EE3980 Algorithms

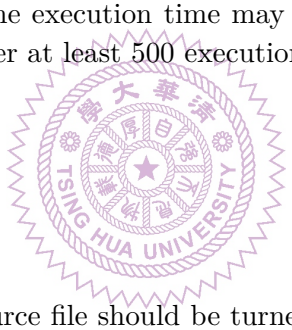
Homework 11. Transforming Text Files

Due: May 31, 2020

Given two similar text files, `t1a.txt` and `t1b.txt`, one can use three editing commands: `change line`, `insert line` and `delete line` to transform one to another. Example commands of transforming `t1a.txt` to `t1b.txt` are given at the end of this file. Your assignment is to write a `C` program that takes two files as its input and output a series of commands to perform such transformation. As usual, the number of transformation commands should be as small as possible.

Once the program is completed, the complexities in time and space should be analyzed and reported. To test your program, 6 sets of files are provided. They are `t1a.txt` and `t1b.txt`; `t2a.txt` and `t2b.txt`; `t3a.txt` and `t3b.txt`; `t4a.txt` and `t4b.txt`; `t5a.txt` and `t5b.txt`; `t6a.txt` and `t6b.txt`. Use these 6 sets of files to verify the time complexity of your program.

It is encouraged that you minimize the time and space complexities of your program, and the execution time as well. As before, the execution time may exclude both input and output times, but it should take take average over at least 500 executions.



Notes.

1. One executable and error-free `C` source file should be turned in. This source file should be named as `hw11.c`.
2. A `pdf` file is also needed. This report file should be named as `hw11a.pdf`.
3. Submit your `hw11.c` and `hw11a.pdf` on EE workstations using the following command:

   `$ ~ee3980/bin/submit hw11 hw11.c hw11a.pdf`

   where `hw11` indicates homework 11.
4. Your report should be clearly written such that I can understand it. The writing, including English grammar, is part of the grading criteria.

Example program output:

```
$ ./a.out t1a.txt t1b.txt
9 lines with 3 changes:
Delete line 3:
Commencement Address at Stanford University, 2005
Insert line 6:
Commencement Address at Stanford University, 2005
Change line 8:
want to tell you three stories from my life. That's it. No big deal. Just
CPU time: 7.20024e-07 sec
```