### **1. What is the Linux file system hierarchy?**

**Answer**: The Linux file system hierarchy is a structured directory system starting with the root (/) directory, with standard subdirectories like /bin, /etc, /var, etc.

* **Follow-up 1**: What is stored in the /var directory? **Answer**: Variable files like logs, caches, and spool files.
* **Follow-up 2**: What is the purpose of the /etc directory? **Answer**: It contains system-wide configuration files.

### **2. How do you display the contents of a directory?**

**Answer**: Use the ls command.

* **Follow-up 1**: How do you display hidden files? **Answer**: Use ls -a.
* **Follow-up 2**: How do you list files with their permissions? **Answer**: Use ls -l.

### **3. What is the difference between relative and absolute paths in Linux?**

**Answer**: Relative paths are based on the current directory, while absolute paths start from the root (/).

* **Follow-up 1**: How do you navigate to the root directory? **Answer**: Use cd /.
* **Follow-up 2**: How do you move to the previous directory? **Answer**: Use cd -.

### **4. What are the different types of file permissions in Linux?**

**Answer**: Read (r), write (w), and execute (x).

* **Follow-up 1**: How are permissions set using numeric values? **Answer**: With numbers like 4 for read, 2 for write, and 1 for execute (e.g., chmod 755).
* **Follow-up 2**: How do you check file permissions? **Answer**: Use ls -l.

### **5. What does the pwd command do?**

**Answer**: It prints the current working directory.

* **Follow-up 1**: How do you navigate to your home directory? **Answer**: Use cd ~.
* **Follow-up 2**: How do you confirm the change to your home directory? **Answer**: Use pwd.

### **6. How do you search for a file in Linux?**

**Answer**: Use the find command.

* **Follow-up 1**: How do you search for a file by name? **Answer**: Use find /path -name filename.
* **Follow-up 2**: How do you search for files larger than 1GB? **Answer**: Use find /path -size +1G.

### **7. What is a process in Linux?**

**Answer**: A process is an instance of a program in execution.

* **Follow-up 1**: How do you view processes running under your user? **Answer**: Use ps.
* **Follow-up 2**: How do you list all processes? **Answer**: Use ps aux or top.

### **8. How do you kill a process in Linux?**

**Answer**: Use the kill command with the PID of the process.

* **Follow-up 1**: How do you find the PID of a process? **Answer**: Use ps aux | grep process\_name.
* **Follow-up 2**: What signal does kill -9 send? **Answer**: SIGKILL, which forcefully terminates the process.

### **9. What does the cat command do?**

**Answer**: It displays the contents of a file.

* **Follow-up 1**: How do you concatenate two files using cat? **Answer**: Use cat file1 file2 > combined\_file.
* **Follow-up 2**: How do you create a file with cat? **Answer**: Use cat > filename and type the content.

### **10. How do you compare two files in Linux?**

**Answer**: Use the diff command.

* **Follow-up 1**: How do you compare two files line by line? **Answer**: Use cmp file1 file2.
* **Follow-up 2**: How do you check if two files are identical? **Answer**: Use diff file1 file2 and confirm no output.

### **11. What is the purpose of the head and tail commands?**

**Answer**: head displays the first 10 lines, and tail displays the last 10 lines of a file.

* **Follow-up 1**: How do you display the first 20 lines of a file? **Answer**: Use head -n 20 filename.
* **Follow-up 2**: How do you continuously monitor a file with tail? **Answer**: Use tail -f filename.

### **12. What are environment variables in Linux?**

**Answer**: They are variables that affect how processes behave in the operating system.

* **Follow-up 1**: How do you list all environment variables? **Answer**: Use env or printenv.
* **Follow-up 2**: How do you set a temporary environment variable? **Answer**: Use export VAR\_NAME=value.

### **13. What does the man command do?**

**Answer**: It displays the manual page for a command.

* **Follow-up 1**: How do you search for a keyword in a man page? **Answer**: Use /keyword.
* **Follow-up 2**: How do you navigate to the next occurrence of the keyword? **Answer**: Press n.

### **14. What is the purpose of the scp command?**

**Answer**: scp is used to securely copy files between systems over SSH.

* **Follow-up 1**: How do you copy a file from a remote server to your local system? **Answer**: Use scp user@remote:/path/to/file /local/path.
* **Follow-up 2**: How do you copy an entire directory? **Answer**: Use scp -r.

### **15. What does the rsync command do?**

**Answer**: It synchronizes files and directories between two locations.

* **Follow-up 1**: How do you use rsync to copy files while preserving permissions? **Answer**: Use rsync -a.
* **Follow-up 2**: How do you delete files in the destination that no longer exist in the source? **Answer**: Use rsync --delete.

### **16. How do you create a compressed archive in Linux?**

**Answer**: Use tar with compression options like gzip or bzip2.

* **Follow-up 1**: How do you extract a .tar.gz file? **Answer**: Use tar -xzf filename.tar.gz.
* **Follow-up 2**: How do you view the contents of an archive without extracting? **Answer**: Use tar -tf archive.tar.

### **17. What is the purpose of the df and du commands?**

**Answer**: df checks disk space usage, and du checks directory space usage.

* **Follow-up 1**: How do you show all mounted file systems with df? **Answer**: Use df -a.
* **Follow-up 2**: How do you check the size of a specific directory with du? **Answer**: Use du -sh directory.

### **18. What are shell scripting variables?**

**Answer**: Variables are used to store data that can be referenced in scripts.

* **Follow-up 1**: How do you declare a variable in a shell script? **Answer**: Use VAR\_NAME=value.
* **Follow-up 2**: How do you access a variable's value? **Answer**: Use $VAR\_NAME.

### **19. How do you debug a shell script?**

**Answer**: Use the bash -x script.sh command to run the script in debug mode.

* **Follow-up 1**: How do you enable debugging within a script? **Answer**: Add set -x at the start of the script.
* **Follow-up 2**: How do you disable debugging? **Answer**: Add set +x.

### **20. How do you execute a Python script in Linux?**

**Answer**: Use python script.py or python3 script.py.

* **Follow-up 1**: How do you make a Python script executable? **Answer**: Add a shebang (#!/usr/bin/env python3) and make it executable with chmod +x.
* **Follow-up 2**: How do you run a script with arguments? **Answer**: Use python script.py arg1 arg2.

### **21. What is the difference between sort and uniq commands in Linux?**

**Answer**: sort arranges lines in a file in order, while uniq filters out adjacent duplicate lines.

* **Follow-up 1**: How do you remove duplicate lines from a file? **Answer**: Use sort filename | uniq.
* **Follow-up 2**: How do you count duplicate lines? **Answer**: Use uniq -c filename.

### **22. How do you find the size of a directory in Linux?**

**Answer**: Use the du command, e.g., du -sh /path/to/directory.

* **Follow-up 1**: How do you find the sizes of all subdirectories? **Answer**: Use du -h /path/to/directory.
* **Follow-up 2**: How do you exclude certain files while using du? **Answer**: Use du --exclude="\*.ext".

### **23. What is the difference between locate and find commands?**

**Answer**: locate searches an indexed database for files, while find searches the file system in real-time.

* **Follow-up 1**: How do you update the locate database? **Answer**: Use updatedb.
* **Follow-up 2**: How do you find files modified in the last 7 days? **Answer**: Use find /path -mtime -7.

### **24. What is the alias command in Linux?**

**Answer**: It creates shortcuts for commands.

* **Follow-up 1**: How do you create an alias for ls -la? **Answer**: Use alias ll='ls -la'.
* **Follow-up 2**: How do you make an alias permanent? **Answer**: Add it to ~/.bashrc.

### **25. What is the difference between export and set in shell scripting?**

**Answer**: export makes variables available to child processes, while set is used for shell options.

* **Follow-up 1**: How do you list all exported variables? **Answer**: Use export -p.
* **Follow-up 2**: How do you unset a variable? **Answer**: Use unset VAR\_NAME.

### **26. How do you append text to a file in Linux?**

**Answer**: Use the >> operator, e.g., echo "text" >> file.

* **Follow-up 1**: How do you overwrite a file instead of appending? **Answer**: Use the > operator.
* **Follow-up 2**: How do you append multiple lines to a file? **Answer**: Use a heredoc, e.g., cat <<EOF >> file.

### **27. What is the difference between nohup and & in Linux?**

**Answer**: nohup lets a process run after logout, while & runs it in the background.

* **Follow-up 1**: How do you run a process with both nohup and in the background? **Answer**: Use nohup command &.
* **Follow-up 2**: How do you view background processes? **Answer**: Use jobs.

### **28. How do you check network connectivity in Linux?**

**Answer**: Use the ping command.

* **Follow-up 1**: How do you limit the number of ping packets? **Answer**: Use ping -c 4 hostname.
* **Follow-up 2**: How do you trace the route to a host? **Answer**: Use traceroute hostname.

### **29. What is the cut command used for?**

**Answer**: It extracts specific fields or columns from text files.

* **Follow-up 1**: How do you extract the second column from a file? **Answer**: Use cut -d' ' -f2 filename.
* **Follow-up 2**: How do you extract characters 1-5 from each line? **Answer**: Use cut -c1-5 filename.

### **30. How do you check the memory usage in Linux?**

**Answer**: Use the free command.

* **Follow-up 1**: How do you display memory in human-readable format? **Answer**: Use free -h.
* **Follow-up 2**: How do you monitor memory usage in real-time? **Answer**: Use watch -n 1 free -h.

### **31. How do you display only specific columns from a text file?**

**Answer**: Use the awk or cut command.

* **Follow-up 1**: How do you display lines containing a specific string? **Answer**: Use grep "string" filename.
* **Follow-up 2**: How do you combine grep and cut to filter and display data? **Answer**: Use grep "string" filename | cut -d' ' -f2.

### **32. How do you write a simple shell script to print numbers 1-10?**

**Answer**:

bash

Copy code

for i in {1..10}

do

echo $i

done

* **Follow-up 1**: How do you add numbers 1-10 instead of printing them? **Answer**: Use a variable to store the sum and add inside the loop.
* **Follow-up 2**: How do you make the script executable? **Answer**: Use chmod +x script.sh.

### **33. What is the difference between sed and awk?**

**Answer**: sed is a stream editor for text substitution, while awk is a pattern scanning and processing tool.

* **Follow-up 1**: How do you replace "foo" with "bar" in a file? **Answer**: Use sed 's/foo/bar/g' filename.
* **Follow-up 2**: How do you print the second column of a file using awk? **Answer**: Use awk '{print $2}' filename.

### **34. How do you list all open ports in Linux?**

**Answer**: Use netstat -tuln or ss -tuln.

* **Follow-up 1**: How do you filter for a specific port, e.g., 80? **Answer**: Use netstat -tuln | grep :80.
* **Follow-up 2**: How do you see which process is using a specific port? **Answer**: Use lsof -i :port.

### **35. How do you use crontab to schedule a daily job?**

**Answer**: Add a line in crontab -e like 0 0 \* \* \* command.

* **Follow-up 1**: How do you check the syntax of an existing cron job? **Answer**: Use crontab -l.
* **Follow-up 2**: How do you specify a job to run every 5 minutes? **Answer**: Use \*/5 \* \* \* \* command.

### **36. What is the purpose of the wget command?**

**Answer**: wget downloads files from the web.

* **Follow-up 1**: How do you download a file and save it with a specific name? **Answer**: Use wget -O filename url.
* **Follow-up 2**: How do you resume a partially downloaded file? **Answer**: Use wget -c url.

### **37. How do you monitor system logs in Linux?**

**Answer**: Use tail -f /var/log/syslog or journalctl.

* **Follow-up 1**: How do you view logs for a specific service? **Answer**: Use journalctl -u service\_name.
* **Follow-up 2**: How do you filter logs by date? **Answer**: Use journalctl --since "YYYY-MM-DD".

### **38. How do you display the first 10 lines of a file?**

**Answer**: Use the head command.

* **Follow-up 1**: How do you display the first 20 lines? **Answer**: Use head -n 20 filename.
* **Follow-up 2**: How do you combine head and tail to extract lines 10-20? **Answer**: Use head -n 20 filename | tail -n 11.

### **39. What is the purpose of the mkfs command?**

**Answer**: It is used to create a file system on a partition.

* **Follow-up 1**: How do you format a partition as ext4? **Answer**: Use mkfs.ext4 /dev/sdX.
* **Follow-up 2**: How do you check the file system type of a partition? **Answer**: Use lsblk -f or blkid.

### **40. What is a symlink in Linux?**

**Answer**: A symlink is a shortcut to another file or directory.

* **Follow-up 1**: How do you create a symlink? **Answer**: Use ln -s target symlink.
* **Follow-up 2**: How do you remove a symlink? **Answer**: Use rm symlink.

### **41. What is the difference between df and du commands in Linux?**

**Answer**: df shows disk space usage by file systems, whereas du shows disk usage by files and directories.

* **Follow-up 1**: How do you display disk space usage in human-readable format with df? **Answer**: Use df -h.
* **Follow-up 2**: How do you display the total size of a directory using du? **Answer**: Use du -sh directory\_name.

### **42. How do you view currently mounted file systems?**

**Answer**: Use the mount or df command.

* **Follow-up 1**: How do you mount a new file system? **Answer**: Use mount /dev/sdX /mount/point.
* **Follow-up 2**: How do you unmount a file system? **Answer**: Use umount /mount/point.

### **43. How do you view the system uptime in Linux?**

**Answer**: Use the uptime command.

* **Follow-up 1**: How do you check uptime along with system load averages? **Answer**: Use uptime or w.
* **Follow-up 2**: How do you check uptime on a remote system? **Answer**: Use ssh user@remote uptime.

### **44. How do you check the kernel version in Linux?**

**Answer**: Use uname -r.

* **Follow-up 1**: How do you check the entire system information? **Answer**: Use uname -a.
* **Follow-up 2**: How do you find the kernel release date? **Answer**: Use cat /proc/version.

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

**Answer**: /dev/null discards all data written to it, while /dev/zero produces a stream of null characters.

* **Follow-up 1**: How do you discard command output? **Answer**: Redirect it to /dev/null, e.g., command > /dev/null.
* **Follow-up 2**: How do you create a file filled with zero bytes? **Answer**: Use dd if=/dev/zero of=file bs=1M count=10.

### **46. How do you monitor real-time network connections?**

**Answer**: Use the netstat or ss command.

* **Follow-up 1**: How do you monitor real-time connections on port 80? **Answer**: Use netstat -an | grep :80.
* **Follow-up 2**: How do you monitor real-time connections with tcpdump? **Answer**: Use tcpdump port 80.

### **47. How do you check available memory and swap usage?**

**Answer**: Use the free command.

* **Follow-up 1**: How do you display memory in a human-readable format? **Answer**: Use free -h.
* **Follow-up 2**: How do you monitor real-time memory usage? **Answer**: Use watch free -h.

### **48. What is the difference between >& and >> in shell scripting?**

**Answer**: >& redirects both stdout and stderr, while >> appends to a file.

* **Follow-up 1**: How do you redirect only stderr? **Answer**: Use 2>.
* **Follow-up 2**: How do you redirect stdout and stderr to the same file? **Answer**: Use command > file 2>&1.

### **49. How do you test network connectivity in Linux?**

**Answer**: Use the ping command.

* **Follow-up 1**: How do you limit the number of ping packets? **Answer**: Use ping -c 4 host.
* **Follow-up 2**: How do you test a specific port's connectivity? **Answer**: Use telnet host port or nc -zv host port.

### **50. How do you extract columns from a file using cut?**

**Answer**: Use cut -d' ' -fN, where -d specifies the delimiter and -f specifies the column number.

* **Follow-up 1**: How do you extract the first and third columns? **Answer**: Use cut -d' ' -f1,3.
* **Follow-up 2**: How do you specify a tab as a delimiter? **Answer**: Use cut -d$'\t'.

### **51. How do you schedule a job to run at a specific time with at?**

**Answer**: Use the at command, e.g., echo "command" | at 10:00.

* **Follow-up 1**: How do you list scheduled at jobs? **Answer**: Use atq.
* **Follow-up 2**: How do you remove a scheduled at job? **Answer**: Use atrm job\_id.

### **52. How do you install a package in Linux using yum?**

**Answer**: Use yum install package\_name.

* **Follow-up 1**: How do you remove a package using yum? **Answer**: Use yum remove package\_name.
* **Follow-up 2**: How do you update all packages with yum? **Answer**: Use yum update.

### **53. How do you compress files using gzip?**

**Answer**: Use gzip file.

* **Follow-up 1**: How do you decompress a .gz file? **Answer**: Use gunzip file.gz.
* **Follow-up 2**: How do you compress multiple files into one? **Answer**: Use tar -czf archive.tar.gz file1 file2.

### **54. How do you run a Python script in Linux?**

**Answer**: Use python script.py or python3 script.py.

* **Follow-up 1**: How do you pass arguments to a Python script? **Answer**: Use python script.py arg1 arg2.
* **Follow-up 2**: How do you check the Python version installed? **Answer**: Use python --version or python3 --version.

### **55. What does the chmod command do?**

**Answer**: It changes the permissions of a file or directory.

* **Follow-up 1**: How do you make a file executable? **Answer**: Use chmod +x file.
* **Follow-up 2**: How do you recursively change permissions? **Answer**: Use chmod -R mode directory.

### **56. How do you add a user in Linux?**

**Answer**: Use the useradd command.

* **Follow-up 1**: How do you set a password for a new user? **Answer**: Use passwd username.
* **Follow-up 2**: How do you delete a user? **Answer**: Use userdel username.

### **57. How do you check the size of a directory?**

**Answer**: Use du -sh directory.

* **Follow-up 1**: How do you include all subdirectories? **Answer**: Use du -h directory.
* **Follow-up 2**: How do you exclude specific files? **Answer**: Use du --exclude="pattern".

### **58. What is the purpose of ssh?**

**Answer**: ssh is used to securely connect to a remote machine.

* **Follow-up 1**: How do you copy files over ssh? **Answer**: Use scp.
* **Follow-up 2**: How do you create a persistent ssh session? **Answer**: Use tmux or screen before ssh.

### **59. How do you monitor disk I/O in Linux?**

**Answer**: Use the iostat or iotop command.

* **Follow-up 1**: How do you install iotop? **Answer**: Use yum install iotop or apt install iotop.
* **Follow-up 2**: How do you check I/O for a specific process? **Answer**: Use iotop -p PID.

### **60. How do you list active connections in Linux?**

**Answer**: Use the netstat -an or ss -an command.

* **Follow-up 1**: How do you filter for TCP connections? **Answer**: Use netstat -t.
* **Follow-up 2**: How do you list listening ports? **Answer**: Use netstat -l.

### **61. What is the difference between scp and rsync?**

**Answer**: scp is used for copying files securely between systems, while rsync is used for efficient synchronization and can skip files that are already up-to-date.

* **Follow-up 1**: How do you preserve file permissions when using rsync? **Answer**: Use the -a flag with rsync.
* **Follow-up 2**: How do you enable compression with rsync? **Answer**: Use the -z flag.

### **62. How do you display only running processes in Linux?**

**Answer**: Use the ps command with appropriate options, e.g., ps -e or top.

* **Follow-up 1**: How do you find a process by its name? **Answer**: Use ps aux | grep process\_name.
* **Follow-up 2**: How do you kill a process by its PID? **Answer**: Use kill -9 PID.

### **63. What does the umask command do?**

**Answer**: It sets default permissions for new files and directories.

* **Follow-up 1**: How do you view the current umask value? **Answer**: Use the umask command without arguments.
* **Follow-up 2**: How do you set the default permissions to rw-r--r-- for files? **Answer**: Set umask 022.

### **64. How do you find the IP address of your system?**

**Answer**: Use ip addr or ifconfig.

* **Follow-up 1**: How do you display only IPv4 addresses? **Answer**: Use ip -4 addr.
* **Follow-up 2**: How do you find the default gateway? **Answer**: Use ip route.

### **65. How do you schedule a task to run once at a later time?**

**Answer**: Use the at command, e.g., echo "command" | at now + 1 hour.

* **Follow-up 1**: How do you check the scheduled tasks? **Answer**: Use the atq command.
* **Follow-up 2**: How do you remove a scheduled task? **Answer**: Use atrm task\_id.

### **66. What is the tee command in Linux?**

**Answer**: It reads input and writes it to both a file and the terminal.

* **Follow-up 1**: How do you append output to a file using tee? **Answer**: Use command | tee -a file.
* **Follow-up 2**: How do you combine tee with sudo to write to a protected file? **Answer**: Use command | sudo tee file.

### **67. How do you identify which application is using a specific port?**

**Answer**: Use the lsof -i :port\_number command.

* **Follow-up 1**: How do you list all open network connections? **Answer**: Use netstat -an or ss -an.
* **Follow-up 2**: How do you check listening ports only? **Answer**: Use netstat -l or ss -l.

### **68. How do you find large files in Linux?**

**Answer**: Use find with the -size option, e.g., find / -size +1G.

* **Follow-up 1**: How do you sort the results by size? **Answer**: Pipe the output to du and sort, e.g., du -h | sort -rh.
* **Follow-up 2**: How do you exclude directories when finding files? **Answer**: Use find / -type f -size +1G.

### **69. What is the difference between df and lsblk?**

**Answer**: df shows disk space usage by file systems, while lsblk displays information about block devices.

* **Follow-up 1**: How do you display only mounted file systems with lsblk? **Answer**: Use lsblk -o NAME,MOUNTPOINT.
* **Follow-up 2**: How do you view detailed disk usage with df? **Answer**: Use df -h.

### **70. How do you monitor real-time system performance?**

**Answer**: Use the top or htop command.

* **Follow-up 1**: How do you sort processes by memory usage in top? **Answer**: Press Shift + M while in top.
* **Follow-up 2**: How do you quit htop? **Answer**: Press q.

### **71. How do you use sed to replace text in a file?**

**Answer**: Use sed 's/old/new/g' filename.

* **Follow-up 1**: How do you edit the file in place? **Answer**: Use sed -i 's/old/new/g' filename.
* **Follow-up 2**: How do you replace text only on specific lines? **Answer**: Use sed '2,4s/old/new/' filename.

### **72. How do you change the hostname of a Linux system?**

**Answer**: Use the hostnamectl set-hostname new\_hostname command.

* **Follow-up 1**: How do you verify the new hostname? **Answer**: Use the hostname or hostnamectl command.
* **Follow-up 2**: How do you temporarily change the hostname? **Answer**: Use hostname new\_hostname.

### **73. How do you list all users on a Linux system?**

**Answer**: View the /etc/passwd file or use cut -d: -f1 /etc/passwd.

* **Follow-up 1**: How do you check the details of a specific user? **Answer**: Use the id username command.
* **Follow-up 2**: How do you check a user’s login history? **Answer**: Use last username.

### **74. How do you create a directory in Linux?**

**Answer**: Use the mkdir directory\_name command.

* **Follow-up 1**: How do you create parent directories if they don’t exist? **Answer**: Use mkdir -p /parent/child.
* **Follow-up 2**: How do you change the ownership of a directory? **Answer**: Use chown user:group directory.

### **75. How do you manage background jobs in Linux?**

**Answer**: Use the jobs command to list them.

* **Follow-up 1**: How do you bring a job to the foreground? **Answer**: Use fg %job\_id.
* **Follow-up 2**: How do you terminate a background job? **Answer**: Use kill %job\_id.

### **76. How do you display disk partitions in Linux?**

**Answer**: Use the fdisk -l or lsblk command.

* **Follow-up 1**: How do you create a new partition? **Answer**: Use fdisk /dev/disk.
* **Follow-up 2**: How do you format a partition? **Answer**: Use mkfs.ext4 /dev/partition.

### **77. How do you display system hardware details?**

**Answer**: Use the lshw command.

* **Follow-up 1**: How do you display only CPU details? **Answer**: Use lscpu.
* **Follow-up 2**: How do you display memory details? **Answer**: Use free -h.

### **78. How do you execute a command on a remote server using SSH?**

**Answer**: Use ssh user@host 'command'.

* **Follow-up 1**: How do you copy a file to a remote server? **Answer**: Use scp file user@host:/path.
* **Follow-up 2**: How do you establish a persistent SSH connection? **Answer**: Use tmux or screen.

### **79. What is the difference between kill and killall?**

**Answer**: kill terminates a process by PID, while killall terminates processes by name.

* **Follow-up 1**: How do you send a SIGTERM signal? **Answer**: Use kill -15 PID.
* **Follow-up 2**: How do you terminate all processes with a specific name? **Answer**: Use killall process\_name.

### **80. How do you add a route in Linux?**

**Answer**: Use ip route add destination via gateway.

* **Follow-up 1**: How do you view the current routing table? **Answer**: Use ip route or route -n.
* **Follow-up 2**: How do you delete a route? **Answer**: Use ip route del destination.

### **81. How do you handle errors in a shell script?**

**Answer**: Use conditional statements like if or check the exit status with $?.

* **Follow-up 1**: How do you terminate a script on error? **Answer**: Use set -e at the start of the script.
* **Follow-up 2**: How do you display a custom error message on failure? **Answer**: Use echo "Error: message" && exit 1.

### **82. What is the purpose of the trap command in shell scripting?**

**Answer**: trap executes commands when a script receives a signal.

* **Follow-up 1**: How do you use trap to clean up temporary files? **Answer**: Use trap 'rm -f /tmp/tempfile' EXIT.
* **Follow-up 2**: How do you ignore a specific signal? **Answer**: Use trap '' SIGINT.

### **83. How do you extract a substring in shell scripting?**

**Answer**: Use parameter expansion, e.g., ${string:position:length}.

* **Follow-up 1**: How do you get the length of a string? **Answer**: Use ${#string}.
* **Follow-up 2**: How do you find the position of a substring? **Answer**: Use expr index "$string" substring.

### **84. How do you create an infinite loop in shell scripting?**

**Answer**: Use while true; do commands; done.

* **Follow-up 1**: How do you exit an infinite loop? **Answer**: Use the break command.
* **Follow-up 2**: How do you continue to the next iteration in a loop? **Answer**: Use the continue command.

### **85. How do you count the number of lines in a file?**

**Answer**: Use wc -l filename.

* **Follow-up 1**: How do you count the number of words in a file? **Answer**: Use wc -w filename.
* **Follow-up 2**: How do you count characters in a file? **Answer**: Use wc -c filename.

### **86. How do you list open files in Linux?**

**Answer**: Use the lsof command.

* **Follow-up 1**: How do you list open files for a specific user? **Answer**: Use lsof -u username.
* **Follow-up 2**: How do you list open files for a specific process? **Answer**: Use lsof -p PID.

### **87. How do you check for disk errors in Linux?**

**Answer**: Use the fsck command.

* **Follow-up 1**: How do you perform a dry-run with fsck? **Answer**: Use fsck -N.
* **Follow-up 2**: How do you specify a file system type for fsck? **Answer**: Use fsck -t filesystem.

### **88. How do you set up passwordless SSH?**

**Answer**: Use ssh-keygen to generate keys and copy the public key to the remote server using ssh-copy-id.

* **Follow-up 1**: How do you manually copy the public key? **Answer**: Append the key to ~/.ssh/authorized\_keys on the remote server.
* **Follow-up 2**: How do you test passwordless SSH? **Answer**: Use ssh user@host and check for no password prompt.

### **89. How do you search for text patterns in a file?**

**Answer**: Use the grep command.

* **Follow-up 1**: How do you perform a case-insensitive search? **Answer**: Use grep -i pattern filename.
* **Follow-up 2**: How do you search for patterns recursively in directories? **Answer**: Use grep -r pattern directory.

### **90. How do you compress multiple files into one archive?**

**Answer**: Use tar -czf archive.tar.gz file1 file2.

* **Follow-up 1**: How do you extract files from a .tar.gz archive? **Answer**: Use tar -xzf archive.tar.gz.
* **Follow-up 2**: How do you view the contents of an archive without extracting? **Answer**: Use tar -tf archive.tar.gz.

### **91. How do you split a large file into smaller files?**

**Answer**: Use the split command, e.g., split -b 100M largefile.

* **Follow-up 1**: How do you split a file by lines? **Answer**: Use split -l 1000 largefile.
* **Follow-up 2**: How do you combine the split files back into one? **Answer**: Use cat part\* > combinedfile.

### **92. How do you display all running services in Linux?**

**Answer**: Use systemctl list-units --type=service.

* **Follow-up 1**: How do you check the status of a specific service? **Answer**: Use systemctl status service\_name.
* **Follow-up 2**: How do you restart a service? **Answer**: Use systemctl restart service\_name.

### **93. How do you find and delete empty files in a directory?**

**Answer**: Use find /path -type f -empty -delete.

* **Follow-up 1**: How do you list empty files without deleting them? **Answer**: Use find /path -type f -empty.
* **Follow-up 2**: How do you find empty directories? **Answer**: Use find /path -type d -empty.

### **94. How do you view disk I/O usage in real-time?**

**Answer**: Use the iotop command.

* **Follow-up 1**: How do you display I/O usage for a specific process? **Answer**: Use iotop -p PID.
* **Follow-up 2**: How do you monitor I/O usage in batch mode? **Answer**: Use iotop -b.

### **95. How do you check the exit status of a command?**

**Answer**: Use $? immediately after running the command.

* **Follow-up 1**: What does an exit status of 0 mean? **Answer**: It indicates the command executed successfully.
* **Follow-up 2**: How do you ensure a script stops if a command fails? **Answer**: Use set -e.

### **96. How do you list all installed packages in Linux?**

**Answer**: Use dpkg -l for Debian-based systems or rpm -qa for Red Hat-based systems.

* **Follow-up 1**: How do you search for a specific package? **Answer**: Use dpkg -l | grep package\_name or rpm -qa | grep package\_name.
* **Follow-up 2**: How do you check the version of an installed package? **Answer**: Use dpkg -s package\_name or rpm -qi package\_name.

### **97. How do you install software from source in Linux?**

**Answer**: Download the source, extract it, and use ./configure, make, and make install.

* **Follow-up 1**: How do you specify an installation directory? **Answer**: Use ./configure --prefix=/path.
* **Follow-up 2**: How do you uninstall software installed from source? **Answer**: Use make uninstall.

### **98. How do you automate repetitive tasks in Linux?**

**Answer**: Use shell scripts or tools like cron and at.

* **Follow-up 1**: How do you schedule a job to run every hour with cron? **Answer**: Add 0 \* \* \* \* command to crontab -e.
* **Follow-up 2**: How do you log the output of a cron job? **Answer**: Redirect output, e.g., command >> logfile 2>&1.

### **99. How do you check which users are currently logged in?**

**Answer**: Use the who or w command.

* **Follow-up 1**: How do you log out a specific user? **Answer**: Use pkill -KILL -u username.
* **Follow-up 2**: How do you check the last login details for a user? **Answer**: Use last username.

### **100. How do you troubleshoot boot issues in Linux?**

**Answer**: Check boot logs using journalctl -b or dmesg.

* **Follow-up 1**: How do you enter recovery mode in Linux? **Answer**: Access it through the GRUB menu during boot.
* **Follow-up 2**: How do you rebuild the GRUB configuration? **Answer**: Use grub2-mkconfig -o /boot/grub2/grub.cfg.