

C++ LAUNCHPAD



Lecture-18 HEAPS

- Priority Queues
 - Heaps

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How to find min/max out of
some elements?

Implement using unsorted List

1. Min
2. RemoveMin
3. Insert

Selection Sort?

Implement using sorted List

1. Min
2. RemoveMin
3. Insert

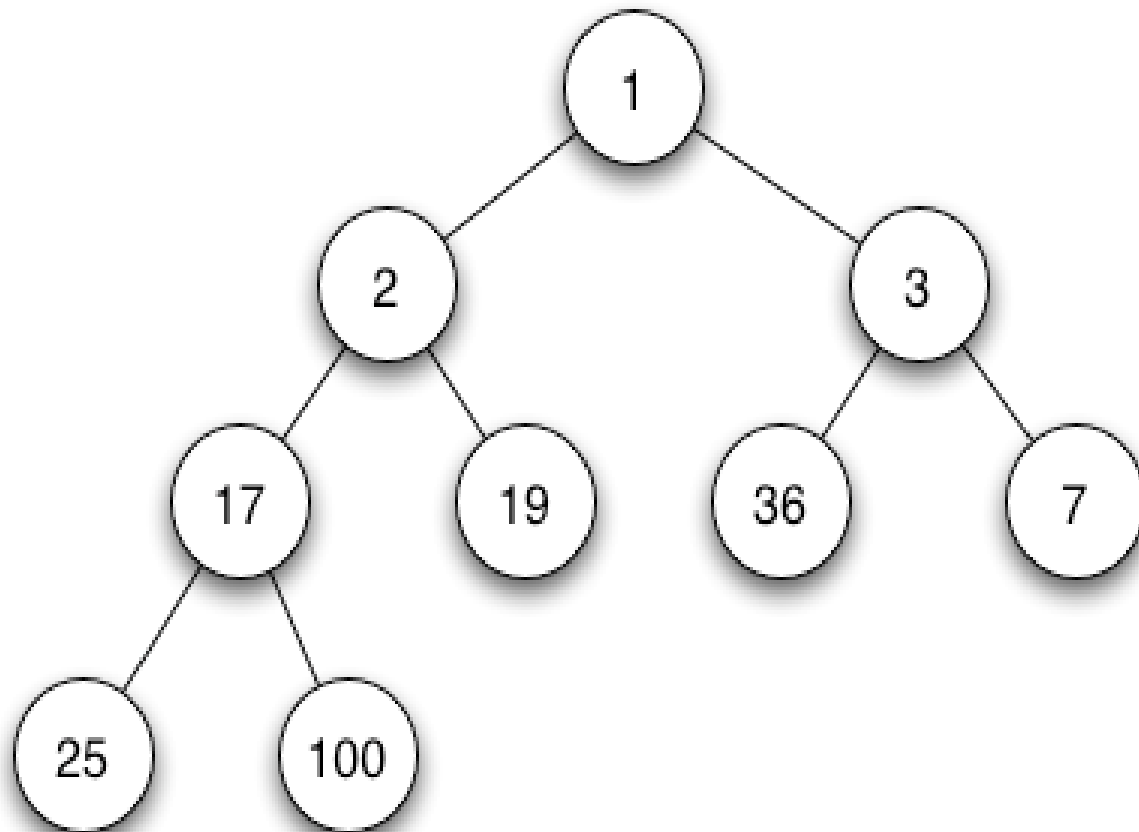
Insertion Sort?

Any other options?

Heaps

Heap Data Structure

1. Binary Tree
2. Complete Binary Tree Property
3. Heap Order Property



What is the height of a complete binary tree?

Complete Binary Tree

1. Add
2. Remove

Priority Queues

Priority Queues

```
Class PriorityQueue{  
    // accessor methods  
    int size();  
    bool isEmpty();  
    T min();  
    // update methods  
    void insert(int priority, T value);  
    void removeMin();  
}
```

How to implement a complete binary tree

How to implement Heap using CBT?

1. Min
2. Insertion
3. removeMin

Heap Sort

Heap Sort is $O(n\log N)$

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Thank You!

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