

CST8130: Data Structures
Assignment #2- Email Directory
(Using Array List & Linked List)

DUE: Saturday October 17, 2020 11:59 PM SHARP!!!

Demo: During lab hours of week 7

Problem Description:

In this assignment, you will write a system to manage email address lists (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). 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 (defined in the **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 with this data.*
3. The **Directory** class will hold an ArrayList of EmailList objects. As we need to search for EmailLists – we want to keep these entries sorted by the name of the list. In this assignment, we are sorting alphabetically in descending order (see output).
4. Main should have a menu which allows the following choices:
 - Add a new email address to an existing email list
 - Delete an email address from an existing email list
 - Create an email list
 - Display all email lists with all email addresses
 - Display email addresses of a specific email list
 - Read email lists from a file
 - Exit
5. You must use these class names and these classes have to be defined in a package named emaildirectory. Be sure to ensure you are adhering to all Object-Oriented Principles that 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). You should have encapsulation in mind when you define your methods.
6. All possible error conditions must be handled. No program abending is allowed. No System.exit() calls are allowed.
7. You can have only one Scanner object which is created in main. You need to pass that object to all methods that read input from the keyboard or from the file.
8. 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 data in 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:

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CST8130Class 4 thomasa@algonquincollege.com anu@rogers.com thomas@gmail.com
perfectStudent@hotmail.com
Friends 2 mickeyMouse@gmail.com donaldDuck@gmail.com

Submission:

You must submit zipped folder named LastnameFirstNameAssign2 by the due date and time, containing:

- all source code – ie .java files (Note – I may choose to re-compile your program....so all code must be available to me)
- 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. A rubric will be attached to the assignment 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.
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 selections for add an address and delete an address menu.
6. You should have separate methods for reading info from keyboard and reading info from files.

Sample Output

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=====
                        Email Directory
=====
1. Add a new email address to an exisitng email list
2. Delete an email address from an existing email list
3. Create an email list
4. Display all email lists with all email addresses
5. Display email addresses of a specific email list
6. Read email lists from a file
7. Exit
Enter your choice: 6
1. Add a new email address to an exisitng email list
2. Delete an email address from an existing email list
3. Create an email list
4. Display all email lists with all email addresses
5. Display email addresses of a specific email list
6. Read email lists from a file
7. Exit
Enter your choice: 4
The email lists are
=====
Work:[boss@hotmail.com]
Friends:[mickeyMouse@gmail.com, donaldDuck@gmail.com]
Family:[brother@rogers.com, sister@rogers.com, mother@rogers.com, father@rogers.com]
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]
CST8130Class:[john@test.com, doe@yahoo.com, mark@gmail.com, perfectStudent@hotmail.com]

1. Add a new email address to an exisitng email list
2. Delete an email address from an existing email list
3. Create an email list
4. Display all email lists with all email addresses
5. Display email addresses of a specific email list
6. Read email lists from a file
7. Exit
Enter your choice: 3
Enter the name of email list to be created: Doctors
1. Add a new email address to an exisitng email list
2. Delete an email address from an existing email list
3. Create an email list
4. Display all email lists with all email addresses
5. Display email addresses of a specific email list
6. Read email lists from a file
7. Exit
Enter your choice: 1
Enter the name of the email list to which the email is to be added: Doctor
Doctor does not exist
1. Add a new email address to an exisitng email list
2. Delete an email address from an existing email list
3. Create an email list
4. Display all email lists with all email addresses
5. Display email addresses of a specific email list
6. Read email lists from a file
7. Exit
Enter your choice: 1
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Enter the name of the email list to which the email is to be added:  Doctors
Enter valid email address:
doc1test.com
Enter valid email address.... it should contain @ and . and should be atleast 7 characters
long
doc1@testcom
Enter valid email address.... it should contain @ and . and should be atleast 7 characters
long
doc1@test.com
1. Add a new email address to an exisitng email list
2. Delete an email address from an existing email list
3. Create an email list
4. Display all email lists with all email addresses
5. Display email addresses of a specific email list
6. Read email lists from a file
7. Exit
Enter your choice: 4
The email lists are
=====
Work:[boss@hotmail.com]
Friends:[mickeyMouse@gmail.com, donaldDuck@gmail.com]
Family:[brother@rogers.com, sister@rogers.com, mother@rogers.com, father@rogers.com]
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]
Doctors:[doc1@test.com]
CST8130Class:[john@test.com, doe@yahoo.com, mark@gmail.com, perfectStudent@hotmail.com]

```

```

1. Add a new email address to an exisitng email list
2. Delete an email address from an existing email list
3. Create an email list
4. Display all email lists with all email addresses
5. Display email addresses of a specific email list
6. Read email lists from a file
7. Exit
Enter your choice: 5
Enter the name of the email list to be displayed:  Famil
Famil does not exist
1. Add a new email address to an exisitng email list
2. Delete an email address from an existing email list
3. Create an email list
4. Display all email lists with all email addresses
5. Display email addresses of a specific email list
6. Read email lists from a file
7. Exit
Enter your choice: Family
Input Mismatch Exception
1. Add a new email address to an exisitng email list
2. Delete an email address from an existing email list
3. Create an email list
4. Display all email lists with all email addresses
5. Display email addresses of a specific email list
6. Read email lists from a file
7. Exit
Enter your choice: 5
Enter the name of the email list to be displayed:  Family
Family:[brother@rogers.com, sister@rogers.com, mother@rogers.com, father@rogers.com]

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1. Add a new email address to an exisitng email list

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2. Delete an email address from an existing email list
3. Create an email list
4. Display all email lists with all email addresses
5. Display email addresses of a specific email list
6. Read email lists from a file
7. Exit
Enter your choice: 2
Enter the name of email list from which address to be deleted: CST8130Class
0 john@test.com
1 doe@yahoo.com
2 mark@gmail.com
3 perfectStudent@hotmail.com
Enter the number of address to be deleted: 9
Invalid entry... please reenter
Enter the number of address to be deleted: 2

```

```

1. Add a new email address to an existing email list
2. Delete an email address from an existing email list
3. Create an email list
4. Display all email lists with all email addresses
5. Display email addresses of a specific email list
6. Read email lists from a file
7. Exit
Enter your choice: 4
The email lists are
=====
Work:[boss@hotmail.com]
Friends:[mickeyMouse@gmail.com, donaldDuck@gmail.com]
Family:[brother@rogers.com, sister@rogers.com, mother@rogers.com, father@rogers.com]
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]
Doctors:[doc1@test.com]
CST8130Class:[john@test.com, doe@yahoo.com, perfectStudent@hotmail.com]

```

```

1. Add a new email address to an existing email list
2. Delete an email address from an existing email list
3. Create an email list
4. Display all email lists with all email addresses
5. Display email addresses of a specific email list
6. Read email lists from a file
7. Exit
Enter your choice: 7
Good Bye... Have a nice day

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