1. Give any 3 examples of operating systems.
    - Windows, Linux, and macOS.
2. What is the root home directory?
    - The root home directory is `/root`.
3. Your company has terminated a server administrator. What is the first thing as an administrator you should do to enhance the security?
    - Change the root password.
4. How to check kernel version?
    - Use the command `uname -a`.
5. How to become a root user from a regular user?
    - Use `su -` or `sudo su` to switch to the root user.
6. How to check the computer name or hostname in Linux?
    - Use the `hostname` command.
7. List 3 basic commands to navigate the filesystem.
    - `cd`, `pwd`, and `ls`.
8. How to check network interfaces in Linux?
    - Use `ifconfig` or `ip addr` or `ip a`
9. List 3 different methods of adding a user.
    - Methods include using `useradd`, `adduser`, or manually editing `/etc/passwd` and `/etc/shadow` files.
10. What is the command to create a new user?
    - `useradd username`
11. How to change a user password?
    - Use the command `passwd username`.
12. Which directory has all the configuration files?
    - The `/etc` directory.
13. List any 4 Linux distributions.
    - Kali, Red Hat, CentOS, Ubuntu, and SUSE.

14. How to log off from the system?
    - Use the `exit` command.
15. How to create a directory?
    - Use the `mkdir` command.
16. Explain the purpose of the “touch” command.
    - `touch` is used to create an empty file or update the timestamp of an existing file.
17. If a command hangs, how to stop it and get the prompt back?
    - Press `Ctrl + C`.
18. Which command is used to count words or lines?
    - `wc`
19. How to rename a file or directory?
    - Use the `mv` command.
20. How to change a hostname in Linux?
    - Edit `/etc/hostname` and `/etc/hosts`, then restart the system or use `hostnamectl set-hostname newname`.
21. What is the command to change file/directory permissions?
    - Use `chmod`.
22. What is the purpose of pipe (`|`)?
    - To pass the output of one command as input to another command.
23. What is `/etc` directory used for?
    - It contains configuration files for the system.
24. Which command is used to list files in a directory?
    - `ls -l`
25. There is a command which gives you information about other commands, please explain that command and what is it used for?
    - `man` is used to display the manual pages for other commands, providing detailed information on usage and options.
26. How to delete a file and a directory?
    - Use `rm filename` for files and `rmdir dirname` for directories.
27. What is the difference between “tail” and “tail -10”?

- `tail` displays the last 10 lines of a file by default, while `tail -10` explicitly specifies to display the last 10 lines.

28. List 4 commands to display or read a file's contents.
    - `cat`, `more`, `less`, `vi`.
29. Which command is used to read the top 5 lines of a file?
    - `head -5 filename`
30. What are the different commands or methods to write to a file?
    - `echo > filename`, `vi filename`, `cat > filename`.
31. What are the different types of shells?
    - Sh, bash, ksh, csh, zsh
32. Which is the core of the operating system?
    - Kernel
33. Which among the following interacts directly with system hardware?
    - Kernel
34. List a few commands that are used in troubleshooting network-related issues?
    - `netstat`: Displays network connections.
    - `tcpdump`: Captures and analyzes network traffic.
    - `ping`: Tests connectivity to another host.
    - `traceroute`: Traces the route packets take to a network host.
35. How to combine 2 files into 1? E.g., you have 3 lines in file “A” and 5 lines in file “B”, which command syntax to use that will combine into one file of 3+5 = 8 lines?**
    - `cat fileA fileB > combinedfile`
36. What is the echo command used for?
    - The `` `echo` `` command is used to display a line of text or output a string to the screen.
37. What does the following command do?
    - `echo "This year the summer will be great" > file1`
    - It creates a new file named “file1” and writes the text “This year the summer will be great” into it. If the file already exists, it will be overwritten.
38. When you login you get “$” prompt, what is the prompt for root?
    - The prompt for the root user is typically `#`.

39. Explain the difference between grep and egrep.
    - `grep` is used for basic regular expression pattern matching, while `egrep` (or `grep -E`) supports extended regular expressions, which allow more complex pattern matching.
40. What is the port number for DNS, NTP, and NFS?
    - DNS: 53, NTP: 123, NFS: 111 (portmapper) and 2049 (NFS).
41. What is the configuration file name of DNS and where is it located?
    - The DNS configuration file is named `named.conf` and is typically located in `/etc`.
42. How many new directories will be created after running the following command `mkdir {a..c}{1..3}`?
    - 9 directories will be created: a1, a2, a3, b1, b2, b3, c1, c2, c3.
43. Your PC is configured with a DNS server address but not the default gateway. Can the PC access the internet?
    - No, without a default gateway, the PC cannot access the internet.
44. What is the difference between IP and Gateway?
    - An IP address is a unique identifier for a device on a network, while a gateway is a network point that acts as an entrance to another network, often used to connect local networks to external networks like the internet.
45. Can you assign one static IP to 2 computers, if not then why?
    - No, assigning the same static IP to two computers will create an IP conflict, causing network communication issues.
46. How to change IP address to static?
    - You can change the IP address to static by editing the network configuration files, such as `/etc/network/interfaces` on Debian-based systems or `/etc/sysconfig/network-scripts/ifcfg-eth0` on Red Hat-based systems, and setting the IP address manually.
    - `etc/netplan` for the network configuration file on Ubuntu.

47. You are trying to ping a server by hostname and you get an error message, “ping: unknown host ...”. What could be the reason and how to solve the problem so you can ping it by hostname?
    - The issue could be due to a missing hostname-to-IP mapping in the `/etc/hosts` file or an incorrect DNS configuration. Check and update these files to resolve the issue.
48. Explain the difference between relative and absolute path.
    - An absolute path starts from the root directory `/` and specifies the complete path to a file or directory. A relative path is based on the current directory and does not start with `/`.
49. What is the command to change file/directory ownership and group?
    - Use `chown` to change ownership and `chgrp` to change the group.
50. List any 3 types of filesystem.
    - ext4, NTFS, and FAT.
51. When you login you get a message on the screen. What is the name of that file and where is it located?
    - The file is `/etc/motd` (Message of the Day).
52. What is the /bin directory used for?
    - The `/bin` directory contains essential binary executables needed for booting and system repair.
53. What are the different types of DNS Server?
    - Master (Primary) and Secondary (Slave) DNS servers.
54. Where are the zone files located for DNS service?
    - Typically located in `/var/named/zonefiles`.
55. How many megabytes in 1 gigabyte?
    - There are 1024 megabytes in 1 gigabyte.
56. What is the purpose of having different network ports?
    - So the communication of each application goes through a dedicated port
    - Different network ports allow multiple applications to communicate over the network simultaneously without interference.
57. How to display the first column of a file?

- Use `cat filename | awk '{print $1}'`
- `awk '{print $1}' filename`.

58. What is the name of the DNS rpm package?
    - The package is called `bind`.
59. What is the difference between nslookup and dig commands?
    - `nslookup` is a simple tool for querying DNS servers, while `dig` provides more detailed information and is more flexible for DNS troubleshooting.
60. How to check your user id and group id?
    - Use the `id` command.
61. What is the difference between “kill” and “kill -9” command?
    - `kill` sends a signal to terminate a process gracefully, allowing it to clean up resources. `kill -9` sends a SIGKILL signal, forcing the process to terminate immediately without cleanup.
62. What is a subnet?
    - A subnet is a segmented piece of a larger network, designed to improve performance and security by grouping devices with similar network requirements.
63. You are troubleshooting an issue with Redhat support and they have asked you to send the contents of /etc directory. How and which method will you use to transfer the contents?
    - Compress the `/etc` directory using `tar` and transfer it using `ftp` or `scp`.
64. What is rsyslogd daemon and its purpose?
    - `rsyslogd` is a system utility providing support for message logging. It is an enhanced version of `syslogd`.
65. What is the command to untar a tarred file?
    - Use `tar -xvf filename.tar`.
66. What is the `/proc` directory used for?
    - The `/proc` directory contains virtual files that provide a view into the kernel's view of the system.
67. What is the purpose of the `nsswitch.conf` file?

- It specifies the sources from which to obtain name-service information in a range of categories and in what order.

68. Which service/daemon should be running on the server that allows you to connect remotely?
    - `sshd` (SSH Daemon).
69. What is the purpose of a firewall?
    - A firewall controls incoming and outgoing network traffic based on predetermined security rules.
70. List any 3 IT components.
    - Hardware, Operating System, and Applications.
71. Which directory has all the commands we use, e.g., ls, cd, etc.?
    - `/usr/bin` or `/bin`.
72. What is the difference between memory, virtual memory, and cache?
    - Memory (RAM) is the physical hardware inside a computer that temporarily stores data.
    - Virtual memory is a memory management capability that uses disk space as an extension of RAM.
    - Cache is a smaller, faster memory component that stores copies of frequently accessed data for quick access.
73. Correct order of interaction:
    - a. User>> Operating System >> Hardware
74. Which of the following is a communication command?
    - `mail`
75. Why is the “tail –f logfilename” command used most often and what does it do?
    - It outputs all incoming logs in real-time, useful for monitoring log files as they are updated.
76. How to sort a file in reverse order?
    - Use `sort -r filename`.
77. List all byte sizes from smallest to largest.
    - Bit, Byte, Kilobyte (KB), Megabyte (MB), Gigabyte (GB), Terabyte (TB), Petabyte (PB), Exabyte (EB).

78. How to check the total number of partitions in Linux?
    - Use `fdisk -l`.
79. How to access a Linux system from a Linux system?
    - Use `ssh`.
80. Explain the procedure of bonding 2 NICs or interfaces together.
    - Use network bonding to combine two or more NICs into a single bonded interface for redundancy or increased throughput. This typically involves configuring `/etc/network/interfaces` or `/etc/sysconfig/network-scripts/ifcfg-bond0` and using the `bonding` kernel module.
81. What is the exact command syntax to list the 5th column of a file and cut the first 3 letters?
    - `awk '{print $5}' filename | cut -c1-3`
82. What is the `/etc/hosts` file used for?
    - It is used to resolve hostnames to IP addresses locally.
83. List any 3 options of 'df' command and what they are used for.
    - `-h`: human-readable format, `-i`: inodes information, `-T`: file system type.
84. What is swap space and how to check swap space?
    - Swap space is a portion of the hard drive used as an extension of RAM. Check swap space using `swapon -s` or `free`.
85. What is inode and how to find an inode of a file?
    - An inode is a data structure on a filesystem that stores information about a file or directory. Use `ls -i filename` to find the inode number.
86. Which file to edit for kernel tuning?
    - Edit `/etc/sysctl.conf` for kernel parameter tuning.
87. What is the latest version of Redhat?
    - Search online for the most recent version as it frequently updates.
88. Name the command to find a specific word from a file.
    - `grep word filename`
89. You have scheduled a job using crontab but it does not run at the time you specified, what could be the reason and how would you troubleshoot?

- Check system time, crontab entry syntax, and `/var/log/cron` for errors.

90. How to check system hardware information?
    - Use `dmidecode`.
91. How to check network interface MAC address?
    - Use `ifconfig` or `ip link`.
92. If I don't want others to read my file1, how do I do that?
    - Remove read permission for others using `chmod o-r file1`.
93. What is the purpose of "uniq" and "sed" commands?
    - `uniq` removes duplicate lines from sorted input, `sed` is a stream editor for filtering and transforming text.
94. Which command is used to list the contents of a directory in the most recent time and in reverse order, meaning the most updated file should be listed on the bottom?
    - `ls -ltr`
95. What is the difference between tar, gzip, and gunzip?
    - `tar` is used for archiving files, `gzip` compresses files, and `gunzip` decompresses files.
96. What are the different ways to install an OS?
    - Using a DVD, DVD ISO, or network boot.
97. How to view the difference between two files?
    - Use `diff file1 file2`.
98. You noticed that one of the Linux servers has no disk space left, how would you troubleshoot that issue?
    - If using LVM, add more disk space and extend the logical volume. If not, add a new disk, create a partition, and link it to an existing filesystem.
99. How to check Redhat version release?
    - Use `cat /etc/redhat-release` or `uname -a`.
100. What is the difference between TCP and UDP?
    - TCP is connection-oriented and reliable, while UDP is connectionless and faster but less reliable.
101. What is a zombie process?

- A zombie process is a process that has completed execution but still has an entry in the process table, waiting for the parent process to read its exit status.

102. How do you search for a pattern/word in a file and then replace it in an entire file?
    - Use `sed` for search and replace operations.
103. How to check the number of users logged in?

    - Use `who` command.
104. What is the command to view the calendar of 2024?

    `cal 2024`
105. Which command is used to view disk space?

    `df -h`
106. How to create a new group in Linux?
    - `groupadd groupname`.
107. What is the command to send a message to everyone who is logged into the system?
    - Use `wall` command.
108. Which command is used to check the total number of disks?
    - `fdisk -l`.
109. What is a mail server record in DNS?
    - MX (Mail Exchange) record
110. What does the following command line do? `ps -ef | awk '{print $1}' | sort | uniq`
    - Lists the first column of all running processes, sorts them, and removes duplicates.
111. You get a call that when a user goes to *www.yourwebsite.com* it fails and gets an error, how do you troubleshoot?
    - Check user internet connectivity, DNS configuration, server status, and web service available
112. List 4 different directories in /?
    - `/etc`, `/bin`, `/tmp`, `/home`.
113. What is the output of the following command:

- `$ tail -10 filename | head -1`
- It will show the first line from the last 10 lines of a file.

114. What are the different fields in /etc/passwd file?

The `/etc/passwd` file contains the following fields separated by colons (:):

- Username: The user's login name.
- Password: An 'x' character indicates that the password is stored in the `/etc/shadow` file.
- UID: User ID number.
- GID: Group ID number.
- GECOS: User's full name or other information.
- Home Directory: The path to the user's home directory.
- Shell: The user's default shell.

115. Which command is used to list the processes?

- `ps -ef`

  The `ps -ef` command is used to list all the currently running processes.

116. What is the difference between “hostname” and “uname” commands?

- hostname: Displays or sets the system's hostname.
- uname: Prints system information, such as the kernel name, version, and other details. `uname -n` specifically prints the network node hostname, similar to the `hostname` command.

117. How to check system load?

- You can check system load using the `top` and `uptime` commands.

118. How to schedule jobs?

- You can schedule jobs using `crontab` for repetitive tasks and `at` for one-time tasks.

119. What is the 3rd field when setting up crontab?

- The third field in a crontab entry is the "Day of the month".

120. What is the “init #” for system reboot?

- The `init` level for system reboot is `6`.

121. How to restart a service?

- `systemctl restart servicename`

- `sudo service servicename restart`

122. How to shutdown a system?**
    - `shutdown now`
    - `init 0`
    - `systemctl poweroff`
123. What is the “ftp” command used for?
    - The `ftp` command is used to transfer files between a local system and a remote server using the FTP protocol.
124. Explain cron job syntax? First is minute, second is..?
    - The cron job syntax consists of five fields followed by the command to be executed:
        - 1. Minute (0-59)
        - 2. Hour (0-23)
        - 3. Day of the month (1-31)
        - 4. Month (1-12 or JAN-DEC)
        - 5. Day of the week (0-6 or SUN-SAT).
125. How to delete a package in Linux?
    - `rpm -e packagename`
    - for RPM-based systems.
126. What is the file name where user password information is saved?
    - The user password information is saved in the `/etc/shadow` file.
127. Which command would you use to find the location of the chmod command?
    - `which chmod`
128. Which command is used to check if the other computer is online?
    - `ping othercomputer`
129. Please explain about LAN, MAN and WAN?
    - LAN (Local Area Network): Covers a small geographic area like a home, office, or building.
    - MAN (Metropolitan Area Network): Spans a city or a large campus.
    - WAN (Wide Area Network): Covers a large geographic area, such as a country or continent, connecting multiple LANs.

130. How to list hidden files in a directory?
    - `ls -la`
131. What is the difference between telnet and ssh?
    - SSH (Secure Shell): Provides encrypted communication and is secure.
    - Telnet: Does not provide encryption and is not secure.
132. How to run a calculator on Linux and exit out of it?
    - Run `bc` to start the calculator and type `quit` to exit.
133. List any 4 commands to monitor the system?
    - `top`
    - `df -h`
    - `iostat`
    - `dmesg`
134. You are notified that your server is down, list the steps you will take to troubleshoot?
    - - Check the system physically.
    - - Login through the system console.
    - - Ping the system.
    - - Reboot or boot if possible.
135. What is the difference between static and DHCP IP?
    - Static IP: Manually assigned and does not change.
    - DHCP IP: Automatically assigned by a DHCP server and can change over time.
136. How to write in vi editor mode?
    - - `i` = insert
    - - `a` = insert after the cursor
    - - `o` = insert a new line below the current line
137. What is the `difference` between “crontab” and “at” jobs?
    - `crontab`: Schedules repetitive jobs.
    - `at`: Schedules one-time jobs.
138. What is vCenter server in VMWare?

- vCenter Server is a centralized management tool for managing VMware vSphere environments, providing control over virtual machines, ESXi hosts, and other components.

139. What is the "`dmidecode`" command used for?
    - The `dmidecode` command is used to retrieve system hardware information from the DMI (Desktop Management Interface) table.
140. What is the difference between SAN and NAS?
    - SAN (Storage Area Network): Provides block-level storage and is typically used in enterprise environments.
    - NAS (Network Attached Storage): Provides file-level storage and is often used for simpler file sharing.
141. What is the location of system logs? E.g. messages
    - System logs are typically located in the `/var/log` directory.
142. How to set up an alias and what is it used for?
    - alias aliasname="command"
    - It is used to create shortcuts for long commands.
143. What is the purpose of the "`netstat`" command?
    - The `netstat` command is used to display network connections, routing tables, interface statistics, masquerade connections, and multicast memberships.
144. What are terminal control keys, list any 3?
    - `Ctrl+C`: Interrupt a process.
    - `Ctrl+D`: End of input (EOF).
    - `Ctrl+Z`: Suspend a process.
145. Which command(s) you would run if you need to find out how many processes are running on your system?
    - `ps -ef | wc -l`
146. How to delete a line when in vi editor mode?
    - Press `dd` to delete a line.
147. How to save and quit from vi editor?

    Press `Shift ZZ` or type `:wq!` and press Enter.

148. What is the difference between a process and daemon?
    - Process: A running instance of a program.
    - Daemon: A background process that starts at boot time and runs continuously.
149. What is the process or daemon name for NTP?
    - The process or daemon name for NTP is `ntpd`.
150. What are a few commands you would run if your system is running slow?
    - `top`: To view running processes and their resource usage.
    - `iostat`: To monitor system input/output device loading.
    - `df -h`: To check disk space usage.
    - `netstat`: To display network connections and statistics.
151. How to install a package in Redhat Linux?
    - `yum install packagename`
152. What is the difference between “ifconfig” and “ipconfig” commands?
    - ifconfig: Used in Linux to configure and display network interface parameters.
    - ipconfig: Used in Windows to display all current TCP/IP network configuration values.
153. What is the first line written in a shell script?
    - The first line in a shell script is the shebang, which defines the shell to interpret the script, e.g., `#!/bin/bash`.
154. Where is the network (Ethernet) file located, please provide the exact directory location and file name?
    - The network configuration file is located at `/etc/sysconfig/network-scripts/ifcfg-nic`, where `nic` represents the network interface card name (e.g., `eth0`).
155. Why do we use the “last” command?
    - The `last` command is used to display a list of the last logged-in users, showing both active and logged-off sessions.
156. What does RHEL Linux stand for?
    - RHEL stands for Red Hat Enterprise Linux.

157. To view your command history, which command is used and how to run a specific command?
    - Use `history` to view the command history.
    - To run a specific command, use `!n`, where `n` is the command number from the history list.
158. What is NTP and briefly explain how it works and where are the config files and related commands of NTP?
    - NTP (Network Time Protocol): Used to synchronize the clocks of computers over a network.
    - How it works: NTP servers provide time information to clients, which adjust their clocks accordingly.
    - Config files: Located at `/etc/ntp.conf`.
    - Related commands**: `ntpd` for the daemon, `ntpq` for querying NTP servers.
159. How to disable the firewall in Linux?
    - To disable the firewall, you can use:
    - `systemctl stop firewalld`
    - `systemctl disable firewalld`
160. How to configure mail server relay for sendmail service?
    - Edit the `/etc/mail/sendmail.mc` file and add the `SMART_HOST` entry to specify the relay host.
161. Where is the samba log file located?
    - The Samba log file is located at `var/log/samba`.
162. What is the `mkfs` command used for?**
    - The `mkfs` command is used to create a new filesystem on a device.
163. If you create a new group, which file does it get created in?
    - The new group information is stored in the `/etc/group` file.
164. Which file has DNS server information (e.g., DNS resolution)?
    - DNS server information is stored in the `/etc/resolv.conf` file.
165. What are the commands you would run if you need to find out the version and build date of a package (e.g., http)?

- `rpm -qi http`

166. On the file permissions, what are the first 3 bits for and who is it for?
    - The first three bits represent the permissions for the file owner: read (r), write (w), and execute (x).
167. How to create a soft link?
    - `ln -s target linkname`
168. How to write a script to delete messages in a log file older than 30 days automatically?
    - You can use the `find` command in a script:
    - `find /path/to/logs -type f -mtime +30 -exec rm {} \;`
169. How to quit out of the "`man`" command?
    - Press `q` to quit the manual page viewer.
170. Which command is used to partition a disk in Linux?
    - The `fdisk` command is used to partition a disk.
171. What is the difference between the "shutdown" and "halt" command?
    - `shutdown`: Gracefully shutdown the system, allowing processes to terminate properly.
    - `halt`: Stops all processes and halts the system without powering it off.
172. What is the exact syntax of mounting an NFS share on a client and also how to un-mount?**
    - Mount: `mount -t nfs server:/path/to/share /mount/point`
    - Unmount: `umount /mount/point`
173. What experience do you have with scripting, explain?
    - Experience with scripting includes using control structures like `if-then`, `do-while`, `case`, and `for` loops to automate tasks.
174. How to get information on all the packages installed on the system?
    - `rpm -qa`
175. Explain VMWare?**
    - VMWare is a company that provides cloud computing and virtualization technology, including products like vSphere, ESXi, and vCenter.

176. You are tasked to examine a log file in order to find out why a particular application keeps crashing. The log file is very lengthy, which command can you use to simplify the log search using a search string?
    - Use the `grep` command to search for specific strings like "error", "warning", or "failure" in the log file:
    - `grep "error" /var/log/messages`
177. What is an `/etc/fstab` file and explain each column of this file?
    - The `/etc/fstab` file contains information about filesystems and their mount points. Each line has six fields:
    - 1. **Device**: The block device or remote filesystem.
    - 2. **Mount Point**: Directory where the filesystem is mounted.
    - 3. **Filesystem Type**: Type of filesystem (e.g., ext4, nfs).
    - 4. **Options**: Mount options (e.g., defaults, ro).
    - 5. **Dump**: Backup utility flag (0 or 1).
    - 6. **Pass**: Filesystem check order at boot (0, 1, or 2).
178. What is the latest version of Windows server?
    - The latest version as of 2023 is Windows Server 2022.
179. What is the exact command to list only the first 2 lines of history output?
    - `history | head -2`
180. How to upgrade Linux from 7.3 to 7.4?
    - `yum update`: This command updates all packages to their latest versions, including upgrading the distribution version.
181. How to tell which shell you are in or running?
    - `echo $0`
182. You have tried to “cd” into a directory but you have been denied. You are not the owner of that directory, what permissions do you need and where?
    - You need execute (`x`) permission on the directory to change into it.
183. What is CNAME record in DNS?
    - A CNAME (Canonical Name) record is a type of DNS record that maps an alias name to a true or canonical domain name.
184. What is the name of the VMWare operating system?**
    - The VMWare operating system is called ESXi.

185. What is the client name used to connect to ESXi or vCenter server?
    - The client used to connect to ESXi or vCenter is the vSphere Client.
186. You get a call from a user saying that I cannot write to a file because it says, permission denied. The file is owned by that user, how do you troubleshoot?
    - Check the file permissions and ensure the user has write (`w`) permission.
187. What is the latest version of VMWare?
    - As of 2023, the latest version of VMware vSphere is 8.0.
188. What is the name of the firewall daemon in Linux?
    - The firewall daemon in Linux is called `` `firewalld` ``.
189. Which command syntax can you use to list only the 20th line of a file?
    - `sed -n '20p' filename`
190. What is the difference between run level 3 and 5?
    - Run level 3: Multi-user mode with networking, but without a graphical interface.
    - Run level 5: Multi-user mode with networking and a graphical interface (GUI).
191. What is the difference between domain and nameserver?
    - Domain: A domain is a human-readable address used to access resources on the internet.
    - Nameserver: A server that translates domain names into IP addresses.
192. You open up a file and it has 3000 lines and it scrolls up really fast, which command will you use to view it one page at a time?
    - Use `less` or `more` to view the file one page at a time.
193. How to start a new shell. E.g., start a new ksh shell?
    - Simply type `ksh` or `bash` to start a new shell session.
194. How to kill a process?
    - `kill processID`
195. How to check scheduled jobs?
    - `crontab -l`
196. How to check system memory and CPU usage?
    - Memory: Use `` `free` ``.
    - CPU Usage: Use `top` or `` `htop` ``.

197. Which utility could you use to repair the corrupted file system?**
    - Use the `fsck` (File System Consistency Check) utility.
198. What is the command to make a service start at boot?**
    - `systemctl enable servicename`
199. Which file to modify to allow users to run root commands?**
    - Modify the `/etc/sudoers` file, typically using `visudo` for safe editing.
200. You need to modify the httpd.conf file but you cannot find it. Which command line tool can you use to find the file?**
    - `find / -name "httpd.conf"`
201. Your system crashed and is being restarted, but a message appears indicating that the operating system cannot be found. What is the most likely cause of the problem?
    - The `/boot` partition or bootloader is most likely corrupted or missing.
202. What are the most essential [90+] Linux Commands you NEED to know

No	Command	Description	Example
File and Directory Management			
1	`pwd`	Prints the current working directory.	`pwd` displays the full path of the current directory.
2	`ls`	**Lis**ts directory contents.	`ls -l` lists files in long format, showing permissions, owner, size, and modification date. `ls -a` lists files including hidden files (those starting with a dot) `ls -la` list directory contents in a long format, including hidden files.

3	`cd`	Changes the current directory.	`cd /home/user` changes the directory to /home/user.
4	`mkdir`	Creates a new directory.	`mkdir newdir` creates a directory named newdir.
5	`rmdir`	Removes an empty directory.	`rmdir olddir` removes the empty directory olddir.
6	`touch`	Creates an empty file or updates the timestamp of an existing file.	`touch newfile.txt` creates an empty file named `newfile.txt`.
7	`echo`	Displays a line of text or a variable value.	`echo "Hello, World!"` prints Hello, World! to the terminal. `echo "Hello, World!" > filename.txt` creates a new text file named "filename.txt" (or overwrites it if it already exists) and writes the phrase "Hello, World!" into it. `echo "Hello, World!" >> filename.txt` appends the phrase "Hello, World!" to the end of the existing file named "filename.txt" (or creates the file if it doesn't exist).
8	`cp`	Copies files or directories.	`cp file1.txt file2.txt` copies file1.txt to file2.txt. `cp file1.txt ./Desktop` copies the file named "file1.txt" from the current directory to the Desktop folder.
9	`mv`	used for moving and renaming files and directories.	`mv oldname.txt newname.txt` renames oldname.txt to newname.txt in the current directory.

			`mv file1.txt ./Desktop` moves the file named "file1.txt" from the current directory to the Desktop folder.
10	`rm`	Removes files or directories.	`rm file.txt` deletes file.txt.
File Viewing and Editing			
11	`cat`	Concatenates and displays file content.	`cat file.txt` displays the content of file.txt.
12	`less`	Views file content one screen at a time.	`less file.txt` displays file.txt content one screen at a time.
13	`more`	displays the content of the file one screen at a time.	`more file.txt`
14	`nano`	Open the Nano text editor.	`nano file.txt` opens file.txt in the Nano editor.
15	`vim`	Open the Vim text editor.	`vim file.txt` opens file.txt in the Vim editor.
16	`head`	Displays the first part of a file.	`head -n 10 file.txt` shows the first 10 lines of `file.txt`.
17	`tail`	Displays the last part of a file.	`tail -n 10 file.txt` shows the last 10 lines of `file.txt`.
18	`cmp`	Compare two files byte by byte.	`cmp file1 file2` compares `file1` and `file2`.

19	`diff`	Compares files line by line.	`diff file1 file2` shows the differences between `file1` and `file2`.
20	`sort`	Sorts lines of text files.	`sort file.txt` sorts the lines in `file.txt`.
21	`find`	Searches for files in a directory hierarchy.	`find /home -name "*.txt"` finds all `.txt` files in the `/home` directory.
22	`chmod`	Changes file permissions.	`chmod 755 script.sh` sets the permissions of `script.sh` to `rwxr-xr-x`.
23	`chown`	Changes file owner and group.	`chown user:group file.txt` changes the owner and group of `file.txt` to `user` and `group`.
24	`grep`	Searches for patterns in files.	`grep "pattern" file.txt` searches for "pattern" in `file.txt`.
25	`awk`	A programming language for pattern scanning and processing.	`awk '{print $1}' file.txt` prints the first field of each line in `file.txt`.
Process Management			
26	`ps`	Displays information about active processes.	`ps aux` shows detailed information about all running processes.
27	`top`	Displays real-time system resource usage.	`top` shows real-time processes and system resource usage.
28	`htop`	An interactive process viewer.	`htop` provides an interactive view of system processes.

29	`kill`	Terminates a process by PID.	`kill 1234` terminates the process with PID 1234.
30	`killall`	Terminates processes by name.	`killall firefox` terminates all processes named firefox.
31	`pstree`	Displays running processes as a tree	`pstree` shows the process hierarchy, with child processes indented under their parents.
32	`pkill`	Terminates processes by name or other attributes.	`pkill firefox` terminates all processes named `firefox`.
System Information			
33	`uname`	Prints system information.	`uname -a` displays all system information.
34	`neofetch`	Displays system information with an aesthetic layout.	`neofetch` shows system information in a visually appealing format.
35	`df`	Displays disk space usage of file systems.	`df -h` shows disk space usage in a human-readable format.
36	`du`	Estimates file and directory space usage.	`du -sh /path/to/directory` shows the total size of a directory in human-readable format.
37	`free`	Displays memory usage.	`free -h` shows memory usage in a human-readable format.
38	`lscpu`	Displays information about the CPU architecture.	`lscpu`
39	`lshw`	Lists hardware information.	`sudo lshw`

40	`lsblk`	Lists information about block devices.	`lsblk`
User and Group Management			
41	`whoami`	Displays the current logged-in user.	`whoami` shows the username of the current user.
42	`sudo`	Executes a command as another user, typically the superuser.	`sudo apt-get update` runs the `apt-get update` command with superuser privileges.
43	`su`	Switch to another user account.	`su - user` switches to the `user` account.
44	`useradd`	Adds a new user.	`sudo useradd newuser` adds a new user named `newuser`.
45	`adduser`	Adds a new user with a **more interactive interface**.	`sudo adduser newuser` interactively adds a new user named `newuser`.
46	`passwd`	Changes a user's password.	`passwd` prompts to change the **current user's** password.
47	`userdel`	Deletes a user account.	`sudo userdel username` removes the specified user account.
48	`usermod`	Modifies user account properties.	`sudo usermod -aG sudo username` adds the user to the sudo group.
49	`groupadd`	Creates a new group.	`sudo groupadd newgroup` creates a new group named newgroup.
50	`groupdel`	Deletes a group	`sudo groupdel groupname` removes the specified group.

51	`groups`	Displays group membership for a user.	`groups username` shows all groups the specified user belongs to.
52	`id`	Displays user and group information for a specified user.	`id username` shows user ID, group ID, and group memberships for the specified user.
Network Configuration and Monitoring			
53	`ifconfig`	Display network interface information. Configures network interfaces.	`ifconfig eth0` displays the configuration of the `eth0` interface.
54	`ip address`	Displays IP addresses and interfaces.	`ip address show` shows all IP addresses and network interfaces.
55	`ping`	Sends ICMP ECHO_REQUEST packets to network hosts.	`ping google.com` sends ping requests to `google.com`.
56	`netstat`	Displays network connections, routing tables, and interface statistics.	`netstat -tuln` shows listening ports and their status.
57	`ss`	Displays socket statistics.	`ss -tuln` shows listening sockets. `ss -l4p` displays all listening IPv4 sockets along with the associated processes
58	`traceroute`	Traces the route packets take to a network host.	`traceroute google.com` shows the route to `google.com`.
59	`ssh`	Connects to a remote machine via SSH.	`ssh user@hostname` connects to the remote machine `hostname` as `user`.
60	`nc`	A versatile networking utility for reading from and	`nc -l 1234` listens on port 1234. `nc hostname 80` connects to 'hostname' on port 80.

		writing to network connections.	
Package Management			
61	`apt`	Manages packages on Debian-based systems.	`sudo apt install package` installs the specified package. `sudo apt remove package` removes the specified package. `apt update` update the package list `apt upgrade` upgrade installed packages to their latest versions `apt dist-upgrade` perform a comprehensive system upgrade
62	`apt-get`	An older command-line tool for package management on Debian-based systems.	`sudo apt-get install package` installs the specified package. `sudo apt-get remove package` removes the specified package.
63	`yum`	Package manager for RPM-based Linux distributions (e.g., CentOS, RHEL).	`sudo yum install package` installs the specified package. `sudo yum remove package` removes the specified package.
64	`dnf`	Next-generation package manager for RPM-based distributions (successor to yum).	`sudo dnf install package` installs the specified package. `sudo dnf remove package` removes the specified package.
65	`rpm`	Low-level package manager for RPM-based systems.	`rpm -i package.rpm` installs an RPM package. `rpm -e package` removes an installed RPM package.

66	`dpkg`	Low-level package manager for Debian-based systems.	`sudo dpkg -i package.deb` installs a Debian package. `sudo dpkg -r package` removes an installed Debian package
67	`snap`	Universal Linux package manager for containerized applications.	`sudo snap install package` installs a snap package. `sudo snap remove package` removes a snap package.
68	`zypper`	Package manager for openSUSE and SUSE Linux Enterprise.	`sudo zypper install package` installs the specified package. `sudo zypper remove package` removes the specified package.
Other Commands			
69	`ln`	Creates hard and symbolic links.	`ln -s target linkname` creates a symbolic link named `linkname` pointing to target.
70	`clear`	Clears the terminal screen.	`clear` clears the terminal display.
71	`exit`	Exits the current shell or session.	`exit` logs out of the current session.
72	`finger`	Displays information about system users.	`finger user` shows details about `user`.
73	`man`	Displays the manual page for a command.	`man ls` shows the manual for the `ls` command.
74	`whatis`	Displays a brief description of a command.	`whatis ls` provides a short description of the `ls` command.

75	`curl`	Transfers data from or to a server.	`curl -O http://example.com/file.txt` downloads `file.txt` from the specified URL.
76	`zip`	Compresses files into a zip archive.	`zip archive.zip file1 file2` compresses file1 and file2 into archive.zip.
77	`unzip`	Extracts files from a zip archive.	`unzip archive.zip` extracts files from archive.zip.
78	`resolvectl status`	Shows the current DNS settings.	`resolvectl status` displays the DNS configuration and status.
79	`iptables`	Configures packet filtering rules.	`sudo iptables -L` lists all current iptables rules.
80	`ufw`	Manages firewall with Uncomplicated Firewall.	`sudo ufw enable` enables the firewall.
81	`cal`	Displays a calendar.	`cal` shows the current month's calendar.
82	`systemctl`	Manages systemd services.	`systemctl status nginx` shows the status of the `nginx` service.
83	`history`	Displays the command history.	`history` shows the list of previously executed commands.
84	`dig`	Queries DNS servers.	`dig example.com` retrieves DNS information for `example.com`.
85	`host`	Performs DNS lookups.	`host example.com` shows the IP address of `example.com`.

86	`arp`	Displays and modifies the ARP table.	`arp -a` shows the current ARP table.
87	`iwconfig`	Configures wireless network interfaces.	`iwconfig wlan0` shows the configuration of the `wlan0` wireless interface.
88	`hostname`	Displays or sets the system's hostname.	`hostname` shows the current hostname.
89	`whois`	Queries the WHOIS database for domain information.	`whois example.com` retrieves WHOIS information for example.com.
90	`reboot`	Reboots the system.	`sudo reboot` restarts the system.
91	`shutdown`	Shuts down or reboots the system.	`sudo shutdown -h now` shuts down the system immediately.