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?

4. Take the array {4, 8, 2, 9, 1, 5}. Draw every step of insertion sort (writing down the array fresh every time it changes.

5. 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.
 *
 *    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)
```