IST 256

Assignment 3

ONLINE AD REPORTS

Assignment 3 due Tuesday, April 17 by the beginning of class

In this application, we will assume that there is an internet advertising agency with a list of companies that have signed up for online ad campaigns, and that we will write a program to read in the company list from a file and prepare two reports: one report is displayed on the form and the other report is written to an output file.

The form for this application will allow the user to select both the input and output files using a FileChooser. While you are preparing the program, you will supply these files, but during the grading, we will run your program on our own files.

The form needs

- one button to read the file and display information to the form,
- three multiline labels or textboxes to display companies as described below,
- two more labels to display numbers of companies with different campaign types,
- and a button to save the company report to a file with a file status label

Each company has signed up for a Pay Per Click ad campaign using a number of keywords and has designated whether their ads will run on Google AdWords, Overture (Yahoo) or both. The companies have also designated whether their ads will run in a local or national campaign. The input file will have one company's data on each line. The description of the company will include the company name, the campaign type (either "local" or "national"), the number of managed keywords, the ad search engine (either "google", "yahoo", or "both"), and the past three months of the number of ad clicks. The format of each line will be like the following two examples

Lands End,national,340,both,1200,950,1175
Dinosaur Bar-B-Que,local,30,google,250,400,0

To test your application, make up an input file that has about 9-10 companies. Please make sure that you have several companies in both the campaign types and the three ad search engine choices, and that there are several who fit the definition of "premium" for the output file report. Your program should work correctly for up to 20 companies in the input file.

Your program should have a data class Company to store each company with fields matching each item in the file and with methods as needed for the rest of the program.

The first button method should use a FileChooser, with showOpenDialog, for the user to select an input file. The method then reads data from the input file, reading all the company data items on a line, saving the data into an array of instances of Company, and (possibly) processing the data to prepare for the displays of the first button.

The button should also display company data on the form. There is one multiline label or

textarea for each of the ad search engine choices. Each company should be listed under the appropriate label with the number of keywords and the total amount of their clicks over the past 3 months.

The remaining two labels should show the total number of companies with a local ad campaign and the total number of companies with a national ad campaign.

The second button will have a FileChooser, with showSaveDialog for the user to select an output file.

The output file will give a report on the "premium" level companies. These companies are defined as follows:

- A national ad campaign company is "premium" if it has more than 300 keywords and the total of clicks for the three months is over 20,000
- A local ad campaign company is "premium" if it has more than 100 keywords and the total of clicks for the three months is over 1,000.

Under this definition, write all the "premium" companies to the file as follows:

- There should be a first line in the file that gives the name of the report
- The next line should report the grand total of all clicks for all companies for all the three months
- Skip two lines
- Give a line of data for each company consisting of
    - The company name
    - The number of keywords for that company
    - The total clicks for the three months for that company

An example line in the output file would be:
Lands End 340 3325

GRADING

All programs should have **comments** that contain the name of the programmer and that explain the entire program and the role of each method, including buttons. Additional comments must be added as necessary to explain the actions of the program.
The following additional items will be included in the grading

- allow the user to choose the input and output files
- read in the data properly from the input file
- have a Company class to save each company's information
- save companies into an array (or ArrayList for the bonus problem)
- display the three different types of companies with their keywords and total clicks
- count the number of companies with local and national ad campaigns and display them

- compute the overall grand total of clicks for all three months for all companies and write it into the output file
- decide which companies are "premium" to write to the output file
- correctly format each line of the output file with the name, number of keywords and total number of clicks over three months for that company

Bonus Problem

For the bonus problem, you can use an ArrayList instead of an array to hold all the companies.

When we use an array to hold the data read from the file, we have to allocate space to hold the largest amount of data that we expect. For example, in this problem, I specified that there would be no more than 20 companies in the file, so we create an array with 20 elements, even if we only use 10.

Also, there are many situations where it is not practical to know ahead of time the maximum number of elements to go into an array. Many of the structures in the Java Collections framework do not have limits on the number of elements. Instead, they allocate memory for elements as you add elements to the structure.
Suggested Reading: http://javarevisited.blogspot.com/2011/05/example-of-arraylist-in-java-tutorial.html

ArrayList is a suitable structure to use instead of an array. An example of how to use ArrayList given on the class sessions page called ArrayListAverage.

For a 10 point bonus, use ArrayList in the Online Ad Company problem to hold all the instances of the class Company that you read from the file instead of an array.

Zip your entire NetBeans project folder and submit it to the iLMS assignment dropbox.