

Template Week 5 – Operating Systems

Student number: 575933

Assignment 5.1: Unix-like

- a) *Find out what the difference is between UNIX and unix-like operating systems?:* unix refers to a family of operating systems that were developed in the 1970s at AT&T bell labs. Unix-like are operation systems that behave similarly to unix but are not from the same code. For example, Linux or macOS. They are also typically open-source unlike unix where it has a trademark and has specific licensing requirements which it is not freely available.
- 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 is the co-creator of UNIX at AT&T bell labs in 1969. He designed and implemented the first version of the UNIX operation system and developed the B programming language. Dennis Ritchie is the co-creator of UNIX and the inventor of the c programming language which later became the primary language for UNIX and other operating systems. Bill Joy is the developer of the BSD version of UNIX and is the creator of the C shell and co-founder of sun Microsystems. Richard Stallman is the founder of GNU project which provides a free and open-source UNIX-like operating system. Linus Torvalds is the creator of Linux which is released in 1991. His work was crucial in advancing the open-source movement in operating systems.
- c) *What is the philosophy of the GNU movement?:* The GNU movement's philosophy is based on the belief that software should respect users' freedom to run software for any purpose, study and modify the software, distribute copies of the software and distribute modified versions of the software.
- d) *Does Ubuntu as a Linux operating system conform to the philosophy of the GNU movement? Please explain your answer.:* Yes, Ubuntu provides a completely open source environment where users can freely modify, distribute and share the operating system.
- e) *Find out what is the Windows Subsystem for Linux?:* WSL is a compatibility layer for running linux binary executables natively on windows 10 and later. It allows users to run linux distributions directly on windows without a virtual machines.
- f) *Find out, which operating system family belongs to Android, iOS and ChromeOS?:* android is part of the Linux family of operating systems. IOS is a Unix-like operating system. ChromeOS is based on the linux kernal and is a unix-like operating system.

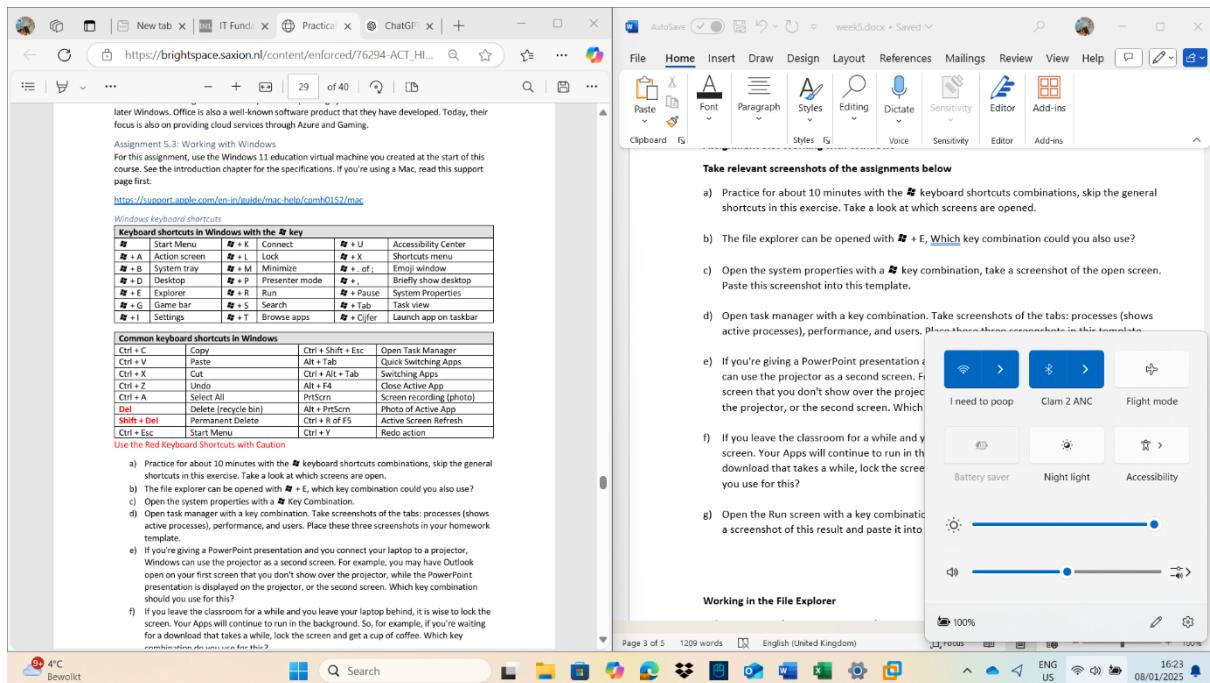
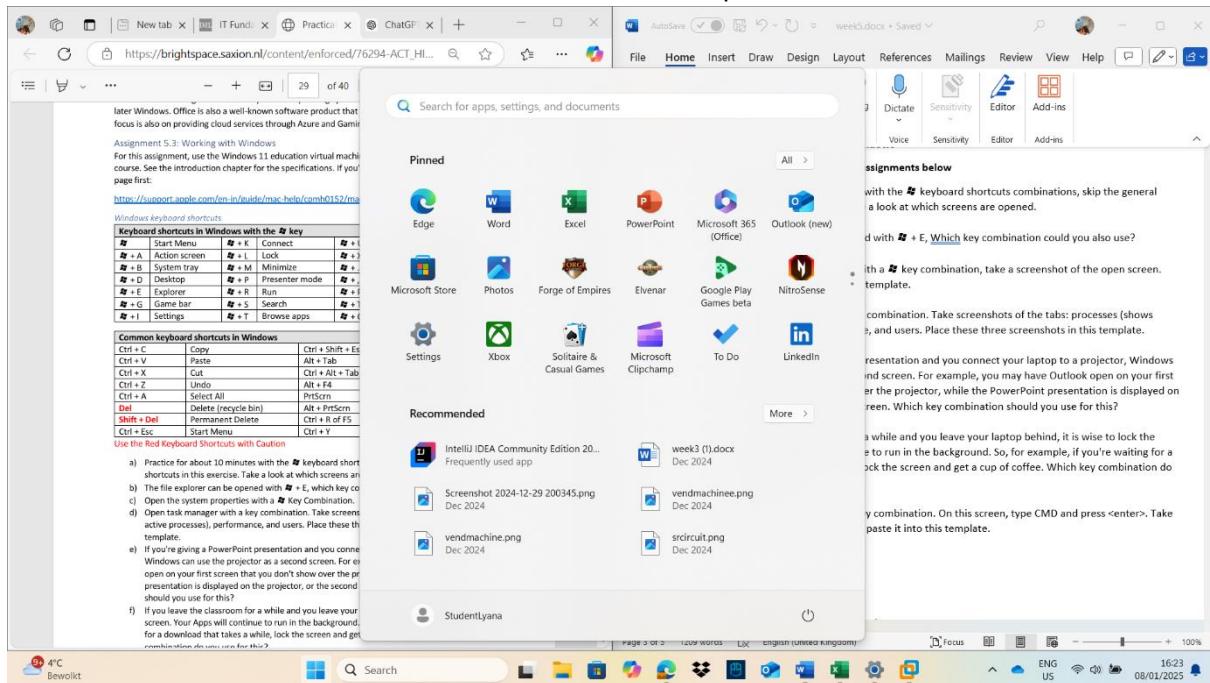
Assignment 5.2: Supercomputers and gameconsoles

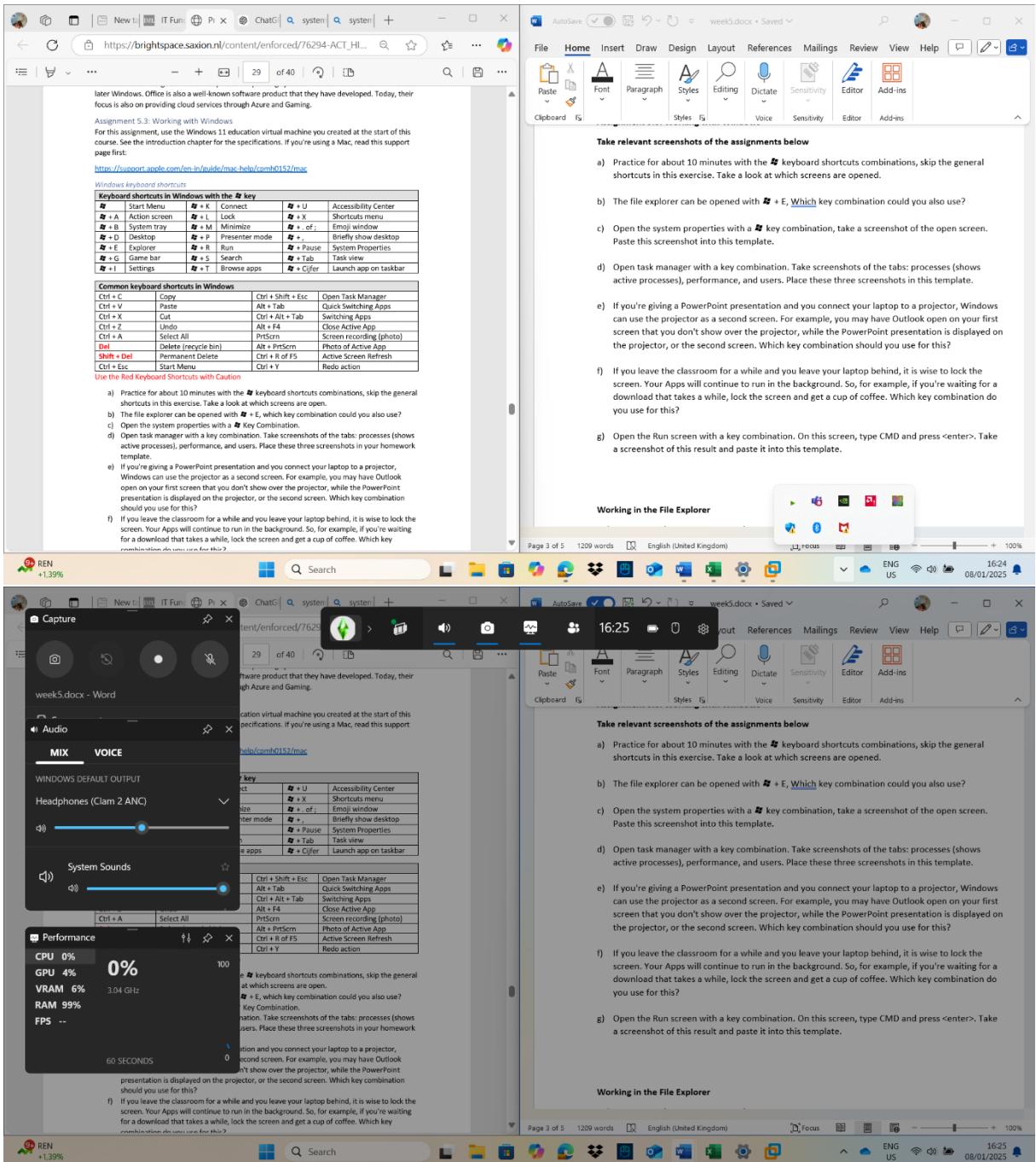
- a) Research on this site what supercomputers are used for and write a short summary of it:
Supercomputers are used for complicated computations for things like scientific research, finance, engineering, healthcare and more. These things use supercomputers' ability to process large amounts of data at high speeds which normally isn't possible with regular computers.
<https://www.computerhistory.org/timeline/search/?q=Supercomputer>
- 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 connects multiple PS3 consoles to function as one computing system. The U.S air force created the Condor Cluster using 1760 PS3s which is used for stuff like processing satellite images, pattern recognition and radar enhancement.
- 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? : It isn't specified in the article.
- 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. : Oracle's raspberry pi cluster while being notable for its scale and value, does not have enough power to be included in the top500 list. The supercomputers on this list perform at very high levels, far higher a raspberry pi cluster. <https://www.top500.org/lists/top500/list/2023/06/>
- e) What CPU architecture is used for the PlayStation 5 and Xbox Series X?: Both of them use custom AMD zen 2 CPUs.
What operating systems run on these consoles?: The PS5 runs a proprietary operating system developed by Sony. The Xbox X uses a custom operating system based on the Windows Kernal.
What conclusion can you draw from the answer to the previous question?: Although they use similar CPU architecture from AMD, they operate on different proprietary operating systems developed by their manufacturers. The difference allows each company to optimize performance and user experience according to their design philosophy and ecosystem requirements.

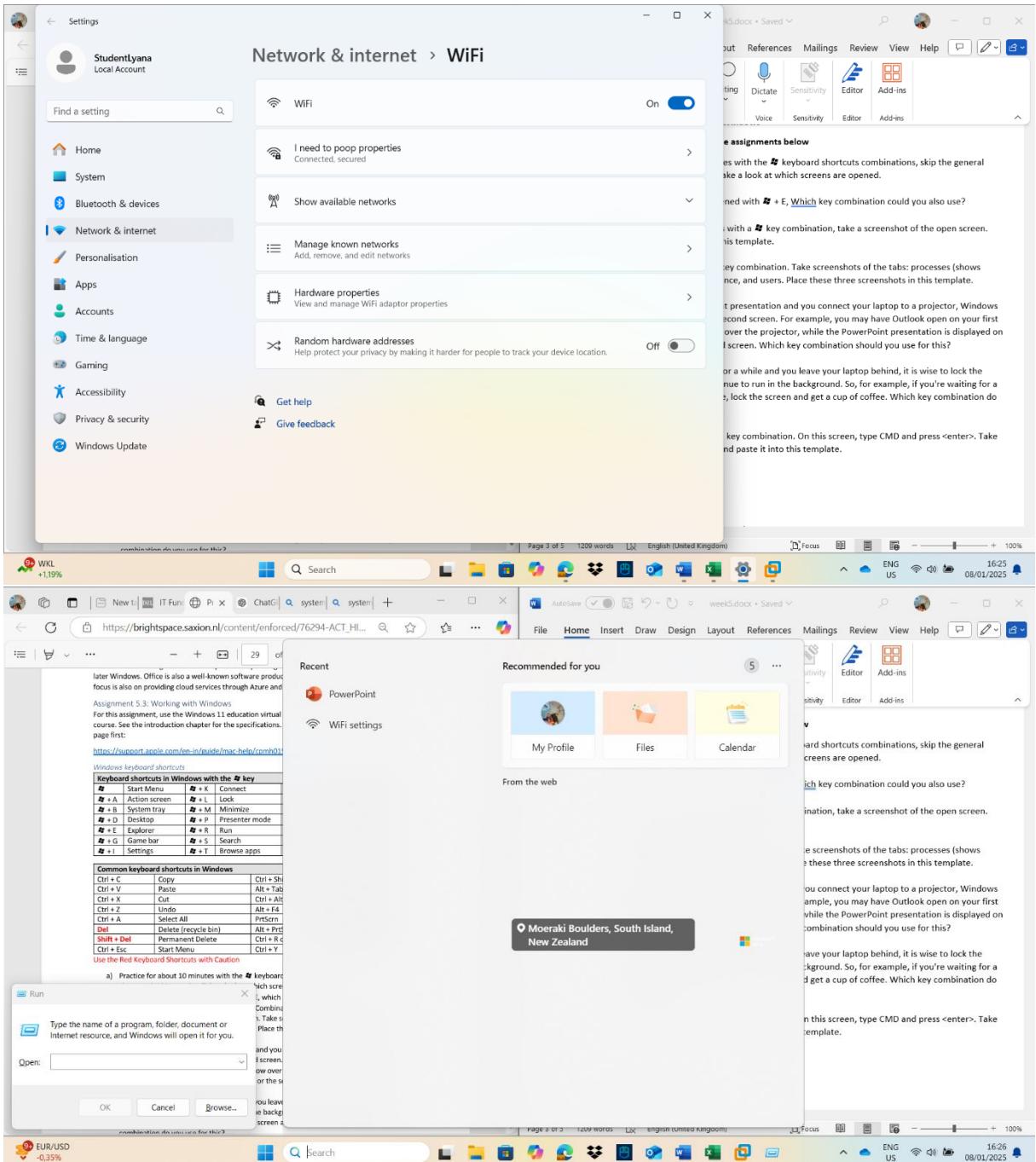
Assignment 5.3: Working with Windows

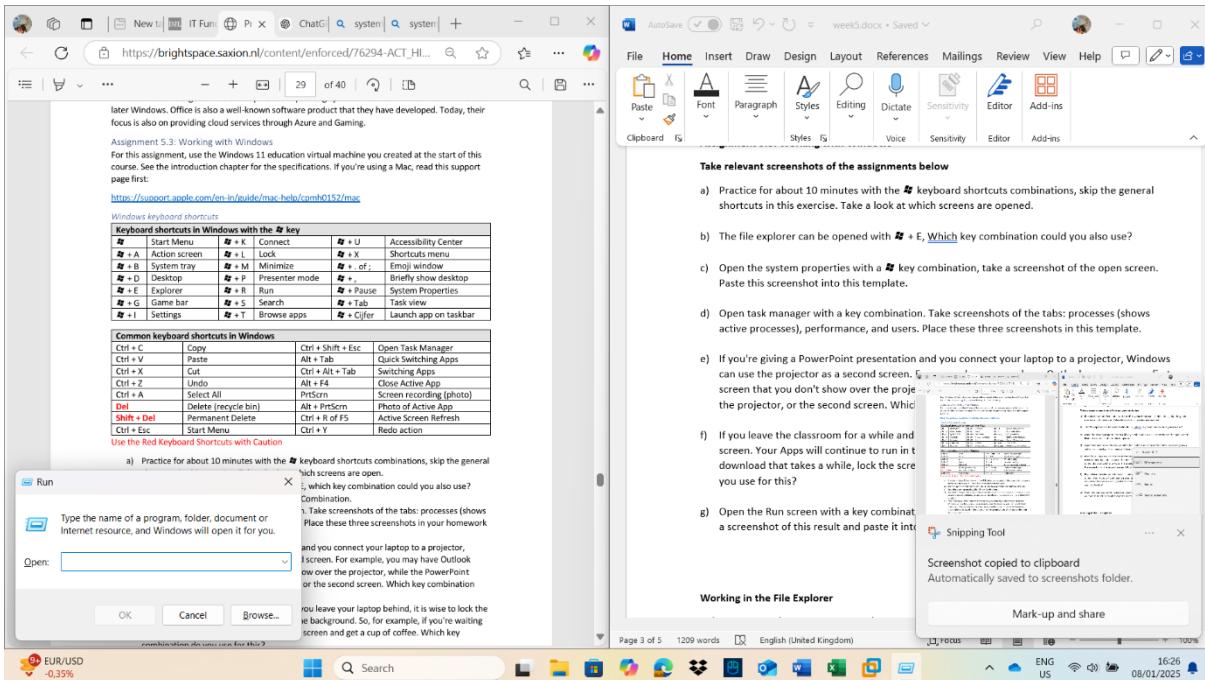
Take relevant screenshots of the assignments below

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

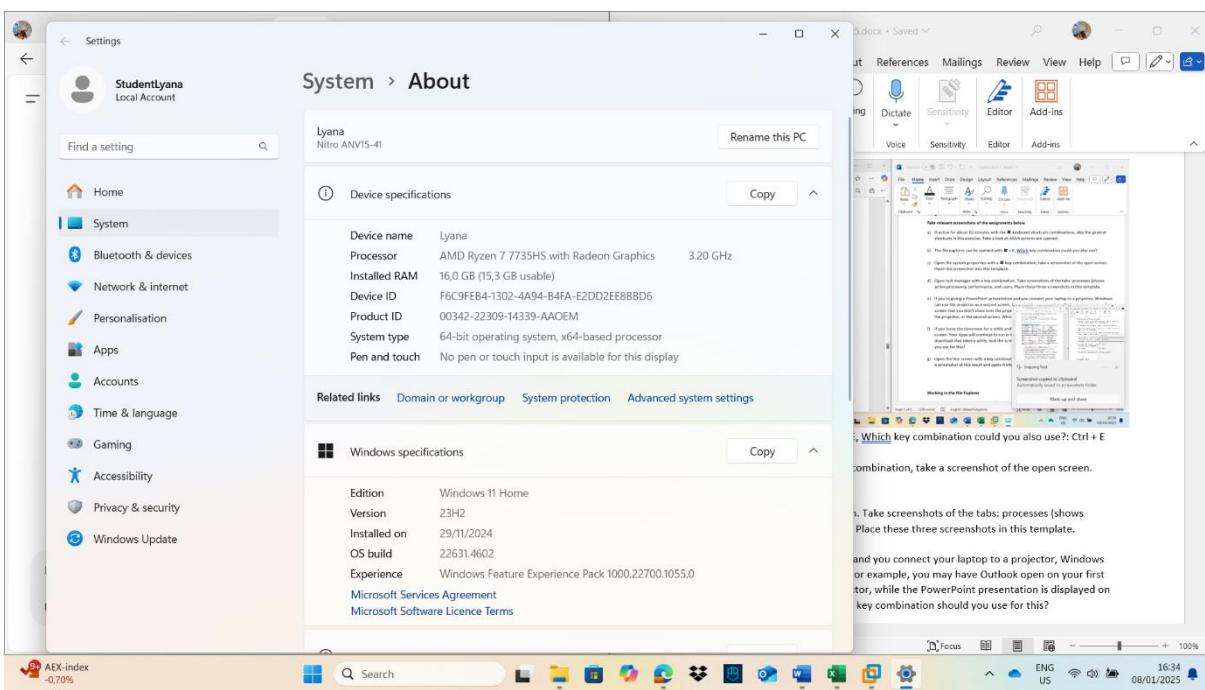




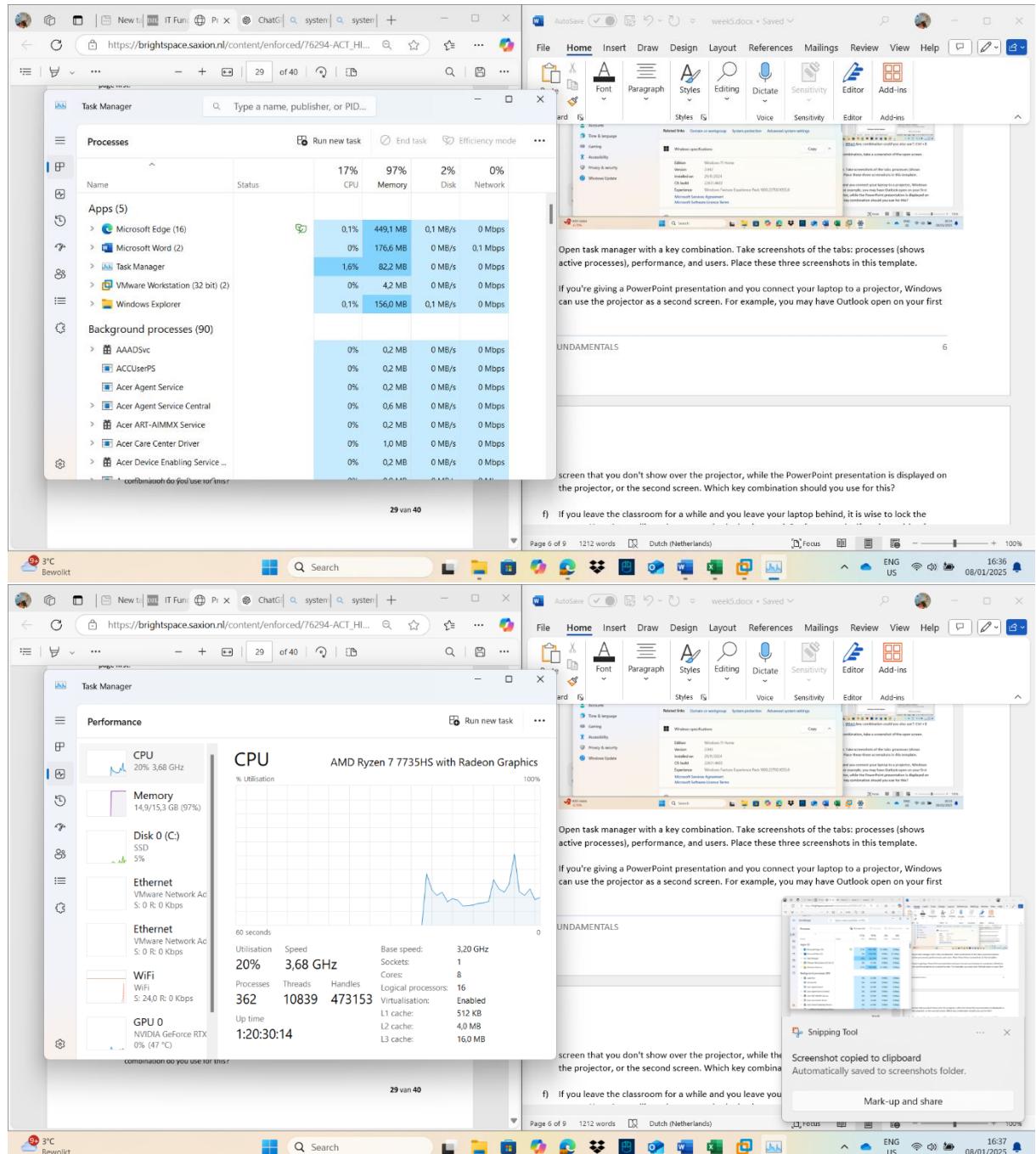


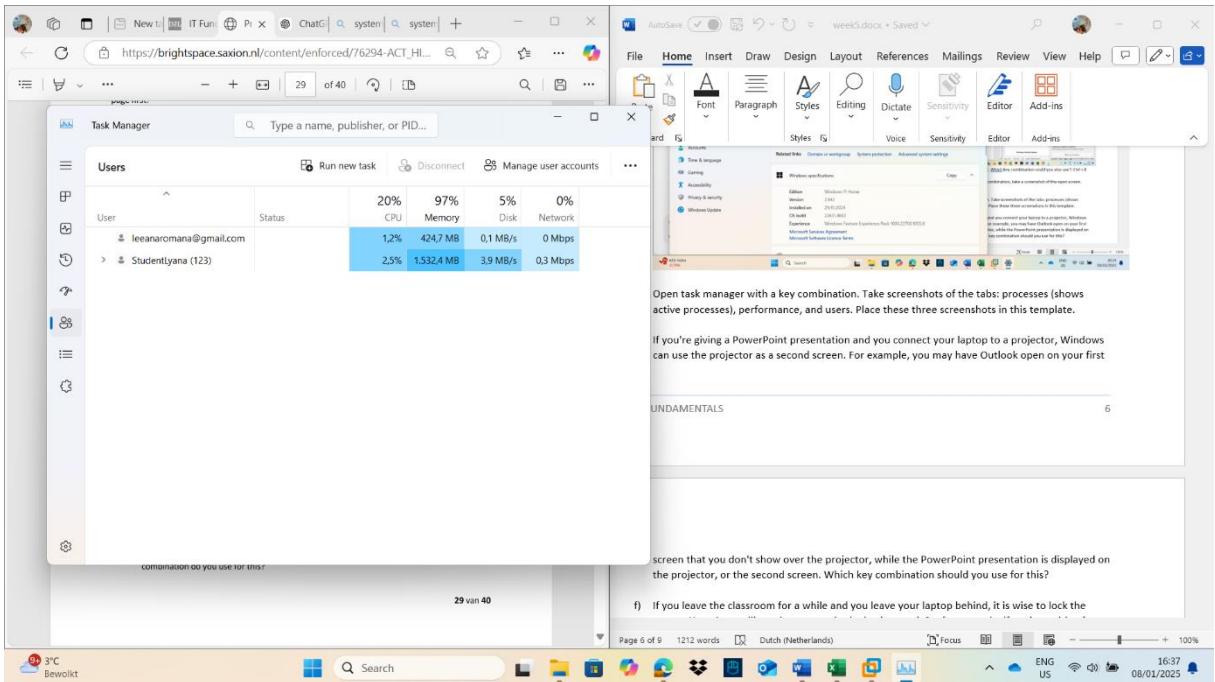


- b) The file explorer can be opened with **Windows + E**. Which key combination could you also use?: **Ctrl + E**
- c) Open the system properties with a **Windows** key combination, take a screenshot of the open screen. Paste this screenshot into this template.



- 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.

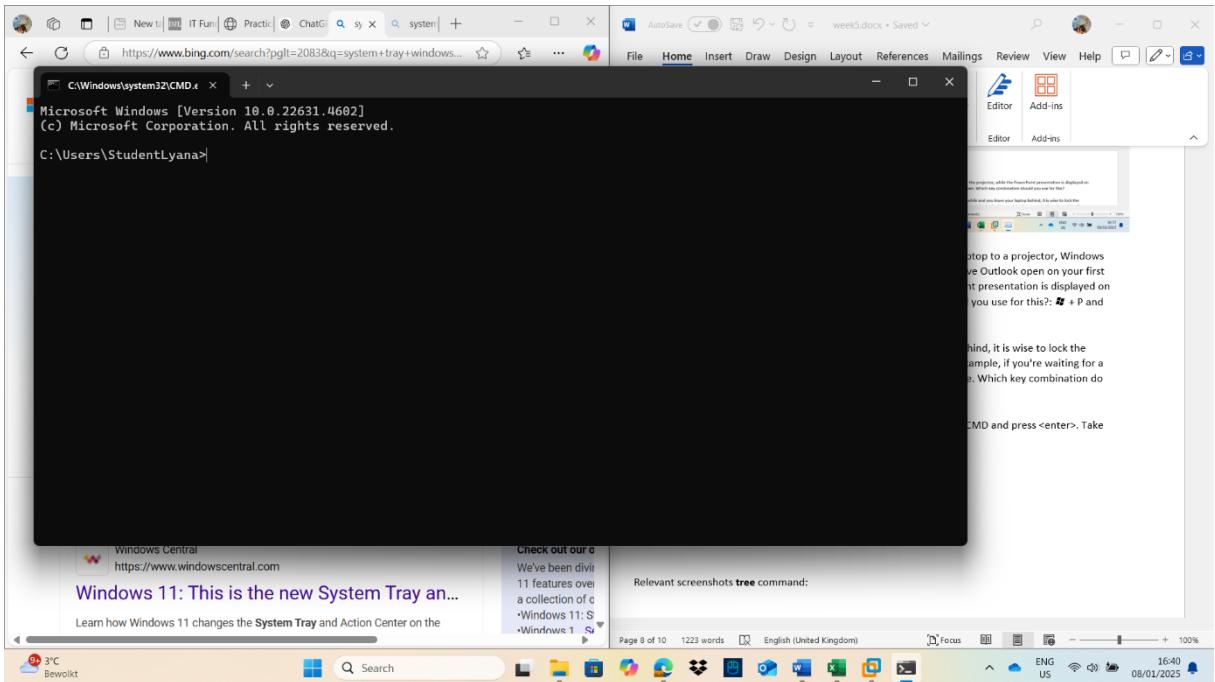




- e) If you're giving a PowerPoint presentation and you connect your laptop to a projector, Windows can use the projector as a second screen. For example, you may have Outlook open on your first screen that you don't show over the projector, while the PowerPoint presentation is displayed on the projector,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

- 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:

lyana windows - VMware Workstation

File Edit View VM Tabs Help

Library Home lyana windows

Computer Ubuntu 64-bit lyana Ubuntu 64-bit lyana knoba lyana windows

Type here to search

Command Prompt

```
08/01/2025 19:09    <DIR>      Music
08/01/2025 19:12    <DIR>      OneDrive
08/01/2025 19:09    <DIR>      Pictures
08/01/2025 19:09    <DIR>      Saved Games
08/01/2025 19:09    <DIR>      Searches
08/01/2025 19:09    <DIR>      Videos
08/01/2025          0 File(s)   0 bytes
14 Dir(s) 104.969.523.200 bytes free

C:\Users\Lyana>cd Saxon
The system cannot find the path specified.

C:\Users\Lyana>cd C:\SAXION
C:\SAXION>copy wave introduction to programming
The system cannot find the file specified.

C:\SAXION>copy "C:\SAXION\Wave.png" "C:\SAXION\HBOICT\YEAR1\QUARTILE1\Introduction to programming"
The syntax of the command is incorrect.

C:\SAXION>copy C:\SAXION\Wave.png C:\SAXION\HBOICT\YEAR1\QUARTILE1\Introduction to programming
The syntax of the command is incorrect.

C:\SAXION>copy Wave Introduction to programming
The system cannot find the file specified.

C:\SAXION>copy "C:\SAXION\Wave.png" "C:\SAXION\HBOICT\YEAR1\QUARTILE1\Introduction to programming"
1 file(s) copied.

C:\SAXION>
```

Shenandoah Skara Sumatra

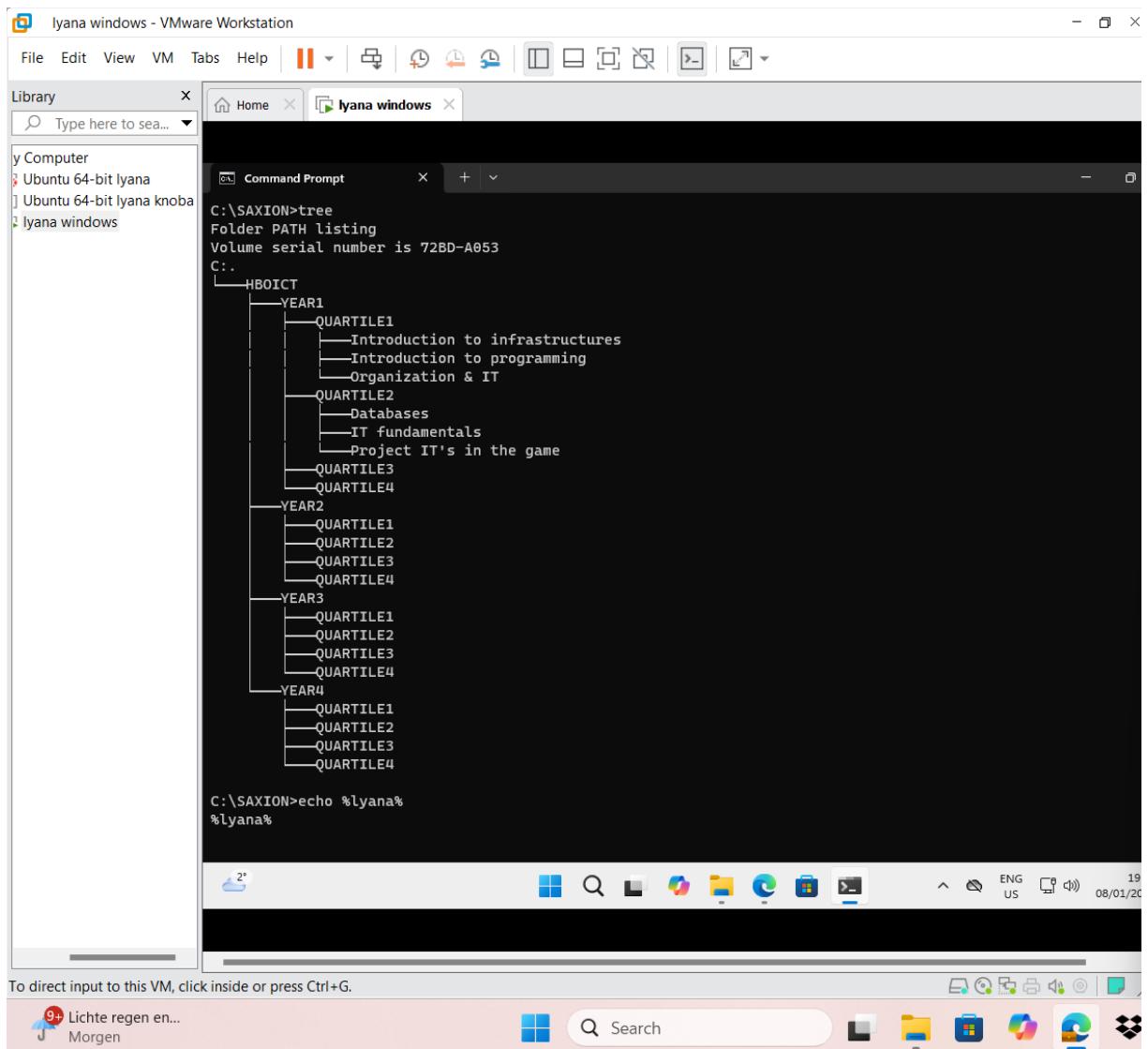
To direct input to this VM, click inside or press Ctrl+G.

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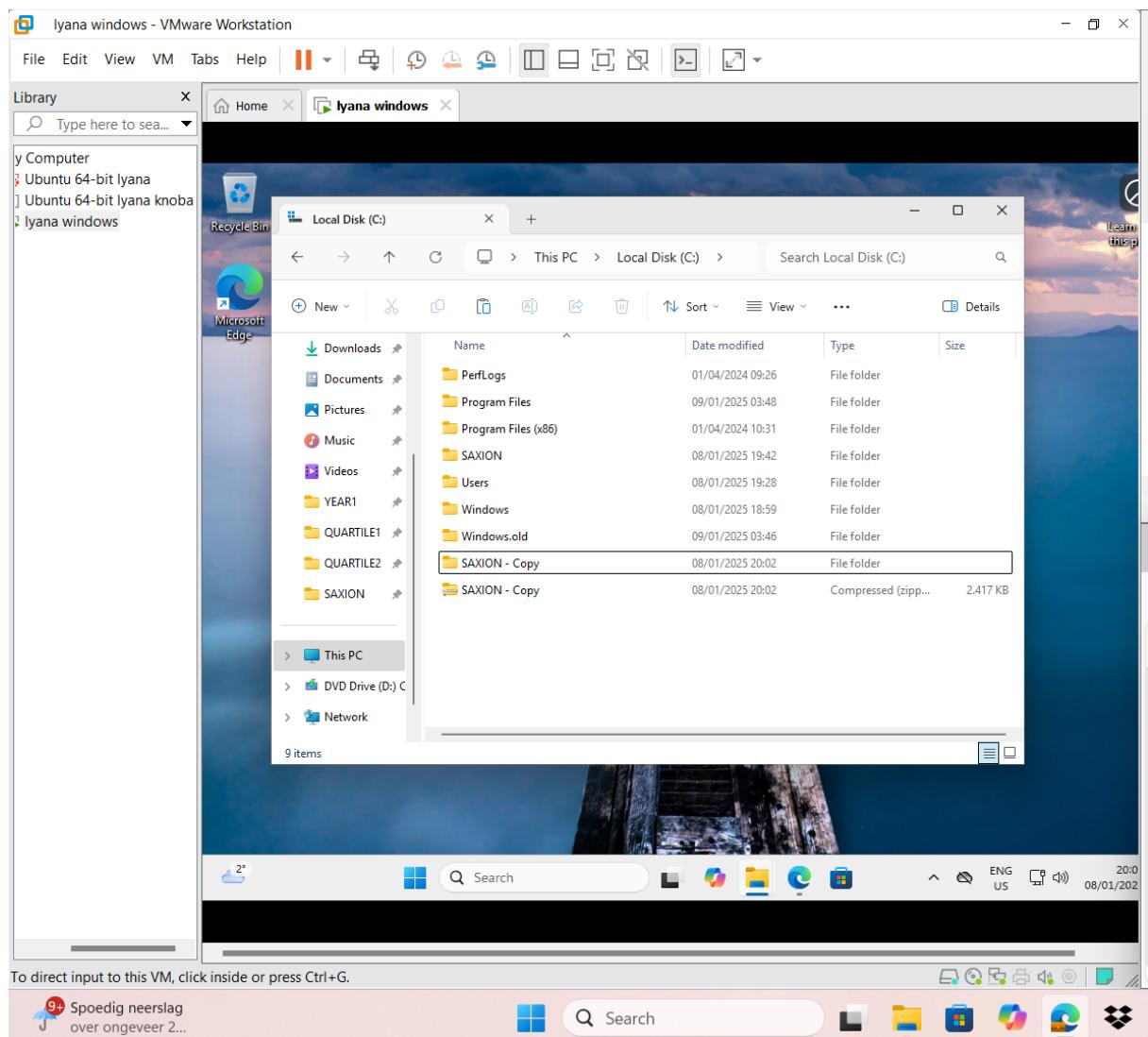
Search

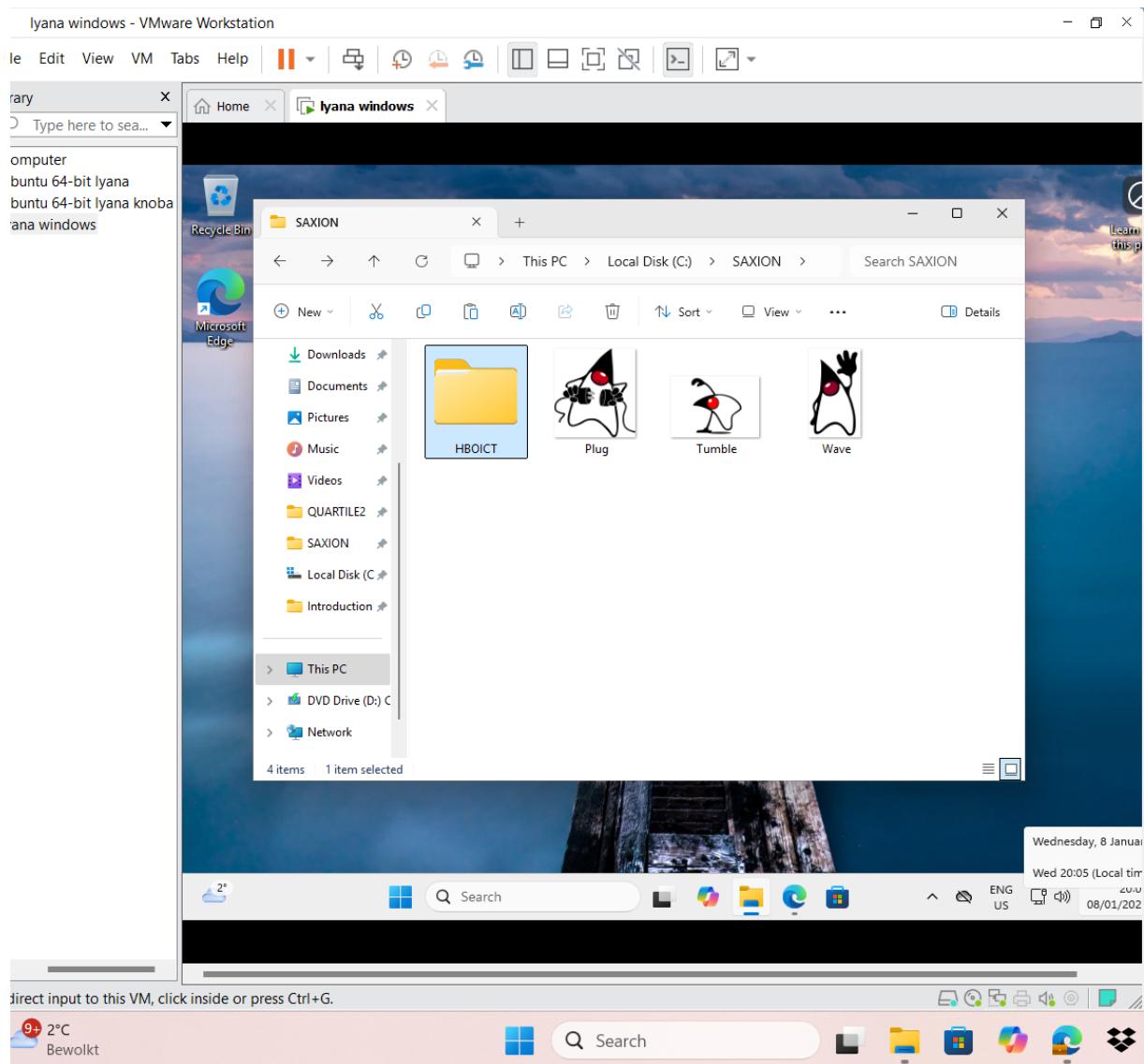
tree

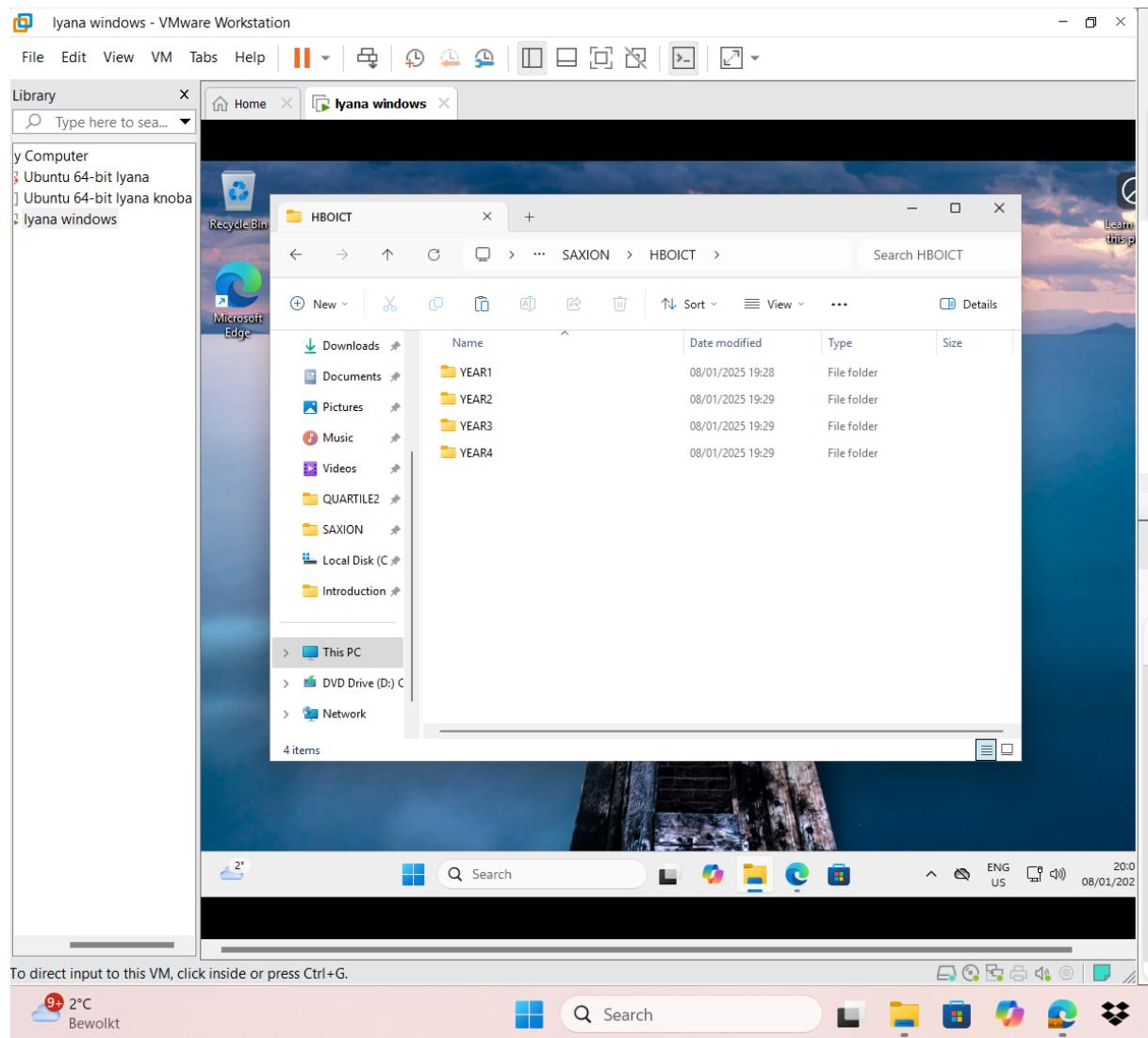
Relevant screenshots **tree** command:

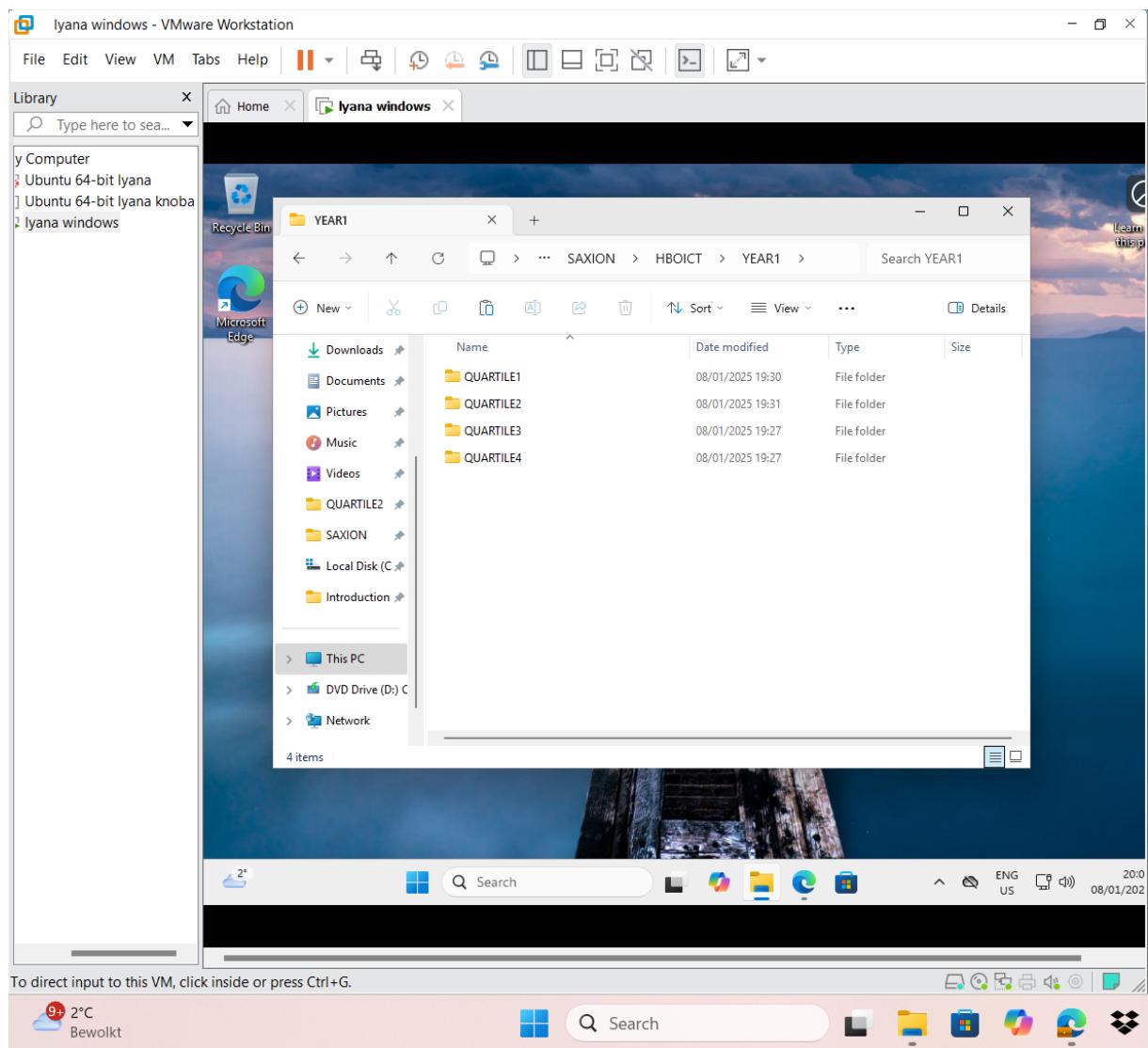


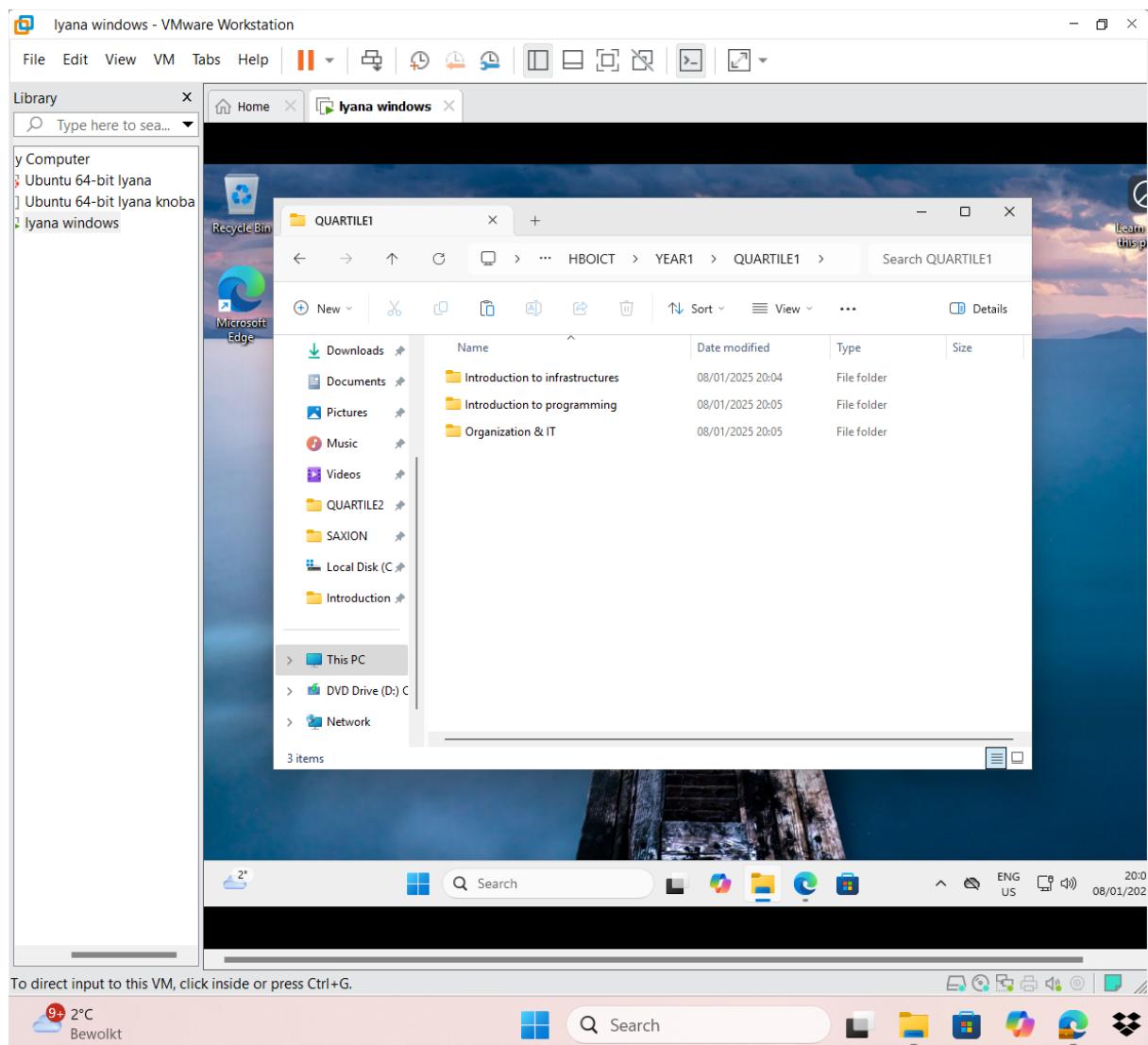
Relevant screenshots in the file explorer of the folder c:\Saxion + created zip file.

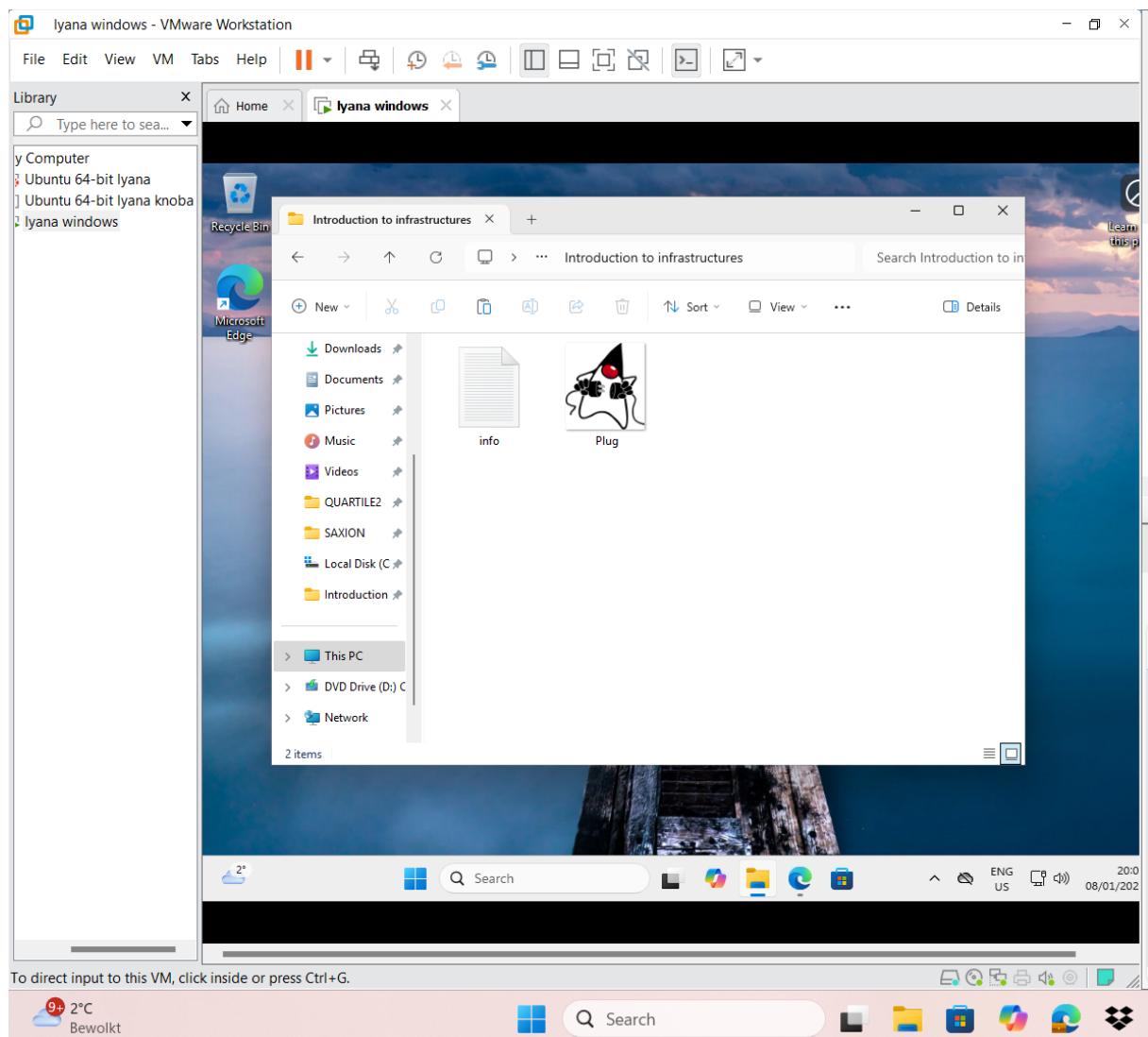


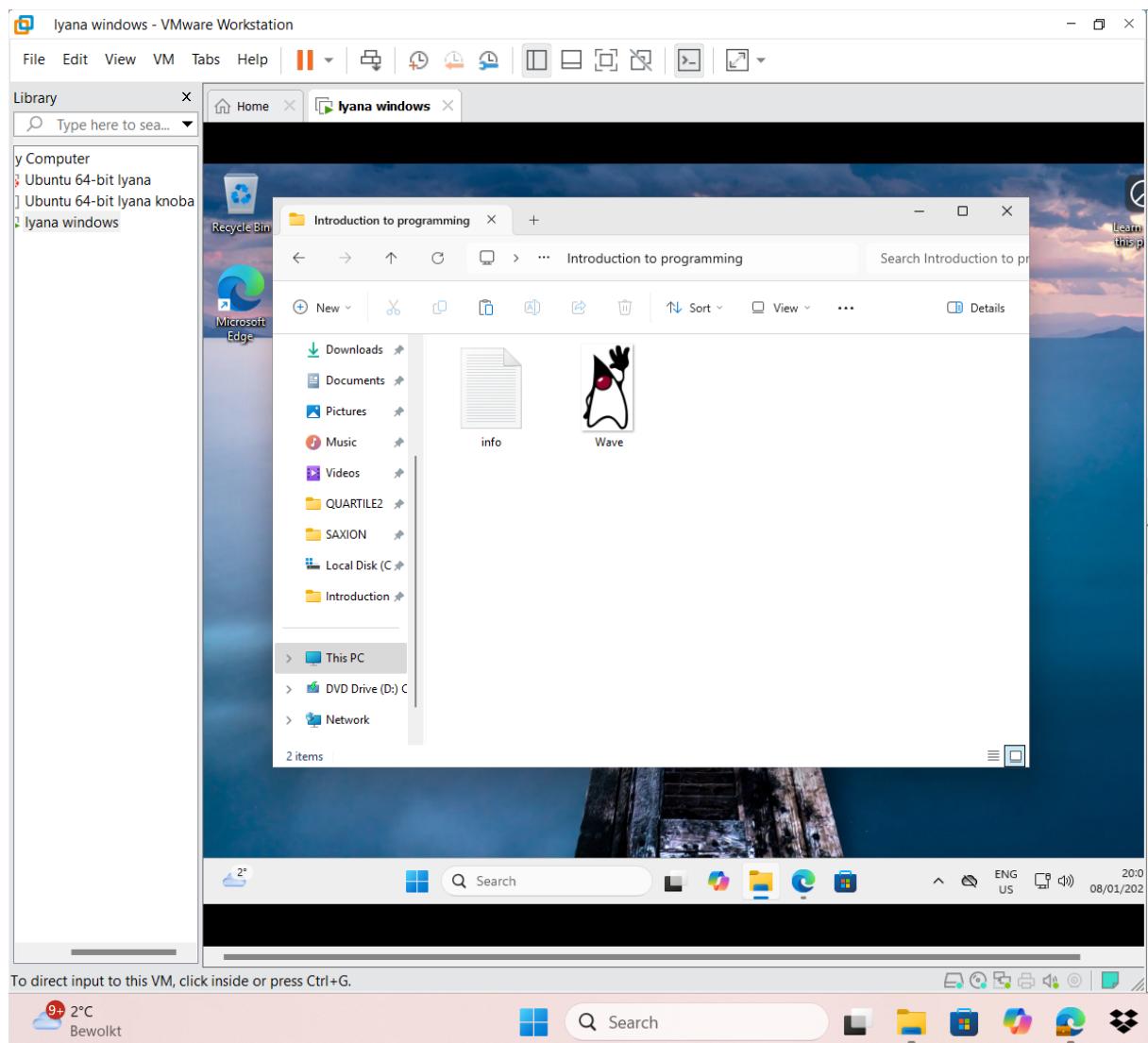


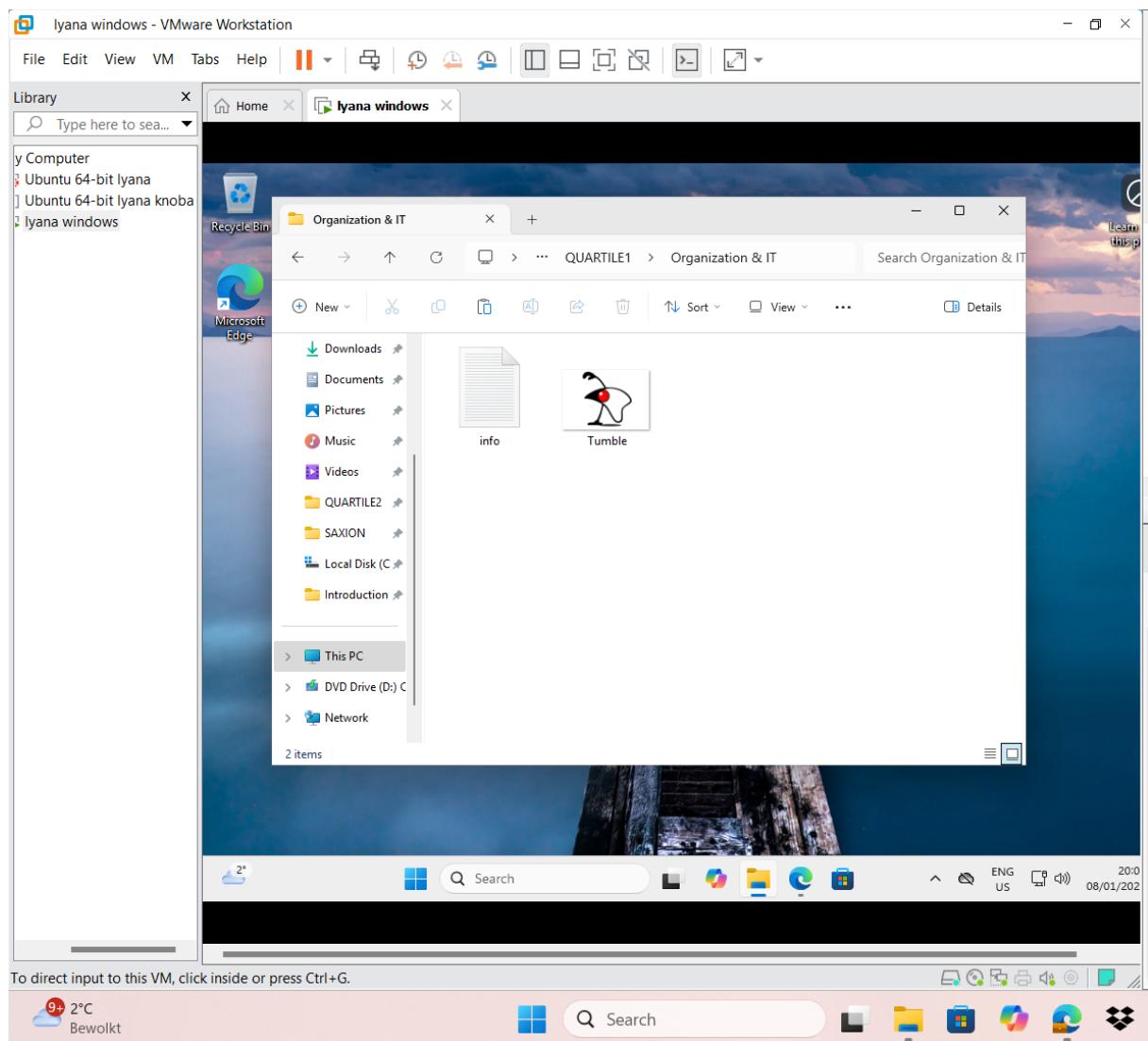


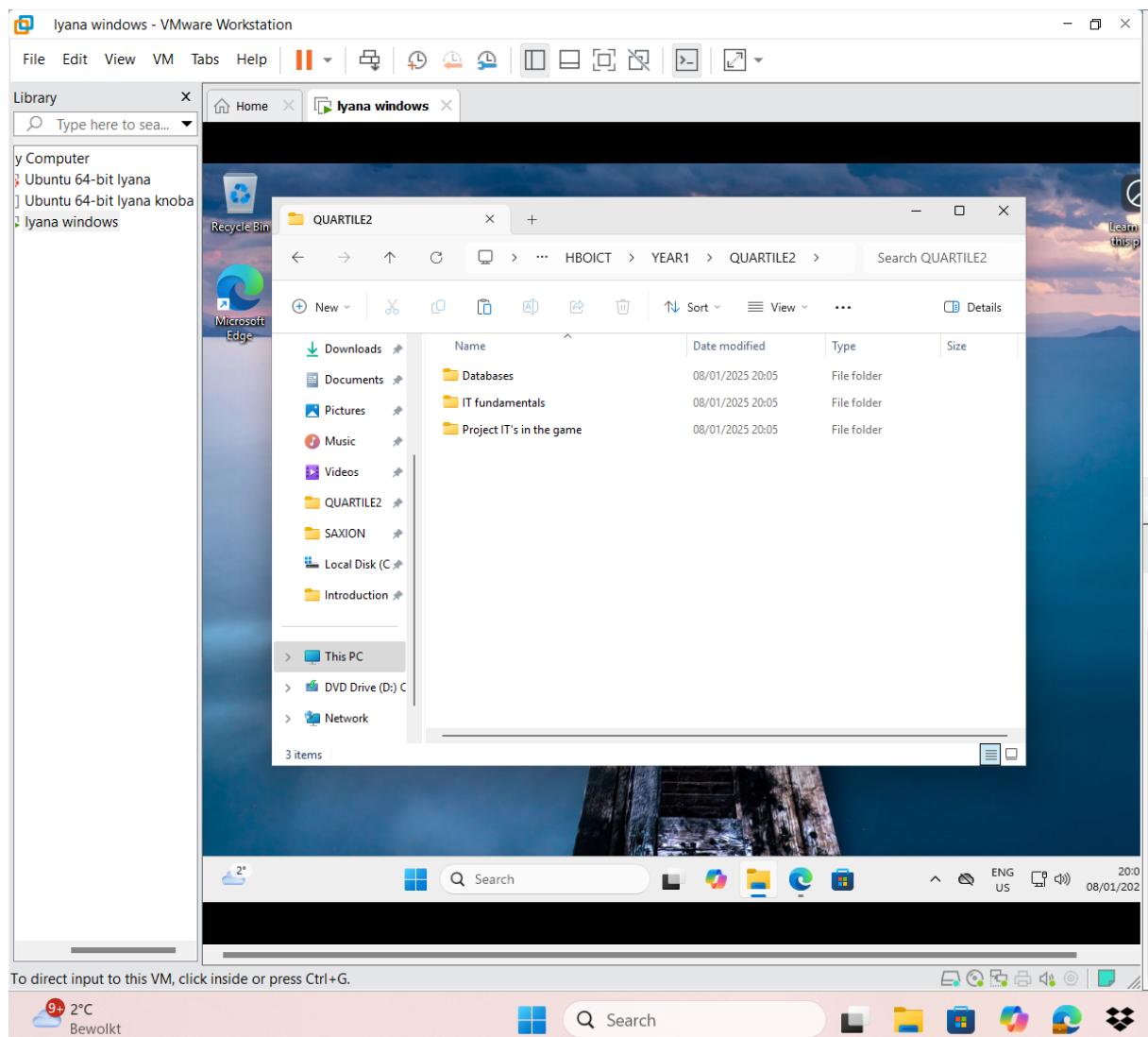


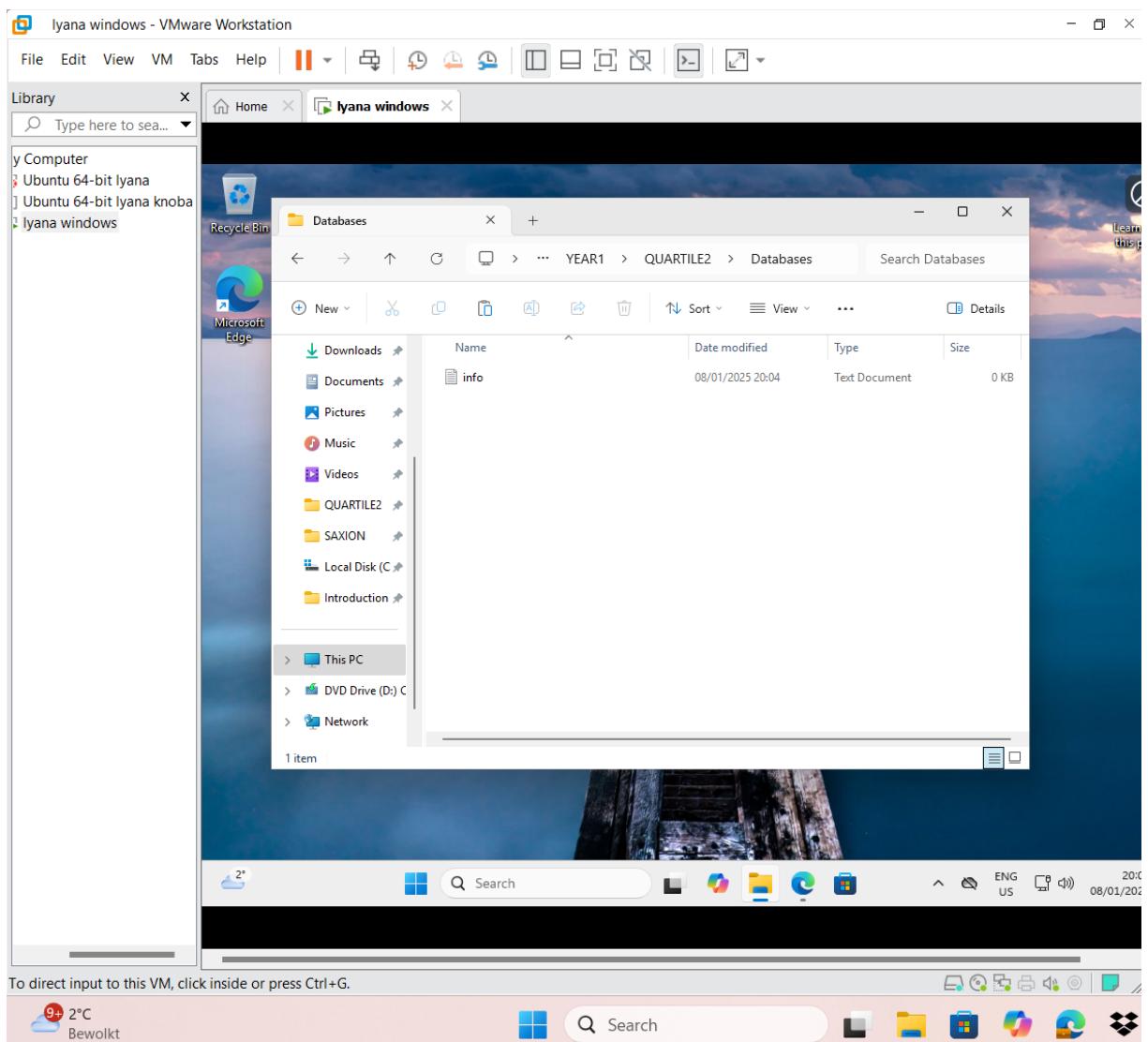


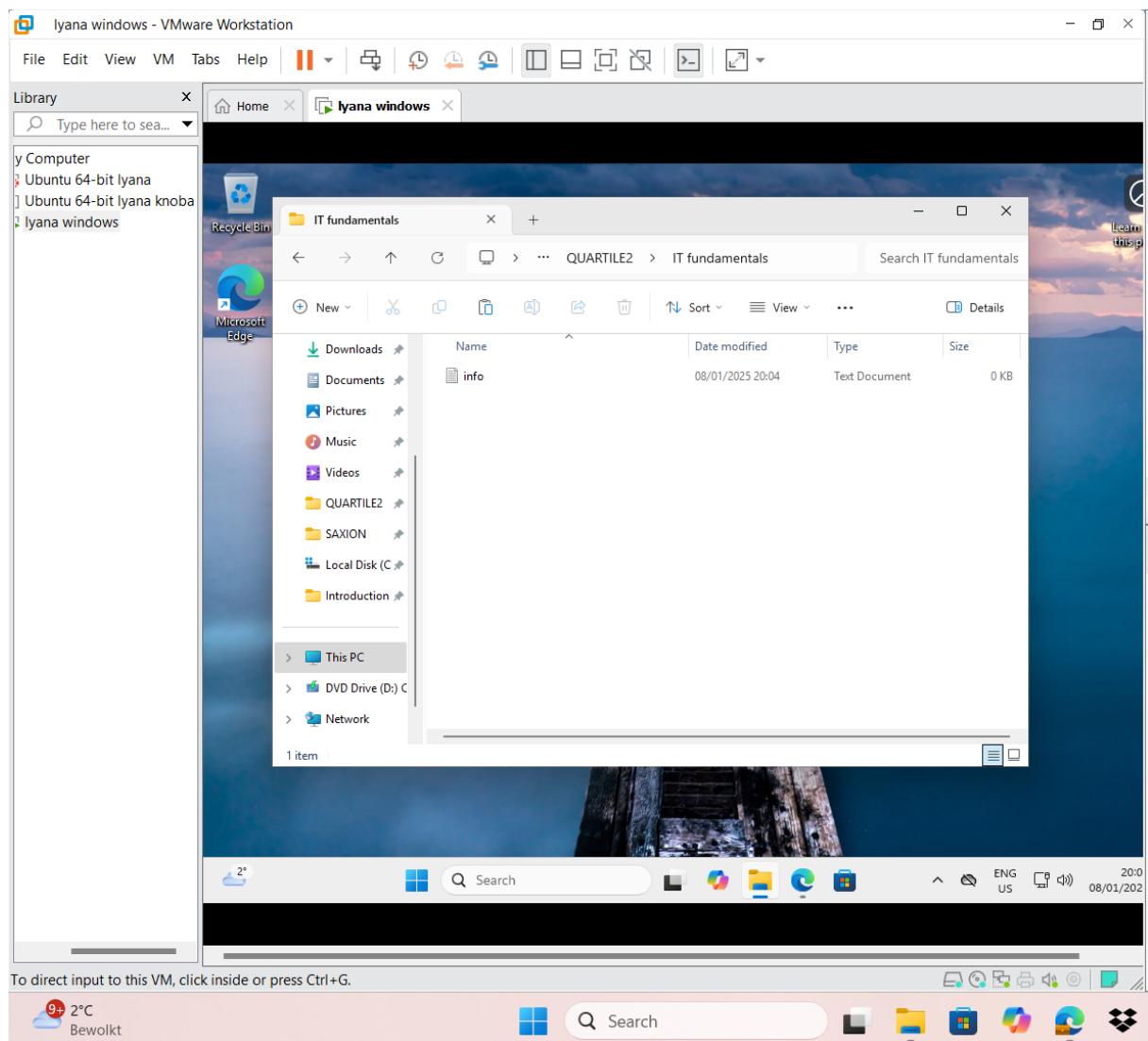


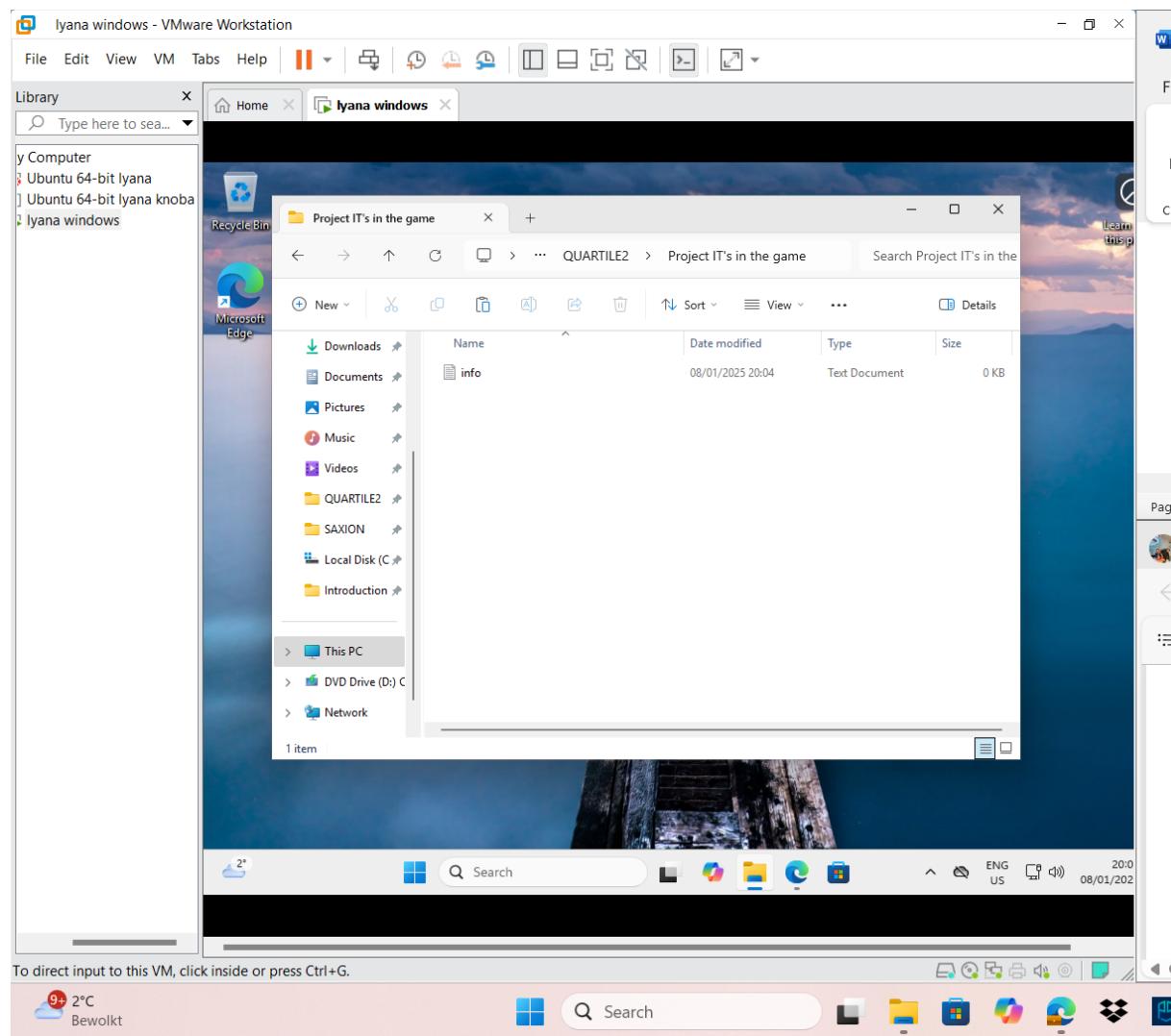


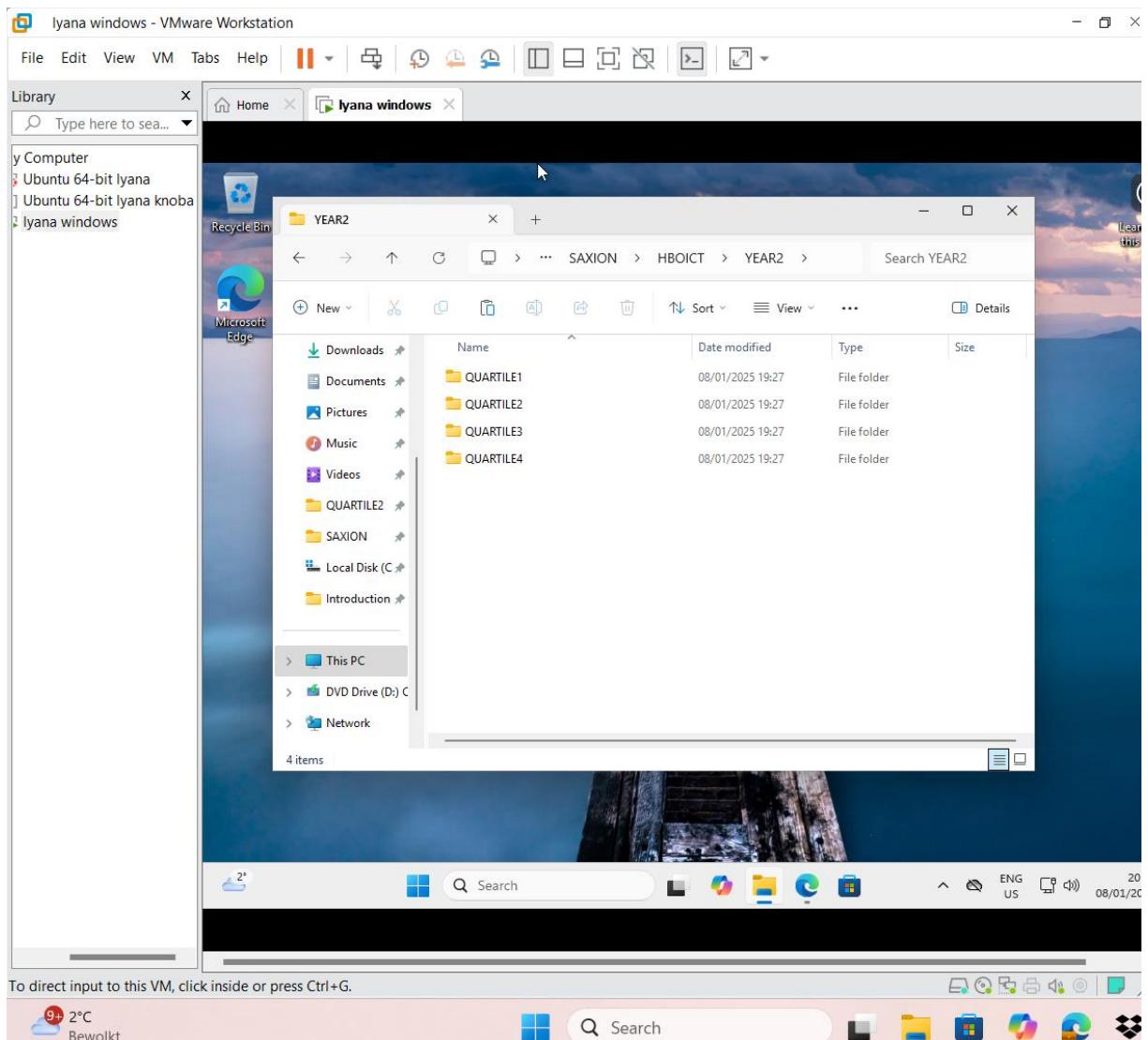




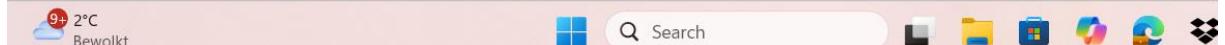


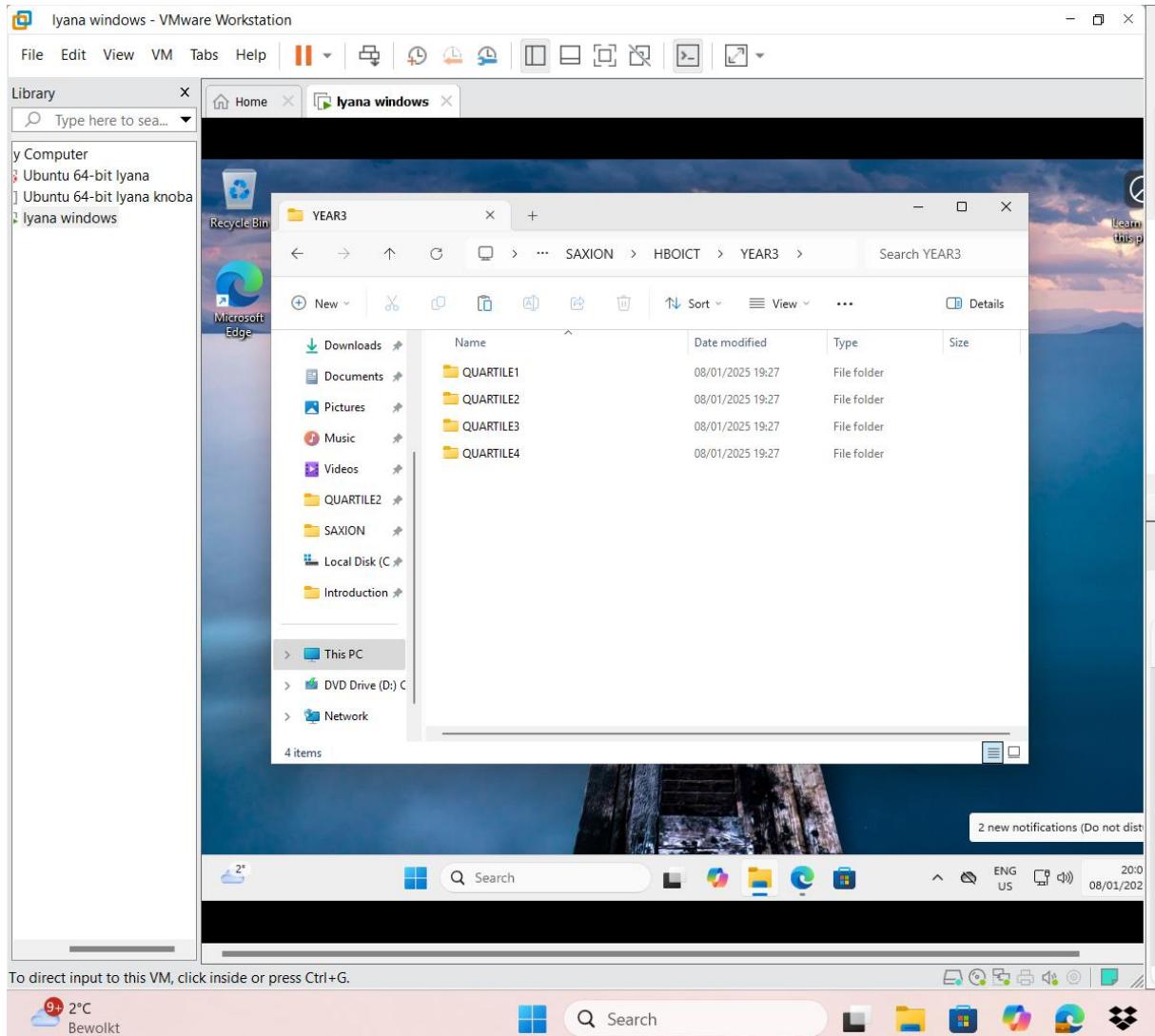


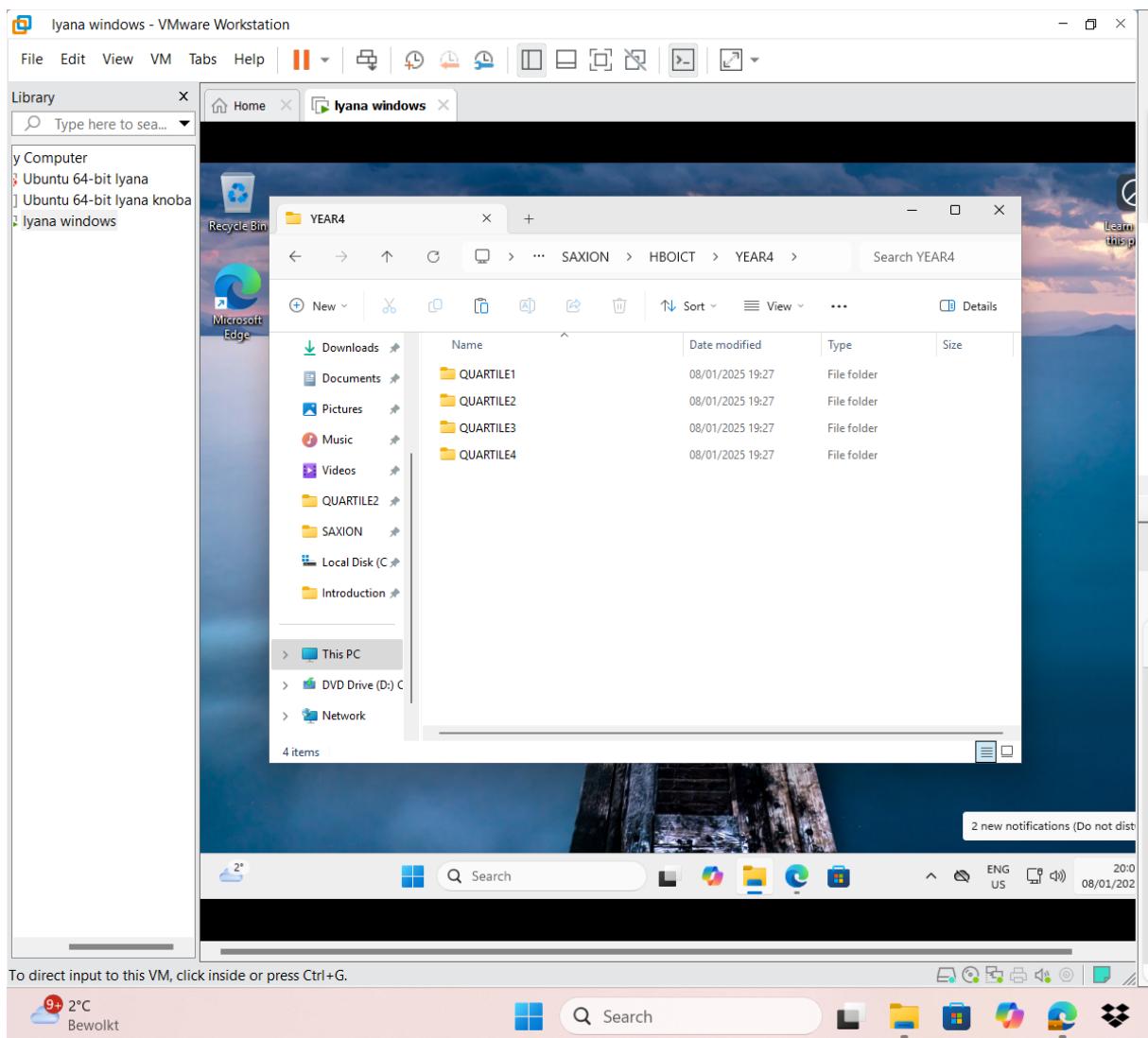




To direct input to this VM, click inside or press Ctrl+G.

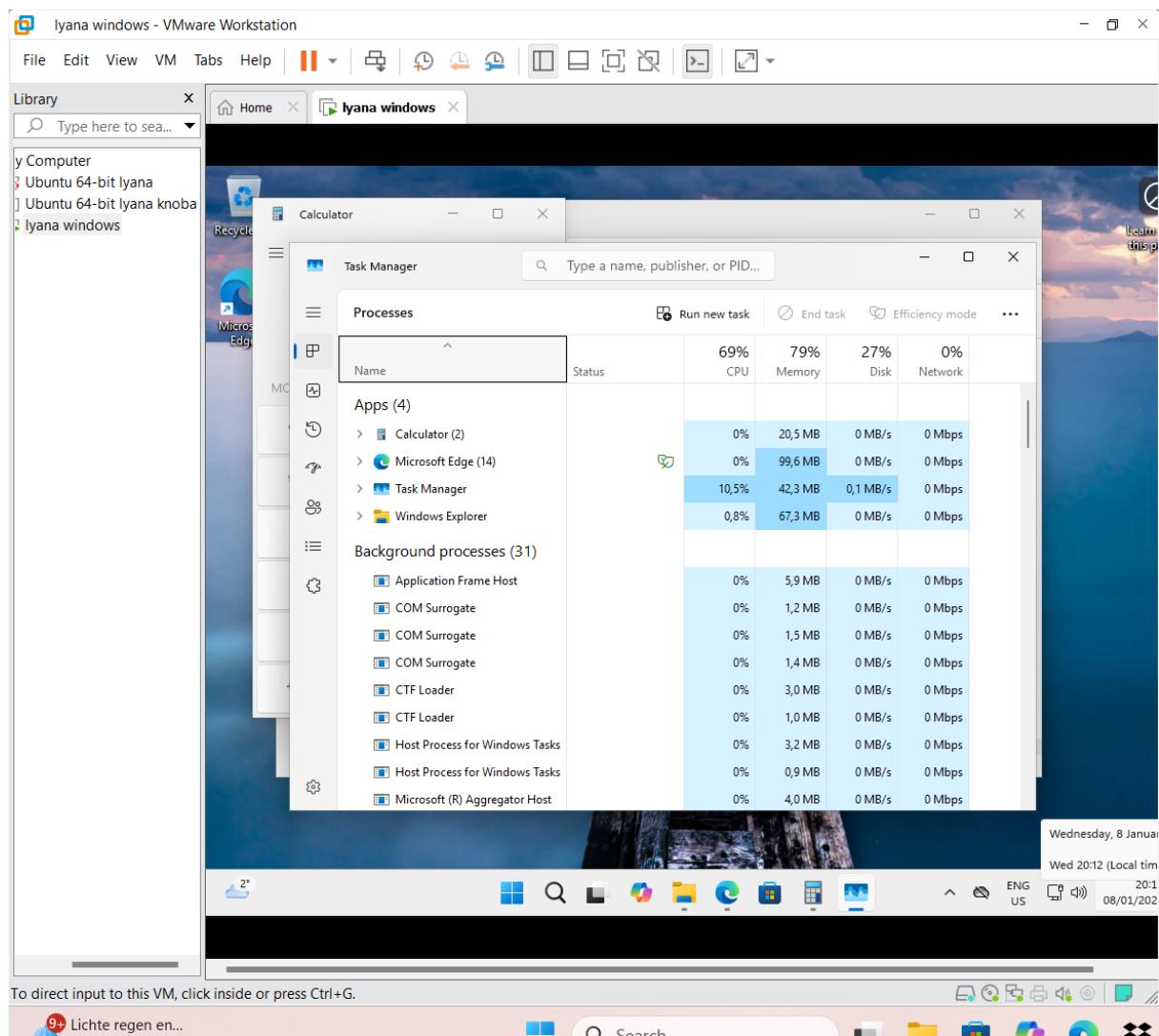


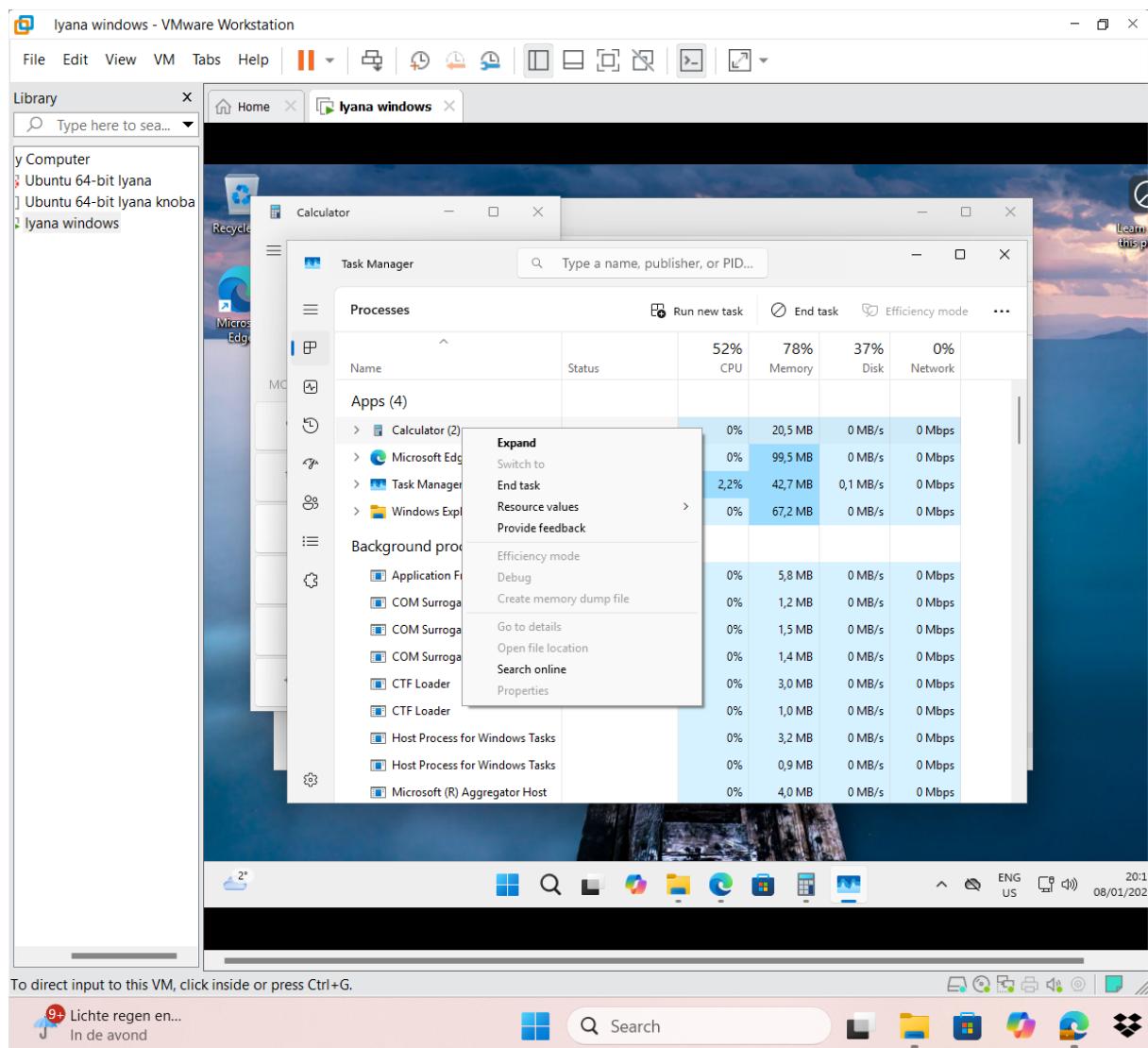




Terminating Processes

Relevant Screenshots Task Manager Window:

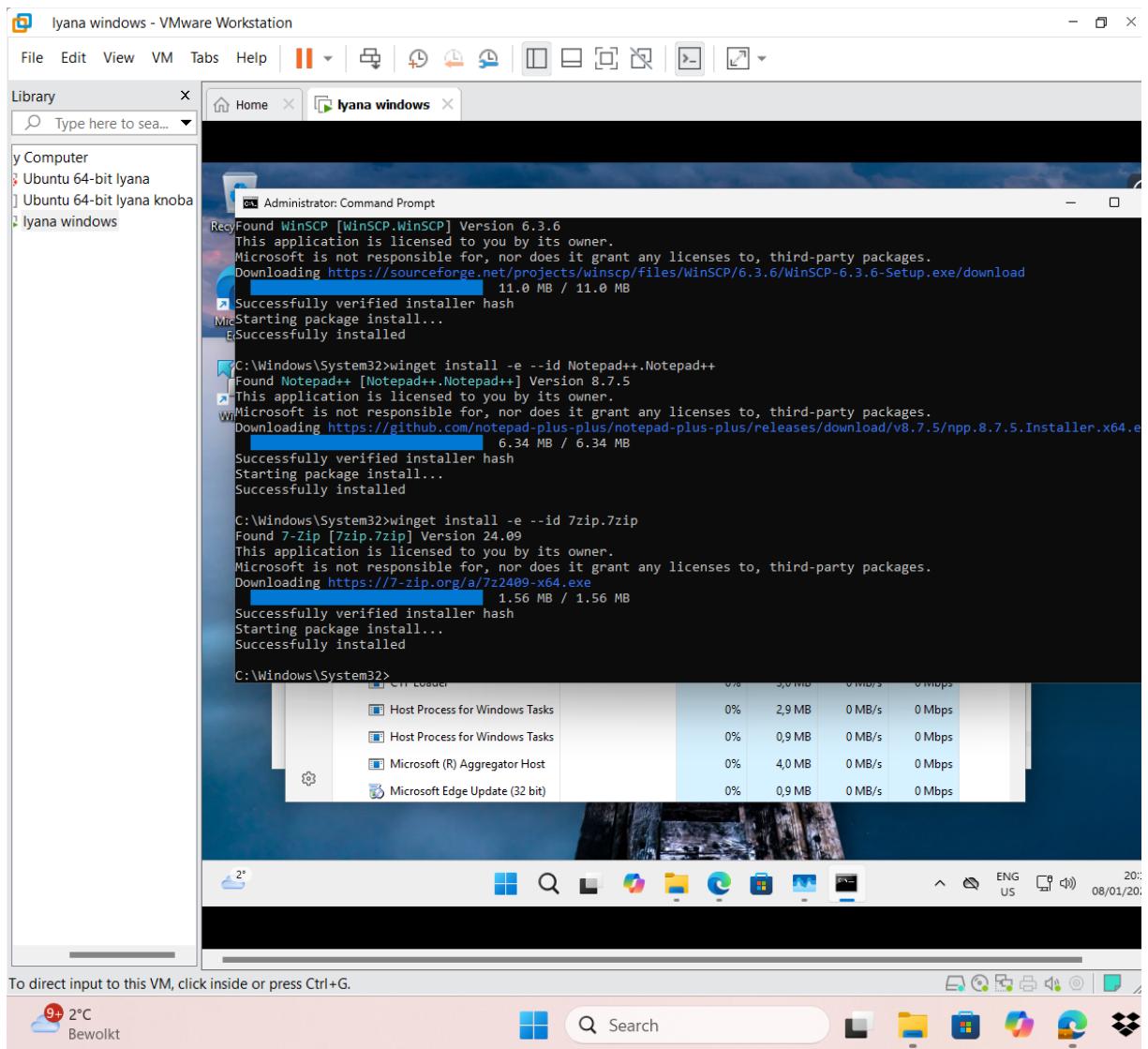




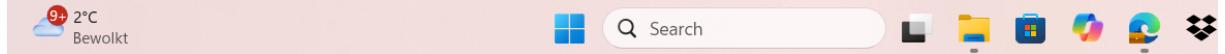
Install Software

Relevant screenshots that the following software is installed:

- WinSCP
- Notepad++
- 7zip

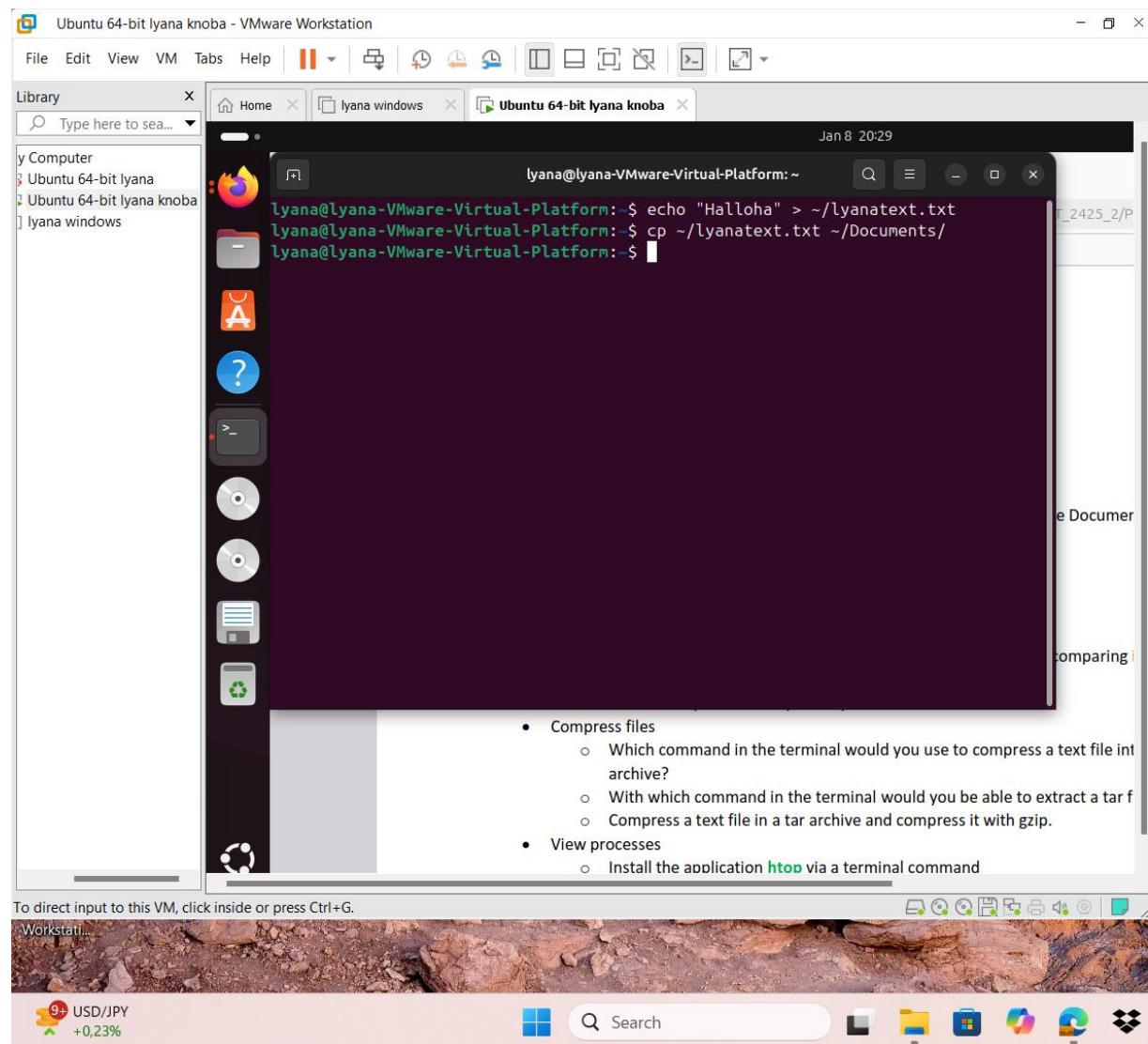


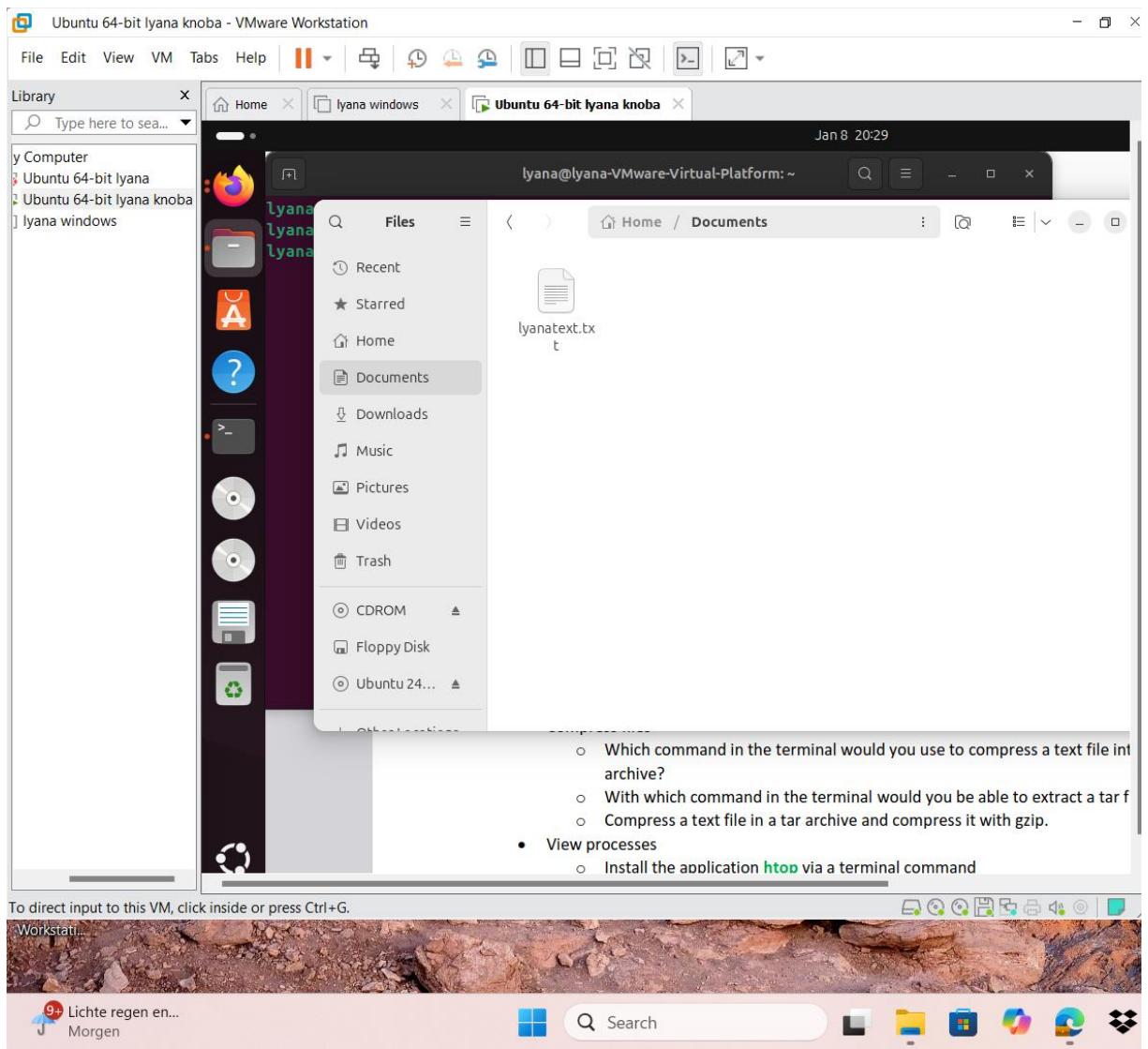
To direct input to this VM, click inside or press Ctrl+G.

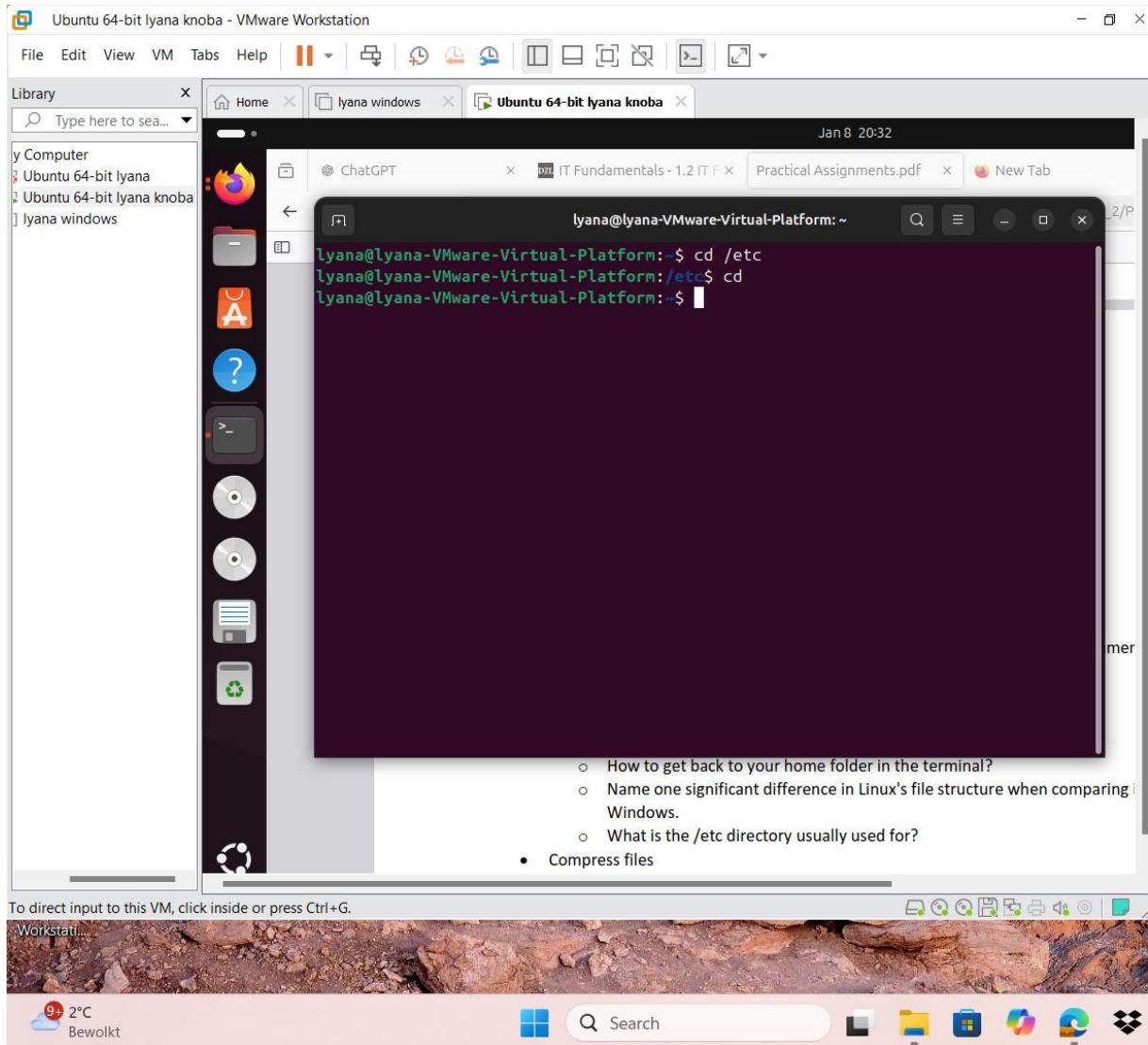


Assignment 5.4: Working with Linux

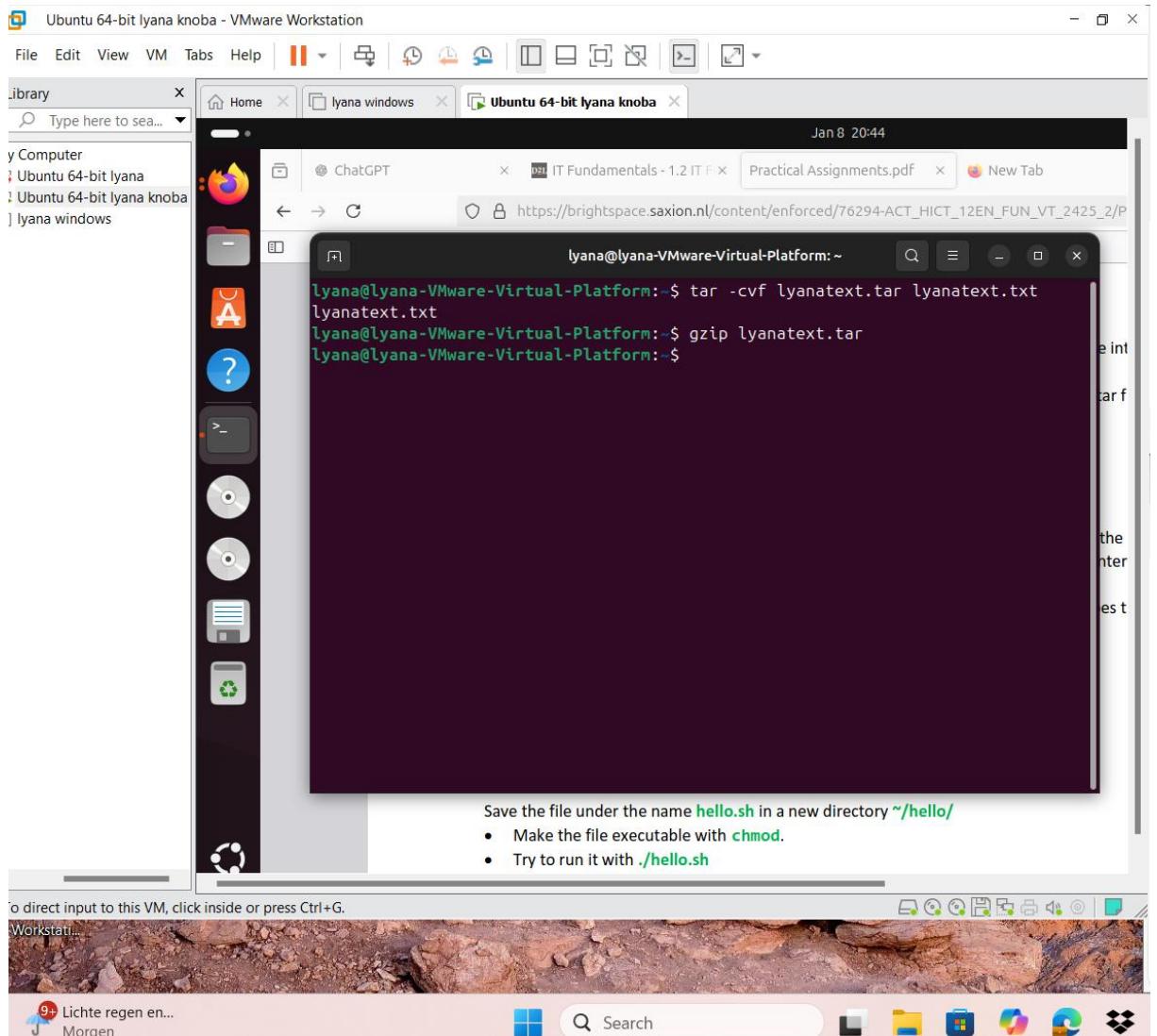
Relevant screenshots + motivation

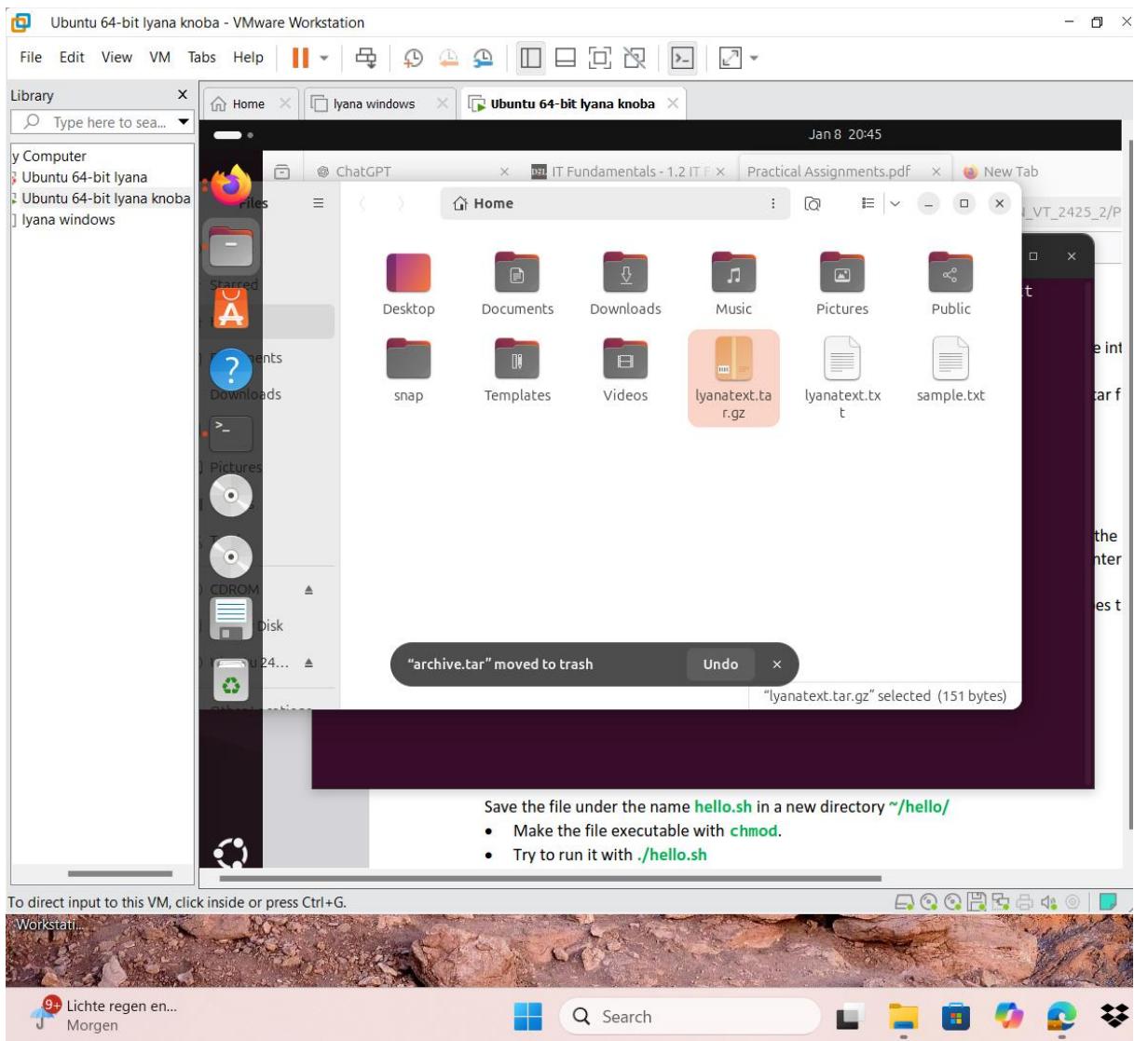


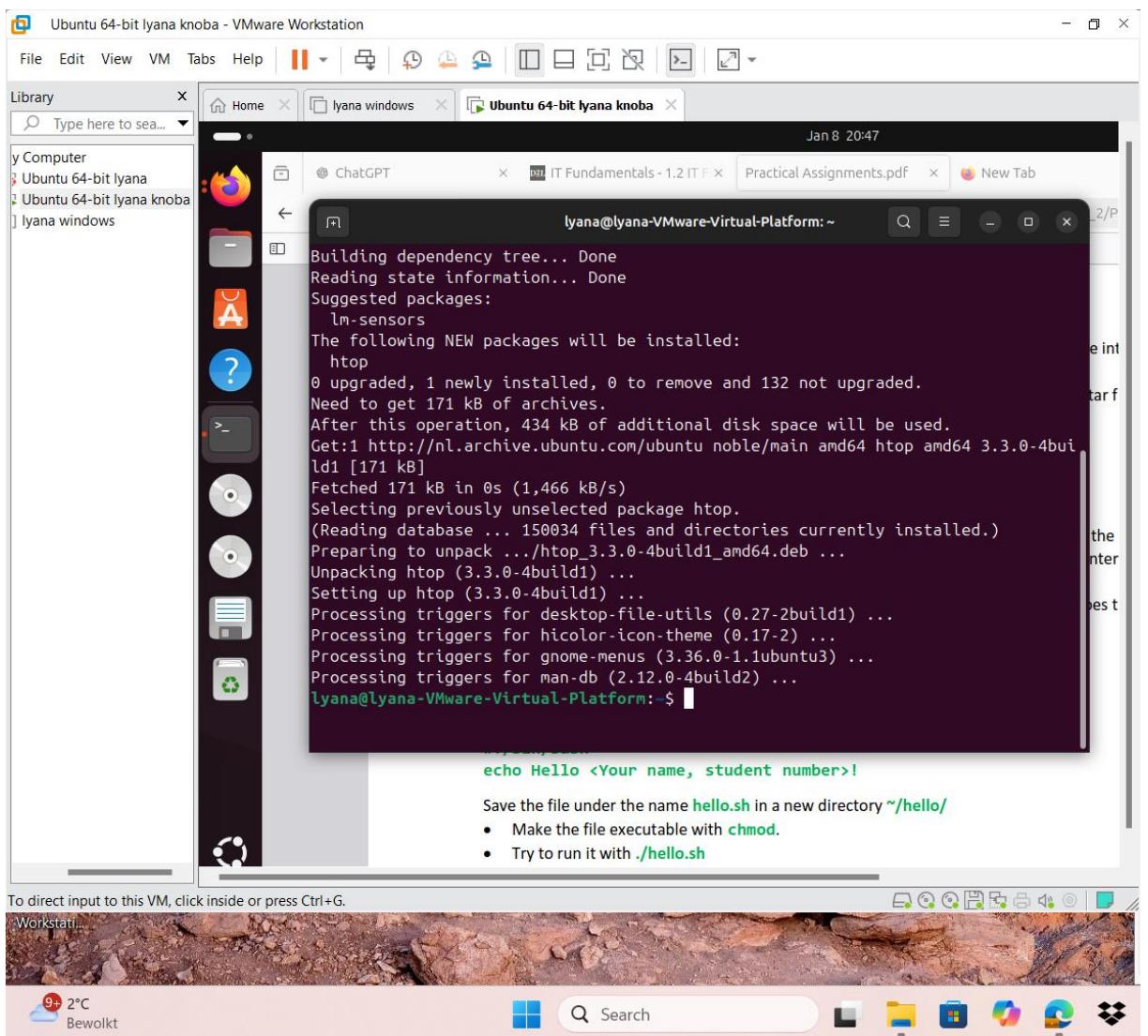


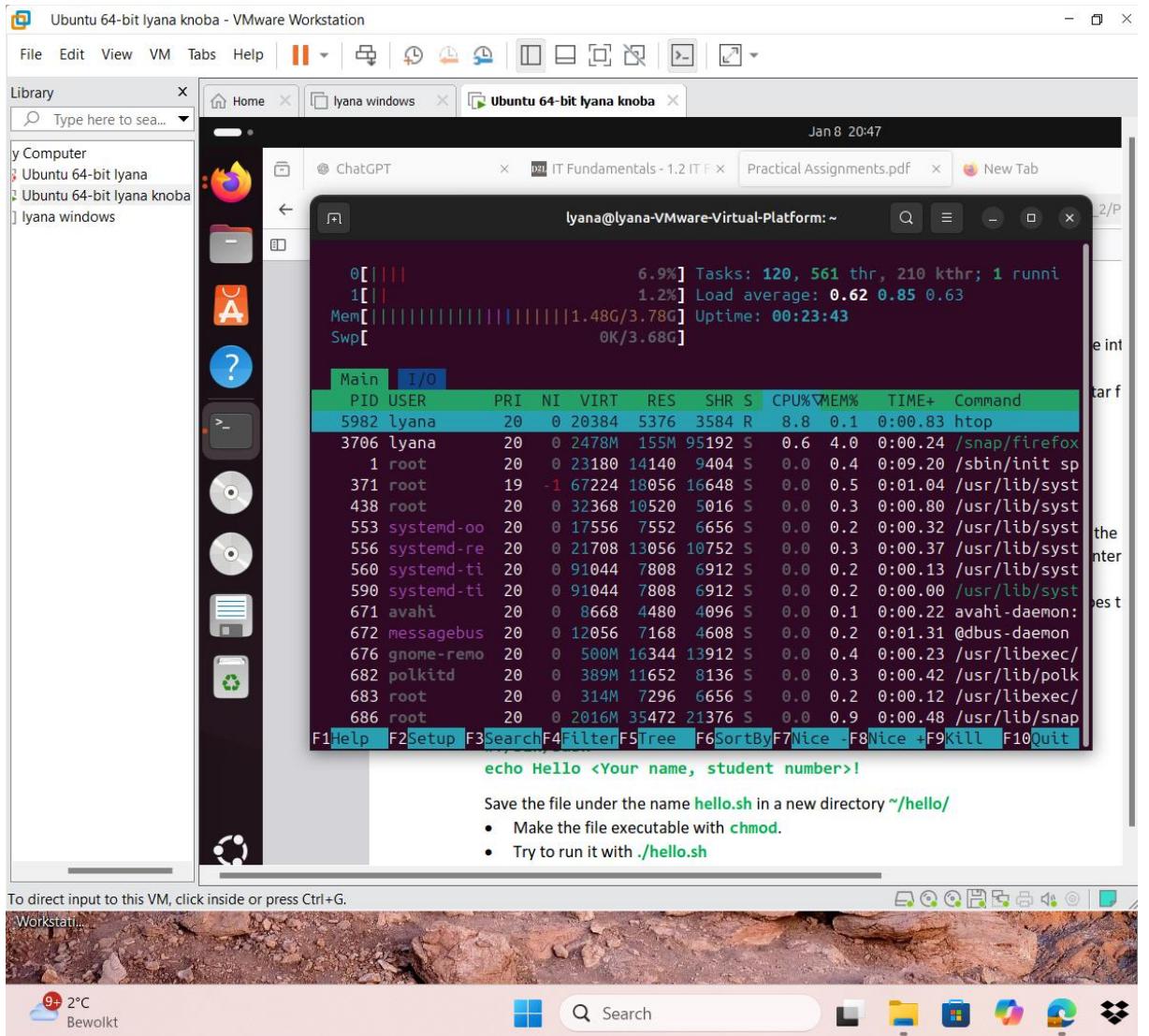


- One significant difference in Linux's file structure when comparing to Windows is that Windows has multiple file systems for each drive like C:\ or D:\. While Linux has a single file system starting from the root /
- The /etc directory is usually used to contain configuration files required for system wide settings and apps.
- I would use the command "tar -cvf textfilename.tar textfilename.txt" to compress a text file into a tar archive.
- I would use the command "tar -xvf textfilename.tar" to extract a tar file.

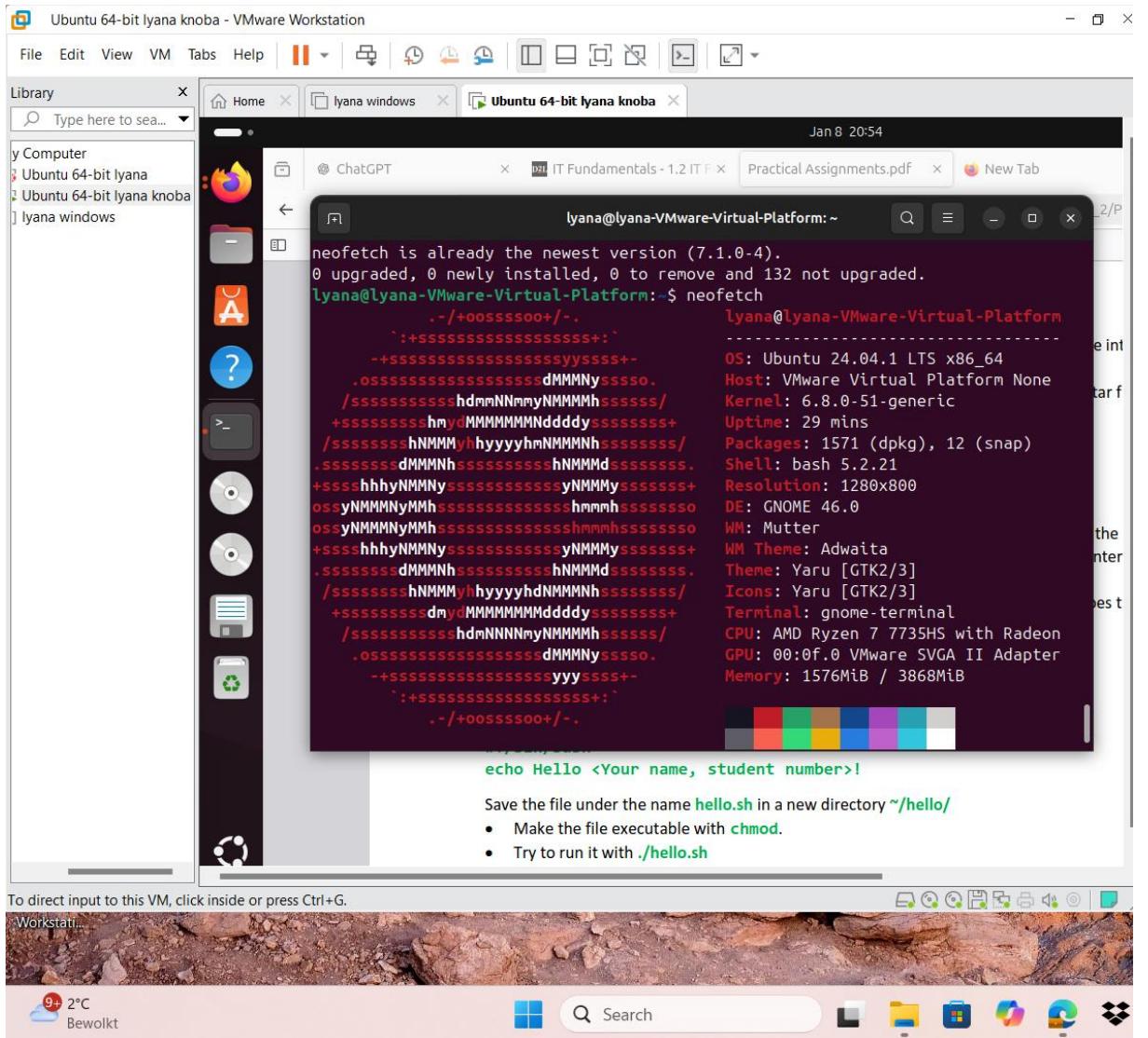


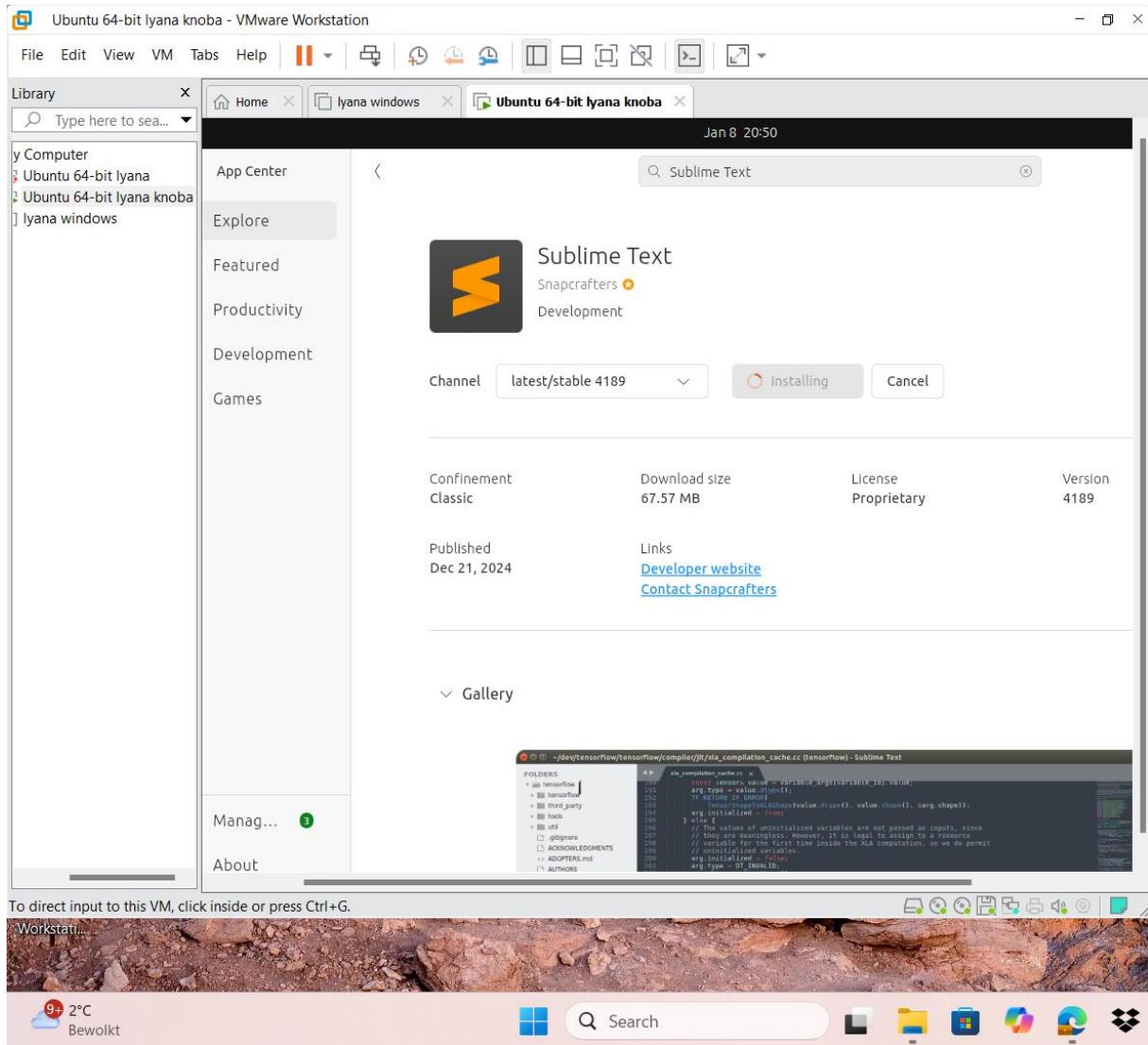






- The htop application works the same way as the task manager on windows where it shows running applications, cpu, memory and more.

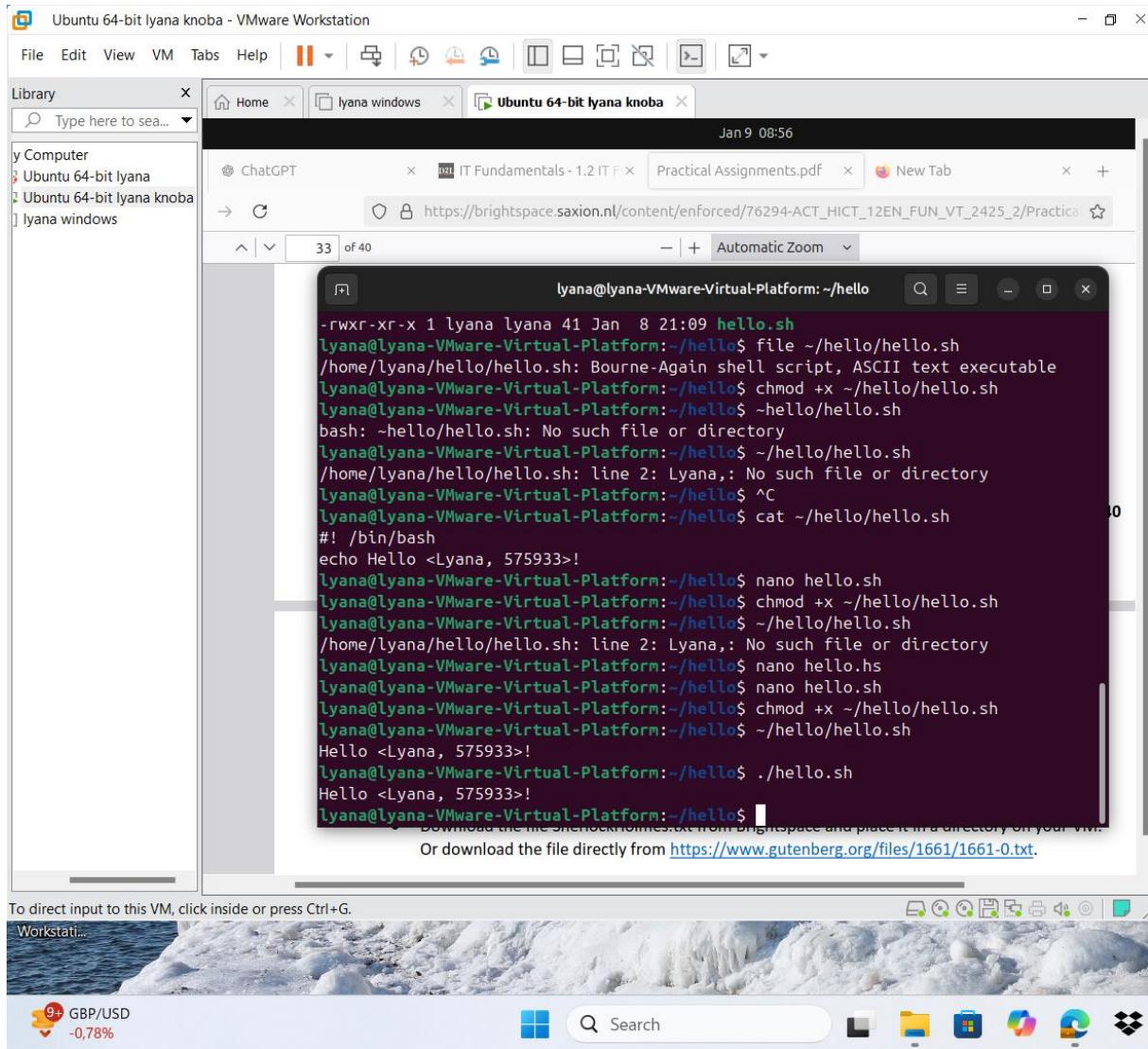




- The neofetch application shows information like the operating system, hardware details, kernel version, resolution, host, cpu, gpu and more.

Assignment 5.5: Users and permissions on Linux

Relevant screenshots + motivation



Assignment 5.6: View the contents of files

Relevant screenshots + motivation

Assignment 5.7: Digital forensics

Relevant screenshots + motivation

Assignment 5.8: Steganography

Relevant screenshots + motivation

Bonus point assignment – week 5

Make relevant screenshots + motivation:

- 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.

Ready? Save this file and export it as a pdf file with the name: [**week5.pdf**](#)