

Hello friends,


I hope you're all doing well.

The following exercises are not exam questions, but rather open-ended prompts whose answers can often be found online, through chatbots, or even in technical interviews. These are intended to encourage deeper exploration and self-directed learning based on your current knowledge.


We've selected these questions based on real-world experience and past exam patterns to help you better understand the types of concepts that appear in the LPIC exam. Many of the questions don't have a single correct answer — instead, they are designed to broaden your perspective and understanding.

Please be kind and patient with yourself as you write and research your responses.

Please complete the following exercises using the same format as the directory structure below. Combine your answers into a single PDF file named **answer.pdf** and submit a pull request.

 Reference format:

[https://github.com/devopsdoctors/Academy/tree/main/L1-JavanPahlevanan/Exercises/T\(x\)/name-family\(emailAddress\)/answer.pdf](https://github.com/devopsdoctors/Academy/tree/main/L1-JavanPahlevanan/Exercises/T(x)/name-family(emailAddress)/answer.pdf)

 Sample answer file:

[https://github.com/devopsdoctors/Academy/tree/main/L1-JavanPahlevanan/Exercises/T1/ali-farhadian\(alifrd49@gmail.com\)/answer.pdf](https://github.com/devopsdoctors/Academy/tree/main/L1-JavanPahlevanan/Exercises/T1/ali-farhadian(alifrd49@gmail.com)/answer.pdf)

1. Please explain the Linux boot process step by step, from powering on the machine until the kernel is running.
2. What is the difference between BIOS with MBR and UEFI with GPT in the boot process?
3. What is GRUB (or GRUB2), and what role does it play in loading the operating system?
4. How does the boot loader know where the kernel is located?
5. What is the purpose of the **initramfs/initrd** file in Linux booting?
6. How does UEFI handle boot entries differently compared to BIOS?
7. What are the limitations of MBR compared to GPT in terms of disk size and partitioning?
8. If a Linux system drops you into the GRUB rescue shell, how would you troubleshoot and boot the system manually?
9. Please explain the role of **/boot** and what critical files it contains.
10. What is **systemd** (or **init**), and at what stage in the boot process does it start?
11. How can you configure Linux to boot into a specific kernel version by default?
12. How can you reduce GRUB timeout or skip the boot menu to boot directly into the OS?
13. What are the risks and benefits of disabling secure boot on a UEFI system?
14. How would you recover a Linux machine that fails to boot because of a corrupted boot loader?
15. Please explain how chainloading works in GRUB when you want to boot another OS.
16. Please explain what **runlevels** were in traditional SysVinit and how they map to **systemd targets** in modern Linux systems.
17. What is the default target in systemd, and how can you check and change it?
18. Please compare **graphical.target** vs **multi-user.target** — what do they represent, and when would you use each?
19. How can you boot a Linux system temporarily into a different target (for example, rescue mode or emergency mode)?
20. Please explain what a **systemd unit** is. What are the main types of units (service, socket, device, mount, target, etc.)?
21. What is the difference between a **systemd service unit** and a **target unit**?
22. How can you enable a service to start automatically on boot using systemd?
23. Please explain how dependencies between units are defined. What is the difference between **Requires=**, **Wants=**, and **After=** in a systemd service file?
24. Where are systemd unit configuration files stored by default? How can you override a unit's default configuration without modifying the original file?

25. How would you troubleshoot a service that fails to start during boot? Which commands and logs would you use?
26. Please explain the difference between **rescue.target** and **emergency.target** in systemd.
27. How do you isolate a target so the system only runs that target and stops others?
28. What is the role of **default.target** symlink in systemd, and how does it replace the old **/etc/inittab** runlevel configuration?
- If you need to create a custom service (for example, start a script at boot), what is the structure of the **.service** file, and how would you configure it?