CS 2213-001 Advanced Programming

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Homework 7 **Due date: check BB** !!!! NO LATE HOMEWORK WILL BE ACCEPTED !!! Total 5 points

(Command-line Arguments, Files, Abstract Data Type - Library)

You are asked to write a program to check if the HTML tags in a given file are nested correctly or not. This problem is similar to the example of proper matching of { ([]) }, but now you will deal with HTML tags and read them from a file. If needed, you can use **stack** lib that we implemented in class with typedef void *stackElementT;

Background:

HTML files consists of regular text and **tags** enclosed in angle brackets, the *<* and *>* symbols. Tags are used to identify the structure of a document.

Most tags come in pairs: a beginning tag and a closing tag. For example, the tags <title> and </title> are the beginning and closing tags. There are several such tags including <i> </i> </h1> etc. Tags may have several attributes and such attributes will be in the beginning tag for example link .

HTML allows two-sided tags to be nested without overlapping, as in the example of proper matching of $\{([])\}$.

Some tags are single-sided (e.g., ,
, <hr />) and they appear alone. They will not affect the nesting but you still need to process them since they might be in the file. You can simply ignore the tags start with < and end with />.

For example, if an HTML file contains

```
<title><b> THIS FILE </b> USES CORRECTLY NESTED TAGS
</title>
<h1><i> First <b class="c1"> header </b> text <img
src="pic.jpg" /> </i></h1>
 Some other text
```

Then YES, all the tags are nested correctly. But if an HTML file contains

```
<title> <b> THIS FILE </title> IS </b> NOT NESTED
CORRECTLY.
 <b> some text is not nested correctly </b>
```

Then NO, the tags are not correctly nested.

Your program must accept HTML input file name as a command line argument and process it for proper nesting of HTML tags. So we will run your program as follows

main212> driver sample1.html

You can stop the program when you detect the first tag that violates the proper nesting structure and print that tag on the screen. Otherwise, your program will report that all tags are nested correctly.

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 HOMEWORK WILL BE ACCEPTED !!!

- 1. Create a directory, say LASTNAME_hw7, and do all your work under that directory.
- 2. If needed, you will get stack library from the textbook and use it along with other libraries in your driver/client program, driver.c.
- 3. To easily compile the library and driver program, you must have a Makefile and use "make" to compile your code.
- 4. After compiling, run your program a few times with different data files that you should create and save the output (using script) into output.txt file. So you will have around 6-7 files in your LASTNAME_hw6 directory.
- 5. Go to parent directory of LASTNAME_hw7, and use
- >tar -cf LASTNAME hw6.tar LASTNAME hw6

This will create a new file called LASTNAME_hw7.tar and it contains all of your files. So just submit this .tar file.

- Go to WebCT (BB), and just submit LASTNAME_hw7.tar as attachment before the deadline.
 DO NOT submit other .h or .c files individually.
- /* 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 either a zip or tar archive file unless it is a single pdf file.
- 2) Assignments must include all source code.
- Assignments must include an output.txt file which demonstrates the final test output run by the student.

4) 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.