**LINUX**

pwd Present working directory (folder)

whoami Displays current using user name

ifconfig (or) hostname - i Displays IP address of machine

hostname Displays current using machine name/server name/ host name

uptime Displays machine uptime. Since how much time machine is running?

uname –a Displays system details- which OS, kernel version, 32/64 bit?

Which softwarename Displays version of that software

Tab key in keyboard- It will automatically give full command if you type half/some command.

Editors in Linux- vi, vim, gvim, nano etc.

Up and down arrows- to use previously used command

Left and right arrows- to move front and back in the same line in console

GUI- Graphical user interface

If line starts with symbol (-) it’s a file

If line starts with letter d it’s a directory

Folder=directory in linux

R=recursively--------------

$ In console for normal users it shows $

# In console for root user it shows #

In windows to clear temp files go to run->temp->

history to see previously used commands in this machine

clear (ctrl+s) to clear content in window

exit to go back to previous users and then previous shells and it will close window

date displays date and time which is in current machine

df –h it shows disk space

du –sch filename to check file size

du –sch \* to check all files and directories size in current directory

free –m to check ram size(total, used, free). System performance is based on RAM.

For vagrant ubuntu machine credentials are username-vagrant and password-vagrant

Absolute path- path starts with (/) slash (full path)

Relative path- path doesn’t starts with (/) slash

(/) slash High level directory in linux

**Cat-**to create file with content

cat>filename to create file with content, after entered content press crtl+d to save file

cat filename (or) cat<filename It display content from a file

If you are using “cat” command to create file, if file already existed with same name in current directory then data will override in that file. New data will enter and old data will erase. So cross check filenames before using cat command.

Cat>>filename to add/append data in the existing file. After content of existing file new content will add

ls-to display list of file(s) and directorie(s)

ls list out files and directories from current directory

ls –a list out files and directories including hidden files from current directory

ls –l long list of files and directories from current directory

ls –lr long list of files in reverse order and directories from current directory

ls –lrt long list of files in reverse order time wise and directories from current directory

ls –d dirname displays directory if it is directory, to check whether that directory is existed in current directory or not?

ls –f filename displays file if it is a file, to check whether that file is existed in current directory or not?

ls –s filename to know size of file

ls –ds dirname to know size of directory

ls \*.html displays all files and directories which is having .html extension from current directory

ls \*.zip displays all files and directories which is having .zip extension from current directory

ls –R shows everything under current directory (files/directories, sub files/directories)

ls ? Displays all single digit files and directories from current directory

ls ??? Displays all three digit files and directories from current directory

Shells in Linux

Cat /etc/shells Displays all shells

Mostly we will use “bash” shell

Types of shells – bash, dash, csh, sh, ksh etc.

echo $0 displays default shell

echo $SHELL displays current running shell

touch -To create only empty file(s) in linux

touch filename to create one empty file

Note: if file already available with same name in current directory it will change timestamp (present time will take) of existing file.

touch dirname to create one empty directory, if directory already available in current directory it will change timestamp (present time will take) of existing directory.

touch filename1 filename2 filename3 to create multiple files at a time. Here it will create 3 files.

touch ram{1..57} to create multiple files in order. Here it will create files like ram1, ram2, ram3, ram4 till ram57

touch {7..69}team to create multiple files in order. Here it will create files like 7team, 8team, 9team, 10team till 69team

touch .filename to create hidden file

Note: We can create only files with “touch” command but not directories

mkdir – To create directorie(S)

mkdir dirname to create one directory

mkdir dirname1 dirname2 to create multiple directories at a time. Here it will create 2 directories

mkdir –p dirname/subdirname/subsubdirname to create directory, subdirectory, sub subdirectory at a time.

mkdir –p dirname/{subdirname1/{subsubdirname1,subsubdirname2,subsubdirname3},subdirname2/{subsubdirname1,subsubdirname2,subsubdirname3},subdirname3/{subsubdirname1,subsubdirname2,subsubdirname3}}

To create multiple directories and subdirectories at a time

Mkdir .dirname to create hidden directory

rm - To remove file(s)/directories

rm filename (or) rm –r filename to remove file

rm -I filename removes file but it will ask confirmation before removing

rm –f filename removes file directly without asking any confirmation

rm \*.txt removes all files which is having .txt extension

rm –r dirname to remove directory

rm filename1 filename2 to remove multiple files at a time. Here it will remove 2 files.

rm –r dirname1 dirname2 to remove multiple directories at a time. Here it will remove 2 directories.

rm –R \* recursively removes everything from current directory (all files, directories, subdirectories/files)

rmdir dirname to delete only empty directory

cd – Change directory

cd to go directly to the current user home directory. If you are using

cd - To go back to the previously entered directory

cd .. To go to one directory back in absolute path

cd../.. To go to two directories back

cd../../.. To go to three directories back

cd /opt to go to “opt” directory which is under slash (/)

cd /etc/ssh to go to “ssh” directory which is under /etc

sudo – acts like administrator

sudo –I to switch to root user without password

su – root to switch to root user but it will ask password

su – username to switch to any user. Need password to switch

sudo if you are not able to execute any command or not able to enter into any directory or not able to access any file/directory and asking for root permissions put “sudo” before command

Software installation/un installation

To install software in Linux machines

For Ubuntu machines command “apt-get” and for red hat, centos, Amazon machines command is “yum”

Yum install softwarename (or) apt-get install softwarename install software if you have sudo permissions

Sudo Yum install softwarename –y If current user does not having sudeor’s/admin/root permissions use “sudo” before command and here –y is to not to ask confirmation for any decencies installation or for general confirmation.

Yum remove softwarename Remove software from current machine if you have permissions

Sudo Yum remove softwarename –y If current user does not having sudeor’s/admin/root permissions use “sudo” before command and here –y is to not to ask confirmation for any decencies removal or for general confirmation.

Tree – Display structure of directory

Tree dirname displays structure of directory

Note: By default tree software doesn’t available in some linux machine. So you need to install if you want to use tree with following steps.

To install software in linux machines

For Ubuntu machines command “apt-get” and for red hat, centos, amazon machines command is “yum”

Yum install softwarename (or) apt-get install softwarename install software if you have sudo permissions

Sudo Yum install tree –y install “tree” software into machine without asking any confirmation

cp – copy file(s)/directories

cp source destination file will copy from one location to another location with same name

cp existingfilename new filename Existing file will copy and create new file with new filename if we are in same location

cp –r source destination directory will copy from one location to another location with same name

cp olddirname newdirname old file will copy and create new file with new filename if we are in same location

mv – to rename file(s)/directories and to move file(s)/directories

mv existingfilename newfilename it will rename filename

Ex: mv sitaram reddy here it will rename file from sitaram to reddy

mv existingdirname newdirname it will rename directory name

mv /dev/movies /tmp Here movies directory will move from /dev to /tmp

mv /dev/movies /tmp/pictures here movies directory will move from /dev directory and place it in /tmp directory with pictures (new directory name)

mv .hiddenfilename filename convert hidden file to normal file

Permissions

chmod – granting/modifying/removing permissions

read – r - 4

write- w - 2

execute – x – 1

If you see long list of file/directory there will be 7 fields

1. Permissions 2. Total No. of files 3. Owner name 4. Group name 5.Filesize 6. Time stamp 7. Filename

umask value by default is 0002

By default permissions for file is 664 because full permissions for file 0666-0002=0664 and for directory 755 because full permissions for directory 0777-0002=0755

Umask 0022 we can change umask value like this. Here it will change from 0002 to 0022

chmod 777 filename grating full permissions for file-for all (owner, group and others)

chmod 444 filename granting read permissions for file- for all (owner, group and others)

chmod –R 700 dirname Full permissions for owner(no permissions for group and others) for directory recursively (directories, sub directories, files etc.)

chmod 600 /etc/sudeors Giving read, write permissions for sudeors file for owner (no permissions for group and others)

sudo chmod –R 777 /opt Recursively giving full permissions for opt directory for all (owner, group and others) so from next time no need to use sudo to work on opt directory

chmod u=rw,g=rw,o=r username assign permissions for owner, group and others. Here assigning read, write for owner and read, write for group and read permissions for others.

Chmod u-x g-rwx o-wx username removing permissions for owner, group and others. Here removing execute permissions for owner and read, write, execute for group and write, execute for others.

Chown – changing owner/group info

We change owner/group information for files and directories

Chown newownername:newgroupname filename changing owner and group for file. Here new owner and new group already should exist.

Chown –R newownername:newgroupname \* changes owner and group for all files and directories from recursively in current directory.

Chown :newgroupname filename to change only group name for file.

Configuration files

/etc/passwd all users information path

/etc/shadow all passwords information path

/etc/group all groups information path

Cat /etc/passwd|grep root to see root user information

If you see long list of user information there will be 7 fields

1. Username 2. Password 3. User id 4. Group id 5. Comments 6. Home directory of user 7. shell

By default user id and group id are same numbers.

User/group management

useradd username to create new user

userdel username to delete existing user

Groups are two types- primary and secondary

groupadd groupname to create new group, by default system will generate group id, if you want to specify you can.

groupadd –g groupid groupname creating group by specifying group id

groupdel groupname to delete existing group

useradd –u userid –g groupid –c “Developer” –s /bin/bash –d /home/username username creating user with all details specifying.

passwd username to set password for user

By default group name is owner name, we can change it.

Id username to check user information (user id, primary group, secondary group etc.)

Usermod –G groupname username change user to another group

Usermod –g groupname username user primary group change

Usermod –d /home/username username existing user home directory change

User –G groupname1,groupname2,groupname3 username to add one user to no. of groups

gpasswd –m username1,usernaem2,username3 groupname allocating mutilple users to one group

gpasswd –d username groupname remove user from one group

Inode –

Inode no. will tell about file/directory information (permissions, owner, group etc.)

ls –li inode filename to check inode no. of file

Links - soft/hard

Soft Link-

ln –s existingfilename linkfilename to create soft link for existing file.

1. In soft link if you change any data in existing file then changes will reflect in soft linked file also.
2. If you delete original file then soft link file also delete.
3. Size will take very less for soft link file. Size is just character count of filename/directory name
4. Inode no. is different for original and soft link file

Hard Link-

1. Inode no. is same for original and hard link file
2. Size is same for original and hard link file
3. If you delete original then duplicate files won’t delete in hard link.

**Journalism- Best feature in Linux**

While you writing something system closes unexpectedly we can retrieve that content.

From redhat5 versions only this recovery option is available.

Vim filename : r

wc – count lines/words/characters from file

wc –l filename displays lines count from a file

wc –w filename displays words count from a file

wc –c filename displays characters from a file

Pipe (|)

Pipe command usage- It will take first command output and gives to second command as input and takes second command output and gives to third command as input etc.

ls –lrt|cat filename|wc –l

Here we are using 3 commands

1. Files and directories long list from current directory
2. Displays file content
3. Displays lines count from that file

Sort

Sort filename sort the lines in ascending order from a file

Head

head filename displays first 10 lines from a file

head -23 filename displays first 23 lines from a file

head -3 filename displays first 3 lines from a file

Tail

tail filename displays last 10 lines from a file

tail -37 filename displays last 37 lines from a file

tail -4 filename displays last 4 lines from a file

Head and tail

Head -25 filename|tail -5 displays 21 to 25 lines from a file

More

more filename displays entire content from a file.

Press Enter to see line by line.

Press space to see page by page

Less

less filename It also displays entire content from a file.

But need to press “q” to put come out from file.

Stderr and stdout

[a] **stdin** – Use to get input (keyboard) i.e. data going into a program.

[b] **stdout** – Use to write information (screen)

[c] **stderr** – Use to write error message (screen)

**Understanding I/O streams numbers**

The Unix / Linux standard I/O streams with numbers:

|  |  |  |
| --- | --- | --- |
| Handle | Name | Description |
| 0 | Stdin | Standard input |
| 1 | Stdout | Standard output |
| 2 | Stderr | Standard error |

Cat /etc/passwd > newfilename data in password file will go to new file

Cat sita > reddy data will take from “sita” file and goes to “reddy” file. If “reddy” file already available, data will overwrite.

Cat sita >> reddy here data will overwrite in reedy file

Command > filename 2>&1 data will go to file whatever the output (right or wrong) from command (or) script.

&-ampersand

vi - editor

vi filename to create file

New file create will create if file with same name is not available. If available we can edit data in that file.

i-to insert data

After entered data go to escape mode and press

:w – save

q – quit

!(factorial) – forcefully

To save data :wq

To quit from file without saving :q!

Shortcuts:

w–to go to next word

v-to go to previous word

(dollar)$-to go to line end

(cap)^-to go to starting of line

0-to go to starting of file

ctrl+f-to go to next page(page forward)

ctrl+b-to go to previous page(page backward)

ctrl+d-forward half screen

ctrl+u-backward half screen

I-to add data in starting of the line

a-after cursor data will add

A-end of the line data will add

o-below the cursor data will add

O-above the cursor data will add

Character replace- esc mode r & newcharactername

All content replace- esc mode R

Word replace-esc mode cw

Deleting

x – to delete character

7x-deletes 7 characters

dw-to delete word

ndw-to delete n words

db-delete before word

dd-delete entire line

5dd-deletes 5 lines

10dd-deletes 10 lines

ndd-deleted n lines

yy-copy lines

24yy-copies 24 lines

nyy-copies n lines

p-paste below cursor

P-paste above cursor

u-to undo previous changes (in windows ctrl+z to undo)

.-to use previous command in vi editor

To search pattern

/pattern n->for next pattern

N->for previous pattern

(or)

? pattern

(or)

:pattern

:10 ->goes to 10th line

:0 -> goes to first line

:G ->goes to last line

:set nu ->to set no’s for all lines in file

:set nonu ->to remove no’s for all lines in a file

Replace pattern

:%s /existing pattern /new pattern/gi to replace pattern globally and case-sensitive

Here “g” is for globally and “i” is for case-sensitive

:r existingfilename copy data from another file

:w newfilename copy data to another file

:20,53w filename copy 20 to 53 lines to another file

To execute commands in vi file

: ! command

Here ! is to execute commands in vi editor itself

: ! pwd it will show command output in another terminal

:r ! date displays o/p in vi editor itself

We can use only local variables & global variables

X=10

Readonly y=20

Export x=10

X=20

Y=30

Y=40

Readonly x=30

X=40

Z=30

Z=50