

# Template Week 5 – Operating Systems

Student number: 569508

## Assignment 5.1: Unix-like

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

UNIX: Original certified system

UNIX-like: System inspired by UNIX and has not certified

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:** Co created UNIX and developed the B programming language, paving the way for early operating systems.

**Dennis Ritchie:** Co created UNIX and invented the C programming language, transforming software and OS development.

**Bill Joy:** Co founded Sun Microsystems, created the vi editor, and contributed to BSD UNIX, which influenced modern systems.

**Richard Stallman:** Founded the GNU Project, promoted free software, and developed tools like GCC and Emacs.

**Linus Torvalds:** Created the Linux kernel, making UNIX-like systems widely accessible across platforms.

c) What is the philosophy of the GNU movement?

Promote free software with the freedom to use, modify and share

d) Does Ubuntu as a Linux operating system conform to the philosophy of the GNU movement?

Ubuntu is built on Linux, which uses many GNU tools and Ubuntu uses free software aswell

e) Find out what is the Windows Subsystem for Linux?

A feature in Windows to run Linux tools directly without a virtual machine

f) Find out, which operating system family belongs to Android, iOS and ChromeOS?

Android: Based on Linux

iOS: Derived from macOS, based on BSD UNIX

ChromeOS: Based on Linux

## 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 is a machine that are powerful and used to solve some of the worlds most complex problems. They are used for tasks for example predicting weather and climate changes, exploring space, and studying diseases.

- 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?

A PlayStation 3 cluster is a group of PS3 consoles connected together to work as one powerful computer. These clusters were used for research purposes, like running scientific simulations or analyzing large amount of data.

- 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's Raspberry Pi cluster runs on Oracle Linux, a version of Linux designed for enterprise use. It's based on Red Hat Enterprise Linux and tailored for reliability and scalability.

- 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, While Oracle's Raspberry Pi cluster is impressive as a concept, Raspberry Pi are low cost, low power devices that can't match the performance of the world's top supercomputers.


- 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?

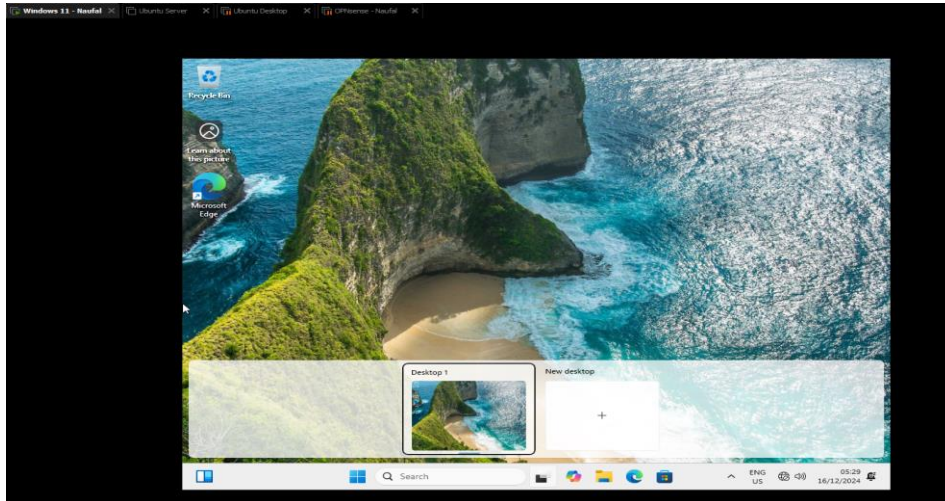
Both the PlayStation 5 and Xbox Series X use AMD Zen 2 architecture, which is a powerful x86 based processor.

The PlayStation 5 runs on a custom PlayStation OS, while the Xbox Series X uses a customized Windows based OS built specifically for gaming.

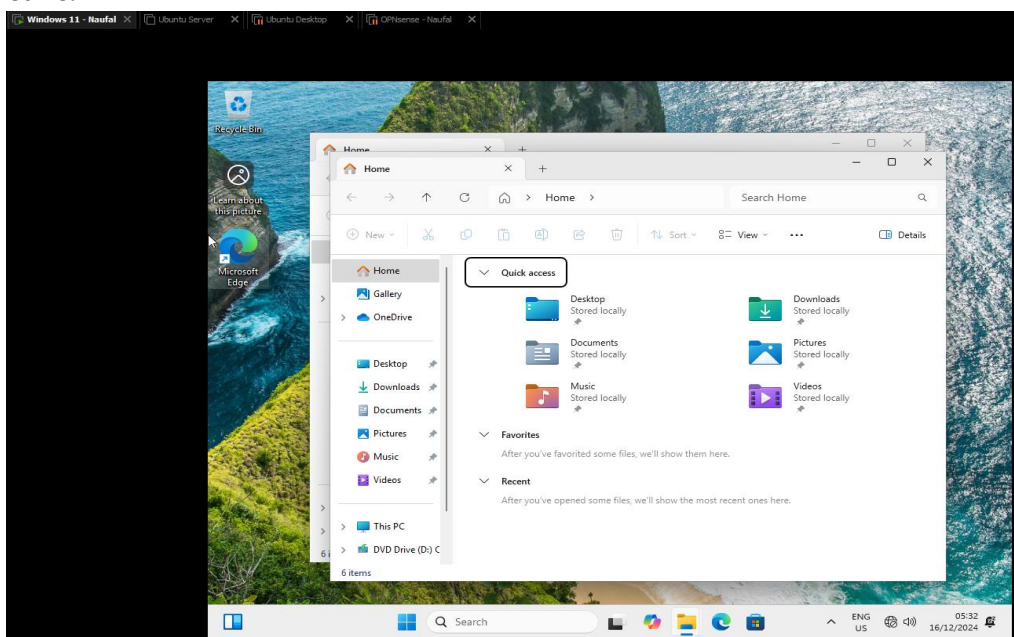
## Assignment 5.3: Working with Windows


Take relevant screenshots of the assignments below

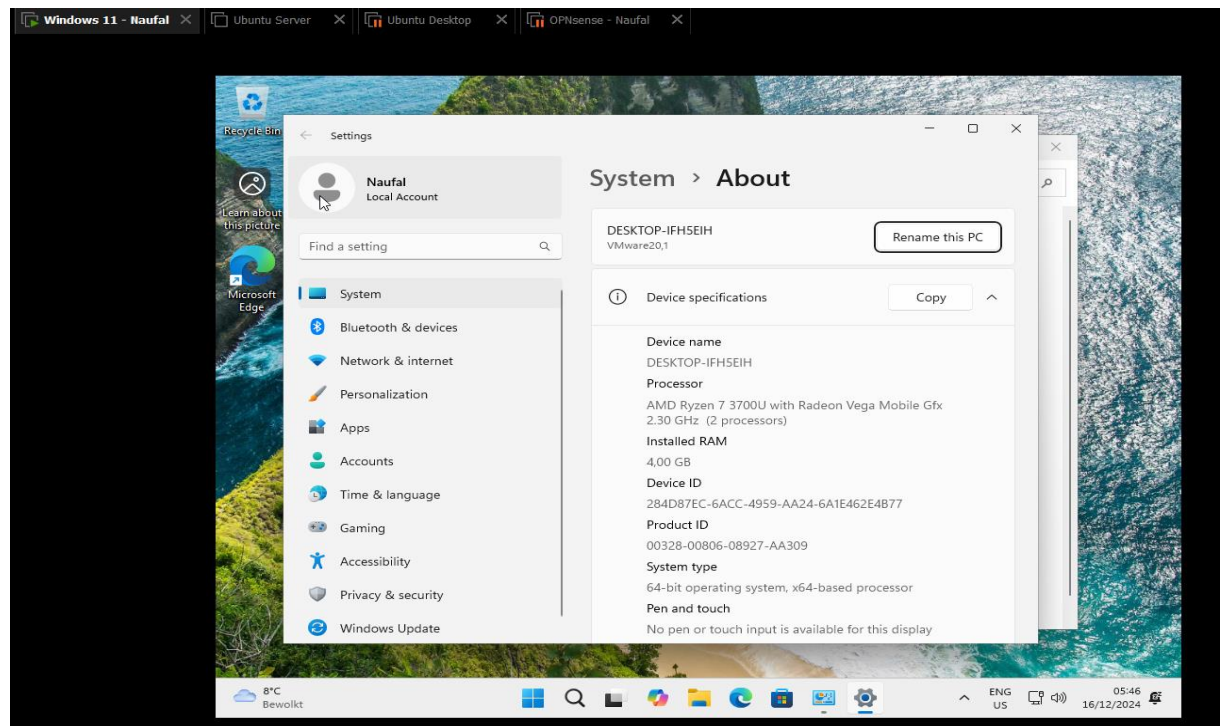
- a) Practice for about 10 minutes with the  keyboard shortcuts combinations, skip the general shortcuts in this exercise. Take a look at which screens are opened.



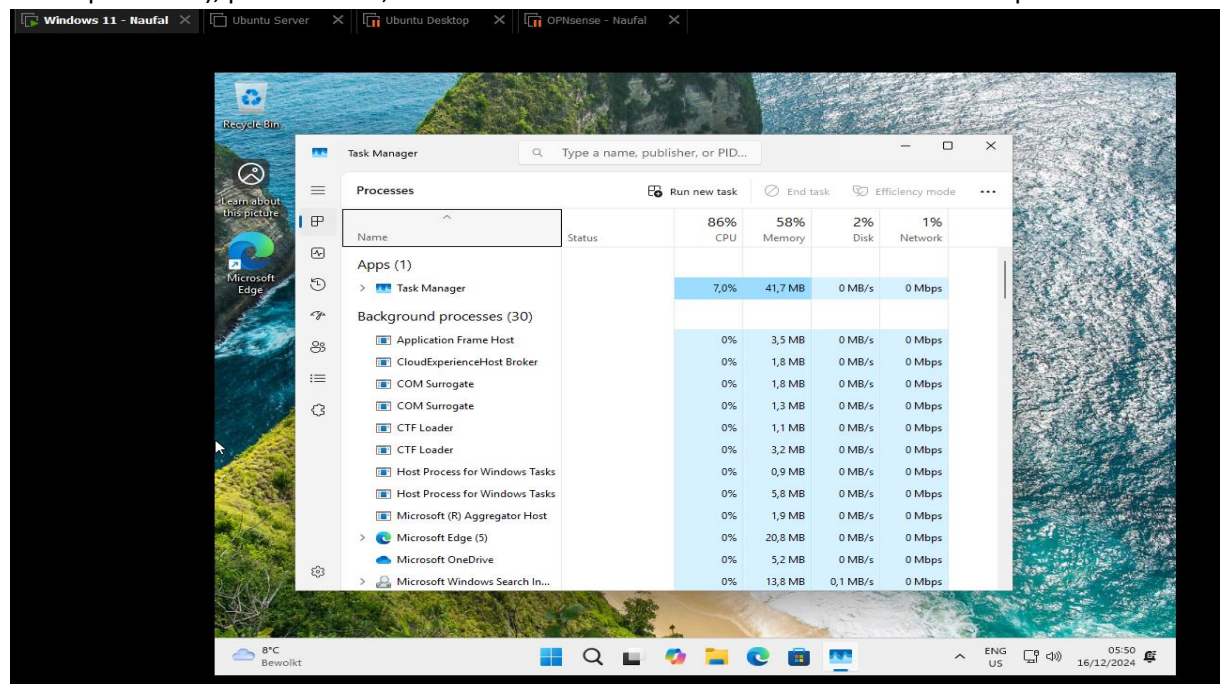
- b) The file explorer can be opened with  + E, Which key combination could you also use? Ctrl & N



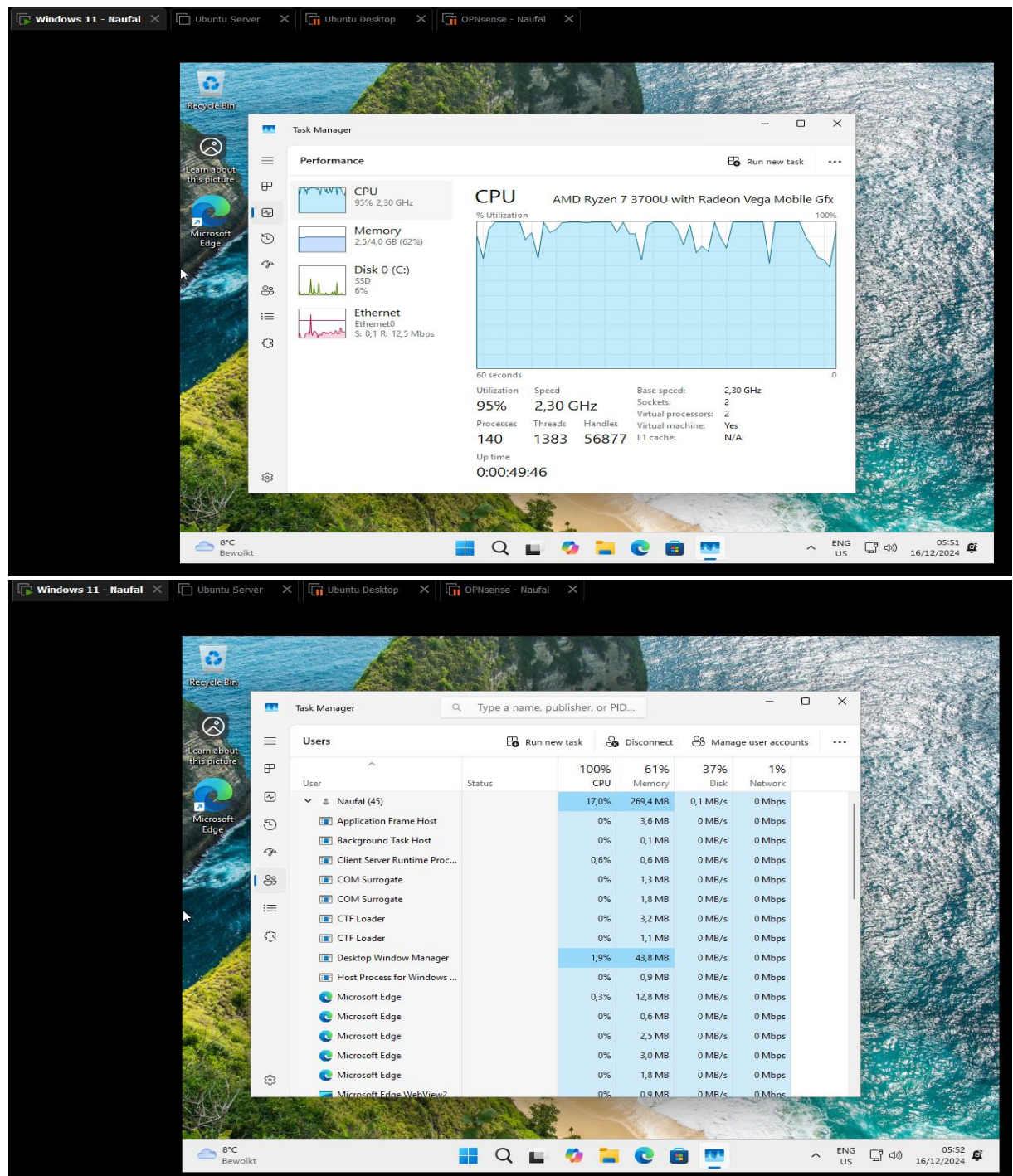
- c) Open the system properties with a  key combination, take a screenshot of the open screen. Paste this screenshot into this template.



- 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?

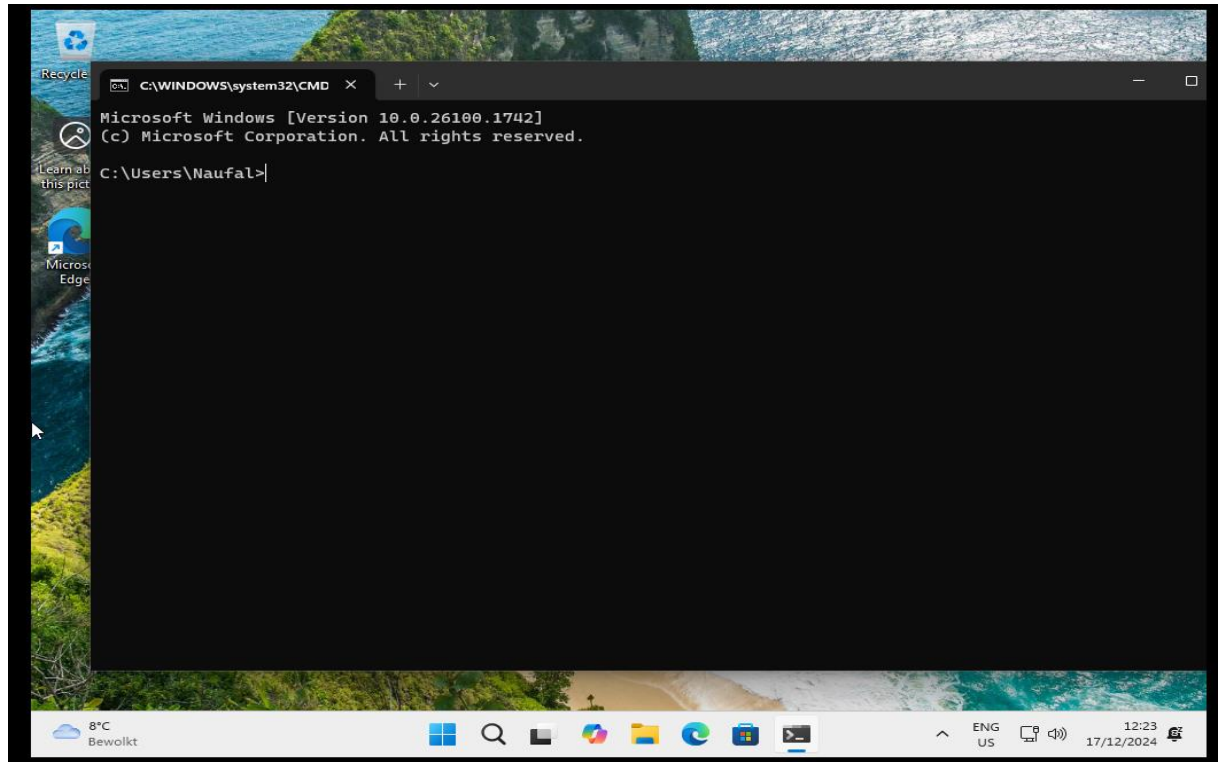
Windows + P

- 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?

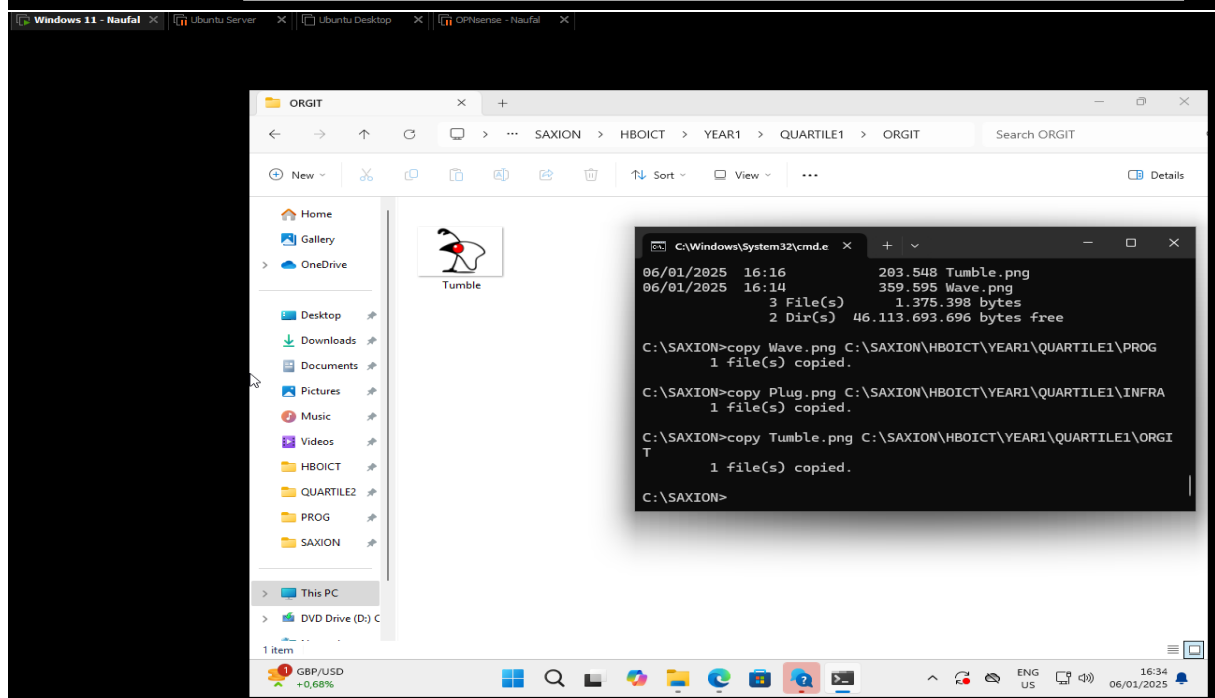
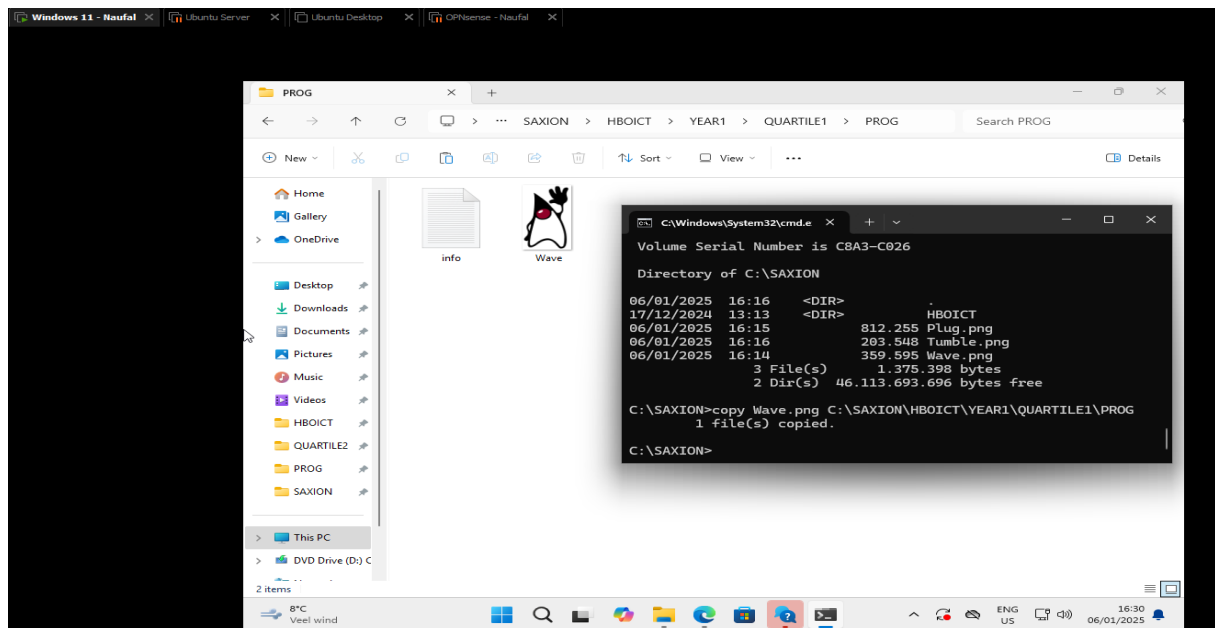
Windows + L

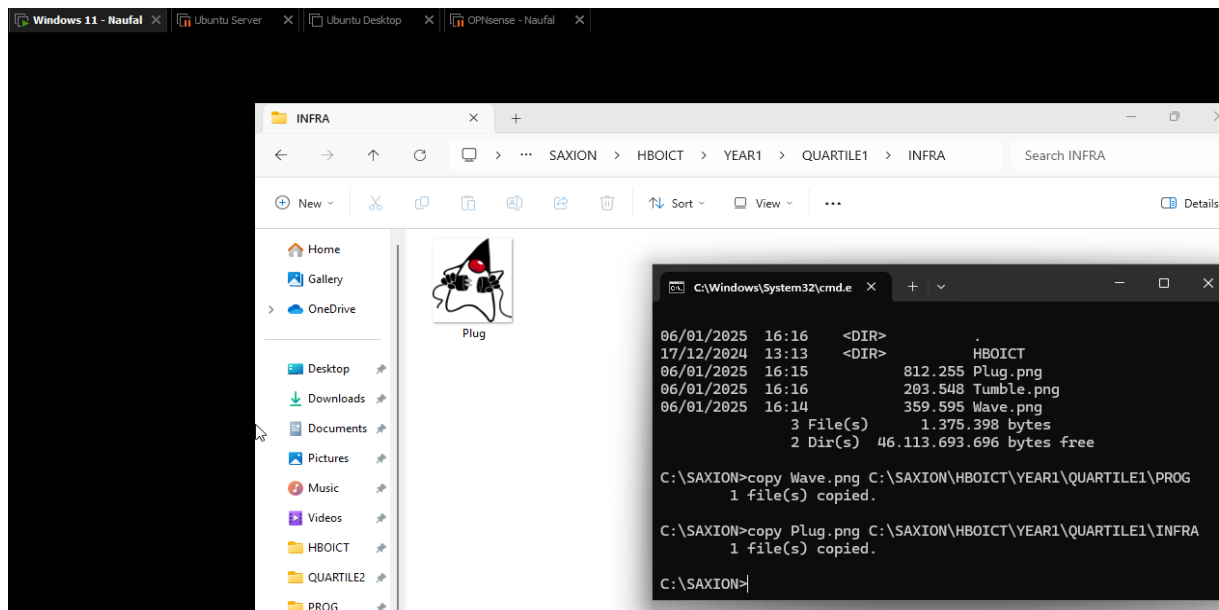
- g) Open the Run screen with a key combination. On this screen, type CMD and press <enter>. Take a screenshot of this result and paste it into this template.



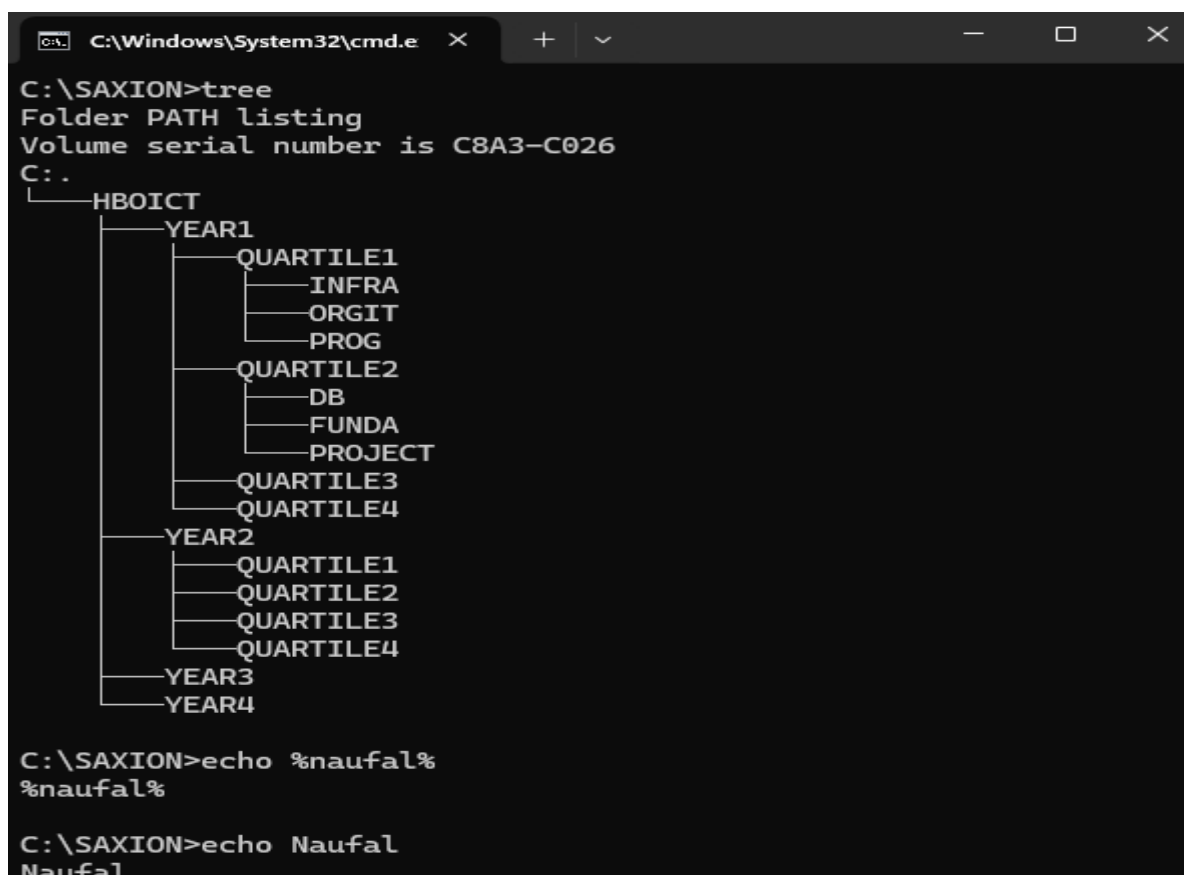
### Working in the File Explorer

Relevant screenshots **copy** command:



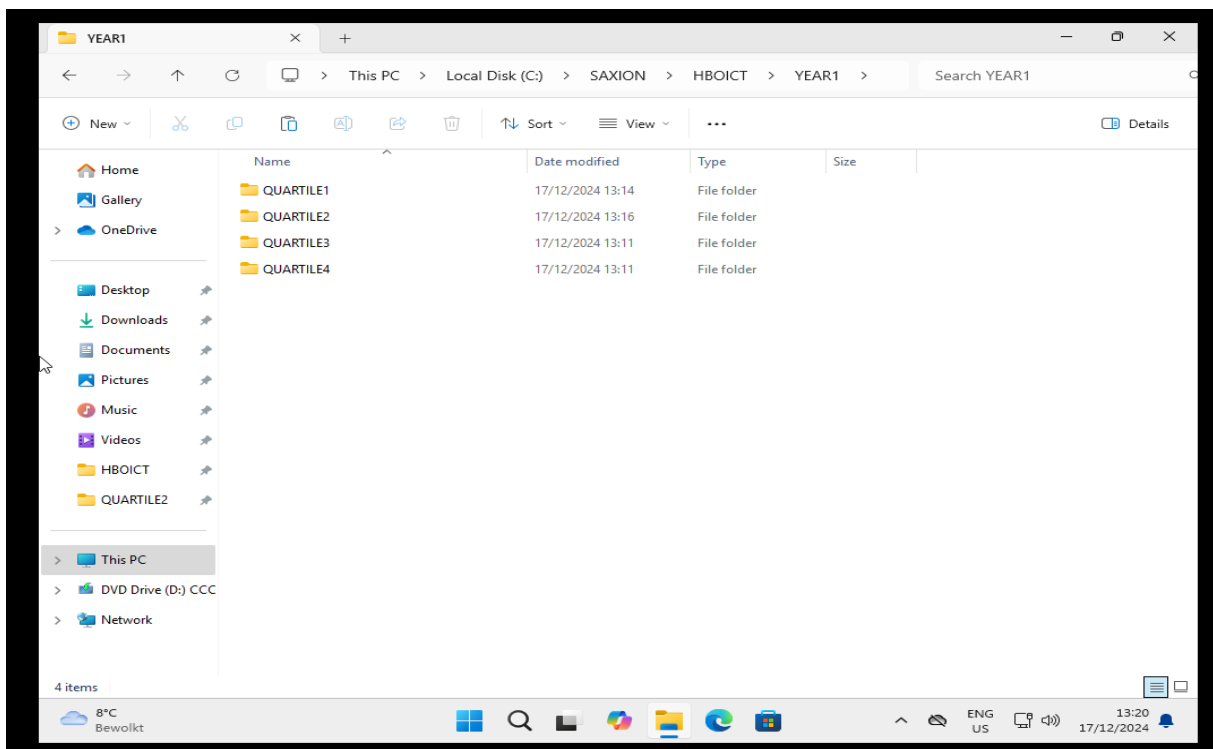
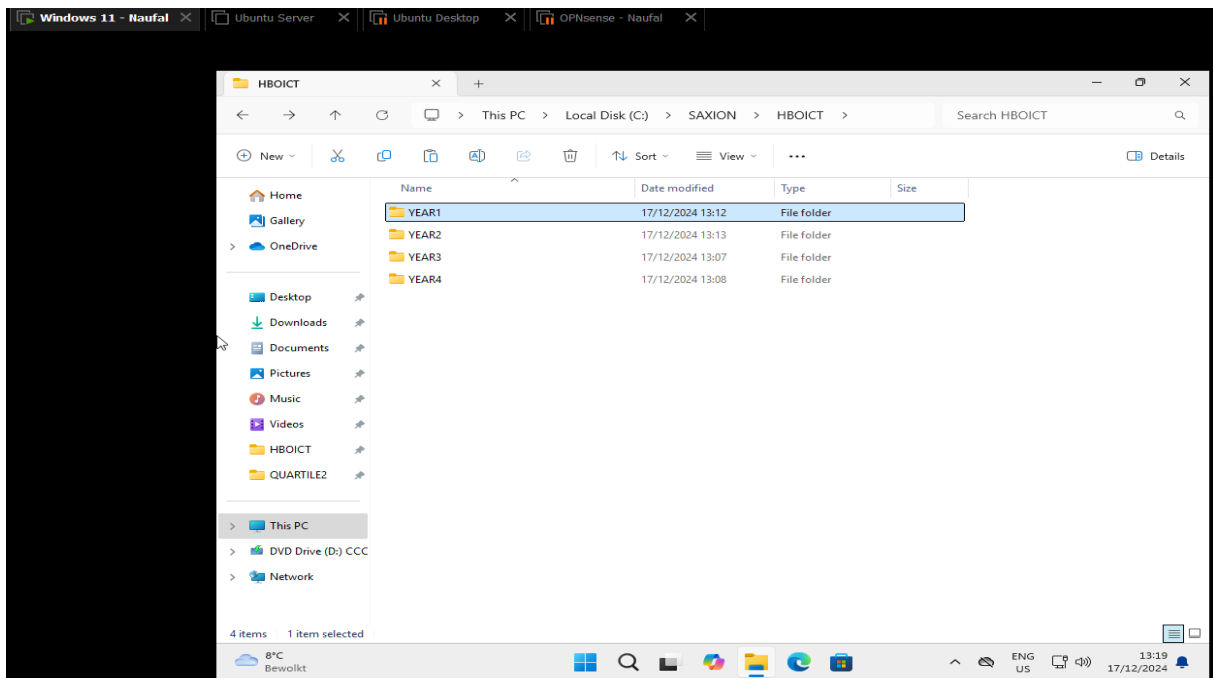


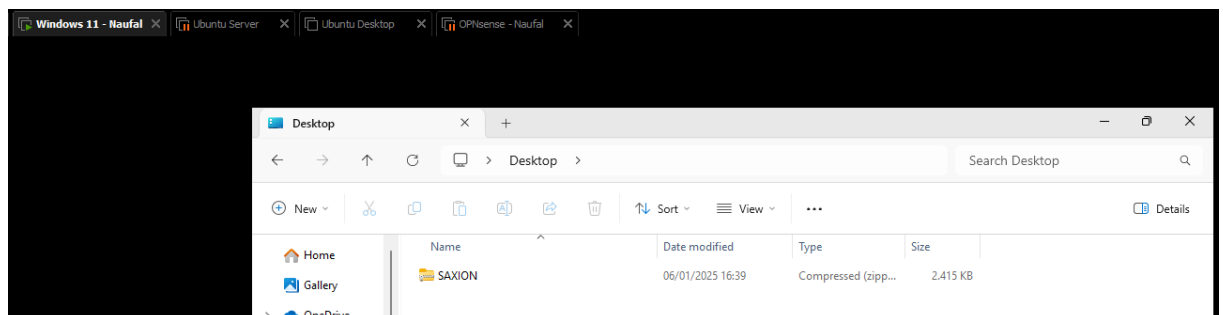
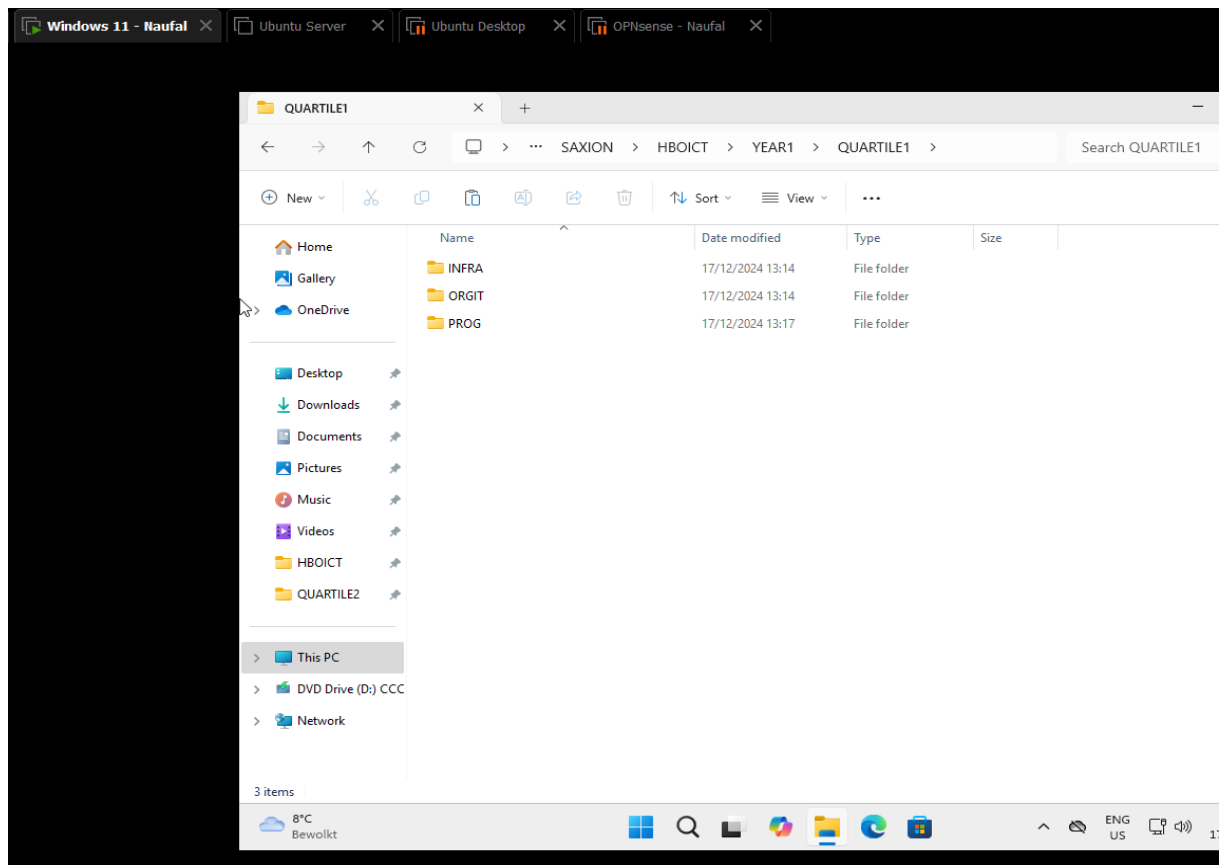
Relevant screenshots **tree** command:





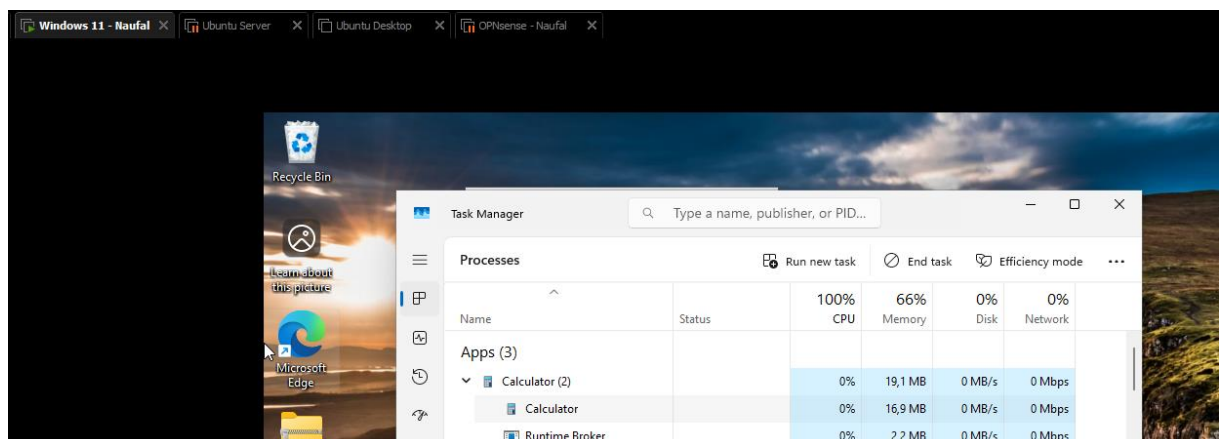
Relevant screenshots in the file explorer of the folder c:\Saxion + created zip file.





## Terminating Processes

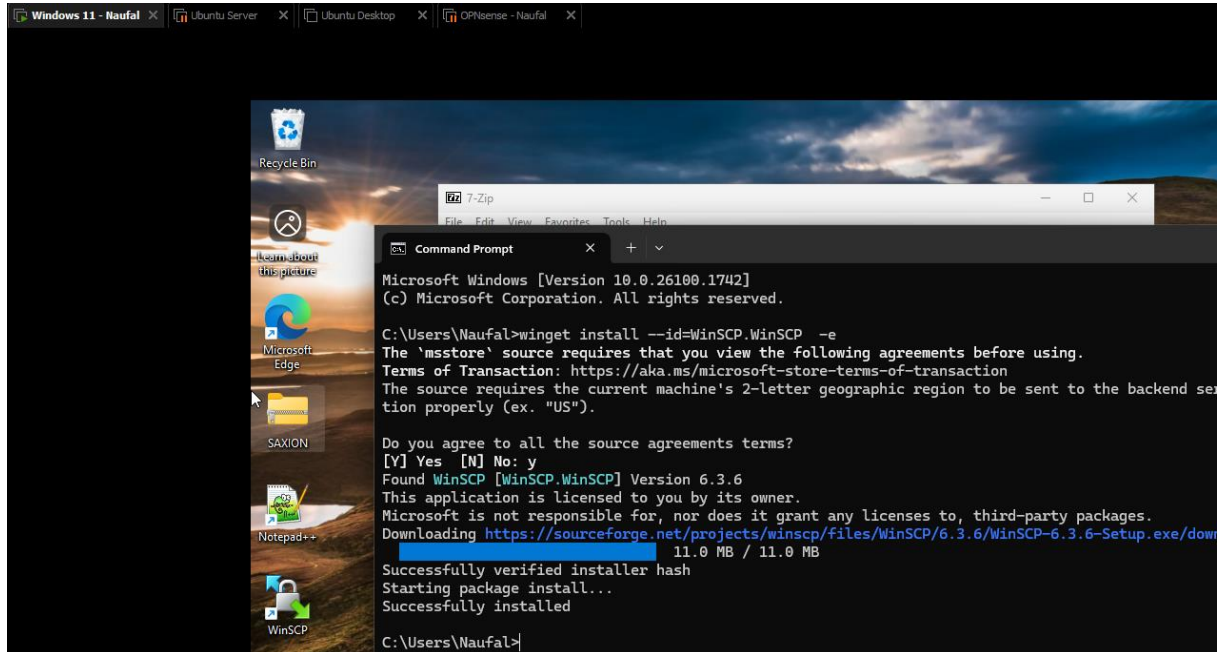
Relevant Screenshots Task Manager Window:



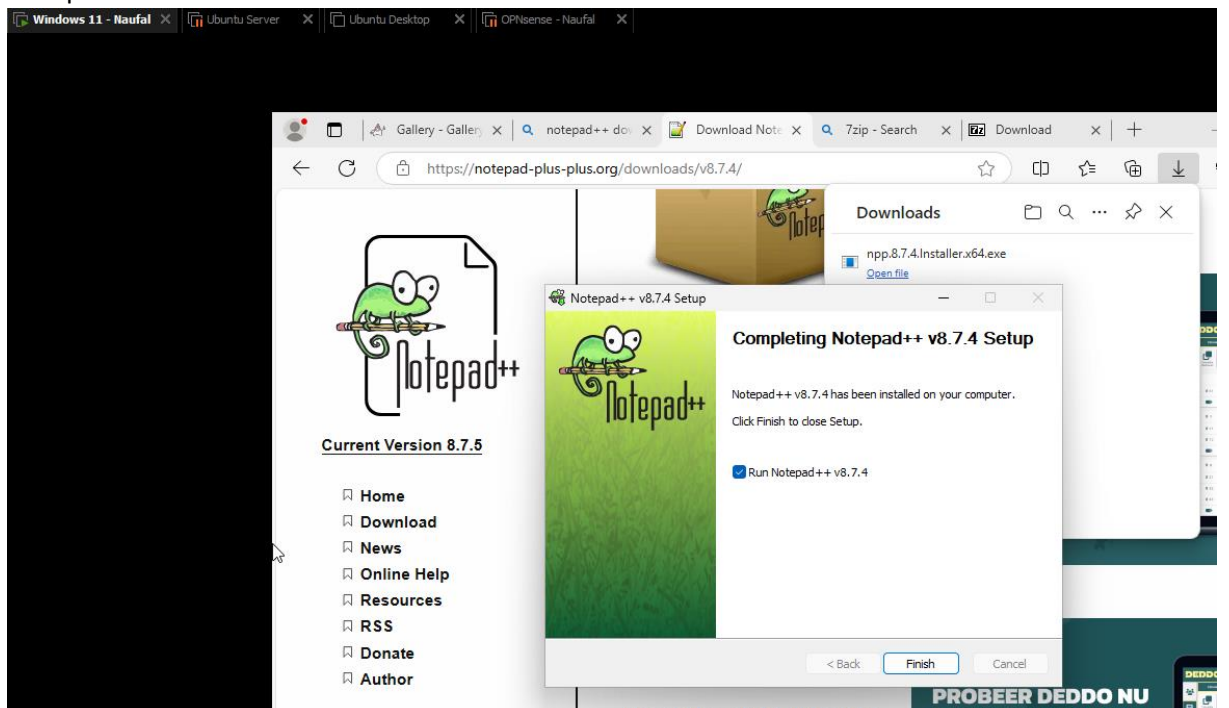
## Install Software

Relevant screenshots that the following software is installed:

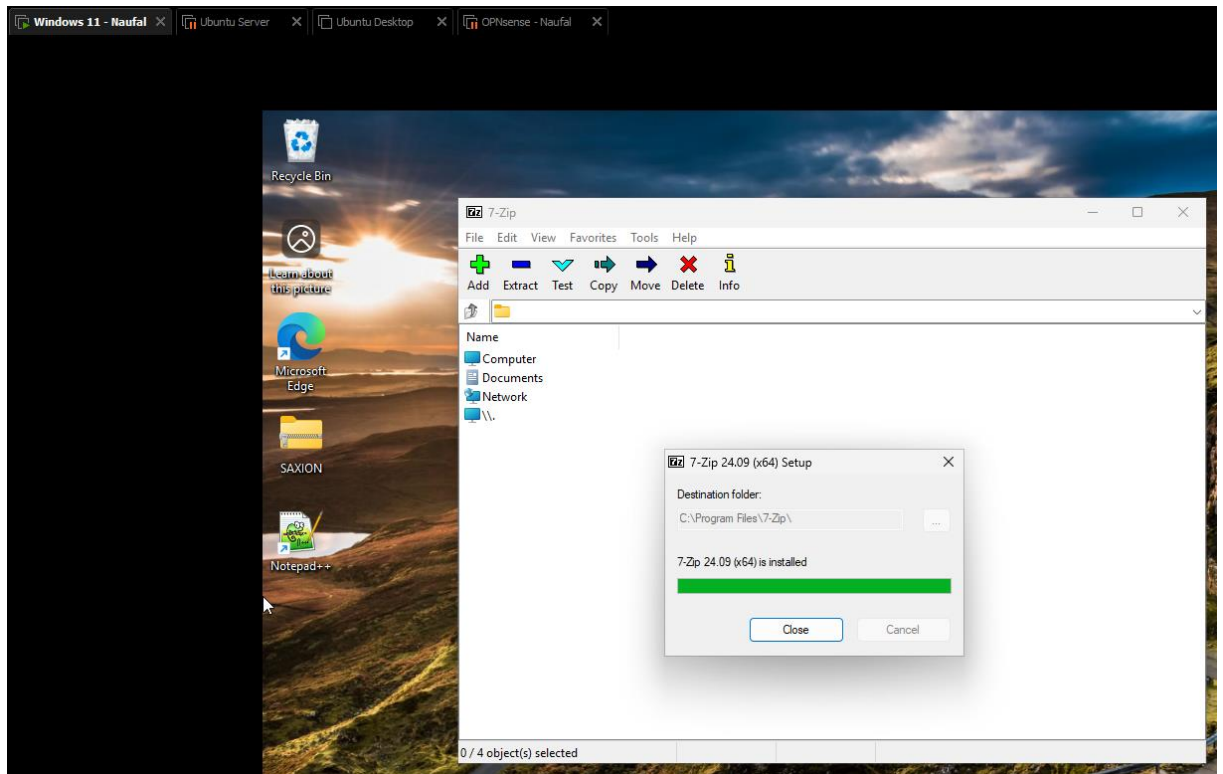
- WinSCP



- Notepad++

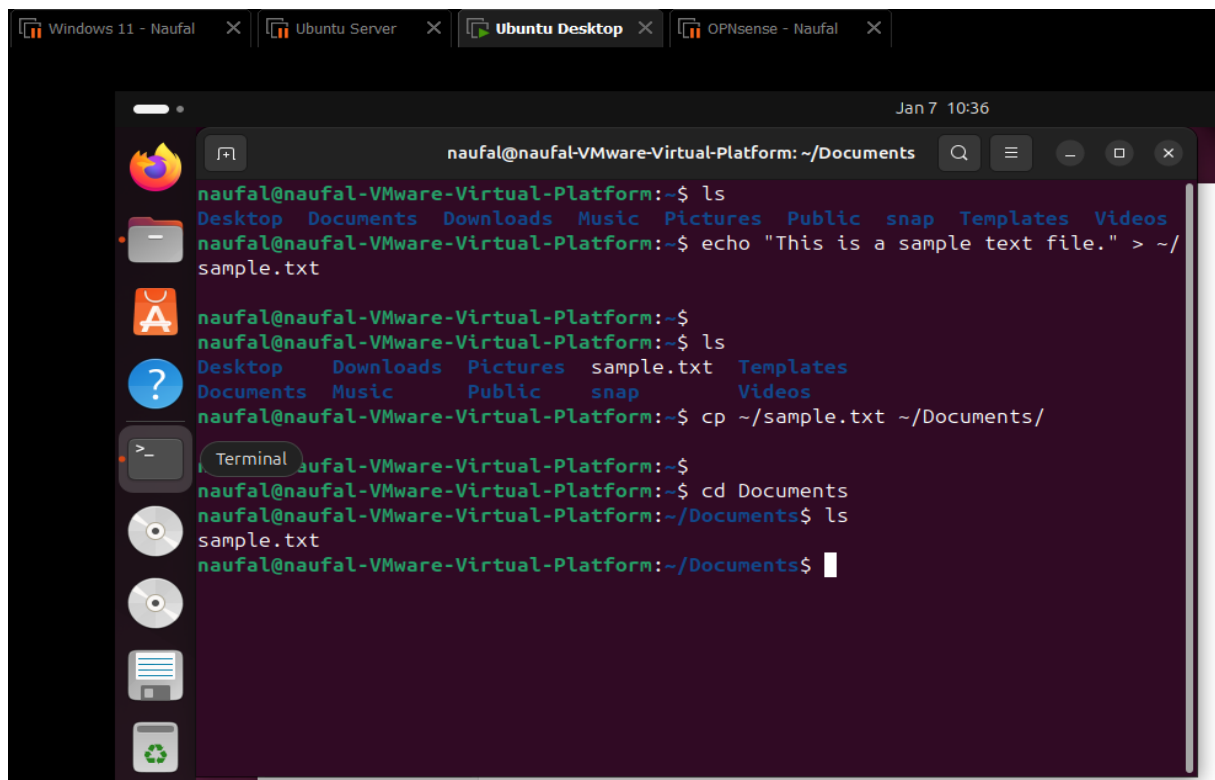


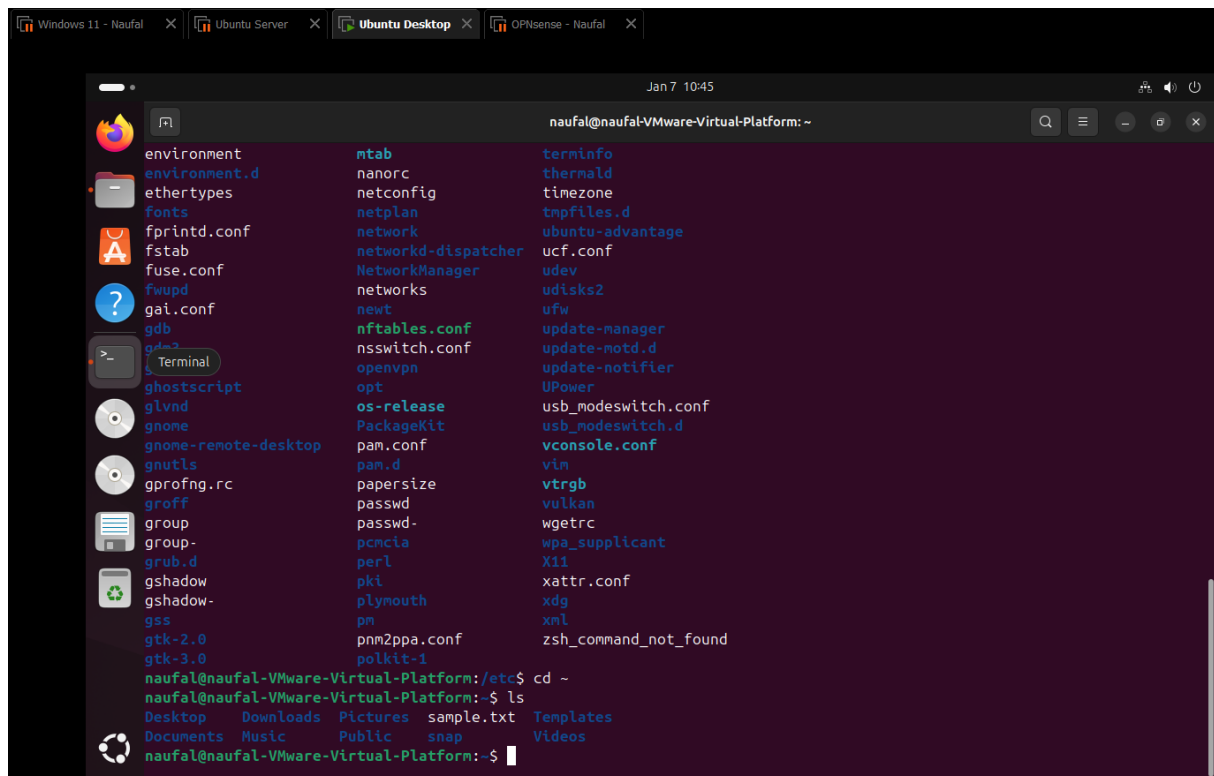
- 7zip



## Assignment 5.4: Working with Linux

Relevant screenshots + motivation

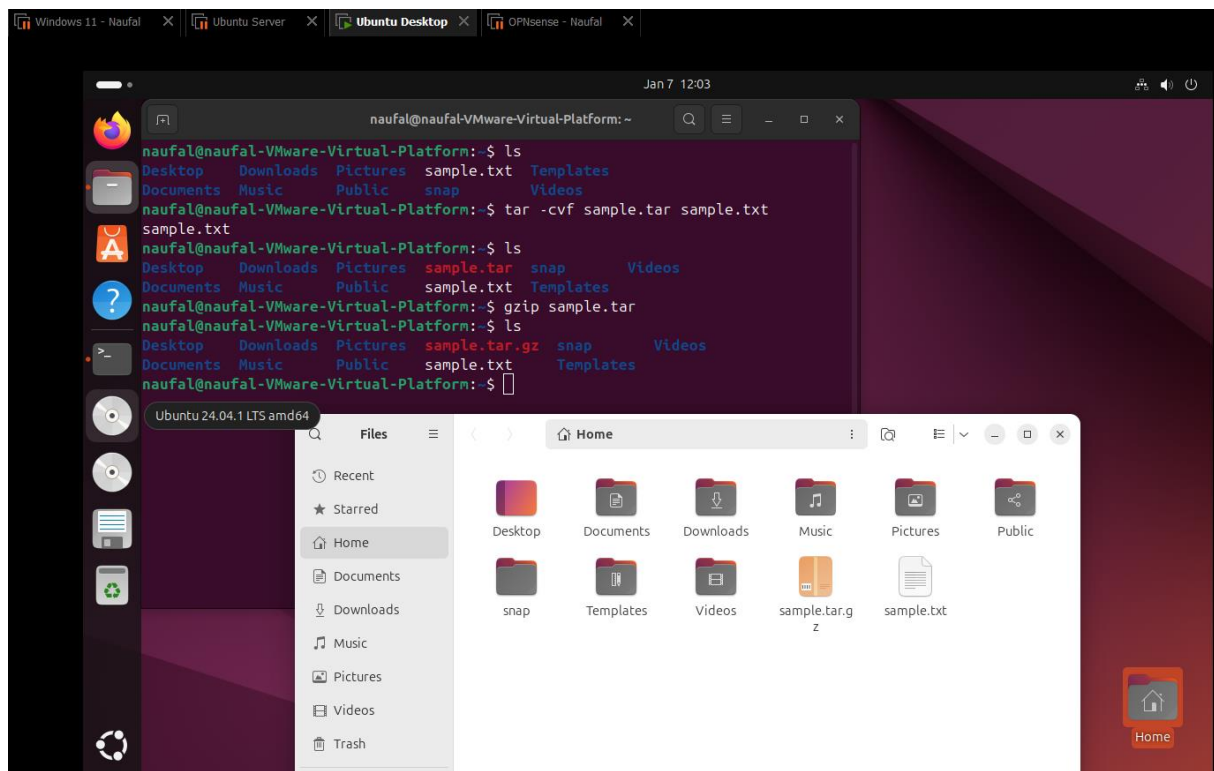




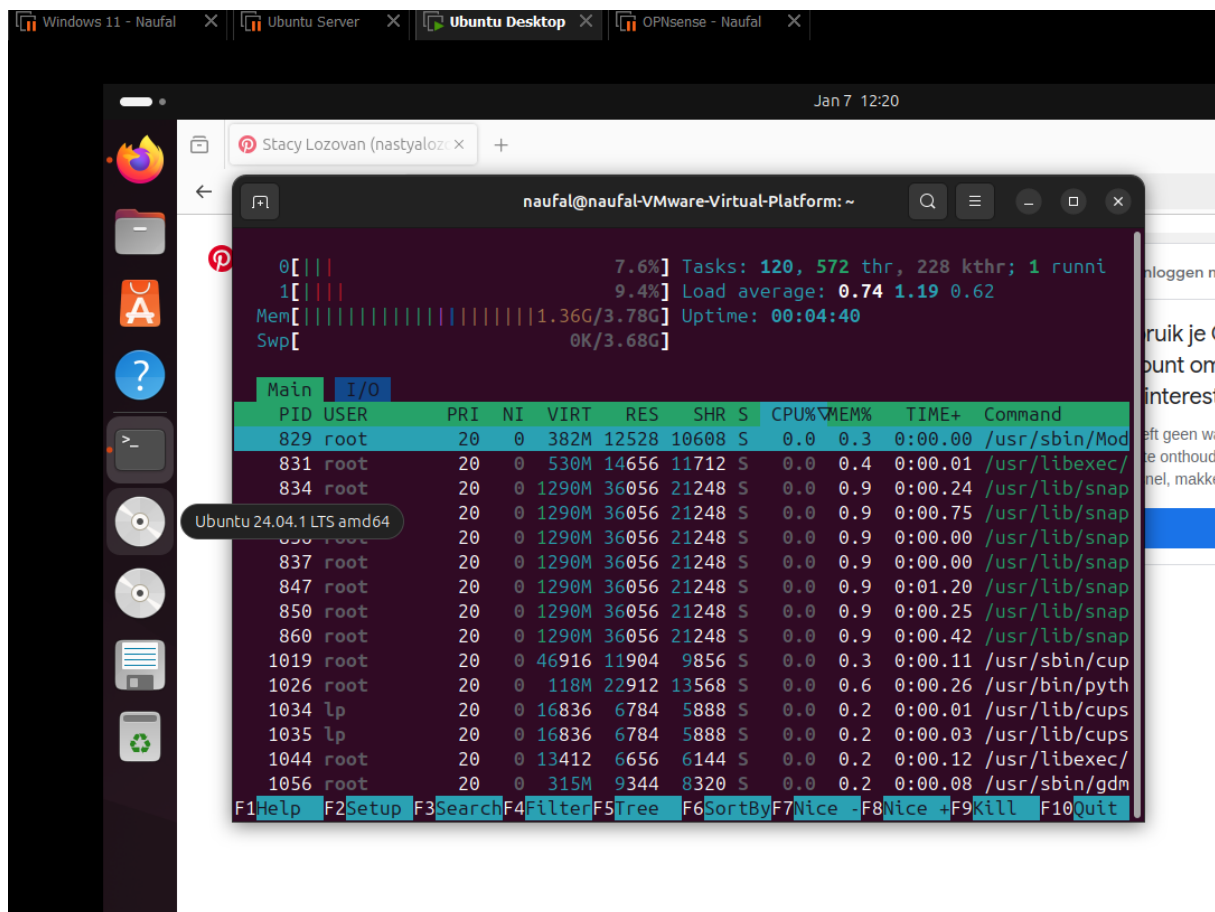
To go back to the home folder in the terminal I used `cd ~` and the `/etc` directory contains system configuration files and settings.

to compress a text file into a tar archive I used `tar -cvf`

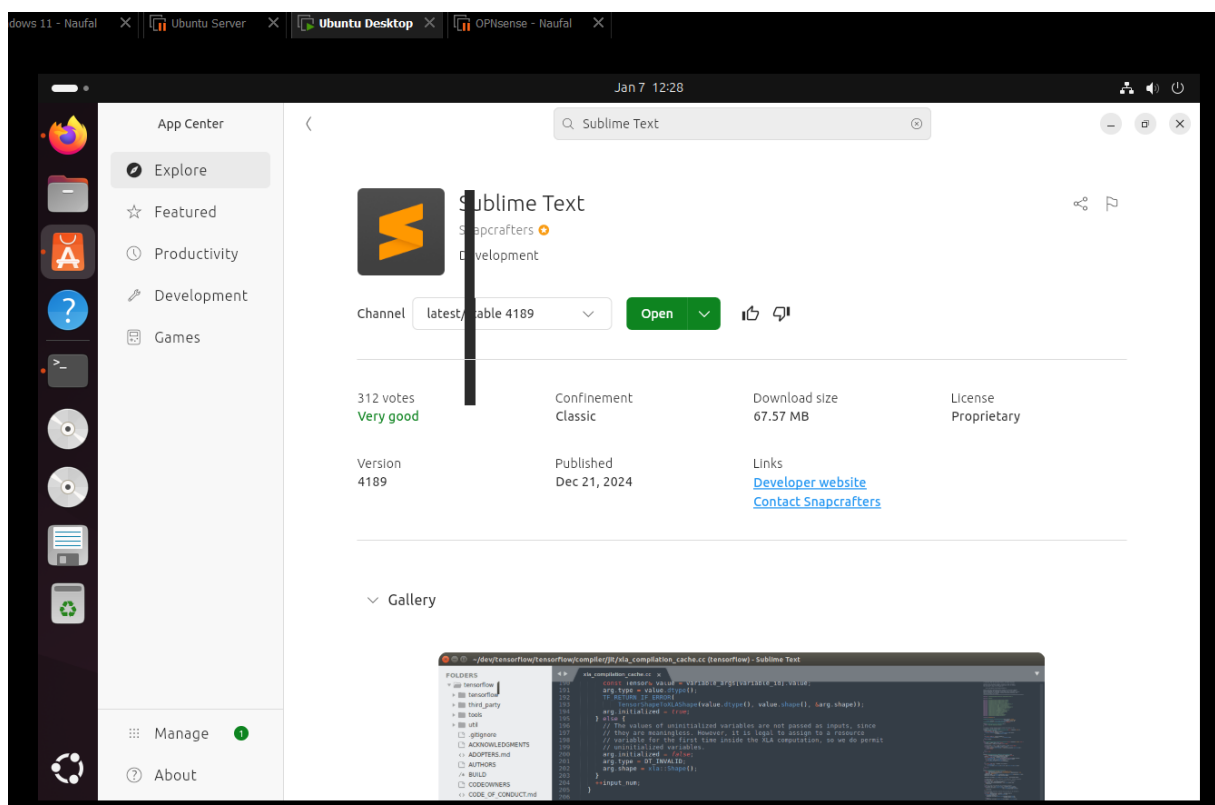
to be able to extract a tar file I used `tar -xvf`

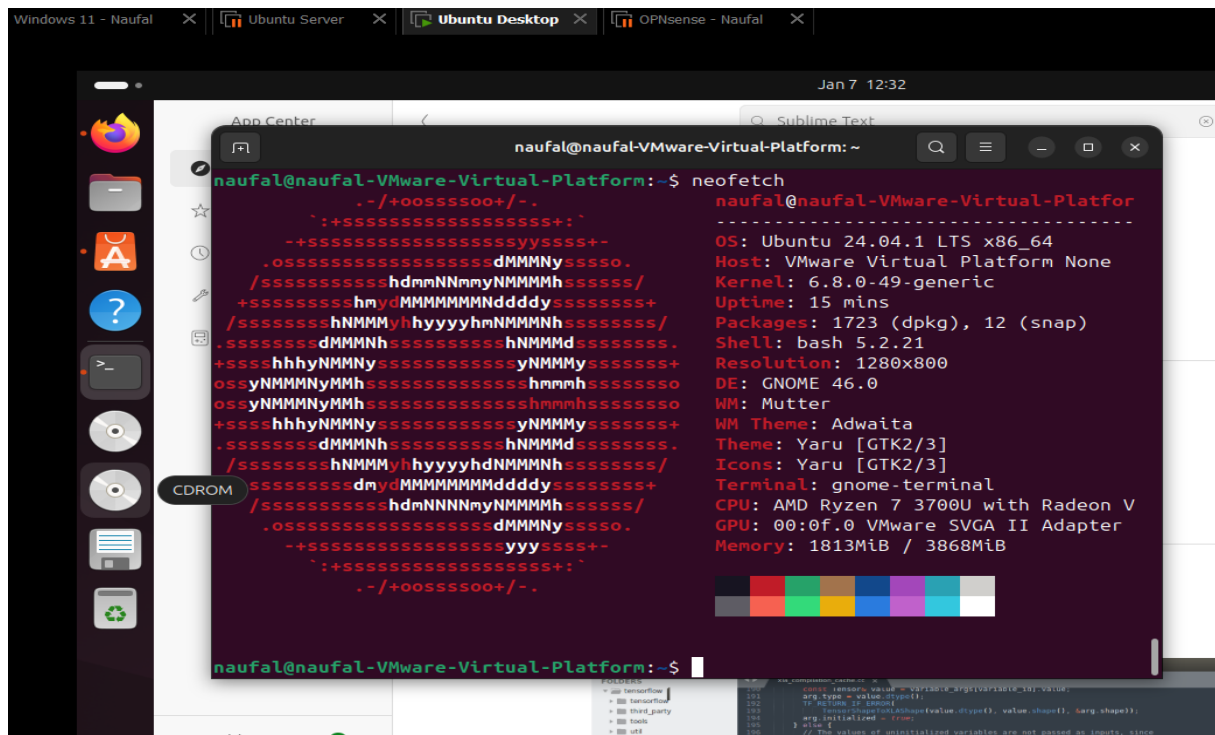






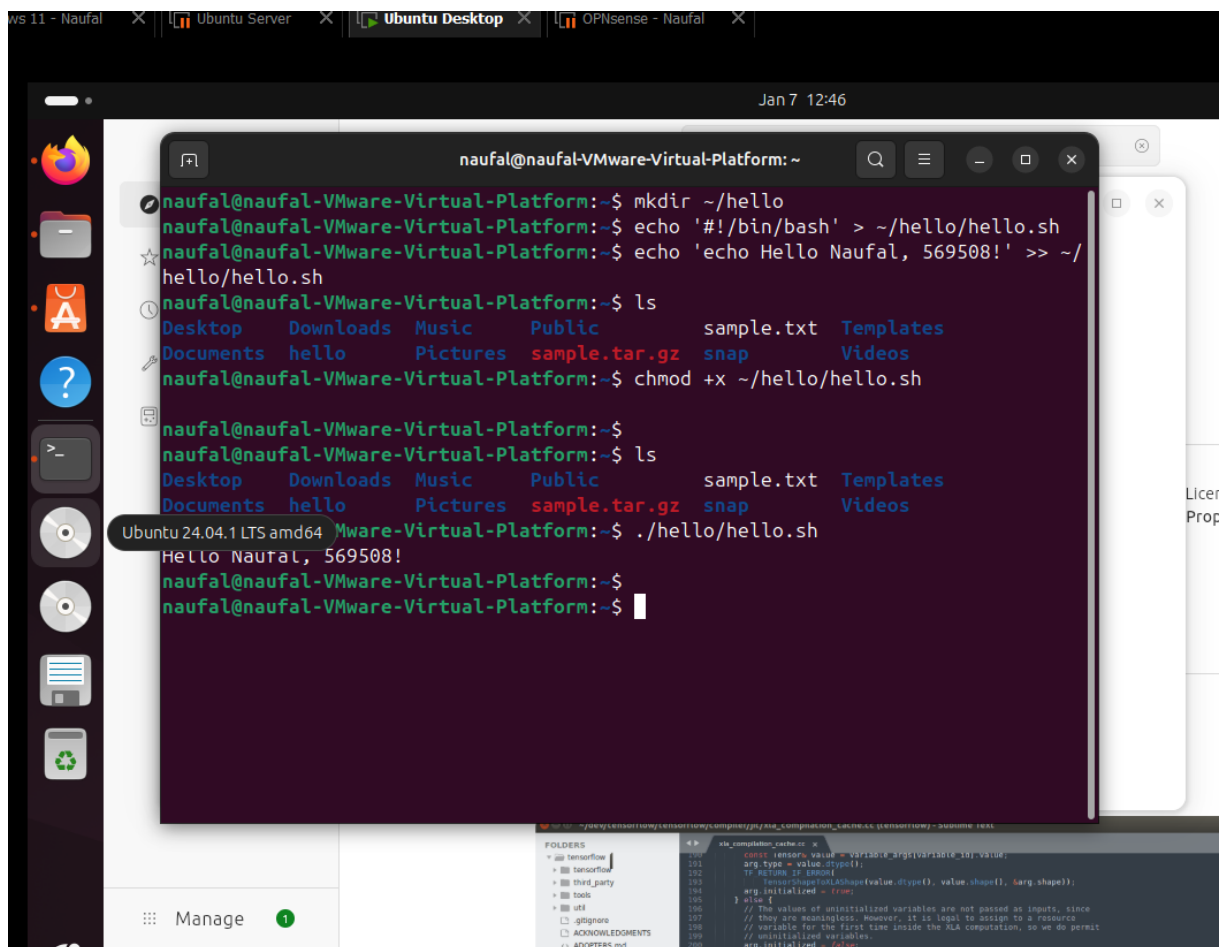
htop displays an interactive view of system processes, including CPU, memory usage, and detailed information about each running process





## Assignment 5.5: Users and permissions on Linux

Relevant screenshots + motivation



## Assignment 5.6: View the contents of files

Relevant screenshots + motivation

Cat – displays the contents of a file

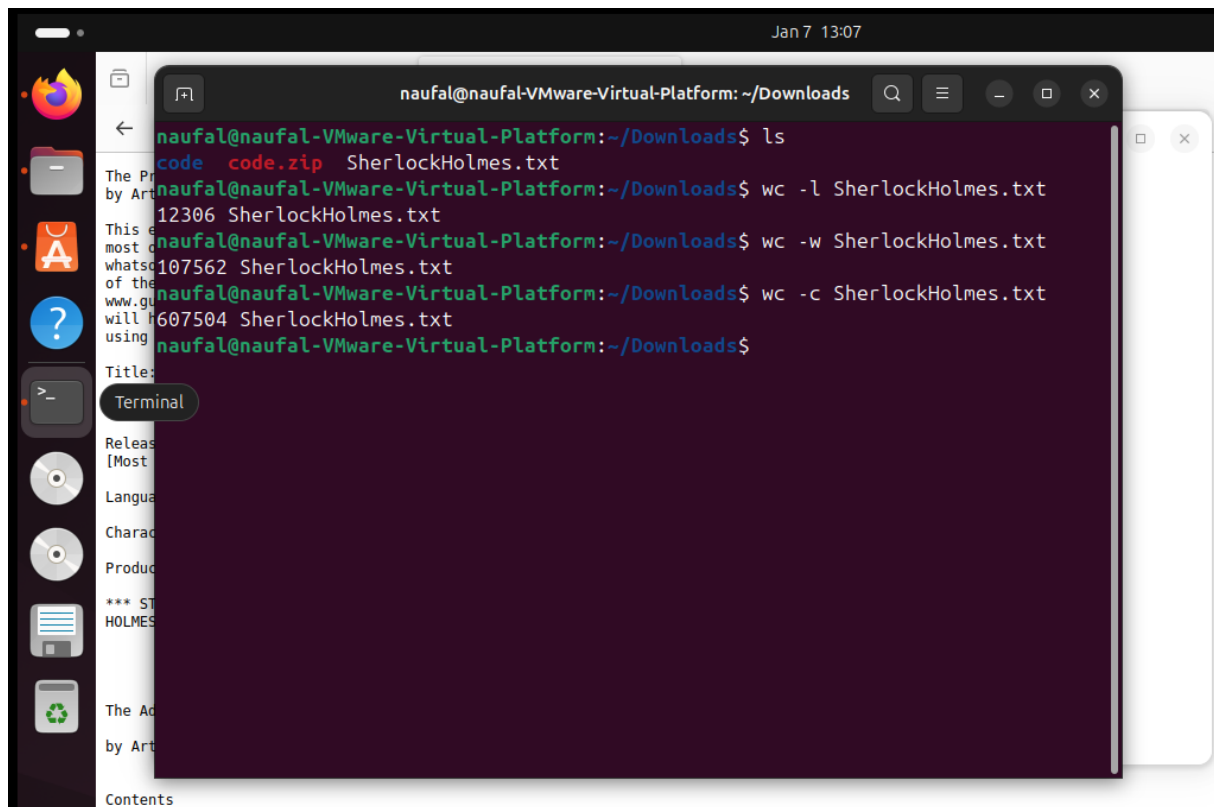
Wc – word count

Less – we can easily scroll through the file

Tail – displays the last few lines of a file

Head – displays the first few lines of a file

Grep – a search function



The screenshot shows a terminal window titled 'naufal@naufal-VMware-Virtual-Platform: ~/Downloads' with a timestamp of 'Jan 7 13:07'. The terminal displays the following commands and their outputs:

```
naufal@naufal-VMware-Virtual-Platform:~/Downloads$ ls
code code.zip SherlockHolmes.txt
naufal@naufal-VMware-Virtual-Platform:~/Downloads$ wc -l SherlockHolmes.txt
12306 SherlockHolmes.txt
naufal@naufal-VMware-Virtual-Platform:~/Downloads$ wc -w SherlockHolmes.txt
107562 SherlockHolmes.txt
naufal@naufal-VMware-Virtual-Platform:~/Downloads$ wc -c SherlockHolmes.txt
607504 SherlockHolmes.txt
naufal@naufal-VMware-Virtual-Platform:~/Downloads$
```

The terminal window is overlaid on a desktop environment. On the left, a sidebar contains icons for Firefox, a file manager, and a terminal. The file manager shows a list of files including 'The Pr...', 'by Art...', 'This e...', 'most d...', 'whatsc...', 'of the...', 'www.g...', 'will h...', 'using...', 'Title:', 'Terminal', 'Releas...', '[Most', 'Langua...', 'Charac...', 'Produc...', '\*\*\* ST...', 'HOLMES...', 'The Ad...', 'by Art...', and 'Contents'. The terminal window has a dark purple background and a light-colored text area.

```
11 - Naufal  X  Ubuntu Server  X  Ubuntu Desktop  X  OPNsense - Naufal  X

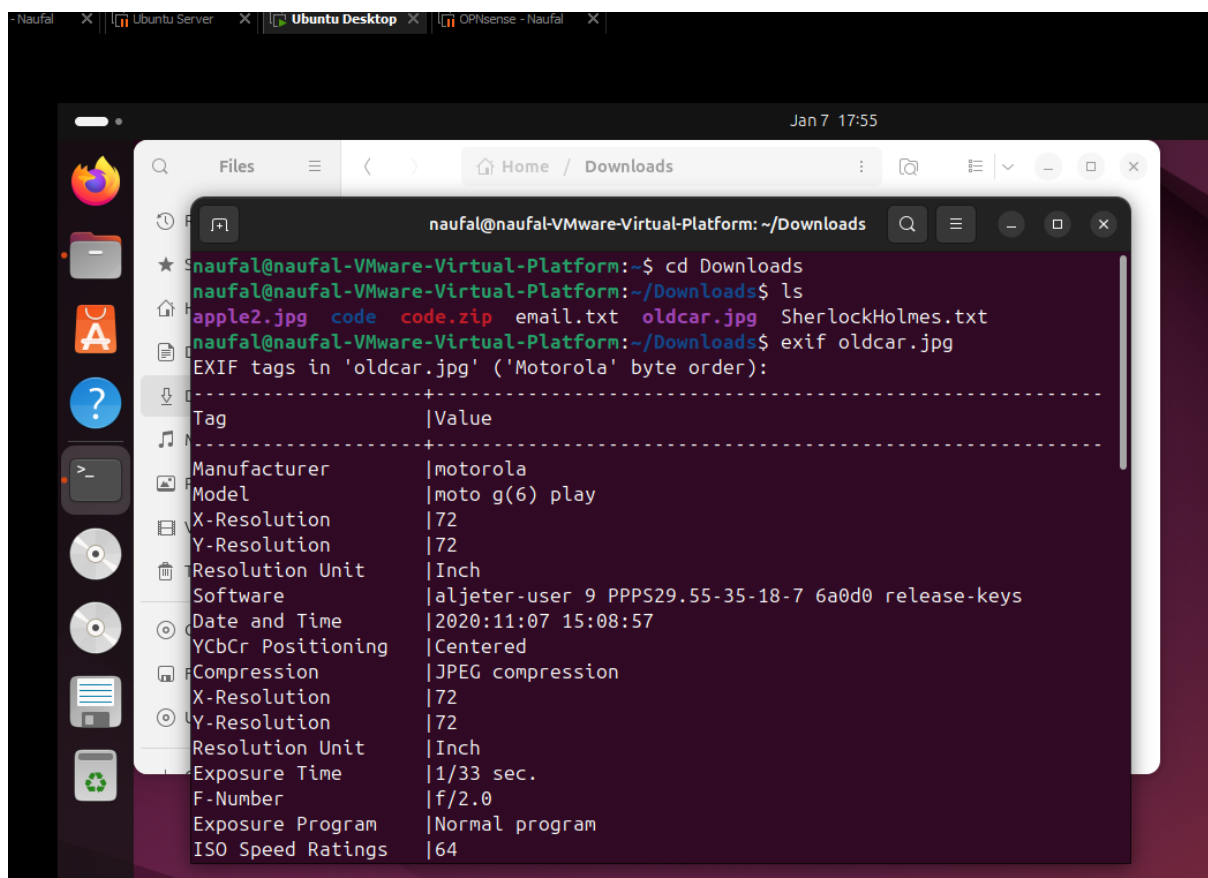
Jan 7 13:09

naufal@naufal-VMware-Virtual-Platform: ~/Downloads
naufal@naufal-VMware-Virtual-Platform:~/Downloads$ ls
code  code.zip  SherlockHolmes.txt
naufal@naufal-VMware-Virtual-Platform:~/Downloads$ wc -l SherlockHolmes.txt
12306 SherlockHolmes.txt
naufal@naufal-VMware-Virtual-Platform:~/Downloads$ wc -w SherlockHolmes.txt
107562 SherlockHolmes.txt
naufal@naufal-VMware-Virtual-Platform:~/Downloads$ wc -c SherlockHolmes.txt
607504 SherlockHolmes.txt
naufal@naufal-VMware-Virtual-Platform:~/Downloads$ 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
naufal@naufal-VMware-Virtual-Platform:~/Downloads$
```

```
Jan 7 13:15

naufal@naufal-VMware-Virtual-Platform: ~/Downloads
naufal@naufal-VMware-Virtual-Platform:~/Downloads$ head -n 490 SherlockHolmes.txt | tail -n 10
"Pray do so. I shall be all anxiety."
"Then, as to money?"
"You have _carte blanche_."
"Absolutely?"
"I tell you that I would give one of the provinces of my kingdom to
naufal@naufal-VMware-Virtual-Platform:~/Downloads$
```

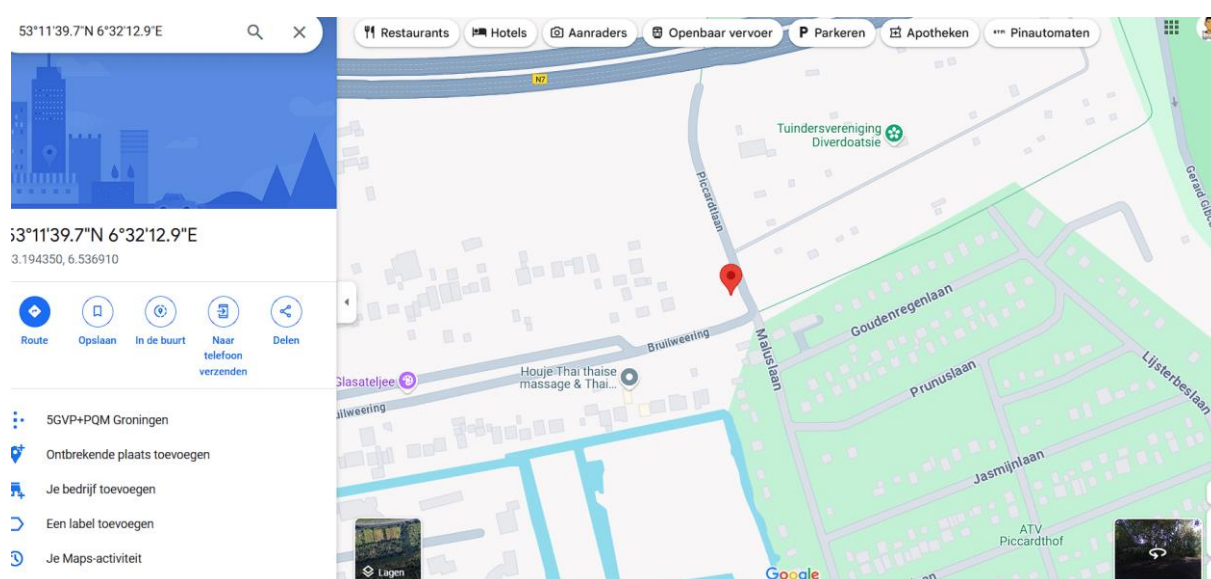
## Assignment 5.7: Digital forensics



Brand / Type = Motorola

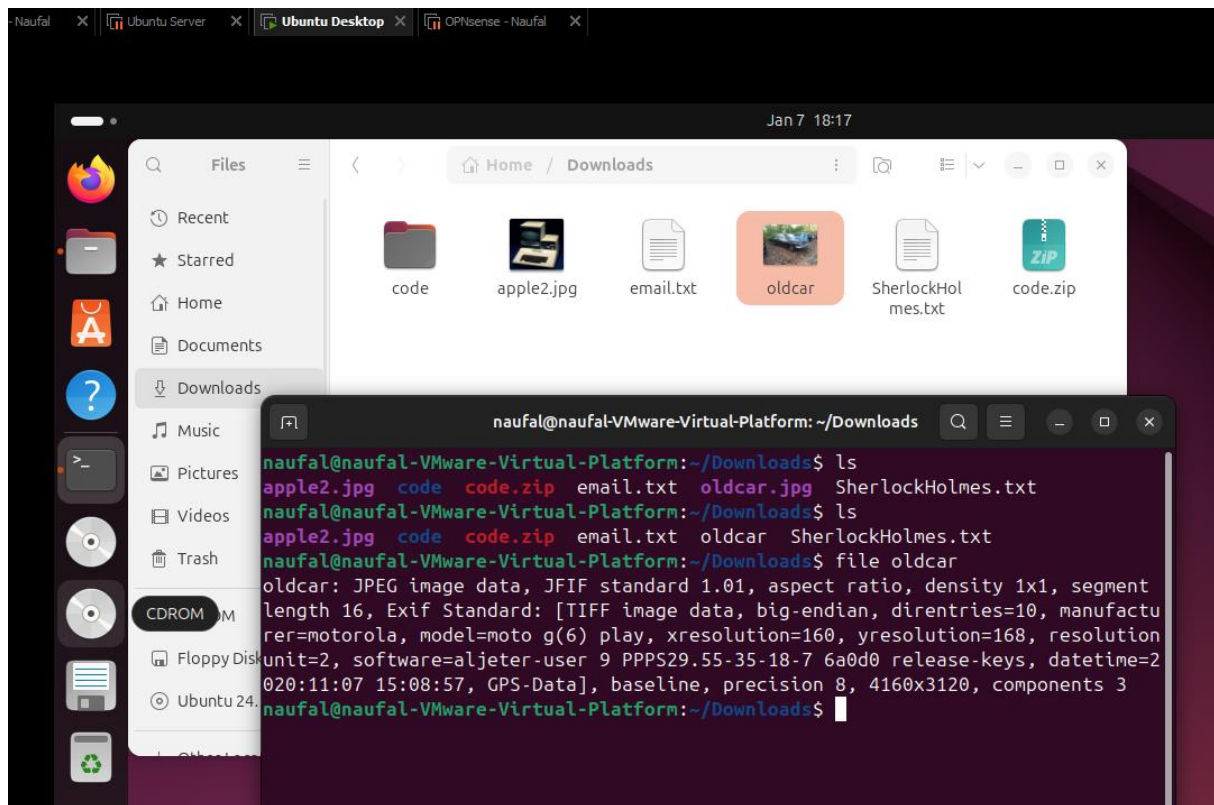
Theres coordinate : Lat (53, 11, 39.6794 )

Long ( 6, 32, 12.9018 )

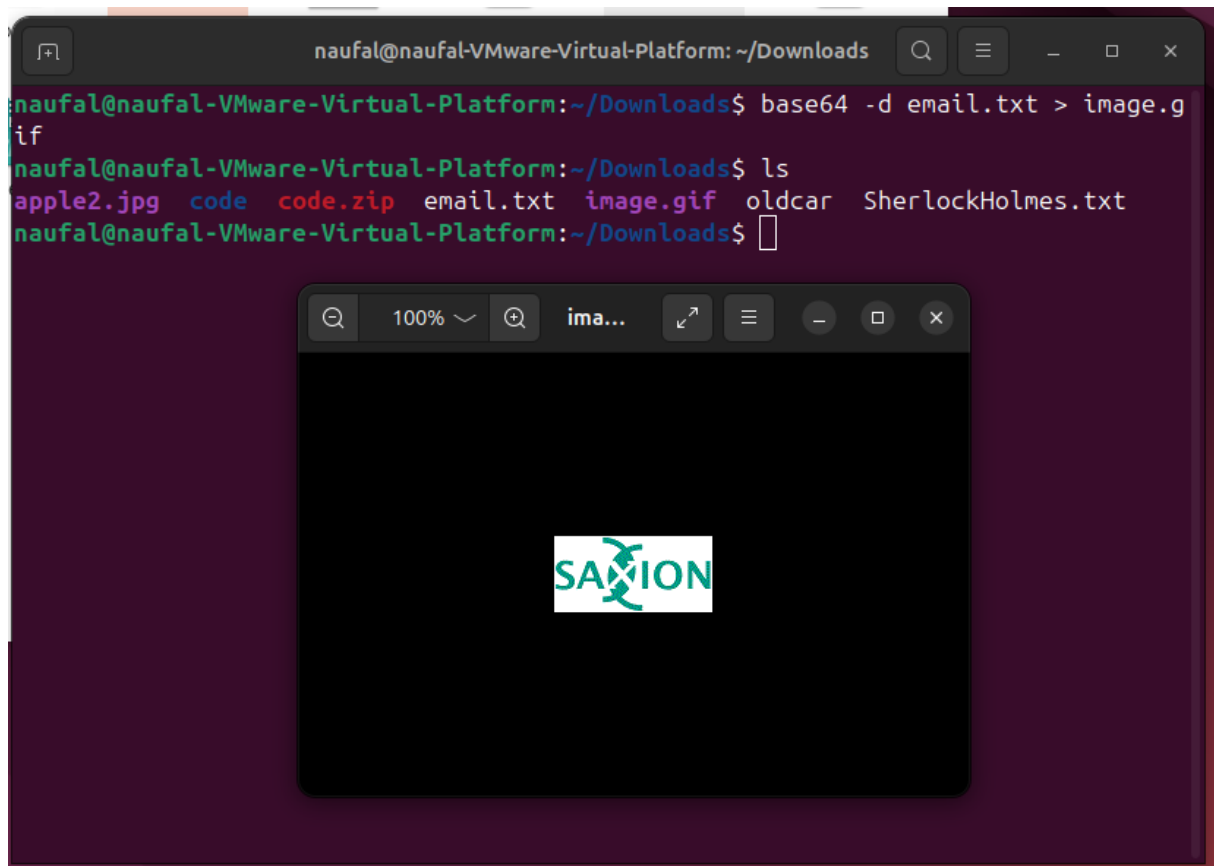


The picture was taken in Groningen

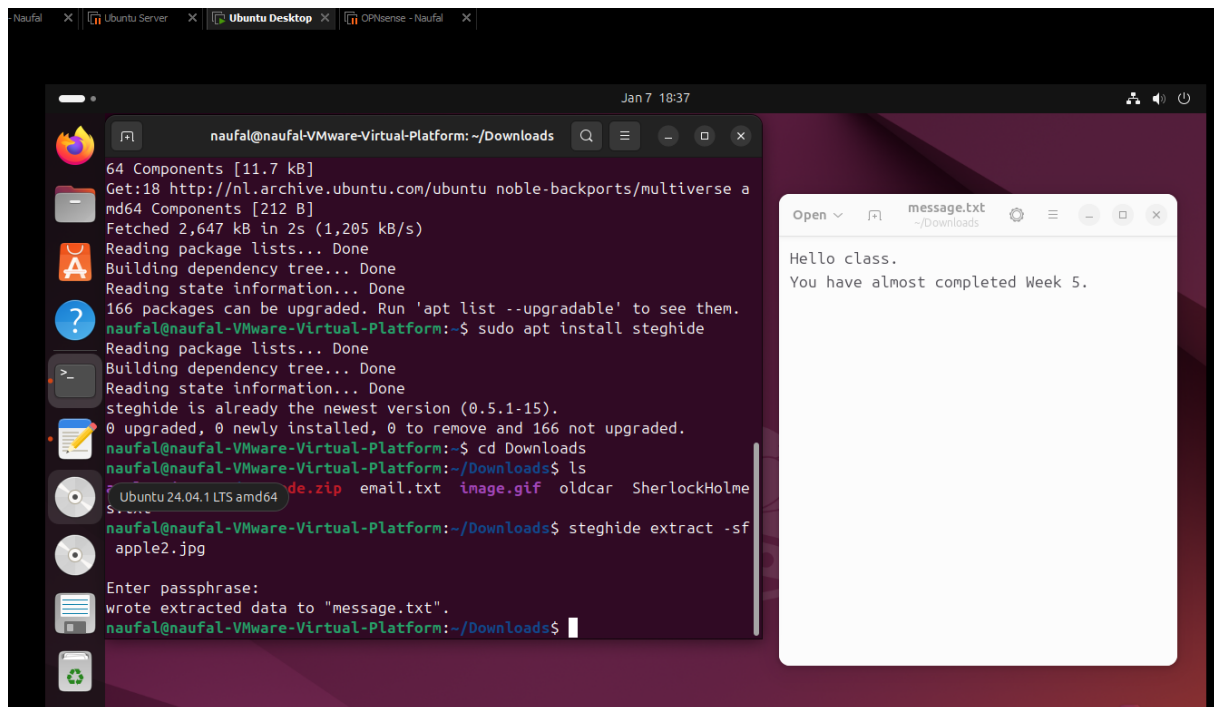




Ubuntu still consider it to be a jpg file after I renamed the file



## Assignment 5.8: Steganography

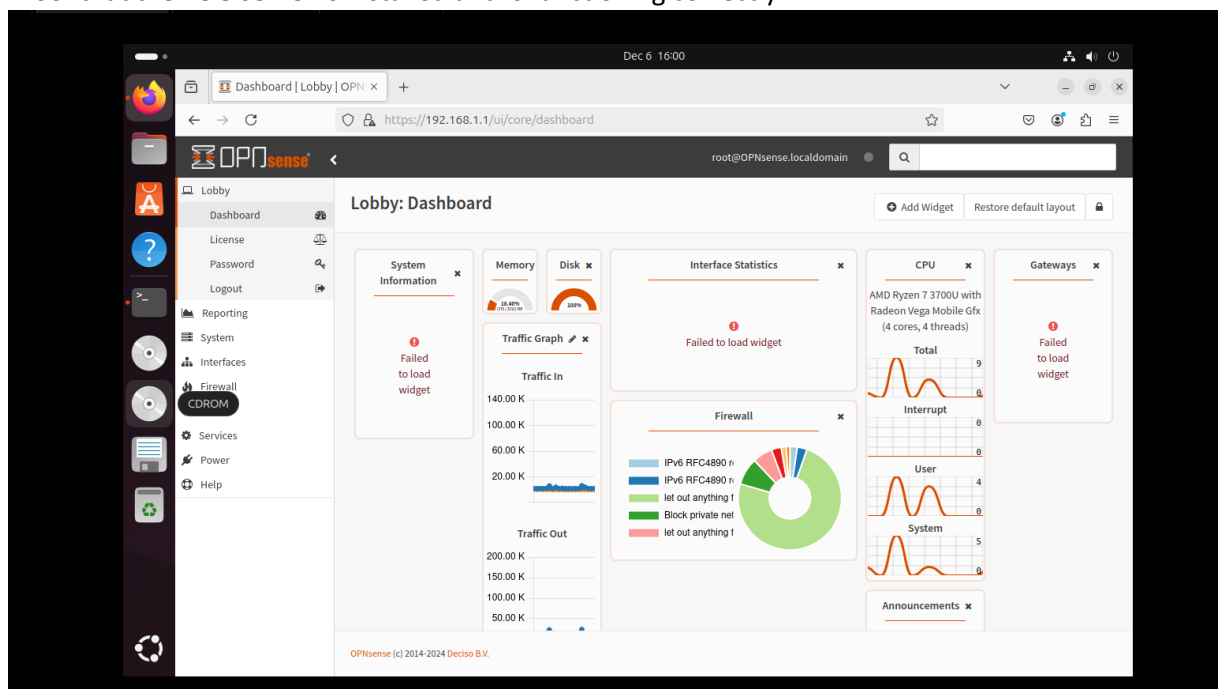


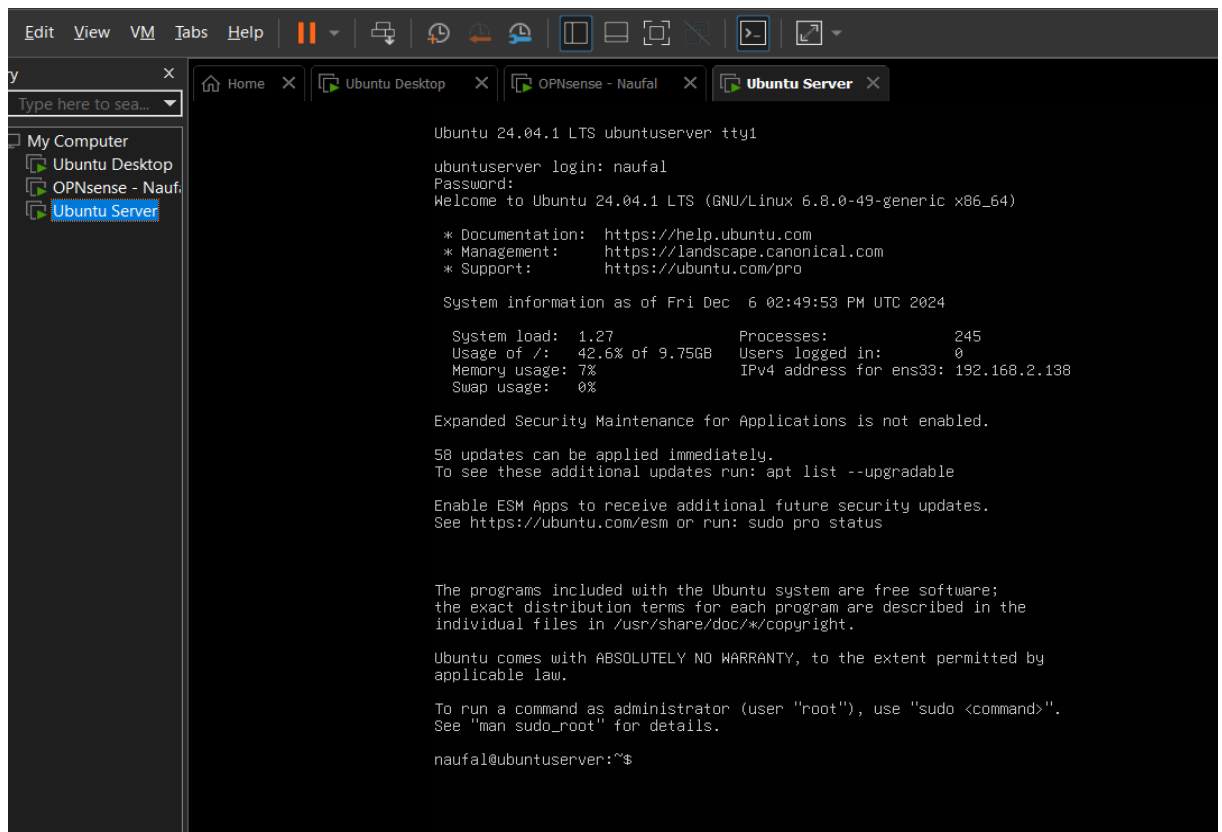
### Bonus point assignment – week 5

Make relevant screenshots + motivation

n:

- Proof that the FOG server is installed and is functioning correctly.





- Proof that the FOG server has made a back-up of the Windows11 VM or the Ubuntu 24.04 Desktop VM.

