CS 360
List Programming Challenge

Goals

In this programming challenge you will create the implementation of a simple List in C++. This challenge will require a good understanding of pointers, along with the uses of "new" and "delete".

Getting Started

- Download the following files from the "ProgrammingChallenges/Challenge2-List" folder on Canvas.
  data.txt
  ListNode.h
  List.h
  main.cpp

The Task

Given the ListNode.h and List.h files above, create the implementation for these classes. The classes you create must work with the provided main.cpp file.

See the **Sample Output** below. Your program should match this output.

Rules

1. You cannot modify List.h or ListNode.h.
2. You cannot modify main.cpp other than to:
   - add print debug statements
   - comment out functionality that you haven't yet implemented.
3. You must clean up your List when done, so you must provide a working destructor for List.

Hints

- Compile with: `g++ -std=c++0x *.cpp`
- Run your code with: `./a.out`
- Work incrementally, starting with the easy stuff, and working your way up to the harder pieces. Note that you can comment out lines from main.cpp that you haven't got working yet, as long as you put them back in after!
- Once you get the code working with the provided data.txt file, try modifying the contents of data.txt to have different values. Also, try your program with an empty data.txt file.
- Work on the List destructor last....get everything else working and tested before attempting

this one.

Sample Output

Run 1 (with the provided data.txt):

```
creating list...
done. created 10 list entries.
Here is your list:
   45
   22
   99
   55
   11
   -5
   76
   78
   41
   9

enter a list value to search for: 4

searching list for 4
no such value in list: 4

cleaning up list.
   cleaning: 45
   cleaning: 22
   cleaning: 99
   cleaning: 55
   cleaning: 11
   cleaning: -5
   cleaning: 76
   cleaning: 78
   cleaning: 41
   cleaning: 9
deleted 10 list entries.
goodbye.
```

Run 2 (with only 2 entries in data.txt):

```
creating list...
done. created 2 list entries.
Here is your list:
   45
   9

enter a list value to search for: 9

searching list for 9
found value 9 in list.

cleaning up list.
   cleaning: 45
```

```
   cleaning: 9
deleted 2 list entries.
goodbye.
```

Run 3 (with an empty data.txt):

```
creating list...
done. created 0 list entries.
Here is your list:
empty list
enter a list value to search for: 5

searching list for 5
no such value in list: 5

cleaning up list.
goodbye.
```

Extra Challenge

Work on this one only if you get everything else done and still have time: Add a method to do an in-place sort of the list.