# Linux Commands and File management

# Basic Commands

| who             | Shows who all are logged into the current system              |
|-----------------|---|
| Whoami          | shows the current user name                                   |
| pwd             | Shows which directory you are in or current working directory |
| cd              | Change directory  |
| ip addr<br>show | Shows the current IP configuration                            |

# Basic Commands (Continued)

## free -m

shows the system memory status and utilization

## df -h

shows the available disk space

## nmcli connection show

shows the active network connections

## findmnt

shows mounted file system

# history

shows command history / previously run command by the user

# File management commands/tools/utilities

## cat

Concatenate/read

### more

Parse read input/file

# less

page by page read

## tail

Read last part of the file

```
root@labsvr ~ | #
 root@labsvr ~1#
 root@labsvr ~|# cat /etc/hosts
            localhost localhost.localdomain localhost4 localhost4.localdomain4
            localhost localhost.localdomain localhost6 localhost6.localdomain6
root@labsvr ~1#
root@labsvr ~]#
 root@labsvr ~] # more /etc/hosts
            localhost localhost.localdomain localhost4 localhost4.localdomain4
            localhost localhost.localdomain localhost6 localhost6.localdomain6
root@labsvr ~1#
root@labsvr ~]# tail /etc/hosts
            localhost localhost.localdomain localhost4 localhost4.localdomain4
            localhost localhost.localdomain localhost6 localhost6.localdomain6
root@labsvr ~]#
[root@labsvr ~l#
```

# Creating a file

### touch

Creates/changes file time stamp

### cat

Concatenate/read

## mkdir

Create a directory

```
root@labsvr test]#
root@labsvr test]# ls
root@labsvr test]#
root@labsvr test]# touch test-touch
root@labsvr test]#
root@labsvr test]# ls
test-touch
[root@labsvr test]#
root@labsvr test]# cat > test-cat
This is a test file
root@labsvr test]# ls
test-cat test-touch
[root@labsvr test]#
root@labsvr test]# cat test-cat
his is a test file
root@labsvr test]#
root@labsvr test]# vi test-vi
root@labsvr test]#
root@labsvr test]# ls
est-cat test-touch test-vi
[root@labsvr test]# ||
```

# Edit/Append/Replace content of a file

```
cat >
cat >>
vi
vim
nano
emacs
```

```
root@labsvr test]#
root@labsvr test]# cat test-cat
This is a test file
root@labsvr test]#
root@labsvr test]# cat > test-cat
Replaced content of test file
root@labsvr test]#
root@labsvr test]# cat test-cat
Replaced content of test file
root@labsvr test]#
root@labsvr test]#
root@labsvr test]# cat >> test-cat
adding second line to the file
root@labsvr test]#
root@labsvr test]#
root@labsvr test]# cat test-cat
Replaced content of test file
adding second line to the file
root@labsvr test]#
root@labsvr test]#
```

```
root@labsvr test]# vi test-vi
root@labsvr test]#
root@labsvr test]# more test-vi
This is a test file. - vi
Adding second line using vi editor
root@labsvr test]#
root@labsvr test]# 🗌
This is a test file. - vi
Adding second line using vi editor
```

# Delete/remove, move a file

#### rm

Remove file/files

## rmdir

Remove directory

#### mv

Move/rename file

```
root@labsvr test]#
[root@labsvr test]# touch test delete
[root@labsvr test]#
root@labsvr test]# ls -1
otal 12
rw-r--r-. 1 root root 61 May 11 01:11 test-cat
rw-r--r-. 1 root root 0 May 11 23:55 test delete
     -r--. 1 root root 50 May 11 20:05 test-error
     -r--. 1 root root 0 May 11 01:06 test-touch
    --r--. 1 root root 61 May 11 01:14 test-vi
root@labsvr test]# rm test delete
n: remove regular empty file 'test delete'? y
root@labsvr test]# touch test
root@labsvr test1#
    @labsvr test]# mv test test1
root@labsvr test]# ls -1
rw-r--r-. 1 root root 0 May 11 23:56 test1
     -r--. 1 root root 61 May 11 01:11 test-cat
     -r--. 1 root root 50 May 11 20:05 test-error
rw-r--r-. 1 root root 0 May 11 01:06 test-touch
rw-r--r-. 1 root root 61 May 11 01:14 test-vi
[root@labsvr test]#
[root@labsvr test]# 🗌
```

# Finding files

ls

find

which

locate

### Note:

Run 'updatedb' if locate is not working

```
[root@labsvr test]#
[root@labsvr test]# find /etc -name hosts
/etc/hosts
/etc/avahi/hosts
[root@labsvr test]#
[root@labsvr test]# locate hosts
/etc/hosts
/etc/hosts
/etc/avahi/hosts
/etc/chromium/native-messaging-hosts
```

```
[root@labsvr test]#
[root@labsvr test]# which passwd
/usr/bin/passwd
[root@labsvr test]#
[root@labsvr test]# find /etc -name hosts
/etc/hosts
/etc/avahi/hosts
[root@labsvr test]#
[root@labsvr test]#
[root@labsvr test]#
```

# Man Pages (Help Page)

man command/utility

Shows the command help. All details about the command will be displayed.

# **Example:**

man Is

man man

```
coot@labsvr ~]# man man
                               Manual pager utils
                                                                           MAN (1)
JAME
      man - an interface to the on-line reference manuals
SYNOPSIS
      man [-C file] [-d] [-D] [--warnings[=warnings]] [-R encoding] [-L locale]
       [-m system[,...]] [-M path] [-S list] [-e extension]
       [--regex|--wildcard] [--names-only] [-a] [-u] [--no-subpages] [-P pager]
       [-r prompt] [-7] [-E encoding] [--no-hyphenation] [--no-justification]
                [-t] [-T[device]]
                                      [-H[browser]] [-X[dpi]] [-Z] [[section]
           [.section] ...] ...
      man -k [apropos options] regexp ...
      \operatorname{man} - K [-w | -W] [-S \text{ list}] [-i | -I] [--regex] [section] term ...
      man -f [whatis options] page ...
      man -1 [-C file] [-d] [-D] [--warnings[=warnings]] [-R encoding] [-L
      locale] [-P pager] [-r prompt] [-7] [-E encoding] [-p string] [-t]
       [-T[device]] [-H[browser]] [-X[dpi]] [-Z] file ...
      man - w - W  [-C file] [-d] [-D] page ...
      man -c [-C file] [-d] [-D] page ...
      man [-?V]
DESCRIPTION
      man is the system's manual pager. Each page argument given to man is nor□
      mally the name of a program, utility or function. The manual page associ
      if provided, will direct man to look only in that section of the manual.
      The default action is to search in all of the available sections following
      a pre-defined order ("1 1p 8 2 3 3p 4 5 6 7 9 0p n 1 p 0 1x 2x 3x 4x 5x 6x
      7x 8x" by default, unless overridden by the SECTION directive in
      /etc/man db.conf), and to show only the first page found, even if page
      exists in several sections.
      The table below shows the section numbers of the manual followed by the
      types of pages they contain.
         Executable programs or shell commands
          System calls (functions provided by the kernel)
          Library calls (functions within program libraries)
          Special files (usually found in /dev)
          File formats and conventions eg /etc/passwd
          Miscellaneous (including macro packages and conventions), e.g. man(7),
          groff(7)
          System administration commands (usually only for root)
          Kernel routines [Non standard]
      A manual page consists of several sections.
```

# Links hard and symbolic links

# **Hard link:**

In /etc/passwd passwd1

# Symbolic link:

In -s /etc/passwd passwd2

```
[root@labsvr ~]# ls -il
total 12
402653318 -rw-----. 1 root root 1615 Jul 5 2020 anaconda-ks.cfg
403410370 -rw-r--r--. 1 root root 1725 Jul 5 2020 initial-setup-ks.cfg
271114569 -rw-r--r--. 2 root root 2714 May 11 10:52 passwd1
135384913 drwxr-xr-x. 2 root root 227 May 12 22:57 test
[root@labsvr ~] # ls -il passwd1 /etc/passwd
271114569 -rw-r--r--. 2 root root 2714 May 11 10:52 /etc/passwd
271114569 -rw-r--r--. 2 root root 2714 May 11 10:52 passwdl
[root@labsvr ~] # ln -s /etc/passwd passwd2
[root@labsvr ~] # ls -il /etc/passwd passwd1 passwd2
271114569 -rw-r--r--. 2 root root 2714 May 11 10:52 /etc/passwd
271114569 -rw-r--r--. 2 root root 2714 May 11 10:52 passwd1
[root@labsvr ~]#
```

# Zip/Archive

## **Create tar file:**

tar -cvf test.tar /root/test/

## **Extract tar file:**

tar -xvf test.tar

# List tar file content:

tar -tvf test.tar

```
root@labsvr ~]# ls -1
otal 12
rw----. 1 root root 1615 Jul 5 2020 anaconda-ks.cfg
rw-r--r-. 1 root root 1725 Jul 5 2020 initial-setup-ks.cfg
    --r--. 2 root root 2714 May 11 10:52 passwd1
rwxr-xr-x. 2 root root 227 May 12 22:57 test
root@labsvr ~]#
root@labsvr ~]#
root@labsvr ~] # tar -cvf test.tar test/
est/test-touch
est/test-cat
est/test-vi
est/test-error
est/test01
est/test02
est/test03
est/test04
est/test05
est/test06
est/test07
est/test08
est/test09
est/test10
est/west01
root@labsvr ~l#
root@labsvr ~1#
root@labsvr ~l# tar -tvf test.tar
                           0 2021-05-12 22:57 test/
rwxr-xr-x root/root
rw-r--r-- root/root
                           0 2021-05-11 01:06 test/test-touch
rw-r--r-- root/root
                          61 2021-05-11 01:11 test/test-cat
                          61 2021-05-11 01:14 test/test-vi
    --r-- root/root
rw-r--r-- root/root
                          50 2021-05-11 20:05 test/test-error
                           0 2021-05-12 22:49 test/test01
    --r-- root/root
    --r-- root/root
                           0 2021-05-12 22:49 test/test02
                           0 2021-05-12 22:49 test/test03
rw-r--r-- root/root
    --r-- root/root
                           0 2021-05-12 22:49 test/test05
rw-r--r-- root/root
                           0 2021-05-12 22:49 test/test06
                           0 2021-05-12 22:49 test/test07
rw-r--r-- root/root
                           0 2021-05-12 22:49 test/test08
rw-r--r-- root/root
                           0 2021-05-12 22:49 test/test09
                           0 2021-05-12 22:49 test/test10
rw-r--r-- root/root
                           0 2021-05-12 22:57 test/west01
rw-r--r-- root/root
root@labsvr ~]# 🗌
```

# Understanding Is long listing (Is –I)

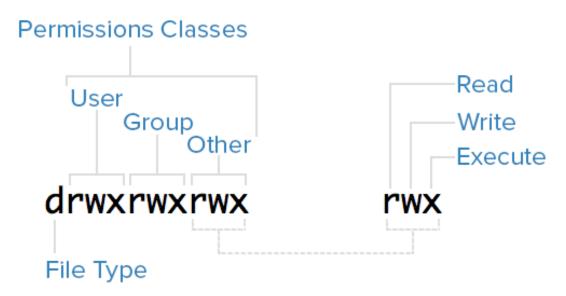
- -rw-r--r- permissions
- 1 : number of linked hard-links
- prajith: owner of the file
- wheel: which group this file belongs to
- **0**: size
- May 11 10:53: modification/creation date and time
- test1: file/directory name

```
Mode
                             File Size
                                    Last Modified
            Owner
                     Group
                                                    Filename
drwxrwxrwx 2 sammy sammy
                               4096 Nov 10 12:15 everyone_directory
drwxrwx--- 2 root developers
                              4096 Nov 10 12:15 group_directory
                                15 Nov 10 17:07 group_modifiable
-rw-rw---- 1 sammy sammy
drwx---- 2 sammy sammy
                               4096 Nov 10 12:15 private_directory
-rw----- 1 sammy sammy
                                269 Nov 10 16:57 private_file
-rwxr-xr-x 1 sammy sammy
                              46357 Nov 10 17:07 public_executable
                               2697 Nov 10 17:06 public_file
-rw-rw-rw- 1 sammy sammy
                               4096 Nov 10 16:49 publicly_accessible_directory
drwxr-xr-x 2 sammy sammy
                               7718 Nov 10 16:58 publicly_readable_file
-rw-r--r-- 1 sammy sammy
drwx----- 2 root root
                               4096 Nov 10 17:05 root_private_directory
```

```
[prajith@labsvr ~]$
[prajith@labsvr ~]$ touch test{1..3}.txt
[prajith@labsvr ~]$ ls
test1.txt test2.txt test3.txt
[prajith@labsvr ~]$ ls -l
total 0
-rw-r--r-. 1 prajith wheel 0 May 11 10:53 test1.txt
-rw-r--r-. 1 prajith wheel 0 May 11 10:53 test2.txt
-rw-r--r-. 1 prajith wheel 0 May 11 10:53 test2.txt
[prajith@labsvr ~]$ []
```

# File Permissions

- **Read (r)**: The read permission allows the user to open the file and read its contents.
- Write (w): The write permission allows the user to modify or change the contents of the file.
- Execute (x): File execute permission
- **I,d,c** in the first field stands for link, directory and character file respectively



```
[prajith@labsvr ~]$ ls -l

total 0

-rw-r--r-- 1 prajith wheel 0 May 11 10:53 test1.txt

-rw-r--r-- 1 prajith wheel 0 May 11 10:53 test2.txt

-rw-r--r-- 1 prajith wheel 0 May 11 10:53 test3.txt

[prajith@labsvr ~]$ []
```

# File Permissions

#### • -rw----:

A file that is only accessible by its owner

#### -rwxr-xr-x:

 A file that is executable by every user on the system. A "world-executable" file

#### • -rw-rw-rw-:

 A file that is open to modification by every user on the system. A "world-writable" file

### • drwxr-xr-x:

A directory that every user on the system can read and access

## drwxrwx---:

 A directory that is modifiable (including its contents) by its owner and group

## • drwxr-x---:

A directory that is accessible by its group

# Input and Output Redirection

```
Output Redirection:
                         >,>>
      example:
                         ls –l > test.txt
                         some program >> test.txt
Input redirection:
                         < , <<
      example:
                         mail -s "test mail" admin@lab.com < test.txt
Error redirection:
                         2>, 2>>
      example:
                         some command 2>
Pipe:
      example:
                         Is –I | more
```

# Filters

Filters are commands that alter piped redirection and output. Note that filter commands are also standard Linux commands that can be used without pipes.

#### • find:

find returns files with filenames that match the argument passed to find.

## • grep:

grep returns text that matches the string pattern passed to grep.

#### • tee:

tee redirects standard input to both standard output and one or more files.

#### • tr:

tr finds-and-replaces one string with another.

#### • wc:

wc counts characters, lines, and words.

# Wildcard Characters

- Is test\*
- Is ?est
- Is [ts]est
- Is [!ts]est
- ls test[0-9][0-9]

```
[root@labsvr test]# ls
               test05
                        test07
                               test09
                                                    test-touch
                                        test-cat
               test06
                        test08
                               test10
                                        test-error
                                                    test-vi
root@labsvr test]#
root@labsvr test]# ls test*
               test05
       test03
                        test07
                               test09
                                        test-cat
                                                    test-touch
               test06
                        test08
                               test10
                                                    test-vi
                                        test-error
root@labsvr test]#
root@labsvr test]# ls ?est*
       test03 test05
                               test09
                                                    test-touch
                        test07
                                        test-cat
       test04 test06
                       test08
                               test10
                                                    test-vi
                                        test-error
root@labsvr test]#
root@labsvr test] # ls [ts]est*
       test03 test05 test07 test09
                                                    test-touch
                                        test-cat
       test04 test06 test08 test10
                                        test-error
                                                    test-vi
[root@labsvr test]#
[root@labsvr test]# ls [!tx]est*
ls: cannot access '[!tx]est*': No such file or directory
[root@labsvr test]#
[root@labsvr test]# ls test[0-9]*
test01 test02 test03 test04 test05 test06 test07
                                                        test08
[root@labsvr test]# ls tes*[0-9]
test01 test02 test03 test04 test05 test06 test07
                                                        test08
[root@labsvr test]# ls test[0-9]
ls: cannot access 'test[0-9]': No such file or directory
[root@labsvr test]# touch west01
[root@labsvr test]# ls [!tx]est*
west01
[root@labsvr test]# 🗍
```

# File Descriptor

These are three default files named below which are also identified by the shell using file descriptor numbers:

**stdin or 0** – it's connected to the keyboard, most programs read input from this file.

**stdout or 1** – it's attached to the screen, and all programs send their results to this file and

**stderr or 2** – programs send status/error messages to this file which is also attached to the screen

