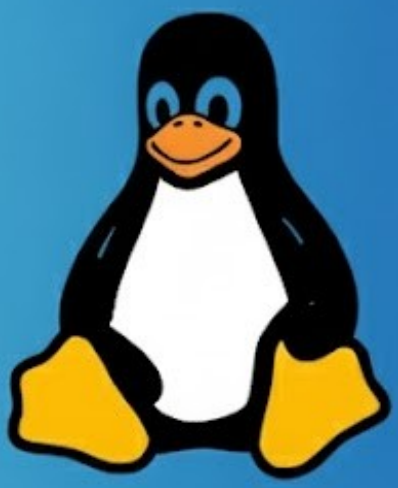
Linux Commands one-liner Handbook



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https://www.linkedin.com/in/tkdhanasekar/

Table of Contents

1. User and Group Management....4
2. Package Management....8
3. File and Directory Management....11
4. Networking Management....15
5. Filesystem and Disk Management....21
6. Process management....27
7. Permissions management....32
8. System Monitoring and Performance Tuning....35
9. Text Processing Management....41
10. Archiving and Compression Management....46
11. System Hardware and kernel Management....49
12. Daemon Services Management....57
13. Bash Builtin commands....60
14. Security Management....66
15. Help Commands....71
16. Debug Management....73
17. Log Management....74
19. Backup Management....75
20. Utility Commands....79
21. Logical Volume Management....81
22. RAID Management....85

1. User and Group Management

Command/File	Explanation
/etc/passwd	It is a file that stores user account information like username, UID, GID, home directory, and shell.
/etc/shadow	it is a file that securely stores encrypted user passwords and password aging information.
/etc/group	it is a file that stores group information, including group name, GID, and group members.
/etc/gshadow	it is a file that securely stores encrypted group passwords and administrative group.
adduser	used to create a new user account interactively on the system.
addgroup	used to create a new group on the system.
deluser	used to remove a user account from the system.
delgroup	used to delete a group from the system.
useradd	used to create a new user account non-interactively on the system.
userdel	used to delete a user account from the system.
usermod	used to modify an existing user account's properties on the system.
groupadd	used to create a new group on the system.
groupdel	used to delete an existing group from the system.
groupmod	used to modify the properties of an existing group on the system.
groupmems	used to add or remove users from a specific group..
gpasswd	used to administer group passwords and manage group membership.
passwd	used to change a user's password on the system.

chage	used to view or modify user password expiration and aging settings
chpasswd	used to update multiple user passwords in batch mode from a file or standard input.
pwconv	used to create shadow password files by moving password hashes from /etc/passwd to /etc/shadow.
pwunconv	used to remove shadow password files by moving password hashes back from /etc/shadow to /etc/passwd
finger	used to display information about system users, such as login name, home directory, and last login time.
pinky	It is a lightweight version of finger that displays brief user information.
id	It displays the user ID (UID), group ID (GID), and group memberships of a user.
who	It shows who is currently logged into the system.
whoami	displays the username of the current user.
logname	prints the login name of the user currently logged in on the terminal.
last	shows a list of recent user logins and system reboots.
w	displays who is logged in and what they are doing on the system
users	shows the usernames of all users currently logged into the system
chgrp	changes the group ownership of a file or directory.
setfacl	used to set Access Control Lists (ACLs) to define fine-grained permissions on files and directories.
getfacl	displays the Access Control List (ACL) permissions of files and

	directories.
sg	runs a command with a different group ID.
login	used to start a new user session by authenticating the user on the system.
logout	used to end the current user's login session and exit the shell
loginctl	used to introspect and manage user logins and sessions on systems running systemd
nologin	used to prevent a user from logging into the system by denying shell access.
runuser	runs a command as another user without requiring a password
su	used to switch to another user account, typically the superuser, by providing the user's password
sudo	allows a permitted user to run commands with superuser or other user privileges
sudoreplay	used to replay a recorded sudo session for auditing purposes
setsid	runs a program in a new session, detaching it from the controlling terminal
faillog	displays or resets the failed login attempt records for users
chfn	used to change a user's finger information like full name, office, and phone number.
mkhomedir_helper	used to create a user's home directory with correct permissions during login
newusers	used to create or update multiple user accounts in batch from a file
grpck	used to check the integrity of the group files like /etc/group and

	/etc/gshadow
wall	sends a message to all logged-in users on the system
write	allows you to send a message directly to another logged-in user's terminal

2. Package Management

Command	Explanation
apt	used to manage packages on Debian-based Linux systems
apt-get	Used to handle package installation, upgrading, and removal on Debian-based Linux systems
apt-cache	used to query the package cache for information about available packages on Debian-based systems
apt-key	used to manage trusted keys for verifying packages in Debian-based systems (deprecated in newer versions)
aptitude	is a text-based interface and command-line tool for managing packages on Debian-based systems
add-apt-repository	used to add a new APT software repository to Debian-based systems
dpkg	command-line tool in Linux used to install, remove, and manage .deb packages.
dpkg-deb	used to create, extract, and manage Debian .deb package archive files
dpkg-query	Displays information about installed packages on a Debian-based Linux system.
dpkg-reconfigure	Reconfigures an installed package by running its configuration scripts again
do-release-upgrade	Upgrades the system to the next available Ubuntu release version.
pip	Installs, upgrades, and manages Python packages from the Python

	Package Index (PyPI)
gem	Manages Ruby packages (gems) by installing, updating, or removing them
npm	Installs, updates, and manages JavaScript packages for Node.js
cargo	Builds, runs, and manages Rust packages and dependencies
pkcon	A command-line tool to install, update, remove, and manage packages using PackageKit
pkexec	Executes a command as another user, typically with administrative (root) privileges
pkg-config	Provides compiler and linker flags for installed libraries to help build programs
snap	Installs, updates, and manages applications packaged as snaps on Linux
yum	Installs, updates, and manages packages on RPM-based Linux distributions
yum repolist	Displays the list of enabled repositories on an RPM-based Linux system
dnf repolist	Shows the list of enabled repositories on a DNF-based Linux system
zypper repos	Lists all repositories configured on an openSUSE or SUSE Linux system
subscription-manager	Manages system subscriptions and repositories on Red Hat-based Linux systems
yum-config-manager	Enables, disables, or modifies Yum repository configurations on RPM-

	based Linux systems
dnf	Installs, updates, and manages packages on DNF-based Linux distributions
zypper	Installs, updates, and manages packages on openSUSE or SUSE Linux systems
pacman	Installs, updates, and manages packages on Arch Linux and its derivatives
flatpak	Installs, updates, and manages sandboxed applications on Linux systems
flatpak-builder	Builds and packages applications as Flatpaks for Linux systems
rpm	Installs, queries, and manages RPM packages on Linux systems
rpmverify	Checks the integrity and authenticity of installed RPM packages
rpmquery	Queries information about installed RPM packages on a Linux system
rpm2cpio	Converts an RPM package into a CPIO archive for extraction
repoquery	Queries packages and their details from enabled repositories on RPM-based Linux systems
yast	Provides a graphical or command-line interface to configure and manage SUSE Linux systems
update-alternatives	Manages multiple versions of commands or programs by setting system-wide default alternatives

3. File and Directory Management

Command	Explanation
cat	Displays the contents of a file or concatenates multiple files to the standard output
cd	Changes the current working directory in the terminal
cal	Displays a calendar of the current month or a specified month/year in the terminal
chgrp	Changes the group ownership of a file or directory
cksum	Calculates and displays the CRC checksum and byte count of a file
cmp	Compares two files byte by byte and reports the first difference
dirname	Extracts and displays the directory path from a full file path
dir	Displays a list of files and directories in the specified directory
cp	Copies files or directories from one location to another
cpio	Creates, extracts, and lists archive files in the CPIO format
diff	Compares two files line by line and shows the differences between them
diff3	Compares three files and shows the differences among them
dd	Copies and converts raw data between files or devices with low-level control
find	Searches for files and directories in a filesystem based on specified criteria
install	Copies files to a specified location and sets their permissions and

	ownership
link	Creates a hard link between files, making them share the same inode
ln	Creates hard or symbolic (soft) links between files or directories
readlink	Displays the target path of a symbolic (soft) link
which	Shows the full path of an executable command that the shell would run
whereis	Locates the binary, source, and manual files for a command
tree	Displays directories and files in a tree-like hierarchical structure
ls	Lists files and directories in the current or specified directory
lsattr	Displays the attributes of files in a Linux filesystem
mkdir	Creates a new directory with the specified name
mv	Moves or renames files and directories
more	Displays the contents of a file one screen at a time
less	Views the contents of a file one screen at a time with backward and forward navigation
od	Displays the contents of a file in octal, hexadecimal, or other formats
patch	Applies changes to files using a diff file (patch file)
banner	Displays a large ASCII text banner of the specified string on the terminal
popd	Removes the top directory from the directory stack and changes to the new top directory
pushd	Adds a directory to the directory stack and switches to it

pwd	Displays the current working directory path
pwdx	Shows the current working directory of a specified process ID (PID)
realpath	Displays the absolute path of a file or directory
rev	Reverses the characters of each line in a file or input
replace	Replaces specified strings in files with another string
rm	Deletes files or directories from the filesystem
rmdir	Removes empty directories from the filesystem
stat	Displays detailed information about a file or filesystem object
unlink	Deletes a single file from the filesystem
tac	Displays the contents of a file in reverse line order
tail	Displays the last part (lines) of a file, commonly used to view the end of logs
tbl	Formats tables in troff or nroff documents for proper display
tee	Reads from standard input and writes it to both standard output and one or more files
touch	Creates a new empty file or updates the timestamp of an existing file
xargs	Builds and executes command lines from standard input
updatedb	Updates the database used by the locate command to find files quickly
locate	Quickly finds files by searching a database created by updatedb
rename	Renames multiple files by replacing specified patterns in their names
identify	Displays detailed information about an image file, such as format, dimensions, and color

fdupes	Finds and optionally deletes duplicate files in specified directories
rmlint	Detects and removes duplicate and unnecessary files to free up disk space
rdfind	Finds duplicate files in a directory tree and helps manage them

4. Networking Management

Command	Explanation
bluetoothctl	Interactively manages Bluetooth devices from the command line
brctl	Configures and manages Ethernet bridges on Linux systems
curl	Transfers data to or from a server using supported protocols like HTTP, HTTPS, FTP, etc
dig	Queries DNS servers to obtain domain name information and troubleshoot DNS issues
domainname	Displays or sets the NIS/YP domain name of the system
ftp	Transfers files to and from a remote server using the File Transfer Protocol
host	Performs DNS lookups to find IP addresses or domain names
ifconfig	Displays and configures network interfaces on a Linux system
ip	Displays and manages network interfaces, addresses, and routing on Linux
iwconfig	Displays and configures wireless network interfaces on Linux
iwlist	Displays detailed information about wireless networks, such as available access points
iptables	Configures and manages packet filtering and firewall rules on Linux
nmap	Scans networks to discover hosts, open ports, and services for security auditing

networkctl	Displays and manages network status and links on systems using systemd-networkd
netstat	Displays network connections, routing tables, interface statistics, and listening ports
nisdomainname	Displays or sets the NIS (Network Information Service) domain name of the system
nmcli	Manages NetworkManager and network connections from the command line
netcat (nc)	Reads and writes data across network connections using TCP or UDP
nslookup	Queries DNS servers to find domain name or IP address information
nstat	Displays various network statistics, including protocol-specific and device-specific data
ping	Sends ICMP echo requests to a host to check its network connectivity and response time
rcp	Copies files between Unix/Linux systems over a network using the remote copy protocol
rlogin	Logs into a remote Unix/Linux system over a network
rsh	Executes commands on a remote Unix/Linux system without logging in interactively
route	Displays and manipulates the IP routing table in a Linux system
rsync	Synchronizes and transfers files or directories efficiently between systems

scp	Securely copies files or directories between local and remote systems using SSH
sftp	Securely transfers files between local and remote systems using SSH File Transfer Protocol
slogin	Securely logs into a remote system using SSH (an older alias of ssh)
ssh	Securely connects to a remote system over a network using the Secure Shell protocol
ssh-add	Adds private SSH keys to the SSH authentication agent for password-less login
ssh-agent	Runs a background program to hold and manage private SSH keys for authentication
ssh-copy-id	Installs your public SSH key on a remote system for password-less login
ssh-keygen	Generates a new SSH key pair (public and private keys) for secure authentication
ssh-keyscan	Retrieves the public SSH keys of a remote host for verification or adding to known_hosts
ss	Displays detailed information about network sockets and connections on Linux
tcpdump	Captures and analyzes network packets transmitted over a network interface
telnet	Connects to a remote system over a network using the Telnet protocol for command-line access

traceroute	Shows the path and transit delays of packets across a network to a destination host
resolvectl	Manages DNS settings and queries for systems using systemd-resolved
wget	Downloads files from the web using HTTP, HTTPS, or FTP protocols
yt-dlp	Downloads videos and audio from YouTube and other supported websites
whois	Retrieves registration information about a domain name or IP address
ypdomainname	Displays or sets the NIS/YP domain name of the system
sipcalc	Performs IP address calculations and displays network information for IPv4 and IPv6 addresses
ipcalc	Calculates and displays network information for a given IPv4 address and subnet
tracepath	Traces the network path packets take to reach a destination, similar to traceroute
lnstat	Displays statistics and status of InfiniBand or high-speed network links
ifstat	Displays real-time network interface statistics, including transfer rates
dnsdomainname	Displays the system's DNS domain name
nmtui	Provides a text-based user interface to configure NetworkManager

	and network connections
mtr	Combines ping and traceroute to diagnose network connectivity and performance to a host
ip addr	Displays all IP addresses assigned to network interfaces on the system
ip link	Displays and manages network interfaces and their states on Linux
ip route	Displays and manages the IP routing table on a Linux system
ip neigh	Displays and manages the ARP (Address Resolution Protocol) table for network neighbors.
hostname	Displays or sets the system's hostname.
ping6	Sends ICMPv6 echo requests to a host to check IPv6 network connectivity
ncat	Reads and writes data across network connections, acting as a versatile networking utility
httpie	Sends HTTP requests and displays responses in a user-friendly format for testing APIs
systemctl restart network	Restarts the network service to apply changes or resolve issues on a Linux system
ethtool	Displays and modifies settings of Ethernet network interfaces on Linux
lsof	Lists open files and the processes that are using them on a Linux system
tshark	Captures and analyzes network packets from the command line,

	similar to Wireshark
iftop	Displays real-time bandwidth usage on network interfaces
nload	Monitors and displays real-time incoming and outgoing network traffic
bmon	Monitors and visualizes bandwidth usage on network interfaces in real-time.
iptraf	Provides real-time network statistics including TCP/UDP traffic and interface activity
dstat	Displays real-time system resource statistics, including CPU, memory, disk, and network usage
getent hosts	Retrieves hostnames and IP addresses from the system's databases, like /etc/hosts and DNS.
lftp	A sophisticated command-line FTP client for transferring files to and from remote servers
arp	Displays and manipulates the ARP (Address Resolution Protocol) table for mapping IP addresses to MAC addresses
arping	Sends ARP requests to a host to check its presence and measure network latency
curl ifconfig.me	Fetches and displays the public IP address of the system
rfkill	Displays and manages the state of wireless devices, allowing them to be blocked or unblocked

5. Filesystem and Disk Management

Command	Explanation
badblocks	Checks a storage device for bad sectors and lists them
blkid	Displays information about block devices, including UUIDs, file system types, and labels
blkdeactivate	used to deactivate block devices, making them unavailable for use
cfdisk	Used to create, delete, or modify disk partitions interactively
chattr	used to change file attributes on a Linux filesystem, like making a file immutable
baobab	It is a graphical disk usage analyzer that shows how much space files and folders occupy
dumpe2fs	displays detailed information about an ext2/ext3/ext4 filesystem, including superblock and block group details
du	shows the disk usage of files and directories, helping you see how much space each occupies
df	displays the available and used disk space on all mounted filesystems
dstat	provides real-time statistics for system resources like CPU, memory, disk, and network usage
iostat	It reports CPU and input/output statistics for devices and partitions to monitor system performance.
iotop	shows real-time disk I/O usage per process, helping monitor which

	processes are using the most disk resources
delpart	used to delete a partition from a disk by specifying the disk and partition number
e2fsck	checks and repairs ext2/ext3/ext4 filesystems for errors and inconsistencies
e2label	used to view or change the label of an ext2/ext3/ext4 filesystem
e2mmpstatus	It displays the multi-mount protection status of an ext2/ext3/ext4 filesystem to prevent data corruption.
e4defrag	defragments files and directories on an ext4 filesystem to improve performance
dmsetup	used to manage and configure device-mapper devices, such as logical volumes
fallocate	used to preallocate or reserve space for a file without writing data to it
fdisk	Used to create, delete, and manage disk partitions on Linux
findfs	locates a filesystem by its label or UUID and outputs the corresponding device name
findmnt	used to find and display information about mounted filesystems in a tree-like format
fsck	checks and repairs Linux filesystems for errors and inconsistencies
fsck.ext4	checks and repairs ext4 filesystems for errors and inconsistencies
hd	displays the contents of a file in hexadecimal, making it easier to inspect binary data
hdparm	used to view and set hardware parameters of hard drives, like read/write

	speed and power management
lsblk	lists all available block devices in a tree-like format, showing their partitions and mount points
mkswap	used to set up a swap area on a device or file for virtual memory usage
mke2fs	creates an ext2/ext3/ext4 filesystem on a specified device or partition
mkfs	used to create a filesystem on a storage device or partition
mkfs.ext4	creates an ext4 filesystem on a specified device or partition
mkfs.xfs	creates an XFS filesystem on a specified device or partition
mkfs.ntfs	creates an NTFS filesystem on a specified device or partition
mkfs.btrfs	creates a Btrfs filesystem on a specified device or partition
xfs_repair	checks and repairs XFS filesystems for errors and inconsistencies
btrfs check	examines a Btrfs filesystem for errors and inconsistencies without mounting it
autofs	automatically mounts and unmounts filesystems on demand, managing access transparently
mkinitramfs	creates an initial RAM filesystem (initramfs) used by the Linux kernel at boot time
mkisofs	creates an ISO 9660 filesystem image from files and directories, often used for CD/DVD burning
mount	attaches a filesystem or storage device to a specific directory so it can be accessed
parted	Used to create, delete, resize, and manage disk partitions

partprobe	It informs the Linux kernel of partition table changes, updating the system without rebooting.
partx	It tells the Linux kernel to add or remove partition entries from a device without rebooting
qemu-img	used to create, convert, and manage disk images for virtual machines.
resize2fs	resizes an ext2/ext3/ext4 filesystem to expand or shrink its capacity
resizepart	resizes a partition on a disk to a specified end sector
pvck	checks the integrity of physical volumes in a LVM setup
sfdisk	It is a scriptable tool to create, delete, and manage disk partitions
swaplabel	used to view or set the label of a swap device
swapon	enables a swap device or file, allowing the system to use it for virtual memory
swapoff	disables a swap device or file, preventing the system from using it for virtual memory
sync	It flushes filesystem buffers, ensuring all pending disk writes are completed
udevadm	manages and monitors the udev device manager, handling device events and rules in Linux
tune2fs	used to adjust tunable parameters of an ext2/ext3/ext4 filesystem, like mount count or reserved blocks
truncate	used to shrink or extend the size of a file to a specified length
umount	detaches a mounted filesystem or device, making it inaccessible until

	mounted again
wipefs	erases filesystem signatures from a device, effectively removing traces of existing filesystems
xfs_info	displays detailed information about an XFS filesystem, including block size, allocation groups, and geometry
quota	displays or enforces disk usage limits for users or groups on a filesystem
edquota	used to edit disk quota limits for users or groups on a filesystem
repquota	reports disk usage and quota limits for all users on a filesystem
quotaon	enables disk quota enforcement on a filesystem
quotaoff	disables disk quota enforcement on a filesystem
xfs_growfs	expands an XFS filesystem to use additional available space on the underlying device
btrfs filesystem resize	changes the size of a btrfs filesystem, allowing it to grow or shrink
btrfs balance	redistributes block groups in a btrfs filesystem to improve space utilization and performance
btrfs scrub	checks a btrfs filesystem for data and metadata errors and attempts to repair any issues
dd	copies and converts data between files, devices, or partitions at a low level, often used for backups or disk imaging
ddrescue	copies data from a damaged or failing device to another, recovering as much data as possible
/etc/fstab	configuration file that defines how disk partitions and filesystems are

	automatically mounted at boot.

6. Process management

Command	Explanation
bg	resumes a suspended job in the background, allowing it to run while you continue using the terminal
crontab	schedules and manages recurring tasks (cron jobs) for users in Linux
cron	It is a background service that executes scheduled tasks (cron jobs) automatically at specified times.
fc	lists, edits, and re-executes commands from the shell history in Linux
fg	brings a background or suspended job to the foreground, allowing interactive use
fuser	identifies processes using a file, directory, or socket, helping to manage resource usage
jobs	lists all background and suspended jobs started in the current shell session
kill	sends a signal to a process to terminate it or control its behavior
kill -9	forcefully terminates a process immediately, ignoring cleanup or shutdown procedures.
killall	terminates all processes with a given name, rather than specifying individual process IDs.
lsof	lists all open files and the processes that are using them on the system
top	displays real-time system information, including CPU, memory usage, and running processes

htop	is an interactive, colorized alternative to top that displays real-time system metrics and allows process management
atop	provides detailed, real-time monitoring of system resources, including CPU, memory, disk, and network usage, with logging capability
uptime	shows how long the system has been running, along with the current time, number of users, and load averages
&	Appending & to a command runs it in the background, allowing the terminal to accept new commands immediately
w	displays information about currently logged-in users and their active processes, along with system uptime and load
who	shows a list of users currently logged into the system
whoami	displays the username of the current user executing the command
lsns	lists all active Linux namespaces, showing their type, ID, and associated processes
nice	starts a process with a specified priority, influencing its CPU scheduling
nohup	runs a command immune to hangups, allowing it to continue running even after the terminal is closed.
disown	removes a job from the shell's job table, so it won't be terminated when the shell exits
setsid	runs a program in a new session, detaching it from the controlling terminal
systemd-run	runs a command as a transient systemd service, allowing scheduling and resource control
pgrep	searches for processes by name or other attributes and returns their

	process IDs (PIDs)
pidof	returns the process ID (PID) of a running program by its name
pkill	terminates processes based on their name or other attributes, similar to kill but more convenient
ps	displays information about currently running processes, including their PID, CPU, and memory usage
pstree	shows running processes in a tree-like structure, illustrating parent-child relationships
pmap	displays the memory map of a process, showing how its memory is allocated
prtstat	provides real-time statistics of system processes, similar to top, showing CPU and memory usage per process
renice	changes the priority of running processes, affecting their CPU scheduling
sleep	pauses execution of a script or command for a specified amount of time
wait	pauses the execution of a script until all background processes or a specific process complete
cgroups	(control groups) organize and limit resources like CPU, memory, and I/O for processes or groups of processes.
systemctl	manages systemd services and the system state, allowing start, stop, enable, and status checks
service	starts, stops, restarts, or checks the status of system services on Linux.
batch	schedules commands to run when the system load is low, executing them non-interactively

skill	sends signals to processes based on their name, group, or other attributes, similar to kill
taskset	sets or retrieves the CPU affinity of a process, controlling which CPU cores it can run on
time	measures and displays the duration a command or program takes to execute, including real, user, and system time
timeout	runs a command with a time limit, automatically terminating it if it exceeds the specified duration
ulimit	sets or displays resource limits for the shell and its child processes, such as maximum file size or number of open files
trap	executes a specified command when the shell receives a signal, allowing cleanup or custom handling
xkill	allows you to forcefully close a graphical application by clicking on its window
watch	repeatedly executes a command at regular intervals and displays the output, allowing real-time monitoring
at	schedules a command to run once at a specified time in the future
journalctl	views and queries systemd journal logs, providing detailed logs of system and service events
dmesg	displays kernel ring buffer messages, showing hardware, driver, and system initialization logs
sar	collects, reports, and monitors system performance metrics like CPU, memory, and I/O usage over time

vmstat	reports virtual memory, process, CPU, and I/O statistics, helping monitor system performance

7. Permissions management

Command	Explanation
aa-complain	sets an AppArmor security profile to complain mode, logging violations instead of enforcing them
aa-enforce	sets an AppArmor security profile to enforce mode, blocking actions that violate the profile rules.
aa-status	displays the current status of AppArmor profiles, showing which are in enforce or complain mode.
chattr	changes file attributes on Linux filesystems to control how files can be modified or deleted.
chcon	changes the SELinux security context of a file or directory
chgrp	changes the group ownership of a file or directory
chmod	changes the file or directory permissions, controlling who can read, write, or execute it
chmod +t	sets the sticky bit on a directory, allowing only the file owner to delete or rename files inside it
chmod g+s	sets the setgid bit on a directory so that new files inherit the directory's group ownership
chmod u+s	sets the setuid bit on an executable file, allowing users to run it with the file owner's privileges
edquota	used to edit disk quota limits for users or groups on a filesystem.
getenforce	displays the current mode of SELinux, such as Enforcing, Permissive,

	or Disabled
getfacl	displays the Access Control List (ACL) of a file or directory, showing detailed permissions for users and groups
getfattr	displays extended attributes of a file or directory on a Linux filesystem
getcap	displays the capabilities set on a file, showing which privileged operations it can perform
install	copies files to a specified location and can set permissions and ownership during the copy
ls -Z	lists files and directories along with their SELinux security context.
lsattr	displays the attributes of files on a Linux filesystem, showing flags that control file behavior
quota	displays disk usage and limits for users or groups on a filesystem
quotaoff	disables disk quota enforcement on a specified filesystem
quotaon	enables disk quota enforcement on a specified filesystem
repquota	Displays a detailed report of disk usage and quotas for users and groups on specified filesystems
restorecon	Restores the default SELinux security context on files and directories.
semanage fcontext	Manages and modifies SELinux file context mappings for files and directories
setcap	Sets or modifies capability flags on executables to grant specific privileges without full root access

setenforce	Switches SELinux enforcement mode between enforcing and permissive
setfacl	Sets or modifies Access Control Lists (ACLs) on files and directories to define fine-grained permissions
setfattr	Sets extended file attributes on files or directories to store additional metadata
setquota	Assigns disk quota limits for a specific user or group on a filesystem
stat	Displays detailed information about a file or filesystem, such as size, permissions, and timestamps
ulimit	Sets or displays resource limits for the shell and its child processes, such as maximum file size or number of open files
umask	Sets the default permission mask for newly created files and directories, determining their initial access rights

8. System Monitoring and Performance Tuning

Command	Explanation
atop	Provides detailed, real-time monitoring of system resources, including CPU, memory, disk, and network usage, with logging capability
atop -r	Reads and displays previously recorded atop log files for historical system performance analysis
bmon	Monitors and visualizes real-time bandwidth and network statistics for network interfaces
cgroups	Organizes and limits system resources like CPU, memory, and I/O for processes or groups of processes
dmesg	Displays kernel ring buffer messages, showing hardware, driver, and system initialization logs
dmesg -T	Displays kernel messages with human-readable timestamps for easier interpretation of hardware and system logs
dstat	Provides real-time system resource statistics, including CPU, memory, disk, and network usage, in a comprehensive and configurable view
dstat -d	Displays real-time disk I/O statistics, showing read and write activity for all disks
df -h	Shows disk space usage of filesystems in a human-readable format (e.g., GB, MB)
du -sh	Displays the total disk usage of a directory or file in a human-readable summary format

ethtool	Displays or modifies the settings and status of network interfaces, such as speed, duplex, and driver information
free -h	Shows the system's memory usage (RAM and swap) in a human-readable format with units like MB or GB
glances	Provides a real-time, comprehensive overview of system resources, including CPU, memory, disk, network, and processes, in a terminal-friendly interface
grubby	Manages and updates bootloader entries, such as GRUB, to modify kernel parameters or default boot settings
htop	Provides an interactive, real-time view of system processes, CPU, memory, and other resource usage, with color-coded display and process management capabilities
ifconfig	Displays or configures network interface settings, including IP address, netmask, and link status
iftop	Monitors real-time network bandwidth usage per interface, showing which hosts and connections consume the most traffic
inotifywait	Waits for and reports filesystem events, such as file creation, modification, or deletion, in specified directories
iostat	Displays CPU and input/output statistics for devices and partitions, helping monitor system performance
iotop	Monitors real-time disk I/O usage per process, showing which processes are reading from or writing to storage
ip -s link	Displays detailed statistics for network interfaces, including packets

	sent/received, errors, and dropped packets
iptraf	Monitors real-time network traffic on interfaces, showing detailed statistics like packet and byte counts, protocol distribution, and connections
journalctl	Views and queries systemd journal logs, providing detailed logs of system and service events
last	Displays a list of recent user logins, reboots, and system shutdowns from the system's log files
lsof	Lists all open files and the processes that are using them on the system
lsblk	Lists information about all available block devices, showing their partitions, sizes, and mount points
ltrace	Traces and displays library calls made by a program, showing function calls to shared libraries and their arguments
mpstat	Displays CPU usage statistics per processor or core, helping monitor system performance
mtr	Combines traceroute and ping to monitor the route and latency of packets to a network host in real-time
nload	Monitors real-time network traffic, displaying incoming and outgoing bandwidth usage on network interfaces
netstat -tulnp	Displays all listening TCP/UDP ports along with the associated process IDs and program names
perf	Measures and analyzes performance of Linux systems, profiling CPU, memory, and other hardware/software events

pidstat	Reports statistics for individual processes, including CPU, memory, and I/O usage, over time
ping	Sends ICMP echo requests to a host to test network connectivity and measure round-trip time
pmap	Displays the memory map of a process, showing how its memory is allocated and used
powertop	Monitors and analyzes power consumption on Linux systems, helping identify processes or devices that use the most energy
proc (/proc)	A virtual filesystem that provides real-time information about the system and running processes
ps aux	Displays detailed information about all running processes, including their PID, CPU and memory usage, and command
pstree	Shows running processes in a tree-like structure, illustrating parent-child relationships
renice	Changes the priority of running processes, affecting their CPU scheduling
sar	Collects, reports, and monitors system performance metrics like CPU, memory, and I/O usage over time
sar -n DEV	Reports network interface statistics, showing traffic, errors, and packet counts for each device over time
schedtool	Sets or retrieves scheduling policies and priorities for processes, controlling how the CPU schedules them
smem	Reports memory usage per process with proportional, shared, and

	private memory statistics for accurate analysis
ss -tulnp	Displays all listening TCP and UDP sockets along with the associated process IDs and program names
strace	Traces system calls and signals made by a program, helping debug and analyze its interactions with the kernel
sysctl	Views or modifies kernel parameters at runtime, controlling system behavior and performance
taskset	Sets or retrieves the CPU affinity of a process, specifying which CPU cores it can run on
top	Displays real-time system information, including CPU, memory usage, and running processes
tuned-adm	Manages and applies predefined system performance tuning profiles to optimize Linux system behavior
turbostat	Monitors CPU frequency, temperature, and power usage in real-time, providing detailed processor statistics
uptime	Shows how long the system has been running, along with the current time, number of users, and load averages
valgrind	Detects memory leaks, memory errors, and threading issues in programs, helping debug and optimize code
vmstat	Reports virtual memory, process, CPU, and I/O statistics to help monitor overall system performance
watch iostat	Runs iostat repeatedly at regular intervals, displaying real-time CPU and I/O statistics for continuous monitoring
wdctl	Displays the status and configuration of watchdog timers on a Linux

	system

9. Text Processing Management

Command	Explanation
ack / ag	Searches files for patterns or text strings faster than grep, optimized for source code
awk	used to search, filter, and process text line by line by dividing it into fields and performing actions based on patterns.
cat	used to display, combine, and create text files by reading their contents sequentially.
col	filters and formats text by removing reverse line feeds and converting backspaces or control characters into readable text
colrm	used to remove specified columns from each line of text in a file or input stream
column	formats text input into neatly aligned columns for easier reading
comm	compares two sorted files line by line and shows the lines that are unique to each file or common to both.
cmp	compares two files byte by byte and reports the first difference or confirms if they are identical
csplit	splits a file into multiple smaller files based on line numbers or pattern matches
cut	used to extract specific sections or columns from each line of a file or input based on a delimiter or character position

diff	compares two files line by line and shows the differences between them
ed	text editor that allows you to create and modify files interactively in a line-oriented manner
egrep	searches text using extended regular expressions, allowing for more complex pattern matching than grep
expand	converts tabs in a file or input into spaces
fgrep	searches for fixed string patterns in text without interpreting them as regular expressions.
file	determines and displays the type of a given file based on its content
fmt	formats text by adjusting line width and spacing for easier readability
fold	wraps long lines of text to a specified width, breaking them into shorter lines.
grep	searches for lines matching a specified pattern in a file or input
head	displays the first few lines of a file or input, typically the top 10 lines by default.
iconv	converts the character encoding of text files from one encoding format to another
info	displays detailed documentation for commands and programs in a hypertext-like format
join	merges lines from two files based on a common field
less	to view text files one screen at a time with forward and backward navigation
look	displays lines from a file that begin with a specified string

more	view text files one screen at a time, allowing forward navigation through the content
nano	text editor that allows you to create and edit files interactively with simple keyboard commands.
nl	It numbers the lines of a text file and displays them
paste	merges lines from multiple files side by side, separating them with a delimiter.
pdf2ps	converts a PDF file into a PostScript (PS) file
pdffonts	lists all the fonts used in a PDF file along with their properties
pdfinfo	displays metadata and general information about a PDF file, such as title, author, page count, and creation date
pdftotext	converts the text content of a PDF file into a plain text file
pr	formats text files for printing by adding headers, footers, and page breaks
ps2pdf	converts a PostScript (PS) file into a PDF file
sdiff	compares two files side by side, showing differences between corresponding lines.
sed	edits and transforms text in a stream or file using specified patterns and commands
seq	generates a sequence of numbers, optionally with a specified increment and format
shar	creates a shell archive (shar) from files, allowing them to be packaged and sent as a shell script.

size	displays the section sizes (text, data, and bss) and total size of an object or executable file.
sort	arranges the lines of a file or input in a specified order, such as alphabetically or numerically.
split	divides a file into smaller files of specified size or number of lines
strings	extracts and displays readable text from binary files
strip	removes symbols, debugging information, and other nonessential data from executable files to reduce their size.
tac	displays the contents of a file or input in reverse line order, from last line to first.
tail	displays the last part of a file or input, typically the last 10 lines by default
tr	translates, replaces, or deletes characters from input text
troff	formats text for typesetting, producing formatted output for printers or display.
tput	initializes terminal capabilities and outputs control sequences for formatting text or moving the cursor
tsort	performs topological sorting on lines of text, arranging them based on dependencies.
uniq	filters out duplicate adjacent lines from a sorted file or input.
unexpand	converts spaces in a file or input into tab characters, reversing the effect of the expand command.
vim	allows users to create and edit files with advanced features for

	programming and text manipulation.
vimdiff	opens multiple files in vim and displays their differences side by side for easy comparison and editing.
wc	counts the number of lines, words, and bytes (or characters) in a file or input.
xmllint	parses and validates XML files, checking for syntax errors and displaying well-formedness.
yes	repeatedly outputs a specified string (or "y" by default) until interrupted, often used for automated responses in scripts.
zgrep	searches for patterns in compressed files (e.g., .gz files) using grep syntax.

10. Archiving and Compression Management

Command	Explanation
7z	used to create, extract, and manage 7z archive files, supporting various compression formats.
7za	provides the functionality of 7z but with a single-archive mode, supporting the creation and extraction of 7z files without multi-threading.
7zr	lightweight version of 7z, supporting only the 7z format for compression and extraction
ar	used to create, modify, and extract files from archive files (typically .a files), commonly used for static libraries
bunzip2	decompresses files compressed with the .bz2 format
bzip2	compresses files using the Burrows-Wheeler algorithm, creating .bz2 compressed archives.
bzcat	decompresses .bz2 files and displays their contents to standard output without extracting them to a file.
bzdiff / bzcmp	compares two .bz2 compressed files and shows the differences between them. compares two .bz2 compressed files and reports if they are identical or different.
bzgrep	searches for patterns in .bz2 compressed files using grep syntax
bzless / bzmore	to view the contents of .bz2 compressed files one page at a time,

	similar to less. displays the contents of .bz2 compressed files one screen at a time, similar to more.
bzip2recover	to recover data from a corrupted .bz2 compressed file.
cpio	used to copy files to and from archives, supporting both creation and extraction of archive files in various formats
funzip	extracts the contents of a .zip file to standard output, allowing you to view or process it without fully decompressing the file
gzip	compresses files using the GNU compression algorithm, creating .gz compressed archives.
gunzip	decompresses files compressed with gzip, restoring them to their original form.
lz4	compresses files using the fast and efficient LZ4 compression algorithm
unlz4	decompresses files that were compressed using the LZ4 compression algorithm.
shar	creates a shell archive (shar) file that bundles multiple files into a single script for easy distribution and extraction.
tar	archives multiple files or directories into a single file, with optional compression for backup or transfer
tgz	compressed archive file created using tar and gzip, commonly used for packaging and distributing files (.tar.gz)
unar	extracts files from various archive formats like ZIP, RAR, 7z, and

	others automatically
uncompress	decompresses files that were compressed using the traditional UNIX compress command (.Z files).
unxz	decompresses files that were compressed using the XZ compression format
unzstd	decompresses files that were compressed using the Zstandard (zstd) compression algorithm
unzip	extracts files from ZIP archive files
xz	compresses or decompresses files using the XZ (LZMA2) compression algorithm for high compression ratios
xzcat	displays the contents of an XZ-compressed file without explicitly decompressing it to disk
zcat	displays the contents of a gzip-compressed file without decompressing it to disk
zip	compresses files or directories into a ZIP archive for storage or transfer
zstd	compresses or decompresses files using the Zstandard (zstd) algorithm for fast and efficient compression

11. System Hardware and kernel Management

Command	Explanation
/proc/cpuinfo	displays detailed information about the CPU(s) on the system, such as model, cores, speed, and features.
/proc/filesystems	lists all filesystem types supported by the running Linux kernel
/proc/interrupts	shows the number of interrupts per CPU and their associated hardware devices
/proc/meminfo	displays detailed information about system memory usage, including RAM, swap, and buffers
/proc/modules	lists all currently loaded kernel modules along with their sizes and usage information
/proc/version	shows the Linux kernel version, build information, and compiler details
acpi	displays power and battery status, thermal information, and AC adapter details
arch	displays the architecture of the machine's processor (e.g., x86_64, arm).
bootctl	manages and queries the system's EFI boot manager and boot loader configuration
check-bios-nx	checks whether the CPU's NX (No-Execute) bit is enabled in the BIOS for memory protection
chmem	modifies the memory attributes or limits of a running process

	(specific to certain UNIX/Linux variants)
chronyc	interacts with the Chrony NTP daemon to monitor and adjust system clock synchronization
clockdiff	measures the time difference between the local machine and a remote host
ctrlaltdel	configures the system's response to the Ctrl+Alt+Del key combination, typically triggering a reboot
depmod	generates a list of module dependencies by analyzing the kernel modules in /lib/modules
dmesg	displays kernel ring buffer messages, typically showing system and hardware initialization logs
dmidecode	displays detailed hardware information from the system's DMI/SMBIOS tables, such as BIOS, CPU, and memory
dracut	generates or updates an initramfs (initial RAM filesystem) for booting the Linux system
dracut -f	forcibly regenerates the initramfs, overwriting the existing one
echo > /proc/sys/...	writes a value to a kernel parameter in /proc/sys/ to temporarily modify system behavior.
efibootmgr	manages UEFI boot entries and boot order on systems using the EFI firmware
exec	replaces the current shell or process with a specified command without creating a new process
free	displays the system's memory usage, including total, used, free,

	shared, and swap memory
getent	retrieves entries from system databases like passwd, group, hosts, or services using the standard Name Service Switch (NSS)
grub2-install	installs the GRUB2 bootloader onto a device to make the system bootable
grub2-mkconfig	generates a GRUB2 configuration file (grub.cfg) based on current system settings and available kernels.
halt	stops all CPU functions and shuts down the system immediately
hostid	displays the unique hexadecimal identifier of the current host system
hostname	displays or sets the system's network hostname
hostnamectl	queries or changes the system hostname and related settings on systems using systemd
hwclock	displays or sets the hardware (RTC) clock on the system
hwinfo	displays detailed information about all hardware components on the system
hwe-support-status	checks the support status of the installed Hardware Enablement (HWE) kernel and packages on Ubuntu systems
inxi	displays comprehensive system information, including hardware, drivers, and system settings, in a readable format
init	initializes the system and manages runlevels by starting or stopping services during boot or shutdown
insmod	inserts a specified kernel module into the running Linux kernel
journalctl	views and queries logs from the systemd journal, including system,

	kernel, and service messages
kexec	loads and immediately boots into a new kernel without going through the full system reboot process.
kmod	manages Linux kernel modules, including loading, unloading, and listing modules
lastb	displays a list of failed login attempts recorded in the system's btmp file
lastlog	shows the most recent login times for all users on the system
lid	displays the current status of the laptop lid (open or closed) and related power events
localectl	queries or configures the system locale and keyboard layout settings on systemd systems
loginctl	manages and queries user logins, sessions, and seats on systemd systems
lsblk	lists information about all available block devices, such as disks and partitions, in a tree-like format
lscpu	displays detailed information about the CPU architecture and processor characteristics
lsinitramfs	lists the contents of an initramfs image used during the Linux boot process
lsipc	displays information about active System V IPC resources like message queues, semaphores, and shared memory
lslocks	lists all currently held file locks on the system

lslogins	displays information about known users, their UIDs, last login times, and related account details
lsmem	displays detailed information about the system's memory blocks and their sizes
lsmod	lists all currently loaded kernel modules along with their sizes and usage counts
lsns	lists all Linux namespaces, showing their types, IDs, and associated processes
lspci	displays detailed information about all PCI devices connected to the system
lsscsi	lists all SCSI devices (including SATA, SAS, and USB storage) connected to the system
lsusb	displays information about all USB buses and the devices connected to them
machinectl	manages and queries containers or virtual machines on systemd systems
mkinitrd	creates an initial RAM disk (initrd) image used to boot the Linux kernel
modinfo	displays detailed information about a specific kernel module, such as author, license, parameters, and dependencies
modprobe	loads or removes a kernel module along with its dependencies automatically
nproc	displays the number of processing units (CPU cores) available on

	the system
on_ac_power	checks whether the system is currently running on AC power or battery
osinfo-query	queries information about operating systems, such as installed OS types, versions, and capabilities, typically for virtualization management
poweroff	shuts down the system immediately and turns off the power
reboot	restarts the system immediately
rmmod	removes a specified kernel module from the running Linux kernel
rsyslogd	runs the Rsyslog daemon to collect, filter, and log system and application messages
runlevel	displays the current and previous runlevels of the system
showkey	displays the keycodes of keys pressed on the keyboard in the console
shutdown	safely powers off or reboots the system, optionally after a specified delay
startx	starts the X Window System (graphical desktop) from the command line
strace	traces and displays all system calls and signals made by a program
sysctl	views or modifies kernel parameters at runtime via the /proc/sys interface
systemctl	manages and controls systemd services, units, and the system state
systemd-machine-id-setup	generates and initializes a unique machine ID for the system

telinit	instructs init to change the system's runlevel or systemd target
timedatectl	queries or configures the system clock, time zone, and NTP settings on systemd systems.
tload	displays a real-time ASCII graph of the system's load average in the terminal
tuned-adm	manages and applies performance tuning profiles to optimize system resources on Linux
udevadm info	displays detailed information about a device from the udev database
unmkinitramfs	extracts the contents of an initramfs image for inspection or modification
upower	displays information about power sources and battery status on the system
update-grub2	generates or updates the GRUB2 configuration file (grub.cfg) based on available kernels and system settings
update-initramfs	creates or updates an initramfs image used by the Linux kernel during boot
uptime	Shows how long the system has been running, along with the current time, number of users, and system load averages
usb-devices	Displays detailed information about all USB devices connected to the system in a human-readable format
xclock	Opens a simple graphical clock window in X11 showing the current time
zdump	Displays the current time and time zone information for specified

	time zones

12. Daemon Services Management

Command	Explanation
daemon	Runs a command as a background process, typically detached from the terminal
disown	Removes a shell job from the shell's job table, preventing it from receiving SIGHUP when the terminal closes
journalctl -u <service>	Displays the logs of a specific systemd service
journalctl -xe	Shows the systemd journal with the most recent logs, including detailed error messages and explanations
lsof -p <PID>	Lists all open files and network connections associated with a specific process ID
loginctl	Manages and queries user logins, sessions, and seats on a system running systemd
nohup <cmd> &	Runs a command in the background immune to hangups, allowing it to continue after logout
pgrep <service>	Searches for and returns the process IDs (PIDs) of processes matching the specified name
pkill <service>	Sends a signal (default: TERM) to terminate processes matching the specified name.
ps aux	Displays a detailed list of all running processes with user, CPU/memory usage, and other information
setsid <cmd>	Starts a command in a new session, detaching it from the

	controlling terminal.
sshd	Starts the OpenSSH daemon to allow secure remote SSH connections to the system
strace -p <PID>	Attaches to a running process to trace and display its system calls and signals in real-time
supervisord	Starts the Supervisor daemon to manage and monitor processes according to its configuration
systemctl	Controls and manages systemd services, units, and the system state on Linux.
systemctl start <service>	Starts the specified systemd service immediately
systemctl stop <service>	Stops the specified systemd service immediately
systemctl restart <service>	restart the specified systemd service
systemctl reload <service>	reload the specified systemd service
systemctl status <service>	Shows the current status, activity, and recent logs of the specified systemd service.
systemctl enable <service>	Configures the specified service to start automatically at system boot.
systemctl disable <service>	Prevents the specified service from starting automatically at system boot.
systemctl is-enabled <service>	Checks whether the specified service is set to start automatically at boot
systemctl is-active <service>	Checks whether the specified service is currently running
systemctl list-units --type=service	Lists all currently loaded systemd service units along with

	their status
systemctl list-unit-files --type=service	Lists all installed service unit files and their enable/disable status.
systemctl daemon-reload	Reloads systemd manager configuration to recognize changes in unit files without restarting the system.
systemctl kill <service>	Sends a specified signal (default: SIGTERM) to all processes of the given service.
systemd	Initializes and manages system services, processes, and the overall system state on Linux
systemd-analyze	Provides performance statistics and timing information for system boot and services
systemd-run	Starts a command as a transient systemd service or scope unit.
service	Starts, stops, restarts, or checks the status of a SysVinit or systemd service.

13. Bash Builtin commands

Command	Explanation
:	A shell builtin that does nothing and returns a success status; often used as a placeholder or no-op
.	A shell builtin (dot command) that executes a script in the current shell environment instead of a subshell
[	A synonym for the test command; evaluates conditional expressions in shell scripts and returns true or false
[[	An enhanced test command in bash/ksh/zsh for evaluating conditional expressions with extended syntax and safer string comparisons
alias	Creates a shortcut or alternate name for a command or command sequence in the shell
bg	Resumes a suspended job in the background, allowing the shell to continue running other commands
bind	Displays or modifies key bindings and readline behavior in the shell
break	Exits from the innermost loop (for, while, or until) in a shell script or interactive shell
builtin	Runs a shell's built-in command, bypassing any external command with the same name
caller	Displays the line number and function name of the current subroutine call in a shell script
case	Performs multi-way branching in shell scripts by matching a value against

	multiple patterns
cd	Changes the current working directory in the shell
command	Runs a specified command, bypassing shell functions and aliases
compgen	Generates lists of words for tab completion, such as commands, aliases, functions, or filenames
complete	Specifies how command-line arguments should be auto-completed for a particular command in the shell.
compopt	Modifies or disables completion options for a shell command during programmable completion.
continue	Skips the remaining commands in the current loop iteration and proceeds to the next iteration
coproc	Starts a command as a background coprocess with input/output connected via a dedicated file descriptor pair
declare	Defines variables and gives them attributes, such as read-only, integer, or array, in the shell
dirs	Displays the list of remembered directories in the shell's directory stack
disown	Removes a shell job from the job table, preventing it from receiving SIGHUP when the terminal closes
echo	Displays a line of text or the value of a variable to standard output
enable	Activates or lists shell built-in commands, allowing you to enable or disable them in the current shell
eval	Executes arguments as a shell command after evaluating them, effectively running dynamically constructed commands

exec	Replaces the current shell with a specified command without creating a new process
exit	Terminates the current shell or script and returns an optional exit status to the parent process
export	Marks a shell variable to be passed to child processes as an environment variable
false	Returns a non-zero (failure) exit status without performing any action
fc	Lists, edits, or re-executes commands from the shell's command history
fg	Brings a background or suspended job to the foreground in the shell
for	Executes a block of commands repeatedly for each item in a list or sequence in shell scripts
function	Defines a named shell function to group commands for reuse in scripts or the interactive shell.
getopts	Parses positional parameters in shell scripts to handle command-line options and arguments
hash	Displays or manages the shell's command path hash table to speed up command lookup
help	Displays information about shell built-in commands and their usage
history	Shows the list of previously executed commands in the shell
if	Executes a block of commands conditionally based on the success or failure of a test or command in shell scripts
jobs	Lists all current jobs in the shell, showing their status as running, stopped, or backgrounded

kill	Sends a signal (default: SIGTERM) to terminate or control a process by its PID
let	Evaluates arithmetic expressions and assigns the result to shell variables
local	Declares a variable with scope limited to the current function in a shell script
logout	Ends the current shell session for login shells
mapfile	Reads lines from standard input into an array variable in the shell
popd	Removes the top directory from the directory stack and changes the current directory to the new top
printf	Formats and prints text or variables to standard output using a specified format string
PS1	Defines the primary prompt string displayed in the interactive shell
pushd	Adds a directory to the top of the directory stack and changes the current directory to it
pwd	Prints the full path of the current working directory
read	Reads a line of input from the user or standard input and assigns it to one or more shell variables
readarray	Reads lines from standard input into an array variable, similar to mapfile
readonly	Marks a variable or function as unchangeable, preventing further modification in the shell
return	Exits from a shell function and optionally provides an exit status to the caller
script	Records a terminal session's input and output to a file for later review
select	Creates a numbered menu from a list of items and executes commands

	based on the user's choice in shell scripts
set	Displays or modifies shell options, positional parameters, and environment settings
shift	Shifts positional parameters to the left, effectively discarding $1 and renumbering the remaining arguments in a shell script
sh	Starts a new Bourne-compatible shell session to execute commands or scripts
shopt	Displays or modifies shell optional settings and behaviors in Bash
source	Executes a script in the current shell environment without creating a new subshell
suspend	Pauses the current shell, stopping its execution until resumed, typically used in interactive sessions
test	Evaluates conditional expressions and returns a status of true or false in shell scripts
time	Measures and displays the execution duration and resource usage of a command
times	Displays the accumulated user and system CPU time for the shell and its child processes
trap	Specifies commands to execute when the shell receives signals or exits, enabling cleanup or custom actions
true	Does nothing and returns a success (zero) exit status
type	Shows how a command name would be interpreted by the shell (alias, function, built-in, or external command)
typeset	Declares variables and sets attributes (like integer, array, or read-only) in

	the shell, similar to declare
ulimit	Sets or displays resource limits for the shell and its child processes
umask	Sets the default file permission mask for newly created files and directories
unalias	Removes a previously defined shell alias
unset	Deletes a shell variable or function, removing it from the environment.
until	Repeatedly executes a block of commands until a specified condition becomes true in shell scripts
variables	In shell scripting, variables store data (like strings, numbers, or paths) that can be used and modified during script execution
wait	Pauses the shell until specified background jobs or processes complete and returns their exit status.
while	Repeatedly executes a block of commands as long as a specified condition remains true in shell scripts
whiptail	Displays dialog boxes and menus in text mode using shell scripts for user interaction

14. Security Management

Command	Explanation
aa-enabled	Checks whether AppArmor security module is enabled on the system
aa-remove-unknown	Removes AppArmor profiles that do not correspond to any existing program on the system
aa-status	Displays the current status of AppArmor profiles and their enforcement modes.
aa-teardown	Unloads all AppArmor profiles from the kernel, effectively disabling AppArmor protection.
apparmor	Provides mandatory access control for programs, confining them to limited resources based on security profiles
apg	Generates random, secure passwords based on user-defined options
auditctl	Configures and controls the Linux audit subsystem, managing audit rules and settings
ausearch	Searches and filters audit logs generated by the Linux Audit system based on specified criteria
aureport	Generates summary reports from Linux audit logs for analysis and security review
avcstat	Displays SELinux Access Vector Cache (AVC) statistics, showing allowed and denied access attempts.
chcon	Changes the SELinux security context (label) of a file or directory

chkrootkit	Scans a Linux system for signs of rootkits and potential security compromises
cracklib-check	Checks passwords against the CrackLib dictionary to assess their strength and vulnerability
diceware	Generates secure, memorable passphrases by selecting random words using dice or a random number generator
fail2ban-client	Interacts with the Fail2Ban service to manage jails, view status, and control banning rules
faillock	Displays, resets, or manages failed authentication attempts for user accounts to enforce login security
fakeroot	Runs a command in an environment where it appears to have root privileges without requiring actual root access
firewall-cmd	Configures and manages the firewalld firewall service on Linux systems
firewall-offline-cmd	Configures firewalld rules and settings while the firewall service is inactive or offline
gpg	Encrypts, decrypts, and signs data or communications using GNU Privacy Guard (OpenPGP standard)
gpg-zip	Creates an encrypted archive of files or directories using GPG encryption
getfacl	Displays the Access Control List (ACL) permissions of files or directories
getenforce	Shows the current SELinux mode: Enforcing, Permissive, or

	Disabled
gpw	Generates secure random passwords using the GNU Privacy Guard (GPG) framework
grpconv / grpunconv	Converts group account information from /etc/group to the shadow group format in /etc/gshadow - Converts shadowed group information from /etc/gshadow back to the standard /etc/group file format
ip6tables	Configures and manages IPv6 packet filtering rules and firewall settings on Linux.
iptables	Configures and manages IPv4 packet filtering rules and firewall settings on Linux
ipset	Creates and manages sets of IP addresses, networks, or port numbers for efficient firewall rule matching
logger	Sends messages from the command line or scripts to the system log (syslog)
makepasswd	Generates random, secure passwords from the command line
md5sum	Calculates and displays the MD5 hash of files or input data for integrity verification
nft / nftables	Configures and manages the nftables firewall, the modern replacement for iptables on Linux / Provides a framework and tools for packet filtering, network address translation, and firewall management on Linux
openssl	Performs cryptographic operations like encryption, decryption,

	certificate management, and secure communication using the OpenSSL toolkit
openssl-rand	Generates cryptographically secure random bytes or strings for use in keys, passwords, or initialization vectors
pam_tally2	Displays or resets failed login attempts for user accounts tracked by the PAM tally module
pwconv / pwunconv	Converts user account information from /etc/passwd to the shadow password format in /etc/shadow - Converts shadowed password information from /etc/shadow back to the standard /etc/passwd file format
pwgen	Generates random, pronounceable, and secure passwords from the command line
restorecon	Restores the default SELinux security context for files and directories based on policy rules
rkhunter	Scans a Linux system for rootkits, backdoors, and security vulnerabilities
semanage	Manages SELinux policy components, such as file contexts, ports, and booleans, on a system
setenforce	Changes the SELinux mode between Enforcing and Permissive at runtime
setsebool	Sets or modifies SELinux boolean values to enable or disable specific policy rules
sestatus	Displays the current status and mode of SELinux on the system

sha1sum	Computes and displays the SHA-1 hash of files or input data for integrity verification
shasum	Calculates and displays SHA checksums (SHA-1 by default) of files or input data for integrity verification
shred	Overwrites files multiple times to securely erase their contents and prevent recovery
shuf	Randomly shuffles lines from input or selects random lines from a file or list
sshpass	Non-interactively provides a password to SSH for automated login or command execution
tripwire	Monitors and detects unauthorized changes to files and directories for system integrity and security
ufw	Simplifies the management of firewall rules on Linux, providing an easy interface for enabling, disabling, and configuring the firewall
unattended-upgrades	Automatically installs security or package updates on a Debian/Ubuntu system without user intervention
uuidd	Runs the UUID daemon to generate universally unique identifiers (UUIDs) for applications
uuidgen	Generates a new universally unique identifier (UUID) for use in applications or scripts
xkcdpass	Generates easy-to-remember, secure passphrases inspired by the XKCD method using random words

15. Help Commands

Command	Explanation
apropos	searches the manual page (man) descriptions for a keyword and lists matching commands with short summaries
command --help	displays a brief help message describing the command's usage, options, and syntax directly in the terminal
help	displays information about built-in shell commands and their usage in Linux
info	displays detailed documentation about commands and programs in an interactive, scrollable format
man	displays the manual pages of commands, showing detailed descriptions, options, and usage
mandb	creates or updates the manual page (man) database used by commands like man and apropos
manpath	displays the list of directories that the man command searches for manual pages
man 1 to man 8	man1 - User commands (general executable programs) man2 - System calls (kernel-level functions) man3 - Library calls (C library functions) man4 - Special files (usually in /dev) man5 - File formats and configuration files man6 - Games and screensavers

	man7 - Miscellaneous (conventions, standards, etc.) man8 - System administration and maintenance commands
pinfo	a terminal-based, colorized viewer for Info and man pages, offering a Lynx-like navigation experience with clickable links and intuitive browsing
whatis	displays a one-line summary of a command from the manual page database
whereis	locates the binary, source, and manual files for a command
which	shows the full path of the executable that would run when a command is invoked
yelp	opens the GNOME Help browser to view system and application documentation in a graphical interface

16. Debug Management

Command	Explanation
crash	analyzes Linux kernel crash dumps (vmcores) for debugging kernel failures.
debugfs	a filesystem debugger for ext2/ext3/ext4, allowing low-level inspection and manipulation of files and metadata
ftrace	a Linux kernel feature for tracing and debugging function calls, events, and performance issues
fuser	identifies processes using a file, directory, or socket
gdb	GNU Debugger, used to debug programs by inspecting code, variables, and execution flow
ldd	lists the shared library dependencies of an executable
lsof	lists all open files and the processes using them on the system
ltrace	traces and displays the library calls made by a program during its execution
pmap	displays the memory map of a process, showing how memory is allocated
perf	a performance analysis tool to profile CPU, memory, and other hardware/software events on Linux.
pstack	prints the stack trace of a running process to help debug where it is executing
strace	traces system calls and signals made by a program for debugging and analysis
kdump	captures a Linux kernel crash dump (vmcore) for post-mortem analysis of system failures

17. Log Management

Command	Explanation
bootctl status	shows the current system bootloader (systemd-boot) status and configuration
cat /var/log/messages	a system log file that stores general kernel and system messages, including boot, service, and hardware events
cat /var/log/syslog	a system log file that records general system activity, messages, and events on Debian-based Linux systems
faillog	displays or sets user failed login attempt records
journalctl	views and queries logs collected by systemd's journal
logger	adds custom messages to the system log (syslog or journald).
logrotate	manages automatic rotation, compression, and removal of log files to save disk space
logsave	runs a command and saves its output to a log file
loginctl	manages and queries user logins, sessions, and seats on systemd systems
rsyslogd	the daemon that collects, processes, and forwards system log messages on Linux
syslog-ng	a syslog daemon that collects, filters, and forwards log messages with advanced features and flexibility

19. Backup Management

Command	Explanation
7z	a command-line tool to create, extract, and manage .7z and other archive files
bgzip / gunzip	compresses files using a block-based gzip format, allowing random access for large genomic data files / decompresses files compressed with gzip (.gz files).
btrfs subvolume snapshot	creates a snapshot of a btrfs subvolume, capturing its state at a specific point in time
bzip2	compresses files using the Burrows-Wheeler algorithm, producing .bz2 files.
bunzip2	decompresses files compressed with bzip2 (.bz2 files)
borg	a deduplicating backup tool that efficiently creates, encrypts, and manages backups
cmp	compares two files byte by byte and reports the first difference
crontab	schedules and manages recurring tasks (cron jobs) for users
crontab -l	lists the current user's scheduled cron jobs
dd	copies and converts data between files or devices at a low level
duplicity	securely backs up files and directories with encryption, incremental storage, and remote support
etckeeper	tracks /etc configuration changes using a version control system like Git

gzip	compresses files using the GNU zip algorithm, creating .gz files
gunzip	decompresses files compressed with gzip (.gz files)
install	copies files to a destination and sets their permissions, often used for installing binaries
lvcreate --snapshot	creates a snapshot of an existing logical volume in LVM, capturing its state at a point in time
md5sum	computes and displays the MD5 hash of a file to verify data integrity
mongodump	creates a binary backup of a MongoDB database or collection
mysqlpump	a utility to perform logical backups of MySQL databases with parallel processing and improved performance
mysqldump	exports a MySQL database or tables as SQL statements for backup or migration
pg_basebackup	creates a base backup of a PostgreSQL database cluster for replication or disaster recovery
pg_dump	exports a PostgreSQL database into a file as SQL statements or a custom-format backup
psql	interactive command-line client for PostgreSQL to execute queries and manage databases
rclone	syncs and manages files between local storage and cloud storage services
restic	a fast, secure, and deduplicating backup tool that supports encryption and multiple storage backends
rsnapshot	a filesystem backup utility that uses rsync and hard links to create

	incremental snapshots efficiently
rsync	efficiently synchronizes files and directories between two locations, locally or over a network
scp	securely copies files or directories between local and remote hosts over SSH
sftp	provides an interactive, secure file transfer session over SSH between local and remote systems
sha256sum	computes and displays the SHA-256 hash of a file for integrity verification
sqlite3	interactive command-line tool to create, manage, and query SQLite databases
sqlite3 .dump	exports the entire SQLite database as SQL statements for backup or migration
tar	creates, extracts, or manages archive files (commonly .tar) on Linux
timeshift	creates and restores system snapshots to protect and recover Linux system files and settings
unxz	decompresses files compressed with xz (.xz files)
unzip	extracts files from a ZIP archive.
xz	compresses files using the LZMA2 algorithm, producing .xz files.
zip	creates compressed ZIP archive files from one or more files or directories
zfs snapshot	creates a read-only snapshot of a ZFS filesystem or volume at a

	specific point in time

20. Utility Commands

Command	Explanation
bc	an interactive arbitrary-precision calculator for performing mathematical operations in the terminal
cheese	a graphical application to capture photos and videos from a webcam on Linux
clear	clears the terminal screen of all previous commands and output
env	displays or runs commands in a modified environment
fc-list	lists all available fonts on the system along with their styles and file paths
evince	a graphical document viewer for PDF, PostScript, and other document formats on Linux
firefox	launches the Firefox web browser on Linux
isoinfo	displays information about ISO 9660 filesystem images, such as file lists and volume details
isosize	displays the size of an ISO 9660 filesystem image, including used and free space
locale	displays or sets system locale settings, such as language, character encoding, and regional formats
localectl	queries or configures system locale and keyboard layout settings on systemd systems
pidgin	a graphical instant messaging client supporting multiple protocols like

	XMPP, IRC, and AIM
reset	restores the terminal to a sane default state, clearing display issues or corrupted output
usb-creator-gtk	a graphical tool to create bootable USB drives from ISO images on Linux
virt-install	creates and installs virtual machines from the command line using libvirt/KVM
virsh	a command-line interface to manage virtual machines and hypervisors using libvirt
vlc	a graphical and command-line media player for playing audio and video files
mkvmerge	creates, edits, or merges Matroska (.mkv) multimedia files from various input sources.

21. Logical Volume Management

Command	Explanation
config	displays or edits LVM (Logical Volume Manager) configuration settings
devtypes	lists all device types recognized and supported by LVM (Logical Volume Manager).
dumpconfig	displays the current LVM configuration in a readable format
formats	lists all metadata formats supported by LVM for physical and logical volumes
help	displays a list of available LVM commands and general usage information
fullreport	generates a detailed report of all LVM components, including physical volumes, volume groups, and logical volumes
lastlog	shows the most recent LVM commands and their results from the LVM log
lvchange	modifies attributes of a logical volume, such as activating, deactivating, or changing read/write status
lvconvert	converts or modifies a logical volume's type, such as creating mirrors or converting to a thin volume.
lvcreate	creates a new logical volume within a specified volume group
lvdisplay	shows detailed information about logical volumes in LVM
lvextend	increases the size of an existing logical volume in LVM
lvchange	modifies attributes of a logical volume, such as activating, deactivating,

	or setting read/write permissions
lvmconfig	displays the current LVM (Logical Volume Manager) configuration and system capabilities
lvmdiskscan	scans and lists all block devices usable by LVM, including physical volumes and regular disks
lvmsadc	collects LVM statistics and writes them to a file for monitoring or debugging purposes
lvmsar	generates reports from LVM statistics collected by lvmsadc
lvreduce	decreases the size of an existing logical volume in LVM
lvremove	deletes one or more logical volumes from a volume group in LVM.
lvrename	renames an existing logical volume in LVM
lvresize	changes the size of a logical volume in LVM, either increasing or decreasing it
lvs	displays a concise summary of logical volumes in LVM
lvscan	scans and lists all logical volumes on the system, showing their activation status
pvchange	modifies attributes of a physical volume in LVM, such as marking it as read-only or activating it
pvresize	resizes a physical volume in LVM to use the new size of the underlying block device
pvck	checks the metadata and consistency of a physical volume in LVM
pvcreate	initializes a block device as a physical volume for use in LVM
pvdata	Display the on-disk metadata for physical volume(s)
pvmove	migrates data from one physical volume to another within LVM, allowing

	safe removal or replacement of disks
lvpoll	monitors and reports the status of logical volumes in LVM for changes or activity
pvremove	wipes LVM metadata from a physical volume, effectively removing it from LVM management
pvs	displays a summary of all physical volumes in LVM, including size, volume group, and attributes
pvscan	scans all disks for LVM physical volumes and reports their status
segtypes	lists all segment types supported by LVM for logical volumes
systemid	displays or sets the unique system identifier used by LVM to distinguish volume groups across systems
tags	lists or manages tags associated with LVM objects like volume groups, logical volumes, or physical volumes
vgcfgbackup	backs up the metadata of a volume group in LVM to a file
vgcfgrestore	restores the metadata of a volume group from a backup file in LVM
vgchange	modifies attributes of a volume group, such as activating or deactivating all its logical volumes
vgck	checks the consistency and integrity of a volume group's metadata in LVM
vgconvert	converts a volume group to a new format or feature set in LVM, such as enabling metadata mirroring or thin provisioning
vgcreate	creates a new volume group from one or more physical volumes in LVM
vgdisplay	shows detailed information about volume groups in LVM
vgexport	marks a volume group as exported, making it unavailable locally but

	portable to another system
vgextend	adds one or more physical volumes to an existing volume group in LVM
vgimport	makes an exported or foreign volume group available on the local system for use
vgimportclone	imports a cloned or copied volume group that has the same name as an existing one on the system, avoiding conflicts
vgmerge	combines two volume groups into a single volume group in LVM
vgmknodes	creates device nodes for all logical volumes in a volume group
vgreduce	removes one or more physical volumes from a volume group in LVM
vgremove	deletes a volume group and all its logical volumes in LVM
vgrename	renames an existing volume group in LVM
vgs	displays a concise summary of all volume groups in LVM
vgscan	scans all disks for volume groups and updates the LVM cache
vgsplit	splits a volume group into two separate volume groups in LVM
version	displays the version of the LVM tools and libraries installed on the system

22. RAID Management

Command	Explanation
mdadm	manages and monitors Linux software RAID arrays
mdadm --create	creates a new software RAID array on Linux
mdadm --assemble	assembles an existing RAID array from its component devices
mdadm --build	creates a simple RAID array without superblocks, typically used for older or non-standard setups
mdadm --manage	performs administrative tasks on an existing RAID array, such as adding, removing, or marking devices
mdadm --misc	performs miscellaneous maintenance operations on RAID arrays, such as examining, stopping, or marking devices
mdadm --grow	modifies the size or configuration of an existing RAID array, such as adding disks or changing RAID level
mdadm --incremental	creates a RAID array incrementally, allowing devices to be added one at a time
mdadm --monitor	continuously monitors RAID arrays and reports events such as failures or degradations
cat /proc/mdstat	displays the current status of all active software RAID arrays on the system
lsblk	lists information about all available block devices in a tree-like format, showing partitions and mount points

mdadm --detail /dev/mdX	displays detailed information about a specific RAID array
mdadm --add /dev/mdX /dev/sdY	used to add a new device to an existing RAID array
mdadm --remove /dev/mdX /dev/sdY	used to remove a device from an existing RAID array
mdadm --stop /dev/mdX	used to stop (deactivate) a running RAID array
mdadm --zero-superblock /dev/sdX	used to erase RAID metadata from a device, making it reusable
watch cat /proc/mdstat	continuously monitors and displays the real-time status of RAID arrays
smartctl	used to check and monitor the health and status of storage drives using S.M.A.R.T. data.
raid-check	used to verify and repair data consistency on RAID arrays
raid-status	displays the current status and health of RAID arrays