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| Subject: Operating System | Subject Code:22516 |
| Semester:5 th Semester | Course: Computer Engineering |
| Laboratory No: V118 | Name of Subject Teacher: Prof. Natasha Bhrahme |
| Name of Student: Siddharth Shah | Roll Id: 22203A0041 |

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| Experiment No: | 8 |
| Title of Experiment | Execute text processing commands. |

Set Question:

1. Execute text processing commands: tr, wc, Explain tr command with examples

Ans: -

- tr command

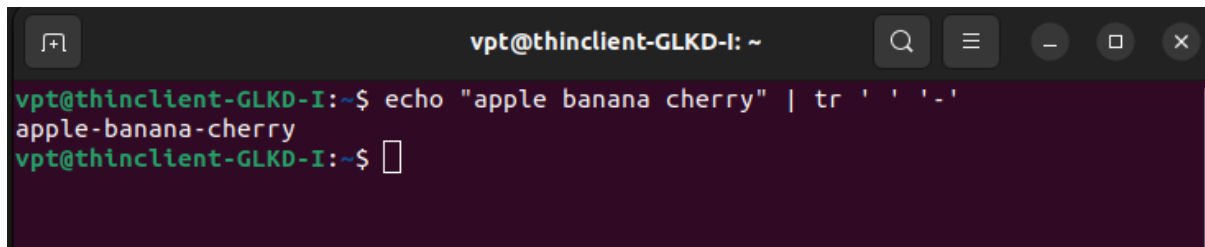
```
vpt@thinclient-GLKD-I: ~  
vpt@thinclient-GLKD-I:~$ echo "hello world"| tr 'a-z' 'A-Z'  
HELLO WORLD  
vpt@thinclient-GLKD-I:~$ echo "hello 123"| tr -d '0-9'  
hello  
vpt@thinclient-GLKD-I:~$
```

- wc command

```
vpt@thinclient-GLKD-I: ~  
vpt@thinclient-GLKD-I:~$ echo -e "Yash\nsarthak\nRamu\ndiksha" | wc -l  
4  
vpt@thinclient-GLKD-I:~$
```

The `tr` (translate) command in Unix/Linux is a utility for translating or deleting characters from standard input and output. It's useful for text processing tasks such as converting characters, deleting specific characters, or squeezing repeated characters.

Eg:

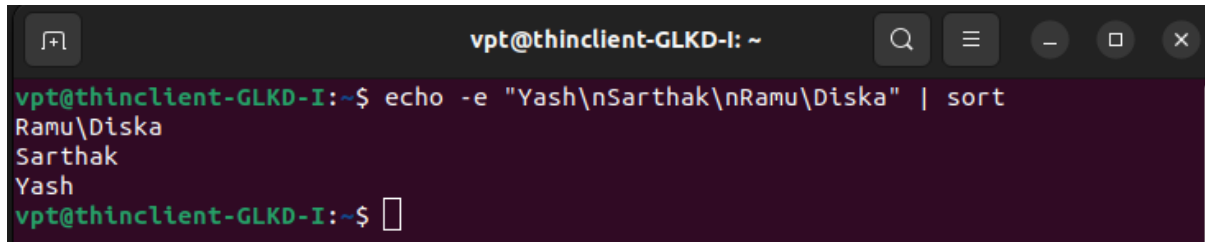


```
vpt@thinclient-GLKD-I: ~  
vpt@thinclient-GLKD-I:~$ echo "apple banana cherry" | tr ' ' '-'  
apple-banana-cherry  
vpt@thinclient-GLKD-I:~$
```

2. Explain sort command with different options and output.

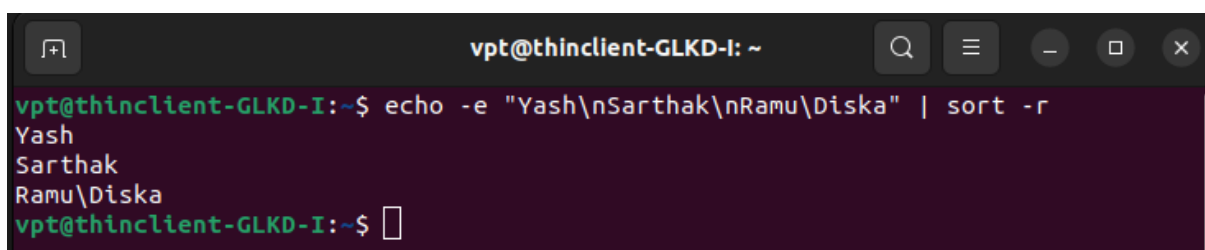
Ans: -The `sort` command in Unix/Linux is used to sort lines of text files or standard input. It offers a variety of options to customize the sorting behavior, including sorting by numeric values, reversing the order, and sorting based on specific columns.

i. ascending order



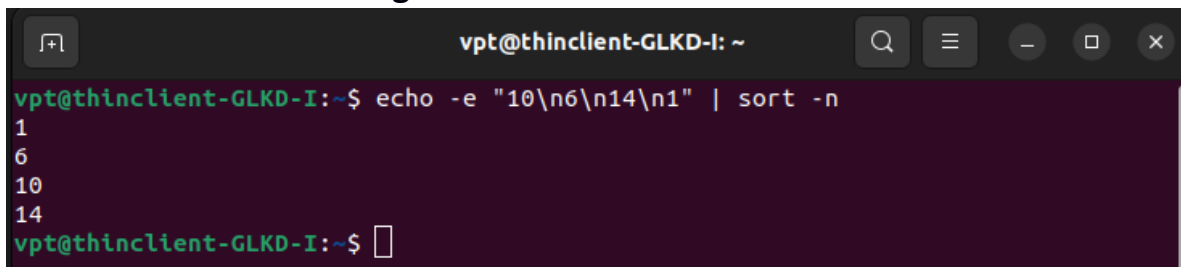
```
vpt@thinclient-GLKD-I: ~  
vpt@thinclient-GLKD-I:~$ echo -e "Yash\nSarathak\nRamu\Diska" | sort  
Ramu\Diska  
Sarathak  
Yash  
vpt@thinclient-GLKD-I:~$
```

ii. reverse sorting



```
vpt@thinclient-GLKD-I: ~  
vpt@thinclient-GLKD-I:~$ echo -e "Yash\nSarathak\nRamu\Diska" | sort -r  
Yash  
Sarathak  
Ramu\Diska  
vpt@thinclient-GLKD-I:~$
```

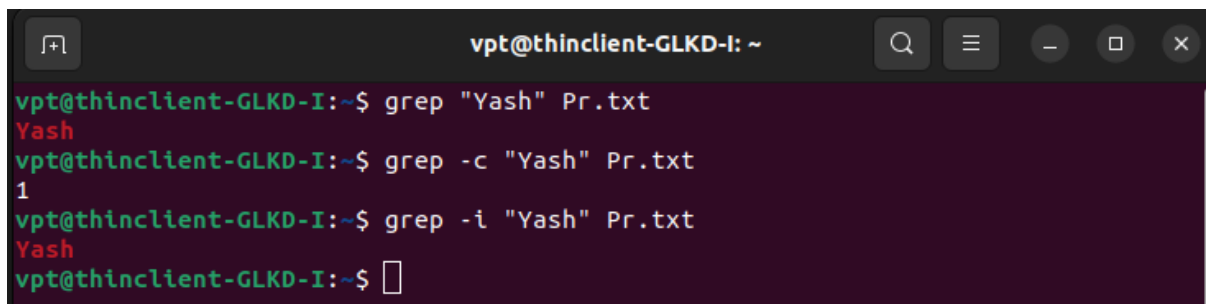
iii. numeric sorting

A terminal window titled 'vpt@thinclient-GLKD-I: ~' showing a command to sort numbers. The command is 'echo -e "10\n6\n14\n1" | sort -n'. The output is '1', '6', '10', '14'.

```
vpt@thinclient-GLKD-I:~$ echo -e "10\n6\n14\n1" | sort -n
1
6
10
14
vpt@thinclient-GLKD-I:~$
```

3. Explain grep command with options

Ans: - The `grep` command is a powerful tool used in Unix/Linux systems for searching text using patterns. It prints lines from the input that match a specified pattern, making it invaluable for text processing and data extraction tasks. The `grep` command supports various options to refine and customize the search.

A terminal window titled 'vpt@thinclient-GLKD-I: ~' showing three different uses of the grep command. The first command is 'grep "Yash" Pr.txt' with output 'Yash'. The second is 'grep -c "Yash" Pr.txt' with output '1'. The third is 'grep -i "Yash" Pr.txt' with output 'Yash'.

```
vpt@thinclient-GLKD-I:~$ grep "Yash" Pr.txt
Yash
vpt@thinclient-GLKD-I:~$ grep -c "Yash" Pr.txt
1
vpt@thinclient-GLKD-I:~$ grep -i "Yash" Pr.txt
Yash
vpt@thinclient-GLKD-I:~$
```

4. Explain cut command with options.

Ans: - The `cut` command in Unix/Linux is used to extract specific sections from lines of a file or standard input. It is particularly useful for processing structured text data, such as columns in a CSV file or fields in a log file. The `cut` command allows you to specify delimiters and fields to extract.

XII. Practical Related Questions

1) Give the applications of paste commands

Ans: - Paste command is one of the useful commands in Unix or Linux operating system. It is used to join files horizontally (parallel merging) by outputting lines consisting of lines from each file specified, separated by tab as delimiter, to the standard output.

2) How to move cursor at the end of line.

Ans: - Ctrl+E or End command can be used moves the cursor to the end of the line.

3) What are options of wc commands.

Ans: -

i) -l: This option prints the number of lines present in a file. With this option wc command displays two-columnar output, 1st column shows number of lines present in a file and 2nd itself represent the file name.

ii) -w: This option prints the number of words present in a file. With this option wc command displays two-columnar output, 1st column shows number of words present in a file and 2nd is the file name.

iii) -c: This option displays count of bytes present in a file. With this option it display two-columnar output, 1st column shows number of bytes present in a file and 2nd is the file name.

iv) -m: Using -m option 7wc8 command displays count of characters from a file

v) -L: The 7wc8 command allow an argument -L, it can be used to print out the length of longest (number of characters) line in a file. So, we have the longest character line Arunachal Pradesh in a file state.txt and Hyderabad in the file capital.txt. But with this option if more than one file name is specified then the last row i.e. the extra row, doesn't display total but it display the maximum of all values displaying in the first column of individual files

vi) --version: This option is used to display the version of wc which is currently running on your system.

4) What are different types of filters used in Linux

Ans.

- cat : Displays the text of the file line by line.
- head : Displays the first n lines of the specified text files. If the number of lines is not specified then by default prints first 10 lines
- tail : It works the same way as head, just in reverse order. The only difference in tail is, it returns the lines from bottom to up.
- sort : Sorts the lines alphabetically by default but there are many options available to modify the sorting mechanism. Be sure to check out the man page to see everything it can do
- uniq : Removes duplicate lines. uniq has a limitation that it can only remove continuous duplicate lines(although this can be fixed by the use of piping). Assuming we have the following data.
- wc: wc command gives the number of lines, words and characters in the data

5) What is difference between `$cat abc` and `$cat abc more`.

Ans: - Cat displays file contents. If the file is large the contents scroll off the screen before we view it. So, command 'more' is like a pager which displays the contents page by page.

Program Code:

1. Write the commands for:

Counting number of words in the 'data.txt'

Counting number of line in the 'data.txt'

Counting all characters in the 'data.txt'

Ans: -

```
hawaiza@ubuntu-hawaiza:~$ cat a3
CSS
AJP
OSY
hawaiza@ubuntu-hawaiza:~$ wc -w a3
3 a3
hawaiza@ubuntu-hawaiza:~$ wc -l a3
3 a3
hawaiza@ubuntu-hawaiza:~$ wc -c a3
12 a3
```

Exercise:

1. Write the significance of the following.

i. Only one character is specified

```
hawaiza@ubuntu-hawaiza:~$ paste -d "|" number state capital
1|Maharashtra|Mumbai
2|Andhra Pradesh|Hyderabad
3|Assam|Dispur
```

ii. More than one character is specified

Ans: -

```
hawaiza@ubuntu-hawaiza:~$ paste -d "|," number state capital
1|Maharashtra,Mumbai
2|Andhra Pradesh,Hyderabad
3|Assam,Dispur
```

iii. -s (serial), combination of -d and -s, --version (write its syntax and example)

Ans: -

```
hawaiza@ubuntu-hawaiza:~$ paste -s number state capital
1      2      3
Maharashtra  Andhra Pradesh  Assam
Mumbai  Hyderabad      Dispur
```

```
hawaiza@ubuntu-hawaiza:~$ paste -s -d ", " number state capital
1,2 3
Maharashtra,Andhra Pradesh Assam
Mumbai,Hyderabad Dispur
```

```
hawaiza@ubuntu-hawaiza:~$ paste --version
paste (GNU coreutils) 8.30
Copyright (C) 2018 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

Written by David M. Ihnat and David MacKenzie.
```

2. Try the commands and write the output with its meaning

i. `$tr "[a-f]" "[0-5]" < employee`

ii. `$tr -s " " < employee`

iii. `$tr -d "f" < employee`

Ans: -

```
hawaiza@ubuntu-hawaiza:~$ cat employee
Hawaiza
Shazmeen
Habban
Hatim
hawaiza@ubuntu-hawaiza:~$ tr "[a-f]" "[0-5]" < employee
H0w0iz0
Sh0zm44n
H0110n
H0tim
hawaiza@ubuntu-hawaiza:~$ tr -s " " < employee
Hawaiza
Shazmeen
Habban
Hatim
hawaiza@ubuntu-hawaiza:~$ tr -d "a" < employee
Hwiz
Shzmeen
Hbbn
Htim
hawaiza@ubuntu-hawaiza:~$
```