

# Template Week 5 - Operating Systems

Student number:582840

## Assignment 5.1: Unix-like

- a) Find out what the difference is between UNIX and unix-like operating systems?  
Unix is een OS die is ontwikkeld in 1970 voor stabiliteit en veiligheid. Unix-like systemen zijn erop gebaseerd maar niet precies unix
- 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 de eerste developer die UNIX heeft gemaakt.  
Dennis Ritchie is de maker van de programmeer taal C.  
Richard Stallman was een activist die wou dat alle software gratis was om te gebruiken, verspreiden en aan te passen.  
Linus Torvalds is de vinder van linux. Hij heeft de eerste linux kernel geschreven. Nu wordt linux ondersteund door duizenden software developers maar Linus is nog steeds een belangrijke schakel in de ontwikkeling. Linus is ook de eerste ontwikkelaar van GIT maar dit heeft die later afgestaan.
- c) What is the philosophy of the GNU movement?  
Gebruikers moeten vrijheid hebben wat ze kunnen doen op hun computer. Dat software altijd gratis moet zijn om te gebruiken en aan te passen.
- d) Does Ubuntu as a Linux operating system conform to the philosophy of the GNU movement?  
Please explain your answer.  
Ja want Ubuntu is opensource en heeft een licentie die toestaat dat elke gebruiker het programma mag aanpassen en gratis mag gebruiken.
- e) Find out what is the Windows Subsystem for Linux?  
WSL is een stukje software dat een soort virtuele machine opstart die geïntegreerd in windows is om linux te draaien. Kan worden gebruikt voor software ontwikkeling voor linux maar ook testen van server applicaties.
- f) Find out, which operating system family belongs to Android, iOS and ChromeOS?  
Unix-Like

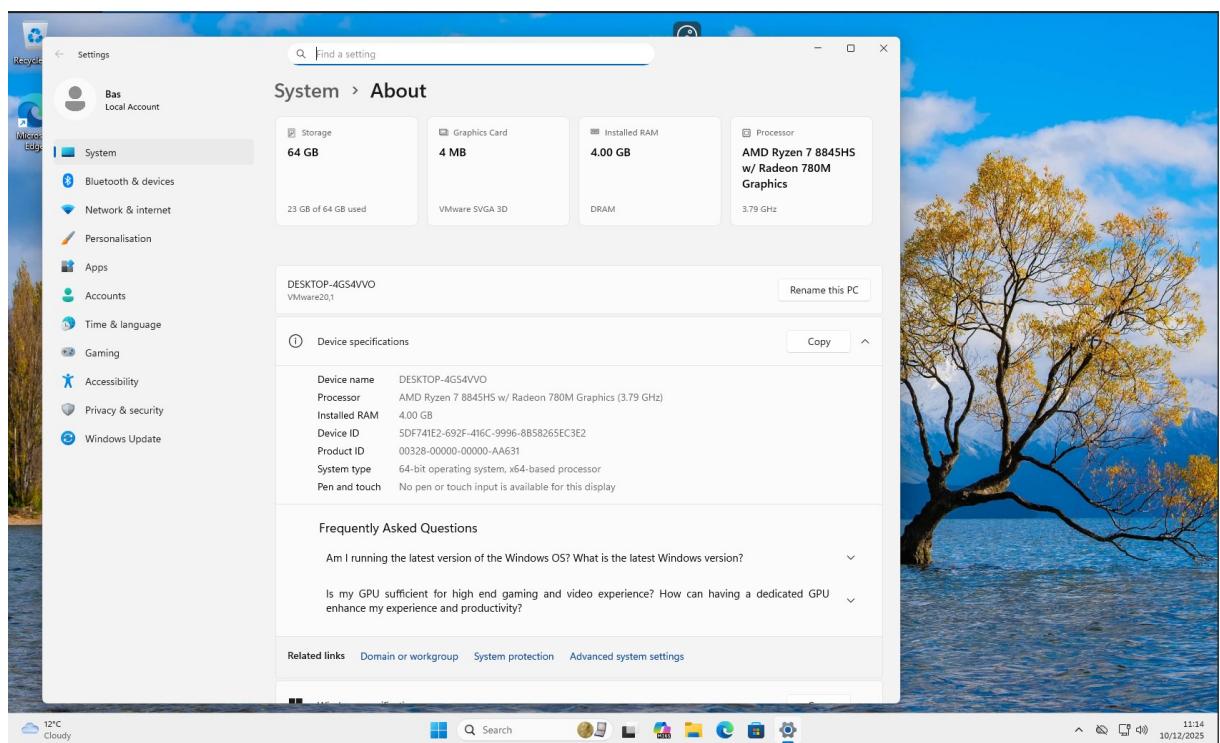
## Assignment 5.2: Supercomputers and gameconsoles

- 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 meestal gebruikt voor complexe taken. Zoals weersvoorspellingen, klimaat onderzoek, berekeningen voor nasa en modelering
- 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?  
Dit waren meerdere PlayStation 3s aan elkaar gekoppeld om gebruik te maken van de snelle CPU van de PlayStation 3 voor die tijd. Om een snellere computer te maken dan op dat moment mogelijk was.
- 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/>  
Nee het is niet snel genoeg.
- 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?  
Een AMD Zen 2 dus CISC processor. Beide draaien een custom OS waarvan de playstation gebaseerd is op een FreeBSD 11 kernel. En de xbox gebaseerd is op windows.

## Assignment 5.3: Working with Windows

Take relevant screenshots of the assignments below

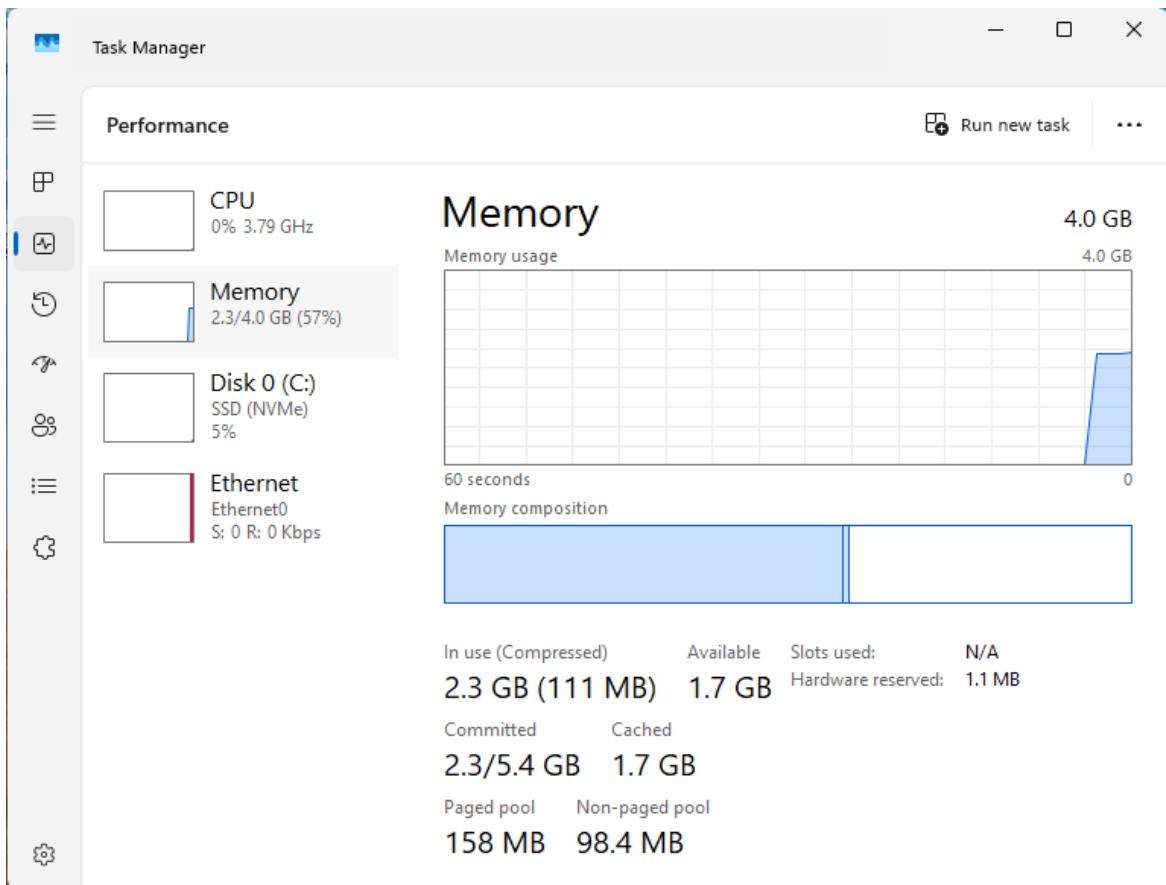
- a) Practice for about 10 minutes with the W keyboard shortcuts combinations, skip the general shortcuts in this exercise. Take a look at which screens are opened.
  
- b) The file explorer can be opened with W + E, Which key combination could you also use?  
Win+1 als je file explorer op plek 1 in je taakbalk staat.
  
- c) Open the system properties with a W 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.

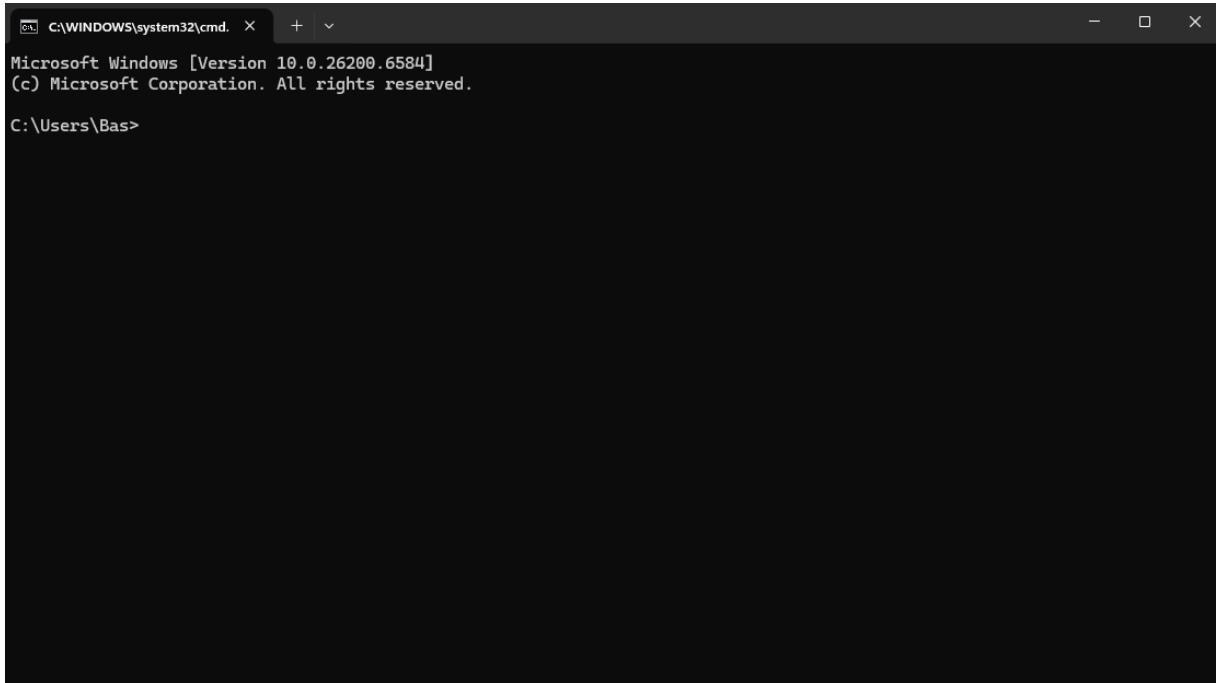
The screenshot shows the Windows Task Manager window with the 'Processes' tab selected. The table displays various system processes and their resource usage. The columns are: Name, Status, CPU, Memory, Disk, and Network. The 'CPU' column shows usage percentages, while the other columns show current values. The 'Memory' column for the Task Manager process is highlighted in blue.

Name	Status	7% CPU	59% Memory	1% Disk	0% Network
Settings		0%	27.5 MB	0.1 MB/s	0 Mbps
Task Manager		0%	44.2 MB	0.1 MB/s	0 Mbps
Antimalware Core Service		0%	5.2 MB	0 MB/s	0 Mbps
Antimalware Service Executable		0%	235.7 MB	0.1 MB/s	0 Mbps
Application Frame Host		0%	6.1 MB	0 MB/s	0 Mbps
COM Surrogate		0%	2.8 MB	0 MB/s	0 Mbps
CrossDeviceResume		0%	3.4 MB	0 MB/s	0 Mbps
CTF Loader		0%	3.5 MB	0 MB/s	0 Mbps
Game Bar (2)		0%	8.8 MB	0 MB/s	0 Mbps
Game Bar Full Trust COM Server		0%	1.6 MB	0 MB/s	0 Mbps
Host Process for Windows Tasks		0%	1.0 MB	0 MB/s	0 Mbps
Host Process for Windows Tasks		0%	2.0 MB	0 MB/s	0 Mbps
Microsoft (R) Aggregator Host		0%	1.7 MB	0 MB/s	0 Mbps



- 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?  
Win+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?  
Win+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

A screenshot of a Windows Command Prompt window titled "C:\Windows\System32\cmd.e". The window shows several attempts to use the "copy" command, each failing due to syntax errors. The text output is as follows:

```
Microsoft Windows [Version 10.0.26200.6584]
(c) Microsoft Corporation. All rights reserved.

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

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

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

C:\Saxion>copy Plug.png "C:\Saxion\HBOICT\YEAR1\QUARTILE1\Introduction infrastructuren\Plug.png" /a
1 file(s) copied.

C:\Saxion>copy Tumble.png "C:\Saxion\HBOICT\YEAR1\QUARTILE1\Organisatie en IT\Tumble.png" /a
1 file(s) copied.

C:\Saxion>
```

The window has a dark theme and standard Windows window controls at the top.

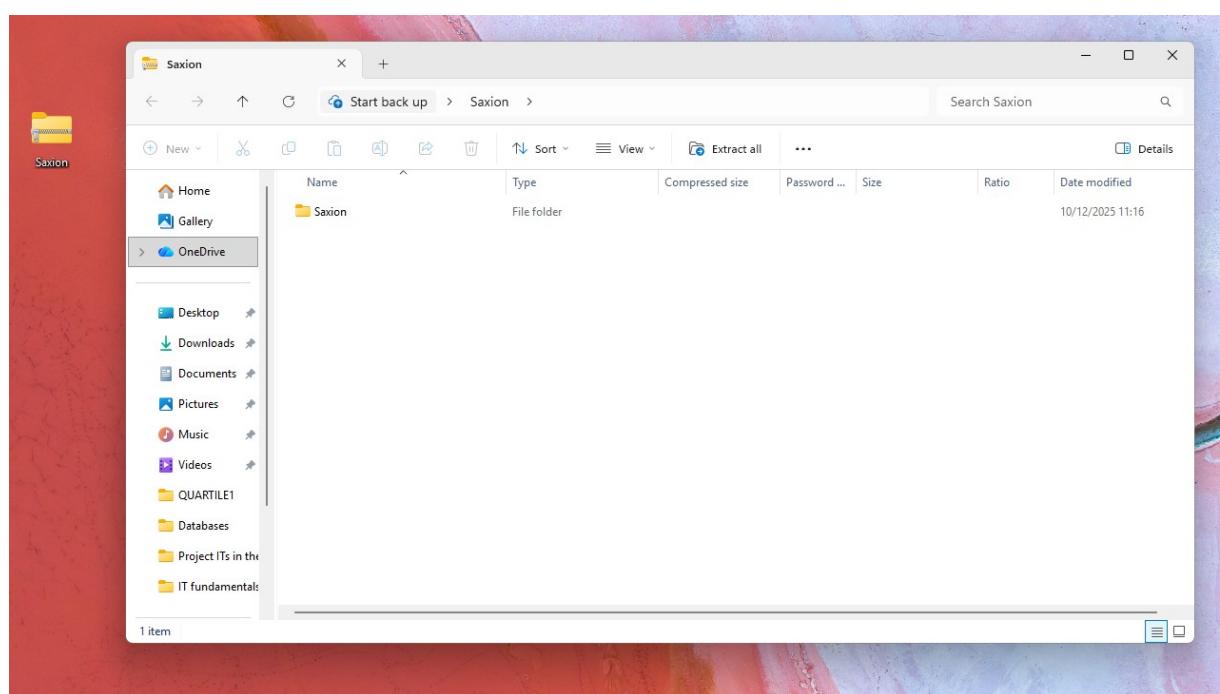
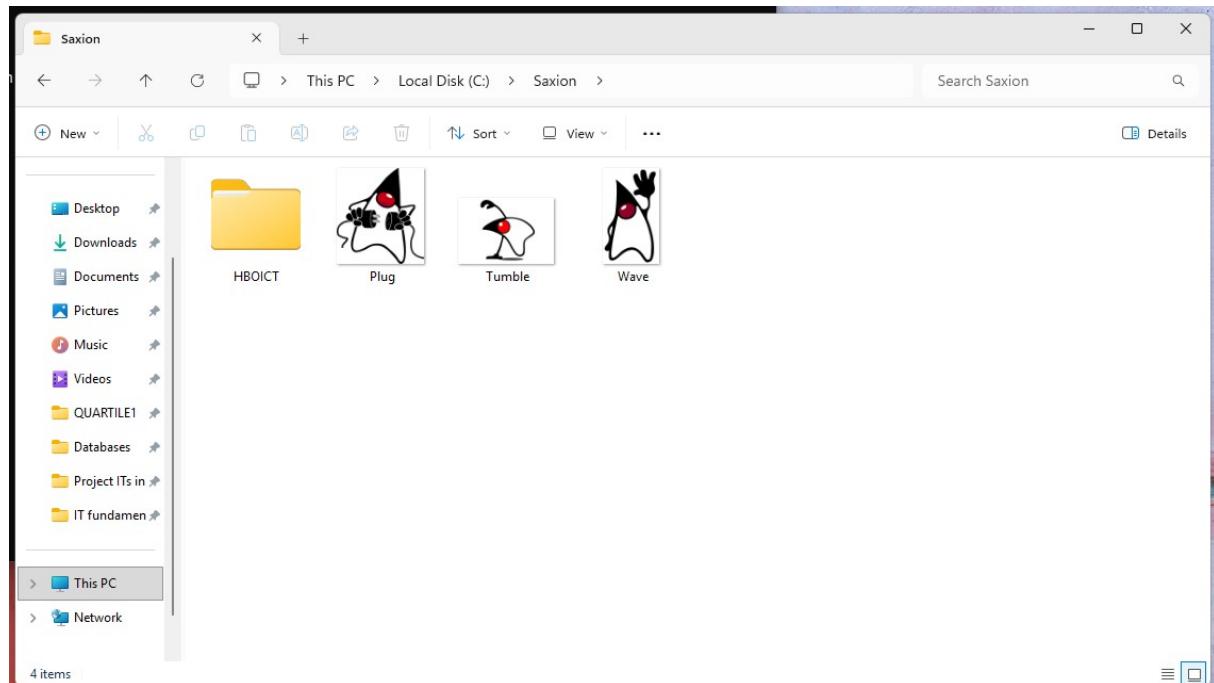
Relevant screenshots **copy** command:

Relevant screenshots **tree** command:

```
C:\Saxion>tree
Folder PATH listing
Volume serial number is 8EE3-0A37
C:.
└── HBOICT
    ├── YEAR1
    │   ├── QUARTILE1
    │   │   ├── Introduction infrastructuren
    │   │   ├── Introduction programming
    │   │   └── Organisatie en IT
    │   ├── QUARTILE2
    │   │   ├── Databases
    │   │   ├── IT fundamentals
    │   │   └── Project ITs in the game
    │   ├── QUARTILE3
    │   └── QUARTILE4
    ├── YEAR2
    │   ├── QUARTILE1
    │   ├── QUARTILE2
    │   ├── QUARTILE3
    │   └── QUARTILE4
    ├── YEAR3
    │   ├── QUARTILE1
    │   ├── QUARTILE2
    │   ├── QUARTILE3
    │   └── QUARTILE4
    └── YEAR4
```

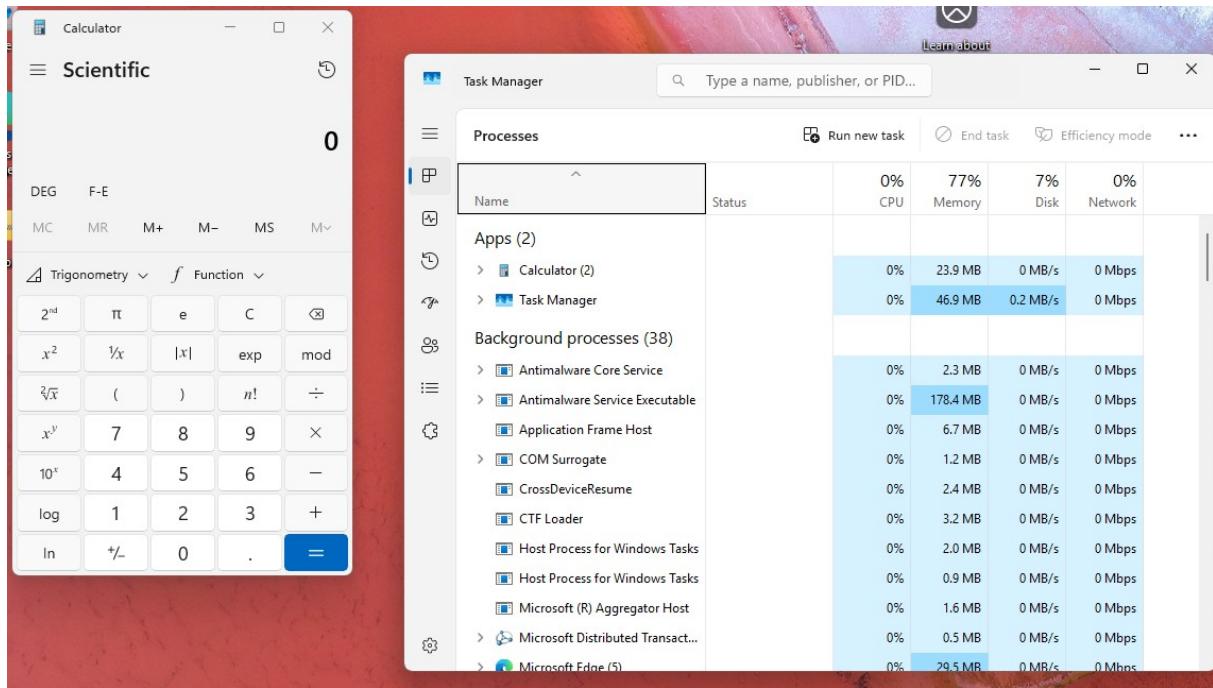
```
C:\Saxion>echo %username%
Bas
```

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



## Terminating Processes

Relevant Screenshots Task Manager Window:



## Install Software

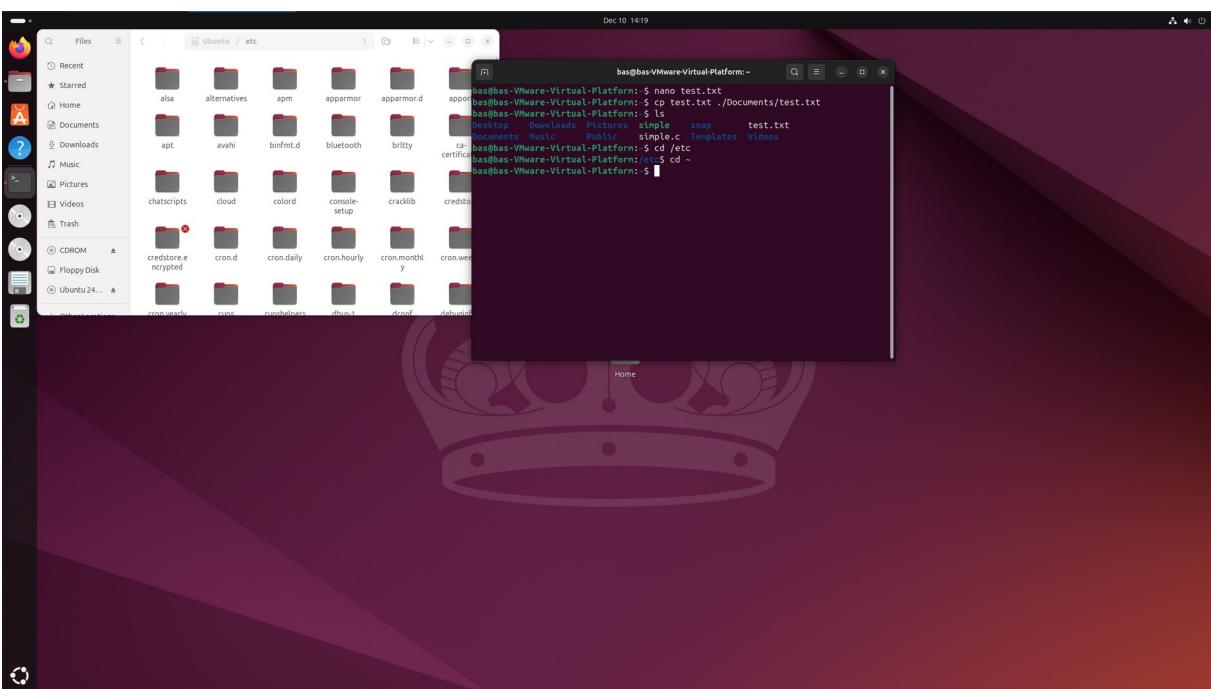
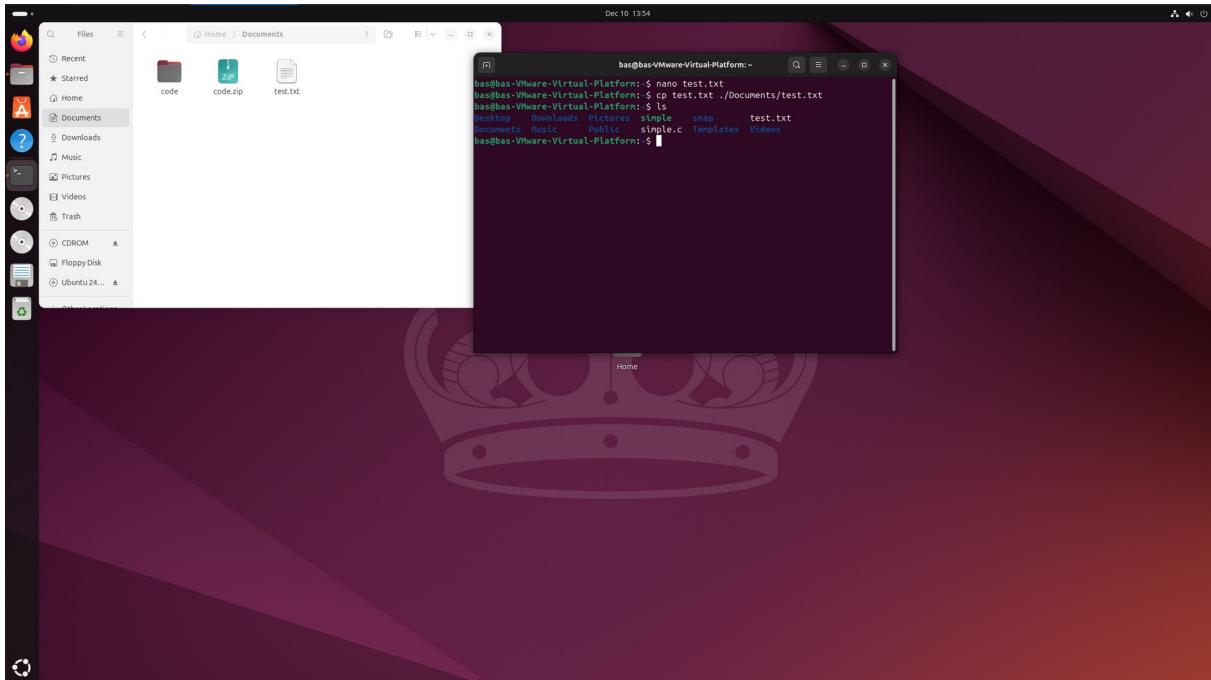
Relevant screenshots that the following software is installed with winget:

- WinSCP
- Notepad++
- 7zip

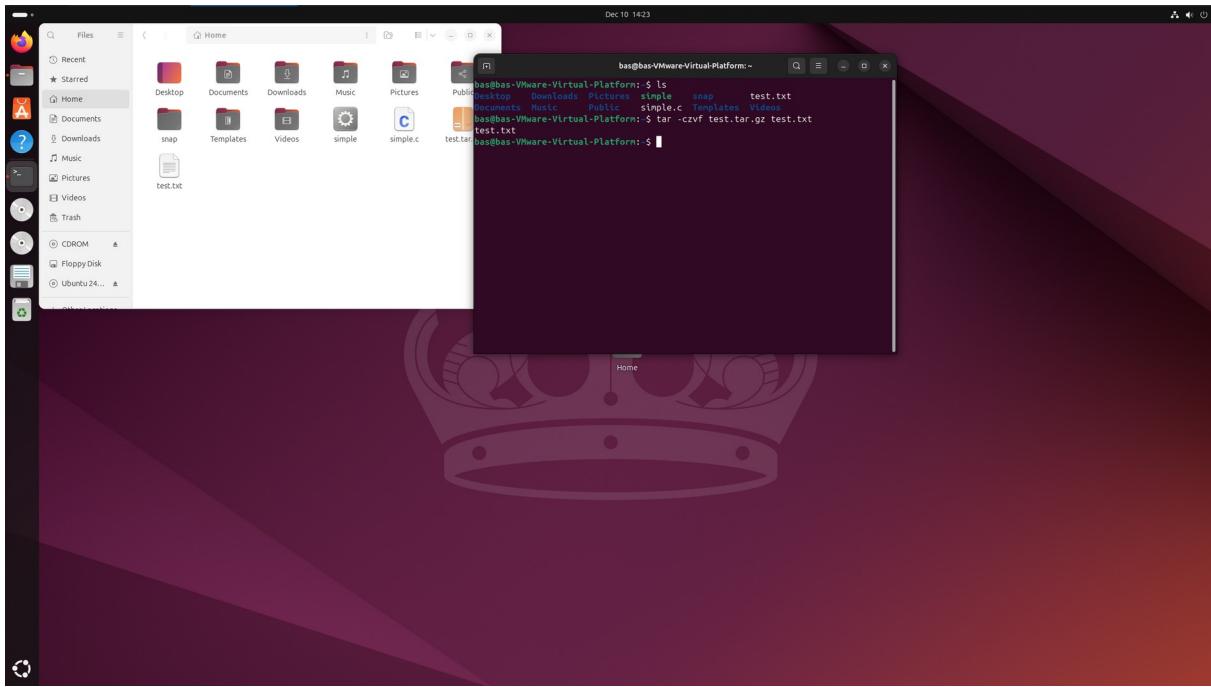
Name	Id	Version	Available	Source
7-Zip 25.01 (x64)	7zip.7zip	25.01		winget
NotePad++ (64-bit x64)	NotePad++.NotePad++	8.8.8		winget
VMware Tools	ARP\Machine\x64\{64171BD0-863E-4DDE-8D...	12.5.0.24276846		
Microsoft Edge	Microsoft.Edge	143.0.3650.75		winget
Microsoft Visual C++ 2015-2022 Redist..	Microsoft.VCRedist.2015+.x86	14.40.33810.0	14.50.35719.0	winget
Microsoft Visual C++ 2015-2022 Redist..	Microsoft.VCRedist.2015+.x64	14.40.33810.0	14.50.35719.0	winget
Microsoft OneDrive	Microsoft.OneDrive	25.216.1104.0002		winget
WinSCP 6.5.5	WinSCP.WinSCP	6.5.5		winget
Microsoft Clipchamp	MSIX\Clipchamp.Clipchamp_4.4.10420.0_x...	4.4.10420.0		
Microsoft Teams	Microsoft.Teams	25306.804.4102.7193		winget
AV1 Video Extension	MSIX\Microsoft.AV1VideoExtension_2.0.6...	2.0.6.0		
AVC Encoder Video Extension	MSIX\Microsoft.AVCEncoderVideoExtensio...	1.1.21.0		
Windows Application Compatibility Enh..	MSIX\Microsoft.ApplicationCompatibilit...	1.2401.10.0		
Microsoft News	MSIX\Microsoft.BingNews_1.0.2.0._x64_...	1.0.2.0		
Microsoft Bing	MSIX\Microsoft.BingSearch_1.1.37.0._x64...	1.1.37.0		
MSN Weather	MSIX\Microsoft.BingWeather_3.2.10.0._x6...	3.2.10.0		
App Installer	Microsoft.AppInstaller	1.27.349.0	1.27.350.0	winget
Xbox	MSIX\Microsoft.GamingApp_2512.1001.31...	2512.1001.31.0		
Get Help	MSIX\Microsoft.GetHelp_10.2409.32612.0...	10.2409.32612.0		
HEIF Image Extension	MSIX\Microsoft.HEIFImageExtension_1.2...	1.2.20.0		
HEVC Video Extensions from Device Man..	MSIX\Microsoft.HEVCVideoExtension_2.4...	2.4.39.0		
MPEG-2 Video Extension	MSIX\Microsoft.MPEG2VVideoExtension_1.2...	1.2.10.0		
Microsoft Edge	MSIX\Microsoft.MicrosoftEdge.Stable_14...	140.0.3485.66		
Microsoft 365 Copilot	MSIX\Microsoft.MicrosoftOfficeHub_19.2...	19.2512.33091.0		
Solitaire & Casual Games	MSIX\Microsoft.MicrosoftSolitaireColle...	4.22.3190.0		
Microsoft Sticky Notes	MSIX\Microsoft.MicrosoftStickyNotes_4...	4.0.6105.0		
Microsoft .Net Native Framework Packa..	MSIX\Microsoft.NET.Native.Framework_2...	2.2.29512.0		
Microsoft .Net Native Framework Packa..	MSIX\Microsoft.NET.Native.Framework_2...	2.2.29512.0		
Microsoft .Net Native Runtime Package..	MSIX\Microsoft.NET.Native.Runtime_2.2...	2.2.28604.0		
Microsoft .Net Native Runtime Package..	MSIX\Microsoft.NET.Native.Runtime_2.2...	2.2.28604.0		
Outlook for Windows	MSIX\Microsoft.OutlookForWindows_1.202...	1.2025.1111.100		
Paint	MSIX\Microsoft.Paint_11.2509.441.0._x64...	11.2509.441.0		
Power Automate	MSIX\Microsoft.PowerAutomateDesktop_1...	1.0.2046.0		
Raw Image Extension	MSIX\Microsoft.RawImageExtension_2.5.5...	2.5.5.0		
Snipping Tool	MSIX\Microsoft.ScreenSketch_11.2510.31...	11.2510.31.0		
Windows Security	MSIX\Microsoft.SecHealthUI_1000.29429...	1000.29429.1000.0		
Microsoft Engagement Framework	MSIX\Microsoft.Services.Store.Engageme...	10.0.23012.0		
Microsoft Engagement Framework	MSIX\Microsoft.Services.Store.Engageme...	10.0.23012.0		
Start Experiences App	MSIX\Microsoft.StartExperiencesApp_1.1...	1.179.4.0		
Store Experience Host	MSIX\Microsoft.StorePurchaseApp_22509...	22509.1401.1.0		
Microsoft To Do	MSIX\Microsoft.Todos_0.148.3611.0._x64...	0.148.3611.0		
Microsoft.UI.Xaml.2.8	Microsoft.UI.Xaml.2.8	8.2501.31001.0		winget
Microsoft.UI.Xaml.2.8	Microsoft.UI.Xaml.2.8	8.2501.31001.0		winget
Microsoft Visual C++ 2015 UWP Desktop..	Microsoft.VCLibs.Desktop.14	14.0.33728.0		winget
Microsoft Visual C++ 2015 UWP Desktop..	Microsoft.VCLibs.Desktop.14	14.0.33728.0		winget
Microsoft Visual C++ 2015 UWP Runtime..	MSIX\Microsoft.VCLibs.140.00.14.0.3351...	14.0.33519.0		
Microsoft Visual C++ 2015 UWP Runtime..	MSIX\Microsoft.VCLibs.140.00.14.0.3351...	14.0.33519.0		
VP9 Video Extensions	MSIX\Microsoft.VP9VideoExtensions_1.2...	1.2.12.0		
Web Media Extensions	MSIX\Microsoft.WebMediaExtensions_2.1...	2.1.20.0		
WebP Image Extension	MSIX\Microsoft.WebPImageExtension_1.2...	1.2.10.0		
Widgets Platform Runtime	MSIX\Microsoft.WidgetsPlatformRuntime_...	1.6.14.0		
Dev Home	MSIX\Microsoft.Windows.DevHome_0.1700...	0.1700.597.0		
Microsoft Photos	MSIX\Microsoft.Windows.Photos_2025.111...	2025.11110.18001.0		
Windows Clock	MSIX\Microsoft.WindowsAlarms_1.1.61.0...	1.1.61.0		
WindowsAppRuntime.1.5	MSIX\Microsoft.WindowsAppRuntime_1.5_5...	5001.373.1736.0		
WindowsAppRuntime.1.5	MSIX\Microsoft.WindowsAppRuntime_1.5_5...	5001.373.1736.0		
WindowsAppRuntime.1.6	MSIX\Microsoft.WindowsAppRuntime_1.6_6...	6000.519.329.0		
WindowsAppRuntime.1.6	MSIX\Microsoft.WindowsAppRuntime_1.6_6...	6000.519.329.0		
WindowsAppRuntime.1.7	MSIX\Microsoft.WindowsAppRuntime_1.7_7...	7000.676.1651.0		
WindowsAppRuntime.1.7	MSIX\Microsoft.WindowsAppRuntime_1.7_7...	7000.676.1651.0		
WindowsAppRuntime.1.8	MSIX\Microsoft.WindowsAppRuntime_1.8_8...	8000.675.1142.0		
WindowsAppRuntime.1.8	MSIX\Microsoft.WindowsAppRuntime_1.8_8...	8000.675.1142.0		
Windows Calculator	MSIX\Microsoft.WindowsCalculator_11.25...	11.2508.4.0		
Windows Camera	MSIX\Microsoft.WindowsCamera_2025.2510...	2025.2510.2.0		
Feedback Hub	MSIX\Microsoft.WindowsFeedbackHub_1.25...	1.2510.14102.0		
Windows Notepad	MSIX\Microsoft.WindowsNotepad_11.2508...	11.2508.38.0		
Windows Sound Recorder	MSIX\Microsoft.WindowsSoundRecorder_1...	1.1.47.0		
Microsoft Store	MSIX\Microsoft.WindowsStore_22510.1401...	22510.1401.4.0		
Windows Terminal	Microsoft.WindowsTerminal	1.23.12811.0		winget
Windows Package Manager Source (winge..	MSIX\Microsoft.Winget.Source_2025.1210...	2025.1210.1312.51		
Xbox TCUI	MSIX\Microsoft.Xbox.TCUI_1.23.28005.0...	1.23.28005.0		
Game Bar	MSIX\Microsoft.XboxGamingOverlay_7.325...	7.325.11061.0		
Xbox Identity Provider	MSIX\Microsoft.XboxIdentityProvider_12...	12.110.15002.0		
Game Speech Window	MSIX\Microsoft.XboxSpeechToTextOverlay...	1.111.30001.0		
Phone Link	MSIX\Microsoft.YourPhone_0.25102.64.0...	0.25102.64.0		
Windows Media Player	MSIX\Microsoft.ZuneMusic_11.2510.7.0_x...	11.2510.7.0		
Quick Assist	MSIX\MicrosoftCorporationII.QuickAssis...	2.0.35.0		
Windows Web Experience Pack	MSIX\MicrosoftWindows.Client.WebExperi...	525.31002.150.0		
Cross Device Experience Host	MSIX\MicrosoftWindows.CrossDevice_0.25...	0.25102.46.0		
NotePad++	MSIX\NotePadPlusPlus_1.0.0.0_neutral_...	1.0.0.0		

## Assignment 5.4: Working with Linux

Relevant screenshots + motivation



Het verschil met windows en linux is dat windows elke schijf toevoegd als een extra letter en linux alle schijven in een boom structuur heeft en schijven worden gemount op specifieke plekken.



```
Dec 10 15:14 bas@bas:VMware-Virtual-Platform:~
```

任务	状态	用户	PEI	N	VIRT	RES	SHR	S	CRU	THR	TIME	命令
1911	睡眠	root	20	0	4239M	289M	139M	5	5.9	7.5	0:14:01	/usr/bin/gnome-shell
3936	运行	bas	20	0	12628	6284	1724	0	3.3	0.2	0:00:25	hadoop
1977	运行	bas	20	0	4239M	289M	138M	5	2.6	7.5	0:01:16	/usr/bin/gnome-shell
1982	运行	bas	20	0	4229M	289M	138M	5	2.0	7.5	0:00:12	/usr/bin/gnome-terminal-server
2859	运行	bas	20	0	621M	67108	51612	5	2.0	1.7	0:02:54	/usr/libexec/gnome-terminal-server
2148	运行	bas	20	0	249M	78272	27794	5	1.0	1.0	0:00:00	/usr/bin/vmtoolsd -n vmsr --blockFd 3 -u inputFd 4
3935	运行	bas	20	0	12628	6284	1724	0	8.7	7.5	0:00:02	hadoop
1	运行	root	20	0	23308	14292	9556	5	0.0	0.4	0:02:00	/sbin/init splash
386	运行	root	19	-1	67256	18104	11695	5	0.0	0.5	0:00:50	/usr/lib/systemd/systemd-journald
423	运行	root	20	0	148M	1484	1348	5	0.0	0.0	0:00:00	vmblock-fuse -o rw,subtype=vmware-vmblock,default_permissions,allow_other,dev,suid
425	运行	root	20	0	148M	1484	1348	5	0.0	0.0	0:00:00	vmblock-fuse -o rw,subtype=vmware-vmblock,default_permissions,allow_other,dev,suid
425	运行	root	20	0	148M	1484	1348	5	0.0	0.0	0:00:00	vmblock-fuse -o rw,subtype=vmware-vmblock,default_permissions,allow_other,dev,suid
443	运行	root	20	0	32188	16228	9880	5	0.0	0.3	0:00:24	/usr/lib/systemd/systemd-udevd
755	运行	root	20	0	17568	7726	1824	5	0.0	0.2	0:02:57	/usr/lib/systemd/systemd-journal
761	运行	root	20	0	21588	13040	10872	5	0.0	0.3	0:00:17	/usr/lib/systemd/systemd-oond
761	运行	root	20	0	91648	7906	7004	5	0.0	0.2	0:00:00	/usr/lib/systemd/systemd-resolved
761	运行	root	20	0	56048	10132	8125	5	0.0	0.3	0:00:04	/usr/lib/systemd/systemd-timesyncd
789	运行	root	20	0	111M	9260	792	5	0.0	0.2	0:06:25	/usr/bin/vmtoolsd
813	运行	root	20	0	311M	9200	792	5	0.0	0.2	0:00:00	/usr/bin/vmtoolsd
895	运行	root	20	0	311M	9200	792	5	0.0	0.2	0:00:00	/usr/bin/vmtoolsd
998	运行	root	20	0	311M	9200	792	5	0.0	0.2	0:00:00	/usr/bin/vmtoolsd
1135	运行	root	20	0	167M	209	872	5	0.0	0.1	0:00:00	/usr/lib/systemd/systemd-timesyncd
1354	运行	root	20	0	135M	177	102	5	0.0	0.1	0:00:00	/usr/lib/systemd/systemd-timesyncd
1355	运行	root	20	0	135M	177	102	5	0.0	0.1	0:00:00	/usr/lib/systemd/systemd-timesyncd
1356	运行	root	20	0	12084	6896	1398	5	0.0	0.2	0:00:03	@ibus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
1366	运行	root	20	0	3568	15980	13864	5	0.0	0.0	0:00:07	/usr/libexec/gnome-remote-desktop-daemon --system
1387	运行	root	20	0	381M	11750	1236	5	0.0	0.3	0:00:17	/usr/lib/polkit-1/polkitd -n -debug
1388	运行	root	20	0	380M	7120	1008	5	0.0	0.0	0:00:00	/usr/libexec/gnome-profiles-daemon
1389	运行	root	20	0	193M	1020	219	5	0.0	0.0	0:00:00	/usr/libexec/gnome-profiles-daemon
1392	运行	root	20	0	158M	7368	1856	5	0.0	0.2	0:00:08	/usr/libexec/accounts-daemon
1393	运行	root	20	0	9424	2856	1728	5	0.0	0.1	0:00:03	/usr/sbin/cron -f -P
1394	运行	root	20	0	302M	6588	1264	5	0.0	0.2	0:00:03	/usr/libexec/switcheroo-control
1400	运行	root	20	0	360M	7120	1698	5	0.0	0.2	0:00:00	/usr/libexec/power-profiles-daemon
1401	运行	root	20	0	16136	8804	998	5	0.0	0.2	0:00:11	/usr/lib/systemd/systemd-logind
1402	运行	root	20	0	300M	7120	1668	5	0.0	0.2	0:00:00	/usr/libexec/power-profiles-daemon
1403	运行	root	20	0	300M	7120	1668	5	0.0	0.2	0:00:00	/usr/libexec/power-profiles-daemon
1404	运行	root	20	0	530M	14360	11544	5	0.0	0.2	0:00:12	/usr/libexec/udisks2/udisksd
1410	运行	root	20	0	305M	7368	1856	5	0.0	0.2	0:00:00	/usr/libexec/accounts-daemon
1411	运行	root	20	0	305M	7368	1856	5	0.0	0.2	0:00:00	/usr/libexec/accounts-daemon
1414	运行	root	20	0	305M	7368	1856	5	0.0	0.2	0:00:00	/usr/libexec/accounts-daemon
1415	运行	root	20	0	302M	6588	1264	5	0.0	0.2	0:00:00	/usr/libexec/switcheroo-control
1416	运行	root	20	0	302M	6588	1264	5	0.0	0.2	0:00:00	/usr/libexec/switcheroo-control
1418	运行	root	20	0	302M	6588	1264	5	0.0	0.2	0:00:00	/usr/libexec/switcheroo-control
1422	运行	syslog	20	0	217M	980	1572	0	0.0	0.2	0:00:03	/usr/sbin/syslogd -n -NONE
1425	运行	root	20	0	530M	14360	11544	5	0.0	0.4	0:00:10	/libexec/udisks2/udisksd

```

Dec 10 15:14
bas@bas-Vmware-Virtual-Platform:~>

0: [|||||]
1[|||||]
2[|||||]
3[|||||]
Men[|||||]
Sup[|||||]

Tasks: 115, 381 thr, 194 kthr; 1 running
Load average: 0.07 0.02 0.00
Uptime: 01:24:19
Mem: 1.23G/3.78G
OK/3.78G

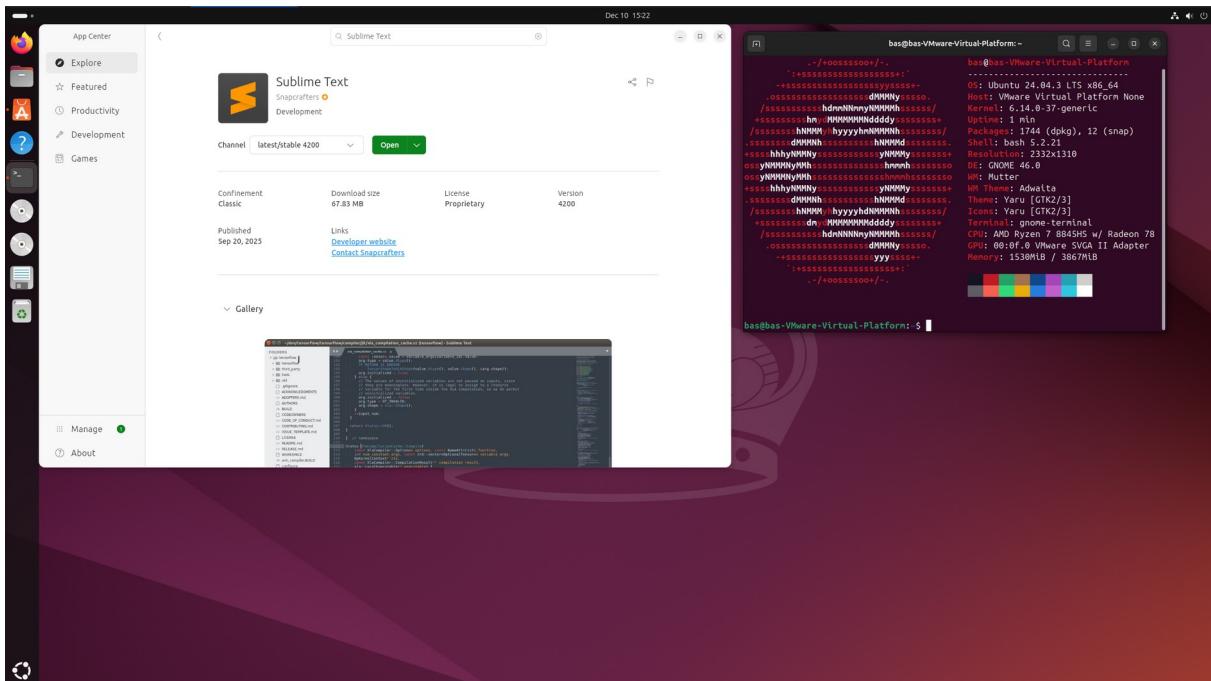
0: [|||||]
1[|||||]
2[|||||]
3[|||||]
Men[|||||]
Sup[|||||]

Main USER PID NICE CPU% TIME TSKS % CPU% COMMAND
3918 bas 20 0 42398 2898 139M 5 2.0 7.5 0:01:25 /usr/bin/gnome-shell
1977 bas -21 0 42298 2898 139M 5 2.0 7.5 0:01:16 /usr/bin/gnome-shell
1982 bas 20 0 42298 2898 139M 5 2.0 7.5 0:00:72 /usr/bin/gnome-shell
2859 bas 20 0 621M 67108 5:612 5 2.0 1.7 0:02:64 /usr/libexec/gnome-terminal-server
2141 bas 20 0 249M 78272 2792 5 0.0 2.4 0:00:01 /usr/bin/vmtoolsd -n vmsur --blockFd 3 --uninputFd 4
3935 bas 20 0 23388 14292 5556 5 0.0 1.7 0:00:02 /usr/bin/vmtoolsd
1 root 20 0 23388 14292 5556 5 0.0 0.4 0:02:00 /sbin/init splash
386 root 19 -1 67256 18104 16696 5 0.0 0.5 0:00:50 /usr/lib/systemd/journald
423 root 20 0 1468 1484 1348 5 0.0 0.0 0:00:00 vmware-vmblock-fuse -o rw,subtype=vmware-vmblock,default_permissions,allow_other,dev,suid
424 root 20 0 1484 1484 1348 5 0.0 0.0 0:00:00 vmware-vmblock-fuse /run/vmblock-fuse -o rw,subtype=vmware-vmblock,default_permissions,allow_other,dev,suid
425 root 20 0 1484 1484 1348 5 0.0 0.0 0:00:00 vmware-vmblock-fuse /run/vmblock-fuse -o rw,subtype=vmware-vmblock,default_permissions,allow_other,dev,suid
443 root 20 0 32188 16228 9890 5 0.0 0.3 0:00:24 /usr/lib/systemd/systemd-udevd
755 systemd-udev 20 0 17568 7726 1824 5 0.0 0.2 0:02:57 /usr/lib/systemd/systemd-udevd
758 systemd-re 20 0 21588 13048 10872 5 0.0 0.3 0:00:17 /usr/lib/systemd/systemd-resolved
761 systemd-ti 20 0 91048 7908 7894 5 0.0 0.2 0:00:04 /usr/lib/systemd/systemd-timesyncd
797 polkitd 20 0 56064 11750 10408 5 0.0 0.3 0:00:04 /usr/bin/polkitd
813 root 20 0 311M 9208 792 5 0.0 0.2 0:06:25 /usr/bin/vmtoolsd
895 root 20 0 311M 9208 792 5 0.0 0.2 0:00:00 /usr/bin/vmtoolsd
986 root 20 0 311M 9208 792 5 0.0 0.2 0:00:23 /usr/bin/vmtoolsd
998 root 20 0 311M 9208 792 5 0.0 0.2 0:00:00 /usr/bin/vmtoolsd
1155 systemd-ti 20 0 91048 7908 7894 5 0.0 0.2 0:00:00 /usr/lib/systemd/systemd-timesyncd
1354 avahi 20 0 672 389 872 5 0.1 0:00:22 avahi-daemon: running [bas-Vmware Virtual-Platform.local]
1356 messagebus 20 0 12084 6898 592 5 0.0 0.2 0:00:03 @ibus-daemon: --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
1366 gnome-remo 20 0 3568 15980 11864 5 0.0 0.3 0:00:17 /usr/libexec/gnome-remote-desktop-daemon --system
1387 polkitd 20 0 381M 11750 1236 5 0.0 0.3 0:00:07 /usr/libexec/polkit-1/polkitd --no-debug
1388 root 20 0 3068 7120 1088 5 0.0 0.2 0:00:08 /usr/libexec/power-profiles-daemon
1389 root 20 0 3068 7120 1088 5 0.0 0.2 0:00:08 /usr/libexec/power-profiles-daemon
1392 root 20 0 3058 7368 1856 5 0.0 0.2 0:00:08 /usr/libexec/accounts-daemon
1393 root 20 0 9424 2856 728 5 0.1 0:00:03 /usr/sbin/cron -f
1394 root 20 0 302K 658K 264 5 0.0 0.2 0:00:03 /usr/libexec/switcheroo-control
1498 root 20 0 306K 7120 1698 5 0.0 0.2 0:00:00 /usr/libexec/power-profiles-daemon
1499 root 20 0 306K 7120 1200 5 0.0 0.2 0:00:00 /usr/libexec/power-profiles-daemon
1402 root 20 0 10136 6898 988 5 0.0 0.2 0:00:11 /usr/lib/systemd/systemd-timesyncd
1403 root 20 0 306K 7120 1698 5 0.0 0.2 0:00:00 /usr/libexec/power-profiles-daemon
1404 root 20 0 530M 14360 11544 5 0.0 0.2 0:00:12 /usr/libexec/udisks2/udisksd
1410 root 20 0 305K 7368 1856 5 0.0 0.2 0:00:00 /usr/libexec/accounts-daemon
1411 root 20 0 305K 7368 1856 5 0.0 0.2 0:00:15 /usr/libexec/accounts-daemon
1414 root 20 0 305K 7368 1856 5 0.0 0.2 0:00:00 /usr/libexec/accounts-daemon
1415 root 20 0 302K 658K 264 5 0.0 0.2 0:00:00 /usr/libexec/switcheroo-control
1416 root 20 0 302K 658K 264 5 0.0 0.2 0:00:00 /usr/libexec/switcheroo-control
1418 root 20 0 302K 658K 264 5 0.0 0.2 0:00:00 /usr/libexec/switcheroo-control
1422 syslog 20 0 217M 9980 572 5 0.0 0.2 0:00:03 /usr/sbin/syslogd -n NONE
1425 root 20 0 305M 14360 11544 5 0.0 0.4 0:00:10 /usr/libexec/udisks2/udisksd

F1 Help F2 Setup F3 Search F4 Filter F5 Sort F6 SortBy F7 Icons F8 Lce F9 List F10 Quit

```

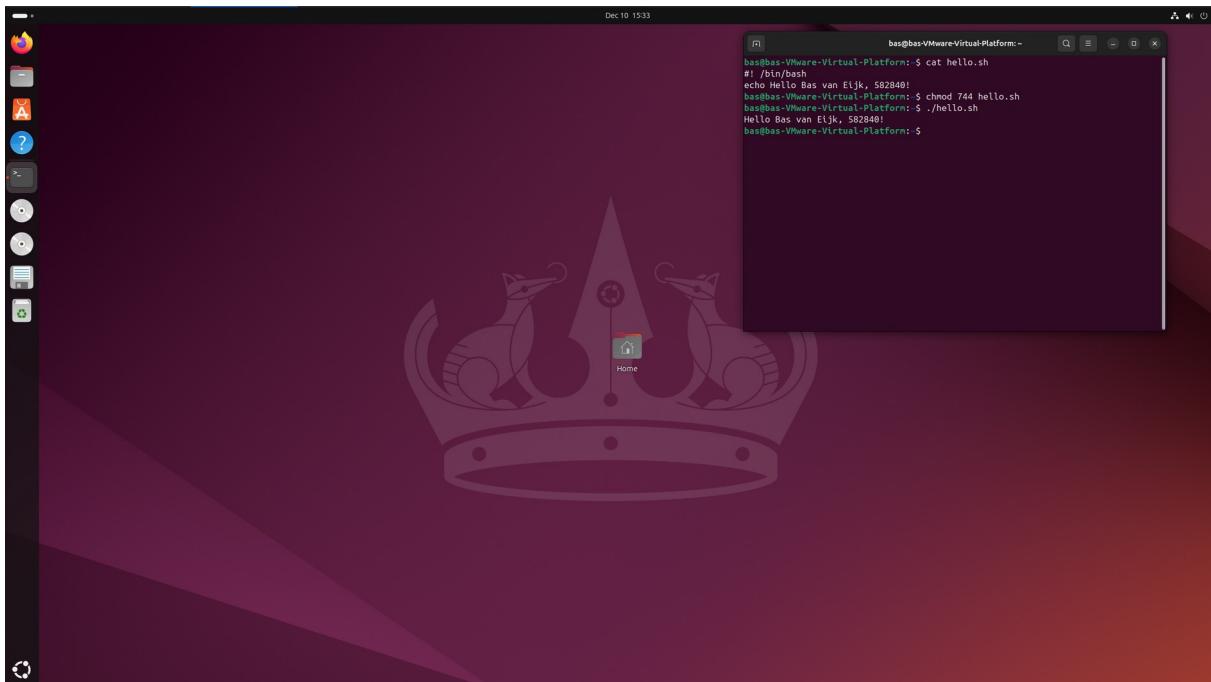
Deze applicatie laat zien welke processen nu op de computer draait en hoeveel resources het gebruikt.



Neofetch laat zien wat de hardware is van je computer. En laat je distro van linux zien.

## Assignment 5.5: Users and permissions on Linux

Relevant screenshots + motivation



## Assignment 5.6: View the contents of files

Relevant screenshots + motivation

Cat: Laat de inhoud van het bestand zien.

Wc: Dit command telt hoeveel lijnen, woorden, characters en bytes.

Tail: Laat standaard de laatste 10 lijnen zien van een file. Kan aangepast worden naar meer lijnen.

Head: Laat de eerste paar lijnen aan de bovenkant van het bestand zien. Standaard 10 lijnen maar kan aangepast worden.

Grep: Kan je zoeken in het bestand en krijg je terug waar het staat.

Aantal lijnen: 12306

Aantal woorden: 107562

Aantal characters: 593731

Waar kingdom staat: 490 en 1124

Dec 10 16:17  
bas@bas-VMware-Virtual-Platform:~

```
bas@bas-VMware-Virtual-Platform:~ $ wc -n
bas@bas-VMware-Virtual-Platform:~ $ wc -n
bas@bas-VMware-Virtual-Platform:~ $ wc -m 1661-0.txt
bas@bas-VMware-Virtual-Platform:~ $ ^C
bas@bas-VMware-Virtual-Platform:~ $ grep -n 'kingdom' 1661-0.txt
496:"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
bas@bas-VMware-Virtual-Platform:~ $ head -n 500 1661-0.txt | tail -n 21
> "Then I shall drop you a line to let you know how we progress."
"Pray do so. I shall be all anxiety."
"Then, as to money?"
"You have _carte blanche_."
"Absolutely?"
"Tell you that I would give one of the provinces of my kingdom to
have that photograph."
"And for present expenses?"
The King took a heavy chamois leather bag from under his cloak and laid
it on the table.
"There are three hundred pounds in gold and seven hundred in notes," he
said.
bas@bas-VMware-Virtual-Platform:~ $ head -n 1124 1661-0.txt | tail -n 21
"I am immensely indebted to you. Pray tell me in what way I can reward
you. This ring—" He slipped an emerald snake ring from his finger and
held it out upon the palm of his hand.
"Your Majesty has something which I should value even more highly," he
said Holmes.
"You have but to name it."
"This photograph?"
The King stared at him in amazement.
"Irene's photograph!" he cried. "Certainly, if you wish it."
"Thank your Majesty. Then there is no more to be done in the matter.
I have the honour to wish you a very good morning." He bowed, and,
turning away without observing the hand which the King had stretched
out to him, he set off in my company for his chambers.
```

And that was how a great scandal threatened to affect the kingdom of

bas@bas-VMware-Virtual-Platform:~ \$

## Assignment 5.7: Digital forensics

Relevant screenshots + motivation

Dec 10 16:25  
bas@bas-VMware-Virtual-Platform:~ \$ exiftool -Model -Make -GPSLatitude -GPSLongitude -GPSPosition -DateTimeOriginal oldcar.jpg

```
Camera Model Name : moto g(5) play
Make : motorola
GPS Latitude : 53 deg 11' 39.68" N
GPS Longitude : 6 deg 32' 12.98" E
GPSPosition : 53 deg 11' 39.68" N, 6 deg 32' 12.98" E
DateTime Original : 2026:11:07 15:08:57
```

bas@bas-VMware-Virtual-Platform:~ \$

Deze foto is genomen in Recht in belgie.

```
Dec 10 16:29
bas@bas-VMware-Virtual-Platform:~$ mv oldcar.jpg oldcar
bas@bas-VMware-Virtual-Platform:~$ file oldcar
oldcar: JPEG image data, JFIF standard 1.01, aspect ratio, density 1x1, segment length 16, Exif Standard: [TIFF image data, big-endian, direntries=10, manufacturer=motorola, model=moto g(6) play, xresolution=160, yresolution=160, resolutionunits=2, software=Aljeter-user 9 PPPS29.55-35-1B-7 6a8d0 release-keys, datetime=2020:11:07 15:08:57, GPS-Data], baseline, precision 8, 4160x3120, components 3
bas@bas-VMware-Virtual-Platform:~$
```

## 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.

```
[sudo] password for bas:  
bas@debian:~$ sudo chown $USER:$USER /srv/images  
chown: invalid group: 'bas:$USER'  
bas@debian:~$ sudo chown $USER:$USER /srv/images  
bas@debian:~$ cd /srv/images  
bas@debian:/srv/images$ ls  
ubuntu2404_vm.img.gz  
bas@debian:/srv/images$
```

- Proof that you can restore the back-up image into an empty VM.



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