

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 officiële operating system, en unix-like zijn operating systems die op UNIX maar niet officieel UNIX zijn
- 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 een van de mede-makers van UNIX
Dennis Ritchie is de maker van UNIX
Bill joy heeft gewerkt aan de UNIX BSD en aan SunOS
Richard Stallman startte de GNU en de free software movement
Linus Torvalds heeft de Linux kernel gemaakt
- c) What is the philosophy of the GNU movement?
Dat gebruikers software kunnen gebruiken, aanpassen en delen zonder problemen
- d) Does Ubuntu as a Linux operating system conform to the philosophy of the GNU movement? Please explain your answer.
Ja, omdat Linux is gebouwd op de GNU movement, en Ubuntu is gebouwd op Linux
- e) Find out what is the Windows Subsystem for Linux?

Dat is een feature in Windows die je een Linux environment laat draaien op je windows computer, zonder dat je er een aparte VM voor nodig hebt of dual booting
- f) Find out, which operating system family belongs to Android, iOS and ChromeOS?
Android -> Linux
IOS -> Unix
ChromeOS -> 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>

Een supercomputer is een computer die gebruikt worden voor zware taken zoals klimaatmodellen, wetenschappelijk onderzoek, ruimtevaart en AI.

- 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 PS3 cluster is een cluster van PS3's die bij elkaar staan om samen rekentaken te laten doen. Ze gebruikten PS3's omdat de Cell CPU goedkoop was, maar wel sterk

- 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?

Linux

- 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, hij staat niet in de top 500

- 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?

De CPU architecture van de PS5 en de XBOX Series X is een x86-64 (AMD)





De PS5 draait op FreeBSD11

De xbox draait op Xbox system software, een OS die gemaakt is specifiek voor de xbox

Dat Game consoles ook gewoon computers zijn, maar dan in een ander jasje

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.
Mijn explorer en instellingen zijn opengegaan
- b) The file explorer can be opened with  + E, Which key combination could you also use?
Voor mij ook  + 3, omdat de explorer mijn derde ding is op mijn taskbar
- c) Open the system properties with a  key combination, take a screenshot of the open screen. Paste this screenshot into this template.
Ik heb geen pause key op mijn laptop

- 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 image displays three screenshots of the Windows Task Manager application, arranged vertically. Each screenshot includes a small Notepad window in the top right corner with the text "Nick Stomps 589055".

Processes Tab: Shows a list of running processes. The columns are Name, Status, CPU, Memory, Disk, and Network. The processes are sorted by CPU usage.

Name	Status	CPU	Memory	Disk	Network
Firefox (19)	Running	0%	1,339.4 MB	0.1 MB/s	0.1 Mbps
Spotify Widget (11)	Running	0.8%	518.5 MB	0 MB/s	0 Mbps
Discord (6)	Running	0%	418.7 MB	0.1 MB/s	0.1 Mbps
Antimalware Service Executable	Running	0%	189.1 MB	0 MB/s	0 Mbps
Search (7)	Running	0%	149.9 MB	0 MB/s	0 Mbps
Windows Explorer	Running	0%	147.6 MB	0 MB/s	0 Mbps
Desktop Window Manager	Running	1.6%	145.6 MB	0 MB/s	0 Mbps
Microsoft Word (2)	Running	0%	141.9 MB	0 MB/s	0 Mbps
Windows Input Experience	Running	0%	135.9 MB	0 MB/s	0 Mbps
Medal (7)	Running	0%	131.3 MB	0.1 MB/s	0.1 Mbps
Notepad.exe	Running	0%	119.3 MB	0.3 MB/s	0 Mbps
Task Manager	Running	1.6%	97.2 MB	0 MB/s	0 Mbps
Overwolf	Running	0%	87.9 MB	0 MB/s	0 Mbps
Game Bar (3)	Running	0%	80.3 MB	0.1 MB/s	0 Mbps
NVIDIA App (5)	Running	0%	66.5 MB	0 MB/s	0 Mbps
Secure System	Running	0%	65.8 MB	0 MB/s	0 Mbps
Service Host: DCOM Server Pr...	Running	0%	58.7 MB	0.1 MB/s	0 Mbps
ShellHost	Running	0%	58.2 MB	0 MB/s	0 Mbps
MedalEncoder	Running	0%	55.3 MB	0 MB/s	0 Mbps
WMI Provider Host	Running	0%	51.8 MB	0 MB/s	0 Mbps
Service Host: Diagnostic Policy...	Running	0%	48.1 MB	0.1 MB/s	0 Mbps
Mobile devices (2)	Running	0%	46.2 MB	0 MB/s	0 Mbps
Service Host: State Repository ...	Running	0%	37.6 MB	0 MB/s	0 Mbps
Start	Running	0%	36.6 MB	0 MB/s	0 Mbps

Performance Tab: Shows system performance metrics. The Memory section is highlighted, showing a usage of 13.3/15.7 GB (85%). The Memory composition bar chart shows the distribution of memory usage.

Users Tab: Shows the list of users currently logged on. The user "nickstomps06@gmail.com ..." is highlighted, showing a CPU usage of 2.3% and a memory usage of 4,204.3 MB.

User	Status	CPU	Memory	Disk	Network
nickstomps06@gmail.com ...	Running	2.3%	4,204.3 MB	0.1 MB/s	0.1 Mbps

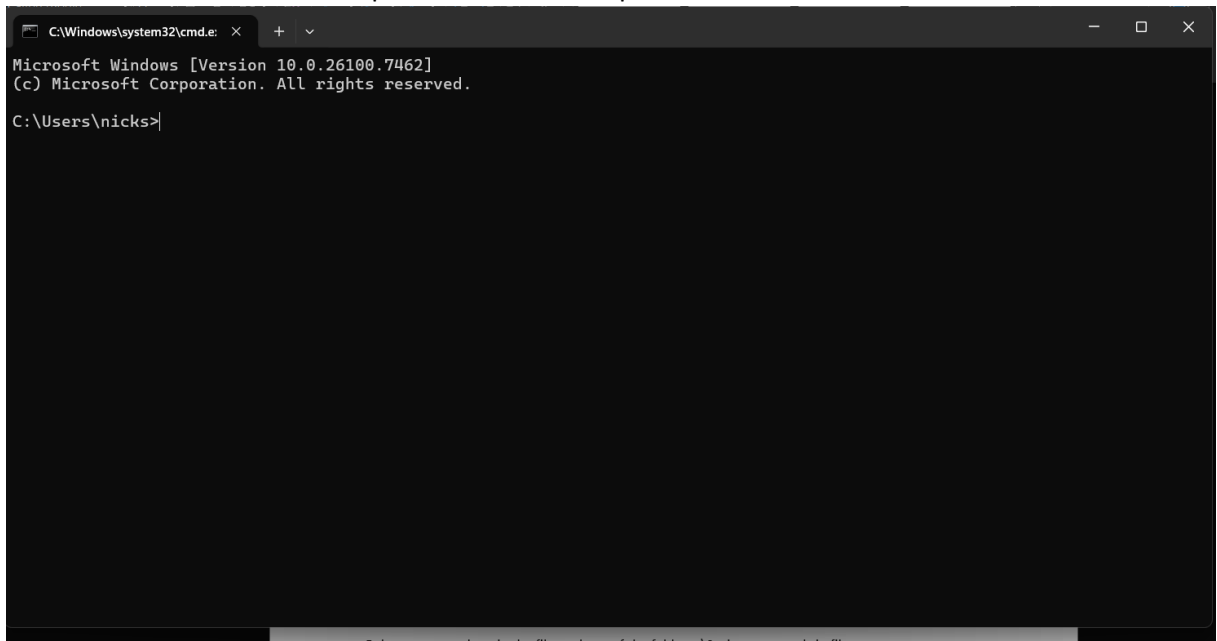
- e) If you're giving a PowerPoint presentation and you connect your laptop to a projector, Windows can use the projector as a second screen. For example, you may have Outlook open on your first screen that you don't show over the projector, while the PowerPoint presentation is displayed on the projector,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

Je kan daarvoor **Windows + P** gebruiken, zodat je dan je scherm kan extenderen en dat je je outlook op je ene scherm kan zetten en de presentatie op het andere

- 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?

Daarvoor gebruik je **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:

```
Microsoft Windows [Version 10.0.26200.7462]
(c) Microsoft Corporation. All rights reserved.

C:\SAXION>copy
The syntax of the command is incorrect.

C:\SAXION>copy "C:\SAXION\Wave.png" "C:\SAXION\HBOICT\YEAR1\QUARTILE1\Introductie Programmeren"
1 file(s) copied.

C:\SAXION>copy "C:\SAXION\Plug.png" "C:\SAXION#~"
1 file(s) copied.

C:\SAXION>copy "C:\SAXION\Plug.png" "C:\SAXION\HBOICT\YEAR1\QUARTILE1\Introductie Infrastructueren"
1 file(s) copied.

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

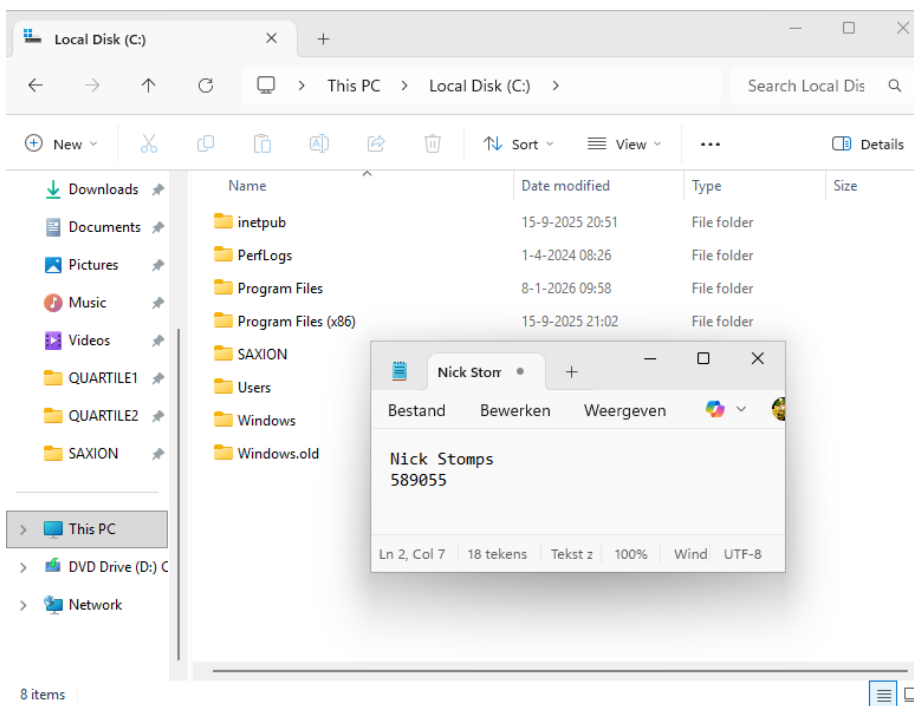
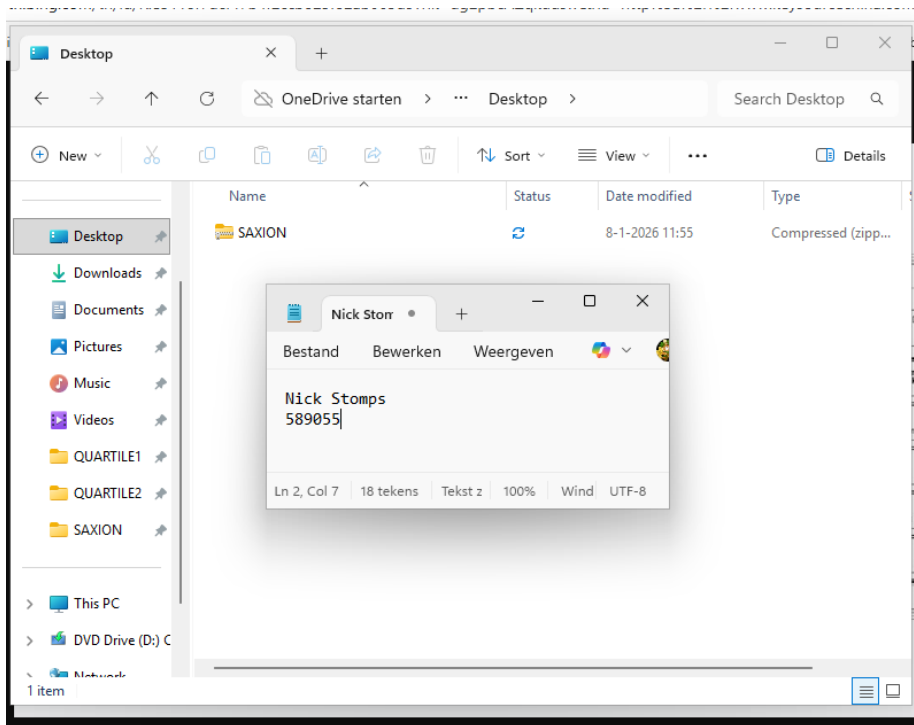
C:\SAXION>Nick Stomps 589055|
```

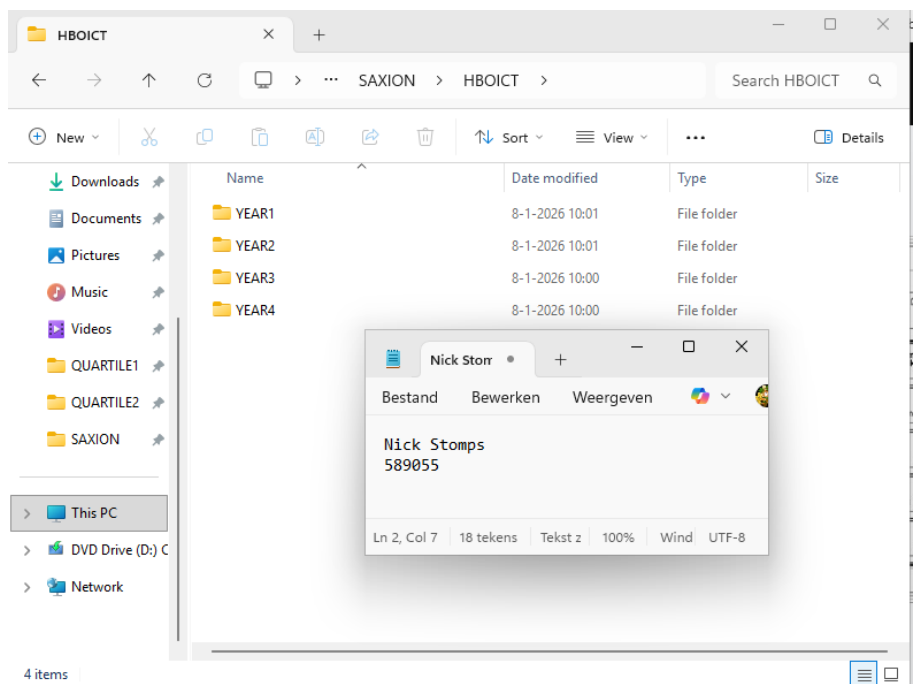
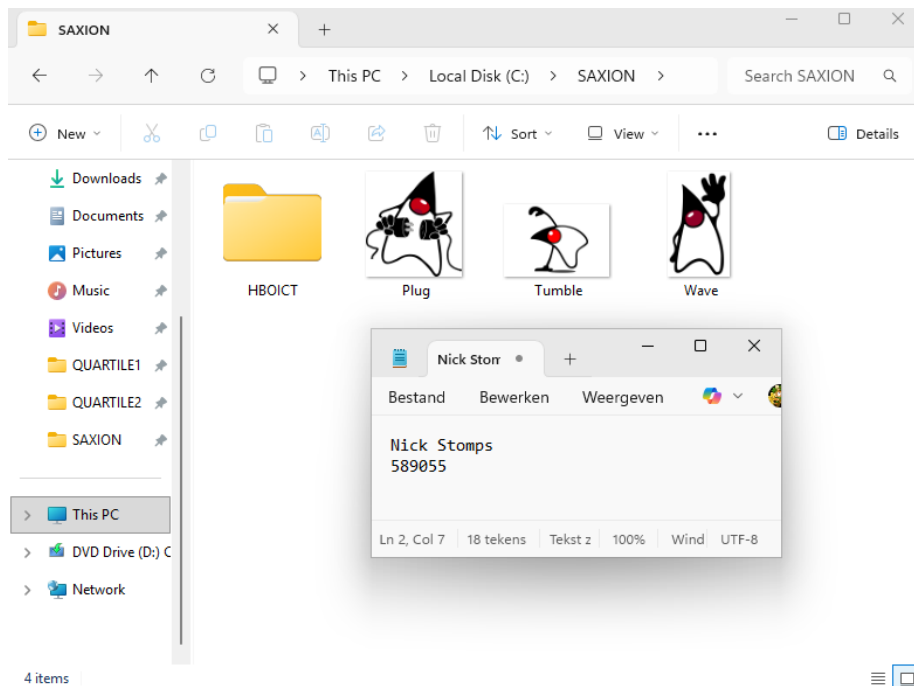
Relevant screenshots **tree** command:

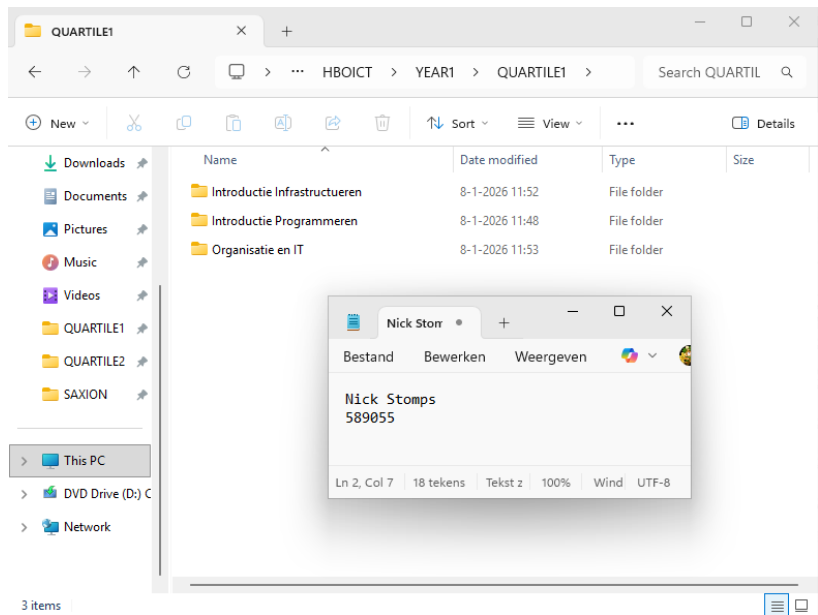
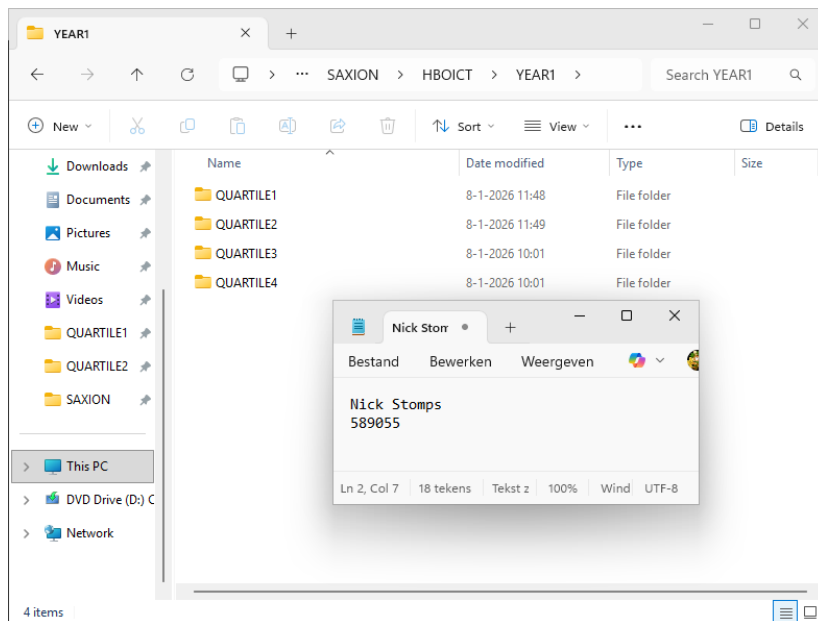
```
C:\SAXION>tree
Folder PATH listing
Volume serial number is 3EC5-15D2
C:.
|_HBOICT
|   |_YEAR1
|   |   |_QUARTILE1
|   |   |   |_Introductie Infrastructueren
|   |   |   |_Introductie Programmeren
|   |   |   |_Organisatie en IT
|   |   |_QUARTILE2
|   |   |   |_Databases
|   |   |   |_IT Fundamentals
|   |   |   |_Project ITS in the Game
|   |   |_QUARTILE3
|   |   |_QUARTILE4
|   |_YEAR2
|   |   |_QUARTILE1
|   |   |_QUARTILE2
|   |   |_QUARTILE3
|   |   |_QUARTILE4
|   |_YEAR3
|   |_YEAR4

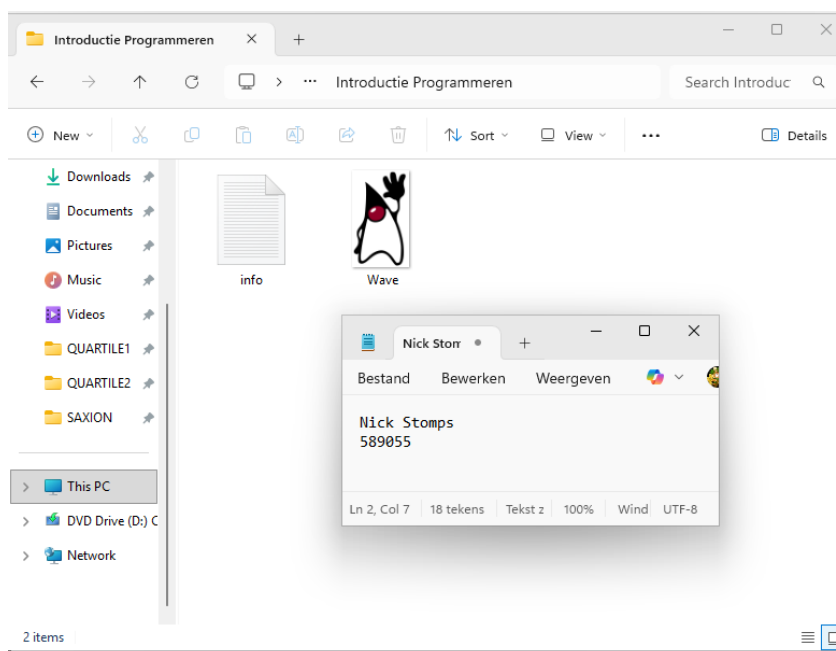
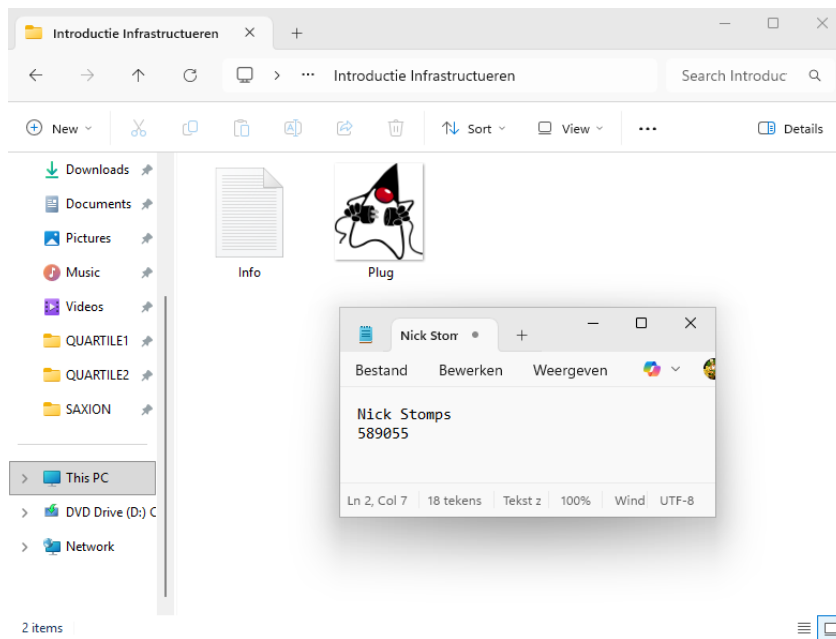
C:\SAXION>echo %username%
nicks
```

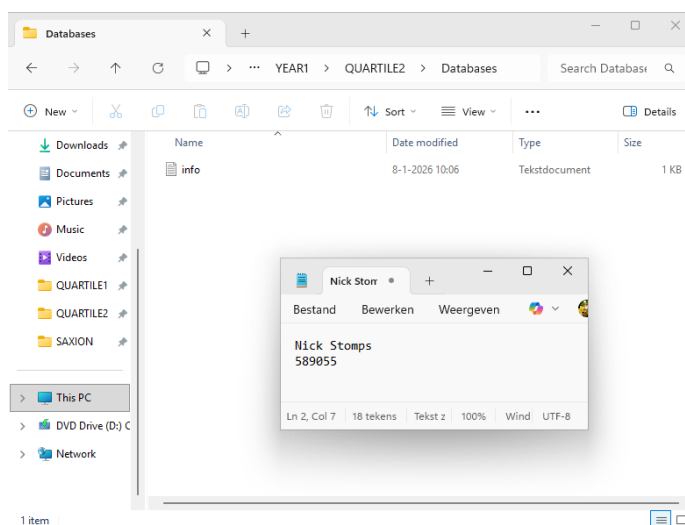
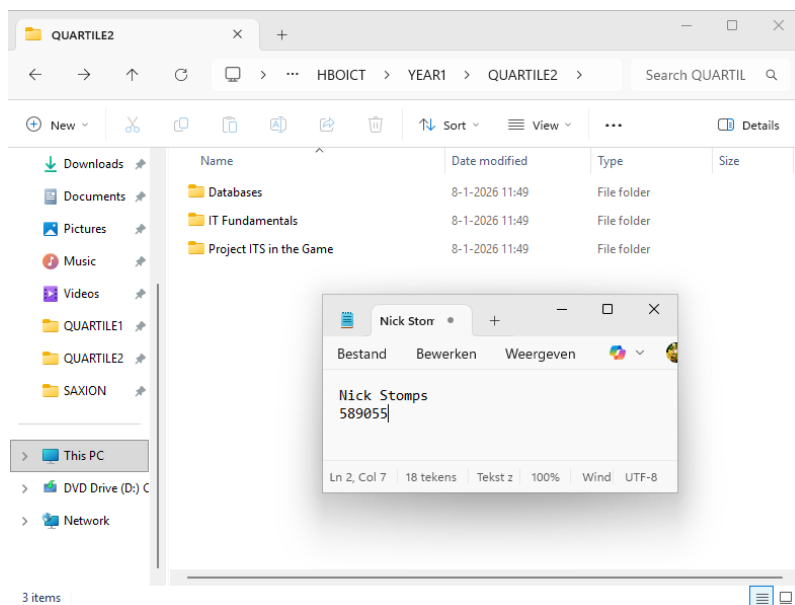
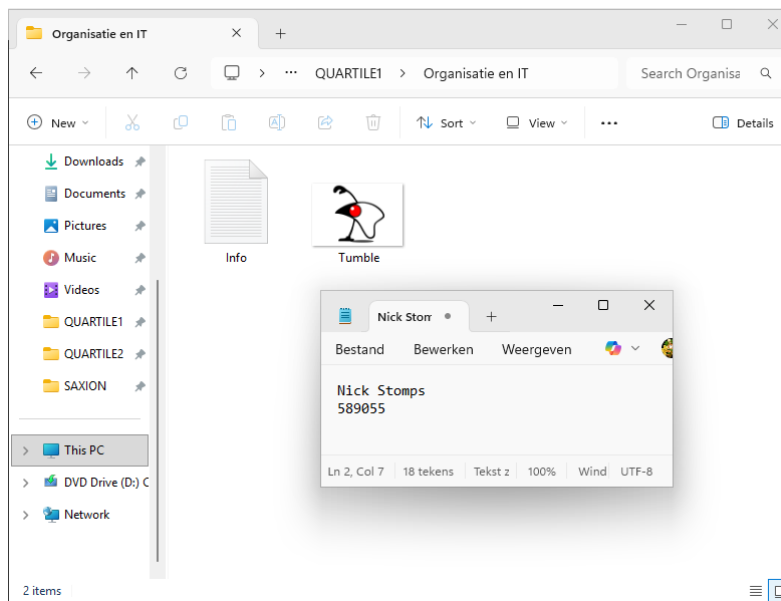
Relevant screenshots in the file explorer of the folder c:\Saxion + created zip file.

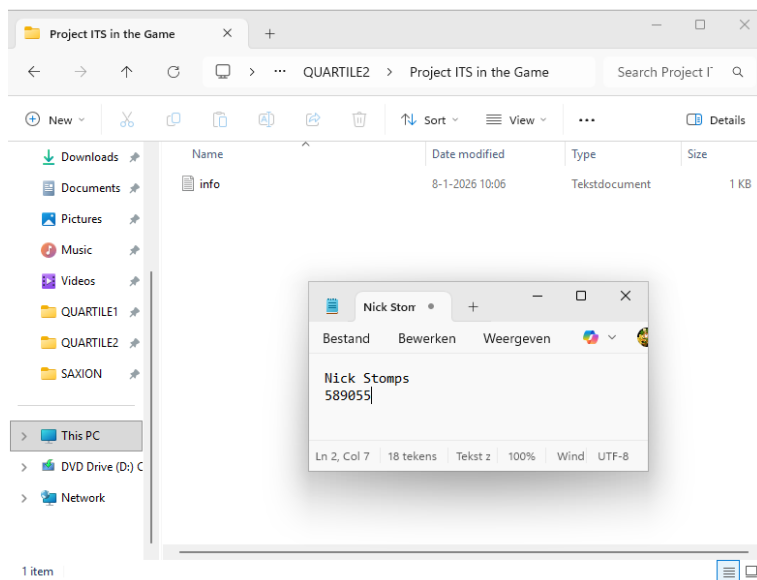
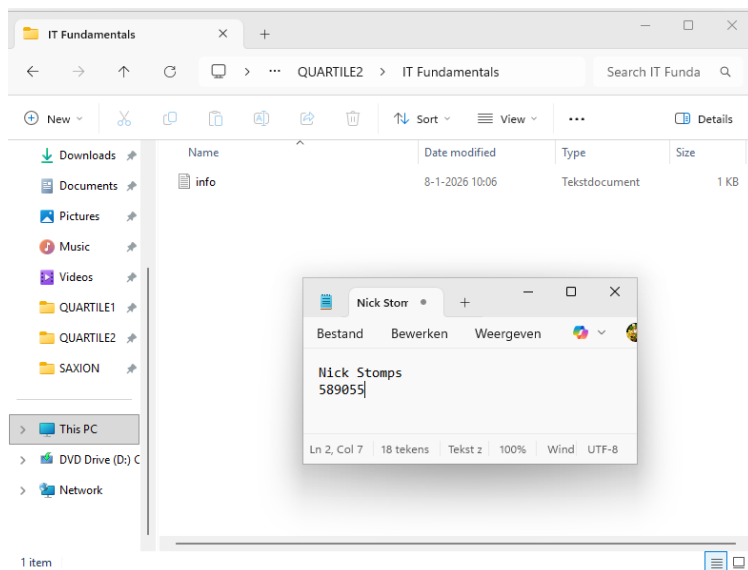






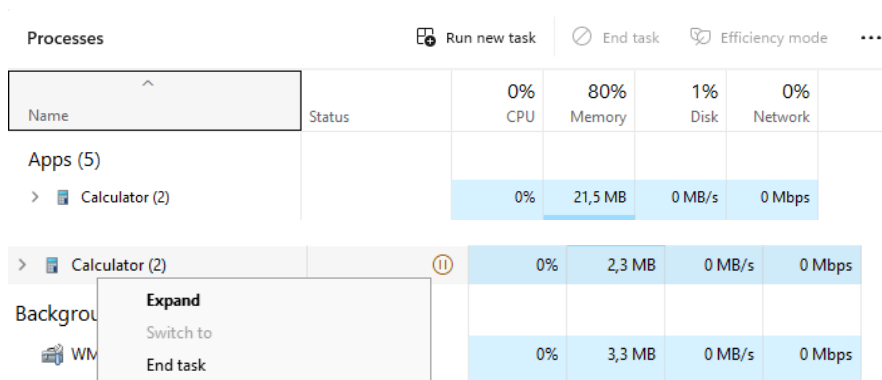






Terminating Processes

Relevant Screenshots Task Manager Window:



Install Software

Relevant screenshots that the following software is installed with winget:

```
Mozilla Firefox ESR (trs) Mozilla.Firefox.ESR.trs 140.6.0 winget
Mozilla Firefox ESR (uk) Mozilla.Firefox.ESR.uk 140.6.0 winget
Mozilla Firefox ESR (ur) Mozilla.Firefox.ESR.ur 140.6.0 winget
Mozilla Firefox ESR (uz) Mozilla.Firefox.ESR.uz 140.6.0 winget
Mozilla Firefox ESR (vi) Mozilla.Firefox.ESR.vi 140.6.0 winget
Mozilla Firefox ESR (xh) Mozilla.Firefox.ESR.xh 140.6.0 winget
Mozilla Firefox ESR (zh-CN) Mozilla.Firefox.ESR.zh-CN 140.6.0 winget
Mozilla Firefox ESR (zh-TW) Mozilla.Firefox.ESR.zh-TW 140.6.0 winget
Mozilla Firefox (MSIX) Night Mozilla.Firefox.MSIX.Night 148.26.0 winget
Firefox - Unbranded Build Mozilla.Firefox.Unbranded 147.0b1 winget
Profile Switcher for Firefox nulldev.ProfileSwitcherfor 0.1.1 winget
Ablaze Floorp Ablaze.Floorp 12.10.0 Tag: firefox-fo... winget
Floorp 12 Daylight Ablaze.Floorp.Daylight 138.0.0 Tag: firefox-fo... winget
r3dfox EclipseCommunity.r3dfox 146.0 Tag: firefox-fo... winget
Pale Moon MoonchildProductions.PaleM 33.9.1 Tag: firefox-fo... winget
Ghostery Private Browser Ghostery.GhosteryDawn 2024.8.0 Tag: firefoxfork winget
FFsend TimVisee.FFsend 0.2.76 Tag: firefox-se... winget

C:\Windows\System32>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:\Windows\System32>
```

--id limiteers de installatie naar de ID van de applicatie, en -e zorgt ervoor de die de exacte subquery pakt die je invult, en ook op case-sensitivity checkt

- WinSCP

```
C:\Windows\System32>winget search winscp
Name Id Version Match Source
-----
WinSCP WinSCP.WinSCP 6.5.5
WinSCP RC WinSCP.WinSCP.RC 5.18.5- Tag: winscp winget

C:\Windows\System32>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...
Successfully installed
```

- Notepad++

```
C:\Windows\System32>winget search notepad++
Name Id Version Match Source
-----
Notepad++ Notepad++.Notepad++ 8.9 ProductCode: notepad++ winget
Notepad Next dail8859.NotepadNext 0.12 Tag: notepad++ winget

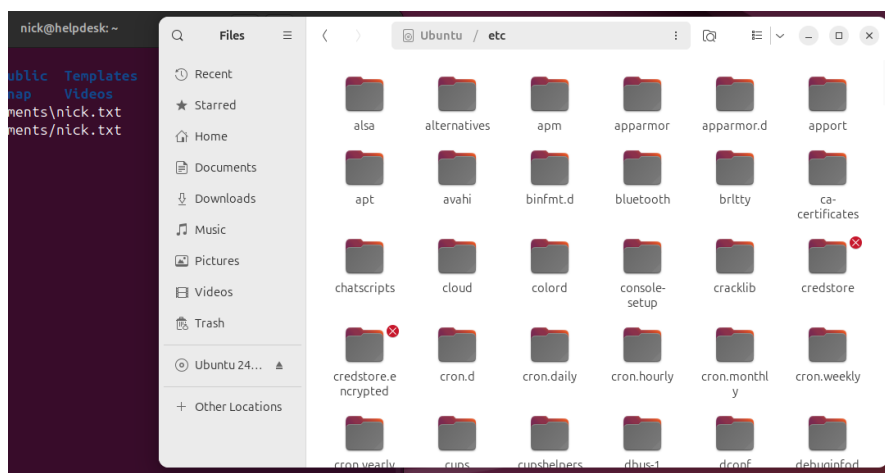
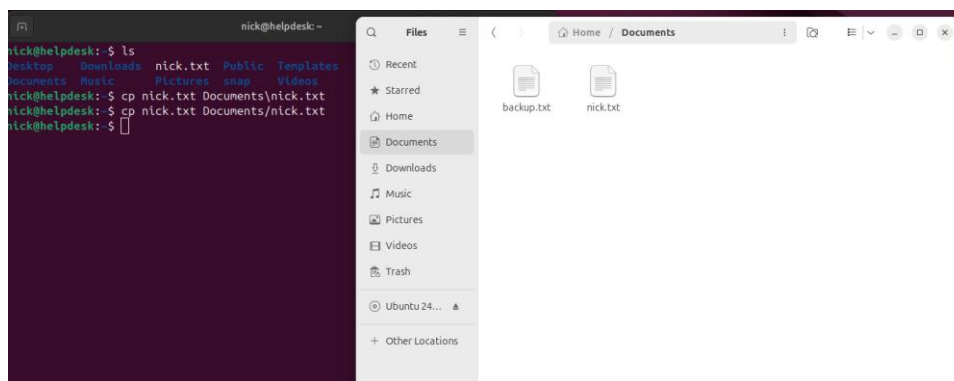
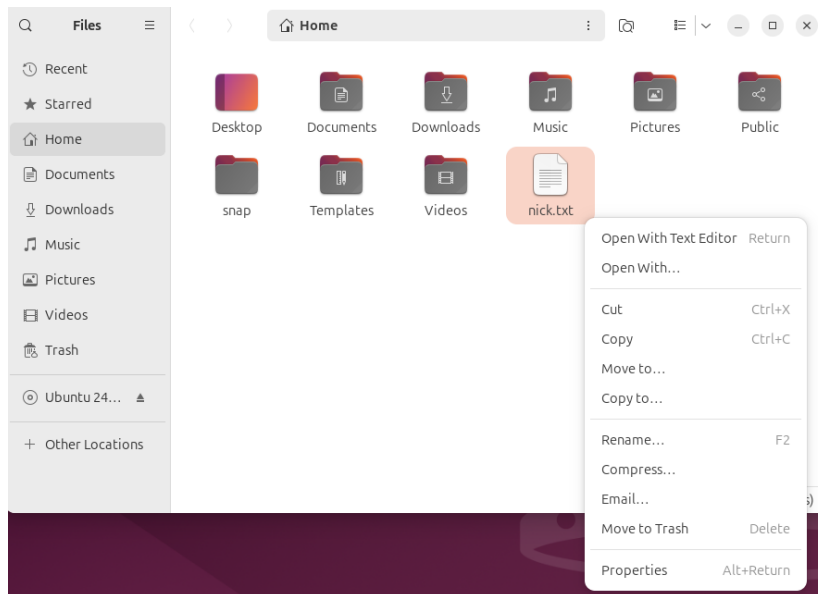
C:\Windows\System32>winget install -e --id Notepad++.Notepad++
Found Notepad++ [Notepad++.Notepad++] Version 8.9
This application is licensed to you by its owner.
Microsoft is not responsible for, nor does it grant any licenses to, third-party packages.
Downloading https://github.com/notepad-plus-plus/notepad-plus-plus/releases/download/v8.9/npp.8.9.Installer.x64.exe
6.54 MB / 6.54 MB
Successfully verified installer hash
Starting package install...
Successfully installed
```

- 7zip

```
C:\Windows\System32>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...
Successfully installed
```

Assignment 5.4: Working with Linux

Relevant screenshots + motivation



```

nick@helpdesk:~$ ls
Desktop  Documents  nick.txt  Music      Pictures  snap      Videos
Documents Downloads  nick.txt  Public     Templates
nick@helpdesk:~$ cd /media/nick/Ubuntu 24.04.3 LTS amd64
bash: cd: too many arguments
nick@helpdesk:~$ cd ..
nick@helpdesk:/home$ cd ..
nick@helpdesk:/$ ls
bin          home          mnt          sbin.usr-is-merged  tmp
bin.usr-is-merged  lib          opt          snap               usr
boot         lib64         proc         srv               var
cdrom        lib.usr-is-merged  root         swap.img
dev          lost+found    run          sys
etc          media         sbin         timeshift
nick@helpdesk:/$ cd etc
nick@helpdesk:/etc$ ls
nick@helpdesk:/etc$ cd ..
nick@helpdesk:/$ ls
bin          home          mnt          sbin.usr-is-merged  tmp
bin.usr-is-merged  lib          opt          snap               usr
boot         lib64         proc         srv               var
cdrom        lib.usr-is-merged  root         swap.img
dev          lost+found    run          sys
etc          media         sbin         timeshift
nick@helpdesk:/$ cd ..
nick@helpdesk:/$ ls
bin          home          mnt          sbin.usr-is-merged  tmp
bin.usr-is-merged  lib          opt          snap               usr
boot         lib64         proc         srv               var
cdrom        lib.usr-is-merged  root         swap.img
dev          lost+found    run          sys
etc          media         sbin         timeshift
nick@helpdesk:/$ cd home
nick@helpdesk:/home$ ls

```

Assignment 5.5: Users and permissions on Linux

Relevant screenshots + motivation

```

nick@helpdesk:~/hello$ chmod +x hello.sh
nick@helpdesk:~/hello$ ./hello.sh
Hello Nick Stomps, 589055s!

```

```

nick@helpdesk:~/hello$ ./hello.sh
Hello Nick Stomps, 589055s!
nick@helpdesk:~/hello$

```

Assignment 5.6: View the contents of files

Relevant screenshots + motivation

cat wordt gebruikt om de inhoud van een bestand direct in de terminal weer te geven

wc telt het aantal regels, woorden en tekens in een bestand

less maakt het mogelijk om een bestand pagina voor pagina te bekijken en erin te navigeren

tail toont de laatste regels van een bestand

head oont de eerste regels van een bestand

grep oekt naar specifieke woorden of patronen binnen bestanden of uitvoer

Het document heeft 12307 lines, 107562 woorden en 595196 karakters

```
nick@helpdesk:~/Documents$ grep -n kingdom 'The Project Gutenberg.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
```

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.

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