

Computer Science Department/College of Engineering and Computer Science

CSc 20: Programming Concepts and Methodology II

Lab 6 - Linear Linked List

Objective:

This lab will give you a practice with writing a linear linked list. To this work, you are building a list of any object. However, for testing, your list data element would be **CsusStudent** (from your previous lab). You will use your debugger to examine your list.

Overview:

This lab's objective is to develop methods (see attached diagram) for a linear linked list. The algorithms for these methods will be discussed in your lecture. You are given the following UML class diagram:

Class LinkedList private head : Node private current: Node size: int insertBefore(o) - Add an object o before the current position. insertAfter(o) - Add an object o after the current position. remove(o) - Object o is removed from the list. currentData() - Return the current object's data. size() - Return the number of objects on the list. forward() - Move the current position forward one position. backward() - Move the current position backward one position. resetCurrent() - Reset the current position at the first element. addFirst() - Add object to the first of the list addLast() - Add object to the last of the list getFirst() - Get first object getLast() - Get last object removeFirst() - Remove first object removeLast() - Remove last object

Activities:

- 1. Copy instructor's class (LinkedList.java) from SacCT into your working directory.
- 2. Provide the pre-condition(s) and post-condition(s) as comment block to each method.
- 3. Develop your program according the pseudo code given in your lecture.
- 4. Test your program by running the main method.
- 5. Run 2 sample of your instructor's unit tests (LinkedListTest.java and LinkedListTest2.java) to validate your work. Show your test results to your instructor before turning your lab to SacCT.

Deliverables:

Turn in your modified LinkedList.java and your programs's output file in MS Doc format to SacCT.

Note on installing Junit:

- 1. Add a **new folder** to your CSc 20 Jcrasp directory (where you stored your previous lab assignments). Named **junit**.
- Download junit (from https://sourceforge.net/projects/junit/files/junit/4.10/) and save the <u>junit-4.10.jar</u> Basic jar file into this new <u>junit</u> folder
 - A jar file is a Java Archive file containing multiple Java files in one zipped file. You do **not** need to extract the individual files.
 - 2. Add the junit jar file to your jGRASP:
 - 1. In jGRASP, Click the Tools -> Junit -> Configure
 - 3. Browse to your **junit directory**, click OK

You only need to set up **jUnit** one time.