

# Linux commonly used Commands: From Basic to Advanced

## 1 Introduction

This document provides a concise guide to Linux commands, categorized into basic, intermediate, and advanced levels. Each command includes a brief description and example usage. This guide is designed for beginners to advanced users seeking a quick reference.

## 2 BasicCommands

These commands are essential for navigating and managing files, directories, and system information.

### 2.1 NavigatingtheFileSystem

- **pwd**: Displays the current directory.

```
1 pwd
2 % Output: /home/user
```

- **ls**: Lists files and directories.

```
1 ls -l % Detailed listing
2 ls -a % Show hidden files
```

- **cd**: Changes the current directory.

```
1 cd /path/to/directory
2 cd .. % Move up one directory
```

### 2.2 FileandDirectoryManagement

- **mkdir**: Creates a new directory.

```
1 mkdir new_folder
```

- **touch**: Creates an empty file.

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```
1 touch file.txt
```

- **cp**: Copies files or directories.

```
1 cp file.txt /path/to/destination/  
2 cp -r folder /path/to/destination/
```

## 2.3 Viewing and Editing Files

- **cat**: Displays file contents.

```
1 cat file.txt
```

- **nano**: Simple text editor.

```
1 nano file.txt % Save: Ctrl+O, Exit: Ctrl+X
```

## 3 Intermediate Commands

These commands introduce process management, text processing, and networking.

### 3.1 Process Management

- **ps**: Lists running processes.

```
1 ps aux % Show all processes
```

- **top**: Displays real-time processes.

```
1 top % Press 'q' to quit
```

### 3.2 Text Processing

- **grep**: Searches for patterns in files.

```
1 grep "error" log.txt  
2 grep -r "error" /path/ % Recursive search
```

- **awk**: Processes text files.

```
1 awk '{print $1}' file.txt % Print first column
```

### 3.3 Networking

- **ping**: Checks connectivity to a host.

```
1 ping google.com
```

- **curl**: Transfers data from/to a server.

```
1 curl -O https://example.com/file.txt
```

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## 4 AdvancedCommands

These commands are for system administration, advanced networking, and scripting.

### 4.1 SystemAdministration

- **sudo**: Runs commands as superuser.

```
1 sudo apt update % Update package lists
```

- **crontab**: Schedules recurring tasks.

```
1 crontab -e
2 % Example: 0 2 * * * /path/to/script.sh          % Run daily   at 2 AM
```

### 4.2 AdvancedNetworking

- **nmap**: Scans network for hosts/services.

```
1 nmap 192.168.1.1
```

- **iptables**: Configures firewall rules.

```
1 iptables -A INPUT -p tcp --dport 22            -j  ACCEPT % Allow  SSH
```

## 5 TipsforUsingLinuxCommands

- Use `man <command>` for detailed documentation.
- Combine commands with pipes (`|`) and redirection (`>`, `>>`).
- Practice in a safe environment to avoid accidental system changes.

## 6 ExampleWorkflow

To find and compress all `.log` files modified in the last day:

```
1 find /var/log -type f -name "*.log" -mtime -1 | xargs tar -zcvf logs
   .tar.gz
```

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## **File and Directory Management**

Command	Description
ls	List directory contents
cd	Change directory
pwd	Print working directory
mkdir	Create a directory
rmdir	Remove empty directory
rm	Remove files or directories
cp	Copy files or directories
mv	Move or rename files
touch	Create empty files
find	Search for files in a directory
locate	Find files by name (uses a database)
tree	View directory structure as a tree

## **File Viewing & Manipulation**

Command	Description
cat	Concatenate and display file
less	View file content page-by-page
more	View file content page-by-page (older)
head	View the beginning of a file
tail	View the end of a file
nano, vim, vi	Text editors
cut, awk, sed	Text processing tools
diff	Compare two files
wc	Count words, lines, characters

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## User Management

Command	Description
whoami	Show current user
id	Display user ID and group ID
adduser, useradd	Add a user
passwd	Change password
usermod	Modify user account
deluser, userdel	Delete a user
groupadd	Add a new group
groups	Show groups of a user

## Permissions & Ownership

Command	Description
chmod	Change file permissions
chown	Change file owner
chgrp	Change group ownership
umask	Default permission setting

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## System Monitoring & Processes

Command	Description
ps	Show running processes
top, htop	Interactive process viewer
kill	Kill a process by PID
killall	Kill processes by name
nice, renice	Set process priority
uptime	Show how long system has been running
free	Show memory usage
df	Disk space usage
du	Estimate file/directory size
vmstat	System performance stats



## Networking

Command	Description
ping	Check network connectivity
ifconfig / ip addr	Show network interfaces
netstat / ss	Network connections
curl, wget	Download from URL
host, dig, nslookup	DNS lookup
scp, rsync	Copy files over SSH
ssh	Connect to remote server
ftp, sftp	File transfer protocols

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# Package Management

## Debian/Ubuntu (APT)

Command	Description
apt update	Refresh package list
apt upgrade	Upgrade installed packages
apt install	Install a package
apt remove	Remove a package
dpkg -i	Install a .deb file

## Red Hat/CentOS (YUM/DNF)

| yum, dnf | Red Hat package managers |

# Disk & Filesystem

Command	Description
mount, umount	Mount/unmount filesystems
lsblk	List block devices
blkid	Display block device attributes
fdisk, parted	Partition disks
mkfs	Create filesystem
fsck	Filesystem check
tune2fs	Tune ext filesystems

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## Archiving & Compression

Command	Description
tar	Archive files
zip, unzip	Compress/decompress zip files
gzip, gunzip	Compress/decompress gz files
xz, unxz	Compress/decompress xz files



## Scheduling Tasks

Command	Description
cron, crontab	Schedule recurring tasks
at	Schedule one-time task
systemctl	Manage services and daemons



## System & Boot

Command	Description
uname -a	System info
hostname	Show/set hostname
reboot, shutdown	Restart/shutdown system
dmesg	Boot messages
journalctl	View system logs
lsmod, modprobe	Kernel modules

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## Scripting

Command	Description
bash	Start a Bash shell
sh	Start shell
./ source	Run script in current shell
alias / unalias	Create/remove shortcuts

## Development & Compilation

Command	Description
gcc, g++	Compile C/C++ code
make	Build from Makefile
ldd	List shared object dependencies
strace	Trace system calls

## Cleanup & Maintenance

Command	Description
history	Show command history
clear	Clear terminal screen
alias	Create command shortcut
uptime	System load info

## To Learn More

Command	Description
man <command>	Manual page for a command
<command> --help	Show command help
info <command>	More detailed help

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