CSE 3033 - OPERATING SYSTEMS

Programming Assignment # 1

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Explanations About Implementations of Sample Executions

Starting With The Menu -)

In the Menu section, user will simply choose which program to run with needed or optional arguments as input. For every choice there will be assistance about what to type for inputs. If the choice is not valid or simply doesn't match with the possible options, then user will be asked again to enter a proper choice. Also when the user is done with the whole process, he or she can simply terminate the menu session with exit option.

Additionally if the execution process of the chosen option isn't terminated by exits and program itself ends as it should be, then the program will prompt that user can turn back to main menu. At the same time, the same situation is applied for the cases that when the program is terminated by exits. Menu will simply ask to user to turn back to main page.

```
-----------------------------------
 Main Menu
-----------------------------------
1. Create histogram
2. Encryption
3. Delete oldest
4. Convert numbers
5. Organized files
6. Exit
===================================
Enter your choice [1-6]: 6

******&& EXIT &&******
```

Question 1 -)

In the first question, user will be asked to enter a filename as an argument to run the program. If the provides inappropriate arguments, he or she will be informed about what went wrong.

In the implementation part of the question, we simply iterate through all the lines in the input file, then assign what was grabbed by the loops to the variable called ‘number’. If the captured ‘number’ is not in [0-9] then user will be informed about that.

After encountering with no problems, at the end, program will hold occurances of the corresponding number in an array; then by using nested loops, it will check occurances of the numbers by comparing what is held in that array cell. If there is a match, then it will print * next to the number.

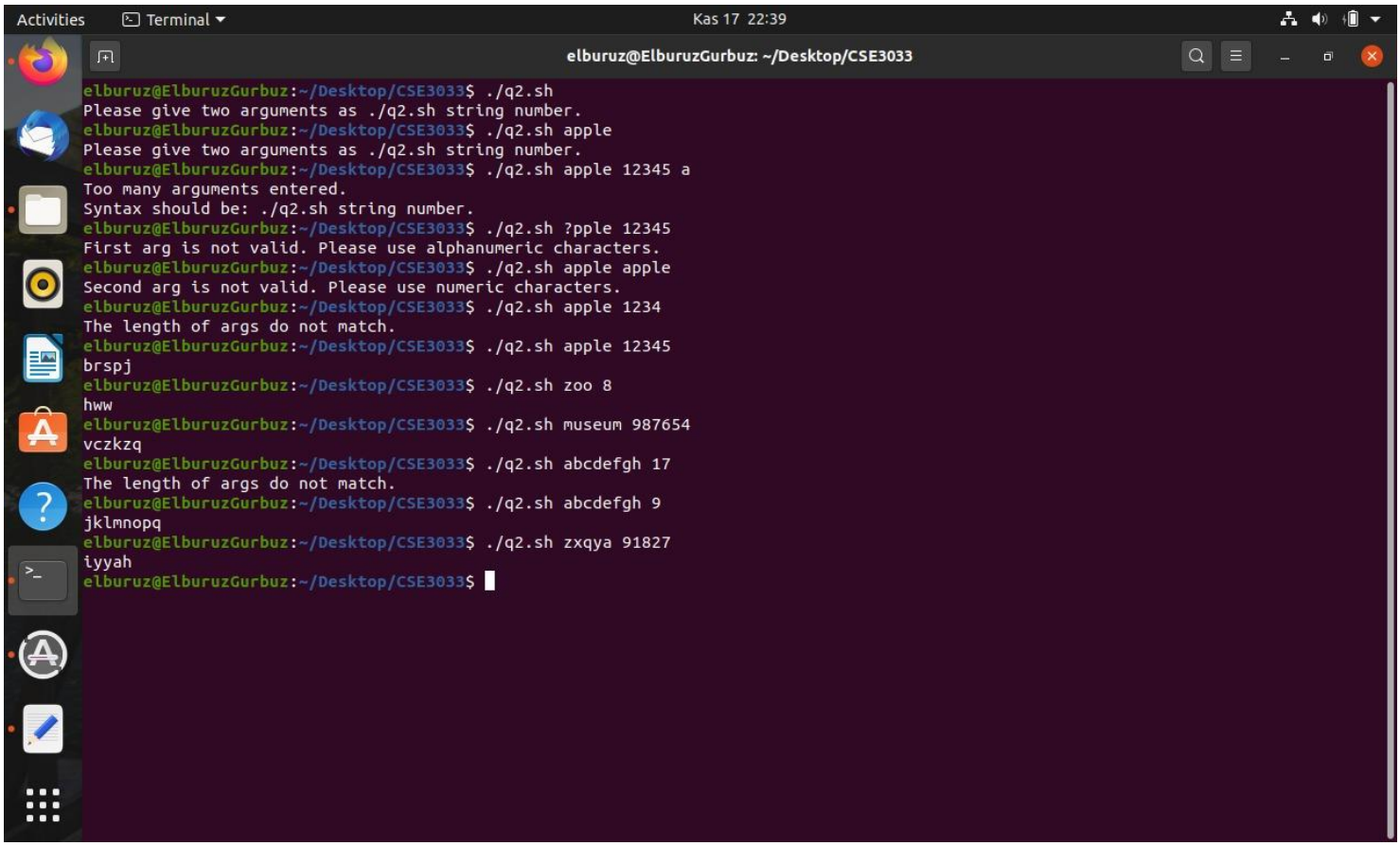
```
mka@kursatacikgoz:~/Desktop/CSE3033$ ./q1.sh
Please give a filename as a parameter.
mka@kursatacikgoz:~/Desktop/CSE3033$ ./q1.sh file1.txt file2.txt
Too many arguments entered.
Syntax should be: ./q1.sh filename.txt .
mka@kursatacikgoz:~/Desktop/CSE3033$ ./q1.sh nofile.txt
nofile.txt doesn't exist. Enter another filename that exists.
mka@kursatacikgoz:~/Desktop/CSE3033$ ./q1.sh file.txt
You have "a" in your file. Please give a proper number between 0-9.
mka@kursatacikgoz:~/Desktop/CSE3033$ ./q1.sh file.txt
You have "15" in your file. Please give a proper number between 0-9.
mka@kursatacikgoz:~/Desktop/CSE3033$ ./q1.sh file.txt
0
1 **
2 ***
3
4 *
5 **
6 ***
7 *
8 *
9
```

Question 2 -)

In the second question, if the given arguments will not match with the validations, program will prompt that corresponding error to user. Additionally the program will check if the length of the given arguments don't match and informs the user about that.

In the execution of the main part, we keep both string and number argument in arrays. Then for the string part, we iterate through it's characters one by one and assign it's ascii value to a variable called 'numAscii'.

So it gave us the flexibility of the usage of addition operation since we are dealing with the numbers. If the ascii value for a character exceeds '122' which is 'z', then it will add it from the starting value which is 'a'. At the end it will reconvert it's ascii value to corresponding string version and prints it to the console.



Question 3 -)

In the third question, if the entered arguments don't fit into validations, the user will be prompted about the issue.

In the main part, if a pathname is provided, then we will simply head into that directory since we will deal with it.

Furthermore, we will look for the oldest file in the given path and ask the user whether founded file should be deleted or not. Depending of the decision of the user, program will be prompt that which file is deleted or not deleted.

```
ahmet@Ahmet:~/Downloads/q3test$ ls -l
total 8
drwxrwxrwx 2 ahmet ahmet 4096 Kas 18 00:46 oldest
-rwxrwxrwx 1 ahmet ahmet 1371 Kas 18 00:34 q3.sh
-rwxrwxrwx 1 ahmet ahmet    0 Kas 16 22:56 yeni5
-rwxrwxrwx 1 ahmet ahmet    0 Kas 17 18:25 yeni6
-rwxrwxrwx 1 ahmet ahmet    0 Kas 17 18:25 yeni7
-rw-rw-r-- 1 ahmet ahmet    0 Kas 18 00:46 yeni8
ahmet@Ahmet:~/Downloads/q3test$ ls -l oldest
total 0
-rw-rw-r-- 1 ahmet ahmet 0 Kas 18 00:40 eski3
-rw-rw-r-- 1 ahmet ahmet 0 Kas 18 00:41 eski4
-rw-rw-r-- 1 ahmet ahmet 0 Kas 18 00:42 eski5
-rw-rw-r-- 1 ahmet ahmet 0 Kas 18 00:46 eski6
ahmet@Ahmet:~/Downloads/q3test$ ./q3.sh file
file doesn't exist. Enter another folder name that exists.
ahmet@Ahmet:~/Downloads/q3test$ ./q3.sh file nofile
Too many arguments entered.
Syntax should be: ./q3.sh pathName .
```

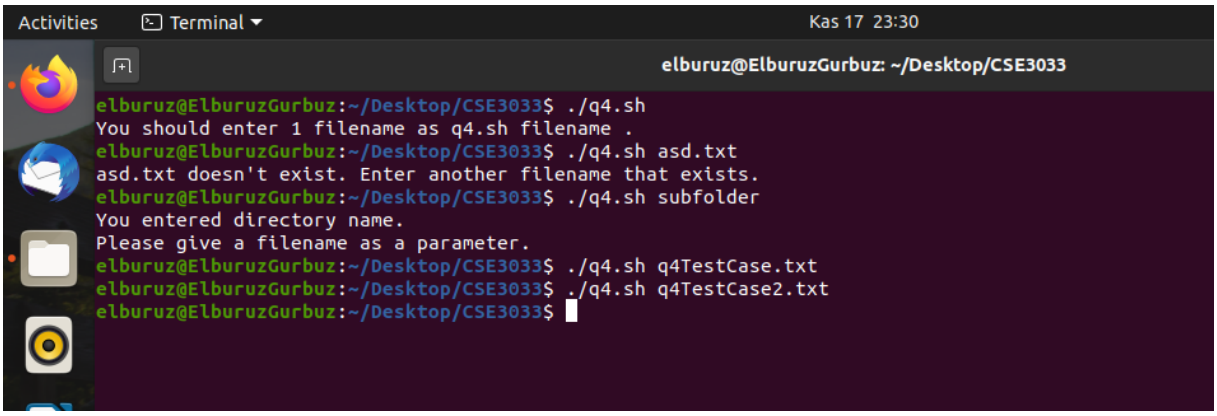
```
ahmet@Ahmet:~/Downloads/q3test$ ./q3.sh
Do you want to delete yeni5 (y/n) :
n
yeni5 is not deleted.
ahmet@Ahmet:~/Downloads/q3test$ ls -l
total 8
drwxrwxrwx 2 ahmet ahmet 4096 Kas 18 00:46 oldest
-rwxrwxrwx 1 ahmet ahmet 1371 Kas 18 00:34 q3.sh
-rwxrwxrwx 1 ahmet ahmet    0 Kas 16 22:56 yeni5
-rwxrwxrwx 1 ahmet ahmet    0 Kas 17 18:25 yeni6
-rwxrwxrwx 1 ahmet ahmet    0 Kas 17 18:25 yeni7
-rw-rw-r-- 1 ahmet ahmet    0 Kas 18 00:46 yeni8
ahmet@Ahmet:~/Downloads/q3test$ ./q3.sh
Do you want to delete yeni5 (y/n) :
y
yeni5 is deleted.
ahmet@Ahmet:~/Downloads/q3test$ ls -l
total 8
drwxrwxrwx 2 ahmet ahmet 4096 Kas 18 00:46 oldest
-rwxrwxrwx 1 ahmet ahmet 1371 Kas 18 00:34 q3.sh
-rwxrwxrwx 1 ahmet ahmet    0 Kas 17 18:25 yeni6
-rwxrwxrwx 1 ahmet ahmet    0 Kas 17 18:25 yeni7
-rw-rw-r-- 1 ahmet ahmet    0 Kas 18 00:46 yeni8
```

```
ahmet@Ahmet:~/Downloads/q3test$ ./q3.sh oldest
Do you want to delete eski3 (y/n) :
n
eski3 is not deleted.
ahmet@Ahmet:~/Downloads/q3test$ ls -l oldest/
total 0
-rw-rw-r-- 1 ahmet ahmet 0 Kas 18 00:40 eski3
-rw-rw-r-- 1 ahmet ahmet 0 Kas 18 00:41 eski4
-rw-rw-r-- 1 ahmet ahmet 0 Kas 18 00:42 eski5
-rw-rw-r-- 1 ahmet ahmet 0 Kas 18 00:46 eski6
ahmet@Ahmet:~/Downloads/q3test$ ./q3.sh oldest/
Do you want to delete eski3 (y/n) :
y
eski3 is deleted.
ahmet@Ahmet:~/Downloads/q3test$ ls -l oldest/
total 0
-rw-rw-r-- 1 ahmet ahmet 0 Kas 18 00:41 eski4
-rw-rw-r-- 1 ahmet ahmet 0 Kas 18 00:42 eski5
-rw-rw-r-- 1 ahmet ahmet 0 Kas 18 00:46 eski6
```

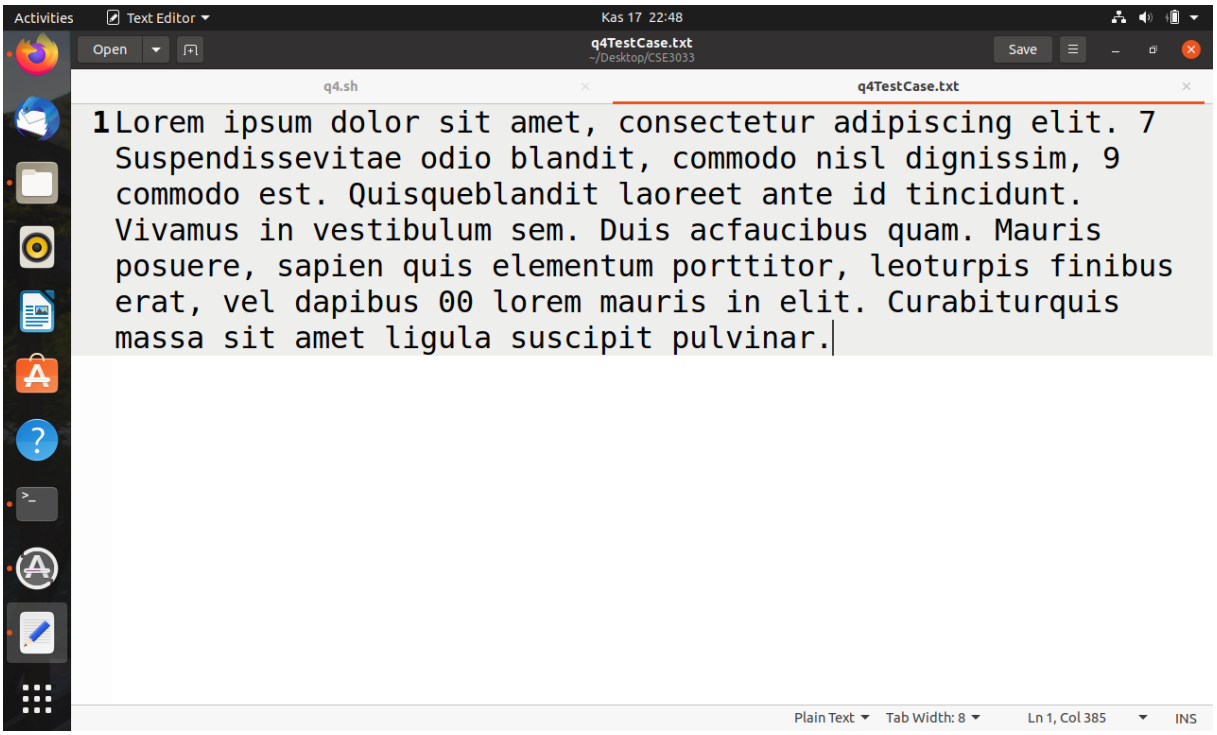
Question 4 -)

In the fourth question, same process will be applied for errors like in previous questions which are related to arguments that are passed by user.

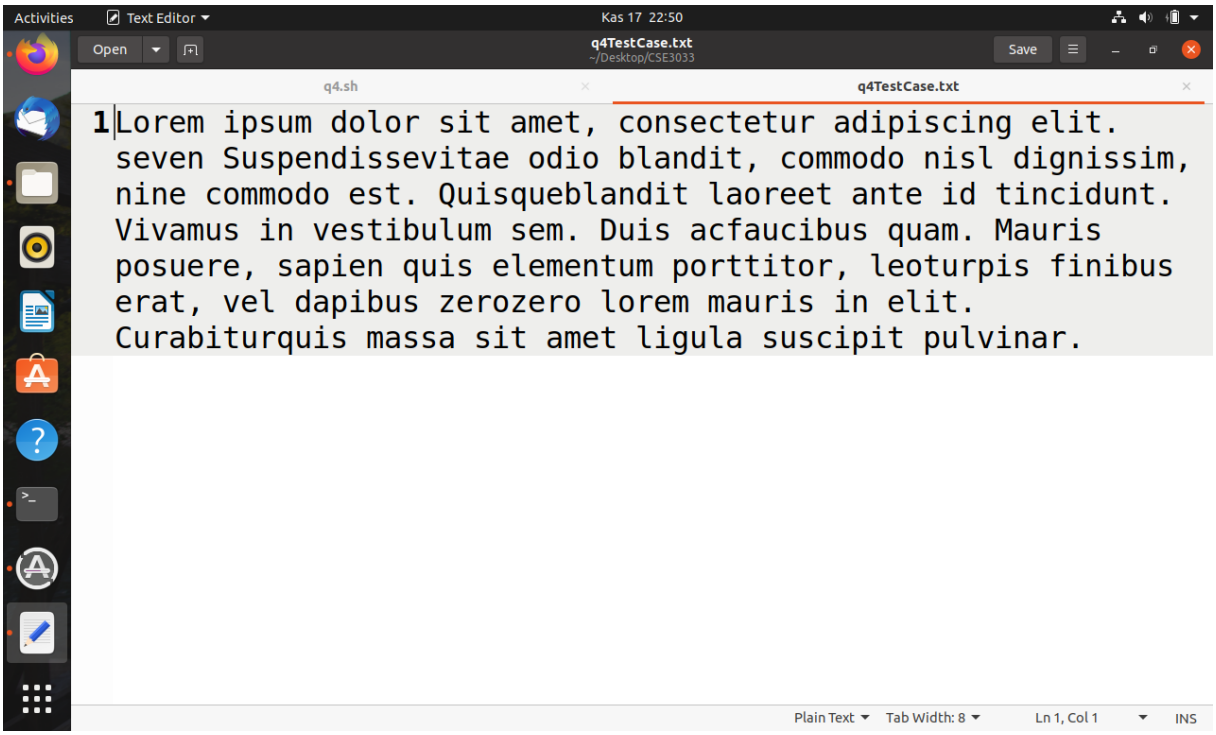
What we have done in the main part of the code is, loop through all the characters that is inside the given file name and if there is an alphanumeric character between 0 and 9, then it will match with the related switch case and replace the number with it's string version. With that way we can directly update the file itself.



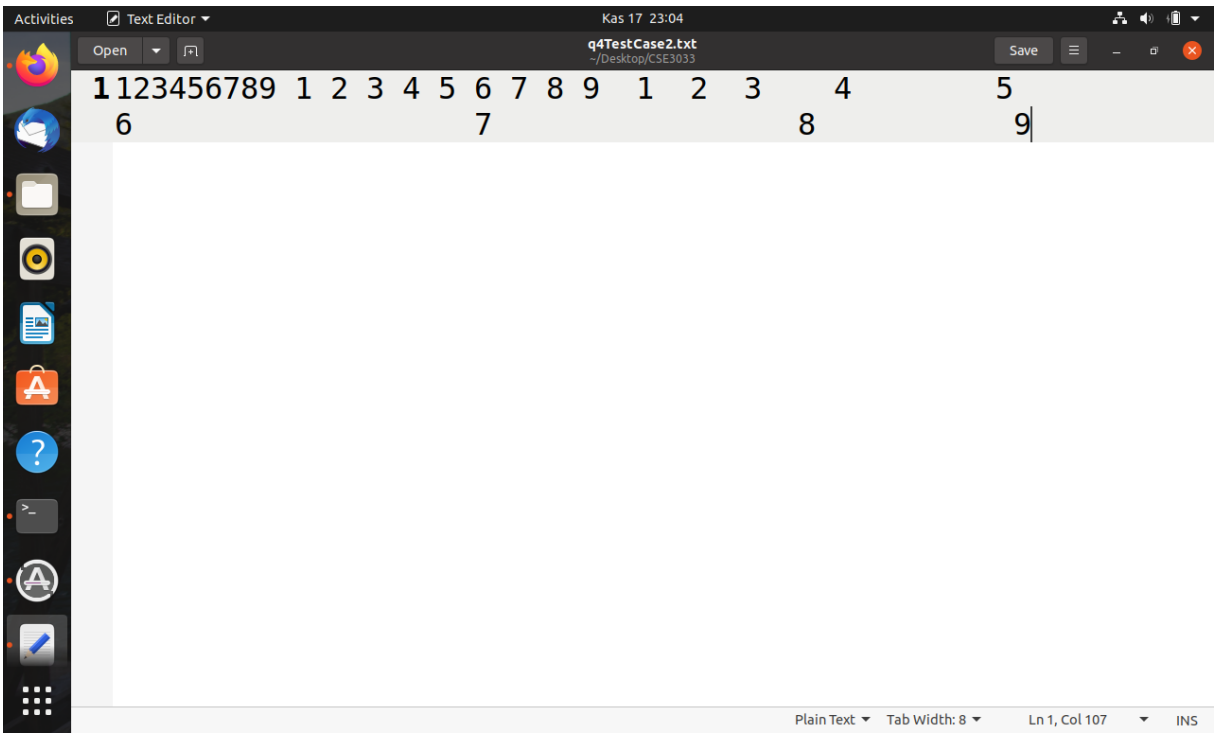
Question4



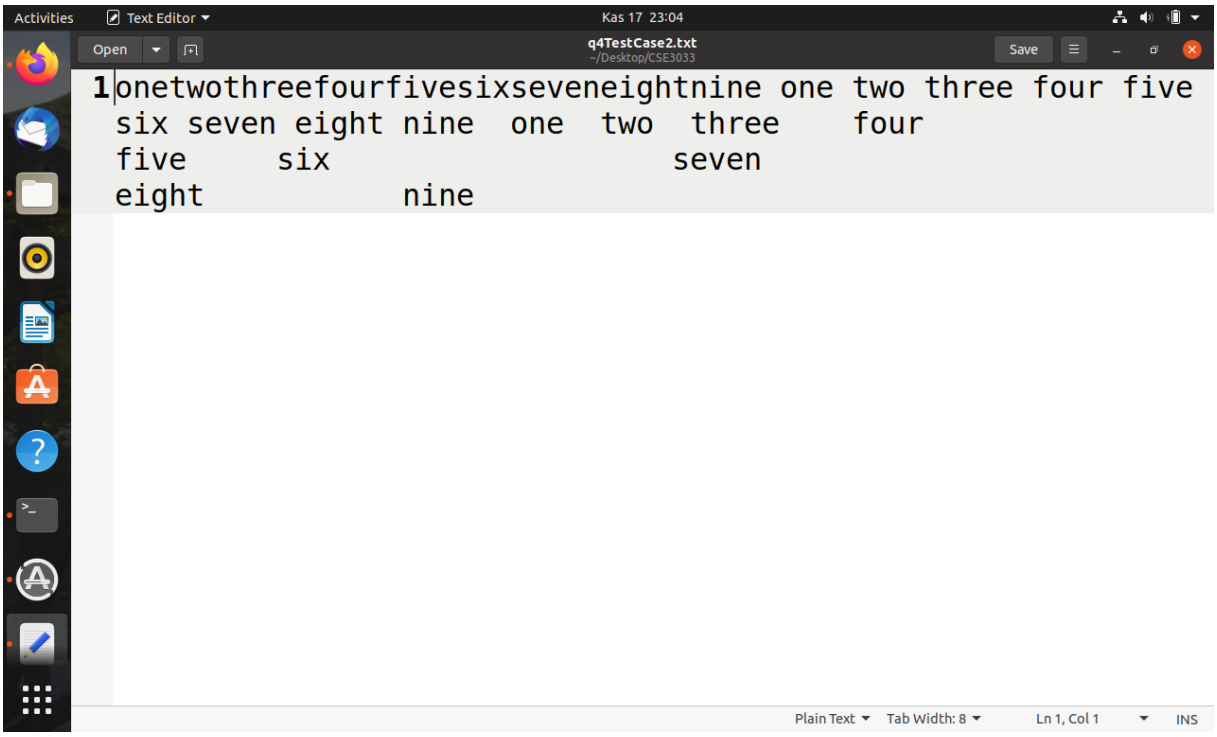
Question4_TestCase1



Question4_TestCase1_Result



Question4_TestCase2



Question4_TestCase2_Result

Question 5 -)

In the fifth question, there are some restrictions about wrong formatting for input arguments. In case if program matches with one of them, user will be informed about it.

We have initially four parameters to use. 'firstArg' and 'secArg' will hold first and second argument entered by the user.'filename' is going to hold wildcard argument as a variable.

Furtherly, 'location' variable will hold the information of in which argument filename is given since it can be in the first or second argument depending on whether current command is recursive or not. If there is no '-R' argument given, it means that filename is given in the first argument and 'location' will be 1. So program understands that the copying operation is not going to be recursive.

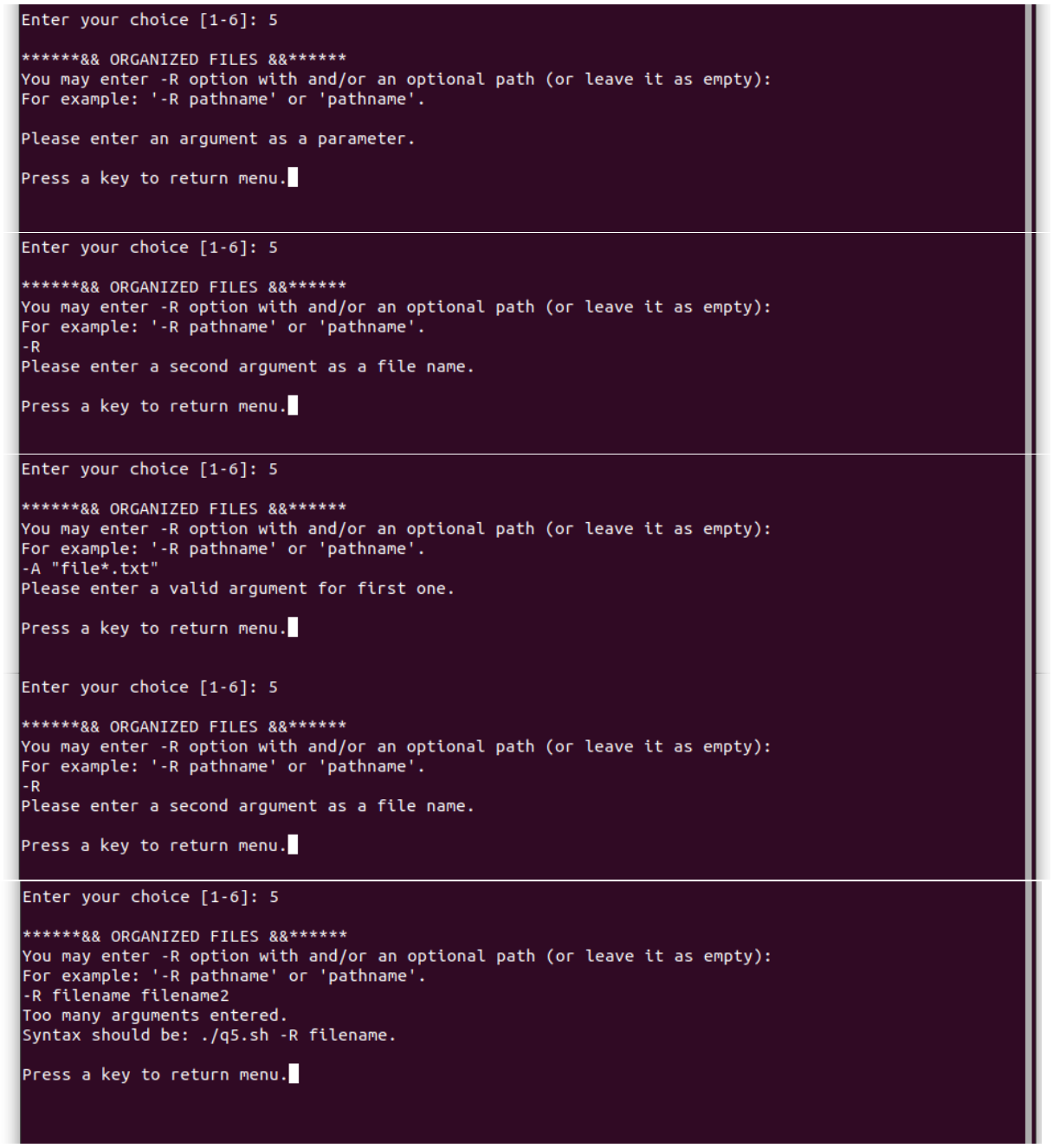
If '-R' is given as first argument, 'filename' will be in the 'secArg' and 'firstArg' will hold 'R' value so that program will update the 'location' variable's value to 2. With these adjustments, program will know that recursive related operations are going to be executed.

In the recursive case, while loop will iterate through all the directories in current working directory and inside of it, for loop will iterate through subfiles of corresponding file. If there is a match with specified wildcard format, 'copied' folder will be created and file that is matched will be copied into 'copied' file. After looping through current directory level, it will change current working directory to subdirectory level and do the same process recursively until there is no subfile to examine.

NOTE :

Fifth question can only be runned through menu itself since we are formatting wildcard argument's quotes because of getting them as string from menu.

It will not work directly by running it with related arguments just like './q5.sh -R "c*.txt" etc..


Enter your choice [1-6]: 5
******&& ORGANIZED FILES &&******
You may enter -R option with and/or an optional path (or leave it as empty):
For example: '-R pathname' or 'pathname'.
Please enter an argument as a parameter.
Press a key to return menu.
Enter your choice [1-6]: 5
******&& ORGANIZED FILES &&******
You may enter -R option with and/or an optional path (or leave it as empty):
For example: '-R pathname' or 'pathname'.
-R
Please enter a second argument as a file name.
Press a key to return menu.
Enter your choice [1-6]: 5
******&& ORGANIZED FILES &&******
You may enter -R option with and/or an optional path (or leave it as empty):
For example: '-R pathname' or 'pathname'.
-A "file*.txt"
Please enter a valid argument for first one.
Press a key to return menu.
Enter your choice [1-6]: 5
******&& ORGANIZED FILES &&******
You may enter -R option with and/or an optional path (or leave it as empty):
For example: '-R pathname' or 'pathname'.
-R
Please enter a second argument as a file name.
Press a key to return menu.
Enter your choice [1-6]: 5
******&& ORGANIZED FILES &&******
You may enter -R option with and/or an optional path (or leave it as empty):
For example: '-R pathname' or 'pathname'.
-R filename filename2
Too many arguments entered.
Syntax should be: ./q5.sh -R filename.
Press a key to return menu.

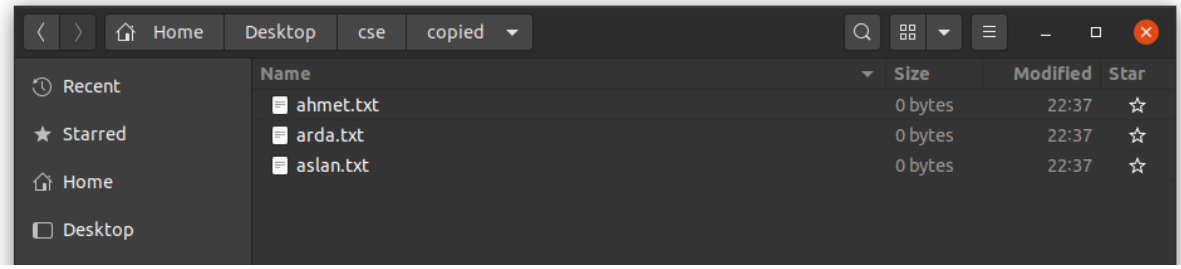
```
Enter your choice [1-6]: 5

******&& ORGANIZED FILES &&******
You may enter -R option with and/or an optional path (or leave it as empty):
For example: '-R pathname' or 'pathname'.
-R "a*.txt"

Press a key to return menu.
```

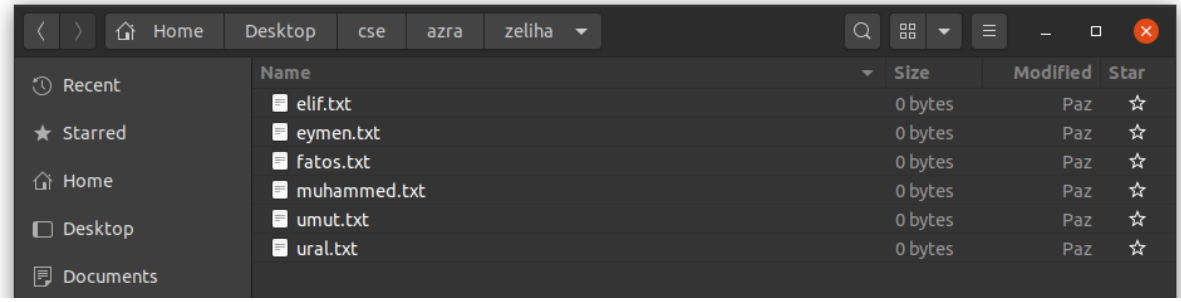
Name	Size	Modified	Star
arel	6 items	Sal	☆
azra	5 items	Sal	☆
betul	7 items	Sal	☆
burak	1 item	Çrş	☆
cem	1 item	Çrş	☆
ahmet.txt	0 bytes	Paz	☆
arda.txt	0 bytes	Paz	☆
aslan.txt	0 bytes	Paz	☆
beril.txt	0 bytes	Paz	☆
bilal.txt	0 bytes	Paz	☆
burak.txt	0 bytes	Paz	☆
can.txt	0 bytes	Paz	☆
cemile.txt	0 bytes	Paz	☆
cemre.txt	0 bytes	Paz	☆
cihangir.txt	0 bytes	Paz	☆
menu.sh	1,6 kB	22:20	☆
q1.sh	540 bytes	Paz	☆
q2.sh	1,0 kB	Paz	☆
q3.sh	688 bytes	Paz	☆
q4.sh	776 bytes	Paz	☆
q5.sh	3,4 kB	22:25	☆

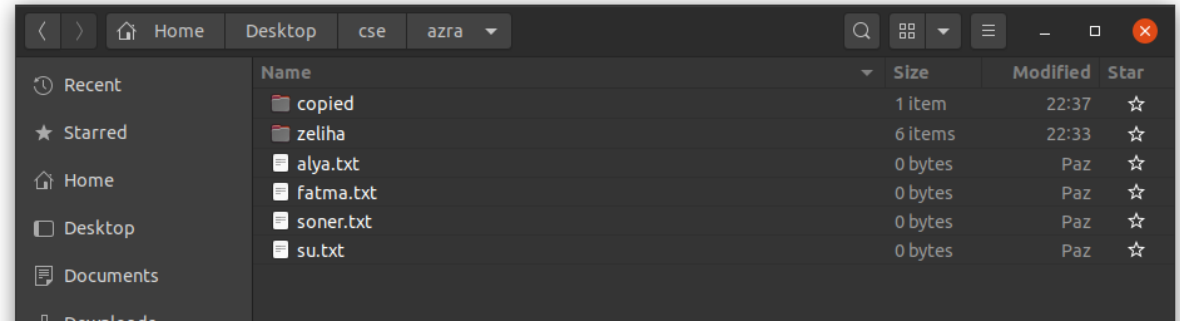
Home Desktop cse

Recent
Starred
Home
Desktop
Documents
Downloads
Music
Pictures
Videos
Trash
Other Locations

Name	Size	Modified	Star
arel	6 items	Sal	☆
azra	5 items	Sal	☆
betul	7 items	Sal	☆
burak	1 item	Çrş	☆
cem	1 item	Çrş	☆
copied	0 items	22:37	☆
ahmet.txt	0 bytes	Paz	☆
arda.txt	0 bytes	Paz	☆
aslan.txt	0 bytes	Paz	☆
beril.txt	0 bytes	Paz	☆
bilal.txt	0 bytes	Paz	☆
burak.txt	0 bytes	Paz	☆
can.txt	0 bytes	Paz	☆
cemile.txt	0 bytes	Paz	☆
cemre.txt	0 bytes	Paz	☆
cihangir.txt	0 bytes	Paz	☆
menu.sh	1,6 kB	22:20	☆
q1.sh	540 bytes	Paz	☆
q2.sh	1,0 kB	Paz	☆
q3.sh	688 bytes	Paz	☆
q4.sh	776 bytes	Paz	☆
q5.sh	3,4 kB	22:25	☆


Home
Desktop
cse
copied
Recent
Starred
Home
Desktop
Name
Size
Modified
Star
ahmet.txt
0 bytes
22:37
arda.txt
0 bytes
22:37
aslan.txt
0 bytes
22:37


Home
Desktop
cse
azra
zeliha
Recent
Starred
Home
Desktop
Documents
Name
Size
Modified
Star
elif.txt
0 bytes
Paz
eymen.txt
0 bytes
Paz
fatos.txt
0 bytes
Paz
muhammed.txt
0 bytes
Paz
umut.txt
0 bytes
Paz
ural.txt
0 bytes
Paz


Home
Desktop
cse
azra
Recent
Starred
Home
Desktop
Documents
Name
Size
Modified
Star
copied
1 item
22:37
zeliha
6 items
22:33
alya.txt
0 bytes
Paz
fatma.txt
0 bytes
Paz
soner.txt
0 bytes
Paz
su.txt
0 bytes
Paz