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**SUBJECT: LINUX PROGRAMMING**

**TOPIC: ASSIGNMENT 4**

**Linux Programming: Assignment-4 Answers**

**1. 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?**

Command: greep '^[^:]+' /etc/passwd | cut -d: -f1 | tee usernames.txt

**2. A binary isn’t found in $PATH. How would you use commands (which, find, locate) to troubleshoot and fix the issue?**

Use 'which binary\_name' to check if it is in PATH Use 'find / -name binary\_name' to search in the system Use 'locate binary\_name' if locate is available Add the path to $PATH using export PATH=$PATH:/new/path

**3. 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.?**

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

**4. What is the difference between shutdown -r now and reboot?**

shutdown -r now: shuts down and restarts the system immediately. reboot: directly restarts the system

**5. How can you use the tee command to debug a script that generates both standard output and error messages?**

You can redirect the both outputs to tee Example: ./script.sh 2>&1 | tee debug.txt

**6. Explain any three real-world applications of Linux in industries?**

1. Linux is used in servers for hosting websites 2. Linux is used in networking and security 3. Linux is used in embedded systems like routers and hot devices

**7. Differentiate application, system and utility software in the context of Linux environment?**

Application software: Programs for users example: LibreOffice System software: Controls hardware and OS example:Linux kernel Utility software: Helps in maintenance example:backup tools

**8. What are the key differences between open-source and proprietary operating systems?**

Open-source: Free, source code is available, can be modified. Proprietary: Paid, source code not available, limited customization.

**9. Write the command to display the system’s kernel version?**

Command: uname -r

**10. What is the difference between head and tail commands in text processing?**

head: it shows the first lines of a file tail: it shows the last lines of a file