CSE 344 SYSTEM PROGRAMMING

HW1 REPORT

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Problem Definition

In this homework problem is replacing occurrences of a word with another given word. In this manner we were expected to write a program that uses syscalls to accomplish this task. We have 7 different types of tasks.

- /str1/str2/
- /str1/str2/i
- /str1/str2/;/str3/str4/
- /[zs]tr1/str2/
- /^str1/str2/
- /str1$/str2/
- /st*r1/str2/

After completing these tasks they must also work with different combinations like:

/^str1*/str2/i;/[zs]tr3/str4/

Problem Solution

First I am getting command line arguments the starting to parse it with ';' character to find if there is more than 1 commands. Assume we have 2 commands I am holding them in a 2D char array. Then parsing those commands with '/' character to get the tokens of the command.

After creating the command and token lists started to read the file line by line with using read function. 'read_lines' that I wrote reads lines and then calls 'replace_ all' function to find and replace the words.

Before these reading and replacing functions I am holding '^', '$','i' situations in different variables.

In replace_all function counting words in the line and tokenizing them one by one. For each token checking if str2 exists in str1. If there is a str2 in str1 replacing it in the rules of start, end, case sensitivity.

Locking the file before starting to read and then unlock before the execution stops. So that any other process can not interfere.

TEST CASES

Test Case 1

In this case replacing 'ing' words with 'yor'. You can see the file's first situation, running command, output of the program on terminal and final situation of the file below in order.

```
test.txt                    ×
 I love system programming.
 I am learning system programming at GTU.
 issstanbul izzztanbul iztanbul
 helü IZTANBUL
 ISTANBUL
 Programming with files is great
 Learning system programming at GTU is hard and challangeing.
```

```
./v1 '/ing/yor/' test.txt
```

```
mrtbyz@mrtbyz:~/Desktop/ÇİMEN$ ./v1 '/ing/yor/' test.txt

 Temporary file created
LINE BEFORE PROCESS: I love system programming.
LINE AFTER PROCESS: I love system programmyor.
LINE BEFORE PROCESS: I am learning system programming at GTU.
LINE AFTER PROCESS: I am learnyor system programmyor at GTU.
LINE BEFORE PROCESS: issstanbul izzztanbul iztanbul
LINE AFTER PROCESS: issstanbul izzztanbul iztanbul
LINE BEFORE PROCESS: helü IZTANBUL
LINE AFTER PROCESS: helü IZTANBUL
LINE BEFORE PROCESS: ISTANBUL
LINE AFTER PROCESS: ISTANBUL
LINE BEFORE PROCESS: Programming with files is great
LINE AFTER PROCESS: Programmyor with files is great
LINE BEFORE PROCESS: Learning system programming at GTU is hard and challangeing.
LINE AFTER PROCESS: Learnyor system programmyor at GTU is hard and challangeyor.

Successfully replaced all occurrences of 'ing' with 'yor'.
```
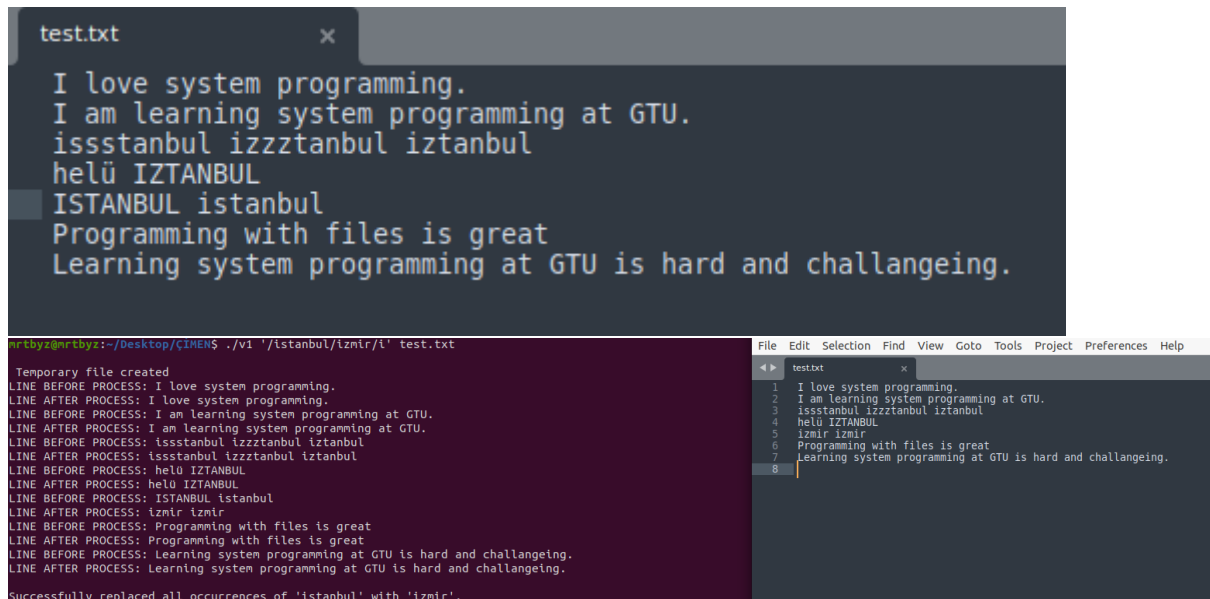
```
test.txt                    ×
 I love system programmyor.
 I am learnyor system programmyor at GTU.
 issstanbul izzztanbul iztanbul
 helü IZTANBUL
 ISTANBUL
 Programmyor with files is great
 Learnyor system programmyor at GTU is hard and challangeyor.
```

Test Case 2

In this test case replacing 'istanbul' to 'izmir' and this is case insensitive. As you can see from the screen shots in line 5 both 'ISTANBUL' and 'istanbul' replaced to 'izmir'.
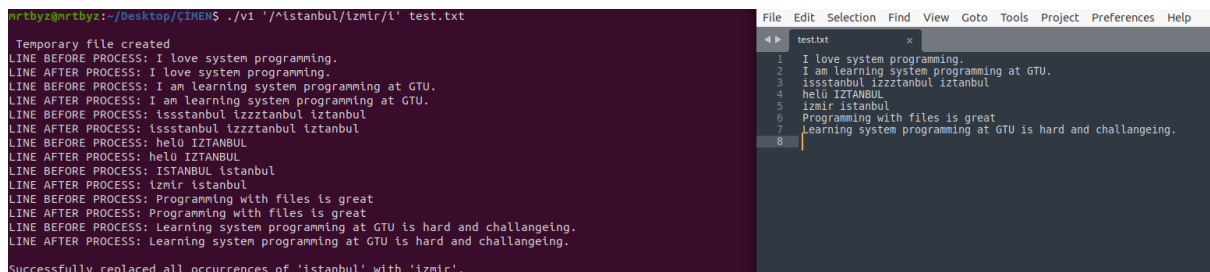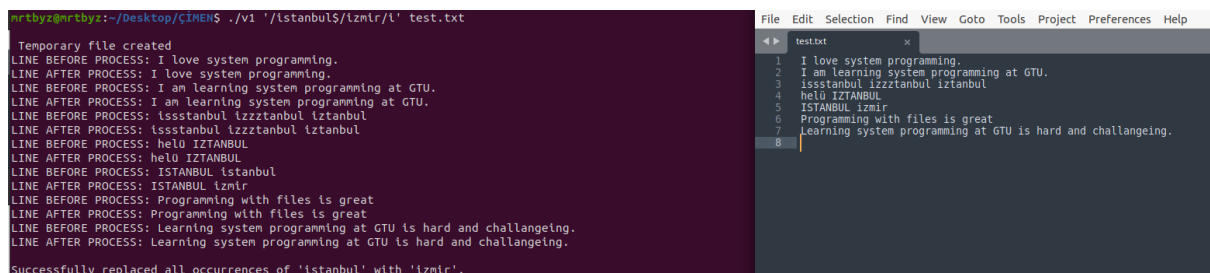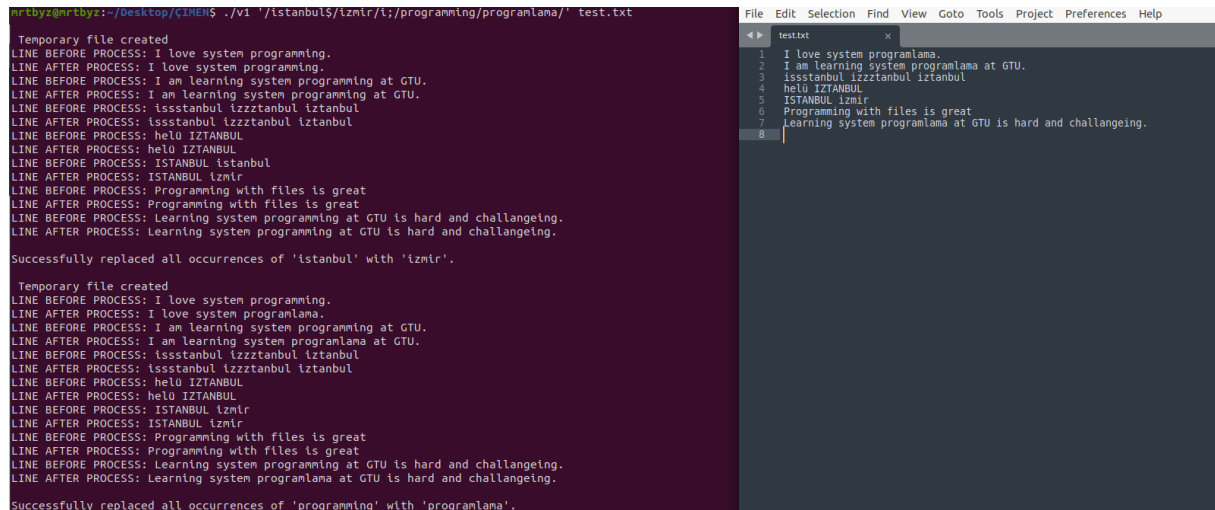

Test Case 3

In this test case replacing 'istanbul' to 'izmir'. It will be case insensitive and 'istanbul' must be the first word of the line. As you can see from the screen shot below in the line 5 'ISTANBUL' to 'izmir'.

Test Case 4

In this test case replacing 'istanbul' to 'izmir'. It will be case insensitive and 'istanbul' must be the last word of the line. As you can see from the screen shot below in the line 5 'ISTANBUL' to 'izmir'.

Test Case 5

In this test case replacing 'istanbul' to 'izmir'. It will be case insensitive and 'istanbul' must be the last word of the line. As you can see from the screen shot below in the line 5 'ISTANBUL' to 'izmir'. Also changed 'programming' to 'programlama'

Test Case 6

In this test case replacing both 'istanbul' and 'iztanbul' to 'izmir'. It will be case insensitive and 'istanbul' must be the last word of the line. As you can see from the screen shot below in the line 3, 4, 5 'ISTANBUL', 'IZTANBUL', 'iztanbul', 'istanbul' to 'izmir'.

Test Case 7

In this test case replacing 'i[sz]*tanbul' to 'izmir'. It will be case insensitive and 'istanbul' must be the last word of the line. As you can see from the screen shot below in the line 3, 4, 5 'ISTANBUL', 'IZTANBUL', 'iztanbul', 'istanbul', 'izzztanbul', 'issstanbul' to 'izmir'.

Test Case 8

In this test case replaced all 'at' or 'a' with 'izmir'. As you can see from the screen shot below replaced all 'a' letters with 'izmir' also 'at' words replaced with 'izmir'.

```
mrtbyz@mrtbyz:~/Desktop/ÇİMEN$ ./v1 '/at*/izmir/i' test.txt

 Temporary file created
LINE BEFORE PROCESS: I love system programming.
LINE AFTER PROCESS: I love system progrizmirmming.
LINE BEFORE PROCESS: I am learning system programming at GTU.
LINE AFTER PROCESS: I izmirm leizmirrning system progrizmirmming izmir GTU.
LINE BEFORE PROCESS: bissstanbul izzztanbul iztanbul
LINE AFTER PROCESS: bissstizmirnbul izzztizmirnbul iztizmirnbul
LINE BEFORE PROCESS: helü IZTANBUL
LINE AFTER PROCESS: helü iztizmirnbul
LINE BEFORE PROCESS: ISTANBUL istanbul
LINE AFTER PROCESS: istizmirnbul istizmirnbul
LINE BEFORE PROCESS: Programming with files is great
LINE AFTER PROCESS: progrizmirmming with files is greizmirt
LINE BEFORE PROCESS: Learning system programming at GTU is hard and challangeing.
LINE AFTER PROCESS: leizmirrning system progrizmirmming izmir GTU is hizmirrd izmirnd chizmirllizmirngein
g.

Successfully replaced all occurrences of 'at*' with 'izmir'.
```
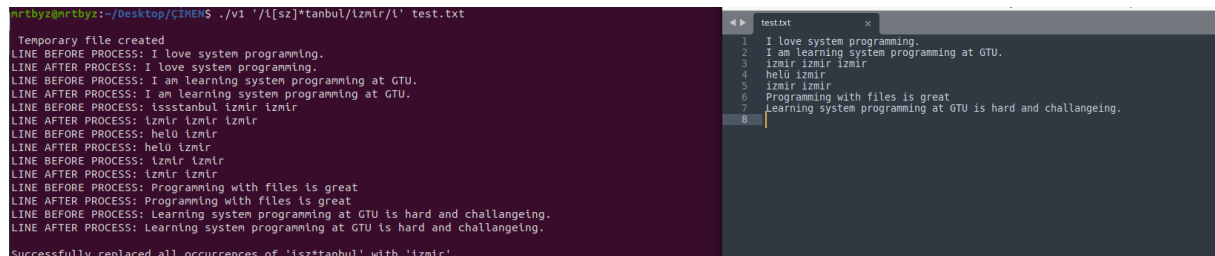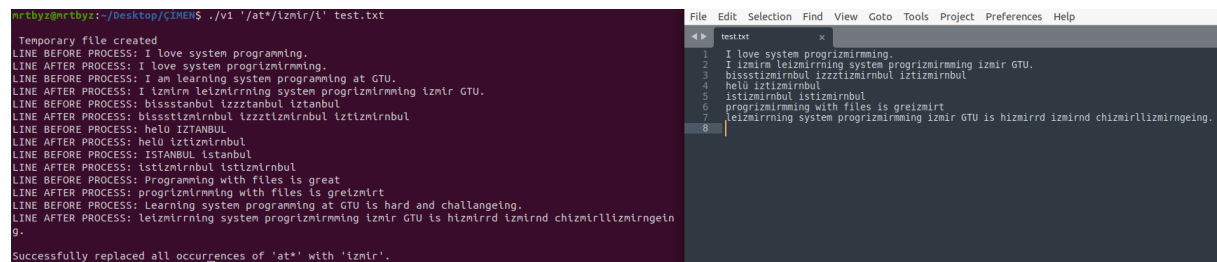
```
File  Edit  Selection  Find  View  Goto  Tools  Project  Preferences  Help
  test.txt                    x
1  I love system progrizmirmming.
2  I izmirm leizmirrning system progrizmirmming izmir GTU.
3  bissstizmirnbul izzztizmirnbul iztizmirnbul
4  helü iztizmirnbul
5  istizmirnbul istizmirnbul
6  progrizmirmming with files is greizmirt
7  leizmirrning system progrizmirmming izmir GTU is hizmirrd izmirnd chizmirllizmirngeing.
8  |
```