

CST8130: Data Structures --- Assign #3- Email Lists

Using Multiple Generic Data Structures – LinkedList and ArrayList

DUE: Tuesday November 8 by 10PM SHARP!

Problem Description:

In this assignment, you will write a system to manage email address lists (ostensibly so that you could send emails to a list which has a name – which would send an email to each of the addresses in the list – although we will not actually implement sending emails. Displaying the list will simulate being able to send the emails). We will use multiple Java Generic data structures to hold the data. We could add MUCH to this program – I am providing specifications for the very basics that must be completed for this assignment to manage your time.

Basic Requirements:

1. An email address (which will be defined in the **EmailAddress** class) is a String. Much editing could be done on this field – but the minimum for this assignment is that it must contain at least one '@' and one '.' and is at least 7 chars long. I have written this class for you – it is published with this assignment.
2. An email address list (**EmailList** class) will contain two fields – a String name of the list, and a **LinkedList** of **EmailAddress** objects. *Note – be sure to know why a LinkedList is an effective structure to use for this data.*
3. The **Directory** class will hold handle an ArrayList of EmailList objects. As we will need to search for EmailLists – we will want to keep these entries sorted by the name of the list.
4. Main should have a menu which allows the following choices:
 - the creation of a new EmailList that is added to the EmailLists ArrayList;
 - display of all the EmailLists in the ArrayList
 - addition of an EmailAddress to an existing EmailList in the ArrayList
 - deletion of an EmailAddress in an existing EmailList
 - display a particular EmailList
 - read in EmailLists from a file

5. You must use these class names and the default package. Be sure to ensure you are adhering to all Object Oriented Principles as have been covered in the class. In particular, all fields must be declared as **private**. (If you don't specify this – the default is public). Also, we will continue in this assignment to **NOT use get/set methods**.
6. All possible error conditions must be handled. No program abending is allowed. No System.exit() calls are allowed.
7. File input – you don't need to use .nextLine() method....you can use .next() method as it handles the new line character.

EmailLists.txt file format:

This file contains the following format:

- An int – number of email lists contained in the file
- Then for each email list
 - The name of list
 - An int – number of email addresses in the list to follow
 - The email addresses

Sample file – EmailLists.txt:

```
2 CST8130Class 4
linda.crane@algonquincollege.com
susieSmith@rogers.com
sallys@gmail.com
perfectStudent@hotmail.com
Friends 2 mickeyMouse2gmail.com
donaldDuck@gmail.com
```

Submission:

You must submit to the assignment link in Blackboard by the due date and time a zip file (named LastnameFirstNameAssign3) containing:

- all source code – ie .java files (Note – I may choose to re-compile your program....so all code must be available to me) with
- Your test plan in either .docx or .xls format

Failure to provide any of the above will have an effect on your grade for this assignment. Marking guide will be published shortly.

Hints:

START THIS ASSIGNMENT TODAY! This assignment needs to be tackled in a structured fashion in order for it to be finished in a timely fashion.. Do not write more than 20-30 lines of code at a time without running your program. Enjoy!!

1. Start with a memory map of what the declaration of a Directory object will look like in memory. I will do in class on Oct 25!
2. Write your menu in main to get it working – then add the code for one selection at a time.
3. Start with create a list menu selection, followed by display list menu selection.
4. Now you can add the file input menu selection (and check it worked by executing the display list menu selection)
5. Now you can add the display a particular list followed by the add an address and delete an address menu selections.

Sample Output:

```
Enter c to create a new list
p to display all the email
lists
a to add an entry to a list
d to delete an entry from a
list
l to display a list
f to load lists from file
q to quit:f

Enter name of file to process:
c:\emai1lists.txt

Enter c to create a new list
p to display all the email
lists
a to add an entry to a list
d to delete an entry from a
list
l to display a list
f to load lists from file
q to quit:p

The email lists are:
ExtendedFamily:[cousin1@rogers.com,
cousin2@rogers.com,
cousin3@rogers.com,
cousin4@rogers.com,
```

```
cousin5@rogers.com,
cousin6@rogers.com,
cousin7@rogers.com,
cousin8@rogers.com,
cousin9@rogers.com,
cousin10@rogers.com]
Work:[boss@hotmail.com]
Family:[brother@rogers.com,
sister@rogers.com,
mother@rogers.com,
father@rogers.com]
Friends:[mickeyMouse@gmail.com,
donaldDuck@gmail.com]
CST8130Class:[linda.crane@algonquin
college.com, susieSmith@rogers.com,
sallys@gmail.com,
perfectStudent@hotmail.com]
```

```
Enter c to create a new list
p to display all the email
lists
a to add an entry to a list
d to delete an entry from a
list
l to display a list
f to load lists from file
q to quit:c
Enter the name of the list:NewList
Enter valid email
addressjoe@hotmail.com
Another? y/n:y
Enter valid email
addressjoe2@gmail.com
Enter valid email address...must
contain @ and .:joe2@gmail
Enter valid email address...must
contain @ and .:joe2@gmail.com
Another? y/n:n
```

```
Enter c to create a new list
p to display all the email
lists
a to add an entry to a list
d to delete an entry from a
list
l to display a list
f to load lists from file
q to quit:l
Enter name of list to display:
NewList
NewList:[joe@hotmail.com,
joe2@gmail.com]
```

```
Enter c to create a new list
p to display all the email
lists
a to add an entry to a list
d to delete an entry from a
list
```

```

    l to display a list
    f to load lists from file
    q to quit:p
The email lists are:
ExtendedFamily:[cousin1@rogers.com,
cousin2@rogers.com,
cousin3@rogers.com,
cousin4@rogers.com,
cousin5@rogers.com,
cousin6@rogers.com,
cousin7@rogers.com,
cousin8@rogers.com,
cousin9@rogers.com,
cousin10@rogers.com]
NewList:[joe@hotmail.com,
joe2@gmail.com]
Work:[boss@hotmail.com]
Family:[brother@rogers.com,
sister@rogers.com,
mother@rogers.com,
father@rogers.com]
Friends:[mickeyMouse@gmail.com,
donaldDuck@gmail.com]
CST8130Class:[linda.crane@algonquin
college.com, susieSmith@rogers.com,
sallys@gmail.com,
perfectStudent@hotmail.com]

Enter c to create a new list
p to display all the email
lists
    a to add an entry to a list
    d to delete an entry from a
list
    l to display a list
    f to load lists from file
    q to quit:a
Enter name of list to add to:
Work
Enter valid email
addressboss2@gmail.com

Enter c to create a new list
p to display all the email
lists
    a to add an entry to a list
    d to delete an entry from a
list
    l to display a list
    f to load lists from file
    q to quit:l
Enter name of list to display:
Work
Work:[boss@hotmail.com,
boss2@gmail.com]

Enter c to create a new list
p to display all the email
lists

```

```

    a to add an entry to a list
    d to delete an entry from a
list
    l to display a list
    f to load lists from file
    q to quit:d
Enter name of list to delete from:
Work
0 boss@hotmail.com
1 boss2@gmail.com
Enter entry number to delete:
0

Enter c to create a new list
p to display all the email
lists
    a to add an entry to a list
    d to delete an entry from a
list
    l to display a list
    f to load lists from file
    q to quit:p
The email lists are:
ExtendedFamily:[cousin1@rogers.com,
cousin2@rogers.com,
cousin3@rogers.com,
cousin4@rogers.com,
cousin5@rogers.com,
cousin6@rogers.com,
cousin7@rogers.com,
cousin8@rogers.com,
cousin9@rogers.com,
cousin10@rogers.com]
NewList:[joe@hotmail.com,
joe2@gmail.com]
Work:[boss2@gmail.com]
Family:[brother@rogers.com,
sister@rogers.com,
mother@rogers.com,
father@rogers.com]
Friends:[mickeyMouse@gmail.com,
donaldDuck@gmail.com]
CST8130Class:[linda.crane@algonquin
college.com, susieSmith@rogers.com,
sallys@gmail.com,
perfectStudent@hotmail.com]

Enter c to create a new list
p to display all the email
lists
    a to add an entry to a list
    d to delete an entry from a
list
    l to display a list
    f to load lists from file
    q to quit:

```