

## **Linked Lists and Iterators**

**2-27-2003**

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### **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?

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### **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.

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## 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?

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## 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.

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## Iterators Continued

- As the name implies, an 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.

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## 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?

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## 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.

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