Sunday, 3 April 16

Crux

Lecture -17

Data Structures -8

Priority Queues, Heaps and Mixed Problems

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CODING BLOCKS

Data Structures so far

1. Linked Lists
2. Stacks and Queues
3. Dynamic Arrays
4. Trees(Generic + Binary)
5. BST
6. Maps

How to find min/max out of some elements?

Priority Queues

Priority Queues

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

Implement using unsorted List

1. Insert
2. Min
3. RemoveMin

Selection Sort?

Implement using sorted List

1. Min
2. RemoveMin
3. Insert

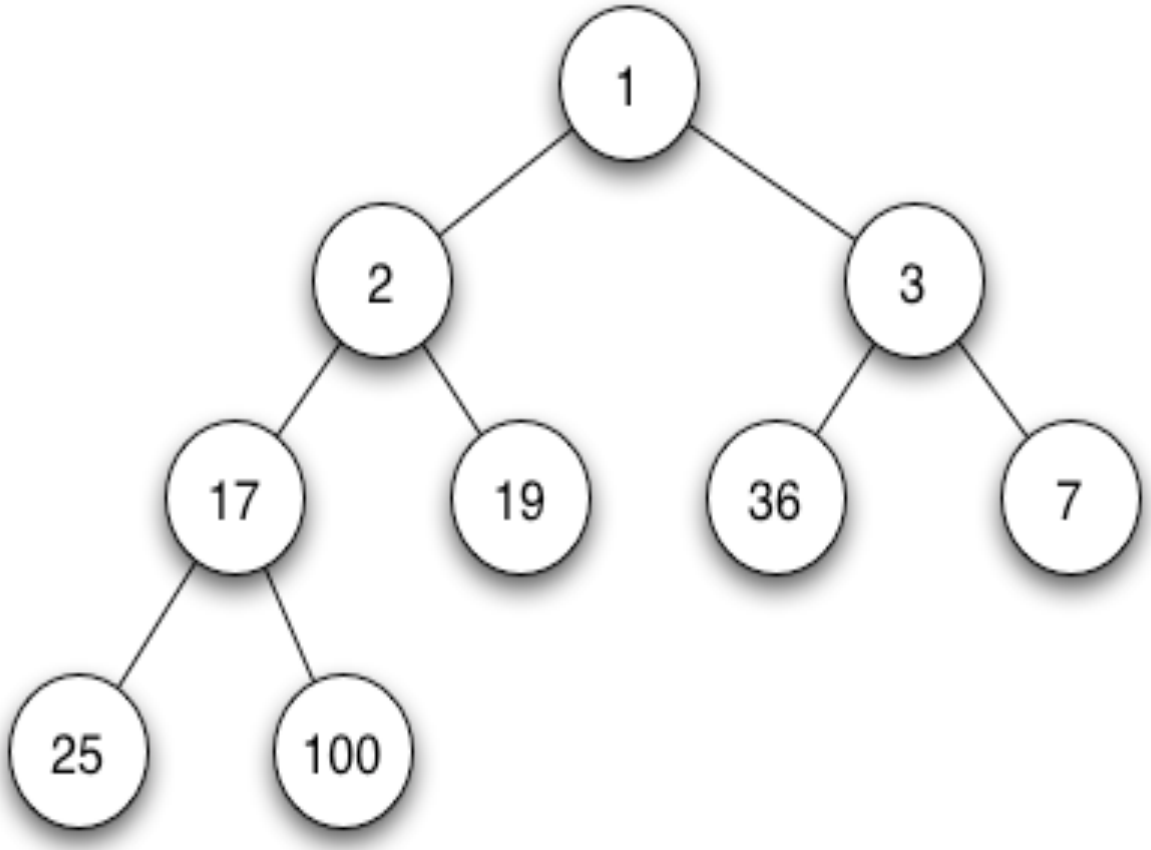
Insertion Sort?

Any other options?

Heaps

Heap Data Structure

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



CODING BLOCKS

What is the height of a complete binary tree?

Complete Binary Tree

1. Add
2. Remove

How to implement a complete binary tree

How to implement Heap using CBT?

1. Min
2. Insertion
3. removeMin

Heap Sort

Inplace Heap Sort

Building a Heap in O(n)

Your Turn

1. Implement Heap

Thank You !!☺

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