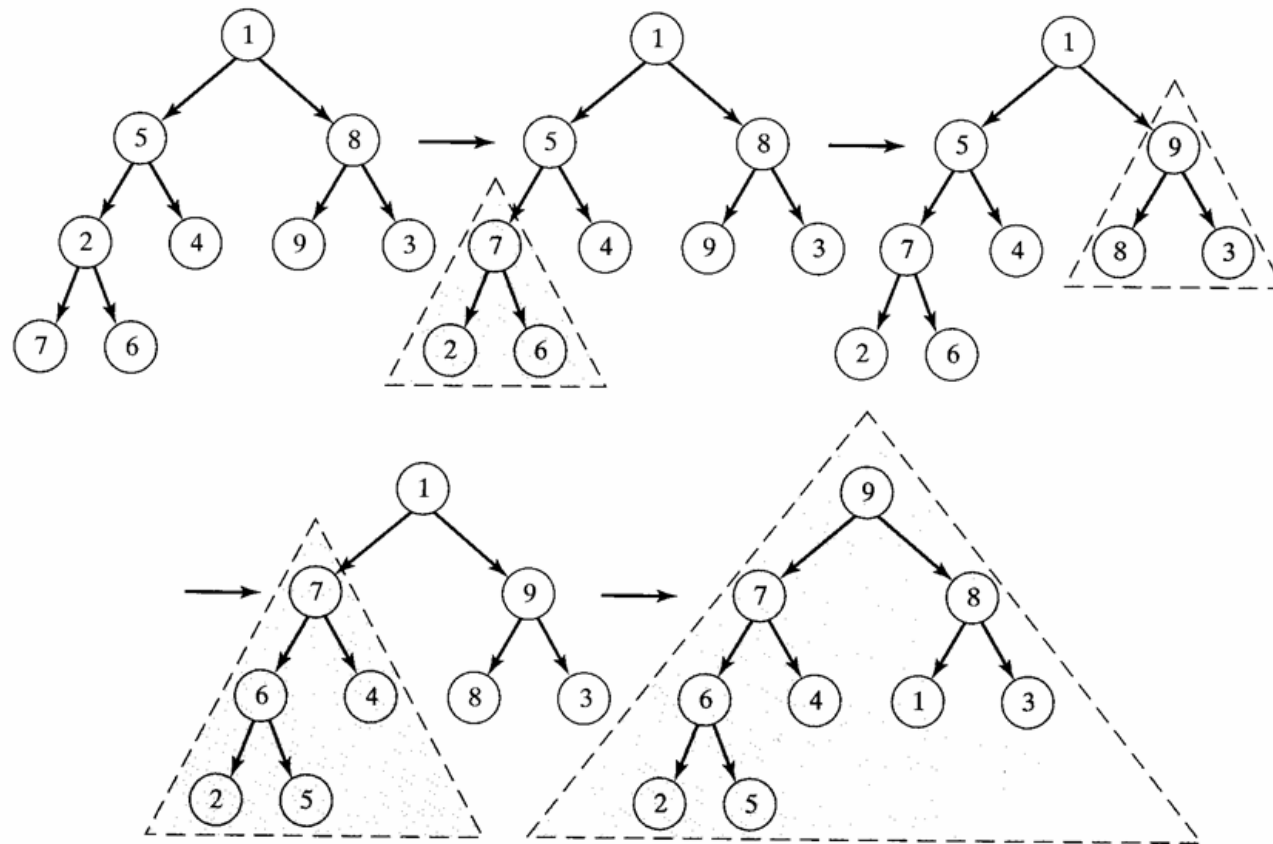
Heapsort

35 15 77 60 22 41

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