**WEEK : 1**

**Aim: Practice basic commands of Linux**

**Linux Directory Commands**

**1. pwd Command**

The [pwd](https://www.javatpoint.com/linux-pwd) command is used to display the location of the current working directory.

**Syntax:** pwd

**2. mkdir Command**

The [mkdir](https://www.javatpoint.com/linux-mkdir) command is used to create a new directory under any directory.

**Syntax:** mkdir **<directory** name**>**

**3. rmdir Command**

The [rmdir](https://www.javatpoint.com/linux-rmdir) command is used to delete a directory.

**Syntax:** rmdir **<directory** name**>**

**4. ls Command**

The [ls](https://www.javatpoint.com/linux-ls) command is used to display a list of content of a directory.

**Syntax:** ls

**5. cd Command**

The [cd](https://www.javatpoint.com/linux-cd) command is used to change the current directory.

**Syntax:** cd **<directory** name**>**

### **Linux File commands**

**6. touch Command**

The [touch](https://www.javatpoint.com/linux-touch) command is used to create empty files. We can create multiple empty files by executing it once.

**Syntax:** touch **<file** name**>**

touch **<file1>**  **<file2>** ....

**7. cat Command**

The [cat](https://www.javatpoint.com/linux-cat) command is a multi-purpose utility in the Linux system. It can be used to create a file, display content of the file, copy the content of one file to another file, and more.

**Syntax:** To create a file, execute it as follows:

cat **>** **<file** name**>**

// Enter file content

Press "**CTRL+ D**" keys to save the file. To display the content of the file, execute it as follows:

cat **<file** name**>**

**8. rm Command**

The [rm](https://www.javatpoint.com/linux-rm) command is used to remove a file.

**Syntax:**

rm <file name>

**9. cp Command**

The [cp](https://www.javatpoint.com/linux-cp) command is used to copy a file or directory.

**Syntax:** To copy in the same directory:

cp **<existing** file name**>** **<new** file name**>**

**10. mv Command**

The [mv](https://www.javatpoint.com/linux-mv) command is used to move a file or a directory form one location to another location.

**Syntax:** mv **<file** name**>** **<directory** path**>**

**11. rename Command**

The [rename](https://www.javatpoint.com/linux-rename) command is used to rename files. It is useful for renaming a large group of files.

**Syntax:** rename 's/old-name/new-name/' files

For example, to convert all the text files into pdf files, execute the below command:

rename 's/\.txt$/\.pdf/' \*.txt

### **Linux File Content Commands**

**12. head Command**

The [head](https://www.javatpoint.com/linux-head) command is used to display the content of a file. It displays the first 10 lines of a file.

**Syntax:**

head **<file** name**>**

**13. tail Command**

The [tail](https://www.javatpoint.com/linux-tail) command is similar to the head command. The difference between both commands is that it displays the last ten lines of the file content. It is useful for reading the error message.

**Syntax:** tail **<file** name**>**

**14. tac Command**

The [tac](https://www.javatpoint.com/linux-tac) command is the reverse of cat command, as its name specified. It displays the file content in reverse order (from the last line).

**Syntax:** tac **<file** name**>**

**15. more command**

The [more](https://www.javatpoint.com/linux-more) command is quite similar to the cat command, as it is used to display the file content in the same way that the cat command does. The only difference between both commands is that, in case of larger files, the more command displays screenful output at a time.

In more command, the following keys are used to scroll the page:

**ENTER key:** To scroll down page by line.

**Space bar:** To move to the next page.

**b key:** To move to the previous page.

**/ key:** To search the string.

**Syntax:** more **<file** name**>**

**16. less Command**

The [less](https://www.javatpoint.com/linux-less) command is similar to the more command. It also includes some extra features such as 'adjustment in width and height of the terminal.' Comparatively, the more command cuts the output in the width of the terminal.

**Syntax:** less **<file** name**>**

### **Linux User Commands**

**17. su Command**

The [su](https://www.javatpoint.com/linux-su-commands) command provides administrative access to another user. In other words, it allows access of the Linux shell to another user.

**Syntax:** su **<user** name**>**

**18. id Command**

The [id](https://www.javatpoint.com/linux-id-command) command is used to display the user ID (UID) and group ID (GID).

**Syntax:** id

**19. useradd Command**

The [useradd](https://www.javatpoint.com/linux-create-user) command is used to add or remove a user on a Linux server.

**Syntax:** useradd  username

**20. passwd Command**

The [passwd](https://www.javatpoint.com/linux-user-password) command is used to create and change the password for a user.

**Syntax:** passwd **<username>**

**21. groupadd Command**

The [groupadd](https://www.javatpoint.com/linux-add-user-to-group) command is used to create a user group.

**Syntax:** groupadd **<group** name**>**

### **Linux Filter Commands**

**22. cat Command**

The [cat](https://www.javatpoint.com/linux-cat-filters) command is also used as a filter. To filter a file, it is used inside pipes.

**Syntax:** cat **<fileName>** | cat or tac | cat or tac |. . .

**23. cut Command**

The [cut](https://www.javatpoint.com/linux-cut) command is used to select a specific column of a file. The '-d' option is used as a delimiter, and it can be a space (' '), a slash (/), a hyphen (-), or anything else. And, the '-f' option is used to specify a column number.

**Syntax:** cut -d(delimiter) -f(columnNumber) **<fileName>**

**24. grep Command**

The [grep](https://www.javatpoint.com/linux-grep) is the most powerful and used filter in a Linux system. The 'grep' stands for "**global regular expression print**." It is useful for searching the content from a file. Generally, it is used with the pipe.

**Syntax:** command | grep **<searchWord>**

**25. comm Command**

The ['comm'](https://www.javatpoint.com/linux-comm) command is used to compare two files or streams. By default, it displays three columns, first displays non-matching items of the first file, second indicates the non-matching item of the second file, and the third column displays the matching items of both files.

**Syntax:** comm **<file1>** **<file2>**

**26. sed command**

The [sed](https://www.javatpoint.com/linux-sed) command is also known as **stream editor**. It is used to edit files using a regular expression. It does not permanently edit files; instead, the edited content remains only on display. It does not affect the actual file.

**Syntax:** command | sed 's/**<oldWord>**/**<newWord>**/'

**27. tee command**

The [tee](https://www.javatpoint.com/linux-tee) command is quite similar to the cat command. The only difference between both filters is that it puts standard input on standard output and also write them into a file.

**Syntax:** cat **<fileName>** | tee **<newFile>** |  cat or tac |.....

**28. tr Command**

The [tr](https://www.javatpoint.com/linux-tr) command is used to translate the file content like from lower case to upper case.

**Syntax:** command | tr **<**'old'**>** **<**'new'**>**

**29. uniq Command**

The [uniq](https://www.javatpoint.com/linux-uniq) command is used to form a sorted list in which every word will occur only once.

**Syntax:** command **<fileName>** | uniq

**30. wc Command**

The [wc](https://www.javatpoint.com/linux-wc) command is used to count the lines, words, and characters in a file.

**Syntax:** wc **<file** name**>**

**31. od Command**

The [od](https://www.javatpoint.com/linux-od) command is used to display the content of a file in different s, such as hexadecimal, octal, and ASCII characters.

**Syntax:**

od -b **<fileName>**      // Octal format

od -t x1 **<fileName>**   // Hexa decimal format

od -c **<fileName>**     // ASCII character format

**32. sort Command**

The [sort](https://www.javatpoint.com/linux-sort) command is used to sort files in alphabetical order.

**Syntax:** sort **<file** name**>**

**33. gzip Command**

The [gzip](https://www.javatpoint.com/linux-gzip) command is used to truncate the file size. It is a compressing tool. It replaces the original file by the compressed file having '.gz' extension.

**Syntax:** gzip **<file1>** **<file2>** **<file3>**...

**34. gunzip Command**

The [gunzip](https://www.javatpoint.com/linux-gzip) command is used to decompress a file. It is a reverse operation of gzip command.

**Syntax:** gunzip **<file1>** **<file2>** **<file3>**. .

### **Linux Utility Commands**

**35. find Command**

The [find](https://www.javatpoint.com/linux-find) command is used to find a particular file within a directory. It also supports various options to find a file such as byname, by type, by date, and more.

The following symbols are used after the find command:

(.) : For current directory name

(/) : For root

**Syntax:** find . -name "\*.pdf"

**36. locate Command**

The [locate](https://www.javatpoint.com/linux-locate) command is used to search a file by file name. It is quite similar to find command; the difference is that it is a background process. It searches the file in the database, whereas the find command searches in the file system. It is faster than the find command. To find the file with the locates command, keep your database updated.

**Syntax:**

locate **<file** name**>**

**37. date Command**

The [date](https://www.javatpoint.com/linux-date) command is used to display date, time, time zone, and more.

**Syntax:** date

**38. cal Command**

The [cal](https://www.javatpoint.com/linux-cal) command is used to display the current month's calendar with the current date highlighted.

**Syntax:** cal**<**

**39. sleep Command**

The [sleep](https://www.javatpoint.com/linux-sleep) command is used to hold the terminal by the specified amount of time. By default, it takes time in seconds.

**Syntax:** sleep **<time>**

**40. time Command**

The [time](https://www.javatpoint.com/linux-time) command is used to display the time to execute a command.

**Syntax:** time

**41. zcat Command**

The zcat command is used to display the compressed files.

**Syntax:** zcat **<file** name**>**

**42. df Command**

The [df](https://www.javatpoint.com/linux-df) command is used to display the disk space used in the file system. It displays the output as in the number of used blocks, available blocks, and the mounted directory.

**Syntax:** df

**43. mount Command**

The [mount](https://www.javatpoint.com/linux-mount) command is used to connect an external device file system to the system's file system.

**Syntax:** mount -t type **<device>** **<directory>**

**44. exit Command**

Linux [exit](https://javatpoint.com/linux-exit-command) command is used to exit from the current shell. It takes a parameter as a number and exits the shell with a return of status number.

**Syntax:** exit

After pressing the ENTER key, it will exit the terminal.

**45. clear Command**

Linux **clear** command is used to clear the terminal screen.

**Syntax:** clear

After pressing the ENTER key, it will clear the terminal screen.

### **Linux Networking Commands**

**46. ip Command**

Linux [ip](https://www.javatpoint.com/linux-ip) command is an updated version of the ipconfig command. It is used to assign an IP address, initialize an interface, disable an interface.

**Syntax:** ip a or ip addr

**47. ssh Command**

Linux [ssh](https://www.javatpoint.com/ssh-linux) command is used to create a remote connection through the ssh protocol.

**Syntax:** ssh user\_name@host(IP/Domain\_name)**</p>**

**48. mail Command**

The [mail](https://www.javatpoint.com/linux-mail-command) command is used to send emails from the command line.

**Syntax:** mail -s "Subject" **<recipient** address**>**

**49. ping Command**

The [ping](https://www.javatpoint.com/linux-ping) command is used to check the connectivity between two nodes, that is whether the server is connected. It is a short form of "Packet Internet Groper."

**Syntax:** ping **<destination>**

**50. host Command**

The [host](https://www.javatpoint.com/linux-host) command is used to display the IP address for a given domain name and vice versa. It performs the DNS lookups for the DNS Query.

**Syntax:** host **<domain** name**>** or **<ip** address**>**

# File handling utilities

**Cat Command:** cat linux command concatenates files and print it on the standard output.

# To Create a new file:

cat > file1.txt

This command creates a new file file1.txt. After typing into the file press control+d (^d) simultaneously to end the file.

**To Append data into the file:** To append data into the same file use append operator >> to write into thefile, else the file will be overwritten (i.e., all of its contents will be erased).

cat >> file1.txt

**To display a file:** This command displays the data in the file.cat file1.txt

# To concatenate several files and display:

cat file1.txt file2.txt

The above cat command will concatenate the two files (file1.txt and file2.txt) and it will display the output in the screen. Some times the output may not fit the monitor screen. In such situation you can print those files in a new file or display the file using less command.

cat file1.txt file2.txt | less

# To concatenate several files and to transfer the output to anotherfile.

cat file1.txt file2.txt > file3.txt

In the above example the output is redirected to new file file3.txt.

# rm COMMAND:

rm linux command is used to remove/delete the file from the directory.

**To Remove / Delete a file:** Here rm command will remove/delete the file file1.txt.rm file1.txt

# To delete a directory tree:

rm -ir tmp

This rm command recursively removes the contents of all subdirectories of the tmp directory,prompting you regarding the removal of each file, and then removes the tmpdirectory itself.

**To remove more files at once:** rm command removes file1.txt and file2.txt files at the same time.rm file1.txt file2.txt

**cd COMMAND:** cd command is used to change the directory.

# cd linux-command

This command will take you to the sub-directory(linux-command) from its parent directory.

# Ex:

**cd ..**

This will change to the parent-directory from the current working directory/sub-directory.

# cd ~

This command will move to the user's home directory which is "/home/username".

# cp COMMAND:

cp command copy files from one location to another. If the destination is an existing file, then

the file is overwritten; if the destination is an existing directory, the file is copied into the directory (thedirectory is not overwritten).

# Copy two files:

cp file1.txt file2.txt

The above cp command copies the content of file1.txt to file2.txt

# Ex:

**ls COMMAND:**

ls command lists the files and directories under current working directory. Display root directorycontents:

# ls /

lists the contents of root directory. **Display hidden files and directories:** ls -a

lists all entries including hidden files and directories.

# Display inode information:

ls –i

# ln COMMAND:

ln command is used to create link to a file (or) directory. It helps to provide soft link for desired files.

# Inode will be different for source and destination.

ln -s file1.txt file2.txt

Creates a symbolic link to 'file1.txt' with the name of 'file2.txt'. Here inode for 'file1.txt' and 'file2.txt'will be different.

# mkdir command:

**rmdir command:**

# mv command:

**diff command:**

# comm command:

**wc command:**

# Process utilities:

**ps Command:**

ps command is used to report the process status. ps is the short name for Process Status.

1. **ps:** List the current running processes.

# Output:

PID TTY TIME CMD

2540 pts/1 00:00:00 bash

1. **ps –f :** Displays full information about currently running processes.

# Output:

UID PID PPID C STIME TTY TIME CMD

nirmala 2540 2536 0 15:31 pts/1 00:00:00 bash

# kill COMMAND: kill command is used to kill the background process.

***Step by Step process:***

* Open a process music player or any file. xmms

# press ctrl+z to stop the process.

* To know group id or job id of the background task. jobs -l

It will list the background jobs with its job id as,

* xmms 3956
* kmail 3467

To kill a job or process.

# kill 3956

kill command kills or terminates the background process xmms.

# Disk utilities:

**du (abbreviated from disk usage)** is a standard Unix program used to estimate file space usage—space used under a particular directory or files on a file system.

**$du kt.txt pt.txt** /\* the first column displayed the file's disk usage \*/

8 kt.txt

4 pt.txt

**Using -h option:** As mentioned above, -h option is used to produce the output in human readable format.

# $du -h kt.txt pt.txt

8.0K kt.txt 4.0K pt.txt

/\*now the output is in human readable format i.e in Kilobytes \*/ Using -a option

# $du -a kartik

|  |  |  |  |
| --- | --- | --- | --- |
| 8 | kartik/kt.txt | 4 | kartik/thakral.png |
| 4 | kartik/pt.txt | 4 | kartik/thakral |
| 4 | kartik/pranjal.png | 24 | kartik |

/\*so with -a option used all the files (under directory kartik) disk usage info is displayed along with the thakral sub-directory \*/

**df command :** Report file system disk space usage

# $df kt.txt

Filesystem 1K-blocks Used Available Use% Mounted on

/dev/the2 1957124 1512 1955612 1% /snap/core

/\* the df only showed the disk usage details of the file system that contains file kt.txt \*/

# //using df without any filename //

**$df**

/\* in this case df displayed the disk usage details of all mounted file systems \*/

**Using -h :** This is used to make df command display the output in human-readable format.

//using -h with df//

# $df -h kt.txt

Filesystem 1K-blocks Used Available Use% Mounted on

/dev/the2 1.9G 1.5M 1.9G 1% /snap/core

/\*this output is easily understandable by the user and all cause of -h option \*/

# Networking commands ping

The ping command sends an echo request to a host available on the network. Using this

command, you can check if your remote host is responding well or not.

# Syntax: $ping hostname or ip-address

The above command starts printing a response after every second. To come out of the command, you can terminate it by pressing CNTRL + C keys.

# $ping google.com

PING google.com (74.125.67.100) 56(84) bytes of data.

64 bytes from 74.125.67.100: icmp\_seq=1 ttl=54 time=39.4 ms

**ftp:** ftp stands for File Transfer Protocol. This utility helps you upload and download your file from one computer to another computer.

# Syntax $ftp hostname or ip-address

**$ftp amrood.com**

Connected to amrood.com.

220 amrood.com FTP server (Ver 4.9 Thu Sep 2 20:35:07 CDT 2009) Name (amrood.com:amrood): amrood

331 Password required for amrood. Password:

230 User amrood logged in. ftp> dir

200 PORT command successful.

….

ftp> quit

221 Goodbye.

# telnet:

Telnet is a utility that allows a computer user at one site to make a connection, login and then conduct work on a computer at another site. Once you login using Telnet, you can perform all the activities on your remotely connected machine.

C:>telnet amrood.com Trying...

Connected to amrood.com. Escape character is '^]'. login: amrood

amrood's Password:

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* WELCOME TO AMROOD.COM \*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* $ logout

Connection closed. C:>

# Finger:

The finger command displays information about users on a given host. The host can be either local or remote.

# Check all the logged-in users on the local machine −

$ finger

Login Name Tty Idle Login Time Office

amrood pts/0 Jun 25 08:03 (62.61.164.115)

# Check all the logged-in users on the remote machine –

$ finger @avtar.com

Login Name Tty Idle Login Time Office amrood pts/0 Jun 25 08:03 (62.61.164.115)

# Get the information about a specific user available on the remote machine −

$ finge[r amrood@avtar.com](mailto:amrood@avtar.com)

**Ifconfig:** Ifconfig is used to configure the network interfaces.

# Filters

**more COMMAND:**

more command is used to display text in the terminal screen. It allows only backward movement.

# more -c index.txt

Clears the screen before printing the file .

# more -3 index.txt

Prints first three lines of the given file. Press Enter to display the file line by line.

# head COMMAND:

head command is used to display the first ten lines of a file, and also specifies how many lines to display.

# head index.php

This command prints the first 10 lines of 'index.php'.

# head -5 index.php

The head command displays the first 5 lines of 'index.php'.

# head -c 5 index.php

The above command displays the first 5 characters of 'index.php'.

# tail COMMAND:

tail command is used to display the last or bottom part of the file. By default it displays last 10 lines of a file.

# tail index.php

It displays the last 10 lines of 'index.php'.

# tail -2 index.php

It displays the last 2 lines of 'index.php'.

# tail -n 5 index.php

It displays the last 5 lines of 'index.php'.

# tail -c 5 index.php

It displays the last 5 characters of 'index.php'.

# cut COMMAND:

cut command is used to cut out selected fields of each line of a file. The cut command uses delimiters to determine where to split fields.

# cut -c1-3 text.txt Output:

Thi

Cut the first three letters from the above line.

# paste COMMAND:

paste command is used to paste the content from one file to another file. It is also used to set column format for each line.

# paste test.txt>test1.txt

Paste the content from 'test.txt' file to 'test1.txt' file.

# sort COMMAND:

sort command is used to sort the lines in a text file.

# sort test.txt

Sorts the 'test.txt'file and prints result in the screen.

# sort -r test.txt

Sorts the 'test.txt' file in reverse order and prints result in the screen.

# uniq

Report or filter out repeated lines in a file.

uniq myfile1.txt > myfile2.txt - Removes duplicate lines in the first file1.txt and outputs the results to the second file.

# Text processing utilities

**echo:** display a line of text or echo command prints the given input string to standard output.

eg. echo I love India echo $HOME

**wc:** print the number of newlines, words, and bytes in files eg. wc file1.txt

**nl:** which lets you number lines in files.

# eg. $ nl file1 1 hi

**join-** Join command is used for merging the lines of different sorted files based on the presence of common field into a single line. The second line will be appended at the end of the first line and cursor is placed at the end of line after joining.

|  |  |  |
| --- | --- | --- |
| **$cat file1.txt** | **$cat file2.txt** | **$join file1.txt file2.txt** |
| 1 AAYUSH | 1 101 |  |
| 2 APAAR | 2 102 |  |
| 3 HEMANT | 3 103 |  |
| 4 KARTIK | 4 104 |  |

**Grep (Global Regular Expression Searching for a pattern), fgrep and egrep**

$ grep ―sales director‖ emp1 emp2

$fgrep ‗good bad great‘ userfile

$egrep ‗good | bad | great‘ userfile

# cat, head, tail, sort, uniq, cut, paste and etc.

**Backup utilities**

Linux backup and restore can be done using backup commands tar, cpio, dump and restore.

**Backup Restore using tar command**

**tar: tape archive** is used for single or multiple files backup and restore on/from a tape or file.

# $tar cvf /dev/rmt/0 \*

Options: c -> create ; v -> Verbose ; f->file or archive device ; \* -> all files and directories .

# $tar cvf /home/backup \*

Create a tar called backup in home directory, from all file and directories s in the current directory.

# Viewing a tar backup on a tape or file

$tar tvf /dev/rmt/0 ## view files backed up on a tape device.

$tar tvf /home/backup ## view files backed up inside the backup

**Note:** t option is used to see the table of content in a tar file.

# Extracting tar backup from the tape

$tar xvf /home/backup ## extract / restore files in to current directory.

**Note :** x option is used to extract the files from tar file. Restoration will go to present directory or original backup path depending on relative or absolute path names used for backup.

**Backup restore using cpio command**

**Using cpio command to backup all the files in current directory to tape.**

find . -depth -print | cpio -ovcB > /dev/rmt/0

cpio expects a list of files and find command provides the list, cpio has to put these file on some destination and a > sign redirect these files to tape. This can be a file as well.

**Viewing cpio files on a tape**

cpio -ivtB < /dev/rmt/0

## Options i -> input ; v->verbose; t-table of content; B-> set I/O block size to 5120 bytes

**Restoring a cpio backup**

cpio -ivcB < /dev/rmt/0

## Options i -> input ; v->verbose; t-table of content; B-> set I/O block size to 5120 bytes