CS435 Homework Assignment 6

Due date: ___________________

Turn in all code on both paper and by email (to dbahr@regis.edu with “CS435 Homework” in the subject line).

Please include comments in all of your code. Describe what your method does, and describe anything that is tricky or unclear. More comments are better than fewer comments.

Problem #1: With 4 nodes there are 14 possible binary trees. Draw these 14 trees.

Problem #2: Determine the order in which the vertices of the following binary trees will be visited under (1) pre-order and (2) post-order traversal.

Problem #3: Consider the following set of letters {d, f, w, t, a, b, o, c, v, n}. Draw a binary search tree by inserting these letters in the order given (first the letter d, then f, then w, etc.) Assume that the letters are ranked alphabetically with “a” being greatest and “z” being smallest. No code necessary.
**Problem #4:** In class I gave code for a binary tree node (not the search tree, just a regular old binary tree). Use this code to build a *complete* binary tree that holds the values \{4, -5, 6, -7, 8, -9\}. In other words, your tree should look like

When finished, your code should compile.

**Problem #5:** Write a method that will print all of the leaves of a binary tree when passed the root node of the tree. Test your code on the root of the tree from problem #4.

   Hint: Use the method isLeaf() that was presented in class. Also, use recursion. In other words, if the node is a leaf, then print it. If the node is not a leaf, then use recursion to print the leaves of the children. We have looked at a number of examples that use recursion in a similar manner.

**Extra Credit:** (10 points) Do problem #3 with code (rather than just drawing).