edX
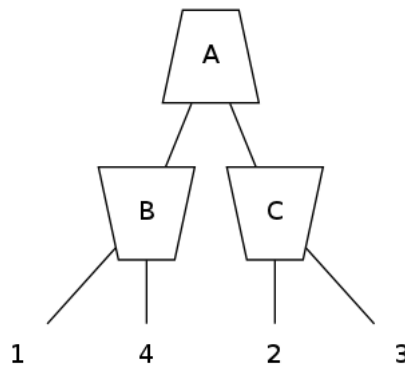
Q5: Pruning and Child Expansion Ordering
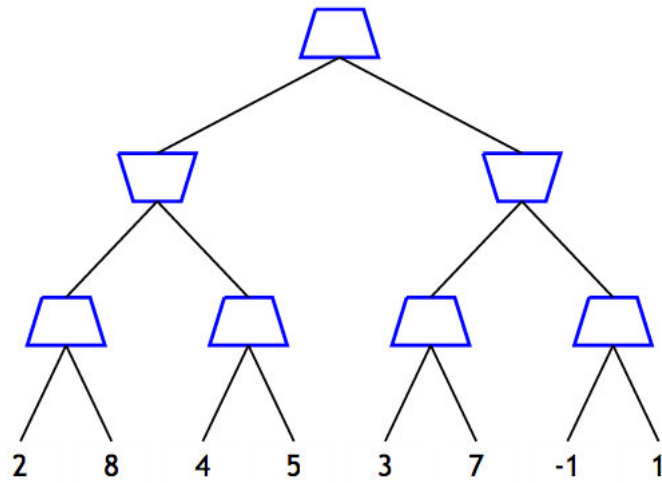Problem 5: Pruning and Child Expansion Ordering

Part 1

10/10 points (ungraded)

The number of nodes pruned using alpha-beta pruning depends on the order in which the nodes are expanded. For example, consider the following minimax tree.

In this tree, if the children of each node are expanded from left to right for each of the three nodes then no pruning is possible. However, if the expansion ordering were to be first Right then Left for node A, first Right then Left for node C, and first Left then Right for node B, then the leaf containing the value 4 can be pruned. (Similarly for first Right then Left for node A, first Left then Right for node C, and first Left then Right for node B.)

For the following tree, give an ordering of expansion for each of the nodes that will maximize the number of leaf nodes that are never visited during the search (thanks to pruning). **In the boxes below the tree, number the leaf nodes in increasing order of expansion, starting from 1. Note that even though there are 8 leaves in the tree, you may not get to number 8 because some leaves may be pruned. For the leaves that get pruned (not explored), enter a 'x' in the box.**

Ordering of node expansion:

2	8	4	5	3	7
x	3	2	1	x	x
✔	✔	✔	✔	✔	✔

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✔ Correct (10/10 points)