1. What is the first node in a binary tree that is processed in an inorder traversal?

2. Draw the binary search trees that result by inserting the following values in the given order:
   (a) W,T,N,J,E,B,A
   (b) A,B,W,J,N,T,E

3. Given the recursive nature of binary trees, a good strategy for writing a Java method that operates on a binary tree is to write a recursive definition of the task. Write recursive definitions that perform the following tasks on binary trees.
   (a) Count the number of nodes in a tree.
   (b) Find the maximum value stored in the tree (assume each node has an integer value associated with it.)

4. A node in a non-binary tree can have an arbitrary number of children. Write a Java method that implements a recursive preorder traversal method of such a tree; provide enough of the details of the underlying class so we can follow the code.

5. Prove by induction that a binary tree with \( n \) nodes has \( n + 1 \) empty subtrees (null references in Java).

6. Extra credit (20 pts): Consider a nonempty binary tree that has two types of nodes: min nodes and max nodes, and each node has an integer value associated with it. The value of such a minmax tree is defined recursively as follows:
   - If a node is a min node, the value of the tree rooted at the node is equal to the minimum of
     - The value stored at the node
     - The value of the left subtree (if it’s nonempty)
     - The value of the right subtree (if it’s nonempty)
   - If the node is a max node, the value is computed analogously with minimum replaced with maximum.

   Write a Java class for a minmax tree and a method called evaluate for evaluating it. Assume that the root node of the tree is a max node, and that the child of a max node is a min node, and that the child of a min node is a max node. Minmax trees are useful in AI for evaluating the value of each possible move in a game since you want to maximize your payoff, whereas your opponent wants to minimize your payoff.