Module 1: Critical Thinking

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CSC507-2: Foundations of Operating Systems

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January 19th, 2025

Critical Thinking 1

Week 1's critical thinking assignment was an introduction to the Linux operating system. We were tasked with installing Linux on our computers and used shell commands to determine the specifications of four main structural components of our computer. This consisted of the processor, main memory, I/O modules, and storage devices.

Processor

Figure 1 displays a screenshot of the shell command used to obtain the system's processor information. Here, the "lscpu" command (geeksforgeeks.org, December 8, 2023) was executed to gather details about the CPU configuration.

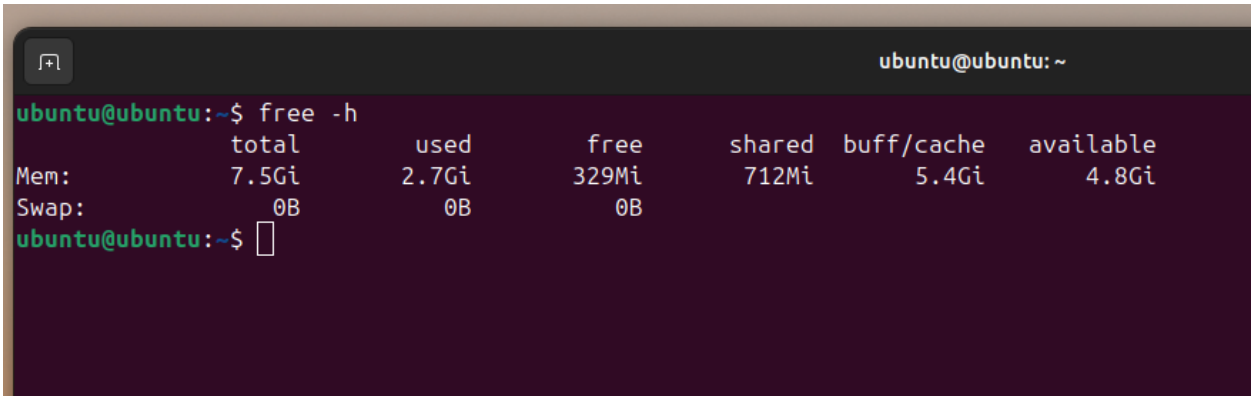
Figure 1: *Processor shell command (image also attached in submission)*

After executing this command, I was able to get an overview of my laptops configuration and capabilities, including how many cores, threads, and caches the processor has, as well as its clock speed and virtualization capabilities.

Main Memory

Figure 2 show the main memory after executing shell command “free -h” (InMotion Hosting Contributor, 2023, December 7). In this case, the “free” command shows the memory usage while the “-h” means that the output is human readable. This uses units like Gi or Mi instead of raw numbers. In the image you can see that the total memory on my CPU is 7.5 Gi and I have used 2.7 Gi.

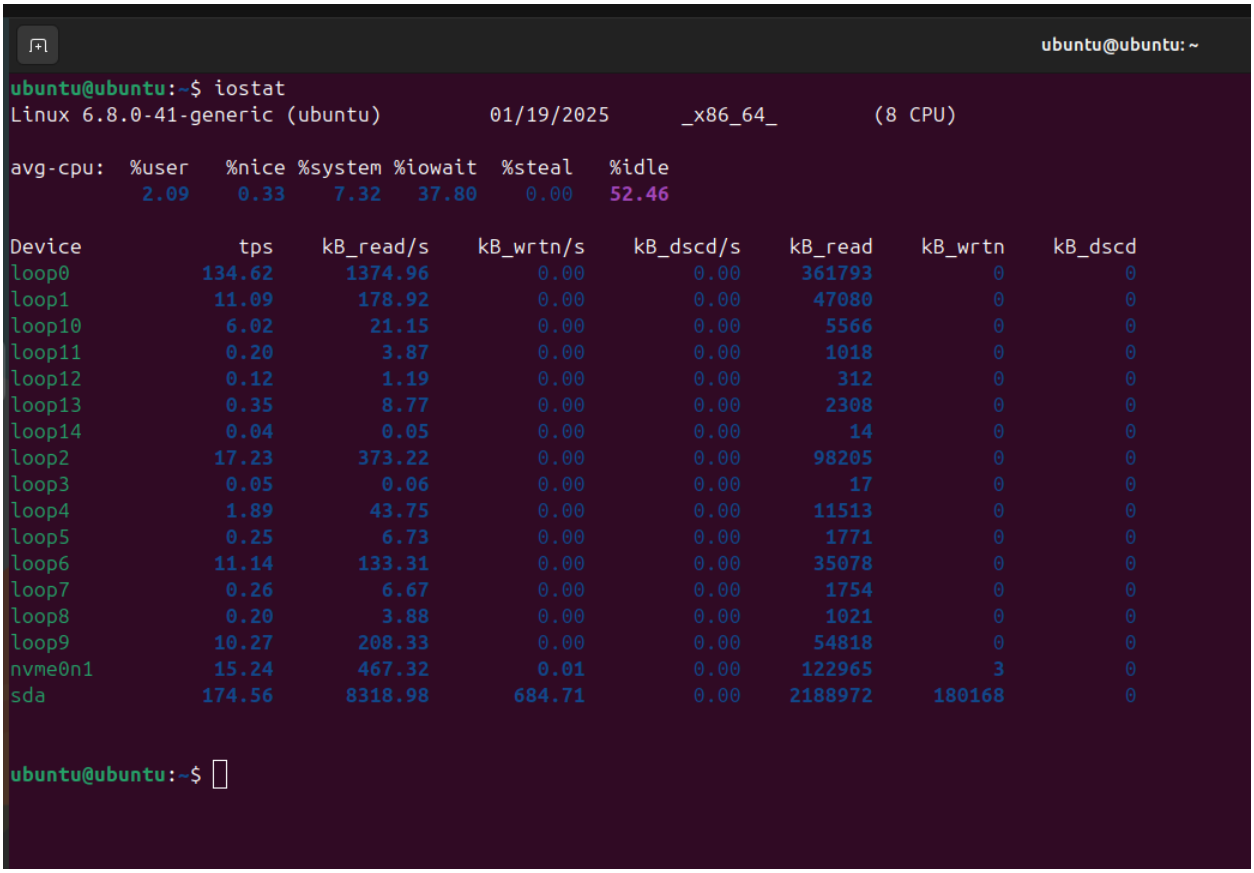
Figure 2: *Main Memory shell command.*



I/O Modules

Figure 3 shows the I/O stats for each partition in the system by executing the shell command “iostat” (Carrigan, T., 2020, July 9). This output includes speeds for both read and write operations as well as the total number of transfers per second. As Carrigan explains, this shell command is helpful because if you know what hardware is being used, you know what parameters you should be operating in.

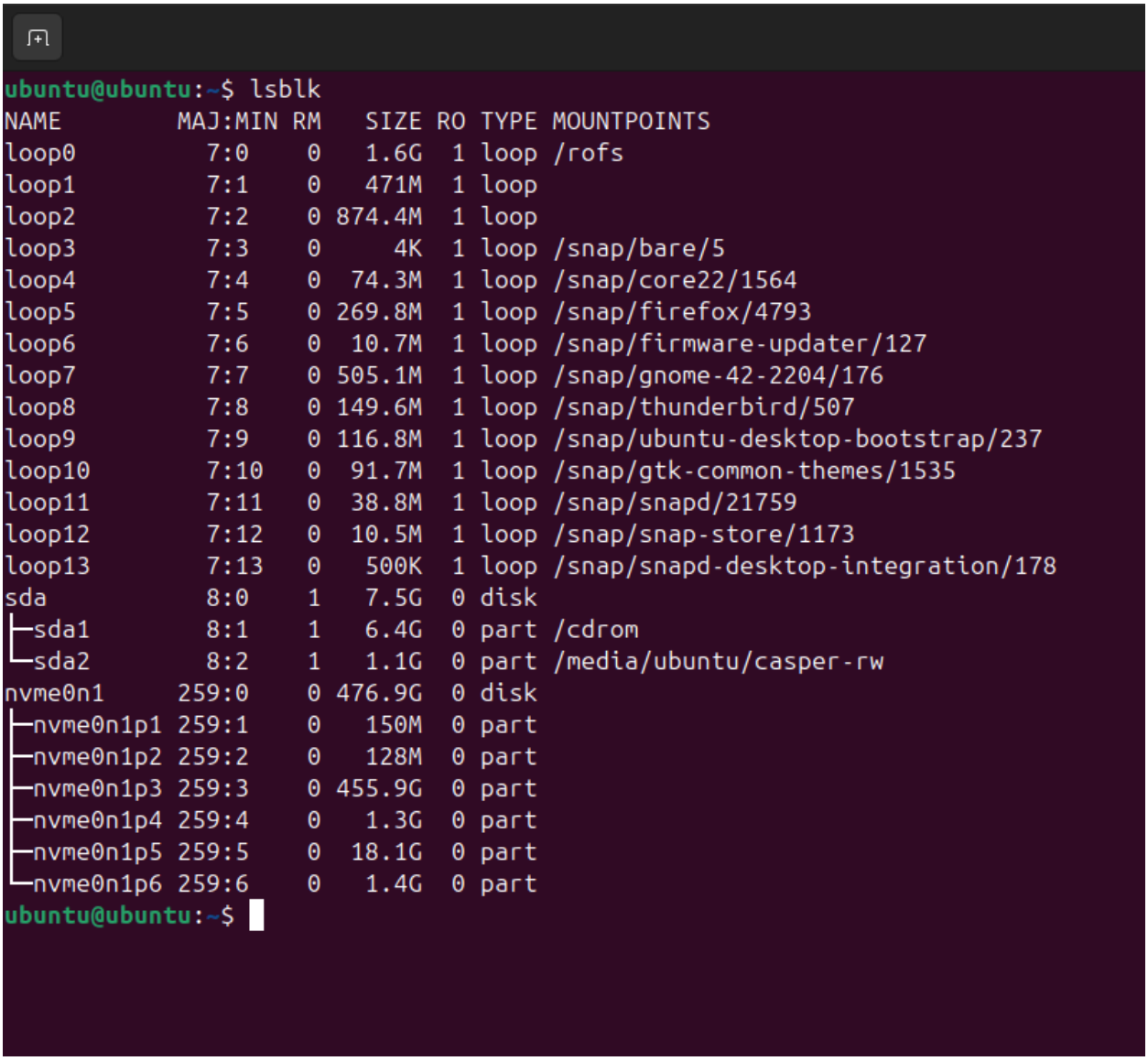
Figure 3: *I/O Module shell command.*



Storage Devices

Figure 4 shows information about the storage devices, or block devices. This was found by executing shell command “lsblk” (Iftikhar, H., 2024, September 4). This command give a table of all block devices and their partitions. Some of the key information here includes columns NAME (the name of device), RM, (removable or non-removable), and SIZE (size of the partition).

Figure 4: *Storage device shell command.*



Conclusion

For me, this assignment was an introduction to the linux operating system. It was helpful to execute some basic commands and understand the outputs. It was very interesting to have have my laptop running on a new operating system. I'm looking forward gaining more experience with it.

References

Carrigan, T., (2020, July 9) *I/O reporting from the Linux command line.* Red Hat. https://www.redhat.com/en/blog/io-reporting-linux

geeksforgeeks.org, (2023, December 8) *How to use the Linux lscpu Command.* https://www.geeksforgeeks.org/how-to-use-linux-lscpu-command/

Iftikhar, H., (2024, September 4) *Linux List Disk Made Easy: Essential Commands for Disk Management.* Cyperpanel. https://cyberpanel.net/blog/linux-list-disks

InMotion Hosting Contributor (2023, December 7) *How to Check the Memory Usage on Linux.* inmotion hosting. https://www.inmotionhosting.com/support/server/linux/check-memory-usage/