Linux Programming- Assignment 4



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**1. Extract usernames from /etc/passwd using grep + tee**

grep '^[^:]\*' /etc/passwd | cut -d: -f1 | tee users.txt

This prints usernames on screen and saves them in users.txt.

**2. Binary not found in $PATH – fix using which, find, locate**

* which cmd → checks if command is in $PATH.
* find / -name cmd → searches full system.
* locate cmd → faster search if mlocate is updated.  
   After finding, add path to $PATH by:

export PATH=$PATH:/path/to/bin

**3. Find .log files modified in last 24 hrs and save to file**

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

**4. Difference between shutdown -r now and reboot**

* shutdown -r now: Properly stops all services, then reboots.
* reboot: Directly restarts the system (faster but less safe).

**5. Use tee to debug a script**  
Example:

./myscript.sh 2>&1 | tee debug.txt

It captures both normal and error output to debug.txt and shows live.

**6. Three real-world Linux uses in industries**

1. Servers (web hosting, databases).
2. Embedded systems (IoT, routers, Android).
3. Cloud computing (AWS, Azure, GCP).

**7. Application vs System vs Utility software**

* **Application** → user programs (LibreOffice, Firefox).
* **System** → OS core (Linux kernel).
* **Utility** → helper tools (grep, tar, top).

**8. Open-source vs Proprietary OS**

* Open-source: Free, code visible, customizable (Linux).
* Proprietary: Paid, closed source, limited control (Windows, macOS).

**9. Show kernel version**

uname -r

**10. Difference between head and tail**

* head → shows first lines of a file.  
  Example: head -5 file.txt → first 5 lines.
* tail → shows last lines.

Example: tail -5 file.txt → last 5 lines.