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CSCI-343 Midterm Review Part 2

IV. Heaps

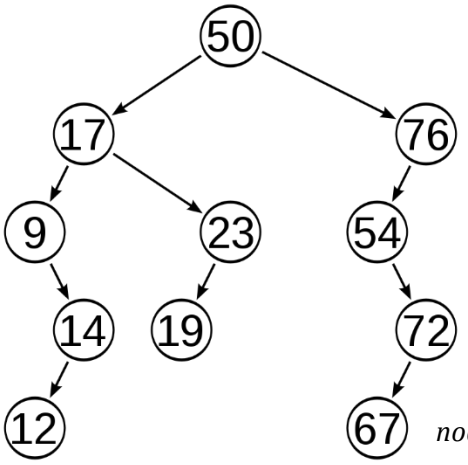
4.1 Draw a simple heap of size 8 nodes

4.2 Draw an INVALID heap of size 8 nodes, breaking the left-fill-first rules

4.3 Given an array that is supposed to represent a heap, write a function to determine whether or not it maintains the heap ordering property

V. Binary Trees

5.1 Fill in the following properties below of the binary tree



Height =

Levels =

Size *(Total Number of nodes***) =**

Diameter *(longest distance between nodes)* **=**

Width *(longest distance between nodes on same level including null nodes)* **=**

5.2 Given a simple binary tree, draw the mirror reflection of it. (hint: draw one and then the transformation of it)

5.3 Write a recursive function to accomplish the above.

BIG O Calculations

What is the runtime of binary search?

What is the runtime of heap-sort?

What is the runtime of merge sort?

Other

What is the difference between recursion and iteration? When would use one over the other?

Tips

Know when to use one data structure over the other

Know which algorithms work with which data structure