

# Lab 2

## Recursive LinkedListCollection

In this lab you will implement the `CollectionInterface` with a recursive linked-based solution. You will use `GenericTester.java` to test your solution.

1. Create a new Java Project in Eclipse called lab2.
2. You have been given 3 Java files, `CollectionInterface.java`, `Contact.java` and `GenericTester.java`. Put those 3 files in the `src` folder of your Eclipse workspace and refresh the project in Eclipse.
3. Implement the `CollectionInterface` given to you. Make sure to read the Javadoc comments above each abstract method to implement correctly. The class implementation should be called `RecursiveLinkedListCollection<T>`.
4. `RecursiveLinkedListCollection` should have 2 instance variables – a front node and an integer size.
5. The following methods should all use recursion in its implementation:
  - a. `add` – a recursive add method adds to the end of the list and returns an `LLNode<T>`.  
**`private LLNode<T> recAdd(LLNode<T> node, T info) {}`**
  - b. `remove` – recursive method must return an `LLNode<T>`  
**`private LLNode<T> recAdd(LLNode<T> node, T info) {}`**
  - c. `get`
  - d. `contains`
  - e. `size`
6. You must also implement a `toString` method in the `RecursiveLinkedListCollection` class. It does not have to use recursion. `toString` is used in the tester class.
7. Use the `GenericTester` class to test your implementation.
8. Submit `RecursiveLinkedListCollection.java` only.

### Assumptions:

You will only be asked to remove elements that are already in the list.

## Grading

### 90 points - Implementation

isFull, isEmpty and toString are worth 5 points each.

The recursive methods are worth 15 points each.

### 10 points

**Your name:** Add your name to the top of the .java file after the Javadoc annotation @author

**Package:** Do not put your code in a package. This makes it difficult for the TAs to grade your submission.

**Readability:** Make sure your code is indented and neatly commented. You can use `ctrl a`, `ctrl i` to have Eclipse automatically indent your code properly. Do not leave commented out code in your submission.

**Compilation:** If your code does not compile, you will receive a 0 on the lab. Once notified, you will have 3 days to fix the lab to receive partial credit, up to 75%.