

SWE2024: System Programming Experiment (Fall 2020)

Programming Assignment #1

Due: October 11th, 11:59 PM

1. Introduction

You may get used to use file I/O and data structure with this homework.

2. Specification

In this assignment, your goal is to read a movie scenario file with name entered as a command line input and write a code that performs a specific search function. After your program starts, your program waits for user's keyword input and performs searching function mentioned below.

2-1 definitions of term

Before starting the description, we define the terms to use.

1) **Word**: Sequence of characters (not empty) that do not include **white space** (tab, space, new line, EOF), '[', ']' and '*'. Word are surrounded by **white space** on the input. Not distinguish between upper and lowercase letters. Maximum length of word is 40.

Ex) input: He's very good boy. -> words: [He's, very, good, boy.], "He" and "He's" are different words.

2) **Line**: Sequence of words separated by **'Wn'** on input. **The line number of the first line on input is 1.**

You have to count empty line.

3) **Index**: The position of the character on the line. **The index of the first character on each line is 0. You have to count white spaces and writing symbols.**

2-2 Implementation.

① **Searching single word locations**

If your program receives input with a single word, search for a word's location in a given movie scenario.

- Find the word your program received in the movie script and print it out on stdout in the form of
"line number:start index of the word"

② Searching several words locations

If your program receives input with multiple words (separate with a single space), search for lines just containing all words.

- Find the line containing all words entered in the movie scripts and print it on stdout in the form of
"line number".

③ Searching several consecutive words locations

If your program receives multiple words (separate with a single space) input wrapped in [], search the lines containing the consecutive multiple words. Only single space (' ') between consecutive words

- Find the first word index received **consecutive multiple words** in the movie scripts and print it on stdout in the form of
"line number:start index of the multiple words".

④ Searching a simple regular expressing keyword locations

If your program receives input which two words are formed as word1*word2, print the location of the keyword, which contains one or more words between word1 and word2 **in line.**

- Find the location of keyword that explained above, and print it on stdout in the form of
"line number".

- If the received keywords appear multiple times in the movie scenario, then you have to print them all.

For the case of ① and ③, you have to **print all locations of even if they exists in the same line.** But the case of ②, ④, you just print once for duplicated line number. **[] and * are not entered at the same time.**

- You have to add a single space after a single keyword location. And you have to print new line when searching is done. For example:

15:23 17:10 23:4

15 17 23

- Search results should be output sequentially from the top of the file.
- You may follow and refer the details about keyword input section 7

3. Score Policy

1) Source code (100%)

We evaluate your assignment with many different movie scenarios.

You have to follow the format explained above, and you can't get any point if you don't.

There are no character '[', ']', '*' in test text file.

4. Restriction

- You have to do your assignment using **Linux environment**.
- You must not use **stdio.h**, **string.h** library. (If you use or employ them, you will get 0 point)
- Input text file name is given as command line argument(argv[1]).

5. Hand in instructions

- * When submitting the assignment, compress it into "student ID.tar" file and submit it to I-campus. And in your tar file, only "Your Student ID.c" file and Makefile should exist (not directory)
- * Your executable file name must be "pa1.out"
- * If you don't follow submission format or we can't compile your source code with 'make' command, you will get penalty.

For your late submission, here is your TA's email addresses.

mjyoo2@g.skku.edu

6. Logistics

- The time required to submit the assignment is based on the time required for submission of the I-campus, and **can be reduced by 15% or up to 45% after the deadline (0 points will be processed after 3 days).**
- You can discuss the task together, but you have to write the program source code yourself.
- If you copy someone else's assignment, **you both do a zero-point job and get F**, even if you copy the source code you found **on the Internet.**

7. Example (Red highlighted words are inputs)

```
$ ./pal.out 500-Days-of-Summer_s.txt

500 days

6 6419

he is

50 1039 1822 1955 2256 2315 3494 3503 4353 4360 4445 4831 5101 5885 6325

[he is]

1955:33 2315:42 5885:22

he*is

2315 4445 5101

she he

1370 1512 1513 3423 3473 3478 3550 4255 4510 4515 5413 5672 6154 6188

she he a

1370 3550 4510

[he is the]

1955:33

loved

106:30 1122:9 1150:24 3961:25 4739:17 5921:28
```