

CSE3033 - Operating Systems Assignment 1 Report

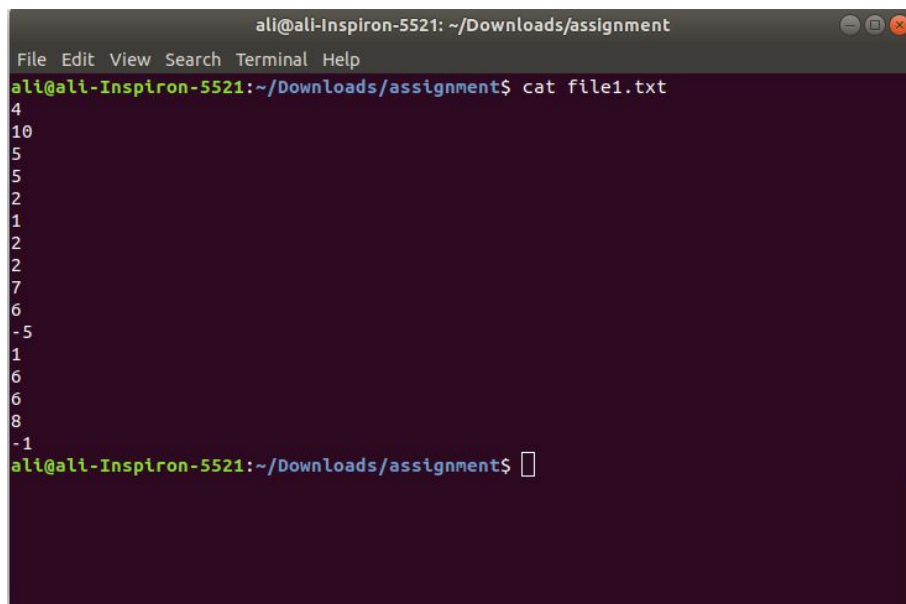
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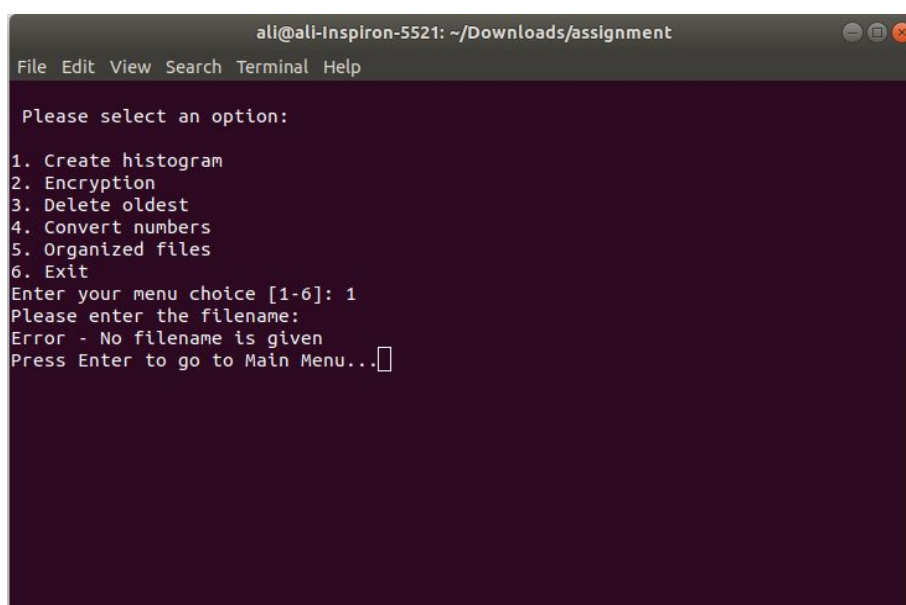
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Q1. Our approach for solving Q1 is to maintain two arrays when running the program. Since there are 10 possible valid numbers available in the given argument, our first array is initialized with ten 0s. The purpose of the second array is to store invalid numbers. Then we read each line and check if the number is valid. If it's not, we append the number to the outOfBounds array. Otherwise, we increment the frequency of that number in the frequency array at index number. After lines are finished, first we show invalid numbers and then print the histogram.



```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help
ali@ali-Inspiron-5521:~/Downloads/assignment$ cat file1.txt
4
10
5
5
2
1
2
2
7
6
-5
1
6
6
8
-1
ali@ali-Inspiron-5521:~/Downloads/assignment$
```

Figure 1: Test file which will be used as argument for Question 1



```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help

Please select an option:
1. Create histogram
2. Encryption
3. Delete oldest
4. Convert numbers
5. Organized files
6. Exit
Enter your menu choice [1-6]: 1
Please enter the filename:
Error - No filename is given
Press Enter to go to Main Menu...
```

Figure 2: Error given by the program when no arguments are given

```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help
Please select an option:
1. Create histogram
2. Encryption
3. Delete oldest
4. Convert numbers
5. Organized files
6. Exit
Enter your menu choice [1-6]: 1
Please enter the filename: file1.txt
Oops!! 10 is out of bounds
Oops!! -5 is out of bounds
Oops!! -1 is out of bounds
0
1 **
2 ***
3
4 *
5 **
6 ***
7 *
8 *
9
Press Enter to go to Main Menu... 
```

Figure 3: A successful run of Q1 using main menu

Q2. Our approach to solving Q2 lies in the array we create for lowercase english alphabet. Each character gets stored in order and we use their indices to create the cipher. In the string and number provided as arguments, we loop over each character, get its index and add the corresponding number to it. Then we use that sum as an index to find the cipher character. In case the sum is bigger than 26, we take a mod so it could start from the beginning. After finding the corresponding cipher character, we append it to a string and echo it at the end.

```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help
Please select an option:
1. Create histogram
2. Encryption
3. Delete oldest
4. Convert numbers
5. Organized files
6. Exit
Enter your menu choice [1-6]: 2
Please enter the string: zoo
Please enter the number: 8
hww
Press Enter to go to Main Menu... 
```

Figure 4: A successful run of Q2 with a single number

```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help

Please select an option:

1. Create histogram
2. Encryption
3. Delete oldest
4. Convert numbers
5. Organized files
6. Exit
Enter your menu choice [1-6]: 2
Please enter the string: istanbul
Please enter the number: 87654321
qzzfrewm
Press Enter to go to Main Menu...[]
```

Figure 5: A successful run of Q2 when lengths of string and number are equal

```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help

Please select an option:

1. Create histogram
2. Encryption
3. Delete oldest
4. Convert numbers
5. Organized files
6. Exit
Enter your menu choice [1-6]: 2
Please enter the string: apple
Please enter the number: 22
These inputs are not valid
Press Enter to go to Main Menu...[]
```

Figure 6: An unsuccessful run of Q2 because of invalid arguments

Q3. In the solution of the third question, first, we check if a path is given, if it is not given then we find the oldest file in the current working directory and ask the user if he/she wants to delete the oldest file. For the answer of the user, because we want the answer not to be case sensitive, we accept either y or Y and n or N as valid answers. But if the user types something other than these, the warning message, "Invalid Input", comes up. In case there is a path given, first, we check if the given path is valid or not. If it is not then we make the necessary warnings, if it is valid, then we find the oldest file in the given path and ask the user if she/he wants to delete the oldest file. And we repeat the operations we did in the first part for the deletion process.

```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls -l
total 128
-rw-rw-r-- 1 ali ali 90806 Nov 12 23:45 CSE3033_Project1.pdf
-rw-r--r-- 1 ali ali 35 Nov 20 17:33 file1.txt
-rw-r--r-- 1 ali ali 403 Nov 21 14:48 file4.txt
-rwxr-xr-x 1 ali ali 1099 Nov 16 18:25 myprog1.sh
-rwxr-xr-x 1 ali ali 1716 Nov 20 23:38 myprog2.sh
-rwxr-xr-x 1 ali ali 2375 Nov 20 17:14 myprog3.sh
-rwxr-xr-x 1 ali ali 860 Nov 16 18:37 myprog4.sh
-rwxr-xr-x 1 ali ali 1628 Nov 19 19:07 myprog5.sh
-rwxr-xr-x 1 ali ali 2394 Nov 20 17:27 myprog.sh
drwxr-xr-x 3 ali ali 4096 Nov 21 14:54 recurse1
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls -l recurse1/
total 12
-rw-r--r-- 1 ali ali 35 Nov 20 17:33 file1.txt
-rw-r--r-- 1 ali ali 390 Nov 16 18:40 names.txt
drwxr-xr-x 2 ali ali 4096 Nov 21 14:29 recurse2
ali@ali-Inspiron-5521:~/Downloads/assignment$
```

Figure 7: Directory structure before running Q3

```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help

Please select an option:

1. Create histogram
2. Encryption
3. Delete oldest
4. Convert numbers
5. Organized files
6. Exit
Enter your menu choice [1-6]: 3
Please enter a path name: recurse1
Do you want to delete names.txt ? (y/n): y
1 file deleted.
Press Enter to go to Main Menu...^C
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls -l recurse1/
total 8
-rw-r--r-- 1 ali ali 35 Nov 20 17:33 file1.txt
drwxr-xr-x 2 ali ali 4096 Nov 21 14:29 recurse2
ali@ali-Inspiron-5521:~/Downloads/assignment$
```

Figure 8: Successful deletion of the oldest file when a path is given

```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help
1. Create histogram
2. Encryption
3. Delete oldest
4. Convert numbers
5. Organized files
6. Exit
Enter your menu choice [1-6]: 3
Please enter a path name:
Do you want to delete CSE3033_Project1.pdf ? (y/n): n
You did not delete the file.
Press Enter to go to Main Menu...^C
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls -l
total 128
-rw-rw-r-- 1 ali ali 90806 Nov 12 23:45 CSE3033_Project1.pdf
-rw-r--r-- 1 ali ali 35 Nov 20 17:33 file1.txt
-rw-r--r-- 1 ali ali 403 Nov 21 14:48 file4.txt
-rwxr-xr-x 1 ali ali 1099 Nov 16 18:25 myprog1.sh
-rwxr-xr-x 1 ali ali 1716 Nov 20 23:38 myprog2.sh
-rwxr-xr-x 1 ali ali 2402 Nov 21 14:56 myprog3.sh
-rwxr-xr-x 1 ali ali 860 Nov 16 18:37 myprog4.sh
-rwxr-xr-x 1 ali ali 1628 Nov 19 19:07 myprog5.sh
-rwxr-xr-x 1 ali ali 2394 Nov 20 17:27 myprog.sh
drwxr-xr-x 3 ali ali 4096 Nov 21 14:58 recurse1
ali@ali-Inspiron-5521:~/Downloads/assignment$
```

Figure 9: User can choose to not delete a file

Q4. For the solution of this question, we have started with argument checking in order to replace numbers with corresponding string representations in files, properly. Then, we have created an array of strings of digits. To achieve each digit in the array, we placed them properly in their indices. For example, zero is placed in the 0th index while nine is placed in the 9th index. This approach helps us to achieve each string representation of digits easily. We are keeping the new text in a variable and we have used regular-expression while tracing the old text in order to check whether there is a number in words or not. While looping on the text we have added the words directly to the new string variable if it does not contain a number. Otherwise, the program will give the digit as an index to array and fetch corresponding string format in order to append it to the new text variable. At the end, "Task completed!!" message will be printed to console and new text will be overwritten on the existing file. Please see Fig.10 and Fig.11 to get better intuition about the input and output.


```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help
ali@ali-Inspiron-5521:~/Downloads/assignment$ cat file4.txt
Lorem ipsum dolor sit amet, consectetur adipiscing elit. 7 Suspendisse vitae odi
o blandit, commodo nisl dignissim, 9 commodo est. Quisque blandit laoreet ante i
d tincidunt. Vivamus in vestibulum sem. Duis ac faucibus quam. Mauris posuere, s
apient quis elementum porttitor, leo turpis finibus erat, vel dapibus 00 lorem ma
uris in elit. Curabitur quis massa sit amet ligula suscipit pulvinar.
ali@ali-Inspiron-5521:~/Downloads/assignment$
```

Figure 10: A sample .txt file to be given as argument for part 4

```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help

Please select an option:
1. Create histogram
2. Encryption
3. Delete oldest
4. Convert numbers
5. Organized files
6. Exit
Enter your menu choice [1-6]: 4
Please enter the filename: file4.txt
Task Completed!!
Press Enter to go to Main Menu...^C
ali@ali-Inspiron-5521:~/Downloads/assignment$ cat file4.txt
Lorem ipsum dolor sit amet, consectetur adipiscing elit. seven Suspendisse vitae
odio blandit, commodo nisl dignissim, nine commodo est. Quisque blandit laoreet
ante id tincidunt. Vivamus in vestibulum sem. Duis ac faucibus quam. Mauris pos
uere, sapien quis elementum porttitor, leo turpis finibus erat, vel dapibus zero
zero lorem mauris in elit. Curabitur quis massa sit amet ligula suscipit pulvina
r.
ali@ali-Inspiron-5521:~/Downloads/assignment$
```

Figure 11: Successful run of part 4

Q5. When solving Q5, we first start by checking if the `-R` (case sensitive) option is given or not. If there is no `-R` option, we check for possible errors in wildcard. Then, we check if the wildcard matches any file in the current working directory. If so, we create the “copied” dir and copy the eligible files. In cases where `-R` and wildcard are given by the user, we first check if `-R` is entered properly. If it is correct, for all possible directories under the present working directory, first we change directory and then check for possible matching files. If there are any, we create a “copied” dir and copy the matching files. If there are no matching files, we let the user know and pass on.

```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls
CSE3033_Project1.pdf  file4.txt  myprog2.sh  myprog4.sh  myprog.sh
file1.txt             myprog1.sh myprog3.sh  myprog5.sh  recurse1
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls recurse1/
file1.txt  recurse2
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls recurse1/recurse2/
file4.txt  names.txt
ali@ali-Inspiron-5521:~/Downloads/assignment$
```

Figure 12: Directory structure before running the program

```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help

Please select an option:
1. Create histogram
2. Encryption
3. Delete oldest
4. Convert numbers
5. Organized files
6. Exit
Enter your menu choice [1-6]: 5
Please enter -R option, if any:
Please enter a wildcard: *.txt
Press Enter to go to Main Menu...^C
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls
copied          file1.txt  myprog1.sh  myprog3.sh  myprog5.sh  recurse1
CSE3033_Project1.pdf  file4.txt  myprog2.sh  myprog4.sh  myprog.sh
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls copied/
file1.txt  file4.txt
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls recurse1/
file1.txt  recurse2
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls recurse1/recurse2/
file4.txt  names.txt
ali@ali-Inspiron-5521:~/Downloads/assignment$
```

Figure 13: Directory structure after running the program without -R option

```
ali@ali-Inspiron-5521: ~/Downloads/assignment
File Edit View Search Terminal Help
Please select an option:
1. Create histogram
2. Encryption
3. Delete oldest
4. Convert numbers
5. Organized files
6. Exit
Enter your menu choice [1-6]: 5
Please enter -R option, if any: -R
Please enter a wildcard: n*
Sorry, no files could match with your wildcard
Sorry, no files could match with your wildcard
Press Enter to go to Main Menu...^C
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls
CSE3033_Project1.pdf  file4.txt  myprog2.sh  myprog4.sh  myprog.sh
file1.txt             myprog1.sh myprog3.sh  myprog5.sh  recurse1
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls recurse1/
file1.txt  recurse2
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls recurse1/recurse2/
copied  file4.txt  names.txt
ali@ali-Inspiron-5521:~/Downloads/assignment$ ls recurse1/recurse2/copied/
names.txt
ali@ali-Inspiron-5521:~/Downloads/assignment$
```

Figure 14: Directory structure after running the program with -R option