HW 4

Weather Stats

Write a program that reads in weather data and builds a linked list; then presents the user with a menu that allows the user to:

1) Write a month's temperatures including the monthly average temperature for all years – this will be either to a file or the screen the user has the choice
2) Write a year's temperatures including the yearly average temperature – this will be to a file or the screen the user has the choice
3) Write the entire list to a file or the screen (I should be able to create a file, and then rerun your program and load this file)
4) Add new data to the list – can come from the keyboard or a file
5) Quit

File Format

The file will contain lines and lines of data. Each line of data will be for a single month. The months are not guaranteed to be in order of any kind

- The first element of the line will contain the month as a string, all lower case. The full month word.
- The second element of the line will be the year of the data
- Then each temperature for the month each separated by a space
- NOTE: you **NEED** to worry about leap year.

Example of the text file:

january 2008 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
march 2009 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
january 2006 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
february 2008 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 1

Specifics

- When writing any data, you must give the user the option to write to a file or the screen. Filename will be user specified.

- When you create and load the list, the data will be in year order, and month order. Meaning for the data above january 2006 then january 2008 then february 2008 then march 2009.

- Your node structure will contain:
    - Weather data
    - struct node * next

- Your weather structure will contain:
    - char * month
    - int year
    - int days
    - int *temps

- You must use a 7 file format
    - .h and .c for only linked list functions
    - .h and .c for the functions non list related
    - .h and .a for openFilePrompt
    - .c file for main – named cscd240_s13_hw4Tester.c

- All temps should be treated as integer numbers.

- You must create a simple makefile that will be used to compile your code and create a target named hw4

- Include comments at the top of your source file that has your name, a description of the program, and a list of shortcomings (if any).

- You must clean up ALL dynamic memory

To Turn In

- Submit a zip file
    - Containing your C files and H file(s) – everything needed to compile and run your code
    - All input and output files
    - Your makefile – target hw4
    - Include an output captures from running your program that includes :
        - A month of january run
        - A year for 2008 run
        - A print of the list to a new filename
        - Saved as cscd240_s13_hw4out.txt
    - Include a valgrind run to illustrate you don't leak memory. This run will be named cscd240_s13_hw4valgrind.txt.

    Your zip will be named your last name first letter of your first name hw4.zip (Example: steinershw4.zip)

GET STARTED ASAP