Name:

Algorithms and Data Structures
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Quiz 4
given: 2017-03-30

You have 20 minutes.

Problem 1

Points: 2+3+5

1. Give the Θ-class of the time complexity of inserting an element into a well-implemented heap (in terms of the number n of elements in the heap).
2. Concisely explain the commonality and difference between stacks and queues.

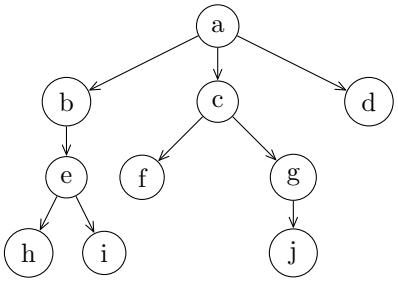
3. Implement the following function on iterators in pseudo-code:

fun $forall[A](x : Iterator[A], p : A \to bool) : bool =$

Problem 2

Points: 1+2+3+(1+1+2)

1. Give the number of nodes in a perfect binary tree of height n.
2. Give an example of a heap of integers with respect to the $\leq$-ordering.
3. Briefly explain how DFS and BFS compare with respect to the expected run-time?
4. Consider the following tree:



Give the

(a) root.
(b) the descendants of c.
(c) list of elements in DFS-order.