

System Programming Homework#1 Report

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1 HOW TO SOLVE THIS PROBLEM

First I separate the arguments with three for loops. I use malloc function to allocate the arguments' characters. First loop is counting the sentence number and checking errors, second for loop is counting character numbers for each sentence and allocate them. Last loop is assigning each word to allocated array. I separate the words with respect to slash and semicolon. After I separate the arguments then I call the file_operation function that does the string replacement for the homework choices. In file_operation function, I create my variables then I open the file that is given by arguments, after that I create a temp file with mkstemp and call unlink function because of deletion after the program. Then, I lock the file with fcntl function. After that I use a for loop to iterate the string arguments. In this for loop, I firstly check the case insensitivity, then I clear the content of my temp file with ftruncate function, after that I read the content of the file to an array, I set the file locations to beginning with lseek function. After that I use another for in the for loop. In this for loop, I get the characters from file content array and compare these characters with argument characters if they match or not. If the character is match then I increase the match number and after that if match number is equal to length of argument then it replaces the word in the file. After that if the argument character is '\$' sign then I check the if index of the character of file is zero or "\n" for previous character because this sign is responsible for the matching at line starts. After that I increase the match number. Then I control the argument character if it is '\$' sign or not. After that if it is then check the current character is "\n" then it increases the match number. Then I check the [argument character for matching multiple characters. I control the] for stop the search the character. After that I implement case insensitivity for every case. After that I implement the change occurrence function for the replacement and I adjust this function parameters for some cases. I write the content characters to the temp file. Out of the inner loop, I clear the content of the file. then I set the file location to the beginning for temp and normal file. I read the content of temp file and write the content to the normal file. After that I call free function for content array for normal file. Then After outer loop finish, I unlock the file and close the file.

2 DESIGN DECISIONS

I chose write system call instead of printf with argument 1 that is stdout_fileno

I use ftruncate for the clearing content of file.

I use temporary file to keep the characters before the clearing main file content.

I use temporary file to write the implemented content to main file.

I check the characters one by one then count them if they matched or not

I use 3 for loop for separating the arguments. If I use realloc function every time then it copies all elements every per character. So I firstly count the characters and sentences and call malloc function, then assign the characters to this array.

I use lseek function to change the location.

I give error messages with perror and write system call with argument 2 that is stderr_fileno.

I lock the file with fcntl function.

3 WHICH REQUIREMENTS I ACHIEVED

I achieved all cases requirements in this homework except g) case star operation.

4 WHICH REQUIREMENTS I FAILED

I failed g) case star operation. I didn't support zero or more repetitions of characters for star operation.

5 INPUT-OUTPUT EXAMPLE

deneme2

```
1 sDr1em ipsum dolor sit amet, conztr1tetur adipiscing sstr1t, sSTR1
2 du eiusmod tempor incididunt ut labore et dolore magna
3 kfr1ua. Ut enim ad minim vedTR1, quis nostrud exercitati
4 r1mco laboris nisi ut aliquip ex ea commodo consequat.
5 Duis aute irure dolor in reprehenderit in voluptate velit esse
6 StR1lum sssssssstr1ore eu fugiat nulla pariatur. Excepteur sint occaestr1
7 dof1idatat non proident, sunt in culpa qui officia deserunt molZtr1
8 anim id est labostr1.
```

cse312@ubuntu: ~/Masaüstü/ders/system-programming/System-Programming/hw1

```
cse312@ubuntu:~/Masaüstü/ders/system-programming/System-Programming/hw1$ ./hw1 '
/^s[dt]r1/MT/i;/str1$/Student/;/Student/M_Student/' deneme2
```

deneme2

```
1 MTem ipsum dolor sit amet, conztr1tetur adipiscing sstr1t, sSTR1
2 du eiusmod tempor incididunt ut labore et dolore magna
3 kfr1ua. Ut enim ad minim vedTR1, quis nostrud exercitati
4 r1mco laboris nisi ut aliquip ex ea commodo consequat.
5 Duis aute irure dolor in reprehenderit in voluptate velit esse
6 MTlum sssssssstr1ore eu fugiat nulla pariatur. Excepteur sint occaestrM_Student
7 dof1idatat non proident, sunt in culpa qui officia deserunt molZtr1
8 anim id est labostr1.
```

cse312@ubuntu: ~/Masaüstü/ders/system-programming/System-Programming/hw1

```
cse312@ubuntu:~/Masaüstü/ders/system-programming/System-Programming/hw1$ ./hw1 '
/^s[dt]r1/MT/i;/str1$/Student/;/Student/M_Student/' deneme2
```

Work is finished -> Please check the file!

```
cse312@ubuntu:~/Masaüstü/ders/system-programming/System-Programming/hw1$
```