**Linux**

Linux is an operating system, like macOS or windows

It is an Open source os.

It is most popular open source and free os.

It was developed by Linus Torvalds in 1991.

Linux is user friendly and network friendly os.

It provides privacy to the users.

An operating system is a software program that efficiently manages the computer resources like CPU ram storage it handles the essential task like process management memory management and file management

So to manage hardware we use os kernel is the heart of Linux it interacts directly with computer hardware it manages system resource and provide services to applications and processes running.

**Man**

man command is the first command to be introduced in the Linux

the man command will help you to understand all the other commands.

When we don’t know how to use a command we use man to get the manual about that command

**Syntax:**

**Man <command>**

**ls**

using this ls command we can list all the files that are present in the folder.

**cd**

we can move into different folders using this cd command. cd means change directory.

**cd ..**

it is used to indicate the parent folder.

**pwd**

It is used to print the current folder path

**mkdir**

To create a folder we use this mkdir command

We can create multiple folders using this one command.

And also we can create multiple nested folders using this -p option

**Syntax:**

**mkdir -p fruits/apples**

**rmdir**

using mkdir we create folders but by using this rmdir we delete a folder.

mkdir fruits

rmdir fruits

you can delete multiple folders at once.

So before using this rmdir command the folder must be empty.

So delete folders with files in them we’ll use rm command which deletes files and folders using the -rf options

**rm -rf fruits cars**

**rm –** to remove files and folders

**-r –** it will remove directories with their contents

-f – forces deletion without conformation.

we should be careful while using this command does not ask for confirmation and it will immediately remove anything we ask to remove.

**mv**

mv command is used to move files are rename files

**cp**

you can copy file using cp command

to copy hole folders content, you need to use -r option.

**open**

the open command lets you open a file using this syntax:

open <filename>

open . refers to the current directory

open .. points to the parent directory

**touch**

you can create an empty file using this touch command

if the file already exists, it open the file in write mode, and the timestamp of the file is updated.

**find**

find command in Linux is powerful tool used to search for files and directories.

**ln**

in command is used to create links we have two types of links

hard links

soft links

when a create a file in server1 and we want to create a same file in the server2 we create a link to that file so automatically the changes will take place in the file 2 also.

**hard links**

hard links are rarely used u can’t link to the external files and directories

Command

ln file.txt link.txt

if the original file is deleted still the link will contain the original file content.

**soft links**

softlinks are different.it can link to other files and directories

we create softlinks using -s option

command

ln -s file.txt link.txt

if the original file is deleted link will deleted.

**gzip**

gzip is used to compress the files using gzip command

command

**gzip filename**

this command will compress the file and append a .gz extension to it. The ordinal file is deleted. To prevent this you can use -c option so that it will leave the original file intact

**gunzip**

gunzip command is used to decompress the files it removes the .gz extension and extracts the original file

**tar**

tar command is used to group multiple files in a single file

using this tar command we can create, extract, history and manage archive files.

Command:

tar -cf archive.tar file1 file2

To extract he files

Command:

tar -xf archive.tar

**alias**

already we have seen alias in python and sql it is nothing but giving nicknames

Command:

alias ll = ‘ls -al’

now instead of typing al -al command we can give command as ll

**cat**

cat command is used to display the files in side the files

command:

**cat file1**

using this command

you can print content from the multiple files

command:

**cat file1 file2**

using output redirection operator > you can concatenate the content of multiple files into a new file, creating it if it does not exists

command

**cat file1 file2 > file3**

**>**: Overwrites the target file.

**>>**: Appends to the target file.

**Less**

Less command is used to see the content inside the file and it has the ability to scroll forward and backword.

It Is efficient for large files it loads the content on demand.

**tail**

tail command is used to print he last 10 lines by default.

Command

**tail text1**

we can restrict up to only 5 lines

command

**tail -5 text1**

**wc**

wc command is used to print the number of lines, words, wc characters in side the file.

Command:

Wc file1

To display number of lines inside the file

Command:

Wc -l file1

To display number of words inside the file

Command:

Wc -w file1

To display number of characters inside the file

Command:

Wc -c file1

**grep**

grep command is used to search for a specific pattern in input provided by user.

Commands

grep ‘pattern’ filename

For case insensitive search

grep -i ‘pattern’ filename

**sort**

suppose we have a file with names sort is used to sort them according to their names if the list is unordered.

We use r option to reverse the order.

Sorting is case sensitive, and alphabetic use the --ignore-case option to sort case insensitive, and -n option to sort using numeric order.

**Uniq**

Uniq is used to remove duplicates.

Using uniq -d option it will display duplicate lines.

Using uniq -u will display non-duplicate lines.

Using uniq -cuniq cat >ls

dirnameps will count the occurrences of each line with the c option.

**diff**

suppose we have 2 files with the same information but you can’t find the difference between 2

diff command will tell you the what’s the difference.

**echo**

echo command will print the output which is passed as an argument.

**chwon**

Every file in an operating system like Linux or macOS has a owner. So by using this command chwon we can change the owner.

Chwon gopi test.txt

**chmod**

the chmod command in linux operating system is used to change file permissions it can control who can read write execute.

Types of permissions are:

Read(R): allows reading a file

Write (w): allows executing a file

Execute (x): allows executing a file

* means it’s a normal file

d means it’s directory

l means it’s a link

we have 2 ways to specify the mode

**1.octal mode**

(4) – r

(2) – w

(1) – x

Command:

Chmod 711 directoryname

It specifies owner has 3 read, write, execute power

Group members has only execute power

Other users has only execute power

**2. symbolic mode**

**Syntax** chmod references operators modes file

references: u: owner of the file

g: users who are member of file’s group

o: users who are neither u nor g

a: all ugo

operator: +: adds mode to specified classes

-: remove mode

=: exact mode to specified classes

Mode:

Read(R): allows reading a file

Write (w): allows executing a file

Execute (x): allows executing a file

**umask**

when we create a file we need not to decide permissions up front. Those defaults can be controlled and modified using the unmask command



0022 mean an octal value that represents the permissions

To convert into human readable form we use command unmask -S



In this case In this case, the user ( u ), owner of the file, has read,

write and execution permissions on files.

Other users belonging to the same group ( g ) have

read and execution permission, same as all the other

users ( o ).

**du**

du command is used to find the size of the directory

command:

du

command

du \*

is used to find the size of the files

**df**

df command is used to get the informantion about disk useage

command

df

df -h

this command is to print the information in human readable format

**basename**

extract the file name or directory name from a given path

command:

basename path

**dirname**

If you provide a directory path, dirname will return the parent directory of the specified directory**.**

**Ps (process status)**

Ps command in linux is used to display active processes running on the system.

**kill**

linux process can receive signals and react to them.

The kill program can send a variety of signals to a program

And we can terminate the program hist

**killall**

instead of sending signal to one specific id it will send the signal to multiple processes at once.

**vim**

vim command is used to edit the files it allows u to create edit and manage text files efficiently.

Command:

vim myfile1.txt

**nano**

nano is a beginner friendly editor run it using nano<filename>

**whoami**

type whoami to print user name currently logged in to the terminal session

**who**

the **who** command displays the users logged in to the system

**su**

This command is used to switch from one account to another account.

Command

su <username>

**sudo**

sudo command in linux is like asking permission to do something on your computer.

Using sudo we can stop, start

**passwd**

users in linux have a password assigned. you can change the password using the passwd command.

**ping**

ping command isused to test the network connectivity between your computer and a remote system. It check if a specific IP address or hostname is reachable over the network.

**clear**

type **clear** is to clear all the previouscommands thatwere ran in the current terminal

**history**

this command shows history with numbers

**export**

the export command is used to export variables to child processes

**crontab**

the crontab is used to automate the repetitive tasks and It is used to schedule tasks to run automatically at specified intervals.

**uname**

The uname command in Linux is used to display system information. It provides details about the operating system, kernel, and hardware architecture.

|  |  |
| --- | --- |
| -a | Displays all available information. |

|  |  |
| --- | --- |
| -s | Prints the kernel name (default if no option is given). |

|  |  |
| --- | --- |
| -n | Prints the network hostname. |

|  |  |
| --- | --- |
| -r | Displays the kernel release. |

|  |  |
| --- | --- |
| -v | Displays the kernel version. |

|  |  |
| --- | --- |
| -m | Shows the machine hardware name (e.g., architecture). |

|  |  |
| --- | --- |
| -p | Displays the processor type (if available). |

|  |  |
| --- | --- |
| -i | Shows the hardware platform (if available). |

|  |  |
| --- | --- |
| -o | Prints the operating system name. |

|  |  |
| --- | --- |
| --help | Displays a help message and exits. |

|  |  |
| --- | --- |
| --version | Outputs version information and exits. |

**printenv**

printenv command is used to display the values of the environmental variables