Linux Commands

A working reference for the commands you actually type at a shell. Distro-agnostic where it matters, with notes on the `apt` vs `dnf` split for package management.

Navigation & Files

Command	Action
`pwd`	print the current working directory
`ls -lah`	long listing, **a**ll files, **h**uman-readable sizes
`cd -`	jump back to the previous directory
`cp -r src dst`	copy recursively (directories)
`mv old new`	move or rename
`rm -r dir`	remove a directory and its contents
`mkdir -p a/b/c`	create nested directories in one shot
`touch file`	create an empty file / update its timestamp
`ln -s target link`	create a symbolic link
`tree -L 2`	show the directory tree, 2 levels deep

> **rm -rf is unforgiving.** There is no trash can. Double-check the path before running `rm -rf`, and never run it with a variable that could be empty (`rm -rf "$DIR/"` deletes `/` if `$DIR` is unset).

Viewing & Searching

Command	Action
`cat file`	dump a whole file to stdout
`less file`	page through a file (`q` to quit, `/` to search)
`head -n 20 file`	first 20 lines
`tail -f log`	follow a file as it grows — great for logs
`grep -rin 'text' .`	recursive, case-**i**nsensitive, with line **n**umbers
`find . -name '*.log'`	find files by name pattern
`find . -mtime -1`	files modified in the last day
`wc -l file`	count lines
`sort file	uniq -c`	

Permissions & Ownership

Command	Action
`chmod +x script.sh`	make a file executable
`chmod 644 file`	owner read/write, group + others read
`chmod 755 dir`	owner all, group + others read/execute
`chown user:group file`	change owner and group
`chmod -R 750 dir`	apply recursively
`sudo !!`	re-run the previous command with sudo

> **Octal in three digits:** read = 4, write = 2, execute = 1. Add them per role (owner, group, other). `7` = rwx, `6` = rw-, `5` = r-x.

Processes & System

Command	Action
`ps aux | grep node`	
`top`	live process/CPU view (`htop` if installed)
`kill -9 PID`	force-kill a process by PID
`pkill -f pattern`	kill by matching the full command line
`df -h`	disk space by filesystem, human-readable
`du -sh *`	size of each item in the current directory
`free -h`	memory usage
`systemctl status nginx`	check a service's state (systemd)
`journalctl -u nginx -f`	follow a service's logs

Networking

Command	Action
`curl -I https://site`	fetch just the response headers
`curl -fsSL url | sh`	
`wget url`	download a file
`ssh user@host`	open a remote shell
`scp file user@host:/path`	copy a file over SSH
`ss -tulpn`	listening ports and their processes
`ping -c 4 host`	send 4 ICMP probes
`dig +short example.com`	resolve a domain, terse output
`ip a`	show network interfaces and addresses

Archives & Packages

Command	Action
`tar czf out.tgz dir/`	create a gzipped tarball
`tar xzf out.tgz`	extract a gzipped tarball
`tar tzf out.tgz`	list contents without extracting
`zip -r out.zip dir/`	create a zip archive
`unzip out.zip`	extract a zip archive

Package managers — Debian/Ubuntu vs Fedora/RHEL

```
# Debian / Ubuntu (apt)
sudo apt update && sudo apt upgrade
sudo apt install <pkg>
sudo apt remove <pkg>

# Fedora / RHEL / Rocky (dnf)
sudo dnf check-update
sudo dnf install <pkg>
sudo dnf remove <pkg>
```