1. File and Directory Management

 ls – List directory contents

 cd – Change directory

 pwd – Print working directory

 cp – Copy files and directories

 mv – Move or rename files and directories

 rm – Remove files or directories

 mkdir – Make directories

 rmdir – Remove empty directories

 touch – Change file timestamps or create empty files

 find – Search for files in a directory hierarchy

 locate – Find files by name

 tree – Display directories in a tree-like format

 chmod – Change file permissions

 chown – Change file owner and group

 chgrp – Change group ownership

 stat – Display file or file system status

2. File Viewing and Editing

 cat – Concatenate and display file content

 tac – Concatenate and display file content in reverse

 more – View file content interactively (page by page)

 less – View file content interactively (scrollable)

 head – Output the first part of a file

 tail – Output the last part of a file

 nano – Text editor (terminal-based)

 vim / vi – Advanced text editors

 emacs – Text editor

 grep – Search text using patterns

 sed – Stream editor for filtering and transforming text

 awk – Pattern scanning and processing language

 cut – Remove sections from each line of files

 sort – Sort lines of text files

 uniq – Report or omit repeated lines

3. Process Management

 ps – Report a snapshot of current processes

 top – Display Linux tasks

 htop – Interactive process viewer (advanced top)

 kill – Send a signal to a process, typically to terminate

 killall – Terminate processes by name

 bg – Resume a suspended job in the background

 fg – Bring a job to the foreground

 jobs – List active jobs

 nice – Run a program with modified scheduling priority

 renice – Alter priority of running processes

 uptime – Show how long the system has been running

 time – Measure program running time

4. Disk Management

 df – Report file system disk space usage

 du – Estimate file space usage

 fdisk – Partition table manipulator for Linux

 lsblk – List information about block devices

 mount – Mount a file system

 umount – Unmount a file system

 parted – A partition manipulation program

 mkfs – Create a file system

 fsck – File system consistency check and repair

 blkid – Locate/print block device attributes

5. Networking

 ifconfig – Configure network interfaces

 ip – Show/manipulate routing, devices, and tunnels

 ping – Send ICMP Echo requests to network hosts

 netstat – Network statistics

 ss – Socket statistics (faster than netstat)

 traceroute – Trace the route packets take to a network host

 nslookup – Query Internet name servers interactively

 dig – DNS lookup utility

 wget – Non-interactive network downloader

 curl – Transfer data with URLs

 scp – Secure copy files between hosts

 ssh – Secure shell for remote login

 ftp – File Transfer Protocol client

6. User and Group Management

 useradd – Add a user to the system

 usermod – Modify a user account

 userdel – Delete a user account

 groupadd – Add a group to the system

 groupdel – Delete a group

 passwd – Change user password

 chage – Change user password expiry information

 whoami – Print the current logged-in user

 who – Show who is logged in

 w – Show who is logged in and what they're doing

 id – Display user and group information

 groups – Show user's groups

7. System Information and Monitoring

 uname – Print system information

 hostname – Show or set the system's hostname

 uptime – How long the system has been running

 dmesg – Boot and system messages

 free – Display memory usage

 top – Display Linux tasks

 vmstat – Report virtual memory statistics

 lscpu – Display information about the CPU architecture

 lsusb – List USB devices

 lspci – List PCI devices

 lshw – List hardware configuration

8. Archiving and Compression

 tar – Archive files

o tar -czf archive.tar.gz /path/to/directory – Compress files using gzip

o tar -xzf archive.tar.gz – Extract gzipped tarball

o tar -cf archive.tar /path/to/directory – Create a tarball

o tar -xf archive.tar – Extract tarball

 zip – Package and compress files into a ZIP archive

 unzip – Extract files from a ZIP archive

 gzip – Compress files using the gzip algorithm

 gunzip – Decompress files compressed with gzip

 bzip2 – Compress files using the bzip2 algorithm

 bunzip2 – Decompress files compressed with bzip2

 xz – Compress files using the xz algorithm

 unxz – Decompress files compressed with xz

9. Package Management (Depends on Distribution)

Debian-based (e.g., Ubuntu)

 apt-get – APT package handling utility

o apt-get install <package> – Install a package

o apt-get update – Update package list

o apt-get upgrade – Upgrade installed packages

o apt-get remove <package> – Remove a package

 apt-cache – Query APT cache

o apt-cache search <package> – Search for a package

o apt-cache show <package> – Show package details

Red Hat-based (e.g., CentOS, Fedora)

 yum – Package manager for RPM-based systems

o yum install <package> – Install a package

o yum update – Update installed packages

o yum remove <package> – Remove a package

 dnf – Next-generation package manager (Fedora, CentOS 8+)

o dnf install <package> – Install a package

o dnf update – Update installed packages

o dnf remove <package> – Remove a package

General Commands

 rpm – RPM package manager

o rpm -i <package.rpm> – Install an RPM package

o rpm -e <package> – Remove an RPM package

 dpkg – Debian package manager

o dpkg -i <package.deb> – Install a Debian package

o dpkg -r <package> – Remove a Debian package

10. System Services and Daemon Management

 systemctl – Control the systemd system and service manager

o systemctl start <service> – Start a service

o systemctl stop <service> – Stop a service

o systemctl restart <service> – Restart a service

o systemctl enable <service> – Enable a service to start on boot

o systemctl disable <service> – Disable a service from starting on boot

o systemctl status <service> – Check service status

 service – Older service management command (used in non-systemd systems)

o service <service> start – Start a service

o service <service> stop – Stop a service

o service <service> restart – Restart a service

o service <service> status – Check service status

11. Scheduling Tasks

 cron – Daemon for running scheduled commands

o crontab -e – Edit cron jobs for the current user

o crontab -l – List the current user’s cron jobs

o crontab -r – Remove the current user's cron jobs

 at – Run commands at a specified time

o at 09:00 – Schedule a command to run at 09:00 AM

 batch – Run commands when the system load is low

 sleep – Delay for a specified time

o sleep 5s – Sleep for 5 seconds

12. File Permissions and Security

 chmod – Change file permissions

 chown – Change file owner and group

 chgrp – Change the group ownership of a file

 umask – Set default permissions for new files

 setfacl – Set file access control lists (ACL)

 getfacl – Get file access control lists (ACL)

 sudo – Execute a command as another user (usually root)

 visudo – Edit the sudoers file safely

 passwd – Change a user's password

 sudoers – Manage sudo access for users

 gpasswd – Administer group password

 ss – Display socket statistics (for secure network connections)

13. System Backup and Restore

 rsync – Remote file and directory synchronization

o rsync -avz source/ destination/ – Synchronize files

o rsync -avz -e ssh source/ user@remote:/destination/ – Sync over SSH

 cpio – Copy files to and from archives

 dd – Low-level copying and backup of entire filesystems

o dd if=/dev/sda of=/path/to/backup.img – Backup a disk/partition

o dd if=/path/to/backup.img of=/dev/sda – Restore a disk/partition

14. System Diagnostics and Troubleshooting

 dmesg – Print the kernel ring buffer messages (system boot and hardware-related messages)

 journalctl – Query and view logs from systemd's journal

 strace – Trace system calls and signals

o strace <command> – Trace a command's system calls

 lsof – List open files (useful for debugging)

o lsof <file> – Show processes using a specific file

 vmstat – Report virtual memory statistics

 iostat – Report CPU and I/O statistics

 mpstat – Report CPU usage statistics

 pidstat – Report statistics by process

 free – Display memory usage

 uptime – How long the system has been running

 watch – Execute a program periodically, showing output

o watch -n 1 free – Watch memory usage every second

 lshw – List hardware configuration

 htop – Interactive process viewer (better than top)

 netstat – Network statistics (deprecated in favor of ss)

 ss – Show socket statistics (more efficient than netstat)

15. Networking & Remote Management

 ifconfig – Configure network interfaces (older command, replaced by ip)

 ip – A more modern alternative for managing network interfaces and routing

o ip addr – Show IP addresses

o ip link – Show or manipulate network interfaces

o ip route – Show or manipulate routing tables

 ss – Display socket statistics (useful for diagnosing network issues)

 nmap – Network exploration tool (can be used for security auditing)

 telnet – User interface to the TELNET protocol (less common nowadays)

 nc (Netcat) – Network utility for reading and writing from network connections

o nc -l -p 1234 – Listen on port 1234

o nc <host> <port> – Connect to a host and port

 iptables – Administration tool for IPv4 packet filtering and NAT (Network Address Translation)

 firewalld – Frontend for managing firewall rules (used in some distros like Fedora and CentOS)

 ufw – Uncomplicated firewall (front-end for iptables)

o ufw enable – Enable firewall

o ufw allow <port> – Allow traffic on a specific port

 tcpdump – Command-line packet analyzer

 curl – Transfer data from or to a server using various protocols (HTTP, FTP, etc.)

 wget – Download files from the web via HTTP, HTTPS, FTP

 scp – Secure copy over SSH (used to copy files between systems)

o scp file.txt user@remote:/path/to/destination/ – Copy file to remote server

 rsync – Remote file and directory synchronization (often used for backups)

o rsync -avz /local/path/ remote:/remote/path/ – Sync directories

16. Text Processing Utilities

 grep – Search for patterns within files

o grep 'pattern' file.txt – Search for a pattern in a file

o grep -r 'pattern' /dir/ – Recursively search for a pattern

 sed – Stream editor for filtering and transforming text

o sed 's/old/new/g' file.txt – Replace old with new globally

 awk – A powerful text processing language

o awk '{print $1}' file.txt – Print the first column of each line in a file

 cut – Remove sections from each line of a file

o cut -d ':' -f 1 /etc/passwd – Print the first field of each line, delimited by ":"

 sort – Sort lines of text files

o sort file.txt – Sort file content in ascending order

 uniq – Report or omit repeated lines in a file

o sort file.txt | uniq – Sort and remove duplicate lines

 tee – Read from standard input and write to standard output and files

o echo "text" | tee file.txt – Write to file and show output on screen

 tr – Translate or delete characters

o echo "hello" | tr 'a-z' 'A-Z' – Convert lowercase to uppercase

 paste – Merge lines of files

o paste file1.txt file2.txt – Combine lines of file1 and file2 side by side

 wc – Word, line, character, and byte count

o wc -l file.txt – Count lines in a file

o wc -w file.txt – Count words in a file

17. System Shutdown and Reboot

 shutdown – Shut down the system

o shutdown -h now – Immediately shut down

o shutdown -r now – Reboot the system

o shutdown -h +10 – Shut down after 10 minutes

 reboot – Reboot the system

 halt – Halt the system immediately (equivalent to turning off power)

 poweroff – Power off the system

 init – Change the runlevel (old-style system manager)

o init 0 – Shutdown

o init 6 – Reboot

18. File System Mounting and Management

 mount – Mount a file system

o mount /dev/sda1 /mnt – Mount partition to a directory

 umount – Unmount a file system

o umount /mnt – Unmount the file system mounted at /mnt

 fstab – File system table (configuration file for mounting file systems)

o /etc/fstab – View and configure persistent mount points

 blkid – Display block device attributes

 fsck – Check and repair a file system

o fsck /dev/sda1 – Check and repair /dev/sda1

19. Filesystem Permissions and Security

 chmod – Change file permissions

o chmod 755 file.txt – Give read, write, and execute permissions to owner, and read-execute permissions to others

 chown – Change file owner and group

o chown user:group file.txt – Change owner and group of a file

 chgrp – Change group ownership of a file

o chgrp group file.txt – Change the group of a file

 umask – Set default permissions for new files

o umask 022 – Set default permissions for newly created files to 755

 setfacl – Set access control lists (ACL) for file permissions

 getfacl – Get access control lists (ACL) for file permissions