Linked Lists and Iterators
2-27-2003

Opening Discussion
- Do you have any questions about the quiz?
- What did we talk about last class? (Yes, it was a long time ago.)
- Do you have any questions about the assignment? Remember that the design is due today.
- Why would you want to use a singly linked list or any other type for that matter? Sorting linked lists?

Code for the Singly Linked List
- Let’s review the code for a basic singly linked list. In particular, note the recurring pattern of walking a list. That is a very important pattern for you to recognize though you won’t be specifically using it much in the project.
Code for a Sorted Linked List

Let’s take our linked list code and modify it to support a sorted linked list. Are there any methods that we should remove?

Iterators

You have now seen patterns for walking through the elements of an array and a linked list. These are very significant patterns when we are dealing with low level code. However, they are also very different and can’t be easily interchanged. We would like a pattern for walking through the elements of any container, whether it be an array, a linked list, or other things we will discuss later.

To do this, we introduce the concept of an iterator.

Iterators Continued

As the name implies, and iterator lets us iterate through the elements of a container. Java has an Interface called Iterator that has three methods. Let’s go to the Java API to look at those methods.

Java also has a similar construct with a less common name called an enumeration.
Using an Iterator

- If we have some type of container, `cont`, that can give us an Iterator then we can use the following loop structure to walk through the elements of that container, regardless of the nature of the container.
- What would an Iterator for an array based list look like? How about a linked list?

Minute Essay

- The Iterator for a list can be a private inner class. How would this work? How can you use it outside of the class if it is private?
- Remember to generate your design today and put it out on the web. The working code is due next Tuesday. There is an open lab this afternoon.
- The midterm is a week from today.