Part 1:

In a fresh directory, start developing a class that's a simplification of the TreeNode class from the textbook pages 260-268. (Follow the lab directions below and later study the book material to reinforce your knowledge by learning from a different, more complex point of view.) Name your class TN to minimize typing, make all its fields accessible, etc. by using my code below. Then, finish main so it builds a binary search tree with at least 4 nodes, like the diagrammed example.

class TN {
    double data;
    TN left;
    TN right;
    TN(double x) {
        data = x;
        left = null;
        right = null;
    }

    public static void main(String[] g) {
        TN root = new TN(73.);
        TN L = new TN(12.);
        root.left = L;
        /*finish your Part 1 code*/
    }
}

Part 2: Add a method named find that does binary search for a given (double) data value, and use enough calls of find in the main method to adequately test it. Here is a start, that (purposely!) leaves out two if( .. ) { return null; } fragments, for you to figure out, discuss and fix the bug. Include adequate tests in your main method! Hint: TRACE line-by-line L.find( 13.0 )

    /*
     * Returns a reference to the TN object containing data x
     * if found, null if not.
     */
    TN find(double x) {
        if( this.data == x ) {return this;}
        if( this.data > x )
        {
            return this.left.find(x);
        }
        else { return this.right.find(x); }
    }

Part 3: Add, with code to test it, a recursive method that prints all the numbers. The idea that leads to the code is: To print all the data in a tree whose root is (referred to by) this,

    1. First, if that root node has a left child, print all the data in the tree whose root is that left child (use recursion!), otherwise print nothing.
    2. Second, print the data in the root referred to by this, and
    3. Third, if that root node has a right child, print all the data in the tree whose root is that right child (use recursion!), otherwise print nothing.