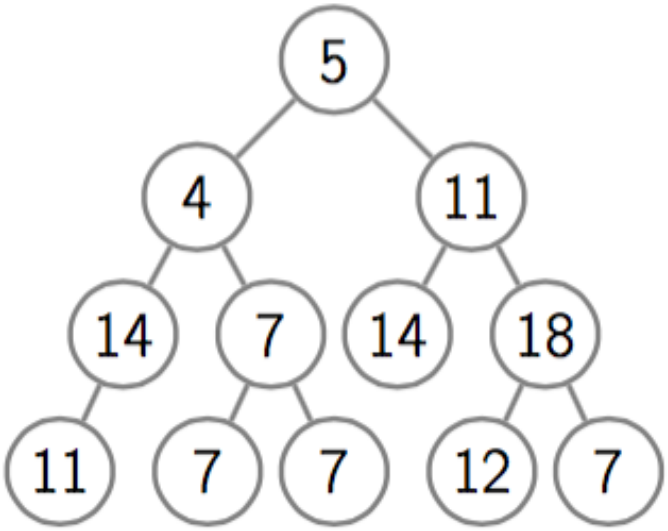
Priority Queues: Quiz

6 questions

1 point

1.

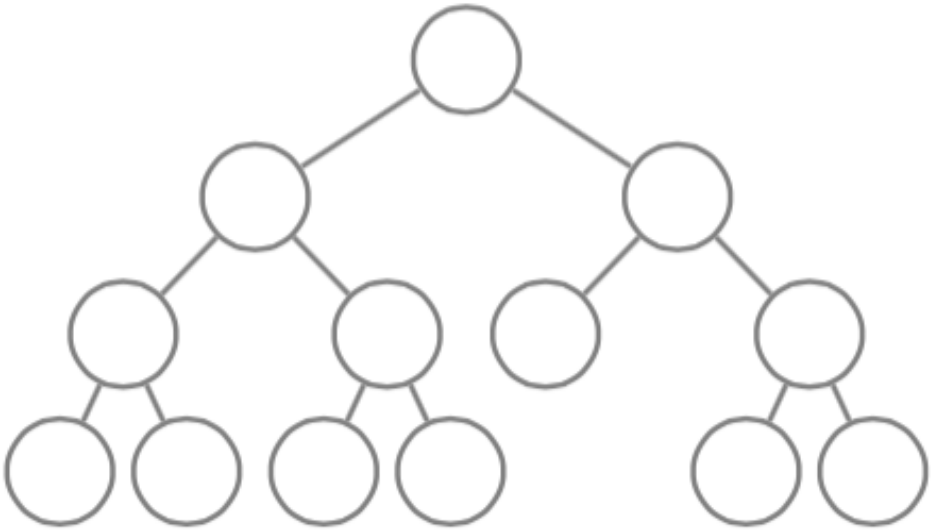


How many edges of this binary tree violate the min-heap property? In other words, for how many edges of the tree, the parent value is greater than the value of the child?

3

1 point

2.



This binary tree contains 13 nodes, and hence we have 13 subtrees here (rooted at each of 13 nodes). How many of them are complete?

11

1 point

3.

Consider a complete binary tree represented by an array $[19, 14, 28, 15, 16, 7, 27, 15, 21, 21, 5, 2]$.

How many edges of this tree violate the max-heap property? In other words, for how many edges of the tree, the parent value is smaller than the value of the child?

5

1 point

4.

Assume that a max-heap with 10^9 elements is stored in a complete 5-ary tree. Approximately how many comparisons a call to `Insert()` will make?

- 38
- 28
- 18
- 8

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1 point

5.

Assume that a max-heap with 10^6 elements is stored in a complete 7-ary tree. Approximately how many comparisons a call to `ExtractMax()` will make?

- 50
- 5
- 500

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1 point

6.

Assume that we represent a complete d-ary tree in an array $A[1 \ldots n]$ (this is a 1-based array of size n). What is the right formula for the indices of children of a node number i?

- $\{(i-1)d+2, \ldots, \min\{n, (i-1)d+d+1\}\}$
- $\{id+2, \ldots, \min\{n, id+d+1\}\}$
- $\{(i-1)d+1, \ldots, \min\{n, (i-1)d+d\}\}$

- ○ $\{(i-1)d+2, \ldots, (i-1)d+d+1\}$

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