**CMSC 206: Data Structures**

**Final Exam Review**

1. Write a ListIterator for either KWArrayList or SingleLinkedList. Write the public ListIterator<E> listIterator() method to construct and return one. Test your work using either JUnit or a main method.
2. What are the requirements on a list in order to use binary search effectively?
3. Build (on paper) a binary search tree of at least ten students in our class. Write down the pre-order, in-order, and post-order traversals of the tree.

Is the tree complete? Is it perfect? What is its height?

1. Take the array {4, 8, 2, 9, 1, 5}. Draw every step of insertion sort (writing down the array fresh every time it changes.
2. Write a recursive method reverseDigits that reverses the order of digits in an integer. You will need an *accumulating parameter* that builds up the reversed digits as you recur. Here is the full description of the method:

/\*\* Reverses the digits in n, appending the reversed digits

\* to those in acc.

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\* Example: reverseDigits(123, 0) == 321

\* Example: reverseDigits(345, 12) == 12543

\* Example: reverseDigits(0, 876) == 876

\* Example: reverseDigits(80, 421) == 42108

\*

\* @param n The digits to reverse

\* @param acc The accumulating parameter; holds digits

\* already reversed

\* @return The digits of acc concatenated with the reverse

\* of the digits of n.

\*/

public static int reverseDigits(int n, int acc)