EGRE 246 Advanced Engineering Programming Using C++
Homework #4 – C++ IO Streams, command line arguments, and linked lists

<u>This homework must be your own (individual) work as defined in the course syllabus and discussed in class.</u>

1) You have been provided with a zip file (hw4_source.zip) that includes the C source code for a simple application that reads in and manipulates a list of account holders and their account balances. You must make the following changes to the program:

   1. Convert the C program to C++. Replace ALL of the calls to the standard C I/O functions `printf()`, `scanf()`, `fprintf()` and `fscanf()` to the C++ standard `cin`, `cout`, and `fstream` operators. Your C++ program can not include ANY calls to `printf()`, `scanf()`, `fprintf()` or `fscanf()` and can reference only the C++ header files, not any of the standard C header files.

   2. Modify the program to take command line arguments using `argc` and `argv[]` to input the names of the input file and output file from the command line.

      If the user runs the program incorrectly from the command line by failing to enter the two filenames, OR enters a first argument of "/?", the program should print the following message:

      Program to keep a list of accounts using a linked list.

      Usage: hw4 [input_file_name] [output_file_name]

      >

      If the user enters the name of an input file that cannot be opened correctly for reading, the program should print out the following message and exit:

      ERROR: file <input_file_name> cannot be opened!
      Usage: hw4 [input_file_name] [output_file_name]

      >

      Where <input_file_name> is the name of the input file that the user input on the command line.

   3. Modify the program to allow the user to delete an account from the list. This should be option 3 in the menu list and option 4 would be to calculate and display the average balance. The resulting menu should look like this:

```
Enter option:
        (0) Write output file and exit
        (1) Print the list
        (2) Add new account at head of the list
        (3) Delete account from the list
        (4) Calculate and display average balance
                Choice ?
```

When the user enters option 3, the program should ask the user if they want to enter the account number or the name of the account holder to determine which account to delete. Based on this input, the program should search the list to find that account and remove it from the list. An example of deleting by account number is shown below:

```
Delete by account number (0) or name (1)?0

Enter account number to delete:2934
Account for Hilton, Paris successfully deleted
```

An example of deleting by account holder name is shown below:

```
Delete by account number (0) or name (1)?1

Enter last name and first name of account to delete:Gates Bill
Account number 9782 successfully deleted
```

If the user enters an account number or name that is not in the list, an error message should be printed out. An example for account number is shown below:

```
ERROR: account number 3210 cannot be found in the list!
```

An example for account holder name is shown below:

```
ERROR: account for Doe, Jane cannot be found!
```

For this assignment, you must turn in a zip file with all of your C++ header files, source code files (changed to .cpp), and a working Makefile to compile your solution. The Makefile should be modified to compile the solution in C++ with no errors or warnings. Turn in your assignment by attaching the zip file to the assignment submission page.

Remember the class policy on late submissions – no late submissions are allowed unless prior arrangement is made with the instructor.