Northern Michigan University
(Marquette, Michigan, USA)
CS 122-01-12F
Computer Science II

Program 5
Due: Monday 12 November 2012 11:00 A.M. EDT

Create a directory called "PG5" at the top level of your CS122-01-12F folder. Put all the files pertaining to this assignment in PG5. Place a file called "DONE" in this folder when you have completed this project.

This program deals with writing recursive methods. In principle, your code in this project can be quite short. You must make the following classes.

```
public class LinkedListNode {

  public int getInt ();  //returns the integer stored in a node
  public LinkedListNode getNext (); //gets the pointer to the next node
}

public class LinkedList {

  public LinkedList (); //creates an empty linked list (constructor)
  public LinkedListNode getHead (); //gets the first node
  public int getSum();  //returns the sum of all the elements
  public int getMax();  //returns the maximum of all the elements
  public LinkedListNode smallest(); //returns the smallest-valued node
  public LinkedListNode largest(); //returns the largest-valued node
  public void addfront (int i);//adds a node with given value to front of
list
  public void Delete (int i);//deletes all nodes with given value from list
  void printforward ();//prints the list in forward order
  void printbackward ();//prints the list in backward order
}
```

These classes must contain all the methods seen here. You are to supply all the code for the methods. You are free to add other methods if you wish. You should add (private) data elements as well. However, your code must contain no loops of any kind. Any repeated work MUST be accomplished through recursion.

I don't want you to hand in a main class. I will supply main. You just have to write everything else. (You should probably write a main class for testing, but remove it when you turn it in.) Your final submitted program should only print within the two print methods. Any other printing that needs to be done, I will do in main.

Handle the following error conditions in this way:
The sum of an empty list is zero.
The maximum of an empty list is zero.
The smallest and largest nodes of an empty list are null.
The head of an empty list is null.
getNext on the last element of a list should return null.
Deleting from or printing an empty list should do nothing.