SWE2024: System Programming Experiment (Fall 2019)

Programming Assignment #1

Due: October 25th, 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.

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 word (separate with a single space and no wrapper), search for lines containing both words.

● Find the line containing both 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 a phrase input wrapped in "", search the lines containing the phrase.

● Find the line containing received phrase in the movie scripts and print it on stdout in the form of **"[line number]:[start index of the phrase]"**.

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 **(except white space)** between [word1] and [word2].

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

And the spec for **line number** and **start index of the word(keyword, phrase)** are explained below:

***line number** – the index of the line which contains the keyword. **You have to count empty line.**

***start index of the word (keyword, phrase)** – the start index of the word (or keyword or phrase) in a line. **You have to count white spaces and writing symbols**.

● 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.

● **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 "7. Example" section.**

3. Score Policy

1) Source code (100%)

We evaluate your assignment with 10 different movie scenarios and you can get 10 points for each scenario. (10 keyword inputs, 1 point per an input)

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

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)**

- The word means, a string separated by **white spaces (tab, space, new line)**, and we don't distinguish between upper and lowercase letters.

- The example of searching keywords are followed:

e.g.) god, and, adam, brother's, priests', kirjath-arba, sons'

- The words which contains writing symbols are considered as different words each other. **For instance, god and god's are different, so they don't have to be searched when searching each other.**

5. Hand in instructions

*** When submitting the assignment, compress it into "student ID.zip" file and submit it to I-campus. And in your zip file, only "[Your Student ID].c" file should exist (not directory)**

*** If you don't follow submission format, you will get 0 point.**

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

gmj03003@gmail.com

ks77sj@gmail.com

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**, even if you copy the source code you found **on the Internet**. If you are 0 points for this reason more than once, you can get F credits, or you can get up to 1% per person, up to 10%.

7. Example (Red highlighted words are inputs)

```
$ ./assignmetn1.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

loved

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

…
```

```
$ ./assignmetn1.out 500-Days-of-Summer_s.txt > result.out
he
hey
she
tom
summer is
"summer is"
landscape
together
we*her
no much
immediately
no*much
quarterback
we
  (ctrl + c)


$ diff –bsq result.out answer.out
Files result.out and answer.out are identical
$
```

(If your result file is equal to answer file, nothing is printed)