CMPS 12B
Introduction to Data Structures
Quiz 2 Review Problems

1. Expect at least one problem from quiz 1 review material.
2. Recall the IntegerList ADT discussed in class whose states were the finite integer sequences, and whose operations were `isEmpty()`, `size()`, `get()`, `add()`, `remove()`, and `removeAll()`. Write the methods described below using only these six ADT operations. In other words you are writing methods belonging to a client of `IntegerList`.
   a. Write a `static void` method called `swap(IntegerList L, int i, int j)` that will interchange the items currently at positions `i` and `j` of the List.
   b. Write a `static int` method called `search(IntegerList L, int x)` that will perform a linear search of `L` for the target `x`. `search()` will return the List index where `x` was found, or it will return 0 if no such index exists. (Recall List indices range from 1 to `size()`.)
   c. Write a `static void` method called `reverse(IntegerList L)` that reverses the order of the items in `L`. Do it with a loop. Also do it using recursion.
   d. Wrtie a `static int` method called `max(IntegerList L)` that returns the maximum element in the list.

3. Write a toString() method for the IntegerList.java class found at https://classes.soe.ucsc.edu/cmps012b/Fall16/Examples/Lecture/IntegerListADT/Array/IntegerList.java that returns a String representation of the list such that when printed the numbers appear 10 on a line separated by spaces. If the number of elements is not evenly divisible by 10 then the last line will have less than 10 numbers.
4. Do problem 3 but instead of modifying the provided IntegerList.java class, create a new class that `extends Integerlist`.
5. Create an implementation of the IntegerListInterface (https://classes.soe.ucsc.edu/cmps012b/Fall16/Examples/Lecture/IntegerListADT/ArrayWithExceptionsInterface/IntegerListInterface.java) that implements the interface using the standard Java list container ArrayList<Integer> instead of a fixed size array of int.