Computer Science II	Lab 15E – HISTOLIST II PART 2	Lab Value - 100

Lab Goal : This lab was designed to teach you more about a linked list and how to use a linked list to create a data structure.

Lab Description : Write a program that uses nodes to store objects and letter counts. This data structure created for this program is similar to a Map. Each ListNode will store a ThingCount and a reference to the next ListNode storing a ThingCount. Each unique ThingCount will occur at most once in the list

ListNode – stores a value and a reference to the next node

```
public class ListNode implements Linkable
{
   private Comparable listNodeValue;
   private ListNode nextListNode;

   public ListNode(){
      listNodeValue = null;
      nextListNode = null;
   }

   public ListNode(Comparable value, ListNode next){
      listNodeValue=value;
      nextListNode=next;
   }

   public Comparable getValue(){
      return listNodeValue;
   }

   public ListNode getNext(){
      return nextListNode;
   }

   public void setValue(Comparable value){
      listNodeValue = value;
   }

   public void setNext(Linkable next){
      nextListNode = (ListNode)next;
   }
}
```

algorithm help

The HistoList method add() will call indexOf() and nodeAt(). Write indexOf() and nodeAt() before writing add().

LEVELS of ABSTRACTION

HistoList - top level

ListNode - middle level

ThingCount - bottom level

EXTENSION :

Add in a remove method that will remove a letter. If there is more than one of the letter, the count is decreased by one. If there is only 1 of the letter, then that node is removed.

Sample Data :

```
A B C D E F A B C D E F F E D C B A A A A A B B B B B C C C D A A A A A A A A E E F F F
11 22 33 44 55 66 33 44 22 11 11 11 11 22 11 11 11
1.1 2.2 3.3 4.4 5.5 6.6 3.3 4.4 2.2 1.1 1.1 1.1 1.1 2.2 1.1
dog 33 3.4
```

Sample Output :

```
F - 6  E - 5  D - 4  C - 6  B - 8  A - 14

66 - 1  55 - 1  44 - 2  33 - 2  22 - 3  11 - 8

6.6 - 1  5.5 - 1  4.4 - 2  3.3 - 2  2.2 - 3  1.1 - 6

Exception in thread "main" java.lang.RuntimeException: both objects are not of t
he same type
        at ThingCount.compareTo(ThingCount.java:60)
        at HistoList.indexOf(HistoList.java:39)
        at HistoList.add(HistoList.java:22)
        at Lab15e.main(Lab15e.java:42)
Press any key to continue...
```