

For Friday

- No new reading
- Homework
 - Complete the List Practice described on Blackboard under Notes and Homework. This is written work. Only turn in the requested pieces.

Late Tickets

- You have 2 for the semester.
- Only good for programs and papers.
- Allow you to hand in up to 5 days late IF you have a late ticket left.
- Each good for $+.05$ on final grade if unused.
- Must acknowledge the use of the late ticket.
- Only way to turn in late work in this course.

Programming Assignment 1

Programming Expectations

- Opening comment blocks
- Other commenting
- Testing your programs
- What actually constitutes good structured programming, and why?

Abstract Data Type

- A specification of a data type, including the operations of the data type
- Describes data items and operations in an **implementation-independent** way
- Can be implemented as a C++ class
- Could also be implemented as a set of variables and associated functions in C or another language

Linear List ADT

- AbstractDataType *LinearList*{
 - instances (or data)
 - ordered finite collection of zero or more elements
 - operations
 - Create()
 - Destroy()
 - IsEmpty()
 - Length()
 - Find(index) // returns an element
 - Search(key) // returns an element
 - DeleteAt(index)
 - DeleteValue(key)
 - Insert(index,element)
 - Output()}

Using an ADT

- ADTs are not directly usable
- They must be implemented
- Most ADTs can be implemented in more than one way
 - What would be different ways to represent the linear list ADT?

Linked Lists

- What's the basic concept?

What Is a Node?

- Two parts
 - Data
 - Pointer to the next one
- Why might you use a class instead of a struct to represent a node?

Creating Nodes

- We'll always create nodes dynamically.
- Note that we almost never actually work with a node itself; we use pointers to the nodes.
- Important:
 - ALWAYS initialize next to NULL when a node is created unless you are immediately assigning it another meaningful value.

C++ Details

- Deleting nodes . . .

Linked List Variations

- Doubly-linked lists
- Empty head node