Assignment - List Implementation (Part one)

**Due** Apr 23 by 11:59pm - **Points** 100 - **Submitting** a file upload - **File Types** zip

**Overview**

We will be implementing a list for this assignment. The goal is to understand the List<T> API in Java, as well as exploring the amount of work that each operation in the List<T> API requires. This work will vary depending on whether you implement the ArrayList<T> or LinkedList<T> class.

**Setup**

For this assignment you can choose to implement the ArrayList OR LinkedList class. I would suggest picking the class you have the least experience with. Remember, you are working on a skill set as well as a grade! :)

After you have chosen your data structure, download the following starter files which contain a [skeleton of your classiew in a new window](https://egator.greenriver.edu/courses/1273210/files/63631546/download?wrap=1).

**Methods**

This first assignment focuses on half the methods in the List<T> interface. You should implement each of the methods below:

* public boolean add(T newElement): adds newElement to the uppermost index in the list. You should be able to repeatedly add elements to the list (it should always resize itself to make room for new elements).
* public void add(int index, T newElement): inserts newElement at the given index. All existing elements should still be present in the list after your insert newElement. Similar to add(), you should be able to repeatedly add elements to the list (it should always resize itself to make room for new elements).
* public boolean isEmpty(): returns true if your list is empty, otherwise false.
* public int size(): returns the number of elements in the list.
* public void clear(): removes all elements in the list.
* public int indexOf(Object search): returns the index of the first occurrence of search in the list. If search is not found, then indexOf() should return -1.
* public boolean contains(Object search): returns true if search is found in the list, otherwise false (this can be accomplished in a single line of code).
* public T get(int index): returns the element at the given index. Your method should validate the given index.
* public T set(int index, T value): replaces the element at the given index with value. Your method should validate the given index.
* public boolean remove(Object search): removes the first occurrence of search in the list. Returns true if the elements was found, otherwise false.
* public T remove(int index): removes and returns the element at the given index. Your method should validate the given index.

**Testing**

As part of your submission, please download the following [test fileiew in a new window](https://egator.greenriver.edu/courses/1273210/files/63631550/download?wrap=1). The file contains several methods that should be completed by you. Each method should thoroughly test the methods in your list class. Part of my assessment of this assignment will based on how accurately you test your methods. I will base my assessment on the method descriptions above.