Assignment-4

- Q: A system has a file /etc/passwd. How would you use grep + tee to extract usernames and save them to a file while also displaying them on screen?

A: Command: cut -d: -f1 /etc/passwd | tee usernames.txt. This extracts the first field (usernames) and saves it while displaying.

- Q: A binary isn't found in $PATH. How would you use commands (which, find, locate) to troubleshoot and fix the issue?

A: Use 'which binary' to check path. If not found, try 'find / -name binary 2>/dev/null' or 'locate binary'. After locating, add its directory to PATH by editing ~/.bashrc.

- Q: Write a command pipeline that finds all .log files modified in the last 24 hours in /var/log and saves results into log_report.txt.

A: Command: find /var/log -name "*.log" -mtime -1 | tee log_report.txt

- Q: What is the difference between shutdown -r now and reboot?

A: 'shutdown -r now' gracefully stops services and reboots immediately. 'reboot' restarts directly, sometimes faster but less graceful.

- Q: How can you use the tee command to debug a script that generates both standard output and error messages?

A: Run: ./script.sh 2>&1 | tee debug.log. This saves both standard output and errors into debug.log while showing them.

- Q: Explain any three real-world applications of Linux in industries.

A: 1) Web servers (Apache, Nginx). 2) Cybersecurity and penetration testing (Kali Linux). 3) Cloud and virtualization platforms (AWS, OpenStack).

- Q: Differentiate application, system and utility software in the context of Linux environment.

A: System software: kernel, OS services. Utility software: tools like grep, awk, ls. Application software: browsers, editors, databases.

- Q: What are the key differences between open-source and proprietary operating systems?

A: Open-source: Free, community-driven, customizable (Linux). Proprietary: Paid, closed source, vendor-controlled (Windows, macOS).

- Q: Write the command to display the system's kernel version.

A: Command: uname -r

- Q: What is the difference between head and tail commands in text processing?

A: 'head' shows the beginning lines of a file, 'tail' shows the last lines. Example: head -n 5 file.txt shows first 5 lines, tail -n 5 shows last 5.

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