CS 2123 Data Structures Recitation - Exercise 08

(Library – single link list ADT)

From ch09a-single-linklist.ppt, copy/paste programs into list.h, list.c,and driver.c in a directory, say recit08, and create Makefile to compile them.

Then extend list library with the following additional functions

```
void      FreeList(listADT a);
void      list_print_values(listADT a, char *name);
double    list_average(listADT a);
void      list_delete_by_value(listADT a, listElementT x) ;
// this function only deletes the first element it finds.
listADT   list_n_copy(listADT a, int n);
// make a new list, copy the first n values from list a
```

Finally, modify driver.c program such that it creates two lists, say X and Y. Then do the followings:

1. In a loop, get 6 integer values from the user and insert them into X and Y, in a sorted and unsorted manner, respectively by calling the appropriate functions.
2. Print both lists X and Y.
3. Find and print the averages of values in both lists by calling list_average( )

4. Ask user to enter a value to remove from both list and call list_delete_by_value( ) to remove the given value from both lists X and Y.
5. Print both lists X and Y
6. Find and print the averages of values in both lists by calling list_average( )

7. Call Z = list_n_copy(X, 3); to create a new list Z which contains the copies of the first three values in list X.
8. Print list Z
9. Find and print the average of values in list Z by calling list_average( )

10. Free all the lists

As always, make sure you release (free) the dynamically allocated memories if you allocate any memory in your programs. So, before submitting your program, run it with `valgrind` to see if there is any memory leakage…

Also if you need to debug your program, compile your programs with –g option and then run it with `gdb` and/or `ddd`.

What to return: !!!! NO LATE RECITATION ASSIGNMNET WILL BE ACCEPTED !!!

DO ALL YOUR WORK UNDER **abc123-rec08** folder using your own abc123

1. First implement your program as described above...
2. Then compile and run it. Copy/paste the result in an output file, say out08.txt.
3.   Remove executables from **abc123-rec08** folder and then Zip that folder
4.   Then go to BB Learn, and submit your **abc123-rec08.zip** as an attachment before the deadline. Make sure your zip file contains all your files!
/*   Don't forget to include comments about the problem, yourself and each major step in your program! */

You must submit your work using Blackboard Learn and respect the following rules:

1) All assignments must be submitted as a zip file unless it is a single pdf file.
2) Assignments must include all source code.
3) Assignments must include an output.txt file which demonstrates the final test output run by the student.

If your assignment does not run/compile, the output.txt file should include an explanation of what was accomplished, what the error message was that prevented the student from finishing the assignment and what the student BELIEVES to be the underlying cause of the error.

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