Lists

- We just studied one "linear" data structure called an array.

- Linear data structures can be thought of as being laid out in a straight line.

- There are several other linear data structures we need to study.

- We begin with the concept of a "list."

What is a List?

- Remember, an ADT has three parts:
  - The specification which tells the user the view of the data elements, the structure of the ADT, and the operations performed on the ADT
  - The representation of the data and associated structure
  - The implementation of each operation

The view of a List

- Give a few examples of a list
- What does the list look like visually?

List Specification

```
/*

 * Specification: List

 *

 * Elements:      The elements are of type ListElement

 *

 * Structure:     There is a linear relationship among the elements. That is,

 *                each list element has a unique predecessor and a unique

 *                successor except the first and last elements.

 *

 * Domain:        The number of elements in the domain is bounded

 *
```

What operations?

- What operations can you think of that you might want to have for a list?

- The list assignment has 18 operations that you are to implement. Let's take a look.