

CSE310 Lecture 09: Heaps and Heapsort

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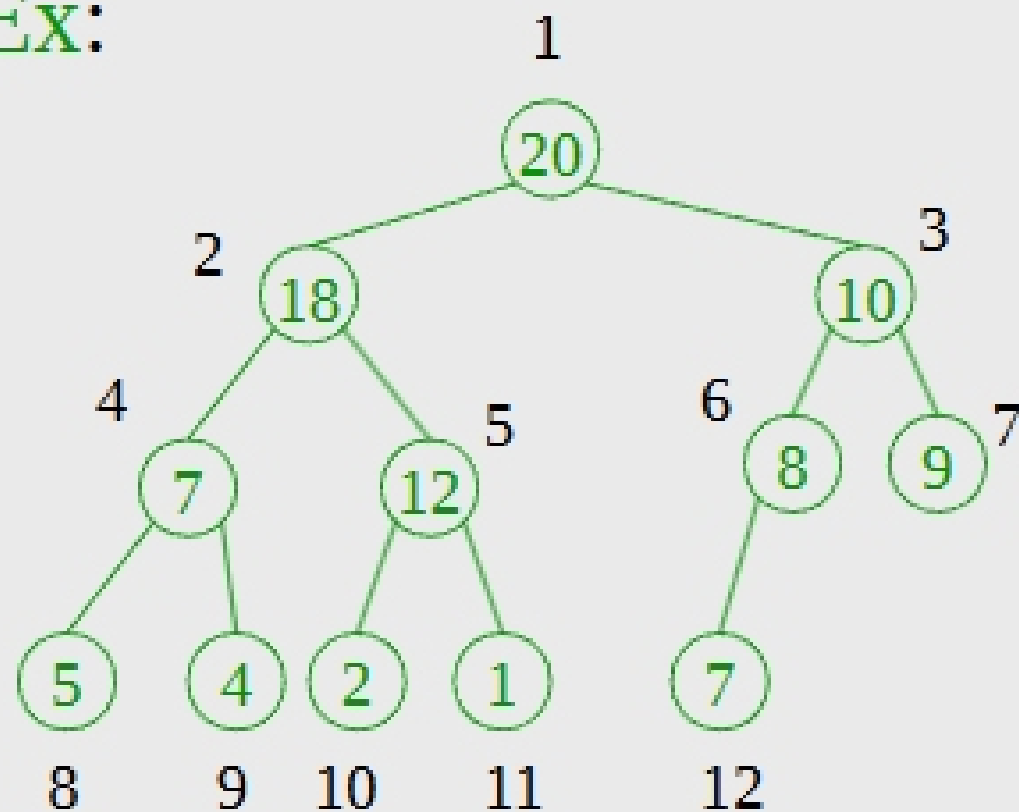
Topics of this lecture

- The Heap Data Structure
 - Insertion in log time
 - Deletion in log time
 - Delete-max in log time
- Build Heap in Linear Time
- Heapsort

= Heaps =

- The **(binary) heap** data structure is an **array** object that can be viewed as a **complete binary tree**.

Ex:



heap viewed as a binary tree

1	2	3	4	5	6	7	8	9	10	11	12
20	18	10	7	12	8	9	5	4	2	1	7

heap.

- **complete binary tree**: a binary tree that is completely filled on all levels except possibly the lowest
- The lowest level of a **heap** (viewed as a binary tree) is filled from **left to right**