Essential Linux Commands cheat-sheet

1. File Operations:

- ls: Lists all files and directories in the present working directory
- ls -R: Lists files in sub-directories as well
- ls -a: Shows hidden files
- ls -al: Lists files and directories with detailed information like permissions, size, owner, etc.
- cd directoryname: Changes the directory
- cd ..: Moves one level up
- pwd: Displays the present working directory
- cat > filename: Creates a new file
- cat filename: Displays the file content
- cat file1 file2 > file3: Joins two files (file1 and file2) and stores the output in a new file (file3)
- touch filename: Creates or modifies a file
- rm filename: Deletes a file
- cp source destination: Copies files from the source path to the destination path
- mv source destination: Moves files from the source path to the destination path
- find / -name filename: Finds a file or a directory by its name starting from root
- file filename: Determines the file type
- less filename: Views the file content page by page
- head filename: Views the first ten lines of a file
- tail filename: Views the last ten lines of a file
- lsof: Shows which files are opened by which process.

2. Directory Operations:

- `mkdir directoryname:` Creates a new directory in the present working directory
- `rmdir directoryname:` Deletes a directory
- `cp -r source destination:` Copies directories recursively
- `mv olddir newdir:` Renames directories
- `find / -type d -name directoryname:` Finds a directory starting from root

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3. Process Operations:

- `ps:` Displays your currently active processes
- `top:` Displays all running processes
- `kill pid:` Kills the process with given pid
- `pkill name:` Kills the process with the given name
- `bg:` Resumes suspended jobs without bringing them to foreground
- `fg:` Brings the most recent job to foreground
- `fg n:` Brings job n to the foreground
- `renice +n [pid]:` Change the priority of a running process.
- `&>filename:` Redirects both the stdout and the stderr to the file
filename.
- `1>filename:` Redirect the stdout to file filename.
- `2>filename:` Redirect stderr to file filename.

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4. File Permissions:

- `chmod octal filename:` Change the permissions of file to octal,
which can be between 0 (no permissions) to 7 (full permissions)
- `chown ownername filename:` Change file owner
- `chgrp groupname filename:` Change group owner

5. Networking:

- `ping host:` Ping a host and outputs results
- `whois domain:` Get whois information for domain
- `dig domain:` Get DNS information for domain
- `netstat -pnltu:` Display various network related information such as network connections, routing tables, interface statistics etc.
- `ifconfig:` Displays IP addresses of all network interfaces
- `ssh user@host:` Remote login into the host as user
- `scp:` Transfers files between hosts over ssh
- `wget url:` Download files from the web
- `curl url:` Sends a request to a URL and returns the response
- `traceroute domain:` Prints the route that a packet takes to reach the domain.
- `mtr domain:` mtr combines the functionality of the traceroute and ping programs in a single network diagnostic tool.
- `ss:` Another utility to investigate sockets. It's a more modern alternative to netstat.
- `nmap:` Network exploration tool and security scanner.

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6. Archives and Compression:

- `tar cf file.tar files:` Create a tar named file.tar containing files
- `tar xf file.tar:` Extract the files from file.tar
- `gzip file:` Compresses file and renames it to file.gz
- `gzip -d file.gz:` Decompresses file.gz back to file
- `zip -r file.zip files:` Create a zip archive named file.zip
- `unzip file.zip:` Extract the contents of a zip file

7. Text Processing:

- `grep pattern files:` Search for pattern in files
- `grep -r pattern dir:` Search recursively for pattern in
- `command | grep pattern:` Pipe the output of command to grep for searching
- `echo 'text':` Prints text
- `sed 's/string1/string2/g' filename:` Replaces string1 with string2 in filename
- `diff file1 file2:` Compares two files and shows the differences
- `wc filename:` Count lines, words, and characters in a file
- `awk:` A versatile programming language for working on files.
- `sed -i 's/string1/string2/g' filename:` Replace string1 with string2 in filename. The -i option edits the file in-place.
- `cut -d':' -f1 /etc/passwd:` Cut out the first field of each line in /etc/passwd, using colon as a field delimiter.

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8. Disk Usage:

- `df:` Shows disk usage
- `du:` Shows directory space usage
- `free:` Show memory and swap usage
- `whereis app:` Show possible locations of app

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9. System Info:

- `date:` Show the current date and time
- `cal:` Show this month's calendar
- `uptime:` Show current uptime
- `w:` Display who is online
- `whoami:` Who you are logged in as
- `uname -a:` Show kernel information
- `df -h:` Disk usage in human readable format

10. Package Installations:

- `sudo apt-get update`: Updates package lists for upgrades
- `sudo apt-get upgrade`: Upgrades all upgradable packages
- `sudo apt-get install pkgname`: Install pkgname
- `sudo apt-get remove pkgname`: Removes pkgname

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11. Others (mostly used in scripts):

- `command1 ; command2`: Run command1 and then command2
- `command1 && command2`: Run command2 if command1 is successful
- `command1 || command2`: Run command2 if command1 is not successful
- `command &`: Run command in background

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12. Environment Variables:

- `env`: Display all environment variables
- `echo $VARIABLE`: Display the value of an environment variable
- `export VARIABLE=value`: Set the value of an environment variable
- `alias new_command='old_command options'`: Create a new command that executes the old command with the specified options.
- `echo $PATH`: Print the PATH environment variable.
- `export PATH=$PATH:/new/path`: Add /new/path to the PATH.

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13. Job Scheduling (Cron Jobs):

- `crontab -l`: List all your cron jobs
- `crontab -e`: Edit your cron jobs
- `crontab -r`: Remove all your cron jobs
- `crontab -v`: Display the last time you edited your jobs
- `crontab file`: Install a cron job from a file
- `@reboot command`: Schedule a job to run at startup

14. Package Installations (using pip, a Python package installer):

- `pip install packagename`: Install a Python package.
- `pip uninstall packagename`: Uninstall a Python package.
- `pip freeze > requirements.txt`: Freeze the installed packages into a requirements file.
- `pip install -r requirements.txt`: Install packages from a requirements file.

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15. Shell Scripting:

- `#!/bin/bash`: Shebang line to specify the script interpreter.
- `$0, $1, ..., $9, ${10}, ${11}`: Script arguments.
- `if [condition]; then ... fi`: if statement in bash scripts.
- `for i in {1..10}; do ... done`: for loop in bash scripts.
- `while [condition]; do ... done`: while loop in bash scripts.
- `function name() {...}`: Define a function.

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16. System Monitoring and Performance:

- `iostat`: Reports Central Processing Unit (CPU) statistics and input/output statistics for devices, partitions, and network filesystems.
- `vmstat`: Reports information about processes, memory, paging, block IO, traps, disks, and CPU activity.
- `htop`: An interactive process viewer for Unix systems. It's a more user-friendly alternative to top.

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17. Search and Find:

- `locate filename`: Find a file by its name. The database updated by updatedb command.
- `whereis programname`: Locate the binary, source, and manual page files for a command.

18. Compression / Archives:

- `tar -cvf archive.tar dirname/:` Create a tar archive.
- `tar -xvf archive.tar:` Extract a tar archive.
- `tar -jcvf archive.tar.bz2 dirname/:` Create a compressed bz2 archive.
- `tar -jxvf archive.tar.bz2:` Extract a bz2 archive.

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19. Disk Usage:

- `dd if=/dev/zero of=/tmp/output.img bs=8k count=256k:` Create a file of a certain size for testing disk speed.
- `hdparm -Tt /dev/sda:` Measure the read speed of your hard drive.

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20. Others:

- `yes > /dev/null &:` Use this command to push a system to its limit.
- `:(){ :|:& };::` A fork bomb - handle with care. Do not run this command on a production system.

Remember, you can always use the `man` command (e.g. `man ls`) to get more information about each command.