1. How would you use grep and tee to extract usernames from “etcpasswd” and save them while also displaying them?
ans:If you want to quickly list all usernames from the “etcpasswd” file, you can use this command:

```
grep '^[^:]*' etcpasswd | cut -d':' -f1 | tee usernames.txt
```

This will pull just the usernames, show them immediately on your screen, and also save them in a file called usernames.txt. It’s a handy way to double-check you got everything right without running the command twice.

2. What can you do if a binary isn’t found in PATH? (using which, find, locate)
ans:If your terminal says a program (binary) is “not found,” don’t panic! Try these:

- which binaryname — tells you if and where it’s in your path.
- find / -name binaryname — searches everywhere if you think it’s on your system but not in your path.
- locate binaryname — searches even faster, as long as the system’s file database is up to date.This way, you’ll know where to look or if you need to install it.

3. How do you find all .log files changed in the last 24 hours in /var/log and save results to logreport.txt?
Here’s an easy way:
ans:find /var/log -type f -name "*.log" -mtime -1 | tee logreport.txt
This command finds new or recently changed log files and puts the result in logreport.txt, while also listing them out right as you run it. It saves time and keeps a record.

4. What’s the difference between shutdown -r now and reboot ?
ans:Both reboot your Linux machine, but there’s a small difference:

- shutdown -r now carefully shuts down all running programs before restarting, which is safer.
- reboot restarts right away and may skip some cleanup in certain cases. If you don’t want to risk losing any open work, use shutdown -r now . If you’re in a hurry on a test system, reboot works fine too.

5. How can tee help debug scripts that generate lots of output and errors?
ans:When running a script that sends messages to both the screen and error logs, try:

```
./script.sh 2>&1 | tee debug.log
```

This way, everything prints on your screen and also gets saved in “debug.log”, so you can review exactly what happened later without missing errors or important output.

6. Name three real-world uses of Linux in industry.
ans:Here are just a few examples:

- It’s the main OS for most web servers hosting your favorite websites.
- All the big cloud providers (Amazon, Google, Microsoft) rely on Linux to power their services.
- Tons of everyday gadgets—think routers, smart TVs, and automated devices—use Linux inside because it’s reliable and flexible.

7. What’s the difference between application, system, and utility software in Linux?
ans:•Applications are everyday programs like LibreOffice or browsers.

- System software is the “core” stuff that keeps your computer running—kernel, shells, file managers.
- Utilities are small but powerful tools, like grep or fdisk, for maintenance and troubleshooting. It’s about what you use vs. what makes it all work vs. what helps you manage or fix things.

8. Open-source vs. proprietary operating systems: How do they compare?

ans:Open-source systems like Linux let anyone see, edit, and share their code for free—perfect for learning or customizing. Proprietary OS (like Windows) is closed off, you pay for it, and only the company can change or fix it. Open-source = community; proprietary = company control.
9. What’s the Linux command to display the kernel version?
ans:The simplest way is:

```
uname -r
```

Just type this and you’ll see exactly which version of the Linux kernel your system is running.

10. What’s the difference between head and tail commands?

ans:Both commands help you peek into big files:

- head shows the first 10 lines by default.
- tail lets you see the last 10 lines. You can always add -n to customize how many lines you want to look at.