

Tuesday, 25  
October 2016

# Launchpad

## Lecture -

Data Structures

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?

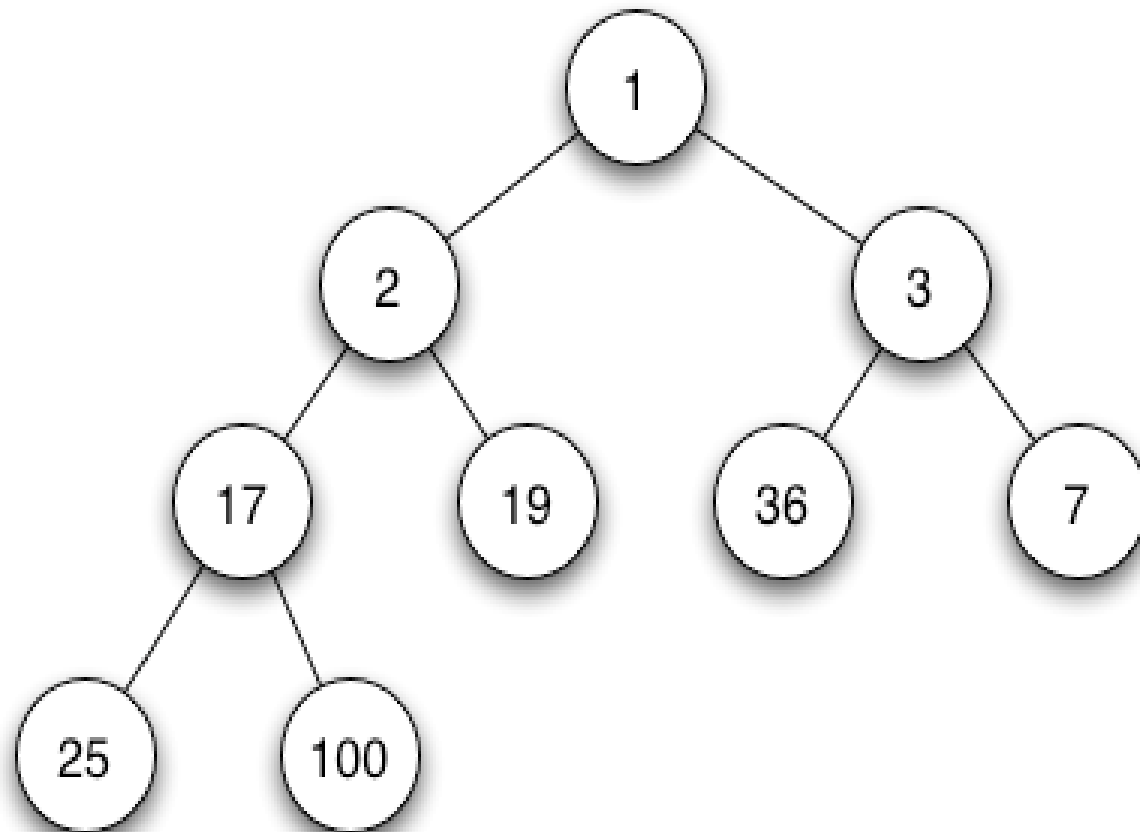
Any other options?

# 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

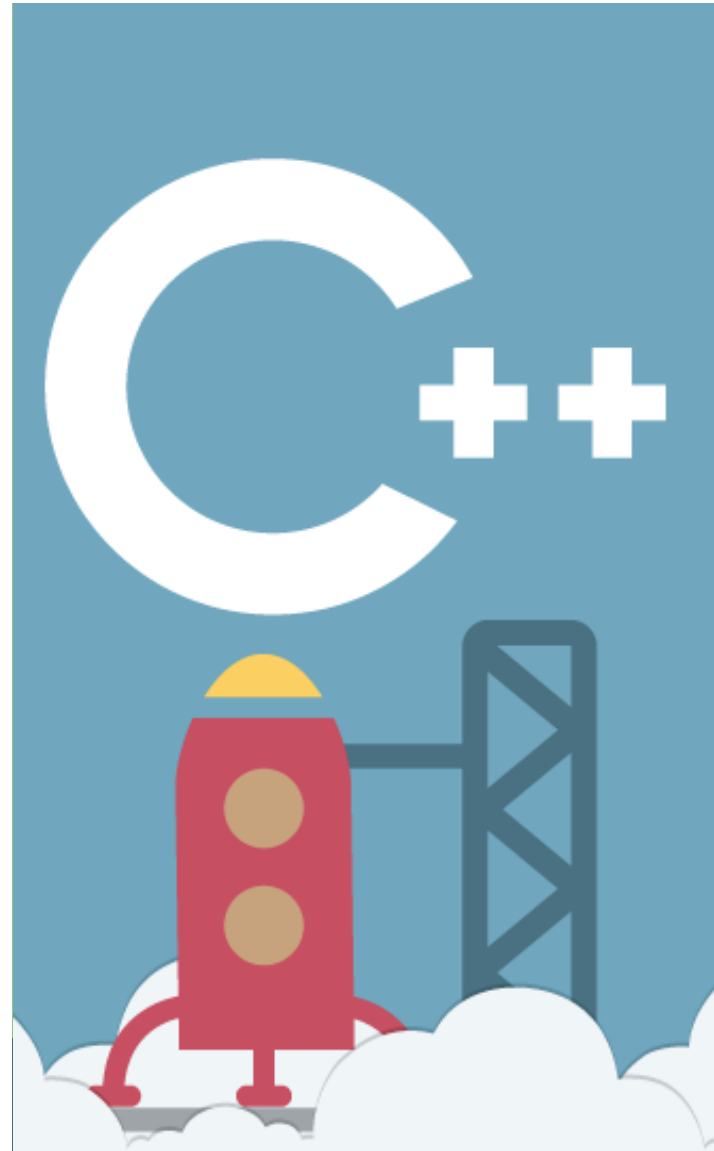
# How to implement Heap using CBT?

1. Min
2. Insertion
3. removeMin



# Heap Sort

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



Thank You!

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