# ***Practice Topics: (Mandatory)***

1. **Vi /Vim editor.**
2. **General commands like cat / cd / mkdir / rm / cp / mv /w /last /whom /which /man e and file permission (chmod commands)**
3. **Regular Expressions / Text processing tools**.

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**1. vi editor.**

*vi or vim is a text editor to create edit manipulate text / scripts and other files.*

Practice:

#vi filename --> it will open a file (new/existing)

press 'i' 'a' or 'insert key' to write something in it. (it means you are in insert mode)

after writing/editing the file save and exit.

To save and exit -->: wq

Command mode of vi:

yy --> in 'esc' mode it will copy line

yw --> in 'esc' mode it will copy a words

p --> in 'esc' mode it will paste the line or words

dd --> in 'esc' mode it will delete the line

dw --> in 'esc' mode it will delete the word

u ---> undo

x ---> delete character under cursor

r ---> used to replace character

***\*\*copy/delete of lines/words depends on the positon of the cursor. example: yy --> it will copy the line after the cursor.***

Other vi commands:

- search a word. --> /wordtosearch . example: I want to search the word cat . /cat

- to take the cursor at the begining of the line: gg

- to take the cursor at the end of the line: G

:q! --> quit forcefully

:w! --> save forcefully

:wq! --> save and exit forcefully

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**2. General commands like cat / cd / mkdir / rm / cp / mv /w /last /whoami /which /man**

* **cp**: to copy a file. cp -r to copy directory (with its' content) example: #cp -r mydirectory /tmp/
* **mv**: to move or rename a file/dir. example: #mv oldfilename newfilename #mv sourcefilelocation destinationfilelocation

***\*\*practice lab1 and lab2 again.***

* **w**: to check who are logged in.
* **last**: to check who logged in in current and past sessions.
* **whoami**: shows the currently logged in users name.
* **free -h**: to check free ram/memory
* **df -h** : to check mounted filesystems.
* **man**: this is manual command. one can know about a command using man. example.

#man mkdir

* **cat** : to read a file content: #cat filename
* **echo** : to echo a word: #echo 'hello'

[***Try your hand from the slides as well . (top 50 commands and try to understand the output***]

**\*\*\*Few questions from Linux:**

1. how to check your OS version?
2. how to check your shell?
3. how to check uid and gid of root?
4. how to check your present working directory?
5. what would be the home directory of user abdul?
6. how to see content of /tmp directory?
7. how to check the permission and attributes of /etc directory?
8. how to check running processes?
9. how to install mlocate package in linux?
10. how to find a file that is having permission of 777?
11. how to check status of a service?
12. how to check if a rpm package is installed or not?
13. how to reboot a linux system?
14. how to check previous commands ran on the shell?
15. write few commands in a file like data cal ls pwd whoami and save the file.

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**3. Regular Expressions / Text processing tools:**

**Basic Regular expressions:**

**.** replaces any character

**^** matches start of string

**$** matches end of string

**\*** matches up zero or more times the preceding character

**\** Represent special characters

**()** Groups regular expressions

**?** Matches up exactly one character

**{n}** Matches the preceding character appearing 'n' times exactly

**{n,m**} Matches the preceding character appearing 'n' times but not more than m

**{n, }** Matches the preceding character only when it appears 'n' times or more.

**\+** Matches one or more occurrence of the previous character

**\?** Matches zero or one occurrence of the previous character

**Text processing commands/tools:**

1. wc
2. sort
3. uniq
4. grep
5. tr
6. sed
7. awk
8. diff

***\*\*To practice and run the above commands create few files with duplicate entries/ words with different cases.***

example:

**#vi file1.txt**

black

white

red

green

yellow

blue

orange

black

black

Orange

WHite

**#vi file2.txt**

bikram trainer account 45000

memnon manager account 25000

debashish manager sales 50000

amit manager account 47000

Ron peon sales 15000

Mark clerk sales 23000

sunny peon sales 13000

david director purchase 80000

**#vi file3.txt**

cat

Cat

caT

CAT

Dog

dog

Lion

liOn

tiger

tiger

elephant

deer

dear

Rabbit

rabbit

turtle

**a. wc: (word count).**

example: #wc -l file3.txt

wc -l : Prints the number of lines in a file.

wc -w : prints the number of words in a file.

wc -c : Displays the count of bytes in a file.

wc -m : prints the count of characters from a file.

wc -L : prints only the length of the longest line in a file.

**b. sort: (this command is used to sort files)**

example: #sort file1.txt

**c. uniq: (this command is more specific to recognizing duplicates)**

example: #uniq file3.txt

**d. grep: (The grep command is used to search text. It searches the given file for lines containing a match to the given strings or words)**

examples:

#cat file1.txt

#cat file1.txt | grep b

#cat file1.txt | grep ^b

#cat file1.txt | grep t

#cat file1.txt grep t$

**e. tr: (translate or delete characters)**

example: #tr a-z A-Z < file3.txt (output will be in uppercase)

**f. sed : (stream editor and it can perform lot’s of function on file like, searching, find and replace, insertion or deletion)**

example: #sed 's/turtle/tortoise/g' file3.txt (it will replace turtle with tortoise)

**g. awk : (awk is a scripting language used for manipulating data and generating reports)**

examples:

#awk '/manager/ {print}' file2.txt

#awk '{print $1,$4}' file2.txt

**h. diff : (compare files line by line)**

examples:

#diff file4.txt file5.txt

#dif -s file4.txt file5.txt

***\*\*create two files file4.txt and file5.txt with almost similar contents (words).***

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**Definition.**

***What is a Variable?***

A variable is a way of referring to a storage area in a computer program. This memory location holds values—numbers, text or more complicated types of data

***What are Environment variables?***

Environment variables contain information about your login session, stored for the system shell to use when executing commands. They exist whether you’re using Linux, Mac, or Windows. Many of these variables are set by default during installation or user creation.

**Bonus Lab:**

***- create a file basic.sh and keep some commands there then save and exit.***

#vi basic.sh

date

pwd

uname-n

whoami

free -h

ls /etc

cal 11 2020

***- after saving the above give execute permission to others/world.***

***- now run the file***

#sh basic.sh