Template Week 5 – Operating Systems

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Assignment 5.1: Unix-like

a) Find out what the difference is between UNIX and Unix-like operating systems?
Unix -> is an original OS
Unix-like -> are OS based of Unix, following it's principles, but are not Unix directly.

b) Study the image above named UNIX timeline. Find out who Ken Thompson, Dennis Ritchie, Bill Joy, Richard Stallman, and Linus Torvalds are and what they have contributed to the development of UNIX or Unix-like systems and to IT in general. **TIP!** English-language sources often contain more detailed information about these individuals.
Ken Thompson -> Creator of Unix
Dennis Ritchie -> Greatly helped to create C language. Also worked with Ken Thompson.
Bill Joy -> Big figure of BSD Unix and co-founder of SUN BSD.
Richard Stallman -> Creator of GNU project.
Linus Torvalds -> Creator of Linux Kernel.

c) What is the philosophy of the GNU movement?
GNU philosophy movement is aimed on user freedom, software should be free to get and run, study, redistribute as well as modify.

d) Does Ubuntu as a Linux operating system conform to the philosophy of the GNU movement? Please explain your answer.
I would say yes, it follows GNU philosophy. Ubuntu is free to get and use, users are able to modify it however they would like to, and it is open source meaning who wants to study it is free to do so.

e) Find out what is the Windows Subsystem for Linux?
WSL is a feature, which allows to run linux environment including commands and appications directly on windows.

f) Find out, which operating system family belongs to Android, iOS and ChromeOS?
Android -> Unix-like
iOS -> Unix-like (from macOS)
ChromeOS -> Linux Kernel

Assignment 5.2: Supercomputers and gameconsoles

a) Research on this site what supercomputers are used for and write a short summary of it:
https://www.computerhistory.org/timeline/search/?q=Supercomputer

Supercomputers are extremely powerful computers built to solve very large and calculation-heavy problems that ordinary computers can't handle. They are used to decipher secret codes, predict weather, and solve complex scientific problems.

b) IBM is a company that has already built a number of supercomputers. One of them is IBM's Roadrunner. The CPU developed for this supercomputer was further developed at a later stage as the CPU for the PlayStation 3 console. Find out what a **PlayStation 3 cluster** is and what it was used for?

It was a supercomputer build from many PlayStation 3 consoles to process some heavy calculations, radar processing, scientific research and also for cryptography.

c) You can build a supercomputer by putting a few computers together in a cluster. Here's what Oracle did with a collection of Raspberry Pi's, for example:
https://blogs.oracle.com/developers/post/building-the-worlds-largest-raspberry-pi-cluster
What specific operating system is running on this cluster?

Oracle Linux for ARM

d) Does Oracle's Raspberry Pi supercomputer appear in the list of the 500 fastest supercomputers in the world? Make a logical decision for this, without going through the entire list.
https://www.top500.org/lists/top500/list/2023/06/

No Raspberry Pi supercomputer is not on the list, first I tried to search on website for the match, but it haven't found any match. If I had to guess why is that it would either be that Oracle's Raspverry Pi has low performance compared to the top500 lsited ones (it has only around 4200 cores) or they were experimenting / building it with intention to not be in the top.

e) What CPU architecture is used for the PlayStation 5 and Xbox Series X?
What operating systems run on these consoles?
What conclusion can you draw from the answer to the previous question?

CPU architecture: Both x86-64 AMD Ryzen
OS: PlayStation5 runs 'OrbisOS' and Xbox runs some windows based OS.
Conclusion: To me they seem built using PC components but software-wise is how they differ. If we don't take in mind what games they offer then they try to compete only in performance and UX.

Assignment 5.3: Working with Windows

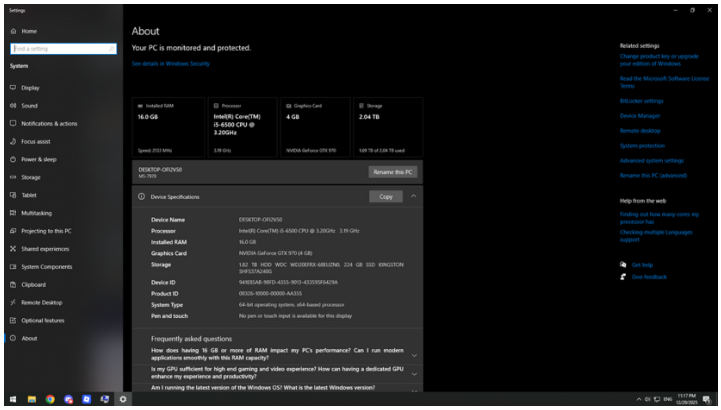
Take relevant screenshots of the assignments below

a) Practice for about 10 minutes with the ⊞ keyboard shortcuts combinations, skip the general shortcuts in this exercise. Take a look at which screens are opened.

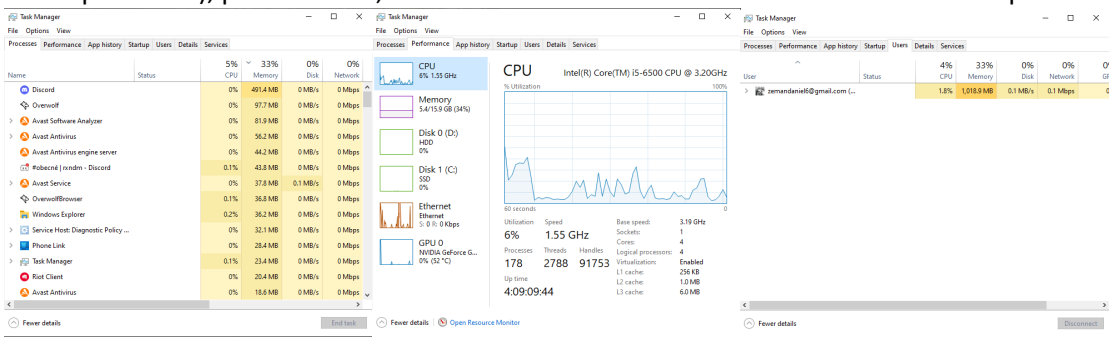
b) The file explorer can be opened with ⊞ + E, Which key combination could you also use?

⊞+X and then press E

c) Open the system properties with a ⊞ key combination, take a screenshot of the open screen. Paste this screenshot into this template.



d) Open task manager with a key combination. Take screenshots of the tabs: processes (shows active processes), performance, and users. Place these three screenshots in this template.



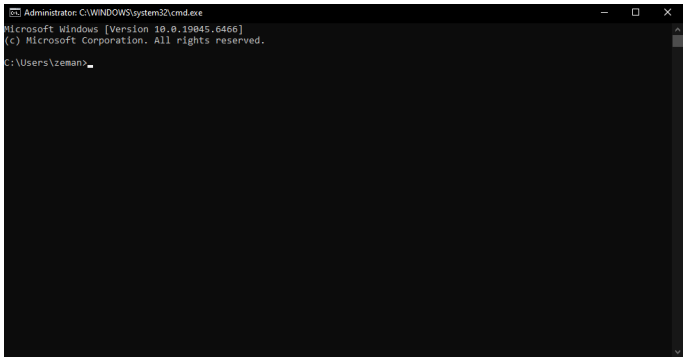
e) If you're giving a PowerPoint presentation and you connect your laptop to a projector, Windows can use the projector as a second screen. For example, you may have Outlook open on your first screen that you don't show over the projector, while the PowerPoint presentation is displayed on the projector, or the second screen. Which key combination should you use for this?

⊞ + P

f) If you leave the classroom for a while and you leave your laptop behind, it is wise to lock the screen. Your Apps will continue to run in the background. So, for example, if you're waiting for a download that takes a while, lock the screen and get a cup of coffee. Which key combination do you use for this?

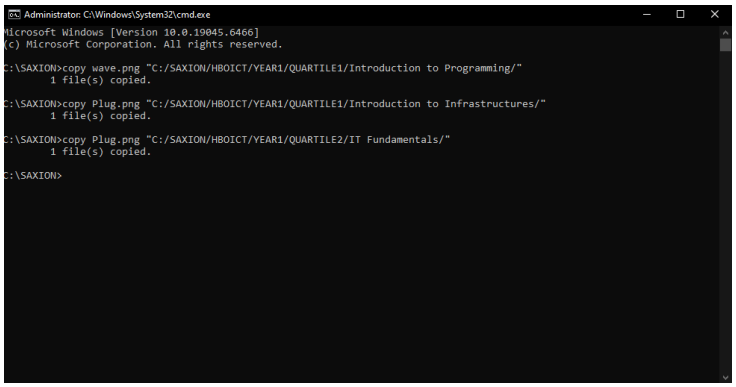
+ L

g) Open the Run screen with a key combination. On this screen, type CMD and press <enter>. Take a screenshot of this result and paste it into this template.

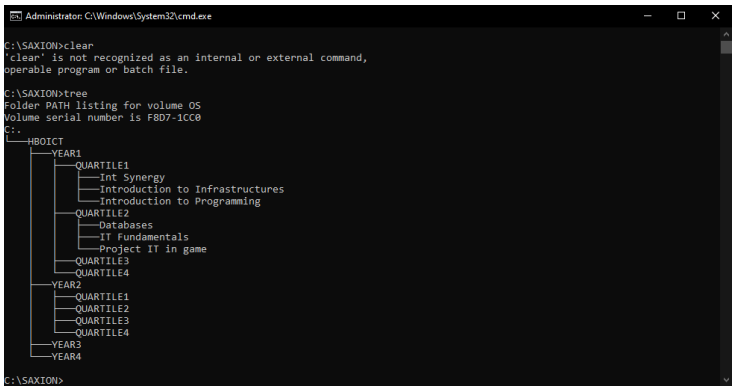


Working in the File Explorer

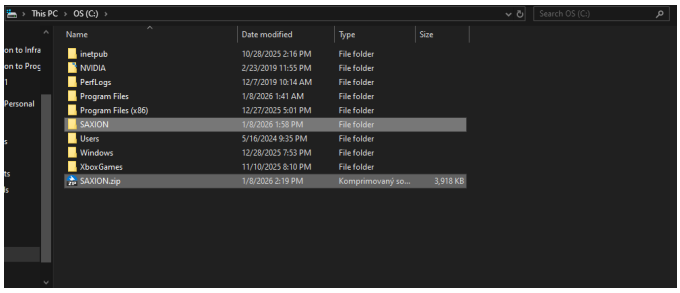
Relevant screenshots **copy** command:



Relevant screenshots **tree** command:

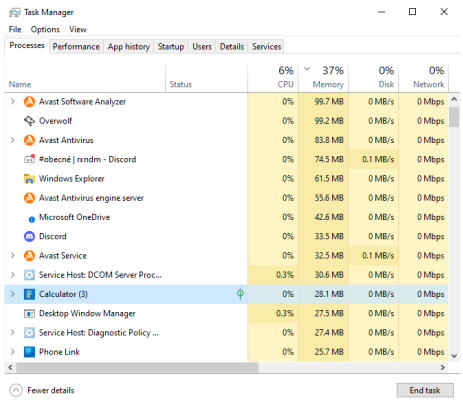


Relevant screenshots in the file explorer of the folder c:\Saxion + created zip file.



Terminating Processes

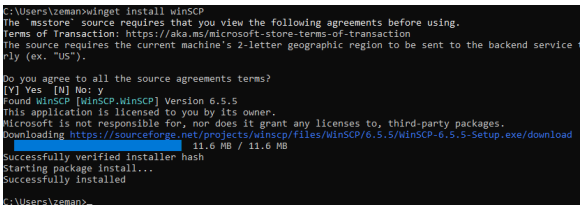
Relevant Screenshots Task Manager Window:



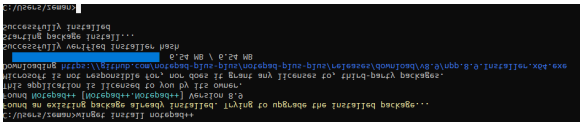
Install Software

Relevant screenshots that the following software is installed with winget:

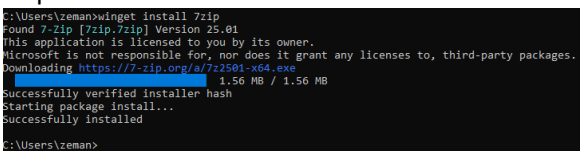
- WinSCP



- Notepad++

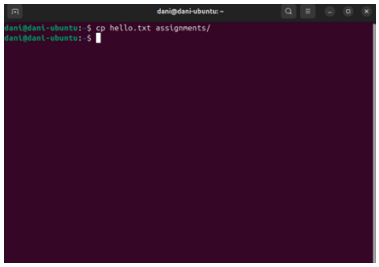


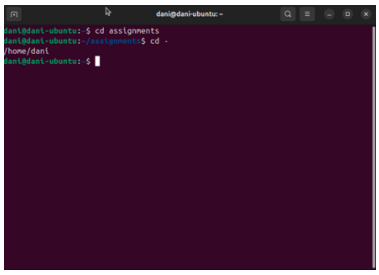
- 7zip



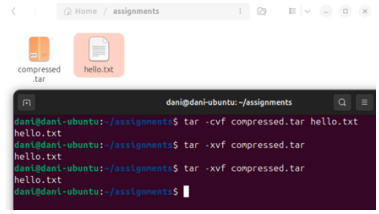
Assignment 5.4: Working with Linux

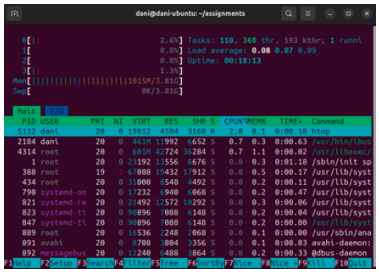
Relevant screenshots + motivation





Linux compared to Windows has one root directory, meanwhile windows is based on storage (C: D: …)



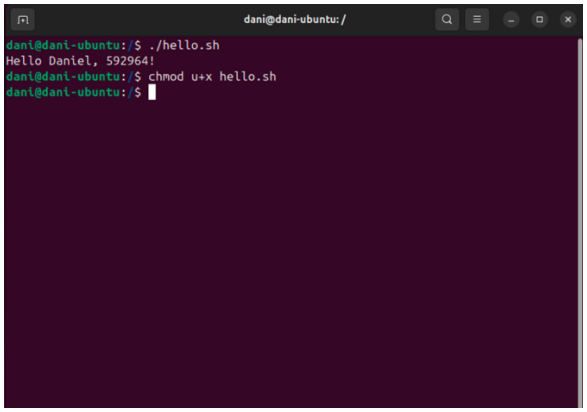


Htop is like a ubuntu version of Windows task manager but in terminal.

Neofetch is a tool that shows system informations.

Assignment 5.5: Users and permissions on Linux

Relevant screenshots + motivation



Assignment 5.6: View the contents of files

Relevant screenshots + motivation

Cat -> prints textfile

Wc -> counts lines words and or characters

Less -> scroll trough file

Head -> shows first lines of a file

Grep -> searches for text inside file and prints lines with match.

Assignment 5.7: Digital forensics

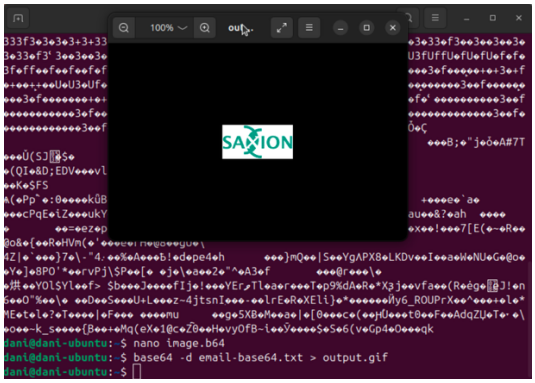
Relevant screenshots + motivation

Oldcar.jpg

Device model -> Motorola g6 play

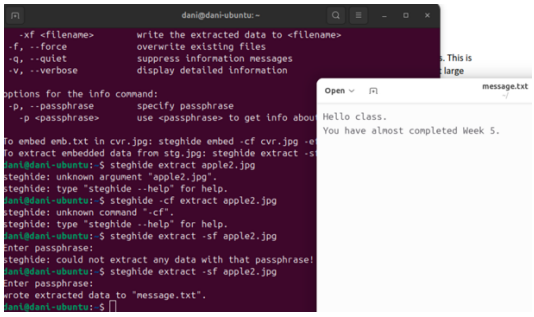
Location -> Picture was taking in Groningen

File type -> Yes, even after deleting extension its considered as JPEG



Assignment 5.8: Steganography

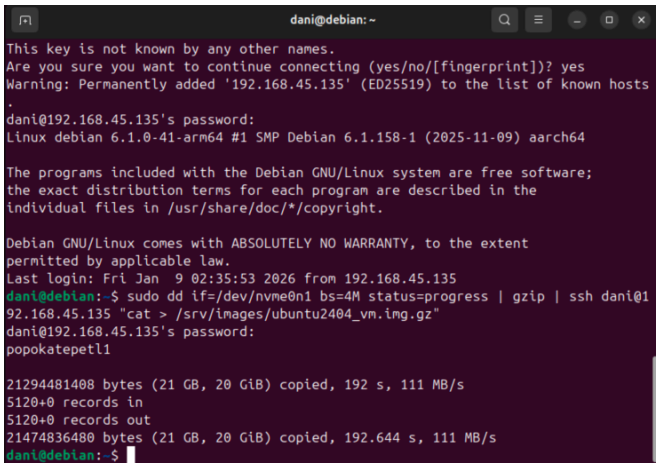
Relevant screenshots + motivation

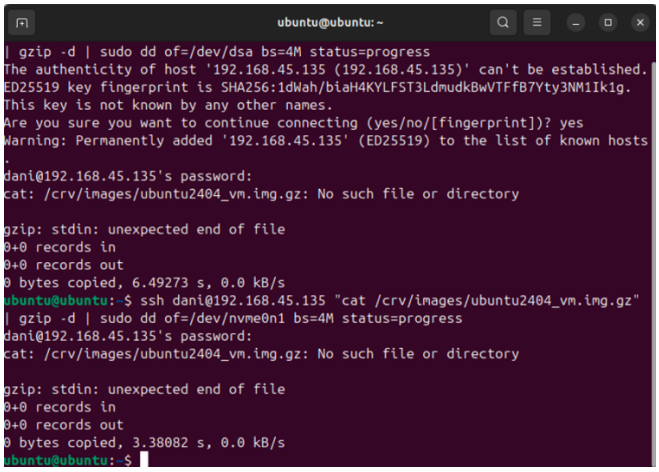


Assignment 5.9: Capture disk images

Make relevant screenshots + motivation:

- Proof that the Debian 13 server stored a back-up image of the Ubuntu 24.04 Desktop VM.
- Proof that you can restore the back-up image into an empty VM.





(it failed for some reason, I tried both sda and nvme0n1 just in case)

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