

# UNIX/Linux Commands with Examples

## 1. tar command examples

Create a new tar archive.

```
$ tar cvf archive_name.tar dirname/
```

Extract from an existing tar archive.

```
$ tar xvf archive_name.tar
```

View an existing tar archive.

```
$ tar tvf archive_name.tar
```

## 2. grep command examples

Search for a given string in a file (case in-sensitive search).

```
$ grep -i "the end" demo_file
```

Print the matched line, along with the 3 lines after it.

```
$ grep -A 3 -i "example" demo_text
```

Search for a given string in all files recursively

```
$ grep -r "laurag" *
```

Display lines matching a pattern and the five lines following that line

```
$ grep -A 5 "Initializing CPU#1" dmesg
```

Count number of lines including given string

```
$ grep -c "pattern" filename
```

## 3. find command examples

Find files using file-name (case in-sensitive find)

```
# find -iname "MyCProgram.c"
```

Find the passwd file under root and one level down. (i.e root — level 1, and one sub-directory — level 2)

```
$ find -maxdepth 2 -name passwd
```

Execute commands on files found by the find command

```
$ find -iname "MyCProgram.c" -exec md5sum {} \;
```

Find all empty files in home directory

```
$ find ~ -empty
```

Find all files that are readable by the world in your home directory, irrespective of other permissions for that file.

```
$ find . -perm -g=r -type f -exec ls -l {} \;
```

## 4. ssh command examples

Login to remote host

```
ssh -l jsmith remotehost.example.com
```

Debug ssh client

```
ssh -v -l jsmith remotehost.example.com
```

Display ssh client version

```
$ ssh -V  
OpenSSH_3.9p1, OpenSSL 0.9.7a Feb 19 2003
```

## 5. sed command examples

sed is a UNIX utility that reads input line by line (sequentially), applies an operation that has been specified via the command line, and then outputs the line.

When you copy a DOS file to Unix, you could find `\r\n` in the end of each line. This example converts the DOS file format to Unix file format using sed command.

```
$sed 's/.$//' filename
```

Print file content in reverse order

```
$ sed -n '1!G;h;h;$p' myfile.txt
```

Find and replace text globally and write out a new file

```
sed -e 's/oldstuff/newstuff/g' inputFileNames > outputFileNames
```

Add a line number for all non-empty-lines in a file

```
$ sed '/./=' myfile.txt | sed 'N; s/\n/ /'
```

## 6. awk command examples

awk is mostly used for pattern scanning and processing. It searches one or more files to see if they contain lines which match with the specified patterns and then perform associated actions.

Remove duplicate lines using awk

```
$ awk '!($0 in array) { array[$0]; print }' temp
```

Print all lines from /etc/passwd that have the same uid and gid

```
$awk -F ':' '$3==$4' passwd.txt
```

Print only specific field from a file.

```
$ awk '{print $2,$5;}' employee.txt
```

## 7. vim command examples

vim is a more advanced, and more functional, version of vi. It includes macros.

Go to the 143rd line of file

```
$ vim +143 filename.txt
```

Go to the first match of the specified

```
$ vim +/search-term filename.txt
```

Open the file in read only mode.

```
$ vim -R /etc/passwd
```

## 8. diff command examples

Ignore white space while comparing.

```
# diff -w name_list.txt name_list_new.txt
```

```
2c2,3
< John Doe --- > John M Doe
> Jason Bourne
```

## 9. sort command examples

Sort a file in ascending order

```
$ sort names.txt
```

Sort a file in descending order

```
$ sort -r names.txt
```

Sort passwd file by 3rd field.

```
$ sort -t: -k 3n /etc/passwd | more
```

## 10. export command examples

To view oracle related environment variables.

```
$ export | grep ORACLE
declare -x ORACLE_BASE="/u01/app/oracle"
declare -x ORACLE_HOME="/u01/app/oracle/product/10.2.0"
declare -x ORACLE_SID="med"
declare -x ORACLE_TERM="xterm"
```

To export an environment variable:

```
$ export ORACLE_HOME=/u01/app/oracle/product/10.2.0
```

## 11. xargs command examples

Copy all images to external hard-drive

```
# ls *.jpg | xargs -n1 -i cp {} /external-hard-drive/directory
```

Search all jpg images in the system and archive it.

```
# find / -name *.jpg -type f -print | xargs tar -cvzf images.tar.gz
```

Download all the URLs mentioned in the url-list.txt file

```
# cat url-list.txt | xargs wget -c
```

## 12. ls command examples

Display filesize in human readable format (e.g. KB, MB etc.,)

```
$ ls -lh
-rw-r----- 1 laurag team-dev 8.9M Jun 12 15:27 arch-linux.txt.gz
```

Order Files Based on Last Modified Time (In Reverse Order) Using ls -ltr

```
$ ls -ltr
```

## Visual Classification of Files with Special Characters Using ls -F

```
$ ls -F
```

Open with vi the last file you edited

```
$ vi `ls -t | head -1`
```

### 13. pwd command

pwd is Print working directory. What else can be said about the good old pwd who has been printing the current directory name for *ever*.

### 14. cd command examples

Use “cd -” to toggle between the last two directories

Use “shopt -s cdspell” to automatically correct mistyped directory names on cd

### 15. gzip command examples

To create a \*.gz compressed file:

```
$ gzip test.txt
```

To uncompress a \*.gz file:

```
$ gzip -d test.txt.gz
```

Display compression ratio of the compressed file using gzip -l

```
$ gzip -l *.gz
      compressed          uncompressed  ratio uncompressed_name
          23709             97975    75.8% asp-patch-rpms.txt
```

### 16. bzip2 command examples

To create a \*.bz2 compressed file:

```
$ bzip2 test.txt
```

To uncompress a \*.bz2 file:

```
bzip2 -d test.txt.bz2
```

### 17. unzip command examples

To extract a \*.zip compressed file:

```
$ unzip test.zip
```

View the contents of \*.zip file (Without unzipping it):

```
$ unzip -l jasper.zip
Archive:  jasper.zip
  Length      Date    Time    Name
-----
  40995  11-30-98  23:50   META-INF/MANIFEST.MF
  32169  08-25-98  21:07   classes_
  15964  08-25-98  21:07   classes_names
  10542  08-25-98  21:07   classes_ncomp
```

## 18. shutdown command examples

Shutdown the system and turn the power off immediately.

```
# shutdown -h now
```

Shutdown the system after 10 minutes.

```
# shutdown -h +10
```

Reboot the system using shutdown command.

```
# shutdown -r now
```

Force the filesystem check during reboot.

```
# shutdown -Fr now
```

## 19. ftp command examples

Both ftp and secure ftp (sftp) has similar commands. To connect to a remote server and download multiple files, do the following.

```
$ ftp IP/hostname
ftp> mget *.html
```

To view the file names located on the remote server before downloading, mls ftp command as shown below.

```
ftp> mls *.html -
/ftptest/features.html
/ftptest/index.html
/ftptest/othertools.html
/ftptest/samplereport.html
/ftptest/usage.html
```

## 20. crontab command examples

View crontab entry for a specific user

```
# crontab -u john -l
```

Schedule a cron job every 10 minutes.

```
*/10 * * * * /home/laurag/check-disk-space
```

## 21. service command examples

The service command is used to check the status of a service or restart a service. It can be used instead of: /etc/init.d/service-name restart (status, stop and start work too).

Check the status of a service:

```
# service ssh status
```

Check the status of all the services.

```
service --status-all
```

Restart a service.

```
# service ssh restart
```

## 22. ps command examples

ps command is used to display information about the processes that are running in the system.

While there are lot of arguments that could be passed to a ps command, following are some of the common ones.

To view current running processes.

```
$ ps -ef | more
```

To view current running processes in a tree structure. H option stands for process hierarchy.

```
$ ps -efH | more
```

## 23. free command examples

This command is used to display the free, used, swap memory available in the system.

Typical free command output. The output is displayed in bytes.

```

$ free
      total        used        free      shared  buffers   cached
Mem:    3566408    1580220    1986188          0     203988     902960
-/+ buffers/cache:    473272    3093136
Swap:    4000176          0     4000176

```

If you want to quickly check how many GB of RAM your system has use the -g option. -b option displays in bytes, -k in kilo bytes, -m in mega bytes.

```

$ free -g
      total        used        free      shared  buffers   cached
Mem:         3          1          1          0          0          0
-/+ buffers/cache:         0          2
Swap:         3          0          3

```

If you want to see a total memory ( including the swap), use the -t switch, which will display a total line as shown below.

```

laurag@laurag-laptop:~$ free -t
      total        used        free      shared  buffers   cached
Mem:    3566408    1592148    1974260          0     204260     912556
-/+ buffers/cache:    475332    3091076
Swap:    4000176          0     4000176
Total:   7566584    1592148    5974436

```

## 24. top command examples

top command displays the top processes in the system ( by default sorted by cpu usage ). To sort top output by any column, Press O (upper-case O) , which will display all the possible columns that you can sort by as shown below.

```

Current Sort Field:  P  for window 1:Def
Select sort field via field letter, type any other key to return

  a: PID           = Process Id           v: nDRT           = Dirty Pages count
  d: UID           = User Id              y: WCHAN          = Sleeping in
Function
  e: USER          = User Name            z: Flags          = Task Flags
  .....

```

To displays only the processes that belong to a particular user use -u option. The following will show only the top processes that belong to oracle user.

```

$ top -u oracle

```

## 25. df command examples

Displays the file system disk space usage. By default df -k displays output in bytes.

```

$ df -k
Filesystem          1K-blocks      Used Available Use% Mounted on

```



```
/dev/sda1          29530400   3233104  24797232  12% /
/dev/sda2          120367992  50171596  64082060  44% /home
```

`df -h` displays output in human readable form. i.e size will be displayed in GB's.

```
laurag@laurag-laptop:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda1       29G   3.1G   24G   12% /
/dev/sda2      115G   48G   62G   44% /home
```

Use `-T` option to display what type of file system.

```
laurag@laurag-laptop:~$ df -T
Filesystem      Type  1K-blocks    Used Available Use% Mounted on
/dev/sda1      ext4   29530400    3233120  24797216  12% /
/dev/sda2      ext4  120367992   50171596  64082060  44% /home
```

## 26. kill command examples

Use `kill` command to terminate a process. First get the process id using `ps -ef` command, then use `kill -9` to kill the running Linux process as shown below. You can also use `killall`, `pkill`, `xkill` to terminate a unix process.

```
$ ps -ef | grep vim
laurag  7243  7222  9 22:43 pts/2    00:00:00 vim

$ kill -9 7243
```

## 27. rm command examples

Get confirmation before removing the file.

```
$ rm -i filename.txt
```

It is very useful while giving shell metacharacters in the file name argument.

Print the filename and get confirmation before removing the file.

```
$ rm -i file*
```

Following example recursively removes all files and directories under the example directory. This also removes the example directory itself.

```
$ rm -r example
```

## 28. cp command examples

Copy file1 to file2 preserving the mode, ownership and timestamp.

```
$ cp -p file1 file2
```

Copy file1 to file2. if file2 exists prompt for confirmation before overwriting it.

```
$ cp -i file1 file2
```

## 29. mv command examples

Rename file1 to file2. if file2 exists prompt for confirmation before overwriting it.

```
$ mv -i file1 file2
```

Note: mv -f is just the opposite, which will overwrite file2 without prompting.

mv -v will print what is happening during file rename, which is useful while specifying shell metacharacters in the file name argument.

```
$ mv -v file1 file2
```

## 30. cat command examples

You can view multiple files at the same time. Following example prints the content of file1 followed by file2 to stdout.

```
$ cat file1 file2
```

While displaying the file, following cat -n command will prepend the line number to each line of the output.

```
$ cat -n /etc/logrotate.conf
 1  /var/log/btmp {
 2      missingok
 3      monthly
 4      create 0660 root utmp
 5      rotate 1
 6  }
```

## 31. mount command examples

To mount a file system, you should first create a directory and mount it as shown below.

```
# mkdir /u01
```

```
# mount /dev/sdb1 /u01
```

You can also add this to the fstab for automatic mounting. i.e Anytime system is restarted, the filesystem will be mounted.

```
/dev/sdb1 /u01 ext2 defaults 0 2
```

## 32. chmod command examples

chmod command is used to change the permissions for a file or directory.

Following are the symbolic representation of three different roles:

- u is for user,
- g is for group,
- and o is for others.

Following are the symbolic representation of three different permissions:

- r is for read permission,
- w is for write permission,
- x is for execute permission.

Give full access to user and group (i.e read, write and execute ) on a specific file.

```
$ chmod ug+rwx file.txt
```

Revoke all access for the group (i.e read, write and execute ) on a specific file.

```
$ chmod g-rwx file.txt
```

Make permissions for a file the same as another file

```
$ chmod --reference=file1 file2
```

Apply the file permissions recursively to all the files in the sub-directories.

```
$ chmod -R ug+rwx file.txt
```

## 33. chown command examples

chown command is used to change the owner and group of a file.

To change owner to oracle and group to db on a file. i.e Change both owner and group at the same time.

```
$ chown oracle:dba dbora.sh
```

Use -R to change the ownership recursively.

```
$ chown -R oracle:dba /home/oracle
```

## 34. passwd command examples

Change your password from command line using passwd. This will prompt for the old password followed by the new password.

```
$ passwd
```

Super user can use passwd command to reset others password. This will not prompt for current password of the user.

```
# passwd USERNAME
```

Remove password for a specific user. Root user can disable password for a specific user. Once the password is disabled, the user can login without entering the password.

```
# passwd -d USERNAME
```

## 35. mkdir command examples

Following example creates a directory called temp under your home directory.

```
$ mkdir ~/temp
```

Create nested directories using one mkdir command. If any of these directories exist already, it will not display any error. If any of these directories doesn't exist, it will create them.

```
$ mkdir -p dir1/dir2/dir3/dir4/
```

## 36. ifconfig command examples

Use ifconfig command to view or configure a network interface (for example an Ethernet adapter) on the Linux system.

View all the interfaces along with status.

```
$ ifconfig -a
```

Start or stop a specific interface using up and down command as shown below.

```
$ ifconfig eth0 up
```

```
$ ifconfig eth0 down
```

## 37. uname command examples

Uname command displays important information about the system such as — Kernel name, Host name, Kernel release number, Processor type, etc.,

Sample uname output from a Ubuntu laptop is shown below.

```
$ uname -a
Linux john-laptop 2.6.32-24-generic #41-Ubuntu SMP Thu Aug 19 01:12:52 UTC
2010 i686 GNU/Linux
```

### 38. whereis command examples

When you want to find out where a specific Unix command exists (for example, where does ls command exist?), you can execute the following command.

```
$ whereis ls
ls: /bin/ls /usr/share/man/man1/ls.1.gz /usr/share/man/man1p/ls.1p.gz
```

When you want to search an executable from a path other than the whereis default path, you can use -B option and give path as argument to it. This searches for the executable lsmk in the /tmp directory, and displays it, if it is available.

```
$ whereis -u -B /tmp -f lsmk
lsmk: /tmp/lsmk
```

### 39. whatis command examples

Whatis command displays a single line description about a command.

```
$ whatis ls
ls          (1)  - list directory contents

$ whatis ifconfig
ifconfig (8)  - configure a network interface
```

### 40. locate command examples

Using locate command you can quickly search for the location of a specific file (or group of files). Locate command uses the database created by updatedb.

The example below shows all files in the system that contains the word crontab in it.

```
$ locate crontab
/etc/anacrontab
/etc/crontab
/usr/bin/crontab
/usr/share/doc/cron/examples/crontab2english.pl.gz
/usr/share/man/man1/crontab.1.gz
/usr/share/man/man5/anacrontab.5.gz
```

```
/usr/share/man/man5/crontab.5.gz
/usr/share/vim/vim72/syntax/crontab.vim
```

## 41. man command examples

Display the man page of a specific command.

```
$ man crontab
```

When a man page for a command is located under more than one section, you can view the man page for that command from a specific section as shown below.

```
$ man SECTION-NUMBER commandname
```

Following 8 sections are available in the man page.

1. General commands
2. System calls
3. C library functions
4. Special files (usually devices, those found in /dev) and drivers
5. File formats and conventions
6. Games and screensavers
7. Miscellaneous
8. System administration commands and daemons

For example, when you do `whatis crontab`, you'll notice that `crontab` has two man pages (section 1 and section 5). To view section 5 of `crontab` man page, do the following.

```
$ whatis crontab
crontab (1)          - maintain crontab files for individual users (V3)
crontab (5)          - tables for driving cron
```

```
$ man 5 crontab
```

## 42. tail command examples

Print the last 10 lines of a file by default.

```
$ tail filename.txt
```

Print N number of lines from the file named `filename.txt`

```
$ tail -n N filename.txt
```

View the content of the file in real time using `tail -f`. This is useful to view the log files, that keeps growing. The command can be terminated using CTRL-C.

```
$ tail -f log-file
```

### 43. less command examples

less is very efficient while viewing huge log files, as it doesn't need to load the full file while opening.

```
$ less huge-log-file.log
```

Forward Search:

- / – search for a pattern which will take you to the next occurrence.
- n – for next match in forward
- N – for previous match in backward

Backward Search:

- ? – search for a pattern which will take you to the previous occurrence.
- n – for next match in backward direction
- N – for previous match in forward direction

Once you open a large file using less command, following two keys can be very helpful.

```
CTRL+F - forward one window  
CTRL+B - backward one window
```

### 44. su command examples

Switch to a different user account using su command. Super user can switch to any other user without entering their password. The dash passes along the environment variables as if you had logged in as that user from the start. In the following example you will be asked for the oracle user's password.

```
$ su - oracle
```

Execute a single command from a different account name. In the following example, john can execute the ls command as raj username. Once the command is executed, it will come back to john's account.

```
[john@dev-server]$ su - raj -c 'ls'  
[john@dev-server]$
```

Login to a specified user account, and execute the specified shell instead of the default shell.

```
$ su -s 'SHELLNAME' USERNAME
```

### 45. ping command examples

Ping a remote host by sending only 5 packets.

```
$ ping -c 5 gmail.com
```

## 46. sudo command (for when you can't use su)

Using sudo allows a user to execute commands as root:

```
$ sudo head -n 4 /etc/sudoers
```

**Note:** If you are executing sudo for the first time in a shell it will ask for the password (current user password ) by default.

The -s flag causes all subsequent commands to be entered as if they were preceded by the sudo command:

```
$ sudo -s
```

If you've forgotten to give sudo for a command that requires root privilege, instead of typing the command with sudo again, you can simply do sudo !! as shown below.

```
$ head -n 4 /etc/sudoers
head: cannot open `/etc/sudoers' for reading: Permission denied
```

```
$ sudo !!
sudo head -n 4 /etc/sudoers
# /etc/sudoers
#
# This file MUST be edited with the 'visudo' command as root.
#
```