

An operating system is responsible for directly managing a system's hardware resources like CPU, memory, and storage. Linux is one of the most widely-used open-source operating systems. It is a bundle of tools, programs, and services along with the Linux kernel which provides a fully functional operating system. Linux can be differentiated from other operating systems in many ways. Firstly, Linux is open-source software. Different Linux distributions come with different software options. Each distribution has its own approach to desktop interfaces. As such, users have the ability to choose core components such as graphics, user-interface, etc., as per their preference.

Linux Cheat Sheet

Here, we have attempted to cover the widely used Linux commands in the Linux Command Cheat Sheet. With new Linux distributions, there are chances of a few commands getting deprecated. So, make sure you keep up with the new releases, their new additions, and commands which are rendered deprecated.

1. GENERAL SHELL COMMANDS

Command	Description	Syntax
alias	Lists all your current aliases It allows one command to be substituted by another.	alias home='cd home/hackr/public_html'
set -x	It is a built-in function that is used to define the values of the system environment.	set [--aefhkntuvx[argument]], where a, e, f, h, k, n, t, u, v, x are the different options that can be used with this command.
\	The backslash character is used to override any aliases.	
script	It automatically creates a typescript or a capture-log of a session and writes it to a file. It includes all commands and their outputs as well.	script [options] [file]
~	The tilde character is used as an alias to a user's home directory.	
reset	It reinitializes your current terminal. This is generally useful when a program dies leaving the terminal in an abnormal state.	reset [terminal] There are a number of options that can be used with reset to customize the output.
exit	Closes your current terminal or logs out. Also, CTRL+D can be used.	exit

logout	Logs out of the current terminal. Also, CTRL+D can be used.	logout
echo	Repeats anything that is typed after it.	echo "text" echo rm -R
history	It is used to list the log of typed commands.	history n – Lists the last n number of commands !<command_name> will list the last command typed with <command_name>

2. COMBINATION KEYS

CTRL + D	It is an end-of-file key combination and can be used to log out of any terminal.
CTRL + Z	This key combination is used to stop a process. Also, it can be used to run a background process.
CTRL + A CTRL + E	These key combinations are used to navigate to the start and the end of a line on the command line.
CTRL + K	Used to delete what is in the front of the cursor.
CTRL + Y	Pastes the last text that was deleted.
CTRL + W	Cuts or deletes the entire line that has been typed.
Screen	This command is used to switch between multiple virtual terminals. It is mainly useful with remote login. By default, you start with one terminal. CTRL + A & C can be used to create a new virtual terminal.
CTRL + N	CTRL + N is used to go to the next virtual terminal
CTRL + P	CTRL + P is used to go to the previous virtual terminal.
CTRL + C	This combination key breaks/kills a process that is running on the terminal.
CTRL + ALT + DEL	This key combination can be used from a terminal to reboot or shutdown. Here the user does not have to be logged in.

3. HELP

man	Displays the summary of a program from an online manual.	man <program_name> man -f: Lists the details associated with the command. man -K <keyword> : searches the manual for the specified keyword.
info	Gives a more detailed hyper-text manual on a particular command.	info <program_name>
whatis	Describes a program in one-line.	whatis <program_name>
apropos	It searches the database for strings.	apropos <string>

4. INPUT/OUTPUT

>	Send information to a file.	cat file1 file2 > file1_and2.txt
<	Inserts information into a text file. It is generally used with other commands that are used to extract information through standard input.	Ex: tr '[A-Z]' '[a-z]' <filename.txt >newfilename.txt
>>	Appends information at the end of file. It creates the file if it does not exist.	
<<	It is mainly used in shell scripting. It is also used with command that are used to extract information.	
2>	Used for redirecting error output.	
	It sends the output of one command as an input for another command.	
Tee	Sends the output of a file to the standard output.	tee -options file_name.txt
&>	Used to redirect output to a specific location	make &> /dev/null

Command Substitution

``	Used to direct the output of the second command to the first command.	1st_command `2nd_command - options`
\$	Used to direct the output of the second command to the first command.	1st_command \$(2nd Command)

	Used to direct the output of the second command to the first command.	cat command1 command2
Multiple Commands		
&&	Runs the 2nd command only if the 1st command runs successfully.	1stcommand && 2nd Command
	Runs the 2nd command only if the 2nd command does not run successfully.	1st Command 2nd Command
;	2nd Command is executed after the 1st Command is executed.	1st Command; 2nd Command

5. FILE MANAGEMENT & FILE HANDLING

access	This command is used to check if a program has access to a specified file or whether the file exists or not.	access (const char *path, int mode)
awk	This command is a scripting language used for manipulating data and generating reports.	awk -options filename.txt
batch	This command is used to read commands from the standard input or a file and execute them when permitted by system load levels.	batch
bc	Used for command line calculator	bc -options file_name.txt
cd	Change Directory. Used to go to the previous directory. Can be used with the absolute path or the relative path.	cd cd pathname
ls	Lists files and directories. Does not list hidden files or directories	ls -options, where options can be l, a, d, F, S, R.
pwd	Print the current working directory	pwd
tree	Lists all files and directory recursively.	tree
find	This is used to search for files on a filesystem. The search can be customized with many options.	find / -name file
slocate	Lists all the files in the system that match the specified pattern	slocate string

whereis	It locates the source, binary and the manual page for a particular program.	whereis program_name
which	It only looks for the executable program	which program_name
mkdir	Make Directory.	mkdir Dir1 mkdir -p /home/dir1/dir2/dir3 This command creates dir1, dir2 and dir3 as it goes.
rm	Removes or delete a file or a directory	rm -options file_or_folder
rmdir	Removes an empty directory.	rmdir directory
mv	Used to move a file or directory to another location. It can also be used to rename a file or a directory.	mv existing_file/folder new_location
cp	Copy a file	cp -options file_to_be_copied new_location
ln	Used to create a link to a file. Links can be hard-links or symbolic links. A hard-link is a reference to a file while a symbolic-link is similar to a shortcut link.	ln target_name link_name ln -s target_name link_name
shred	Overwrites a file and removes it in order to make it irretrievable by the software or hardware.	shred -n 2 -z -v /dev/hda1
du	It is used to display information about the file size. It can also be used on directories, which then displays the information about all the size of all the files and subdirectories.	du -options file_name/directory_name
file	It shows the type of a particular file. It displays the inode number, creation data/access date along with some advanced options.	file file_name
stat	Give detailed information about a file.	stat file
dd	Used to create copies of disks, perform conversions on files and vary the block size while writing the file.	dd operand dd option dd inputfile_path outputfile_path
touch	Used to create empty files. It is also used to increase the timestamps on the file.	touch -t 09072019 filename.txt

split	It is used to split files into several small files.	split -options filename split -b xx – splits the file into xx bytes, split -k xx – splits the file into xx kilobytes split -m xx – splits the file into xx megabytes
rename	It is used to rename files as per regular expression.	rename -options file_name

6. SYSTEM INFORMATION

time	It is a utility that measures the time taken by a program to execute.	time program_name options
/proc	The files under /proc displays system information.	cat /proc/cpuinfo – displays information about the CPU.
dmseg	This command is used to print the contents of the bootup messages displayed by the kernel. This is particularly useful in debugging issues.	dmseg
df	Displays the information about the space on the mounted file-systems.	df -options /dev/hdx
who	Displays information about the logged in users including their login time.	who
w	This command displays who are logged in into the system and the processes they are running.	w
users	This command prints the name of the currently logged in users.	users
last	This command displays the time of the logged-out users. This also displays the information when the computer was rebooted.	last
lastlog	Displays a list of the users and the time/day of their login.	lastlog
whoami	It tells the username of the logged in user.	whoami – it does not need or take any options.

free	Displays memory status. (Total, Used, Free, cached, Swap)	free -tm, where t displays the total statistics and m displays the space in megabytes.
uptime w	It displays how long the computer has been up and running. Additionally, it displays the number of users and the processor load.	
uname	It is used to display system information such as OS type, kernel version, etc.	uname -options, where the options can be – a, n, m, s, r, p
xargs	This command is used to run a command as many times as required.	Ex: ls xargs grep “search string” The various options that go with it are: • Nx, lx, p, t, i.
date	It is used to display the system. It can also be used to set the date/time.	date -s hh:mm:ss
cal	This command displays the calendar of the current month.	cal -y – Displays the calendar of the specific year.
acpi	This command is used to display the battery status and other ACPI(Advanced Configuration and Power Information) related information.	acpi -options Using different options will give different system information.
acpi_available	This command is used to test if the ACPI subsystem is available.	acpi-available
aptitude	This command opens up a highly built-in interface to interact with the package manager of the machine.	

7. SYSTEM MANAGEMENT

proc	This command gives information about the hard- drive.	cd /proc/ide0/had
fdisk	It gives information on any hard drives that is connected to the system and their partitions.	fdisk

shutdown now	It starts the process of shut-down immediately. This command can also mean go to a single user mode. This command can also be used to shutdown a system at a particular time.	shutdown now
halt	This command shuts down the system immediately.	same as shutdown -h
reboot	This command is used to reboot the computer immediately.	same as shutdown -r
ps	This displays the list of processes running on the system. When used without any options, it lists the processes run by the current user in the controlling terminal.	ps -aux: lists all processes run by all users.
pstree	Lists all the processes in a tree structure.	pstree -p: lists all processes along with their ID's
pgrep	This command is used for finding processes via keyword terms. Generally, this command returns only the PID no. It can be used to list process names or via usernames.	pgrep
top	This command is used to list process in the order of CPU usage. It has many additional options that go with it, which helps to get the desired result.	top
kill	This command is used to kill a process. It requires the pid or the id of the process.	kill pid kill %id
killall	This command is used to kill a process by its name.	killall -v: will make the process report if the kill was successful. killall -i – will prompt the user to confirm before attempting the kill.
pkill	This command is used to kill a process specified by a regular expression.	pkill process_name pkill -u: is used to kill the processes of a certain user.
skill	It is used to continue, kill, stop the process. The process can be specified via username, command name or process-id.	Ex: skill -stop unauthorised_username

jobs	It displays the list of currently running jobs in order of execution. This command is available only in bash, csh, ksh and tcsh shells.	jobs [job_name]
bg	It runs a process in the background. An & sign at the end of the command can also be used to run a job at the background.	bg job_number bg job_name
fg	This command is used to bring a process at the foreground. This will take over your current terminal.	fg job_number fg job_id
nice	This command is used to set the CPU priority for a process. In order to set a higher priority for a process, the user needs to be a root user. However, any user can lower the priority of a process.	nice -20 <process_name>: sets the maximum priority nice 20 <process_name>:: sets the minimum priority
renice	Changes the priority of an existing command.	
snice	Along with changing the priorities of a process, snice can also be used to stop, continue or kill a process.	snice -upctvi, where u,p,c,t,v,i are all options that make snice perform differently.
service	It allows to perform different tasks on services.	service -sfR, where s, f, R are all different options that can be used with it.
autoconf	This command is used in Linux to generate configuration scripts.	

8. USER MANAGEMENT

su username	This command is used to switch to a different username. In order to return to the original username, you need to type exit or use CTRL+D.	su username
root	This is the superuser. The overall power of the system lies with this user. This includes all administrative powers as well.	
chsh	This command is used to change the login shell.	chsh [enter] <shell_name> to be used every time you login.

chfn	This command is used to change the finger information. This change is reflected in the /etc/passwd file	chfn user_name
passwd	This command can only be executed by the root user. It allows the user to change the password of a user.	passwd username

9. TEXT COMMANDS

vi	It is a very powerful text editor which is known for its minimal use of resources.	
emacs	It is an advanced text editor which enables a user to browse the internet, play games, chat, etc.	
head	When used without any options, it shows the first 10 lines of a file.	head -n x, where x specifies the number of lines to be displayed from the top.
tail	When used without any options, it is used to show the last 10 lines of a file.	tail -n x, where x specifies the number of lines to be displayed from the last.
less	This command enables to view text and scroll backwards and forwards.	less <file-name>
more	This command enables to view one page at a time.	
cat	Used to concatenate/combine multiple files into one.	cat <file_1> <file_2> > <new_file>
tac	Combines multiple files into one, however the files will be combines in reverse order.	tac <file_1> <file_2> > <new_file>
z* bz* commands	Commands can be prefixed with a z in order to allow them to work within a gzip compressed file.	
wc	This returns the word count in a text file.	wc -wlc <filename>, where w returns the number of words, l returns the number of lines and c returns the number fo characters.

style	This command allows to run various readability tests on a file.	style -options <file_name>
cmp	This command is used to determine the differences between two files, at the binary level.	cmp -option filename1.txt filename2.txt
diff	This command outputs the difference in text between two files.	diff <file_name1> <file_name2>
sdiff	This command displays the file contents in two columns.	sdiff <file_name1> <file_name2>
diff3	This command outputs the difference in text between three files.	diff <file_name1> <file_name2> <file_name3>
comm	This command enables us to compare two files and displays the unique contents of file1, unique contents of file2 and those common to both in three separate columns.	comm <file1> <file2> Options -1, -2, -3 can be used to suppress the display of the corresponding column.
look	This command enables you to display a list of words from the system dictionary that begins with a specified string.	look <string>
sort	This command is used to sort text in a file. When used without any options, it sorts the text alphabetically. It is a powerful command and can be used with many options to achieve the required output.	cat result_list.txt sort
join	This command will allow joining of two lines under the consideration that both the lines have a specific value in common.	join <file_1> <file_2>
cut	This command helps to remove certain sections of a line. This can be done based on tabs, commas, etc.	cut -options <file_name>
ispell/aspell	This command enables a user to find detect misspelt words and replace the word or continue.	ispell <file_name.txt> aspell -c <file_name.txt >
chcase/tr	This command is used to change the uppercase letters in a file to lowercase.	cat <original_filename.txt> chcase '[A-Z]' '[a-z]' > newfile.txt

fmt	It is a simple command for text formatting.	
paste	This command can be used to put lines from two files together. It arranges the lines as per options used.	paste <file_name1> <file_name2>
expand	This command will convert 2 tabs into spaces and output it.	expand <file_name.txt>
unexpand	This command will convert spaces into tabs and display it,	unexpand <file_name.txt>
uniq	This command is used to remove the duplicate entries from a file.	uniq <list.txt>
nl	This command is used to add numbers to each line and indent the text.	nl <file_name.txt>
perl	This command is used to search and replace text.	perl -pi -e "s/search_string/new- string/g;" <file_name.txt>
dos2unix/ fromdos	This command is used to convert Microsoft style end-of-line characters to Unix System end-of-line characters.	dos2unix <file_name.txt>
unix2dos/todos	This command is used to convert Unix System style end-of-line characters to Microsoft System end-of-line characters.	unix2dos file_name.txt
antiword	This is a filter command that is used to convert Microsoft word documents into plain ASCII text documents.	antiword file_name.txt
recode	This command is used to convert text files between various forms of text encodings. By default, recode overwrites the file, hence it is suggested the user to use necessary options to avoid losing the original content.	recode ..pc < file_name.txt > new_file.txt
enscript	This command is used to convert text files to postscript, HTML, rich text file, etc. It goes with a number of options that helps to customize its output.	enscript - - language=HTML original_file.txt -o output_file.txt
figlet	This is a unique command that can be used to convert an ASCII art.	

grep	This command is used to search for a text within files.	grep 'search_word' file_name.txt Options like v,n,w,A x, B x and/or r can be used to customize the output.
rgrep	It is recursive grep. It searches the respective subdirectories and files in the directory and displays the files names and the matching line.	grep -r option can be used for the same effect.
fgrep	This command is used to find string literals only.	fgrep 'string literal' file_name.txt

10. MATHEMATICAL COMMANDS

units	It helps to convert units of measurement between different scales.	units – verbose To exit – CTRL+D
python	It is a programming language that also makes a good calculator. This command executes the Python interpreter in interactive mode.	python To exit: CTRL – D
numgrep	It searches for different occurrences of numbers, basically ranges, factors and sequences of numbers.	numgrep /<expression>/

11. NETWORK COMMANDS

ifconfig	This command is used to configure network parameters.	ifconfig -options
tcpdump	It is a program that sniffs packets off network interface and interprets them.	sudo tcpdump -l any : captures all packets in any interface.
ping	It sends echo requests to the specified host and lists the responses received in their round-trip time.	ping ip_or_host_name To stop ping – CTRL + C
hostname	Displays the hostname of the	
tracert	Shows the route of a packet.	tracert machine_name or IP
tracert	It is similar to tracert, however it does not take complicated options with it.	tracert machine_name or IP
findsmb	It lists information about machines that respond to SMB name queries	findsmb

telnet	This command helps to establish connection between two hosts.	telnet [hostname]
nmap	It is used to query machines, if they are up and which ports they are on.	nmap machine_name
ip	The ip command is used to perform network administration tasks. It can be used to set or delete ip addresses, verify changes, show routing table, change the default route, show network statistics, monitor netlink messages, activate and deactivate network interface and more.	ip a (ip address) ip (link) ip -s(ip stats) ip tunnel ip r
host	Looks up the internet address using the Domain Name Server.	host_ipaddress host domain_name
dig	It is the domain information groper tool which outputs IP address, hostname and various other information.	dig -x <ip-address> returns the hostname dig works with various other options.
whois	Used to look up contact information	
wget	Used for downloading files from the world wide web	wget file_url: gets a file from the url wget -m: archives a single website wget -nc: to avoid overwriting and already archived file. wget -c: to continue archiving a file that was previously unfinished.
curl	It is used to download information remotely. It works without user interaction and supports many internet protocols. It can access dictionary servers, ftp, http, gopher,etc.	curl -M: this will take you to its manual page. It has a lot many options going with it for accomplishing various tasks.

12. REMOTE ADMINISTRATION

ssh	It is used to securely connect to a remote server/system. It transfers data in an encrypted form between the host and the client.	ssh user_name@host(IP/domain_name)
scp	Allows copying of one file from one computer to another.	scp machine-to-be-copied-from machine-to-be-copied-to scp -r: Used for recursive copying.

sftp	Secure ftp. It is an encrypted version of the ftp command, which transfers securely over a network.	sftp [user@]host[:file...] sftp [user@]host[:dir[/]] sftp -b batchfile [user@]host There are many other options that goes with this command.
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13. SECURITY

md5sum	Computes an md5 checksum to for the specified file_name to verify its integrity.	md5sum file_name
mkpassword -l 10	Gives a random password of 10 characters	

14. BACKGROUND COMMANDS

at	'at' is used to execute a command once on a specified day, at a specified time.	at 22:00 Then type the command and press the end-of-file key.
at now+time	Runs the command at the + the time time specified.	at -f shell_script now+1hr
atq	Lists the job in the queue. It does not take any options.	
atrm	Removes a job from the at queue.	atrm job_no
cron	It is used to schedule a particular function every minute, hour, day, week or month.	anacron is a command used for machines which are switched off. It runs the command when the machine is next switched on.
crontab	It edits, reads and removes the files read by the cron daemon.	-e – edits file -l – lists the contents of the file -u username – to works with other uses crontab file.
Shortcut Commands		
@reboot	Runs the command at reboot	
@yearly @annually	Same as 0011*	
@monthly	Same as 001**	