CS 61B Lab 4
February 13-15, 2012

Goal: This lab will demonstrate how a sentinel node can simplify a
doubly-linked list implementation.

Copy the Lab 4 directory by starting from your home directory and typing:

      cp -r ~cs61b/lab/lab4 .
      cd lab4

Getting Started

Please make sure you have a partner for this lab.

The files in the lab4 directory contain classes for two different types of
doubly-linked list. The DList1 class does not use a sentinel, whereas the
DList2 class does. The DList1 class is not circularly linked, but the DList2
class is (through the sentinel). Compile DList1.java and DList2.java (using
"javac -g DList1.java DList2.java".)

Your task is to implement two insertFront() and two removeFront() methods--one
of each for each list class. insertFront() and removeFront() insert or remove
an item at the beginning of a list. Make sure your implementations work for
empty lists, one-node lists, and larger lists.

The main() methods of DList1 and DList2 include test code, which you can run
with "java DList1" and "java DList2".

Part I: insertFront in DList1 (1 point)

Write a method called DList1.insertFront() that inserts an int at the front of
"this" DList1.

Part II: removeFront in DList1 (1 point)

Write a method called DList1.removeFront() that removes the first item (and
node) from "this" DList1.

Part III: insertFront in DList2 (1 point)

Write a method called DList2.insertFront() that inserts an int at the front of
"this" DList2. Your code should NOT use any "if" statements or conditionals.

Part IV: removeFront in DList2 (2 points)

Write a method called DList2.removeFront() that removes the first item (and
non-sentinel node) from "this" DList2. Your code should not require separate
branches for the one-node case and the more-than-one-node case. (You will
need one "if", to handle the zero-node case.)

Check-off

Run the DList1 and DList2 test code for your TA or Lab Assistant.

1 point: DList1.insertFront().
1 point: DList1.removeFront().
1 point: DList2.insertFront().
1 point: DList2.removeFront().