🧠 The Ultimate Linux & DevOps Interview Question Bank (220 Questions)

Part 1: Core Commands & File Management

1. What command lists files sorted by modification time?
👉 `ls -lt` (newest first) or `ls -ltr` (oldest first)

2. How do you count the number of lines in a file?
👉 `wc -l filename`

3. How do you display the first 10 lines of a file?
👉 `head -n 10 filename`

4. How do you display the last 10 lines of a file?
👉 `tail -n 10 filename`

5. How do you follow a log file in real-time?
👉 `tail -f filename`

6. Command to create an empty file?
👉 `touch filename`

7. How do you create nested directories (e.g., a/b/c) at once?
👉 `mkdir -p a/b/c`

8. How do you remove a directory that contains files?
👉 `rm -r directory_name`

9. How do you rename a file?
👉 `mv old_name new_name`

10. How do you copy a directory recursively?
👉 `cp -r source_dir dest_dir`

11. How do you find files larger than 100MB?
👉 `find / -size +100M`

12. How do you find files modified in the last 24 hours?
👉 `find / -mtime -1`

13. How do you search for a string inside all files in a directory?
👉 `grep -r "string" /path/to/dir`

14. How do you search for a string but ignore case?
👉 `grep -i "string" filename`

15. How do you show line numbers in grep output?
👉 `grep -n "string" filename`

16. What command displays your current username?
👉 `whoami`

17. How do you check which users are logged in?
👉 `w` or `who`

18. How do you download a file from the internet via terminal?
👉 `wget <url>` or `curl -O <url>`

19. How do you extract a `.tar.gz` file?
👉 `tar -xzvf file.tar.gz`

20. How do you compress files into a `.tar.gz` archive?
👉 `tar -czvf archive.tar.gz /path/to/directory`

21. How do you unzip a `.zip` file?
👉 `unzip file.zip`

22. How do you check the disk usage of the current directory?
👉 `du -sh .`

23. How do you view the history of commands used?
👉 `history`

24. How do you run the last command again?
👉 `!!`

25. How do you search for a command in your history?
👉 `Ctrl + r` and start typing

26. What does the pipe `|` operator do?
👉 Passes output of one command as input to another

27. How do you redirect output to a file (overwrite)?
👉 `command > file.txt`

28. How do you redirect output to a file (append)?
👉 `command >> file.txt`

29. How do you compare two files?
👉 `diff file1 file2`

30. How do you create a symbolic link?
👉 `ln -s /path/to/original /path/to/link`

31. What command shows the manual page for a tool?
👉 `man <command>`

32. How do you check the kernel version?
👉 `uname -r`

33. How do you check OS release information?
👉 `cat /etc/os-release`

34. How do you clear the terminal screen?
👉 `clear` or `Ctrl + l`

35. How do you copy files securely between servers?
👉 `scp source_file user@remote_host:/destination`

36. How do you sync directories between servers?
👉 `rsync -avz source dest`

37. What does `echo $?` return?
👉 Exit status of the last command (0=success)

38. How do you define a variable in Bash?
👉 `VAR_NAME="value"`

39. How do you print a variable?
👉 `echo $VAR_NAME`

40. How do you create an alias for a command?

👉 `alias name='command'`

Part 2: User Management & Permissions

41. Add a new user

👉 `useradd username`

42. Set a password for a user

👉 `passwd username`

43. Delete a user and their home directory

👉 `userdel -r username`

44. Add a new group

👉 `groupadd groupname`

45. Add a user to a secondary group

👉 `usermod -aG groupname username`

46. Where are password hashes stored?

👉 `/etc/shadow`

47. Where are group definitions stored?

👉 `/etc/group`

48. Switch to root user

👉 `sudo su -`

49. What does `chmod 777` mean?

👉 Full permissions (RWX for all)

50. What does `chmod 755` mean?

👉 Owner=RWX, Group/Others=RX

51. What does `chmod +x` do?

👉 Makes a file executable

52. Change the owner of a file

👉 `chown user filename`

53. Change the group of a file
👉 `chgrp group filename`

54. What is the Sticky Bit?
👉 Prevents users from deleting others' files in shared dirs (like /tmp)

55. What is SUID?
👉 Executes file with owner’s privileges

56. What is SGID?
👉 Files in dir inherit group ownership

57. View default file permissions
👉 `umask`

58. Check if a user is locked
👉 `passwd -S username`

59. Unlock a user
👉 `passwd -u username`

60. Restrict root login via SSH
👉 `PermitRootLogin no` in `/etc/ssh/sshd_config`

61. Disable password authentication for SSH
👉 `PasswordAuthentication no` in `/etc/ssh/sshd_config`

62. Force a user to change password on next login
👉 `chage -d 0 username`

63. Show groups a user belongs to
👉 `groups username` or `id username`

64. What is `/etc/skel`?
👉 Default files copied to new user homes

65. Lock user account
👉 `usermod -L username`

66. What is `visudo`?
👉 Safely edits sudoers file with syntax checking

67. Grant a user sudo access
👉 Add to `sudo` or `wheel` group or edit `/etc/sudoers`

68. What is ACL?
👉 Fine-grained permissions model

69. View ACLs
👉 `getfacl filename`

70. Set ACLs
👉 `setfacl -m u:user:rwx filename`

71. How do you check the last login time of users?
👉 `last`

72. How do you check bad login attempts?
👉 `lastb` (reads `/var/log/btmp`)

73. How do you kick a logged-in user?
👉 `pkill -KILL -u username`

74. How do you change your shell?
👉 `chsh -s /bin/bash`

75. What is the UID of the root user?
👉 `0`

Part 3: Processes & System Resources

76. How do you view all running processes?
👉 `ps aux` or `ps -ef`

77. How do you view processes in a tree structure?
👉 `pstree`

78. How do you kill a process by ID?
👉 `kill <PID>`

79. How do you kill a process by name?
👉 `pkill name` or `killall name`

80. What does `kill -9` do?
👉 Sends `SIGKILL` (force kill, cannot be trapped)

81. What does `kill -15` do?
👉 Sends `SIGTERM` (polite request to terminate)

82. How do you find the PID of a specific service?
👉 `pidof service_name` or `pgrep service_name`

83. How do you change the priority of a running process?
👉 `renice +n <PID>`

84. What is the Nice value range?
👉 From `-20` (highest priority) to `+19` (lowest priority)

85. How do you check memory usage?
👉 `free -h`

86. How do you check disk space usage?
👉 `df -h`

87. How do you check detailed CPU information?
👉 `lscpu` or `cat /proc/cpuinfo`

88. How do you check block devices (disks)?
👉 `lsblk`

89. What is `top`?
👉 An interactive real-time process and resource monitor

90. What is `htop`?
👉 An enhanced, user-friendly version of `top` with colors and interaction

91. How do you monitor disk I/O stats?
👉 `iostat`

92. How do you monitor virtual memory stats?
👉 `vmstat`

93. How do you check system uptime?
👉 `uptime`

94. What is a background job?
👉 A process running non-interactively, detached from the terminal foreground

95. How do you list background jobs?
👉 `jobs`

96. How do you suspend a running foreground process?
👉 `Ctrl + Z`

97. How do you send a suspended job to the background?
👉 `bg`

98. How do you bring a background job to the foreground?
👉 `fg`

99. What is `nohup` used for?
👉 To run a command immune to hangups so it keeps running after logout

100. How do you schedule a command to run once in the future?
👉 Use `at`

101. How do you schedule recurring tasks?
👉 `crontab -e`

102. Explain the cron syntax `* * * * *`.
👉 Minute, Hour, Day of Month, Month, Day of Week (in that order)

103. Where are cron logs usually found?
👉 `/var/log/cron` or `/var/log/syslog` (on some distros)

104. What is `systemd`?
👉 A modern init system and service manager (often PID 1)

105. How do you start a service?
👉 `systemctl start service_name`

106. How do you enable a service to start on boot?
👉 `systemctl enable service_name`

107. How do you check service logs?
👉 `journalctl -u service_name`

108. What does `dmesg` show?
👉 Kernel ring buffer messages (boot and hardware logs)

109. How do you check for open files by a user?
👉 `lsof -u username`

110. How do you see which process is using a specific port?
👉 `lsof -i :port` or `netstat -nlp | grep port`

Part 4: Networking

111. How do you check IP addresses?
👉 `ip addr` or `ifconfig`

112. How do you check the default gateway?
👉 `ip route` or `route -n`

113. How do you check connectivity to a host?
👉 `ping host`

114. How do you check the path packets take to a host?
👉 `traceroute host` or `mtr host`

115. How do you check DNS resolution?
👉 `nslookup domain` or `dig domain`

116. Which file configures DNS servers?
👉 `/etc/resolv.conf`

117. Which file maps IPs to hostnames locally?
👉 `/etc/hosts`

118. How do you check listening ports?
👉 `netstat -tuln` or `ss -tuln`

119. What is localhost IP?
👉 `127.0.0.1`

120. What is the loopback interface?
👉 The virtual interface `lo` for local host communication

121. How do you download a file and save it with a specific name?
👉 `wget -O filename url` or `curl -o filename url`

122. How do you check if a specific port is open on a remote server?
👉 `telnet ip port` or `nc -zv ip port`

123. What is SSH?
👉 Secure Shell, a protocol for encrypted remote login and commands

124. Default port for SSH?
👉 `22`

125. Default port for HTTP?
👉 `80`

126. Default port for HTTPS?
👉 `443`

127. Default port for DNS?
👉 `53`

128. How do you copy your SSH public key to a remote server?
👉 `ssh-copy-id user@host`

129. What is `scp`?
👉 Secure Copy Protocol for transferring files over SSH

130. How do you capture network packets?
👉 `tcpdump`

131. How do you analyze packet captures?
👉 Wireshark (GUI) or `tshark` (CLI)

132. What is a Firewall?
👉 A system that filters and controls network traffic based on rules

133. Command to list iptables rules?
👉 `iptables -L`

134. What is UFW?
👉 Uncomplicated Firewall, a simple firewall frontend on Ubuntu

135. How do you allow SSH in UFW?
👉 `ufw allow ssh` or `ufw allow 22`

136. Difference between TCP and UDP?
👉 TCP is connection-oriented and reliable; UDP is connectionless and faster but unreliable

137. What is DHCP?
👉 Dynamic Host Configuration Protocol that assigns IPs automatically

138. How do you renew a DHCP IP lease?
👉 `dhclient -r` then `dhclient`

139. What is a MAC address?
👉 Hardware identifier burned into a network interface

140. How do you change the hostname?
👉 `hostnamectl set-hostname name`

141. What is `nmap` used for?
👉 Network scanning and security auditing

142. What is a reverse proxy?
👉 A server that forwards client requests to backend servers

143. What is Load Balancing?
👉 Distributing traffic across multiple servers to improve reliability and scale

144. What is a subnet mask?
👉 Value that separates network and host portions of an IP address

145. What is CIDR notation?
👉 Classless Inter-Domain Routing, e.g., `/24` for `255.255.255.0`

Part 5: DevOps, SRE & Cloud

146. What is DevOps?
👉 A culture and set of practices that unify dev and ops to automate and accelerate delivery

147. What is CI/CD?
👉 Continuous Integration plus Continuous Delivery/Deployment of code changes

148. What is Git?
👉 A distributed version control system

149. How do you check git status?
👉 `git status`

150. How do you revert a git commit?
👉 `git revert <commit_id>`

151. What is Docker?
👉 A platform for building and running containerized applications

152. What is a Container?
👉 A lightweight, isolated runtime package with code and dependencies

153. Difference between VM and Container?
👉 VMs virtualize hardware; containers share host OS kernel

154. How do you list running containers?
👉 `docker ps`

155. How do you see all containers (including stopped)?
👉 `docker ps -a`

156. How do you view container logs?
👉 `docker logs <container_id>`

157. How do you get inside a running container?
👉 `docker exec -it <container_id> /bin/bash` (or `/bin/sh`)

158. What is Kubernetes (K8s)?
👉 An orchestration system for managing containerized workloads at scale

159. What is a Pod in K8s?
👉 The smallest deployable unit, often wrapping one or more containers

160. What is `kubectl`?
👉 Command-line tool to interact with Kubernetes clusters

161. What is Infrastructure as Code (IaC)?
👉 Managing and provisioning infra via machine-readable definitions

162. What is Ansible?
👉 An agentless configuration management and automation tool using SSH

163. What is Terraform?
👉 An IaC tool to provision infra across multiple cloud providers

164. What is Jenkins?
👉 An automation server for building CI/CD pipelines

165. What is Prometheus?
👉 A metrics-based monitoring system and time-series database

166. What is Grafana?
👉 A visualization tool for dashboards over data sources like Prometheus

167. What is Blue/Green Deployment?
👉 Two environments (Blue live, Green new); traffic is switched to Green after validation

168. What is Canary Deployment?
👉 Releasing to a small subset of users before full rollout

169. What is a Microservice Architecture?
👉 Application decomposed into small, independently deployable services

170. What is "Serverless"?
👉 Running code on managed compute without managing servers (e.g., AWS Lambda)

171. What is S3?
👉 AWS Simple Storage Service for object storage

172. What is EC2?
👉 AWS Elastic Compute Cloud for virtual servers

173. What is a Load Balancer?
👉 A component that distributes incoming requests across multiple targets

174. What is Auto Scaling?
👉 Automatic adjustment of instances based on load

175. What is a VPC?
👉 Virtual Private Cloud, an isolated virtual network in the cloud

176. How do you handle secrets in DevOps?
👉 Use secret managers like Vault, AWS Secrets Manager, or K8s Secrets; avoid hardcoding

177. What is GitOps?
👉 Using Git as the single source of truth for infra and app definitions, with automation applying changes

178. What is "Shift Left"?
👉 Moving testing and security earlier in the development lifecycle

179. What is Chaos Engineering?
👉 Deliberately injecting failures to test and improve system resilience

180. Why use a multi-stage Docker build?
👉 To keep final images smaller and cleaner by separating build and runtime stages

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Part 6: Advanced Troubleshooting & Scenarios

181. Scenario: Server High Load
👉 Use `top`/`htop` to check CPU and I/O wait (`wa`) and identify heavy processes

182. Scenario: "No space left on device" but `df` shows free space
👉 Check inode usage with `df -i` to detect too many small files

183. Scenario: Deleted log file but disk space not freed
👉 A process still holds it; use `lsof | grep deleted` and restart that process

184. Scenario: SSH connection is very slow
👉 Often DNS reverse lookup; set `UseDNS no` in `sshd_config`

185. Scenario: App works manually but fails in cron
👉 Cron has minimal environment; use full paths and set required env vars

186. Scenario: Permission Denied error
👉 Check mode (`ls -l`), owner (`chown`), and SELinux (`sestatus`)

187. Scenario: Can ping IP but not domain
👉 Likely DNS issue; inspect `/etc/resolv.conf`

188. Scenario: Server is out of memory (OOM)
👉 See OOM kills with `dmesg | grep -i oom`, then add swap or RAM

189. Scenario: Process stuck and can't be killed
👉 It may be in uninterruptible sleep (D state) due to I/O issues; fix underlying device

190. Scenario: 502 Bad Gateway
👉 Upstream/backend is down or misconfigured; check its status and logs

191. Scenario: 504 Gateway Timeout
👉 Backend too slow or timeout too low; optimize or increase timeouts

192. Scenario: 403 Forbidden
👉 Web server permission or access rule issue; verify ownership, mode, and config

193. Scenario: Kernel Panic on boot
👉 Boot recovery or older kernel, then inspect initramfs and logs

194. Scenario: Forgot root password
👉 Boot single-user or rescue mode and run `passwd` for root

195. Scenario: Filesystem is read-only
👉 Indicates disk or fs error; run `fsck` on the unmounted filesystem

196. Scenario: High I/O wait
👉 Use `iotop` or similar to find processes causing heavy disk I/O

197. Scenario: Analyzing a hacked server
👉 Review `/var/log/auth.log`, `last`, `history`, running processes, and open ports

198. Scenario: Preventing fork bomb
👉 Use `ulimit` to cap processes per user

199. Scenario: Log file is huge
👉 Configure `logrotate` or truncate with `> logfile` instead of deleting active logs

200. Scenario: Two services need port 80
👉 Put a reverse proxy (like Nginx) on port 80 and route to different backends

201. Scenario: Check script syntax without running
👉 `bash -n script.sh`

202. Scenario: Debug script line by line
👉 `bash -x script.sh`

203. Scenario: Run command if previous failed
👉 `cmd1 || cmd2`

204. Scenario: Run command only if previous succeeded
👉 `cmd1 && cmd2`

205. Scenario: Time is out of sync
👉 Check NTP (e.g., `chronyd`, `ntpd`) and `timedatectl`

206. Scenario: Copy a file preserving permissions
👉 `cp -p source dest`

207. Scenario: Find file modified in last 10 minutes
👉 `find . -mmin -10`

208. Scenario: Check libraries a command depends on
👉 `ldd /bin/command`

209. Scenario: Mount a USB drive
👉 `mount /dev/sdb1 /mnt/usb` (adjust device and mountpoint)

210. Scenario: Unmount a busy drive
👉 `fuser -km /mnt/point` then `umount /mnt/point`

Part 7: Bonus MCQs

211. Which signal cannot be ignored?
A. SIGTERM B. SIGINT C. SIGKILL ✅ D. SIGHUP

212. Which directory contains device files?
A. `/etc` B. `/dev` ✅ C. `/proc` D. `/var`

213. Which symbol runs a command in the background?
A. `*` B. `&` ✅ C. `#` D. `$`

214. Which command shows the full path of a command?
A. `whereis` B. `which` ✅ C. `find` D. `locate`

215. What is the default shell in most Linux distros?
A. `sh` B. `zsh` C. `bash` ✅ D. `fish`

216. Which permission is 755?
A. `rwxrwxrwx` B. `rwxr-xr-x` ✅ C. `rw-r--r--` D. `rwx------`

217. What file contains hostname configuration?
A. `/etc/hosts` B. `/etc/hostname` ✅ C. `/etc/network` D. `/etc/resolv.conf`

218. Which command creates a hard link?
A. `ln -s` B. `ln` ✅ C. `link` D. `hlink`

219. What is the process ID of init/systemd?
A. 0 B. 1 ✅ C. 100 D. 2

220. Which command checks memory usage?
A. `cpu` B. `mem` C. `free` ✅ D. `ram`