Programming Assignment 3
CSci 1132 Data Structures Lab
Spring 2013
Due Date: April 7, 11.59pm ET

Assignment:

In this assignment, you have to model a very simple email system. All the emails are addressed to you. For each email message, there should be the following fields:

- From field (name of the sender).
- A date field (month, day, and year).
- A subject field (email subject).
- A body field (the message text).

The input will be a group of messages that listed from the oldest message to the recent one, and each having all the fields just as indicated above. Your program should respond to the following types of quires:

1. Display the undeleted received messages from most recent to the least recent.
2. Display all the undeleted messages from a given sender, arranged the most recent to the least recent.
3. Display the body of the kth message in the remaining list of undeleted messages
4. Delete the most recent message

The details of the input, the queries, and the format of the output follow.

The Input:

You should have two input files that shall be input to your program from the command prompt: messagesfile.txt and queriesfile.txt. This is:

C:\lab_1132\assignment3\program.exe messagesfile.txt queriesfile.txt

The first file is called the **messagesfile.txt**. It contains the messages, where each one has several lines, and each message is separated from the next with a line consisting of ----------, that is, 10 consecutive occurrences of -. The format of each message is as the following:

FROM: the email address of the sender representing as a string of at most 60 characters. It has no blanks.
DATE: a date, formatted as MM-DD-YYYY

SUBJECT: a line of at most 80 characters
BODY: a string (one or more lines starting at the next line below). It can have any number of characters, such that no line begins with ----------.

Please note that you are guaranteed that each message in **messagesfile.txt** is more recent (has later date) than all the messages before it in that file.

The second file is called **queriesfile.txt**. It contains a set of queries, one at each line, where each query is one of the following:

1. **LIST-MESSAGES-BY-DATE**
2. **LIST-MESSAGES-FROM** *sender-string*
3. **DISPLAY-MESSAGE** *k*
4. **DELETE-LAST-MESSAGE**

The four queries correspond to the descriptions provided above. Note that each of those queries could repeat multiple times in the queries file.

The output:

Your program must write the output to the standard output (using printf).

The output of the first two kinds of query should begin by repeating the same query on a new line, followed by a colon (:), followed on the next line by a sequence of lines, one line per message. Each line will have sender's name, then the subject of the message, and finally the date of the message. Put --- between each field and the next in each line.

The output of the third type of query (**DISPLAY-MESSAGE** *k*) should begin on a new line with **MESSAGE** *k*: followed on the next line with the body of the kth message, in exactly the same as it was given in the messages input file, but without the ----------.

The output of the fourth kind of query has two lines, where the first is "DELETE-LAST-MESSAGE:" and the second line is "DELETED MESSAGE" or "THERE ARE NO MESSAGES TO DELETE", depending on the case encountered.

Please note, if there is no output for one of the first three kinds of query, you should output the word NONE.

The same format input files with different data will be used for grading.

```
LIST-MESSAGES-BY-DATE
yourcs1132TAs---2nd phase of assignment 1---09-28-2012
yourethics---academic honesty---09-22-2012
ayoussef---next phase of assignment 1---09-21-2012
korman---cs1132---09-16-2012
ayoussef---Do your homework---09-15-2012
LIST-MESSAGES-FROM ayoussef:
ayoussef---next phase of assignment 1---09-21-2012
ayoussef---Do your homework---09-15-2012
MESSAGE 5
My advice to you is to start to do your programming assignment 1 today. -AY
DELETE-LAST-MESSAGE:
MESSAGE DELETED
MESSAGE 1
Hello there,
We hope you are doing well in all your assignments.
Remember to do your best while maintaining the highest moral conduct.
You cannot cheat, you cannot download software from anywhere to
do your programming assignments in cs1132, and you cannot ask anyone else
to write a program or piece of code for you to include in your cs 1132
programming assignments. If you have any question or need help, ask the
instructor or the TAs; they are there to help you. They know how much to
tell you without giving away the answers and denying you the opportunity
to challenge yourself and learn.

Good luck!
Your ethics
MESSAGE 6
NONE
LIST-MESSAGES-FROM dean:
NONE
```