# Template Week 5 – Operating Systems

Student number: 590620

**Assignment 5.1: Unix-like**

a) Find out what the difference is between UNIX and unix-like operating systems?

UNIX is een officieel gecertificeerd besturingssysteem en unix-like systemen gedragen zich als UNIX maar zijn niet officieel gecertificeerd

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

- ontwikkelaar van UNIX
- maakte de basis voor moderne besturingssystemen

Dennis Ritchie

- ontwikkelaar van UNIX
- ontwikkelaar van de C-programmeertaal
- Maakte UNIX draagbaar naar verschillende hardware

Bill Joy

- Belangrijke ontwikkelaar van BSD UNIX
- Maker van tools zoals vi
- Mede oprichter van Sun Microsystems

Richard Stallman

- Oprichter van het GNU-project
- Pleitbezorger van vrije software
- Ontwikkelaar van de GPL-licentie

Linus Torvalds

- Ontwikkelaar van de Linux-kernel
- Linux vormt samen met GNU-tools een volledig OS
- Maker van Git

c) What is the philosophy of the GNU movement?

Dat software vrij moet zijn zodat gebruikers volledige controle hebben over wat ze gebruiken.

d) Does Ubuntu as a Linux operating system conform to the philosophy of the GNU movement? Please explain your answer.

Ubuntu volgt de filosofie niet volledig. Het is gebaseerd op Linux en gebruikt veel GNU-tools en open-source software, en is vrij beschikbaar. Toch bevat het soms gesloten software en drivers.

e) Find out what is the Windows Subsystem for Linux?
   Subsystem for Linux is een functie in Windows waarmee je Linux distros kunt draaien binnen Windows
f) Find out, which operating system family belongs to Android, iOS and ChromeOS?

Android: Linux (Unix-like)

iOS: UNIX (BSD)

ChromeOS: Linux (Unix-like)

**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 worden gebruikt voor complexe berekeningen die gewone computers niet aankunnen. Ze worden vooral gebruikt bij wetenschappelijk onderzoek, simuleren van natuurkundige processen, weer en klimaatvoorspellingen en ruimtevaartonderzoek

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?

Een PlayStation 3 cluster is een groep met PS3-consoles die aan elkaar gekoppeld zijn om samen te rekenen als een supercomputer. het werd gebruikt voor wetenschappelijk onderzoek, zoals natuurkundige simulaties medische berekeningen en militaire analyses

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?

d) Oracle Linux for ARM

e) 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/

Waarschijnlijk niet want een Raspberry Pi is zelf niet heel krachtig.

f) What CPU architecture is used for the PlayStation 5 and Xbox Series X?
Beide consoles gebruiken x86-64
What operating systems run on these consoles?
PlayStation 5 gebruikt Orbis OS (gebaseerd op FreeBSD/Unix)
Xbox Series X gebruikt  een Aangepaste Windows-kernel
What conclusion can you draw from the answer to the previous question?
wat ik zie is dat je met de dezelfde CPU architectuur andere Besturingssystemen kan gebruiken.

**Assignment 5.3: Working with Windows**

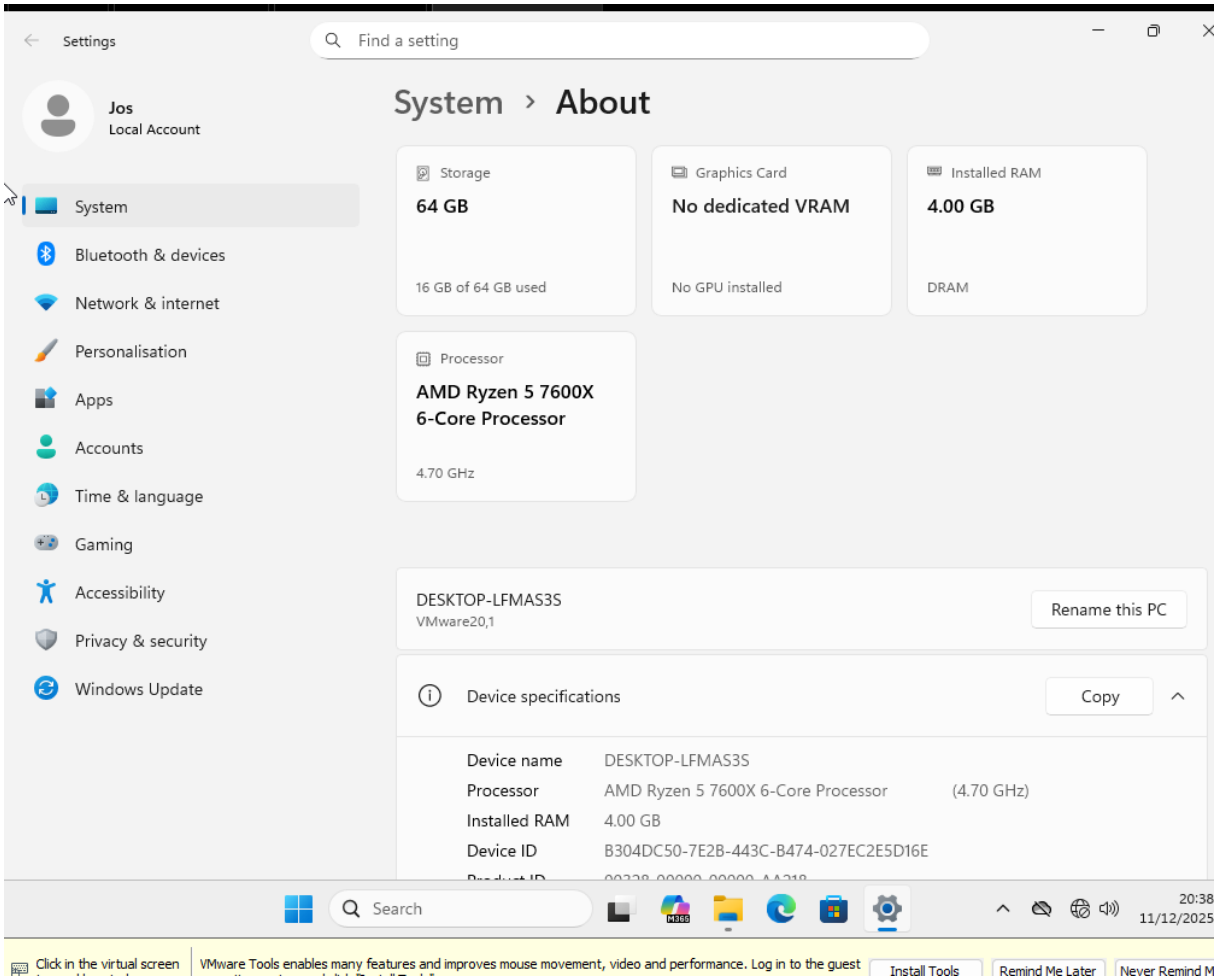
**Take relevant screenshots of the assignments below**

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.

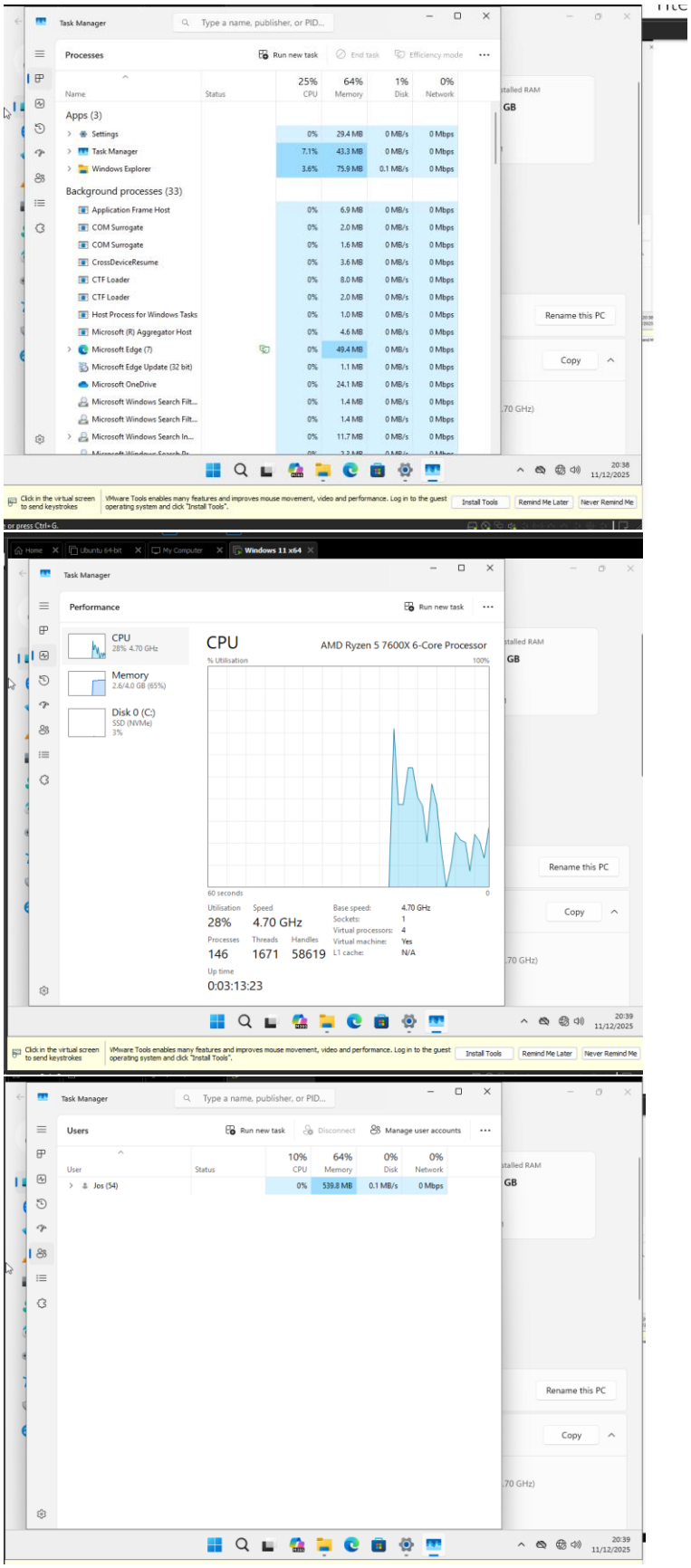
b) The file explorer can be opened with ⊞ + E, Which key combination could you also use?

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

I cant use the shortcut cuz of 75% keyboard




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.



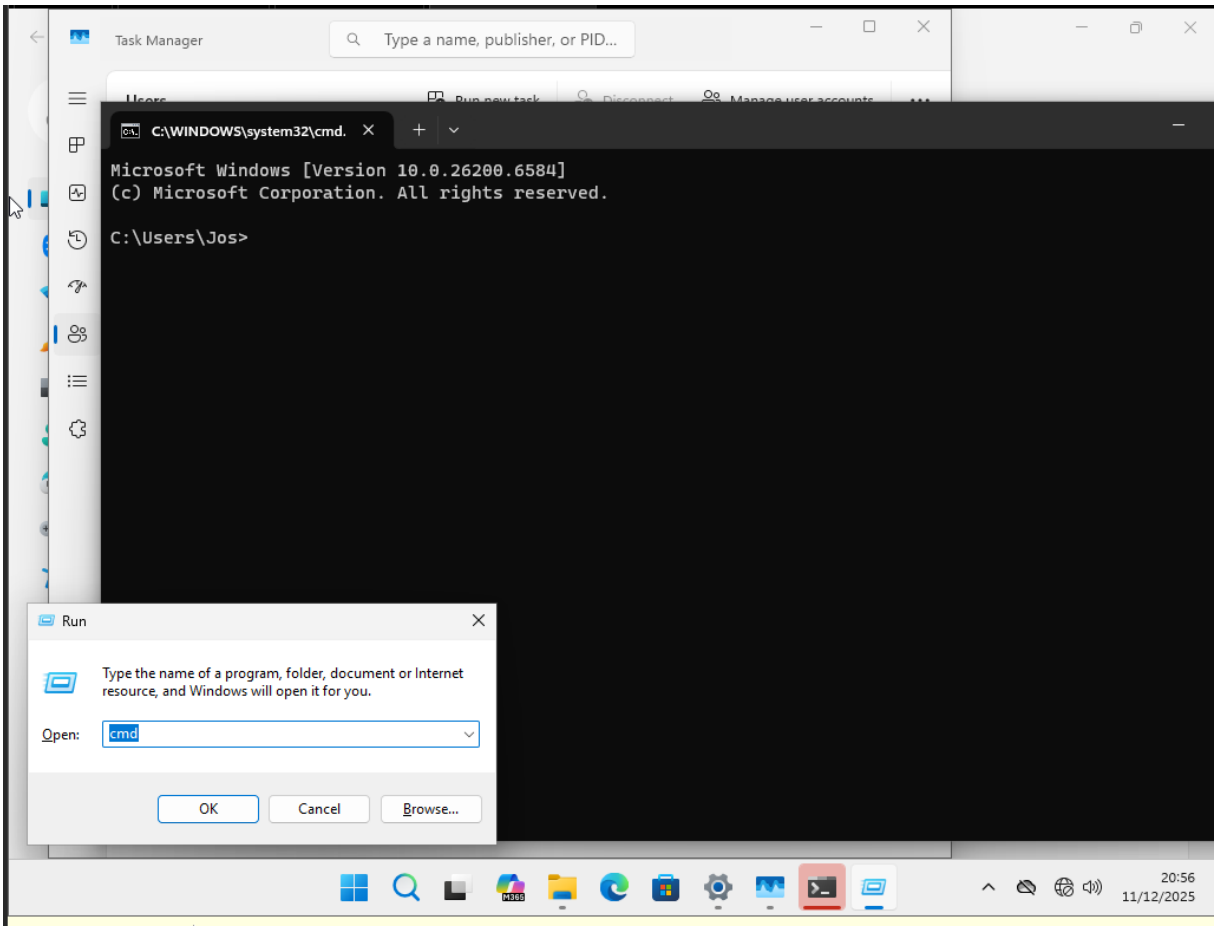

e) If you're giving a PowerPoint presentation and you connect your laptop to a projector, Windows can use the projector as a second screen. For example, you may have Outlook open on your first

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?

Je kan ⊞ + P om je scherm uit te bereiden naar 2 losse schermen dan kan je met ⊞ + pijltje rechts of ⊞ + pijltje links Outlook verlaatsen naar het 2de scherm

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**

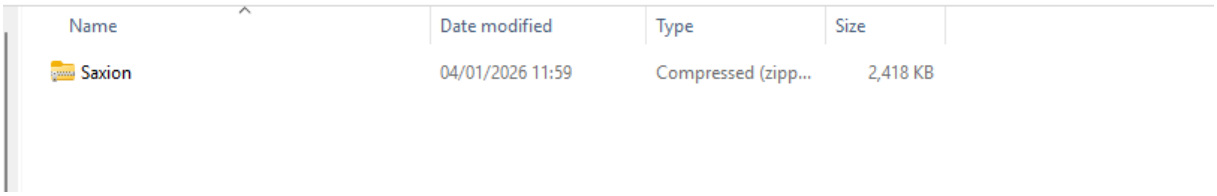
Relevant screenshots **copy** command:

```
C:\Saxion>copy Wave.png "C:\Saxion\HBOICT\YEAR1\QUARTILE 1\Intro Programmeren"
        1 file(s) copied.

C:\Saxion>copy Plug.png "C:\Saxion\HBOICT\YEAR1\QUARTILE 1\Infrastructuren"
        1 file(s) copied.

C:\Saxion>copy Tumble.png "C:\Saxion\HBOICT\YEAR1\QUARTILE 1\ORG & IT"
        1 file(s) copied.
```

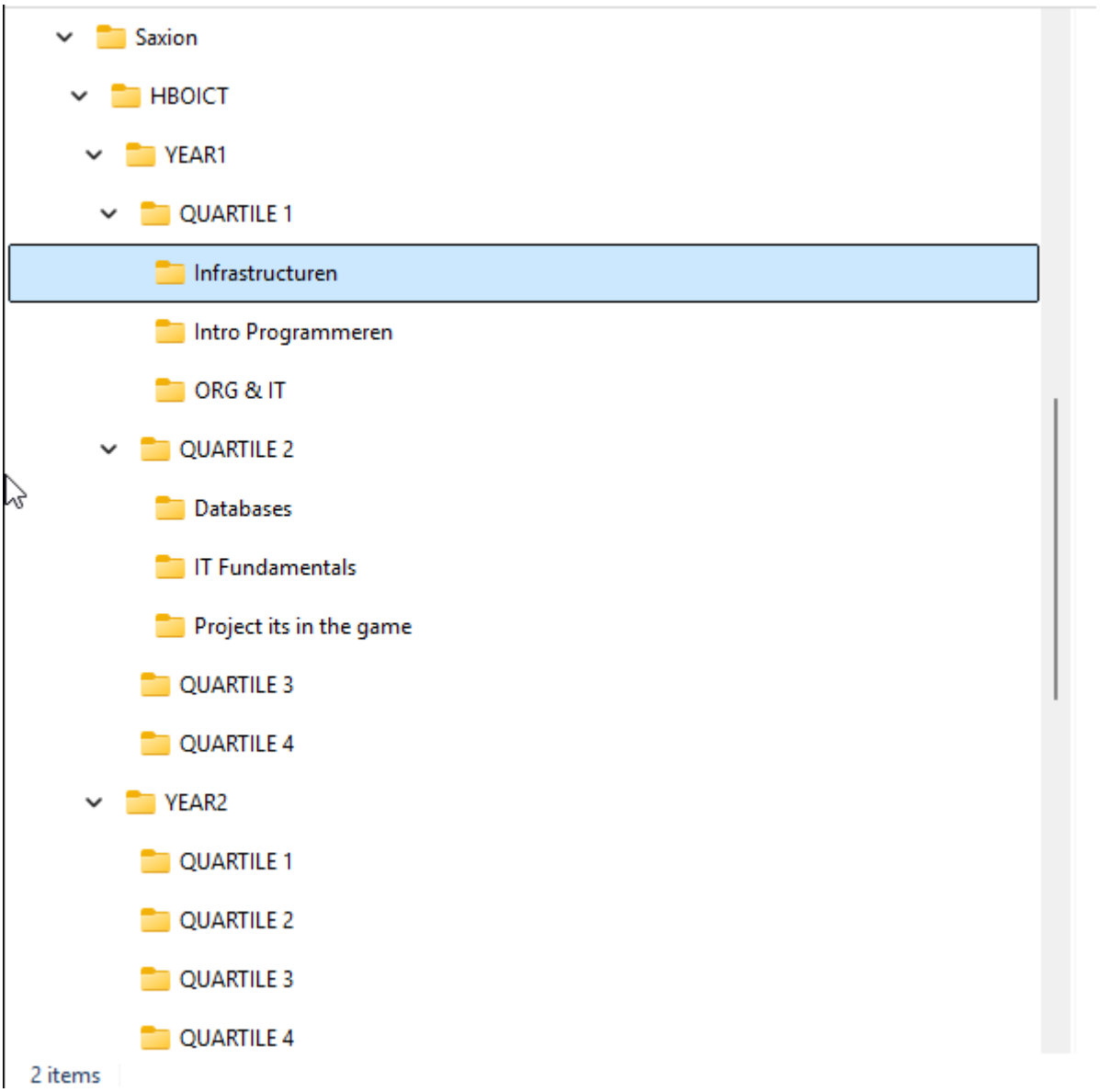
Relevant screenshots **tree** command:

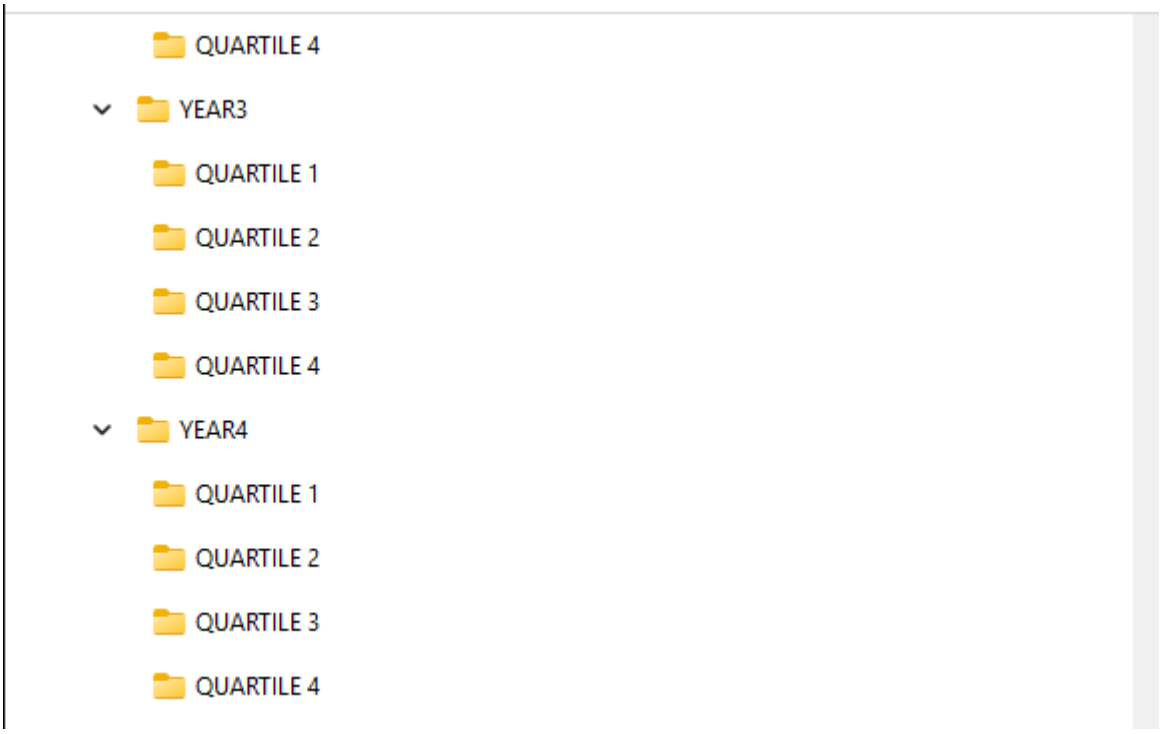
```
C:\Saxion>tree
Folder PATH listing
Volume serial number is 2E54-471F
C:.
└───HBOICT
    ├───YEAR1
    │   ├───QUARTILE 1
    │   │   ├───Infrastructuren
    │   │   ├───Intro Programmeren
    │   │   └───ORG & IT
    │   ├───QUARTILE 2
    │   │   ├───Databases
    │   │   ├───IT Fundamentals
    │   │   └───Project its in the game
    │   ├───QUARTILE 3
    │   └───QUARTILE 4
    ├───YEAR2
    │   ├───QUARTILE 1
    │   ├───QUARTILE 2
    │   ├───QUARTILE 3
    │   └───QUARTILE 4
    ├───YEAR3
    │   ├───QUARTILE 1
    │   ├───QUARTILE 2
    │   ├───QUARTILE 3
    │   └───QUARTILE 4
    └───YEAR4
        ├───QUARTILE 1
        ├───QUARTILE 2
        ├───QUARTILE 3
        └───QUARTILE 4

C:\Saxion>echo %username%
Jos
```

Relevant screenshots in the file explorer



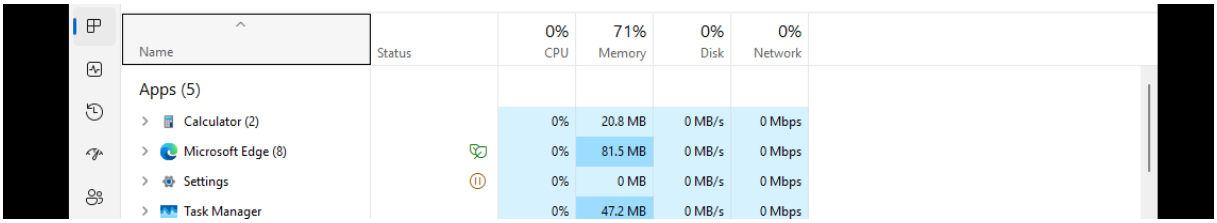

of the folder c:\Saxion + created zip file.


Saxion
HBOICT
YEAR1
QUARTILE 1
Infrastructuren
Intro Programmeren
ORG & IT
QUARTILE 2
Databases
IT Fundamentals
Project its in the game
QUARTILE 3
QUARTILE 4
YEAR2
QUARTILE 1
QUARTILE 2
QUARTILE 3
QUARTILE 4
2 items




**Terminating Processes**

Relevant Screenshots Task Manager Window:




**Install Software**

Relevant screenshots that the following software is installed with winget:

- WinSCP
- Notepad++
- 7zip

```
C:\Users\Jos>winget install -e --id Mozilla.Firefox
Found Mozilla Firefox (en-US) [Mozilla.Firefox] Version 146.0.1
This application is licensed to you by its owner.
Microsoft is not responsible for, nor does it grant any licenses to, third-party packages.
Downloading https://download-installer.cdn.mozilla.net/pub/firefox/releases/146.0.1/win64/en-US/Firefox%20Setup%20146.0.1.exe
  82.3 MB / 82.3 MB
Successfully verified installer hash
Starting package install...
Successfully installed

C:\Users\Jos>
```

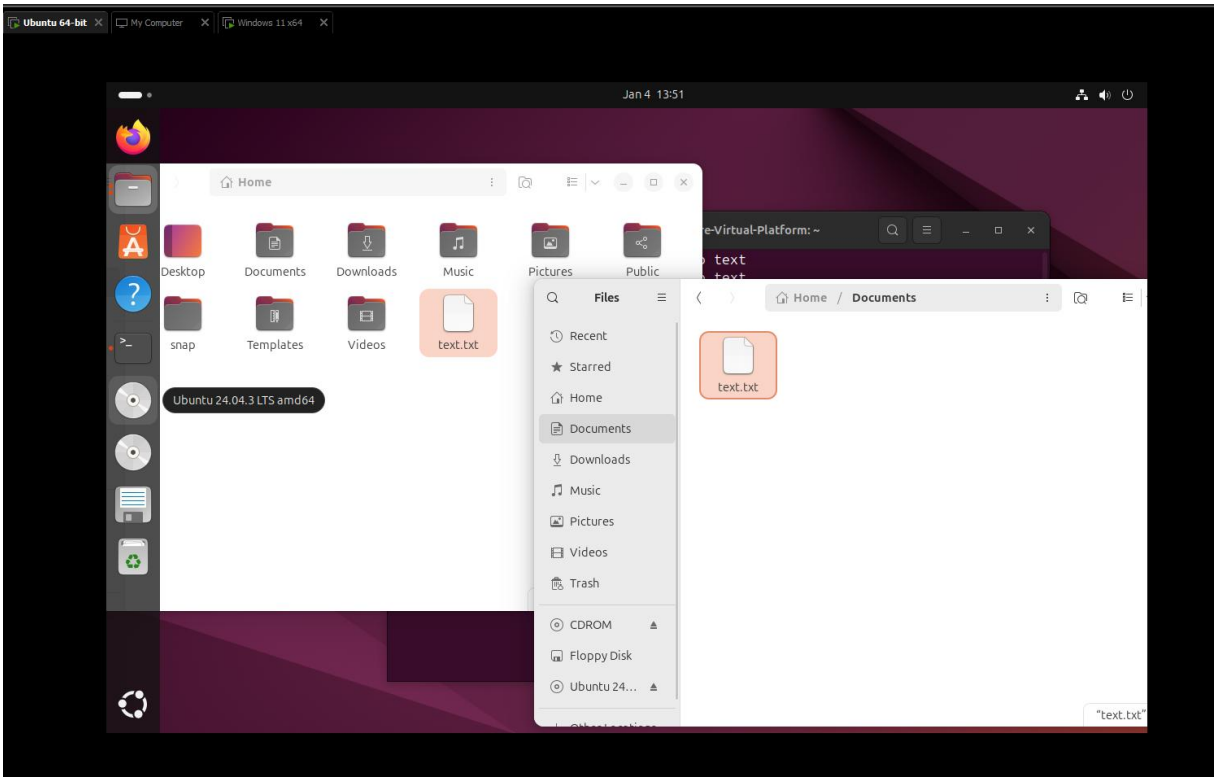
--id zegt welke package hij moet gebruiken met behulp van een id

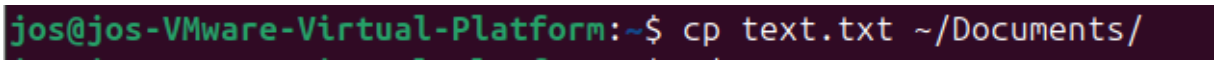
-e zorgt ervoor dat de query precies overeen moet komen

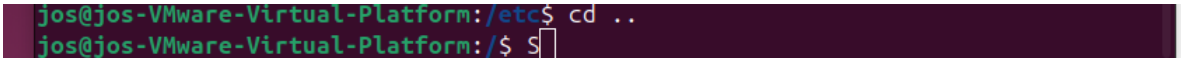
```
C:\Users\Jos>winget install -e --id 7zip.7zip
Found 7-Zip [7zip.7zip] Version 25.01
This application is licensed to you by its owner.
Microsoft is not responsible for, nor does it grant any licenses to, third-party packages.
Downloading https://7-zip.org/a/7z2501-x64.exe
  1.56 MB / 1.56 MB
Successfully verified installer hash
Starting package install...
The installer will request to run as administrator. Expect a prompt.
Successfully installed

C:\Users\Jos>winget install -e --id Notepad++.Notepad++
Found Notepad++ [Notepad++.Notepad++] Version 8.9
This application is licensed to you by its owner.
Microsoft is not responsible for, nor does it grant any licenses to, third-party packages.
Downloading https://github.com/notepad-plus-plus/notepad-plus-plus/releases/download/v8.9/npp.8.9.Installer.x64.exe
  6.54 MB / 6.54 MB
Successfully verified installer hash
Starting package install...
The installer will request to run as administrator. Expect a prompt.
Successfully installed

C:\Users\Jos>winget install -e --id WinSCP.WinSCP
Found WinSCP [WinSCP.WinSCP] Version 6.5.5
This application is licensed to you by its owner.
Microsoft is not responsible for, nor does it grant any licenses to, third-party packages.
Downloading https://sourceforge.net/projects/winscp/files/WinSCP/6.5.5/WinSCP-6.5.5-Setup.exe/download
  11.6 MB / 11.6 MB
Successfully verified installer hash
Starting package install...
The installer will request to run as administrator. Expect a prompt.
Successfully installed
```

**Assignment 5.4: Working with Linux**

Relevant screenshots + motivation



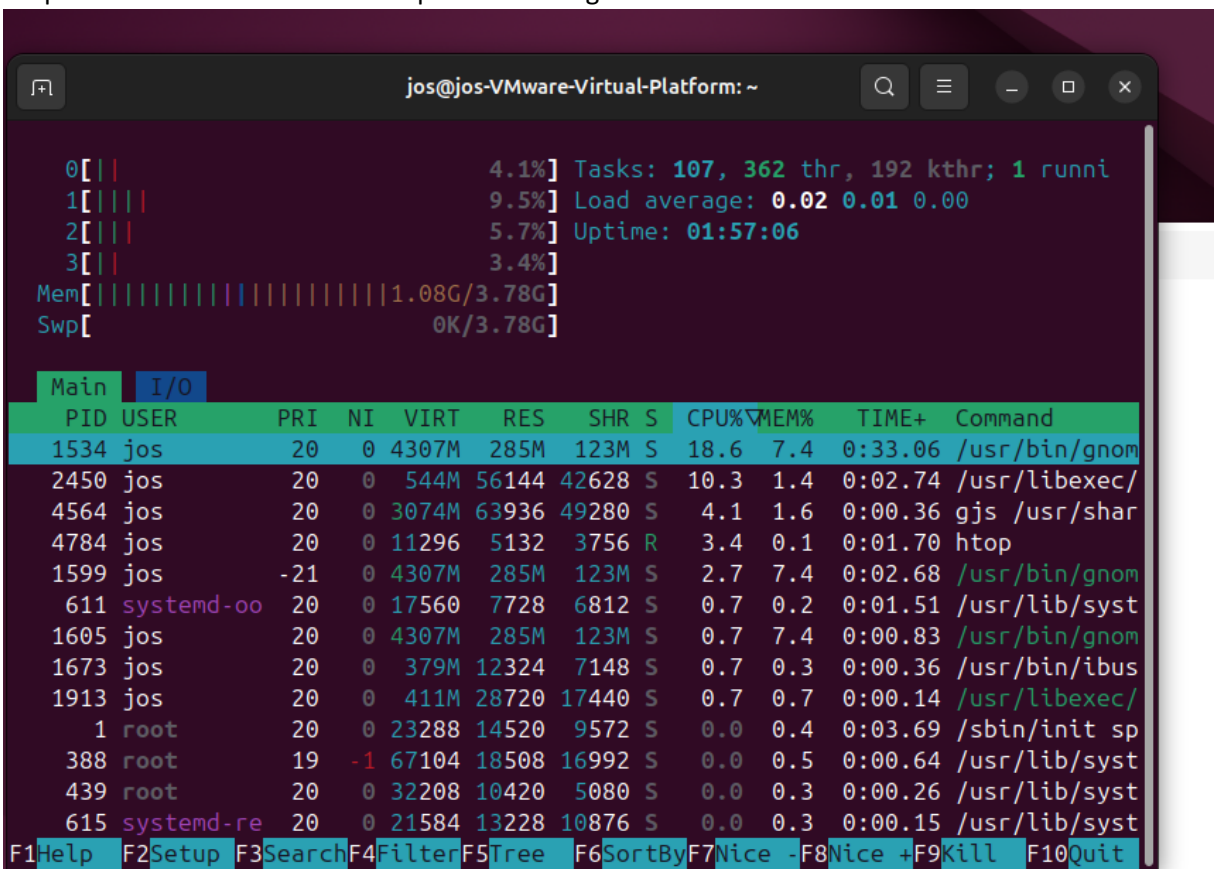

Linux heft een single root directory en windows heeft drive letters

/etc is voor system config files

tar -czf text.tar.gz text.txt

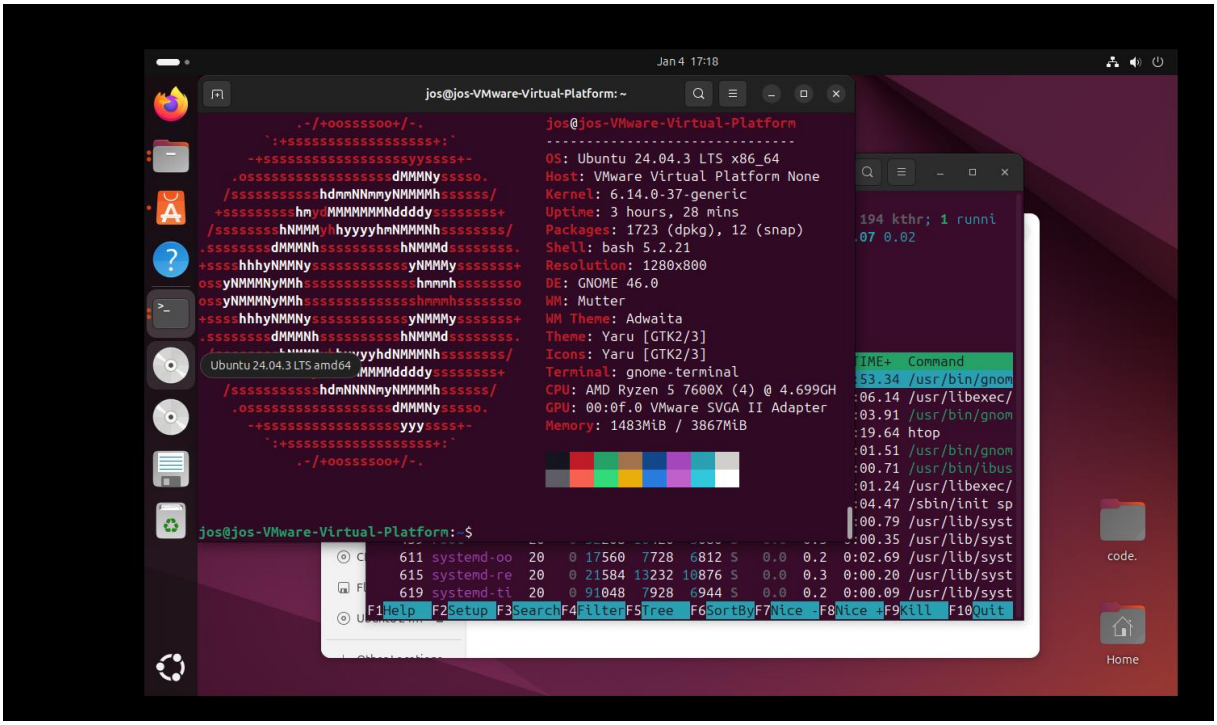
tar -xzf text.tar.gz

htop laat de runnende taken zien cpu en ram usage.




Systeeminformatie in een overzichtelijk, vaak kleurrijk formaat

OS, kernelversie, uptime, CPU, GPU, geheugen Shell, desktopomgeving en andere hardware/software info



```
jos@jos-VMware-Virtual-Platform:~/hello$ sudo ./hello.sh
Hello Jos, 590620!
jos@jos-VMware-Virtual-Platform:~/hello$ chmod 544 hello.sh
jos@jos-VMware-Virtual-Platform:~/hello$
```

**Assignment 5.5: Users and permissions on Linux**

Relevant screenshots + motivation

Cat laat heel de tekst ien van het bestand

Wc telt de lijnen woorden characters

Less laat  de tekst zien maar je kan scrollen en zoeken

Head laat de eerste 10 lines zien van het bestand

Head laat de laatste 10 lines zien van het bestand

Grep laat alle regels zien met een specifiek woord

```
jos@jos-VMware-Virtual-Platform:~/Desktop$ wc SherlockHolmes.txt
 12306 107562 607504 SherlockHolmes.txt
```

12306 lines 108562 woorden 607504 characters

Kingdom staat op de regels 490 en 1124

```
jos@jos-VMware-Virtual-Platform:~/Desktop$ grep -n kingdom SherlockHolmes.txt
490:“I tell you that I would give one of the provinces of my kingdom to
1124:And that was how a great scandal threatened to affect the kingdom of
jos@jos-VMware-Virtual-Platform:~/Desktop$ tail SherlockHolmes.txt

Most people start at our website which has the main PG search
facility: www.gutenberg.org.

This website includes information about Project Gutenberg™,
including how to make donations to the Project Gutenberg Literary
Archive Foundation, how to help produce our new eBooks, and how to
subscribe to our email newsletter to hear about new eBooks.


jos@jos-VMware-Virtual-Platform:~/Desktop$ head SherlockHolmes.txt
The Project Gutenberg eBook of The Adventures of Sherlock Holmes,
by Arthur Conan Doyle

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of the Project Gutenberg License included with this eBook or online at
www.gutenberg.org. If you are not located in the United States, you
will have to check the laws of the country where you are located before
using this eBook.
jos@jos-VMware-Virtual-Platform:~/Desktop$
```

**Assignment 5.6: View the contents of files**

Relevant screenshots + motivation

Motorola moto g(6) play

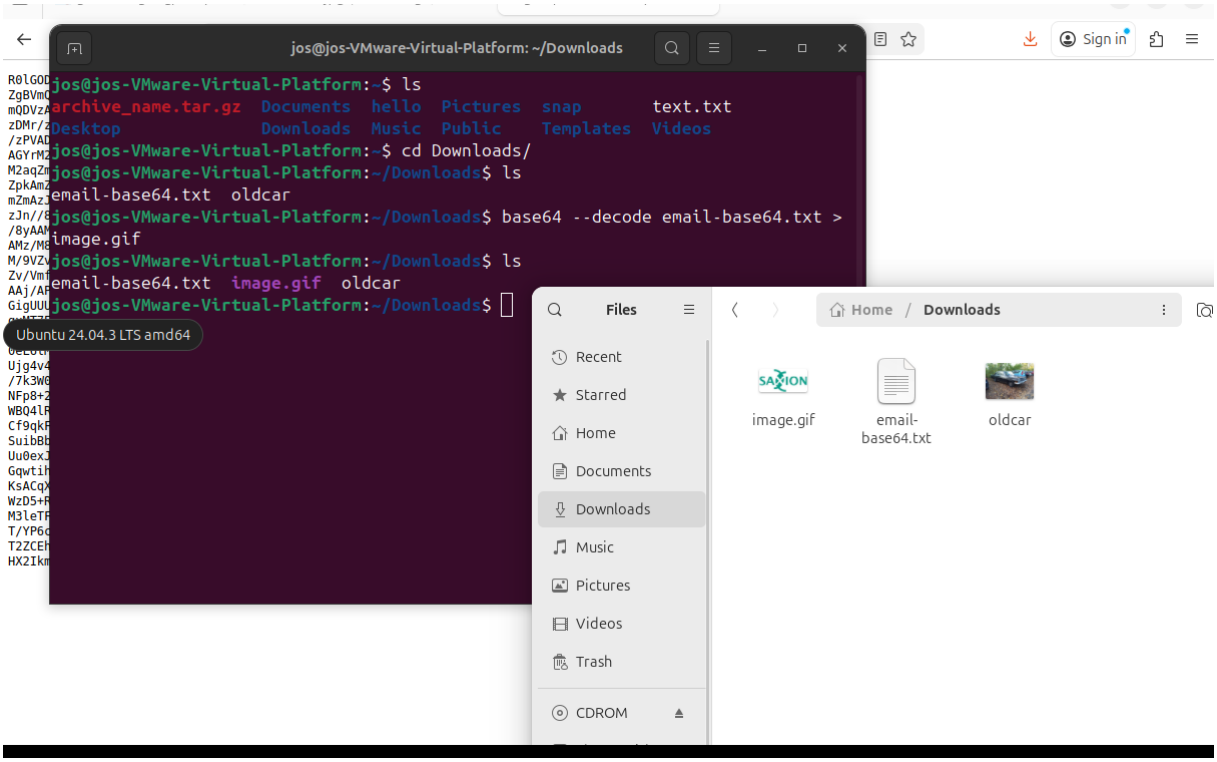
Groningen

```
jos@jos-VMware-Virtual-Platform:~/Downloads$ mv oldcar.jpg oldcar
jos@jos-VMware-Virtual-Platform:~/Downloads$ ls
oldcar
jos@jos-VMware-Virtual-Platform:~/Downloads$ file oldcar
oldcar: JPEG image data, JFIF standard 1.01, aspect ratio, density 1x1, segment length 16, Exif Standard: [TIFF image da
ta, big-endian, direntries=10, manufacturer=motorola, model=moto g(6) play, xresolution=160, yresolution=168, resolution
unit=2, software=aljeter-user 9 PPPS29.55-35-18-7 6a0d0 release-keys, datetime=2020:11:07 15:08:57, GPS-Data], baseline,
 precision 8, 4160x3120, components 3
jos@jos-VMware-Virtual-Platform:~/Downloads$
```

Hij ziet het nogsteeds als een JPEG file

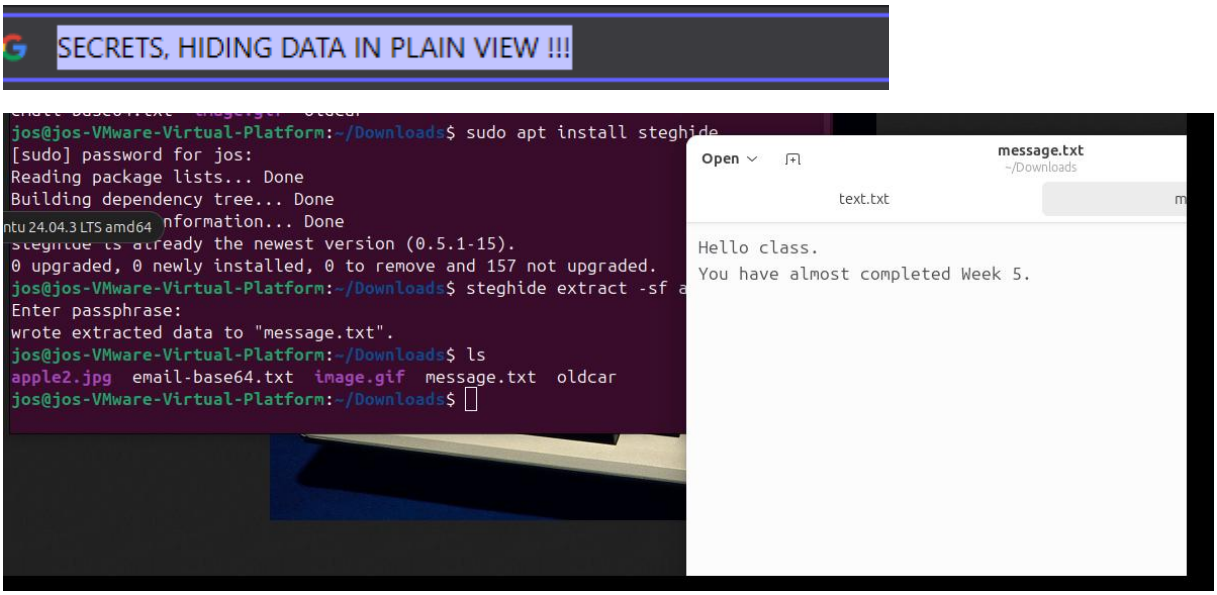
**Assignment 5.7: Digital forensics**

Relevant screenshots + motivation




**Assignment 5.8: Steganography**

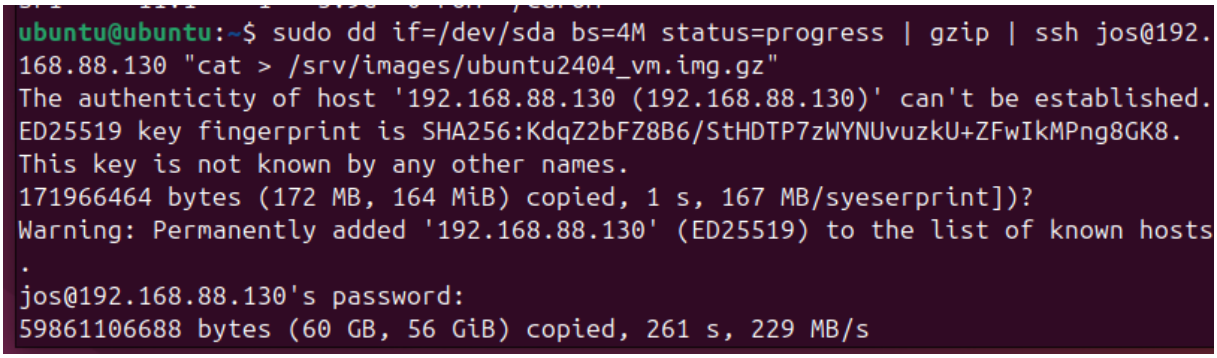
Relevant screenshots + motivation

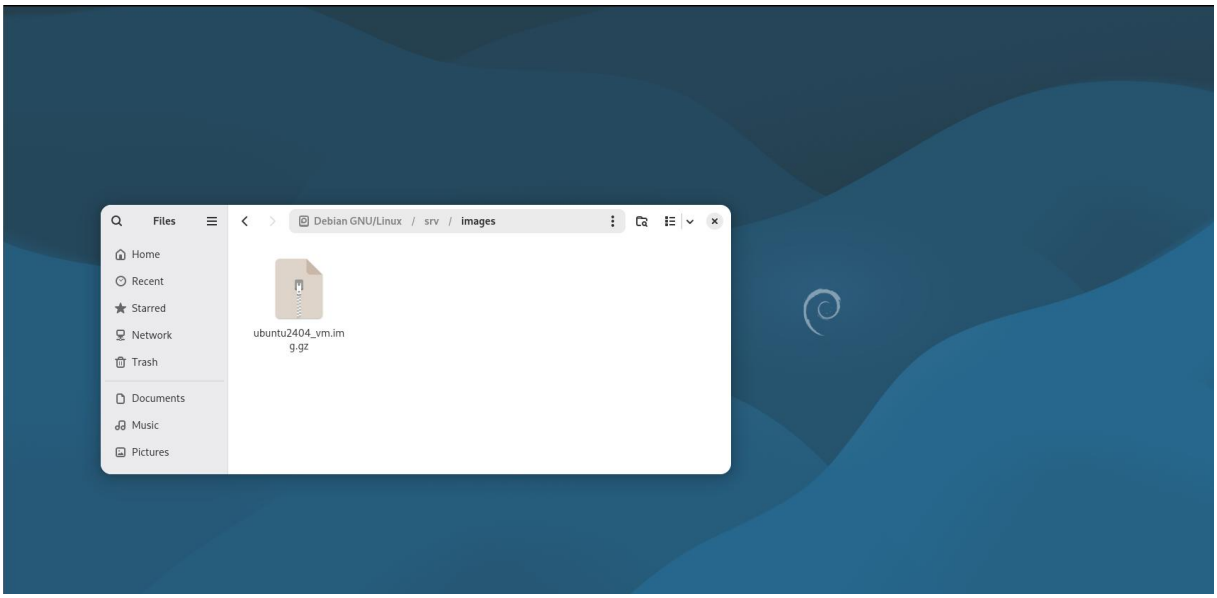



**Assignment 5.9: Capture disk images**

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.



```
ubuntu@ubuntu:~$ ssh jos@192.168.88.130 "cat /srv/images/ubuntu2404_vm.img.gz" |
 gzip -d | sudo dd of=/dev/sda bs=4M status=progress
jos@192.168.88.130's password:
```

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