CS 12: Assignment 5

Handed out: February 17, 1996

Due: February 26, 1996

Topics covered

The assignment covers linked lists, dynamic memory allocation and searches through lists.

The program

Write a program that will maintain a sorted linked list of integers. The program should allow the user to:

1. Add integers to the list, maintaining the list in sorted order.
2. Remove integers from the list.
3. Print out the entire list in increasing order.
4. Determine if the list is empty.
5. Determine if an element is in the list.
6. Determine how many elements are in the list.
7. **Extra Credit:** any *documented* feature you think may come in useful in such a list. Undocumented features will not receive credit. Documentation should appear in both the .h and the .cc file.

A basic `list.h` file is in `~deganit/cs12/code`. You may add to it, but not remove from it. You should write `list.cc` in which the methods are implemented. You should also test your class by writing a `main()` in which the various features are tested. You do not need to turn in the test file. Below are some suggestions about how to implement `Insert()` and `Delete()` There are other correct ways of doing this.

Adding an integer to the list

- Dynamically create a new node to store the integer.
- Search the list until you find the node that comes before the new one.
- Insert the node into the list by manipulating pointers.

Deleting an integer to the list

- Search the list until you find the node that contains the integer. If the integer is not in the list, your program should tell the user.
- Delete the node into the list by manipulating pointers.
- Free the memory held by the node using `delete` (you'll have to keep a pointer to it so it isn't lost in the pointer shuffling stage).

Turnin

The turnin directory for this assignment is `list` Note that your files *must* be named `list.h` and `list.cc`.