1 CS3134 #11
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2 Administrivia
• Should get a new TA by Wednesday, hopefully
• Homework 2 problem(s) 3(b) and 3(c)
• Makeup OH on Wednesday because Andy is gone?
• Homework 1 without any name…
  – You’ll get HW1s back on Thursday

3 Agenda
• Finish Linked Lists
• Start Recursion
• But first…
  – Meaning of the "." operator, reviewed
  – What does Last.prev.next = null mean?

4 Other linked-list considerations
• Sorted List: how to do?
  – Cases when inserting at beginning, middle, or end
• Sorting an unsorted List
  – Insertion sort is faster than the other two sorts, since “sliding” is very easy to do
• Doubly-linked lists
  – Advantage: easy to go backwards
  – Disadvantage: more memory and bookkeeping

5 Iterators
• With lists, frequently need to walk through a list
  – Increase minimum wages of all employees, etc.
• But there’s no array index! How to step through?
• One way is to keep references to current cell, but requires “outsider” to know the internals of how the list works
• Would be nice to have something like StringTokenizer’s “nextToken()” call

6 Iterators (II)
• Structure: list, current, and previous references
• Methods – book suggests:
  – reset() – go back to beginning
  – nextLink()
  – getCurrent()
  – atEnd() – last element, not after it
  – insertAfter()
  – insertBefore()
  – deleteCurrent()
• Java has its own, simpler, Iterator, with next() and hasNext(), and that’s it
  – Supports more than linked lists
Iteration vs. Recursion

- So, what is iteration, anyway?
  - Dictionary.com: “The process of repeating a set of instructions a specified number of times or until a specific result is achieved.”
- Any other way of repeating over and over?
- Well, let’s think about it…

How to calculate…

- What’s the sequence 1, 3, 6, 10, 15, 21, 28, 36…
  - Triangle numbers
  - How to do as loop?
  - How to do as addition on previous result?
  - Recursion!

Next time…

- Recursion