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 push request.

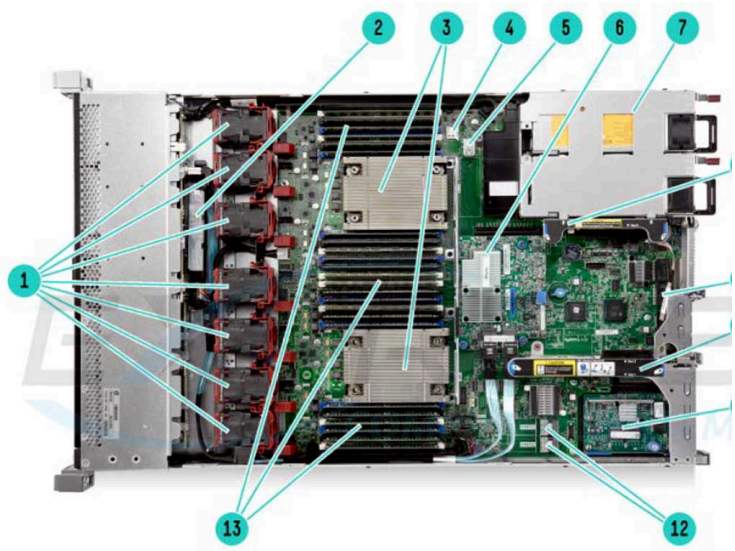
📁 Reference format:

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

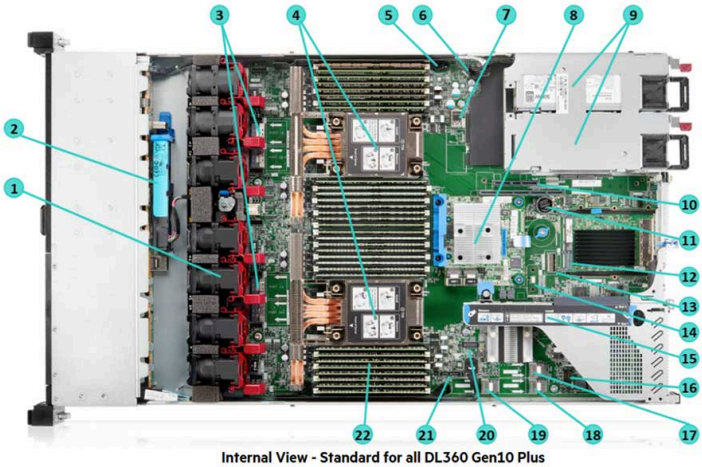
📄 Sample answer file:

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

Exsersices



1. 5 Standard Fans Ship for 1P and 7 Standard Fans Ship for 2P[3]
2. HPE Smart Storage Battery (Optional)
3. 2 Processors with HPE Smart Socket Guide
4. MicroSD card slot[4]
5. Dual Internal USB 3.0 connector
6. HPE Flexible Smart Array or Smart HBA (Optional)[5]
7. 2 HPE Flexible Slot Power supplies[7]
8. Secondary PCIe 3.0 riser for PCIe slot 3 (requires 2)
9. Embedded 4x1Gbe NIC
10. Primary PCIe 3.0 riser for PCIe slots 1 & 2
11. FlexibleLOM Bay (Optional)
12. Embedded SATA Controller ports
13. DDR4 DIMM slots. Shown fully populated in 24 slo per processor)



Internal View - Standard for all DL360 Gen10 Plus

1. Hot plug fans (single rotor standard)
   - 1 CPU – 5 fans
   - 2 CPUs – 7 fans
   Option: High Performance fans
2. Option: HPE Smart Hybrid Capacitor or HPE Smart Storage Battery
3. 4 x8 NVMe ports (1A – 2B)
4. Up to 2 processors
   (shown with high performance heat sinks)
5. Optional Chassis Intrusion Detection connector
6. Hard Drive backplane power connector
7. Dual internal USB 3.0 connector
8. Storage Controller (Type -a shown)
9. Up to 2 Power Supplies for redundant power
10. Secondary (CPU2) PCIe 4.0 riser
    - Option: Low Profile x16
    - Option: Full Height x16 (lose slot 2 on Primary riser)
11. System Battery
12. x16 OCP connector (supports various NICs up to 200GbE)
13. Vertical slimline SAS connector (AROC lane recovery)
14. TPM 2.0 (included on Pre-Configured Models)
15. Primary (CPU1) PCIe 4.0 riser
    - Standard: 2x 16 slots, AUX power block
    - Option: 1 x16 and 1 x8 slots + 2x PCIe M.2 connectors with HW RAID support
    - Option: (SFF only): 1 x16 and 1 x8 slots + 1 x8 NVMe connector
16. Optional front Display Port / USB 2.0 port connector
17. x4 SATA port 1
18. x4 SATA port 2
19. x4 SATA port 3
20. Front Power USB 3.0 connector
21. Optical/SATA port
22. DDR4 DIMM slots (Fully populated 32 DIMMs shown)

1. Please summarize the following server components:

   - Motherboard (System Board)
   - CPU (Central Processing Unit)
   - RAM (Memory)
   - Storage Drives (HDD/SSD/NVMe)
   - RAID Controller (Smart Array)
   - Power Supply Unit (PSU)
   - Network Interface Card (NIC)
   - Cooling System (Fans and Heat Sinks)
   - Expansion Slots (PCIe)
   - Chassis (Rack/Tower/Blade)
   - BIOS/UEFI Firmware
   - Backplane

2. What are IPMI and iLO, and what are their functions?
3. How do IPMI or iLO relate to the BIOS or UEFI firmware?
4. What are CPU sockets on a server, and what is their purpose?
5. Why was the pseudo file system introduced in Linux?
    - Hint: Consider the Linux design philosophy
6. What are the differences between a pseudo file system and a normal file system?
7. What kind of information is available in the `/sys/` directory?
   Example:

```
ls /sys/
block  bus  class  dev  devices  firmware  fs  hypervisor  kernel  module
power
```

8. What is DMA (Direct Memory Access), and what is its use case in Linux?
9. What does the `lsblk` command do internally when executed in Linux?
    - Do `lsusb`, `lspci`, and `lshw` function similarly?
10. How can we simulate a shutdown operation via the `/sys` file system?
11. What are the different types of kernels?
    - Monolithic vs. Microkernel vs. Hybrid
    - What are the advantages and disadvantages of each?
12. Why is the first sector of a disk used for the MBR?
13. If the MBR is located in the first 512 bytes, how does it know the location of GRUB or another bootloader to load the kernel?

14. What are `.efi` files, and what is their role in the boot process?
15. What is the ESP (EFI System Partition) in UEFI, and how is it used?
16. Please explain the following section from `/etc/grub/grub.conf`:

```
menuentry 'Ubuntu' --class ubuntu --class gnu-linux --class gnu --class os
$menuentry_id_option 'gnulinux-simple-3e3d2181-a1f5-4456-867c-a69f52c910e6'
{
      recordfail
      load_video
      gfxmode $linux_gfx_mode
      insmod gzio
      if [ x$grub_platform = xxen ]; then insmod xzio; insmod lzopio; fi
      insmod part_gpt
      insmod ext2
      set root='hd0,gpt2'
```

```
      if [ x$feature_platform_search_hint = xy ]; then
        search --no-floppy --fs-uuid --set=root --hint-bios=hd0,gpt2
--hint-efi=hd0,gpt2 --hint-baremetal=ahci0,gpt2
49ee8c4e-7d13-455b-b287-488a33286e30
      else
        search --no-floppy --fs-uuid --set=root
49ee8c4e-7d13-455b-b287-488a33286e30
      fi
      linux /vmlinuz-5.4.0-65-generic root=/dev/mapper/vg0-root ro
maybe-ubiquity
      initrd      /initrd.img-5.4.0-65-generic
}
```