**1. What is the difference between a process and a thread?**  
A process is an independent program in execution, while a thread is a lightweight sub-process within a process that shares memory and resources.

**2. How do you check memory usage in Linux?**  
Use free -m, top, vmstat, or htop to view memory usage.

**3. How to find which process is consuming the most CPU?**  
Use top or ps -eo pid,ppid,cmd,%mem,%cpu --sort=-%cpu | head.

**4. How to check disk usage?**  
Use df -h to check disk space and du -sh \* for directory-wise usage.

**5. What is a zombie process?**  
A zombie process has completed execution but still has an entry in the process table because its parent hasn’t yet read its exit status.

**6. How do you kill a zombie process?**  
You can't kill a zombie directly; kill the parent process or use wait() in the parent code to clean it.

**7. Difference between hard link and soft link?**

* Hard link: Points to the inode. Original file can be deleted, and data still remains accessible.
* Soft link (symlink): A shortcut to the original file path. If the source file is deleted, the link breaks.

**8. How to list open files in Linux?**  
Use lsof, or lsof -i for network-related files.

**9. How do you check which ports are open?**  
Use netstat -tuln, ss -tuln, or nmap.

**10. What is a runlevel?**  
A state of init that defines what services are available. Example: runlevel 3 = multi-user mode without GUI.

**11. Difference between systemd and init?**  
Systemd is a newer init system with parallel service startup, better performance, and dependency handling.

**12. How do you schedule a job in Linux?**  
Using cron (crontab -e) for recurring tasks and at for one-time jobs.

**13. How to find which files changed recently?**  
Use: find /path -type f -mtime -1 (files changed in the last 1 day).

**14. How do you check the last reboot time?**  
Use who -b or uptime.

**15. How to monitor logs in real-time?**  
Use tail -f /var/log/syslog or tail -f /var/log/messages.

**16. What is the sticky bit in Linux?**  
When set on directories (e.g., /tmp), only the file owner can delete their files even if others have write access. Set with chmod +t.

**17. How to view and kill a hung process?**  
Use ps aux | grep <app>, get PID, and kill using kill -9 <PID>.

**18. How to check disk I/O usage?**  
Use iostat, iotop, or dstat.

**19. What is the difference between scp and rsync?**  
scp copies files securely; rsync is faster and syncs differences between source and destination.

**20. How to find large files consuming space?**  
find / -type f -size +100M -exec ls -lh {} \; | sort -k 5 -rh | head

**21. What is SELinux?**  
Security-Enhanced Linux provides access control security policies, preventing unauthorized access.

**22. What are inode and block in Linux?**

* Inode stores metadata about a file.
* Blocks store the actual file content.

**23. How to mount a filesystem manually?**  
Use mount /dev/sdX /mnt/dir and to list: mount or df -h.

**24. What is LVM and how is it different from traditional partitioning?**  
Logical Volume Manager allows flexible disk management, resizing volumes without unmounting.

**25. How to extend a LVM partition?**

1. lvextend -L +5G /dev/mapper/volgrp-lvname
2. resize2fs /dev/mapper/volgrp-lvname

**26. Difference between su and sudo?**

* su: Switch user (requires root password).
* sudo: Executes a command as another user (requires user's password & sudo rights).

**27. How to check system load?**  
Use uptime, top, or loadavg from /proc/loadavg.

**28. What is swap space?**  
It is disk space used when RAM is full. Use swapon -s or free -m to check.

**29. How to change hostname in Linux?**  
Use hostnamectl set-hostname newname.

**30. How to add a new user and assign a password?**  
useradd newuser  
passwd newuser

**31. How do you give sudo access to a user?**  
Add them to sudoers using visudo:  
newuser ALL=(ALL) NOPASSWD:ALL

**32. What are file permissions in Linux?**  
r = read, w = write, x = execute  
Displayed as: -rwxr-xr-- (owner, group, others)

**33. How to change file permissions and ownership?**

* Permissions: chmod 755 file
* Ownership: chown user:group file

**34. How to check available updates on RHEL/CentOS?**  
Use yum check-update or dnf check-update

**35. What is /etc/fstab used for?**  
Contains static filesystem info for mounting at boot.

**36. How to troubleshoot boot issues in Linux?**  
Check:

* /var/log/boot.log
* Use recovery mode
* journalctl -xb

**37. What is the difference between .bashrc and .bash\_profile?**

* .bash\_profile runs at login shell
* .bashrc runs for non-login interactive shells

**38. What are signals in Linux?**  
Used to communicate with processes (e.g., SIGKILL, SIGTERM, SIGHUP). Sent using kill -9 PID.

**39. How to configure a static IP in Linux?**  
Edit /etc/sysconfig/network-scripts/ifcfg-eth0 or use nmtui.

**40. What is the use of strace command?**  
Traces system calls and signals of a command. Helpful in debugging.

**41. How to extract .tar.gz file?**  
Use: tar -xvzf file.tar.gz

**42. How to find which package provides a command?**  
yum provides \*/command

**43. What is a core dump and how to enable it?**  
A snapshot of memory at crash. Enable via ulimit -c unlimited and sysctl.

**44. What’s the difference between kill and killall?**

* kill: needs PID
* killall: needs process name

**45. How to find a file by name?**  
Use: find / -name "filename"

**46. What is cron.allow and cron.deny?**  
They define who can or cannot use cron jobs.

**47. What is /etc/passwd and /etc/shadow?**

* /etc/passwd: user info
* /etc/shadow: encrypted passwords

**48. How to reboot a system safely?**  
Use reboot, shutdown -r now, or systemctl reboot

**49. What is umask?**  
Default permission for new files/directories. Check using umask.

**50. How do you lock and unlock user accounts?**  
Lock: passwd -l username  
Unlock: passwd -u username

**51. What is the difference between /dev/null and /dev/zero?**

* /dev/null: Data sink (discards input)
* /dev/zero: Provides infinite null bytes

**52. How to check service status?**  
systemctl status servicename or service servicename status

**53. What is the use of nohup?**  
Runs a command immune to hangups (e.g., when session ends).

**54. How to disable a service permanently?**  
Use: systemctl disable servicename

**55. What’s a .bash\_history file?**  
Stores command history of a user.

**56. What is the /proc filesystem?**  
Virtual filesystem giving process and kernel info.

**57. How to create and mount an NFS share?**  
On server: Install nfs-utils, configure /etc/exports  
On client: mount -t nfs server:/path /mnt

**58. What are sticky bit, SUID, and SGID?**

* Sticky Bit: Protect files in a directory
* SUID: Run file with owner’s permissions
* SGID: Run with group’s permissions

**59. How to analyze system logs in Linux?**  
Use journalctl, or check /var/log/messages, /var/log/syslog.

**60. What is the difference between grep, egrep, and fgrep?**

* grep: Basic search
* egrep: Extended regex
* fgrep: Fixed strings (no regex)