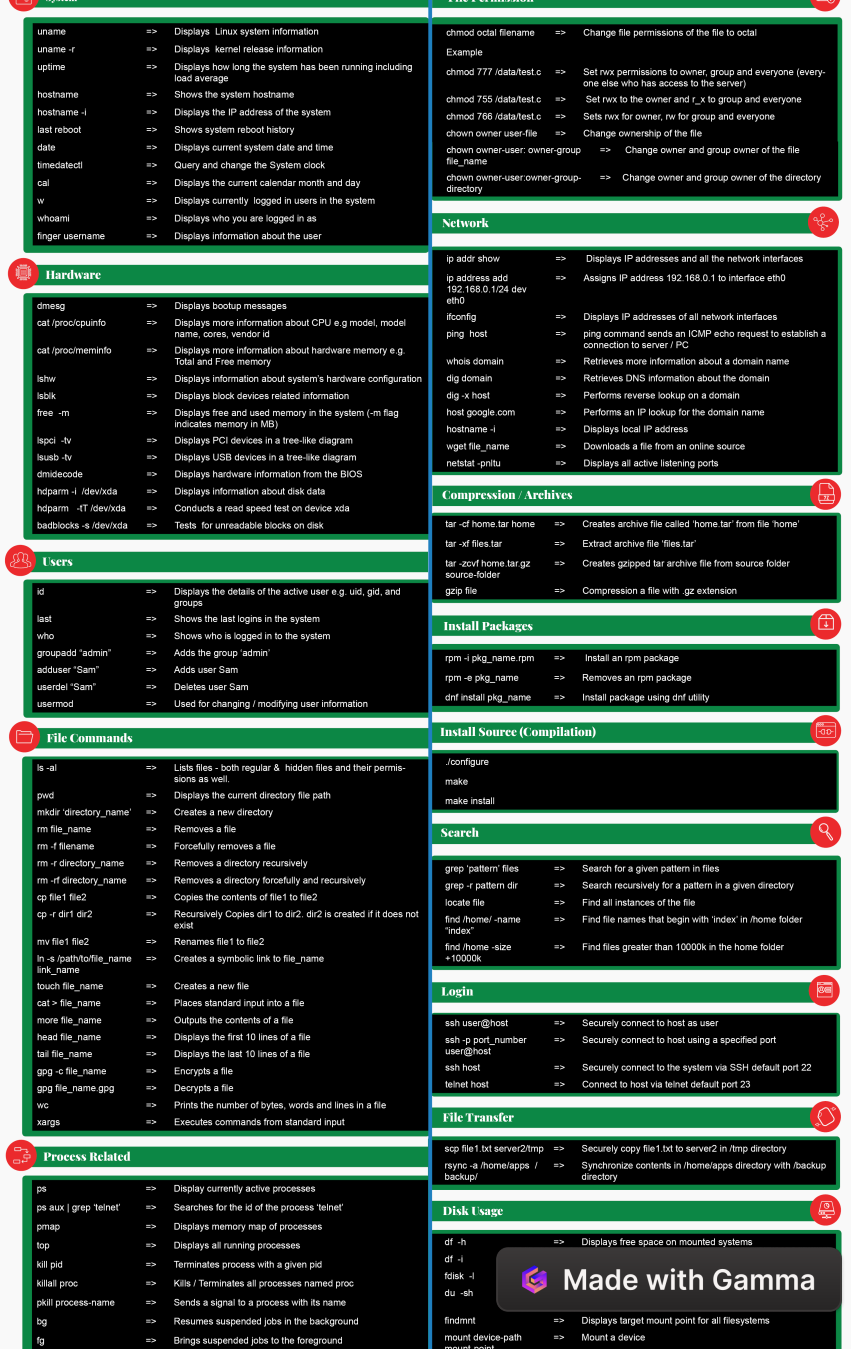
Linux Commands

Welcome to the world of Linux commands! This presentation will introduce you to the fundamental commands and techniques for navigating and managing the Linux file system.

by Sri Saranya Damerla



System

uname	=>	Displays Linux system information
uname -r	=>	Displays kernel release information
uptime	=>	Displays how long the system has been running including load average
hostname	=>	Shows the system hostname
hostname -i	=>	Displays the IP address of the system
last reboot	=>	Shows system reboot history
date	=>	Displays current system date and time
timedatectl	=>	Query and change the System clock
cal	=>	Displays the current calendar month and day
w	=>	Displays currently logged in users in the system
whoami	=>	Displays who you are logged in as
finger username	=>	Displays information about the user

Hardware

dmesg	=>	Displays bootup messages
cat /proc/cpuinfo	=>	Displays more information about CPU e.g model, model name, cores, vendor id
cat /proc/meminfo	=>	Displays more information about hardware memory e.g. Total and Free memory
lshw	=>	Displays information about system's hardware configuration
lsblk	=>	Displays block devices related information
free -m	=>	Displays free and used memory in the system (-m flag indicates memory in MB)
lspci -tv	=>	Displays PCI devices in a tree-like diagram
lsusb -tv	=>	Displays USB devices in a tree-like diagram
dmidecode	=>	Displays hardware information from the BIOS
hdparm -i /dev/xda	=>	Displays information about disk data
hdparm -tT /dev/xda	=>	Conducts a read speed test on device xda
badblocks -s /dev/xda	=>	Tests for unreadable blocks on disk

Users

id	=>	Displays the details of the active user e.g. uid, gid, and groups
last	=>	Shows the last logins in the system
who	=>	Shows who is logged in to the system
groupadd "admin"	=>	Adds the group 'admin'
adduser "Sam"	=>	Adds user Sam
userdel "Sam"	=>	Deletes user Sam
usermod	=>	Used for changing / modifying user information

File Commands

ls -al	=>	Lists files - both regular & hidden files and their permissions as well.
pwd	=>	Displays the current directory file path
mkdir 'directory_name'	=>	Creates a new directory
rm file_name	=>	Removes a file
rm -f filename	=>	Forcefully removes a file
rm -r directory_name	=>	Removes a directory recursively
rm -rf directory_name	=>	Removes a directory forcefully and recursively
cp file1 file2	=>	Copies the contents of file1 to file2
cp -r dir1 dir2	=>	Recursively Copies dir1 to dir2. dir2 is created if it does not exist
mv file1 file2	=>	Renames file1 to file2
ln -s /path/to/file_name link_name	=>	Creates a symbolic link to file_name
touch file_name	=>	Creates a new file
cat > file_name	=>	Places standard input into a file
more file_name	=>	Outputs the contents of a file
head file_name	=>	Displays the first 10 lines of a file
tail file_name	=>	Displays the last 10 lines of a file
gpg -c file_name	=>	Encrypts a file
gpg file_name.gpg	=>	Decrypts a file
wc	=>	Prints the number of bytes, words and lines in a file
xargs	=>	Executes commands from standard input

Process Related

ps	=>	Display currently active processes
ps aux | grep 'telnet'	=>	Searches for the id of the process 'telnet'
pmap	=>	Displays memory map of processes
top	=>	Displays all running processes
kill pid	=>	Terminates process with a given pid
killall proc	=>	Kills / Terminates all processes named proc
pkill process-name	=>	Sends a signal to a process with its name
bg	=>	Resumes suspended jobs in the background
fg	=>	Brings suspended jobs to the foreground

File Permission

chmod octal filename	=>	Change file permissions of the file to octal
Example		
chmod 777 /data/test.c	=>	Set rwx permissions to owner, group and everyone (everyone else who has access to the server)
chmod 755 /data/test.c	=>	Set rwx to the owner and r_x to group and everyone
chmod 766 /data/test.c	=>	Sets rwx for owner, rw for group and everyone
chown owner user-file	=>	Change ownership of the file
chown owner-user: owner-group file_name	=>	Change owner and group owner of the file
chown owner-user:owner-group-directory	=>	Change owner and group owner of the directory

Network

ip addr show	=>	Displays IP addresses and all the network interfaces
ip address add 192.168.0.1/24 dev eth0	=>	Assigns IP address 192.168.0.1 to interface eth0
ifconfig	=>	Displays IP addresses of all network interfaces
ping host	=>	ping command sends an ICMP echo request to establish a connection to server / PC
whois domain	=>	Retrieves more information about a domain name
dig domain	=>	Retrieves DNS information about the domain
dig -x host	=>	Performs reverse lookup on a domain
host google.com	=>	Performs an IP lookup for the domain name
hostname -i	=>	Displays local IP address
wget file_name	=>	Downloads a file from an online source
netstat -pnltu	=>	Displays all active listening ports

Compression / Archives

tar -cf home.tar home	=>	Creates archive file called 'home.tar' from file 'home'
tar -xf files.tar	=>	Extract archive file 'files.tar'
tar -zcvf home.tar.gz source-folder	=>	Creates gzipped tar archive file from source folder
gzip file	=>	Compression a file with .gz extension

Install Packages

rpm -i pkg_name.rpm	=>	Install an rpm package
rpm -e pkg_name	=>	Removes an rpm package
dnf install pkg_name	=>	Install package using dnf utility

Install Source (Compilation)

```
./configure
make
make install
```

Search

grep 'pattern' files	=>	Search for a given pattern in files
grep -r pattern dir	=>	Search recursively for a pattern in a given directory
locate file	=>	Find all instances of the file
find /home/ -name "index"	=>	Find file names that begin with 'index' in /home folder
find /home -size +10000k	=>	Find files greater than 10000k in the home folder

Login

ssh user@host	=>	Securely connect to host as user
ssh -p port_number user@host	=>	Securely connect to host using a specified port
ssh host	=>	Securely connect to the system via SSH default port 22
telnet host	=>	Connect to host via telnet default port 23

File Transfer

scp file1.txt server2/tmp	=>	Securely copy file1.txt to server2 in /tmp directory
rsync -a /home/apps / backup/	=>	Synchronize contents in /home/apps directory with /backup directory

Disk Usage

df -h	=>	Displays free space on mounted systems
df -i		
fdisk -l		
du -sh		
findmnt	=>	Displays target mount point for all filesystems
mount device-path mount-point	=>	Mount a device

Navigating the File System

1 cd

Change directory: Navigate to different directories on the file system.

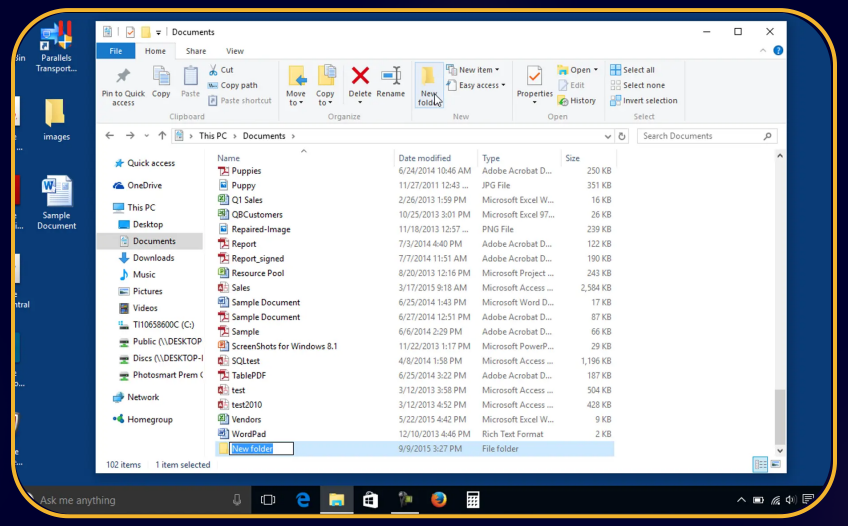
2 ls

List files and directories: View the contents of a directory.

3 pwd

Print working directory: Display the current directory path.

Managing Files and Directories

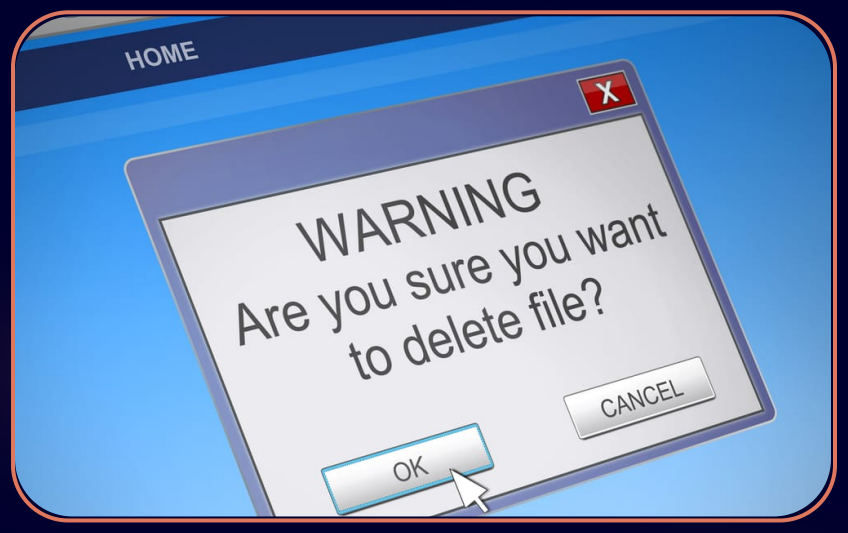


mkdir

Create directory: Make a new directory.

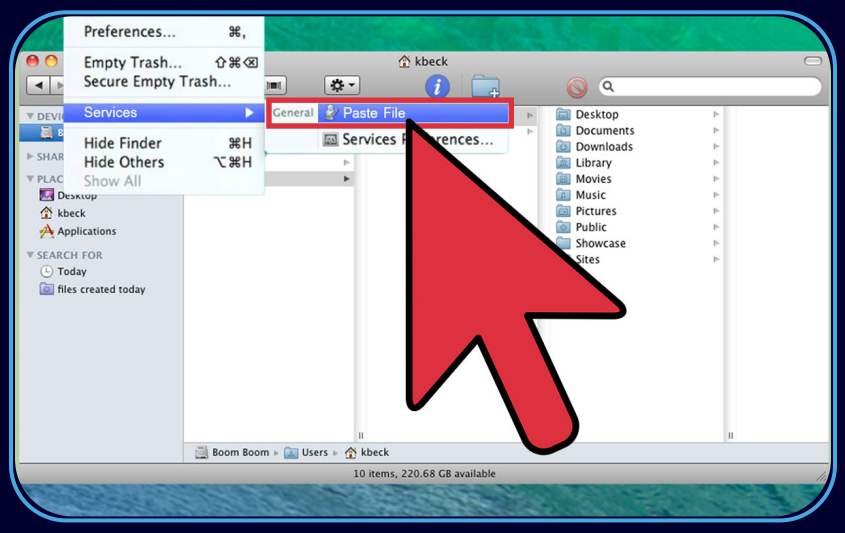
cp

Copy file: Duplicate a file.



rm

Remove file: Delete a file permanently.



mv

Move file: Rename or move a file or directory.

File Permissions and Ownership

chmod

Change file permissions: Modify the permissions of a file.

chown

Change file ownership: Assign ownership of a file to a specific user or group.

chgrp

Change group ownership: Change the group ownership of a file.

Working with Text Files

cat

Concatenate files and print on the standard output.

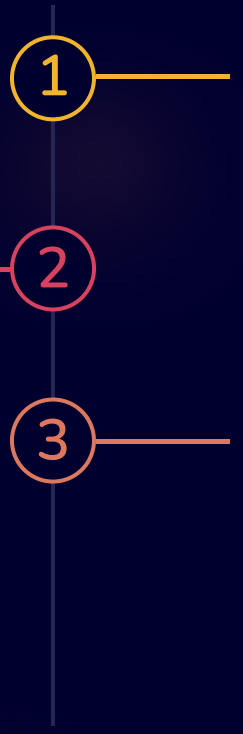
grep

Search for patterns in a file.

sed

Stream editor: Perform various text transformations on input streams.

Process Management



1

ps

List processes: View the running processes on the system.

2

kill

Terminate processes: Stop or end a running process.

3

top

Monitor system activity: Display real-time information about CPU, memory, and processes.

Networking Commands

1

ping

Test network connectivity: Check the connection to a specific IP address or domain.

2

ifconfig

Configure network interfaces: Set up and manage network interfaces.

3

ssh

Secure shell: Establish secure remote connections to other systems.

Next Steps

Congratulations on completing the Linux commands crash course! Keep practicing, explore the vast command library, and refer to cheat sheets to enhance your skills and efficiency.

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