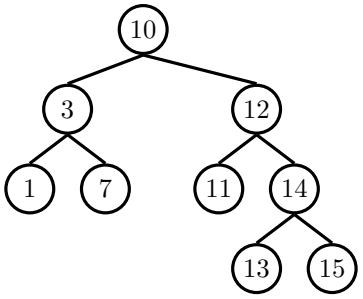
CS 61B Spring 2019

Traversals, Tries, K-d Trees

Discussion 9: March 18, 2019

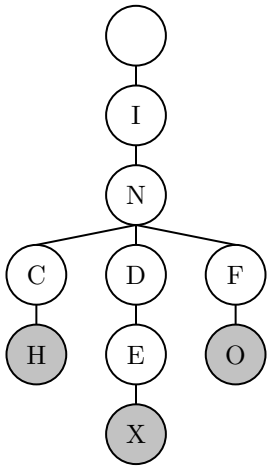
Tree Traversals



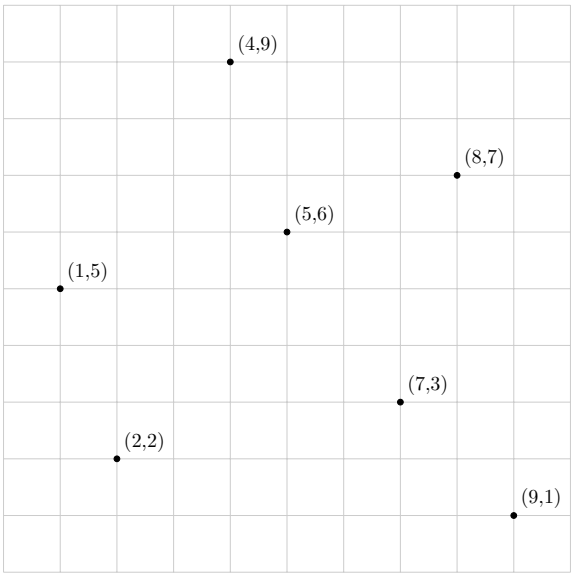
1.1 Write the pre-order, in-order, post-order, and level-order traversals of the above binary search tree.

Tries

2.1 What strings are stored in the trie below? Now insert the strings *indent, inches, and trie* into the trie. *Extra:* How could you modify a trie so that you can efficiently determine the number of words with a specific prefix in the trie?



K-d Trees



3.1 Given the points shown in the grid above, create a perfectly balanced k-d tree. For this tree, first split on the x dimension. After creating the tree draw the corresponding splitting planes on the grid above. *Hint:* For this your resulting tree should be a complete tree of height 2.

3.2 Insert the point (6,2) into the balanced k-d tree from above.

3.3 Find the nearest point to (3,6) in the above k-d tree. Which branches of the k-d tree can be pruned (not visited) in our execution of the nearest algorithm.