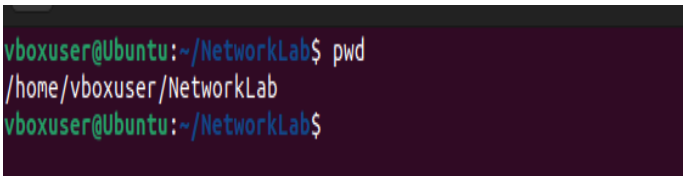
EXPERIMENT NO:4 **DATE:**

FAMILIARISATION WITH LINUX COMMANDS

AIM: Basic Linux commands

1. pwd

Use the pwd command to find out the path of the current working directory (folder) you're in. The command will return an absolute (full) path, which is basically a path of all the directories that start with a forward slash (/). An example of an absolute path is /home/username.



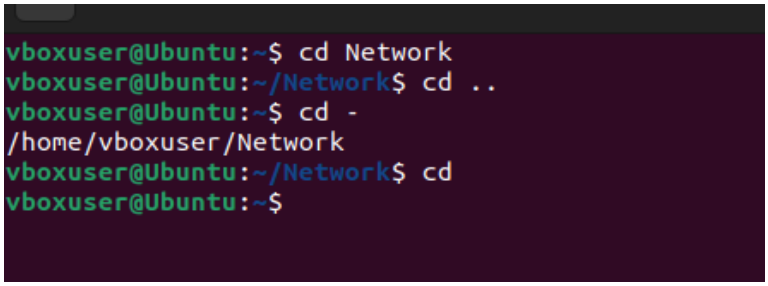
2. cd

To navigate through the Linux files and directories, use the cd . It requires either the full path or the name of the directory, depending on the current working directory that you're in. Let's say you're in /home/username/Documents and you want to go to Photos, a subdirectory of Documents. To do so, simply type the following command: cd Photos. Another scenario is if you want to switch to a completely new directory, for example,/home/username/Movies. In this case, you have to type cd followed by thedirectory's absolute path: cd /home/username/Movies.

There are some shortcuts to help you navigate quickly:

- cd .. (with two dots) to move one directory up
- cd to go straight to the home folder
- cd- (with a hyphen) to move to your previous directory

On a side note, Linux's shell is case sensitive. So, you have to type the name's directory exactly as it is.



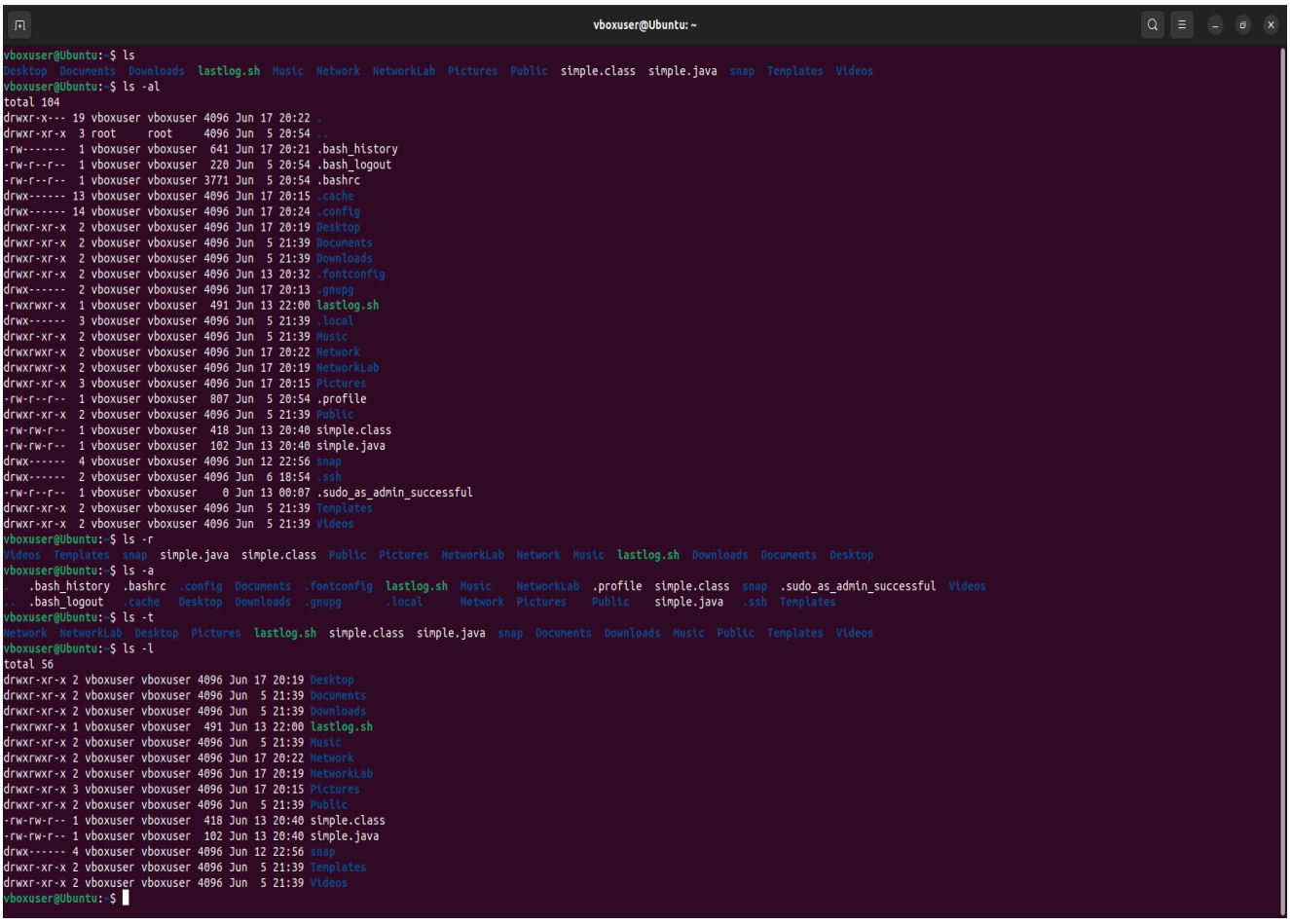
3. ls

The ls command is used to view the contents of a directory. By default, this command will display the contents of your current working directory.

If you want to see the content of other directories, type ls and then the directory's path. For example, enter ls /home/username/Documents to view the content of Documents.

There are variations you can use with the ls command:

- ls -R will list all the files in the sub-directories as well
- ls -a will show the hidden files
- ls -al will list the files and directories with detailed information like the permissions, size, owner, etc.
- ls -t lists files sorted in the order of "last modified"
- -r option will reverse the natural sorting order. Usually used in combination with other switches such as ls -tr. This will reverse the time-wise listing.



```
vboxuser@Ubuntu:~$ ls -R
.:
Desktop  Documents  Downloads  lastlog.sh  Music  Network  NetworkLab  Pictures  Public  simple.class  simple.java  snap  Templates  Videos

./Desktop:
pwd.png

./Documents:

./Downloads:

./Music:

./Network:

./NetworkLab:

./Pictures:
Screenshots

./Pictures/Screenshots:
cd.png  ls.png  pwd.png

./Public:

./snap:
firefox  snapd-desktop-integration

./snap/firefox:
2356  common  current

./snap/firefox/2356:

./snap/firefox/common:

./snap/snapd-desktop-integration:
49  83  common  current

./snap/snapd-desktop-integration/49:

./snap/snapd-desktop-integration/83:

./snap/snapd-desktop-integration/common:

./Templates:

./Videos:
vboxuser@Ubuntu:~$
```

4. cat

cat (short for concatenate) is one of the most frequently used commands in Linux.It is used to list the contents of a file on the standard output stdout . To run this command, type cat followed by the file's name and its extension. For instance: cat file.txt.

Here are other ways to use the cat command:

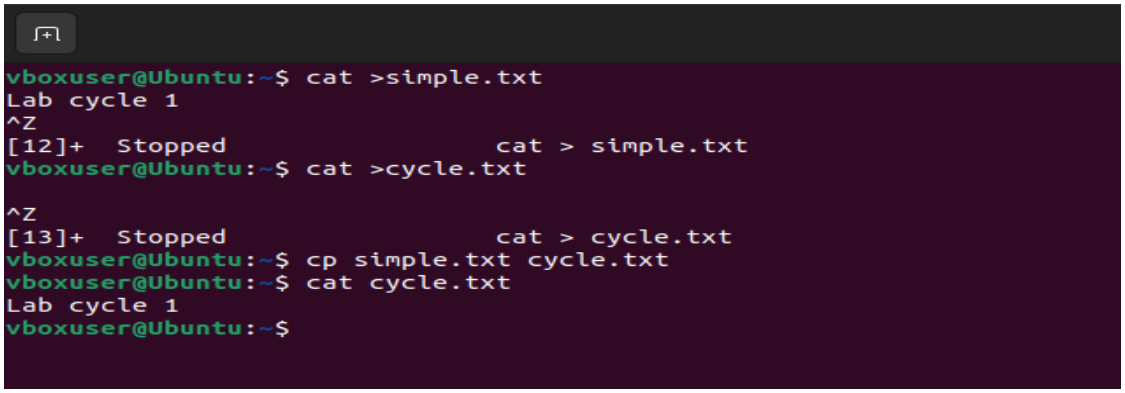
- cat > filename creates a new file
- cat filename1 filename2>filename3 joins two files (1 and 2) and stores the output of them in a new file (3)
- to convert a file to upper or lower case use, cat filename | tr a-z A-Z>output.txt.

```
vboxuser@Ubuntu:~$ cat >a.txt
Network Lab
^Z
[10]+  Stopped                 cat > a.txt
vboxuser@Ubuntu:~$ cat >b.txt
linux commands
^Z
[11]+  Stopped                 cat > b.txt
vboxuser@Ubuntu:~$ cat a.txt >c.txt
vboxuser@Ubuntu:~$ cat c.txt
Network Lab
vboxuser@Ubuntu:~$ cat a.txt
Network Lab
vboxuser@Ubuntu:~$ cat b.txt
linux commands
vboxuser@Ubuntu:~$ cat >a.txt b.txt >d.txt
vboxuser@Ubuntu:~$ cat d.txt
linux commands
vboxuser@Ubuntu:~$
```

5. cp

Use the cp command to copy files from the current directory to a different directory. For instance, the command cp scenery.jpg /home/username/Pictures would create a copy of scenery.jpg (from your current directory) into the Pictures directory.

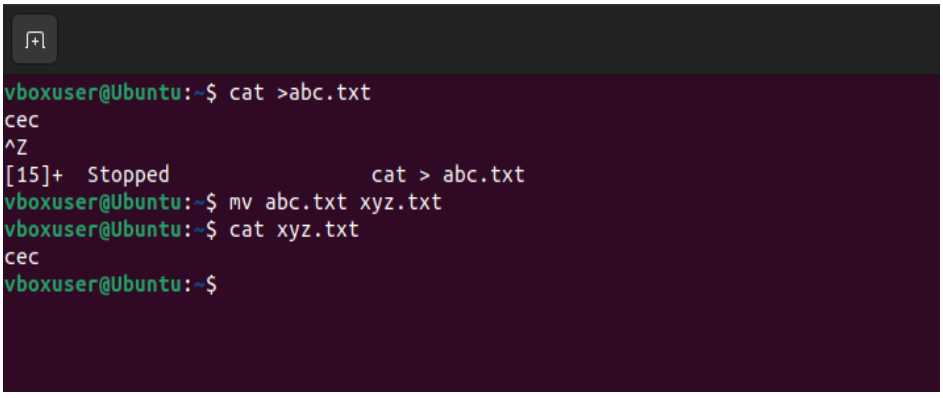
- cp -i will ask for user's consent in case of a potential file overwrite.
- cp -p will preserve source files' mode, ownership and timestamp.
- cp -r will copy directories recursively.
- cp -u copies files only if the destination file is not existing or the source file is newer than the destination file.



6. mv

The primary use of the mv command is to move files, although it can also be used to rename files.

The arguments in mv are similar to the cp command. You need to type mv, the file's name, and the destination's directory. For example: mv file.txt /home/username/Documents.
To rename files, the Linux is mv oldname.extnewname.ext.



7. mkdir

Use mkdir command to make a new directory — if you type mkdir

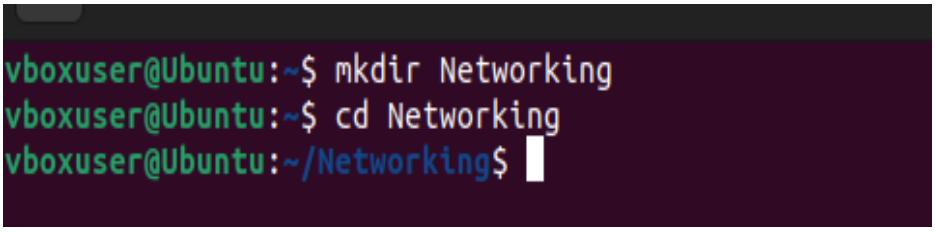
Music it will create a directory called Music.

There are extra mkdir commands as well:

● To generate a new directory inside another directory, use this Linux basic command mkdir Music/Newfile

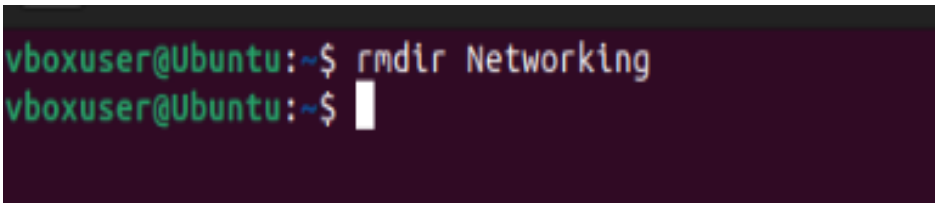
● use the p (parents) option to create a directory in between two existing directories.

Forexample, mkdir -p Music/2020/Newfile will create the new “2020” file.



8. rmdir

If you need to delete a directory, use the rmdir command. However, rmdir only allows you to delete empty directories.

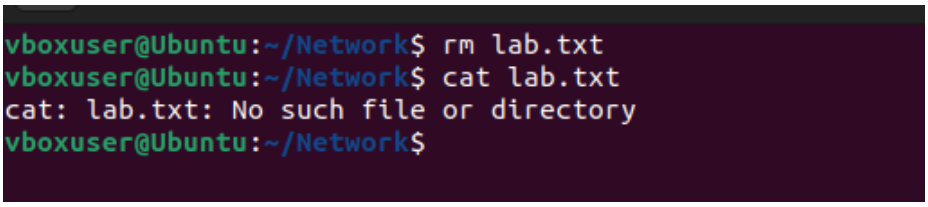


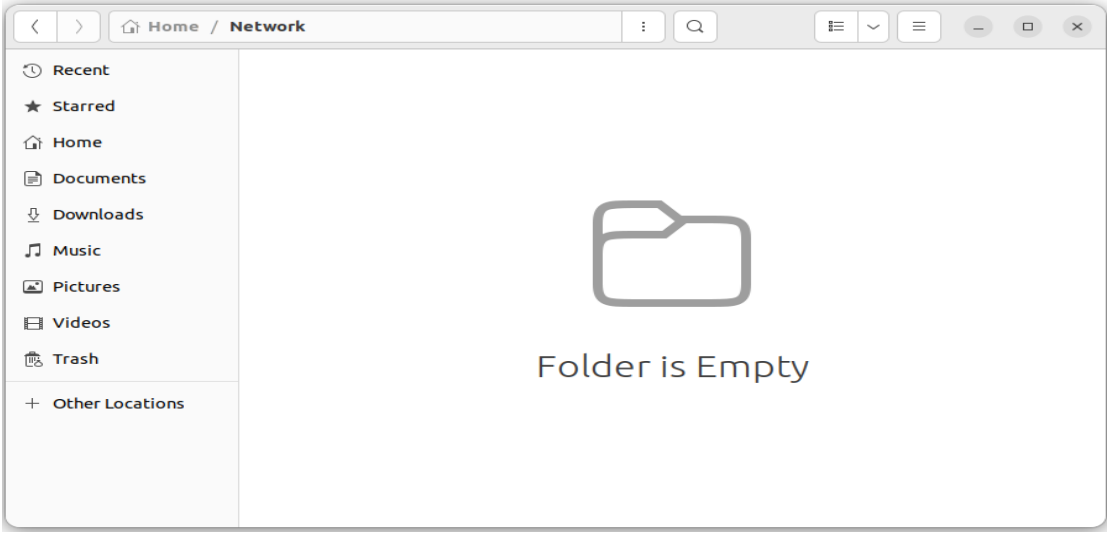
9. rm

The rm command is used to delete directories and the contents within them. If you only want to delete the directory — as an alternative to rmdir — use rm -r.

Note: Be very careful with this command and double-check which directory you are in.

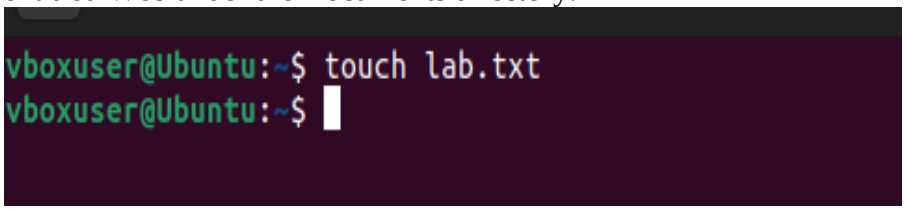
This will delete everything and there is no undo.

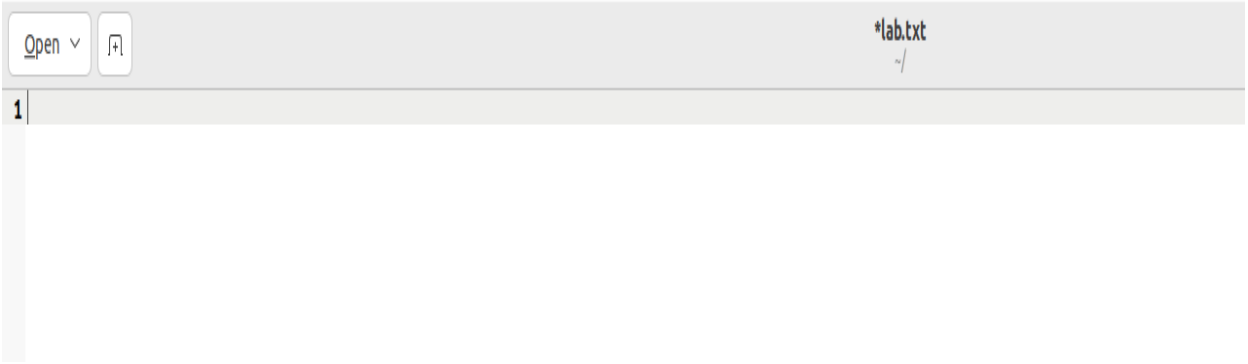




10. touch

The touch command allows you to create a blank new file through the Linux command line. As an example, enter touch /home/username/Documents/Web.html to create an HTML file entitled Web under the Documents directory.

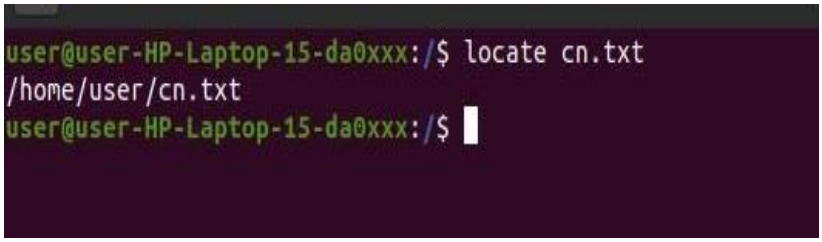




11. locate

You can use this command to locate a file, just like the search command in Windows. What's more, using the -i argument along with this command will make it case-insensitive, so you can search for a file even if you don't remember its exact name. To search for a file that contains two or more words, use an asterisk (*). For example,

locate -i school*note command will search for any file that contains the word “school” and“note”, whether it is uppercase or lowercase.



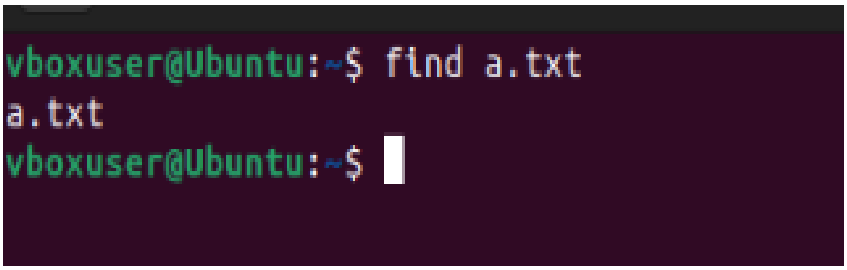
12. find

Similar to the locate command, using find also searches for files and directories. The difference is, you use the find command to locate files within a given directory.

As an example, find /home/ -name notes.txt command will search for a file called notes.txt within the home directory and its subdirectories.

Other variations when using the find are:

- To find files in the current directory use, find . -name notes.txt
- To look for directories use, / -type d -name notes. Txt.



13. grep

Another basic Linux command that is undoubtedly helpful for everyday use is grep. It lets you search through all the text in a given file.

To illustrate, grep blue notepad.txt will search for the word blue in the notepad file.

Lines that contain the searched word will be displayed fully. You should refer to some grep tutorial

Useful for command line use as well. Usually output of a previous command is piped into the grep command. For example ls -l | grep “kernel”

```
vboxuser@Ubuntu:~$ cat >mail.txt
arya@gmail.com
anju@gmail.com
lakshmi@gmail.com
megha@gmail.com
sruthy@outlook.com

^Z
[1]+  Stopped                 cat > mail.txt
vboxuser@Ubuntu:~$ grep gmail mail.txt
arya@gmail.com
anju@gmail.com
lakshmi@gmail.com
megha@gmail.com
vboxuser@Ubuntu:~$
```

14. sudo

Short for “SuperUser Do”, this command enables you to perform tasks that require administrative or root permissions. You must have sufficient permissions to use this command.

```
vboxuser@Ubuntu:~$ sudo -h
sudo - execute a command as another user

usage: sudo -h | -K | -k | -V
usage: sudo -v [-ABknS] [-g group] [-h host] [-p prompt] [-u user]
usage: sudo -l [-ABknS] [-g group] [-h host] [-p prompt] [-U user] [-u user] [command]
usage: sudo [-ABbEHknPS] [-r role] [-t type] [-C num] [-D directory] [-g group] [-h host] [-p prompt] [-R directory] [-T timeout] [-u user] [VAR=value] [-i|-s] [<command>]
usage: sudo -e [-ABknS] [-r role] [-t type] [-C num] [-D directory] [-g group] [-h host] [-p prompt] [-R directory] [-T timeout] [-u user] file ...

Options:
  -A, --askpass                 use a helper program for password prompting
  -b, --background              run command in the background
  -B, --bell                    ring bell when prompting
  -C, --close-from=num          close all file descriptors >= num
  -D, --chdir=directory         change the working directory before running command
  -E, --preserve-env            preserve user environment when running command
      --preserve-env=list       preserve specific environment variables
  -e, --edit                    edit files instead of running a command
  -g, --group=group             run command as the specified group name or ID
  -H, --set-home                set HOME variable to target user's home dir
  -h, --help                    display help message and exit
  -h, --host=host               run command on host (if supported by plugin)
  -i, --login                   run login shell as the target user; a command may also be specified
  -K, --remove-timestamp        remove timestamp file completely
  -k, --reset-timestamp         invalidate timestamp file
  -l, --list                    list user's privileges or check a specific command; use twice for longer format
  -n, --non-interactive         non-interactive mode, no prompts are used
  -P, --preserve-groups         preserve group vector instead of setting to target's
  -p, --prompt=prompt           use the specified password prompt
  -R, --chroot=directory        change the root directory before running command
  -r, --role=role               create SELinux security context with specified role
  -S, --stdin                   read password from standard input
  -s, --shell                   run shell as the target user; a command may also be specified
  -t, --type=type               create SELinux security context with specified type
  -T, --command-timeout=timeout terminate command after the specified time limit
  -U, --other-user=user         in list mode, display privileges for user
  -u, --user=user               run command (or edit file) as specified user name or ID
  -V, --version                 display version information and exit
  -v, --validate                update user's timestamp without running a command
  --                            stop processing command line arguments
vboxuser@Ubuntu:~$
```

15. df

se df command to get a report on the system’s disk space usage, shown in percentage and KBs. If you want to see the report in megabytes, type df -m.

```
vboxuser@Ubuntu:~$ df
Filesystem     1K-blocks     Used Available Use% Mounted on
tmpfs             202268     1472    200796   1% /run
/dev/sda3       25106692 13584776  10221232  58% /
tmpfs            1011324        0   1011324   0% /dev/shm
tmpfs               5120        4      5116   1% /run/lock
/dev/sda2         524252     6216    518036   2% /boot/efi
tmpfs             202264      100    202164   1% /run/user/1000
vboxuser@Ubuntu:~$
```

```
vboxuser@Ubuntu:~$ df -m
Filesystem     1M-blocks  Used Available Use% Mounted on
tmpfs                198     2       197   1% /run
/dev/sda3          24519 13267      9982  58% /
tmpfs                988     0       988   0% /dev/shm
tmpfs                  5     1         5   1% /run/lock
/dev/sda2            512     7       506   2% /boot/efi
tmpfs                198     1       198   1% /run/user/1000
vboxuser@Ubuntu:~$
```

16. du

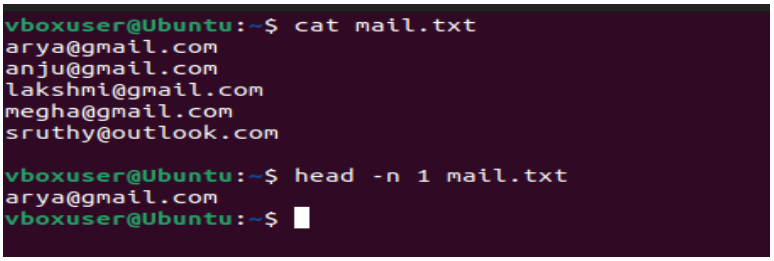
If you want to check how much space a file or a directory takes, the du (Disk Usage) command is the answer. However, the disk usage summary will show disk block numbers instead of the usual size format. If you want to see it in bytes, kilobytes, and megabytes, add the -h argument to the command line.

```
vboxuser@Ubuntu:~$ du
392     ./.cache/gstreamer-1.0
36      ./.cache/thumbnails/normal
340     ./.cache/thumbnails/large
380     ./.cache/thumbnails
4       ./.cache/ibus-table
56      ./.cache/fontconfig
8       ./.cache/mesa_shader_cache/bc
8       ./.cache/mesa_shader_cache/14
8       ./.cache/mesa_shader_cache/4f
8       ./.cache/mesa_shader_cache/a6
8       ./.cache/mesa_shader_cache/8a
8       ./.cache/mesa_shader_cache/d5
8       ./.cache/mesa_shader_cache/26
12      ./.cache/mesa_shader_cache/72
8       ./.cache/mesa_shader_cache/2b
16      ./.cache/mesa_shader_cache/42
8       ./.cache/mesa_shader_cache/57
8       ./.cache/mesa_shader_cache/06
8       ./.cache/mesa_shader_cache/91
8       ./.cache/mesa_shader_cache/b5
8       ./.cache/mesa_shader_cache/d3
12      ./.cache/mesa_shader_cache/18
8       ./.cache/mesa_shader_cache/94
8       ./.cache/mesa_shader_cache/20
8       ./.cache/mesa_shader_cache/d7
8       ./.cache/mesa_shader_cache/0d
12      ./.cache/mesa_shader_cache/dd
8       ./.cache/mesa_shader_cache/bf
8       ./.cache/mesa_shader_cache/8f
8       ./.cache/mesa_shader_cache/1f
8       ./.cache/mesa_shader_cache/93
8       ./.cache/mesa_shader_cache/61
12      ./.cache/mesa_shader_cache/3e
8       ./.cache/mesa_shader_cache/0b
8       ./.cache/mesa_shader_cache/68
8       ./.cache/mesa_shader_cache/de
8       ./.cache/mesa_shader_cache/cc
12      ./.cache/mesa_shader_cache/32
8       ./.cache/mesa_shader_cache/e6
8       ./.cache/mesa_shader_cache/6c
8       ./.cache/mesa_shader_cache/2f
12      ./.cache/mesa_shader_cache/b4
12      ./.cache/mesa_shader_cache/4e
```

```
vboxuser@Ubuntu:~$ du -b
398325  ./.cache/gstreamer-1.0
11895   ./.cache/thumbnails/normal
276555  ./.cache/thumbnails/large
292546  ./.cache/thumbnails
4096    ./.cache/ibus-table
51632   ./.cache/fontconfig
6682    ./.cache/mesa_shader_cache/bc
5700    ./.cache/mesa_shader_cache/14
7254    ./.cache/mesa_shader_cache/4f
6879    ./.cache/mesa_shader_cache/a6
7674    ./.cache/mesa_shader_cache/8a
6982    ./.cache/mesa_shader_cache/d5
7691    ./.cache/mesa_shader_cache/26
7343    ./.cache/mesa_shader_cache/72
6319    ./.cache/mesa_shader_cache/2b
12917   ./.cache/mesa_shader_cache/42
6768    ./.cache/mesa_shader_cache/57
6607    ./.cache/mesa_shader_cache/06
6837    ./.cache/mesa_shader_cache/91
6696    ./.cache/mesa_shader_cache/b5
7195    ./.cache/mesa_shader_cache/d3
8752    ./.cache/mesa_shader_cache/18
6561    ./.cache/mesa_shader_cache/94
6605    ./.cache/mesa_shader_cache/20
7409    ./.cache/mesa_shader_cache/d7
7103    ./.cache/mesa_shader_cache/0d
9464    ./.cache/mesa_shader_cache/dd
7100    ./.cache/mesa_shader_cache/bf
7355    ./.cache/mesa_shader_cache/8f
6964    ./.cache/mesa_shader_cache/1f
6604    ./.cache/mesa_shader_cache/93
7782    ./.cache/mesa_shader_cache/61
9419    ./.cache/mesa_shader_cache/3e
6031    ./.cache/mesa_shader_cache/0b
7589    ./.cache/mesa_shader_cache/68
6099    ./.cache/mesa_shader_cache/de
6260    ./.cache/mesa_shader_cache/cc
8214    ./.cache/mesa_shader_cache/32
6224    ./.cache/mesa_shader_cache/e6
6604    ./.cache/mesa_shader_cache/6c
6224    ./.cache/mesa_shader_cache/2f
7642    ./.cache/mesa_shader_cache/b4
10230   ./.cache/mesa_shader_cache/4e
7468    ./.cache/mesa_shader_cache/f6
```

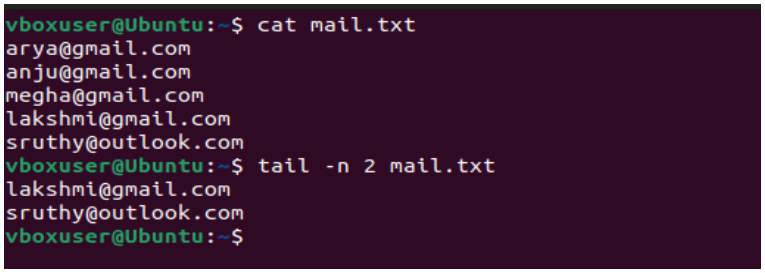
17. head

The head command is used to view the first lines of any text file. By default, it will show the first ten lines, but you can change this number to your liking. For example, if you only want to show the first five lines, type head -n 5 filename.ext. (Read the manual)



18. tail

This one has a similar function to the head command, but instead of showing the first lines, the tail command will display the last ten lines of a text file. For example, tail -n filename.ext.



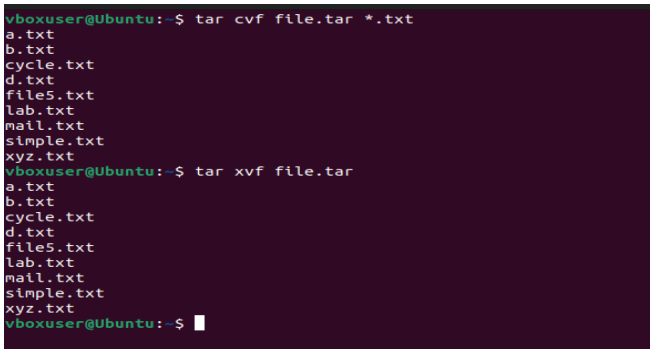
19. diff

Short for difference, the diff command compares the contents of two files line by line. After analyzing the files, it will output the lines that do not match. Programmers often use this command when they need to make program alterations instead of rewriting the entire source code.

The simplest form of this command is diff file1.ext file2.ext

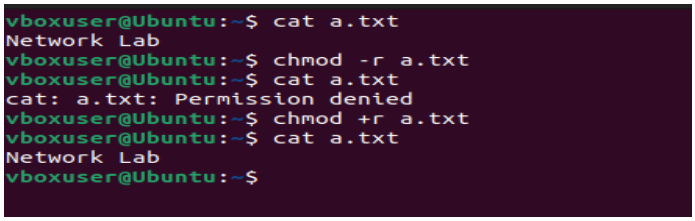
20. tar

The tar command is the most used command to archive multiple files into a tarball — a common Linux file format that is similar to zip format, with compression being optional. This command is quite complex with a long list of functions such as adding new files into an existing archive, listing the content of an archive, extracting the content from an archive, and many more. Read some tutorial on net.



21. chmod

chmod is another Linux command, used to change the read, write, and execute permissions of files and directories. Read about permissions and how to manipulate them .

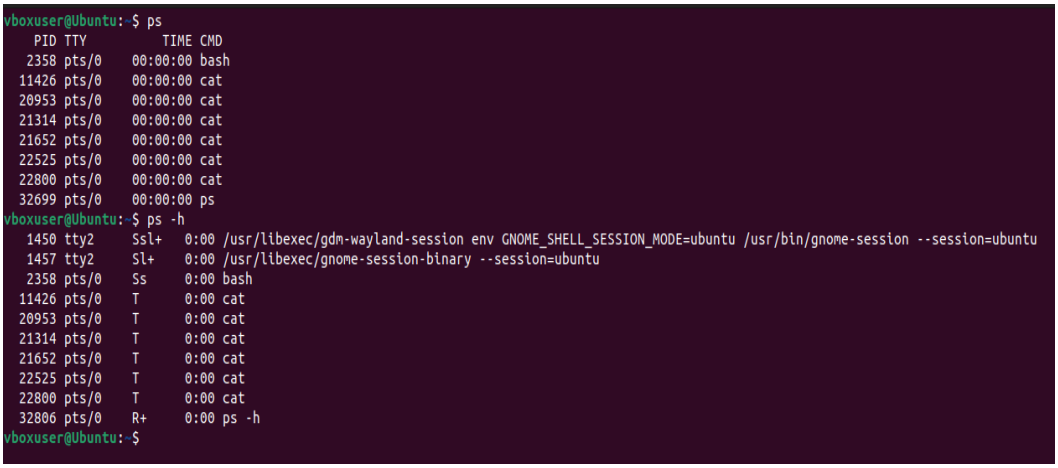


22. chown

In Linux, all files are owned by a specific user. The chown command enables you to change or transfer the ownership of a file to the specified username. For instance, chown linuxuser2 file.ext will make linuxuser2 as the owner of the file.ext.

23. ps

Ps command will display all current processes along with their process ids (PID) . Read manuals for various options.



24. Kill

If you have an unresponsive program, you can terminate it manually by using the kill command. It will send a certain signal to the misbehaving app and instructs the app to terminate itself.

There is a total of sixty-four signals that you can use, but people usually only use two signals:

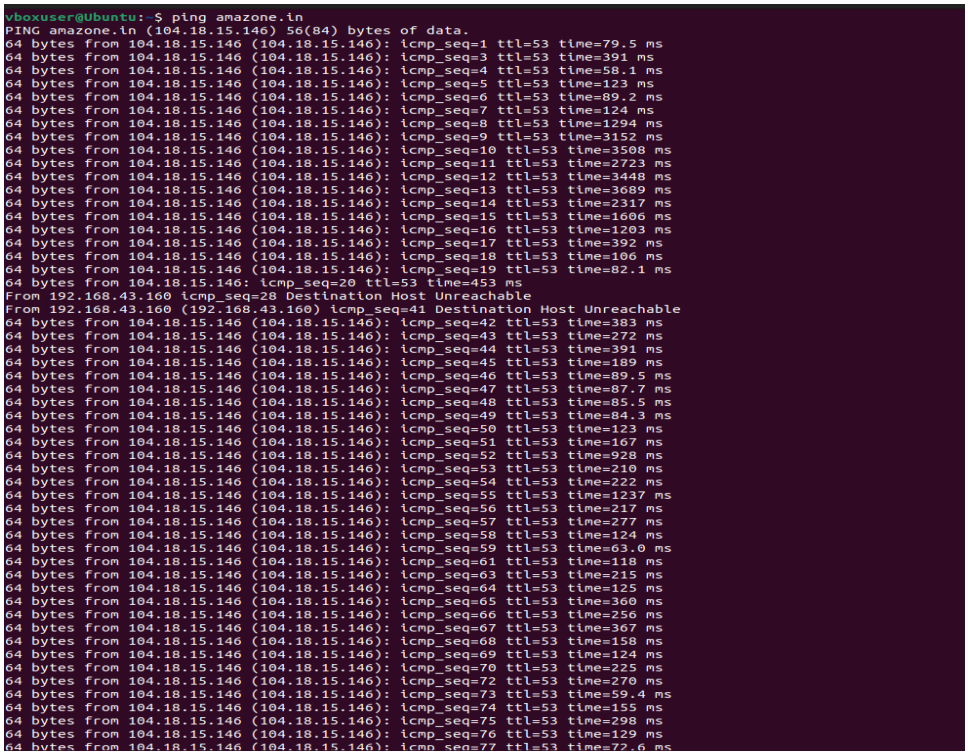
- SIGTERM (15) — requests a program to stop running and gives it some time to save all of its progress. If you don't specify the signal when entering the kill command, this signal will be used.
- SIGKILL (9) — forces programs to stop immediately. Unsaved progress will be lost. Besides knowing the signals, you also need to know the process identification number (PID) of the program you want to kill. If you don't know the PID, simply run the command ps ux.

After knowing what signal you want to use and the PID of the program, enter the following syntax: kill [signal option] PID.

You can issue kill -9 PID

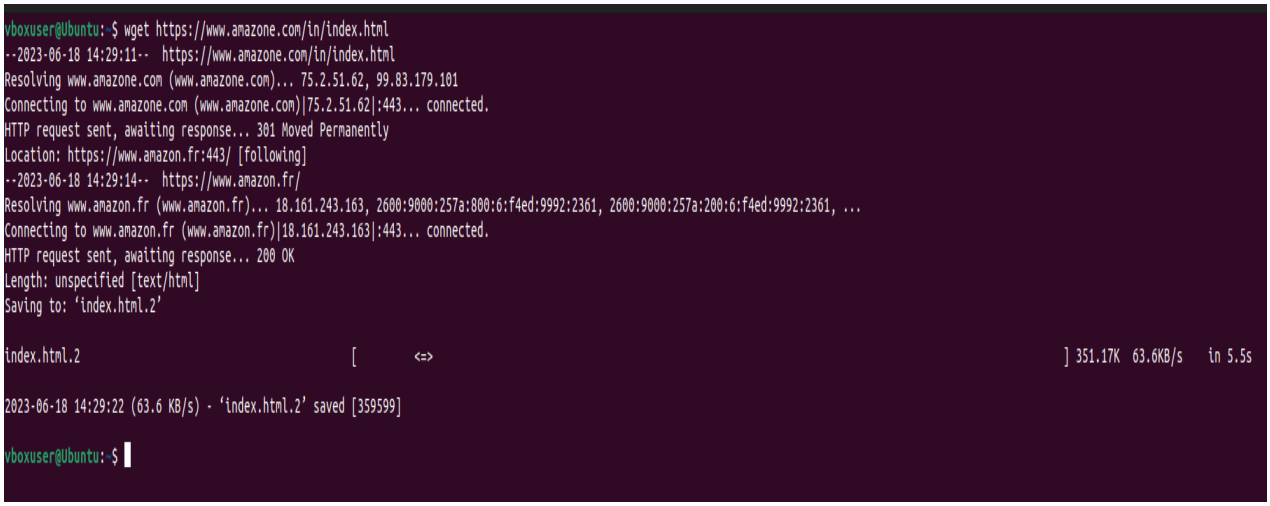
25. ping

Use the ping command to check your connectivity status to a server. For example, by simply entering ping google.com, the command will check whether you're able to connect to Google and also measure the response time.



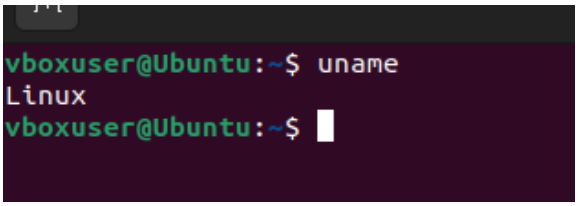
26. wget

The Linux command line is super useful — you can even download files from the internet with the help of the wget command. To do so, simply type wget followed by the download link.



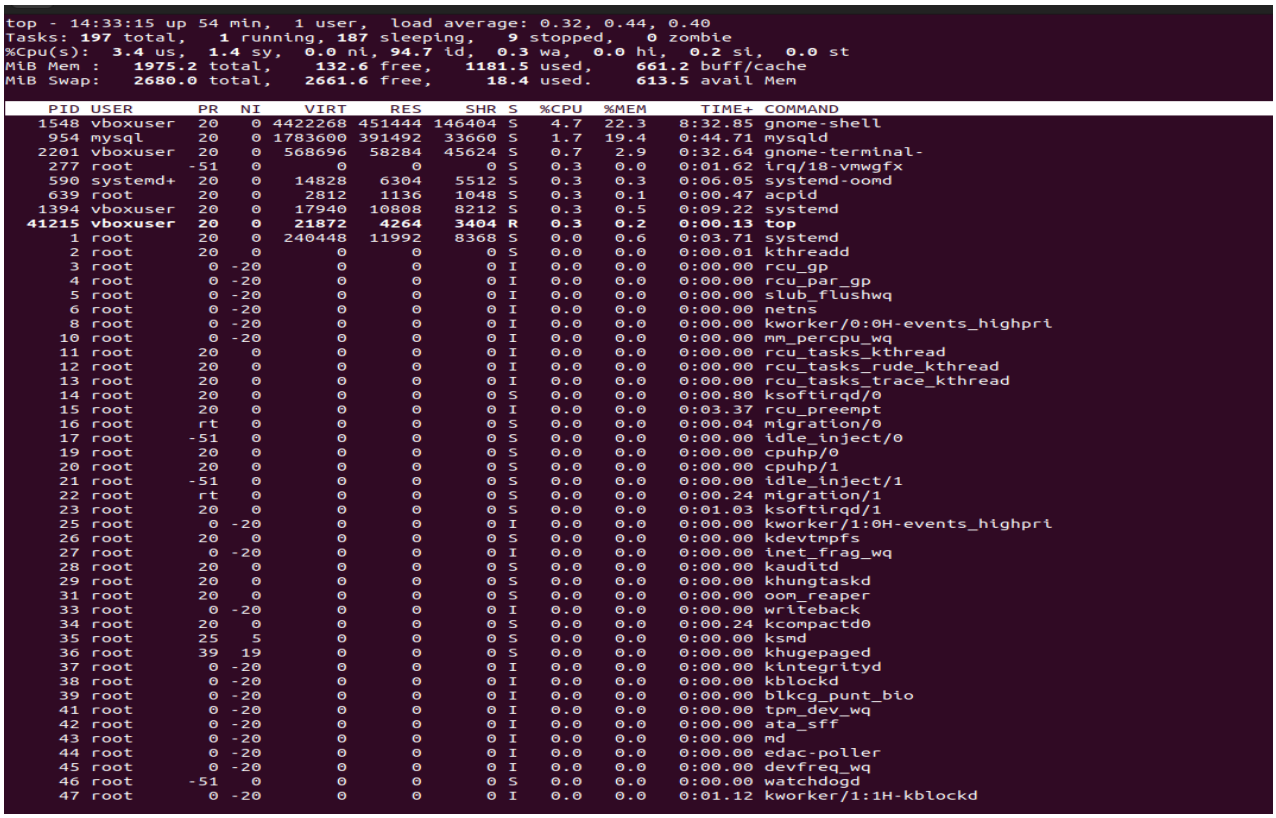
27. uname

The uname command, short for Unix Name, will print detailed information about your Linux system like the machine name, operating system, kernel, and so on.



28. top

As a terminal equivalent to Task Manager in Windows, the top command will display a list of running processes and how much CPU each process uses. It's very useful to monitor system resource usage, especially knowing which process needs to be terminated because it consumes too many resources.



29. history

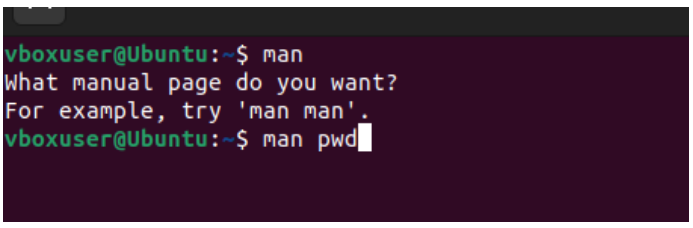
When you've been using Linux for a certain period of time, you'll quickly notice that you can run hundreds of commands every day. As such, running history command is particularly useful if you want to review the s you've entered before.

```
vboxuser@Ubuntu:~$ history
    1  sudo apt update
    2  sudo apt install mysql-server
    3  sudo
    4  sudo apt install mysql-server
    5  sudo apt install default-jdk
    6  clear
    7  who
    8  vi/etc/sudoers
    9  sudo vi /etc/sudoers
   10  su -
   11  su
   12  restart
   13  reboot
   14  sudo apt install mysql-server
   15  sudo systemctl status mysql
   16  sudo mysql_secure_installation
   17  sudo mysql
   18  clear
   19  sudo apt install default-jdk
   20  clear
   21  sudo apt install default-jdk
   22  gedit simple.java
   23  javac simple.java
   24  gedit simple.java
   25  javac simple.java
   26  gedit simple.java
   27  javac simple.java
   28  gedit simple.java
   29  javac simple.java
   30  java simple
   31  sudo mysql
   32  pwd
   33  clear
   34  cd
   35  clear
   36  mkdir NetworkLab
   37  pwd
   38  cd NetworkLab
   39  clear
```

30. man

Confused about the function of certain Linux commands? Don't worry, you can easily learn how to use them right from Linux's shell by using the man command. For instance, entering man tail will show the manual instruction of the tail command.

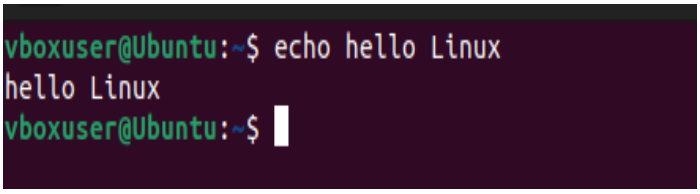
Use the command: man to start learning about man utility.



```
PWD(1)                                                          User Commands                                                          PWD(1)

NAME
       pwd - print name of current/working directory

SYNOPSIS
       pwd [OPTION]...

DESCRIPTION
       Print the full filename of the current working directory.

       -L, --logical
              use PWD from environment, even if it contains symlinks

       -P, --physical
              avoid all symlinks

       --help display this help and exit

       --version
              output version information and exit

       If no option is specified, -P is assumed.

       NOTE: your shell may have its own version of pwd, which usually supersedes the version described here.  Please refer to your shell's documentation for details about the options it supports.

AUTHOR
       Written by Jim Meyering.

REPORTING BUGS
       GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
       Report any translation bugs to <https://translationproject.org/team/>

COPYRIGHT
       Copyright © 2020 Free Software Foundation, Inc.  License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.
       This is free software: you are free to change and redistribute it.  There is NO WARRANTY, to the extent permitted by law.

SEE ALSO
       getcwd(3)

       Full documentation <https://www.gnu.org/software/coreutils/pwd>
       or available locally via: info '(coreutils) pwd invocation'

GNU coreutils 8.32                                              February 2022                                                          PWD(1)
 Manual page pwd(1) line 1/44 (END) (press h for help or q to quit)
```

31.echo

This command is used to move some data into a file. For example, if you want to add the text, “Hello, my name is John” into a file called name.txt, you would type echo Hello, my name is John >> name.txt



32. zip, unzip

Use the zip command to compress your files into a zip archive, and use the unzip command to extract the zipped files from a zip archive. (This program should be installed , some distributions may not have them. You can also look at gzip and bzip commands)

```
vboxuser@Ubuntu:~$ zip
Copyright (c) 1990-2008 Info-ZIP - Type 'zip "-L"' for software license.
Zip 3.0 (July 5th 2008). Usage:
zip [-options] [-b path] [-t mmddyyyy] [-n suffixes] [zipfile list] [-xi list]
  The default action is to add or replace zipfile entries from list, which
  can include the special name - to compress standard input.
  If zipfile and list are omitted, zip compresses stdin to stdout.
  -f   freshen: only changed files  -u   update: only changed or new files
  -d   delete entries in zipfile    -m   move into zipfile (delete OS files)
  -r   recurse into directories     -j   junk (don't record) directory names
  -0   store only                   -l   convert LF to CR LF (-ll CR LF to LF)
  -1   compress faster              -9   compress better
  -q   quiet operation              -v   verbose operation/print version info
  -c   add one-line comments        -z   add zipfile comment
  -@   read names from stdin        -o   make zipfile as old as latest entry
  -x   exclude the following names  -i   include only the following names
  -F   fix zipfile (-FF try harder) -D   do not add directory entries
  -A   adjust self-extracting exe   -J   junk zipfile prefix (unzipsfx)
  -T   test zipfile integrity       -X   eXclude eXtra file attributes
  -y   store symbolic links as the link instead of the referenced file
  -e   encrypt                      -n   don't compress these suffixes
  -h2  show more help

vboxuser@Ubuntu:~$
```

```
vboxuser@Ubuntu:~$ unzip
UnZip 6.00 of 20 April 2009, by Debian. Original by Info-ZIP.

Usage: unzip [-Z] [-opts[modifiers]] file[.zip] [list] [-x xlist] [-d exdir]
  Default action is to extract files in list, except those in xlist, to exdir;
  file[.zip] may be a wildcard.  -Z => ZipInfo mode ("unzip -Z" for usage).

  -p  extract files to pipe, no messages     -l  list files (short format)
  -f  freshen existing files, create none    -t  test compressed archive data
  -u  update files, create if necessary      -z  display archive comment only
  -v  list verbosely/show version info       -T  timestamp archive to latest
  -x  exclude files that follow (in xlist)   -d  extract files into exdir
modifiers:
  -n  never overwrite existing files         -q  quiet mode (-qq => quieter)
  -o  overwrite files WITHOUT prompting      -a  auto-convert any text files
  -j  junk paths (do not make directories)   -aa treat ALL files as text
  -U  use escapes for all non-ASCII Unicode  -UU ignore any Unicode fields
  -C  match filenames case-insensitively     -L  make (some) names lowercase
  -X  restore UID/GID info                   -V  retain VMS version numbers
  -K  keep setuid/setgid/tacky permissions   -M  pipe through "more" pager
  -O CHARSET  specify a character encoding for DOS, Windows and OS/2 archives
  -I CHARSET  specify a character encoding for UNIX and other archives

See "unzip -hh" or unzip.txt for more help.  Examples:
  unzip data1 -x joe   => extract all files except joe from zipfile data1.zip
  unzip -p foo | more  => send contents of foo.zip via pipe into program more
  unzip -fo foo ReadMe => quietly replace existing ReadMe if archive file newer
vboxuser@Ubuntu:~$
```

33. hostname

If you want to know the name of your host/network simply type hostname. Adding a -I to the end will display the IP address of your network.

```
vboxuser@Ubuntu:~$ hostname
Ubuntu
vboxuser@Ubuntu:~$ hostname -I
10.0.2.15
vboxuser@Ubuntu:~$
```

34. useradd, userdel

This is available only to system admins.Since Linux is a multi-user system, this means more than one person can interact with the same system at the same time. useradd is used to create a new user, while passwd is adding a password to that user's account. To add a new person named John type, useradd John and then to add his password type, passwd 123456789

```
vboxuser@Ubuntu:~$ useradd
Usage: useradd [options] LOGIN
       useradd -D
       useradd -D [options]

Options:
      --badnames                do not check for bad names
  -b, --base-dir BASE_DIR       base directory for the home directory of the
                                new account
      --btrfs-subvolume-home    use BTRFS subvolume for home directory
  -c, --comment COMMENT         GECOS field of the new account
  -d, --home-dir HOME_DIR       home directory of the new account
  -D, --defaults                print or change default useradd configuration
  -e, --expiredate EXPIRE_DATE  expiration date of the new account
  -f, --inactive INACTIVE       password inactivity period of the new account
  -g, --gid GROUP               name or ID of the primary group of the new
                                account
  -G, --groups GROUPS           list of supplementary groups of the new
                                account
  -h, --help                    display this help message and exit
  -k, --skel SKEL_DIR           use this alternative skeleton directory
  -K, --key KEY=VALUE           override /etc/login.defs defaults
  -l, --no-log-init             do not add the user to the lastlog and
                                faillog databases
  -m, --create-home             create the user's home directory
  -M, --no-create-home          do not create the user's home directory
  -N, --no-user-group           do not create a group with the same name as
                                the user
  -o, --non-unique              allow to create users with duplicate
                                (non-unique) UID
  -p, --password PASSWORD       encrypted password of the new account
  -r, --system                  create a system account
  -R, --root CHROOT_DIR         directory to chroot into
  -P, --prefix PREFIX_DIR       prefix directory where are located the /etc/* files
  -s, --shell SHELL             login shell of the new account
  -u, --uid UID                 user ID of the new account
  -U, --user-group              create a group with the same name as the user
  -Z, --selinux-user SEUSER     use a specific SEUSER for the SELinux user mapping
      --extrausers              Use the extra users database

vboxuser@Ubuntu:~$
```

35.passwd

passwd command in Linux is used to change the user account passwords. The root user reserves the privilege to change the password for any user on the system, while a normal user can only change the account password for his or her own account.

```
himanshu@ansh:~$ passwd
Changing password for himanshu.
(current) UNIX password:
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
himanshu@ansh:~$
```

36. expr

The expr command in Unix evaluates a given expression and displays its corresponding output. It is used for:

a. Basic operations like addition, subtraction, multiplication, division, and modulus on integers.
b. Evaluating regular expressions, string operations like substring, length of strings etc.

```
vboxuser@Ubuntu:~$ expr --version
expr (GNU coreutils) 8.32
Copyright (C) 2020 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

Written by Mike Parker, James Youngman, and Paul Eggert.
vboxuser@Ubuntu:~$
```

37. cut

The cut command in UNIX is a command for cutting out the sections from each line of files and writing the result to standard output. It can be used to cut parts of a line by byte position,characterand field. Basically the cut command slices a line and extracts the text. It is necessary to specify option with command otherwise it gives error. If more than one file name is provided then data from each file is not precedes by its file name.

```
vboxuser@Ubuntu:~$ cat marks.txt
arya-88
megha-92
anju-90
lakshmi-94
vboxuser@Ubuntu:~$ cut -d- -f2 marks.txt
88
92
90
94
vboxuser@Ubuntu:~$ cut -d- -f1 marks.txt
arya
megha
anju
lakshmi
vboxuser@Ubuntu:~$
```

38.paste

Paste command is one of the useful commands in Unix or Linux operating system. It is used to join files horizontally (parallel merging) by outputting lines consisting of lines from each file specified, separated by tab as delimiter, to the standard output. When no file is specified, or put dash (“-“) instead of file name, paste reads from standard input and gives output as it is until a interrupt command.

```
vboxuser@Ubuntu:~$ cat states
kerala
karnataka
jharkhand
Madya pradesh
vboxuser@Ubuntu:~$ cat capital
Thiruvanandapuram
Bangaluru
Ranchi
Bhopal
vboxuser@Ubuntu:~$ paste states capital
kerala   Thiruvanandapuram
karnataka        Bangaluru
jharkhand        Ranchi
Madya pradesh    Bhopal
vboxuser@Ubuntu:~$
```

39.ssh,scp

ssh stands for **"Secure Shell"**. It is a protocol used to securely connect to a remote server/system. ssh is secure in the sense that it transfers the data in encrypted form between the host and the client. It transfers inputs from the client to the host and relays back the output. ssh runs at TCP/IP port 22. scp (secure copy) command in Linux system is used to copy file(s) between servers in a secure way. The SCP command or secure copy allows secure transferring of files in between the local host and the remote host or between two remote hosts. It uses the same authentication and security as it is used in the Secure Shell (SSH) protocol. SCP is known for its simplicity, security and pre-installed availability.

```
vboxuser@Ubuntu:~$ ssh
usage: ssh [-46AaCfGgKkMNnqsTtVvXxYy] [-B bind_interface]
           [-b bind_address] [-c cipher_spec] [-D [bind_address:]port]
           [-E log_file] [-e escape_char] [-F configfile] [-I pkcs11]
           [-i identity_file] [-J [user@]host[:port]] [-L address]
           [-l login_name] [-m mac_spec] [-O ctl_cmd] [-o option] [-p port]
           [-Q query_option] [-R address] [-S ctl_path] [-W host:port]
           [-w local_tun[:remote_tun]] destination [command [argument ...]]
vboxuser@Ubuntu:~$ scp
usage: scp [-346ABCOpqRrsTv] [-c cipher] [-D sftp_server_path] [-F ssh_config]
           [-i identity_file] [-J destination] [-l limit]
           [-o ssh_option] [-P port] [-S program] source ... target
vboxuser@Ubuntu:~$
```

40.ssh-keygen, ssh-copy-id

ssh-keygen is the utility used to generate, manage, and convert authentication keys for SSH. ssh-keygen comes installed with SSH in most of the operating systems. ssh-keygen is able to generate a key using one of three different digital signature algorithms.

a. RSA
b. DSA
c. ECDSA

The ssh-copy-id command is a simple tool that allows you to install an SSH key on a remote server's authorized keys. This command facilitates SSH key login, which removes the need for a password for each login, thus ensuring a password-less, automatic login process.

```
vboxuser@Ubuntu:~$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/vboxuser/.ssh/id_rsa): vbox
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in vbox
Your public key has been saved in vbox.pub
The key fingerprint is:
SHA256:tH9RJmn66vRZiVjkkcD87mDi4rKzgY/ghdexMSHFeSE vboxuser@Ubuntu
The key's randomart image is:
+---[RSA 3072]----+
|    .E...o.      |
|    .o..  o. o   |
|   . .. .  .B o  |
|    . .. . =.=   |
|     +  S ..+    |
|  ... = ..o+.o . |
|...o.o . o+o+ o  |
|..ooo.. .. +.o   |
| .. +*.. .o o    |
+----[SHA256]-----+
vboxuser@Ubuntu:~$ ssh-copy-id
Usage: /usr/bin/ssh-copy-id [-h|-?|-f|-n|-s] [-i [identity_file]] [-p port] [-F alternative ssh_config file] [[-o <ssh -o options>] ...] [user@]hostname
        -f: force mode -- copy keys without trying to check if they are already installed
        -n: dry run    -- no keys are actually copied
        -s: use sftp   -- use sftp instead of executing remote-commands. Can be useful if the remote only allows sftp
        -h|-?: print this help
vboxuser@Ubuntu:~$
```

Result: Familiarized with Linux commands.