Linux Cheat Sheet

File and Directory Management

1. **ls** - Lists directory contents.
    - ls - Basic list.
    - ls -l - List with details.
    - Example: ls -la Directory
2. **cd** - Change the current directory.
    - cd Directory - Changes to "Directory".
    - Example: cd /home
3. **pwd** - Print the current directory path.
    - pwd - Outputs the current directory.
    - Example: pwd
4. **mkdir** - Create a new directory.
    - mkdir Directory - Creates "Directory".
    - Example: mkdir /home/Directory
5. **rmdir** - Remove an empty directory.
    - rmdir Directory - Deletes "Directory".
    - Example: rmdir /home/Directory

6. **rm** - Delete files and directories.
    - rm file - Deletes "file".
    - rm -r Directory - Deletes "Directory" recursively.
    - Example: rm -rf /home/Directory
7. **cp** - Copy files or directories.
    - cp file new_file - Copies "file" to "new_file".
    - cp -r Directory new_directory - Copies "Directory" recursively.
    - Example: cp -r Directory /backup/
8. **mv** - Move or rename files and directories.
    - mv file new_file - Renames "file" to "new_file".
    - Example: mv file /home/Directory/
9. **touch** - Create an empty file.
    - touch file - Creates "file".
    - Example: touch /home/Directory/newfile
10. **cat** - Concatenate and display file contents.
    - cat file - Shows contents of "file".
    - Example: cat file

11. **less** - View file content interactively.
    - less file - Opens "file" in viewer.
    - Example: less file
12. **more** - View file content page-by-page.
    - more file - Views file with paging.
    - Example: more file
13. **head** - Show the first few lines of a file.
    - head -n 5 file - Shows first 5 lines.
    - Example: head file
14. **tail** - Show the last few lines of a file.
    - tail -n 5 file - Shows last 5 lines.
    - tail -f file - Shows last lines with live updates.
    - Example: tail -f /var/log/syslog
15. **find** - Search for files and directories.
    - find Directory -name "*.txt" - Searches for .txt files.
    - Example: find /home -type f -name "*.sh"
16. **locate** - Find files by name (needs mlocate package).
    - locate file - Searches for "file".
    - Example: locate file

17. **du** - Disk usage of files and directories.
    - du -sh Directory - Shows size of "Directory".
    - Example: du -h Directory
18. **df** - Display disk space usage.
    - df -h - Disk usage in human-readable format.
    - Example: df -h
19. **stat** - Display detailed file or directory status.
    - stat file - Shows stats of "file".
    - Example: stat file
20. **tree** - Show directory structure in tree format.
    - tree Directory - Displays "Directory" structure.
    - Example: tree /home

File Permissions and Ownership

21. **chmod** - Change file permissions.
    - chmod 755 file - Sets permissions for "file".
    - Example: chmod +x script.sh
22. **chown** - Change file ownership.
    - chown user file - Changes owner to "user".
    - Example: chown root file
23. **chgrp** - Change group ownership.
    - chgrp group file - Changes group to "group".
    - Example: chgrp admin file
24. **umask** - Set default permissions for new files.
    - umask 022 - Default file permissions.
    - Example: umask

Process Management

25. **ps** - Show active processes.
    - ps aux - Shows all processes.
    - Example: ps aux | grep nginx
26. **top** - Monitor system processes in real time.
    - top - Live view of processes.
    - Example: top
27. **htop** - Enhanced process viewer (requires htop).
    - htop - Interactive process viewer.
    - Example: htop
28. **kill** - Terminate a process by ID.
    - kill 1234 - Ends process with PID 1234.
    - Example: kill 1234
29. **killall** - Kill processes by name.
    - killall firefox - Kills all "firefox" processes.
    - Example: killall nginx
30. **pkill** - Kill processes by pattern.
    - pkill -u user - Kills all processes for "user".
    - Example: pkill -u john

Networking

31. **ping** - Check network connectivity.
    - ping google.com - Sends ping requests.
    - Example: ping -c 4 google.com
32. **ifconfig** - Display network configuration (deprecated).
    - ifconfig - Shows network interfaces.
    - Example: ifconfig
33. **traceroute** - Track packet route to destination.
    - traceroute google.com - Shows route to "google.com".
    - Example: traceroute google.com
34. **nslookup** - Query DNS records.
    - nslookup google.com - DNS lookup for "google.com".
    - Example: nslookup example.com

35. **netstat** - Network connections, routing tables.
    - netstat -tuln - Lists open ports.
    - Example: netstat -an

Compression and Archiving

37. **tar** - Archive multiple files.
    - tar -cvf archive.tar Directory - Creates a tar archive.
    - Example: tar -xvf archive.tar
38. **zip** - Compress files into a zip archive.
    - zip archive.zip file1 file2 - Creates "archive.zip".
    - Example: zip -r archive.zip Directory
39. **unzip** - Extract files from a zip archive.
    - unzip archive.zip - Extracts "archive.zip".
    - Example: unzip archive.zip
40. **gzip** - Compress a file.
    - gzip file - Compresses "file" as "file.gz".
    - Example: gzip -d file.gz
41. **bzip2** - Compress with bzip2.
    - bzip2 file - Compresses "file".
    - Example: bzip2 -d file.bz2

System Information

42. **uname** - Display system information.
    - uname -a - Full system details.
    - Example: uname -r
43. **uptime** - Show system uptime.
    - uptime - Outputs how long system has been up.
    - Example: uptime
44. **free** - Memory usage.
    - free -h - Shows memory in human-readable form.
    - Example: free
45. **dmesg** - Print or control kernel messages.
    - dmesg | less - Shows boot logs.
    - Example: dmesg | grep error
46. **df** - Disk space usage of filesystems.
    - df -h - Human-readable format.
    - Example: df /home

User Management

47. **useradd** - Create a new user.
    - useradd username - Adds "username".
    - Example: useradd admin
48. **usermod** - Modify user accounts.
    - usermod -aG sudo user - Adds "user" to "sudo" group.
    - Example: usermod -aG docker user
49. **passwd** - Change user password.
    - passwd user - Changes password for "user".
    - Example: passwd root
50. **whoami** - Display the current logged-in user.
    - whoami - Shows username.
    - Example: whoami

Data Manipulation

51. **awk** - Pattern scanning and processing.
    - awk '{print $1}' file - Prints first column.
    - Example: awk '{print $2}' file
52. **sed** - Stream editor for modifying files.
    - sed 's/old/new/' file - Replace text.
    - Example: sed -i 's/foo/bar/g' file
53. **sort** - Sort file content.
    - sort file - Sorts file lines.
    - Example: sort file
54. **uniq** - Report or omit repeated lines.
    - uniq file - Removes duplicates.
    - Example: uniq -c file
55. **grep** - Search within files.
    - grep "pattern" file - Searches for "pattern".
    - Example: grep -i error file

File and Directory Management (Continued)

56. **wc** - Count lines, words, and characters in a file.

- **Usage:** wc file - Displays line, word, and character counts for "file".
- **Example:** wc -l file - Counts lines in "file".

57. **ln** - Create links between files.

- **Usage:** ln file link_name - Creates a hard link.
- ln -s file link_name - Creates a symbolic (soft) link.
- **Example:** ln -s /path/to/file symlink_name

58. **alias** - Create command shortcuts.

- **Usage:** alias ll='ls -la' - Creates an alias for ls -la.
- **Example:** alias dir='ls -d */'

59. **unalias** - Remove an alias.

- **Usage:** unalias ll - Removes the alias "ll".
- **Example:** unalias dir

60. **rename** - Rename multiple files.

- **Usage:** rename 's/old/new/' *.txt - Renames files by replacing "old" with "new" in .txt files.
- **Example:** rename 's/2023/2024/' *.log

Process Management (Continued)

61. **bg** - Run a job in the background.

- **Usage:** bg - Resumes a paused job in the background.
- **Example:** bg %1 - Backgrounds job number 1.

62. **fg** - Bring a job to the foreground.

- **Usage:** fg %1 - Brings job number 1 to the foreground.
- **Example:** fg %2

63. **jobs** - List all active jobs.

- **Usage:** jobs - Displays active jobs with their statuses.
- **Example:** jobs -l

64. **nice** - Run a command with adjusted priority.

- **Usage:** nice -n 10 command - Runs a command with priority 10.
- **Example:** nice -n 15 ./script.sh

65. **renice** - Change the priority of a running process.

- **Usage:** renice -n 5 -p PID - Changes the priority of process "PID".
- **Example:** renice -n 10 -p 1234

66. **nohup** - Run a command immune to hangups.

- **Usage:** nohup command & - Executes command, ignoring hangups.
- **Example:** nohup ./script.sh &

67. **pgrep** - Find processes by name.

- **Usage:** pgrep process_name - Finds process IDs with the specified name.
- **Example:** pgrep nginx

68. **pmap** - Display memory map of a process.

- **Usage:** pmap PID - Shows memory details of process "PID".
- **Example:** pmap 1234

69. **uptime** - Display system uptime and load.

- **Usage:** uptime - Shows system uptime and average load.
- **Example:** uptime

Networking (Continued)

70. **curl** - Transfer data to/from a server.

- **Usage:** curl URL - Fetches data from URL.
- **Example:** curl -O https://example.com/file.txt

71. **wget** - Download files from the internet.

- **Usage:** wget URL - Downloads file from the specified URL.
- **Example:** wget https://example.com/file.zip

72. **scp** - Securely copy files between hosts.

- **Usage:** scp source_file user@remote:/path - Copies file to a remote server.
- **Example:** scp file.txt user@remote-server:/home/user

73. **rsync** - Synchronize files and directories.

- **Usage:** rsync -av source/ destination/ - Syncs source to destination.
- **Example:** rsync -avz Directory user@remote:/backup/

74. **telnet** - Connect to remote servers (insecure).

- **Usage:** telnet host port - Connects to a specified host and port.
- **Example:** telnet localhost 80

75. **netcat (nc)** - Network utility for debugging.

- **Usage:** nc -zv host port - Checks if port is open on the host.
- **Example:** nc -zv google.com 443

76. **ip route** - Display or manipulate IP routing table.

- **Usage:** ip route show - Shows the routing table.
- **Example:** ip route add 192.168.1.0/24 dev eth0

77. **dig** - DNS lookup tool.

- **Usage:** dig domain.com - Fetches DNS records for a domain.
- **Example:** dig +short google.com

78. **arp** - Display or manipulate ARP cache.

- **Usage:** arp -a - Lists the ARP table.
- **Example:** arp -d IP_ADDRESS

Text Processing

79. **echo** - Display a line of text.

- **Usage:** echo "Hello World" - Outputs text to the screen.
- **Example:** echo $PATH

80. **tr** - Translate characters.

- **Usage:** echo "text" | tr 'a-z' 'A-Z' - Converts lowercase to uppercase.
- **Example:** echo "hello" | tr 'a-z' 'A-Z'

81. **cut** - Remove sections from lines.

- **Usage:** cut -d ' ' -f 1 file - Displays the first field from each line.
- **Example:** cut -d: -f1 /etc/passwd

82. **paste** - Merge lines of files.

- **Usage:** paste file1 file2 - Joins lines from two files.
- **Example:** paste file1 file2

83. **xargs** - Execute commands from standard input.

- **Usage:** cat file | xargs echo - Passes arguments to echo.
- **Example:** find . -name "*.log" | xargs rm

84. **nl** - Number lines in a file.

- **Usage:** nl file - Numbers each line.
- **Example:** nl file

85. **sort** - Sort lines in a file.

- **Usage:** sort file - Sorts lines alphabetically.
- **Example:** sort -n file (numerical sort)

86. **uniq** - Filter out repeated lines.

- **Usage:** uniq file - Removes duplicate lines.
- **Example:** sort file | uniq

87. **tee** - Read from input and write to files.

- **Usage:** command | tee file - Writes output to file and displays it.
- **Example:** ls | tee file

Scheduling and Automation

88. **cron** - Schedule regular tasks.

- **Usage:** crontab -e - Opens the cron editor.
- **Example:** 0 5 * * * /path/to/script.sh (Runs script daily at 5 AM)

89. **at** - Schedule one-time tasks.

- **Usage:** echo "command" | at time - Executes command at specified time.
- **Example:** echo "backup.sh" | at 2:00 AM

System Monitoring and Information

90. **vmstat** - Reports virtual memory statistics.

- **Usage:** vmstat - Shows memory usage.
- **Example:** vmstat 5 (updates every 5 seconds)

91. **iostat** - Reports CPU and I/O statistics.

- **Usage:** iostat - Shows CPU and disk I/O stats.
- **Example:** iostat -d 2

92. **lsof** - List open files.

- **Usage:** lsof - Shows open files and processes.
- **Example:** lsof | grep file

93. **ss** - Display socket statistics.

- **Usage:** ss -tuln - Shows listening ports and connections.
- **Example:** ss -s

94. **free** - Show memory usage.

- **Usage:** free -h - Memory stats in human-readable format.
- **Example:** free

95. **mpstat** - Display CPU usage.

- **Usage:** mpstat - Shows per-processor CPU usage.
- **Example:** mpstat -P ALL 1

96. **sar** - Collect and report system activity.

- **Usage:** sar -u 1 5 - CPU usage every second for 5 times.
- **Example:** sar -r (memory stats)

Security and Access Control

97. **iptables** - Set up firewall rules.

- **Usage:** iptables -L - Lists rules.
- **Example:** iptables -A INPUT -p tcp --dport 22 -j ACCEPT

98. **chmod** - Change file permissions.

- **Usage:** chmod 755 file - Sets permissions.
- **Example:** chmod +x script.sh

99. **chown** - Change file ownership.

- **Usage:** chown user:group file - Changes ownership.
- **Example:** chown user file

100. **passwd** - Change user password. - **Usage:** passwd user - Sets a password for "user". - **Example:** passwd (for current user)

Happy Learning