Computing and Algorithms II: Programming Assignment 3

CS-102 **Fall 2008**

In this programming assignment, you will demonstrate your knowledge of dynamic data structures (in particular, linked lists) by revising the airport abbreviation code program from Programming Assignment 2 to incorporate dynamic data structures.

New Internal Requirements

For this assignment, you should replace your Database class with another implementation which two instances of the Java Collections `java.util.LinkedList` class to replace your hand-crafted linked list classes.

Note that ou are still required to maintain your lists in sorted order. The pre-built `LinkedList` methods do not directly support relative insertion into a linked list; you will need to find ways to accomplish this with the tools available to you. (There are at least a couple of ways to do this.)

Keep in mind that your design must still minimize duplicated code; for example, writing two separate version of the add method (one for the abbreviation list, one for the name list) is not permitted.

New Functional Requirements

Your program will be an extension of Programming Assignment 2, and thus should operate in the same manner as that assignment, unless otherwise specified herein. In particular, this means that any errors present in your submissions for Programming Assignment 2 should be fixed for this assignment.

No other new functional requirements are required for this assignment.

Submitting Your Program

Before 11:59:59 p.m., Monday, 17 November 2008 (7th Monday), you must send a MIME-encoded email message to `jhuggins@kettering.edu` containing all source code files for your program, including a class named `Prog3` containing a `main` method.

In addition, you must deliver to the instructor a printout of your program files at the start of class on Tuesday, 18 November 2008 (7th Tuesday).

Notes

1. *Plan for the future!* If your submission for Programming Assignment 2 was well designed, the number of changes to classes outside of the Database class should be minimal. In future assignments, you will be asked to replace the Database class with an implementation of a different dynamic data structure; again, changes outside of the Database class should be minimal. Design your program with this in mind.

2. Obviously, this assignment will require you to learn about the Java Collections Framework in general, and the `java.util.LinkedList` class in particular. Documentation may be found at the Sun website:

   - **Java Collections**:
     `http://java.sun.com/javase/6/docs/technotes/guides/collections/index.html`
   - **LinkedList**:
     `http://java.sun.com/javase/6/docs/api/java/util/LinkedList.html`

3. Reminder: The midterm exam is scheduled for 7 November (5th Friday).