Exercises Linux Boot Process Basics

1. Understanding the `/boot` Directory

1. List the files inside `/boot`. Identify files related to the kernel and initial RAM filesystem.

```
ls -lh /boot
```

Question: What are the typical filenames of the kernel image and initramfs?

2. Determine the running kernel version and verify if its image file exists under `/boot/`.

```
uname -r
```

Task: Locate the corresponding `vmlinuz-*` file in `/boot` that matches your kernel version.

2. Examining the GRUB Configuration

1. View the main GRUB configuration file:

```
cat /boot/grub2/grub.cfg  # On most systems
# or
cat /boot/grub/grub.cfg
```

Question: Find that holds the kernel options "`kernelopts`". What kernel parameters are passed?

3. Inspecting Kernel Messages with `dmesg`

1. Run the following command:

```
dmesg | less
```

Question: Find messages related to disk or filesystem initialization. Which lines mention `sda`, `nvme`, or `ext4`?

2. View only messages related to memory detection:

```
dmesg | grep -i memory
```

Task: How much total memory did the kernel detect?

4. Reading Kernel Boot Parameters from `/proc/cmdline`

1. Display the file:

```
cat /proc/cmdline
```

Question: Identify at least two kernel boot parameters and describe what each one controls (for example, `ro`, `quiet`, `root=`).

2. If possible, temporarily modify a kernel parameter at the GRUB prompt (without saving) and check whether the change appears in `/proc/cmdline` after boot.