Template Week 5 – Operating Systems

Student number:

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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 a certified operating system. Unix-like operating systems are inspired by 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
Played rol in creation of unix operating system with Dennis Ritchie. Played rol in creation of original b programming language which c was inspired by.
Dennis Ritchie
Played rol in creation of unix operating system with Ken Thompson. Played rol in creation of c programming language.
Bill Joy
Developed the berkeley software distribution unix. Played role in creation of sunos operating system.
Richard Stallman
Founded the gnu project. Played role in creation of gcc.
Linus Torvalds
Played role in creation of linux operstion system. Linux is used by many technological devices.

c) What is the philosophy of the GNU movement?
Founded by Richard Stallman. Advocates free software. Has 4 layers of freedom.

d) Does Ubuntu as a Linux operating system conform to the philosophy of the GNU movement? Please explain your answer.
Partially conform to gnu. Supports free software but includes proprietary software

e) Find out what is the Windows Subsystem for Linux?
It is a compatibility layer developed by windows to allow users to run linux on windows without using virtual machine.

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

Android: linux

Ios : bsd

Chrome os: 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
Supercomputes are used for processing complex calculations and high amount of data at high speed. Playes role in ai, cryptography, scientific simulations, weather forecasting, moleculer research and more.

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?
It is used for scientific research, distributed computing, ai and education.

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

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/
Doesn’t meet performance requirements.

e) What CPU architecture is used for the PlayStation 5 and Xbox Series X?

f) Amd
What operating systems run on these consoles?
Playstation 5: orbit os
Xbox series x: xbox ox
What conclusion can you draw from the answer to the previous question?
Playstation 5 and xbox series x use custom operating system.

Assignment 5.3: Working with Windows

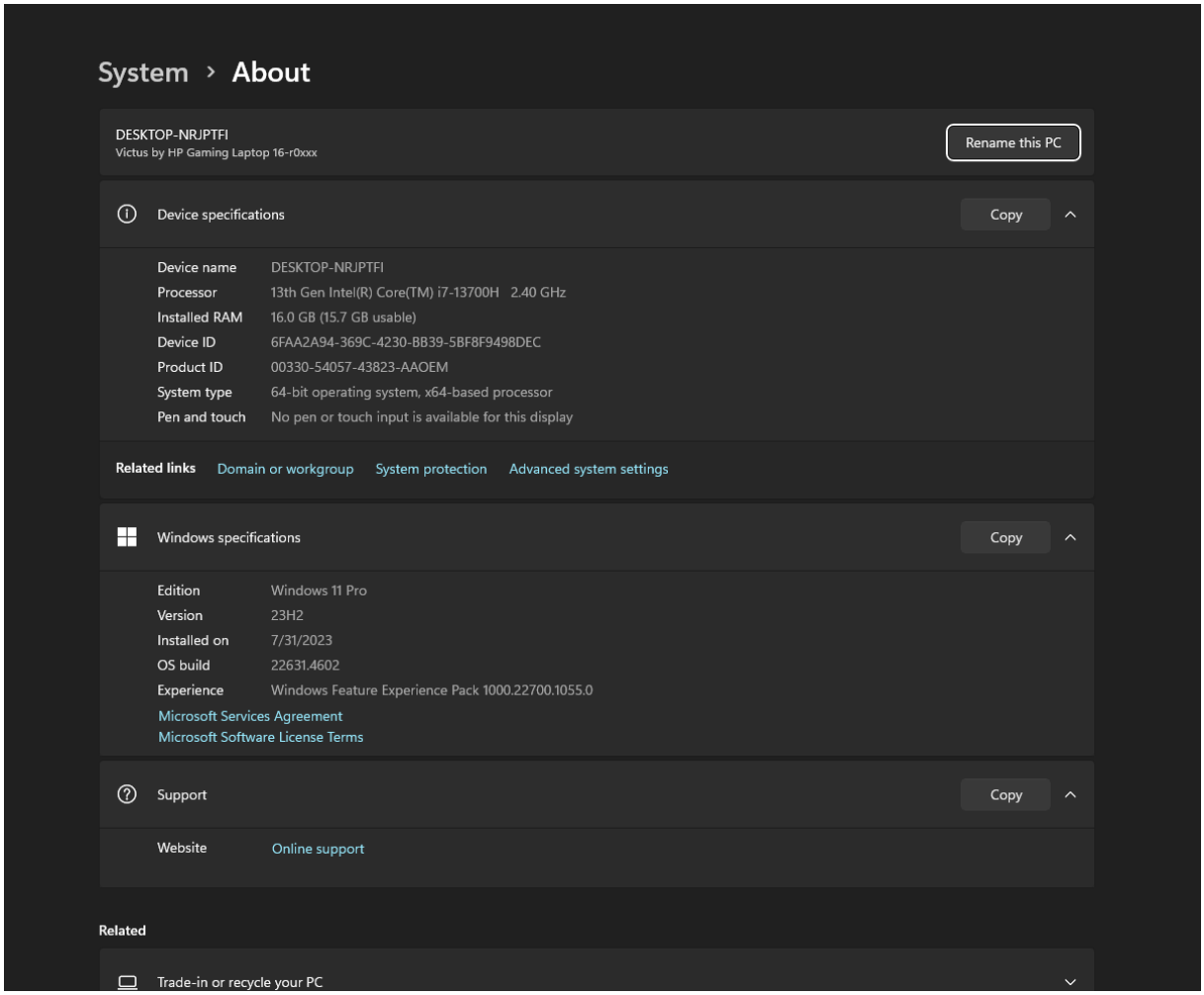
Take relevant screenshots of the assignments below

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.

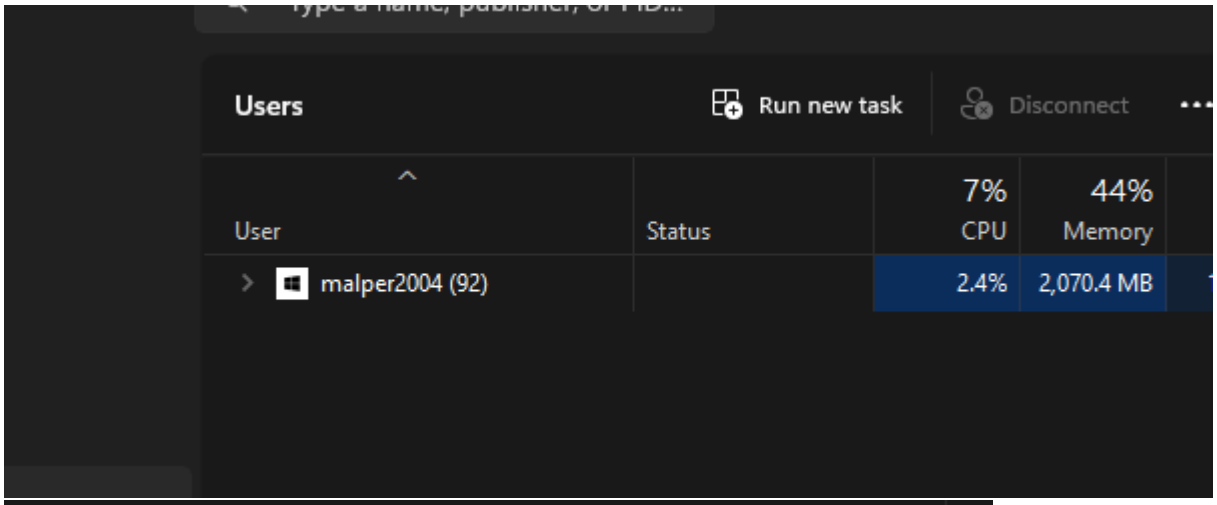
b) The file explorer can be opened with ⊞ + E, Which key combination could you also use?

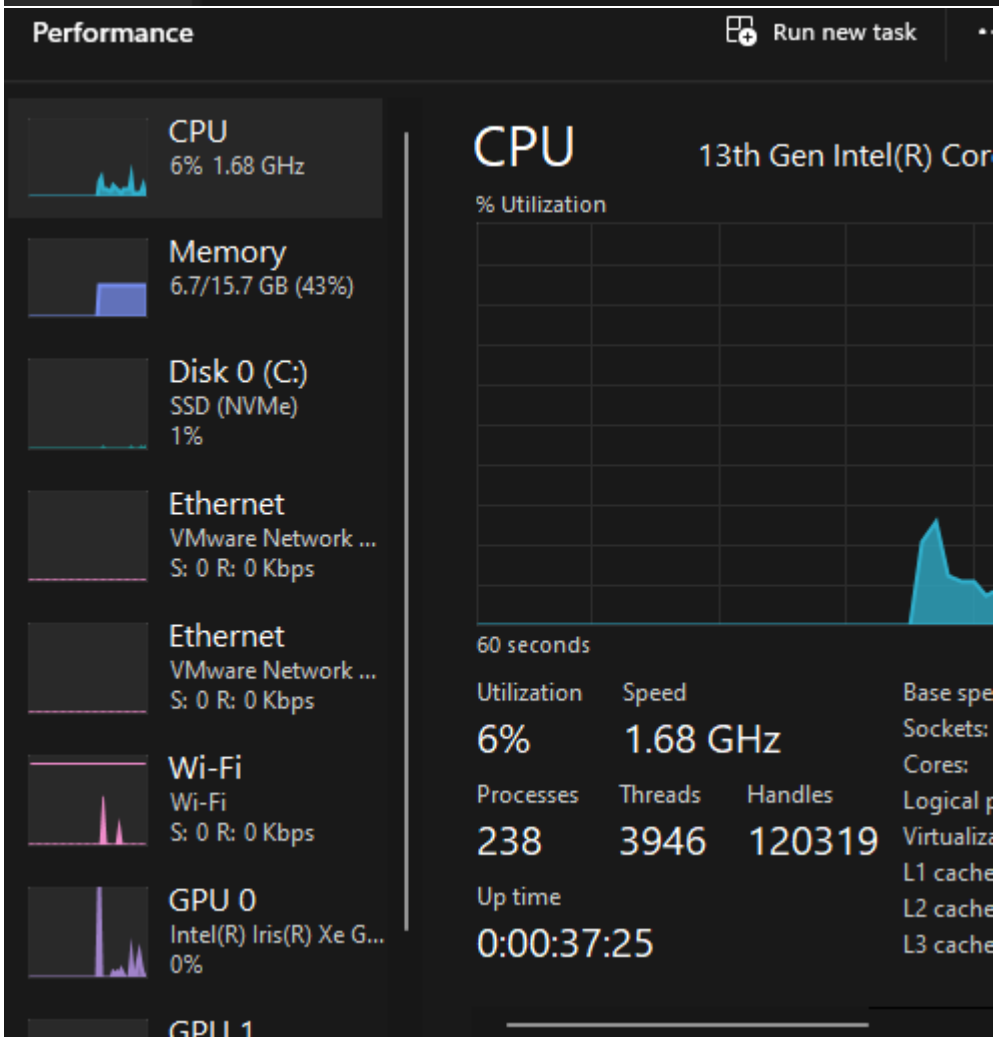
⊞ + X

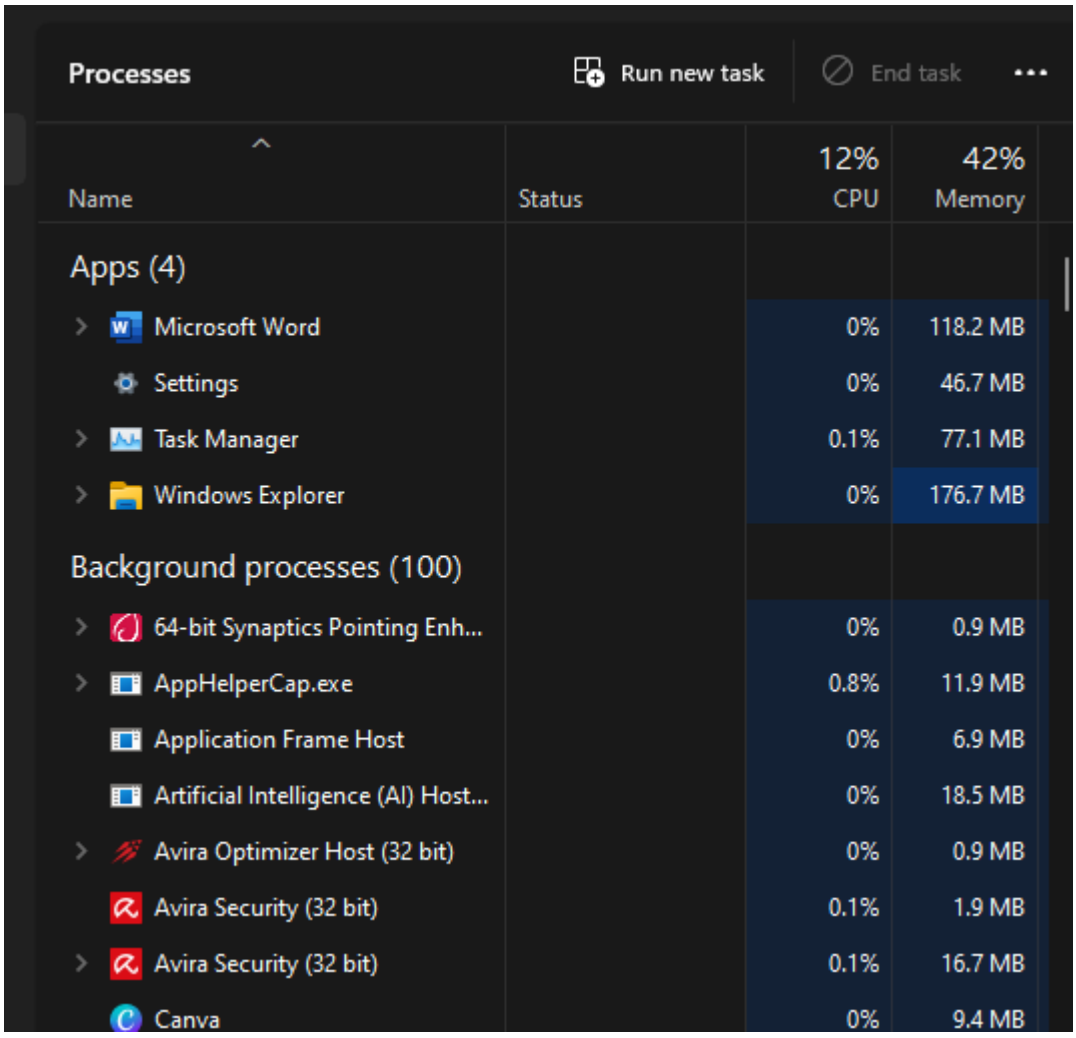
c) Open the system properties with a ⊞ key combination, take a screenshot of the open screen. Paste this screenshot into this template.



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.


Users
Run new task
Disconnect
User
Status
7%
CPU
44%
Memory
malper2004 (92)
2.4%
2,070.4 MB


Performance
Run new task
CPU
6% 1.68 GHz
Memory
6.7/15.7 GB (43%)
Disk 0 (C:)
SSD (NVMe)
1%
Ethernet
VMware Network ...
S: 0 R: 0 Kbps
Ethernet
VMware Network ...
S: 0 R: 0 Kbps
Wi-Fi
Wi-Fi
S: 0 R: 0 Kbps
GPU 0
Intel(R) Iris(R) Xe G...
0%
CPU
13th Gen Intel(R) Cor
% Utilization
60 seconds
Utilization
6%
Speed
1.68 GHz
Processes
238
Threads
3946
Handles
120319
Up time
0:00:37:25
Base spe
Sockets:
Cores:
Logical p
Virtualiz
L1 cache
L2 cache
L3 cache



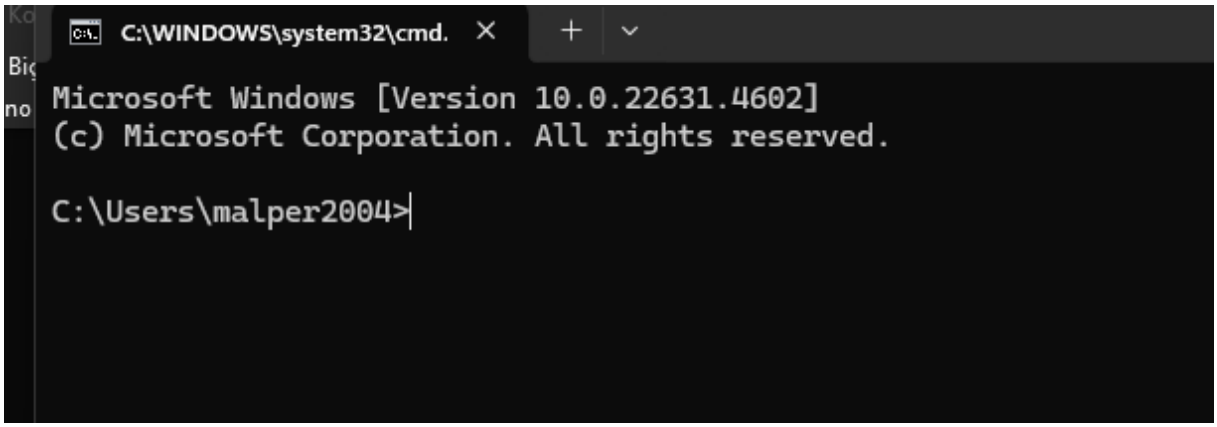
e) If you're giving a PowerPoint presentation and you connect your laptop to a projector, Windows can use the projector as a second screen. For example, you may have Outlook open on your first screen that you don't show over the projector, while the PowerPoint presentation is displayed on the projector,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

⊞ + 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?

⊞ + 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.

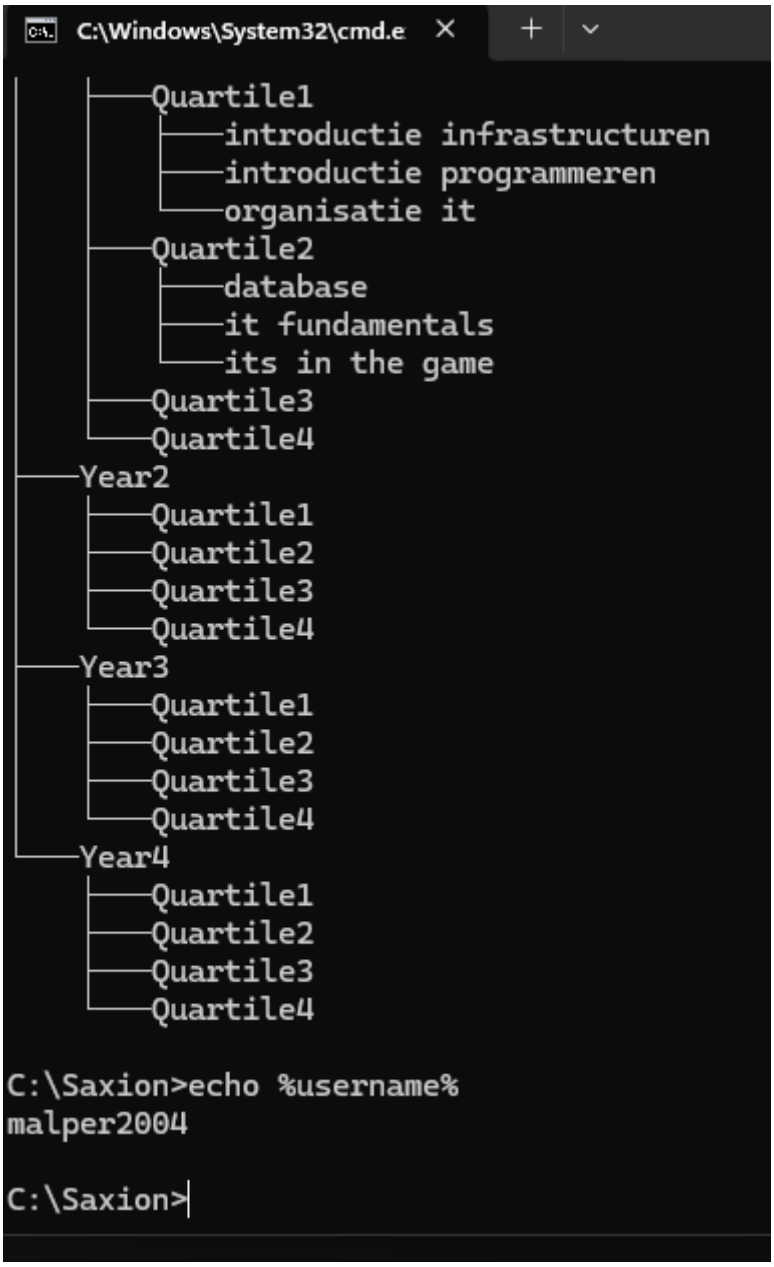


Working in the File Explorer

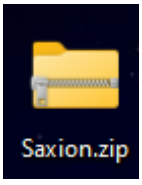
Relevant screenshots **copy** command:

```
C:\Saxion>copy "C:\Users\malper2004\Downloads\Tumble.png" "C:\Saxion\Year1\Quartile1\organisatie it\"
        1 file(s) copied.

C:\Saxion>copy "C:\Users\malper2004\Downloads\Wave.png" "C:\Saxion\Year1\Quartile1\introductie programmeren\"
        1 file(s) copied.

C:\Saxion>copy "C:\Users\malper2004\Downloads\Plug.png" "C:\Saxion\Year1\Quartile1\introductie infrastructuren\"
        1 file(s) copied.
```

Relevant screenshots **tree** command:



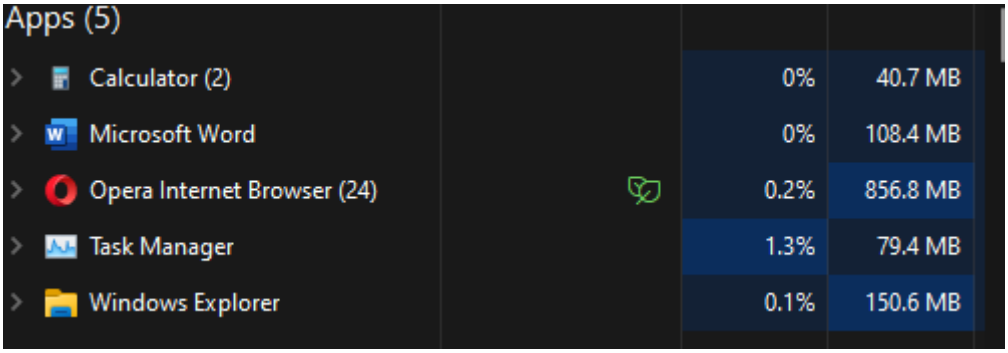
Relevant screenshots in the file explorer of the folder c:\Saxion + created zip file.



Het is niet mogelijk op c zip te maken. Hij vraagt het op desktop.

Terminating Processes

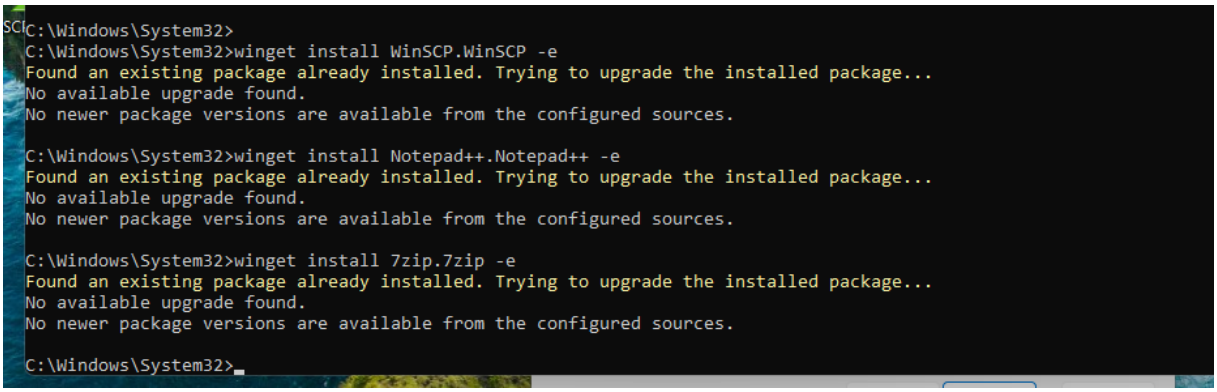
Relevant Screenshots Task Manager Window:



Install Software

Relevant screenshots that the following software is installed:

- WinSCP
- Notepad++
- 7zip



Assignment 5.4: Working with Linux

Relevant screenshots + motivation

Linux has a file system with a single root directory. Windows has multiple roots.

```
malper2004@infra:~$ tar -cf archive.tar textfile.txt
malper2004@infra:~$
```

```
malper2004@infra:/etc$ cd ~
malper2004@infra:~$
```

```
malper2004@infra:~$ cd /etc
malper2004@infra:/etc$
```

```
malper2004@infra:~$ cp ~/textfile.txt ~/Documents/
malper2004@infra:~$
```

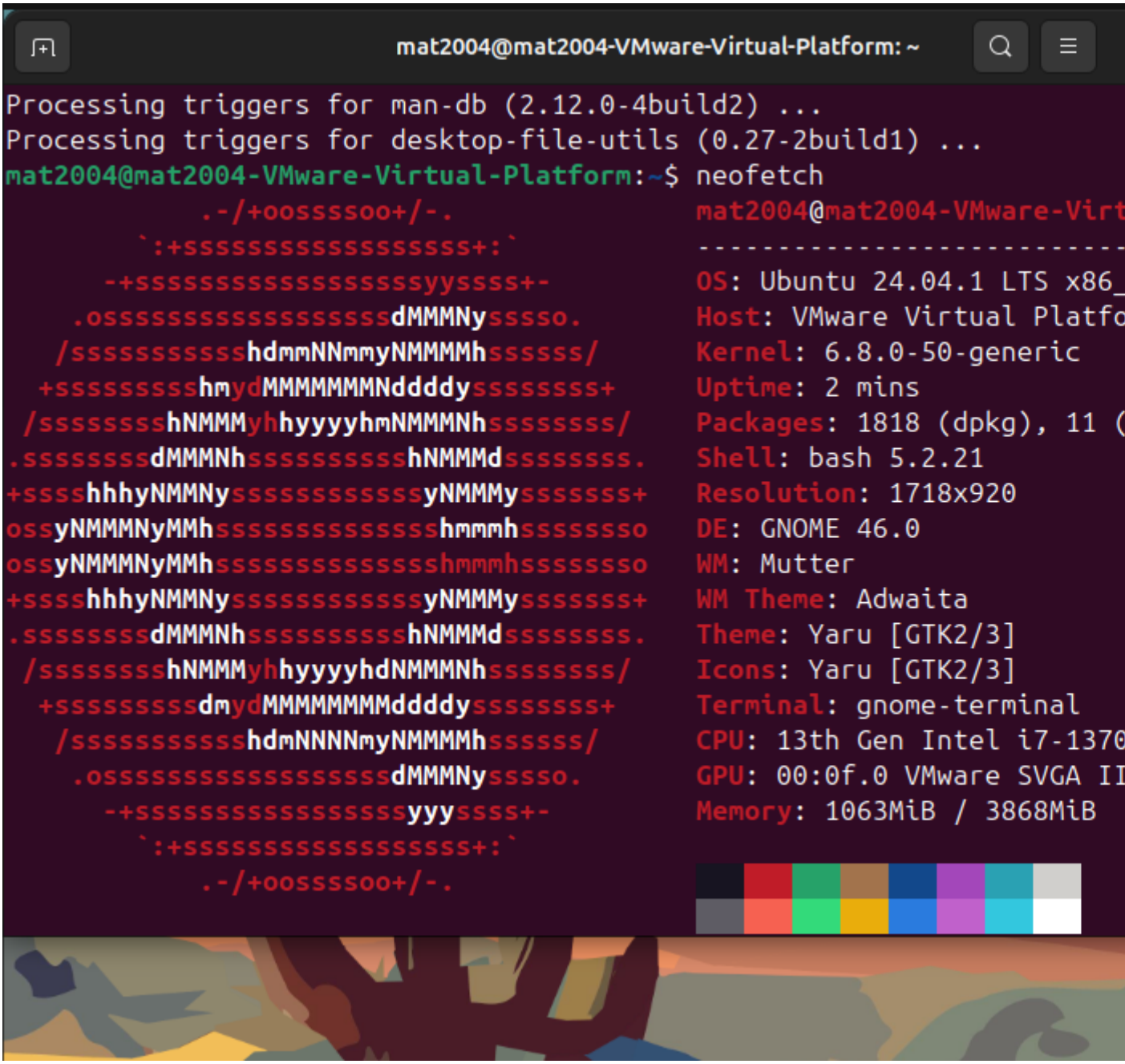
```
malper2004@infra:~$ echo "This is a text file." > textfile.txt
malper2004@infra:~$
```

```
malper2004@infra:~$ sudo apt install -y neofetch
[sudo] password for malper2004:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
```

```
malper2004@infra:~$ sudo apt update && sudo apt install -y htop
[sudo] password for malper2004:
Ign:1 http://nl.archive.ubuntu.com/ubuntu noble InRelease
Ign:2 http://security.ubuntu.com/ubuntu noble-security InRelease
Ign:3 http://nl.archive.ubuntu.com/ubuntu noble-updates InRelease
```

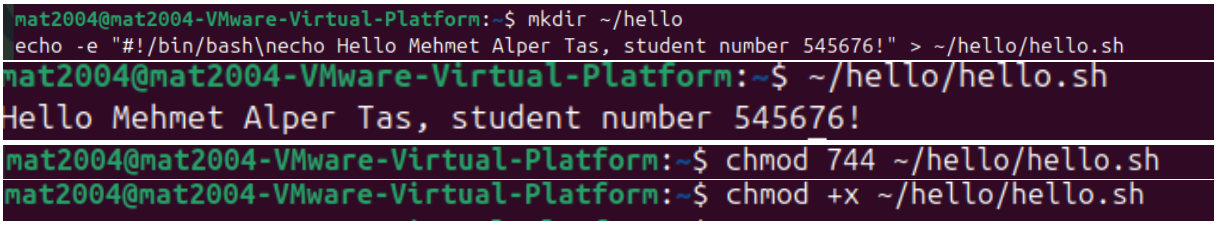
```
malper2004@infra:~$ tar -czf archive.tar.gz textfile.txt
malper2004@infra:~$
```

```
malper2004@infra:~$ tar -xf archive.tar
malper2004@infra:~$
```



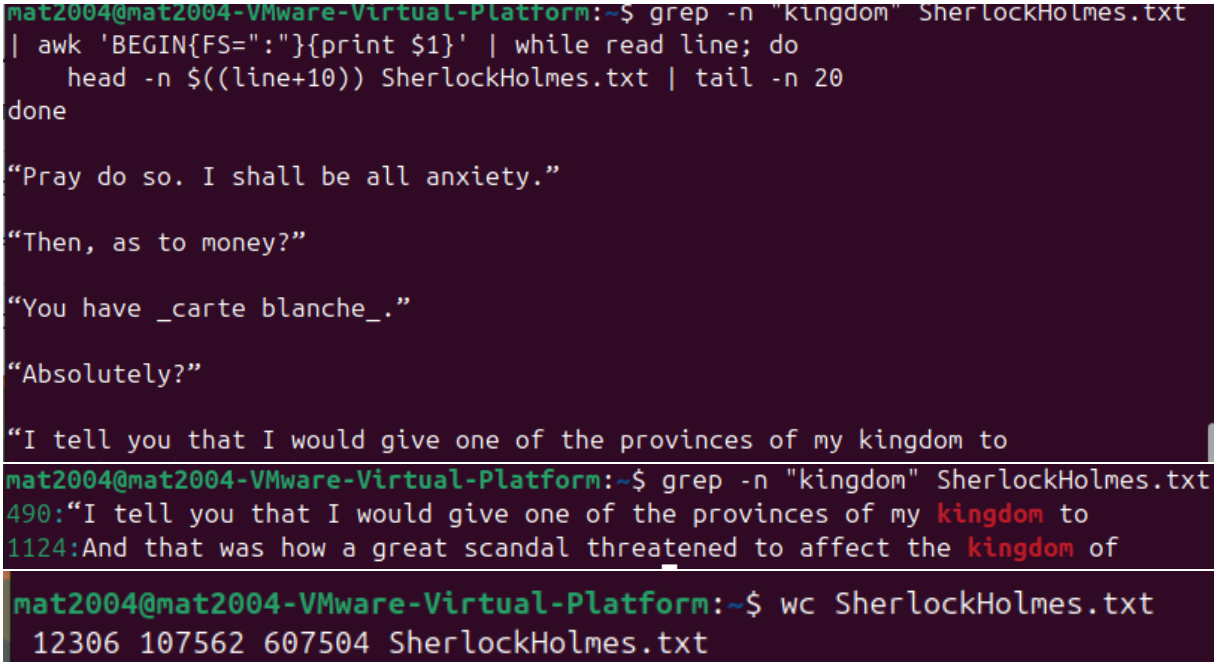
Assignment 5.5: Users and permissions on Linux

Relevant screenshots + motivation

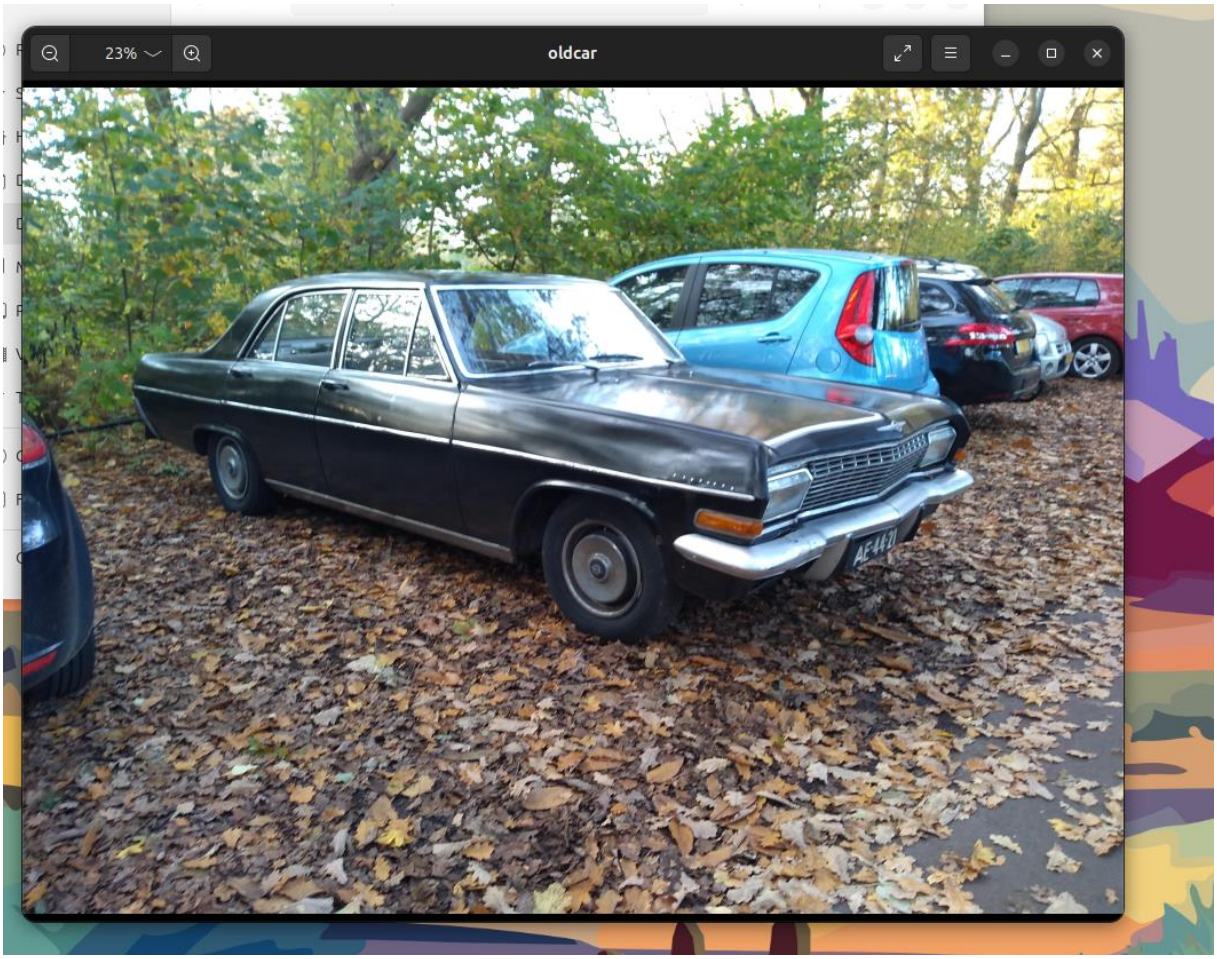


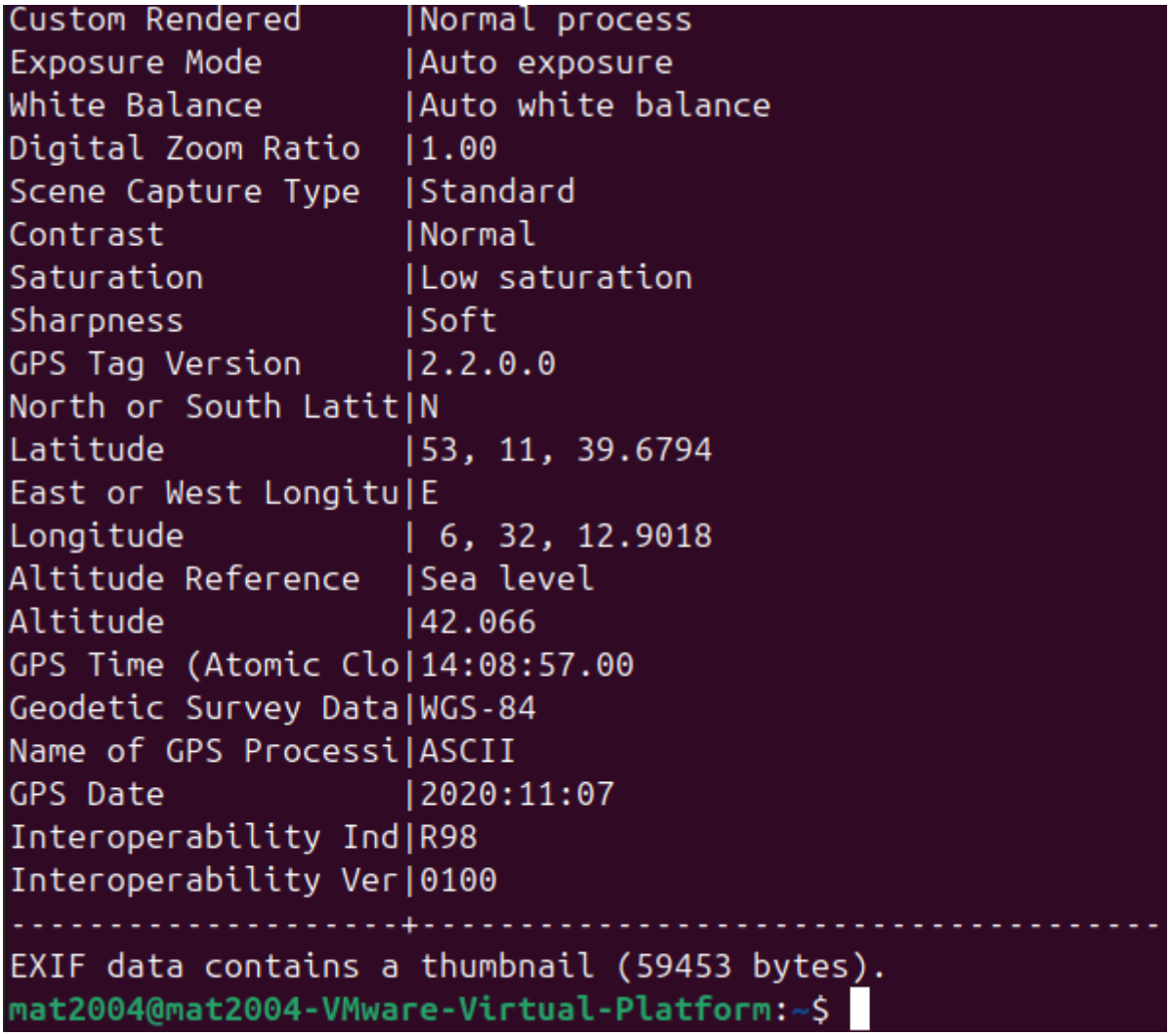
Assignment 5.6: View the contents of files

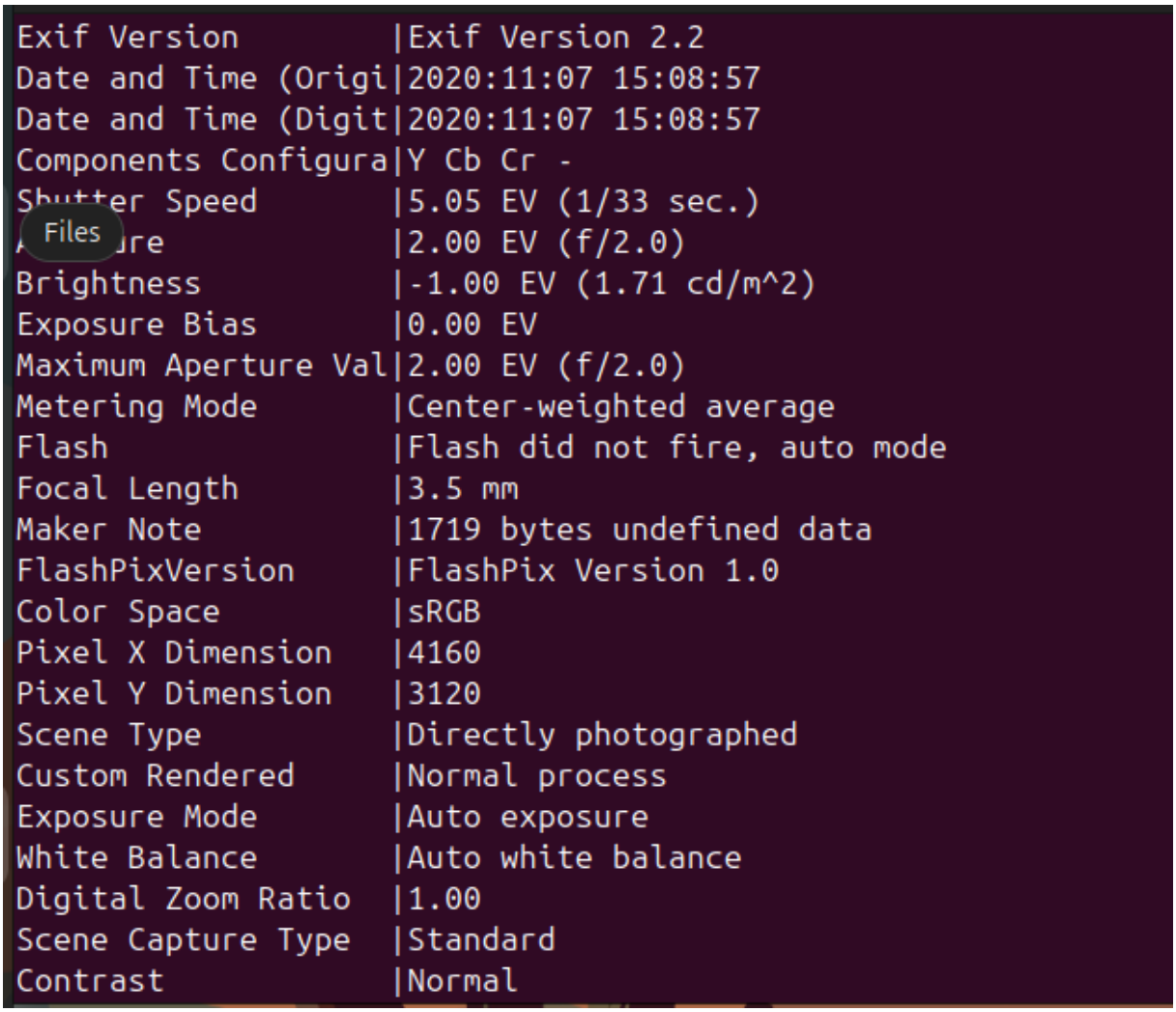
Relevant screenshots + motivation



Assignment 5.7: Digital forensics


23%
oldcar


Custom Rendered |Normal process
Exposure Mode |Auto exposure
White Balance |Auto white balance
Digital Zoom Ratio |1.00
Scene Capture Type |Standard
Contrast |Normal
Saturation |Low saturation
Sharpness |Soft
GPS Tag Version |2.2.0.0
North or South Latit|N
Latitude |53, 11, 39.6794
East or West Longitu|E
Longitude | 6, 32, 12.9018
Altitude Reference |Sea level
Altitude |42.066
GPS Time (Atomic Clo|14:08:57.00
Geodetic Survey Data|WGS-84
Name of GPS Processi|ASCII
GPS Date |2020:11:07
Interoperability Ind|R98
Interoperability Ver|0100
EXIF data contains a thumbnail (59453 bytes).
mat2004@mat2004-VMware-Virtual-Platform:~$


Exif Version |Exif Version 2.2
Date and Time (Origi|2020:11:07 15:08:57
Date and Time (Digit|2020:11:07 15:08:57
Components Configura|Y Cb Cr -
Shutter Speed |5.05 EV (1/33 sec.)
Files
|2.00 EV (f/2.0)
Brightness |-1.00 EV (1.71 cd/m^2)
Exposure Bias |0.00 EV
Maximum Aperture Val|2.00 EV (f/2.0)
Metering Mode |Center-weighted average
Flash |Flash did not fire, auto mode
Focal Length |3.5 mm
Maker Note |1719 bytes undefined data
FlashPixVersion |FlashPix Version 1.0
Color Space |sRGB
Pixel X Dimension |4160
Pixel Y Dimension |3120
Scene Type |Directly photographed
Custom Rendered |Normal process
Exposure Mode |Auto exposure
White Balance |Auto white balance
Digital Zoom Ratio |1.00
Scene Capture Type |Standard
Contrast |Normal

```
mat2004@mat2004-VMware-Virtual-Platform:~$ exif ~/Downloads/oldcar.jpg
EXIF tags in '/home/mat2004/Downloads/oldcar.jpg' ('Motorola' byte order):
--------------------+------------------------------------------------------
Tag                 |Value
--------------------+------------------------------------------------------
Manufacturer        |motorola
Model               |moto g(6) play
X-Resolution        |72
Y-Resolution        |72
Resolution Unit     |Inch
Software            |aljeter-user 9 PPPS29.55-35-18-7 6a0d0 release-keys
Date and Time       |2020:11:07 15:08:57
YCbCr Positioning   |Centered
Compression         |JPEG compression
X-Resolution        |72
Y-Resolution        |72
Resolution Unit     |Inch
Exposure Time       |1/33 sec.
F-Number            |f/2.0
Exposure Program    |Normal program
ISO Speed Ratings   |64
Exif Version        |Exif Version 2.2
Date and Time (Origi|2020:11:07 15:08:57
Date and Time (Digit|2020:11:07 15:08:57
```

Assignment 5.8: Steganography

Relevant screenshots + motivation

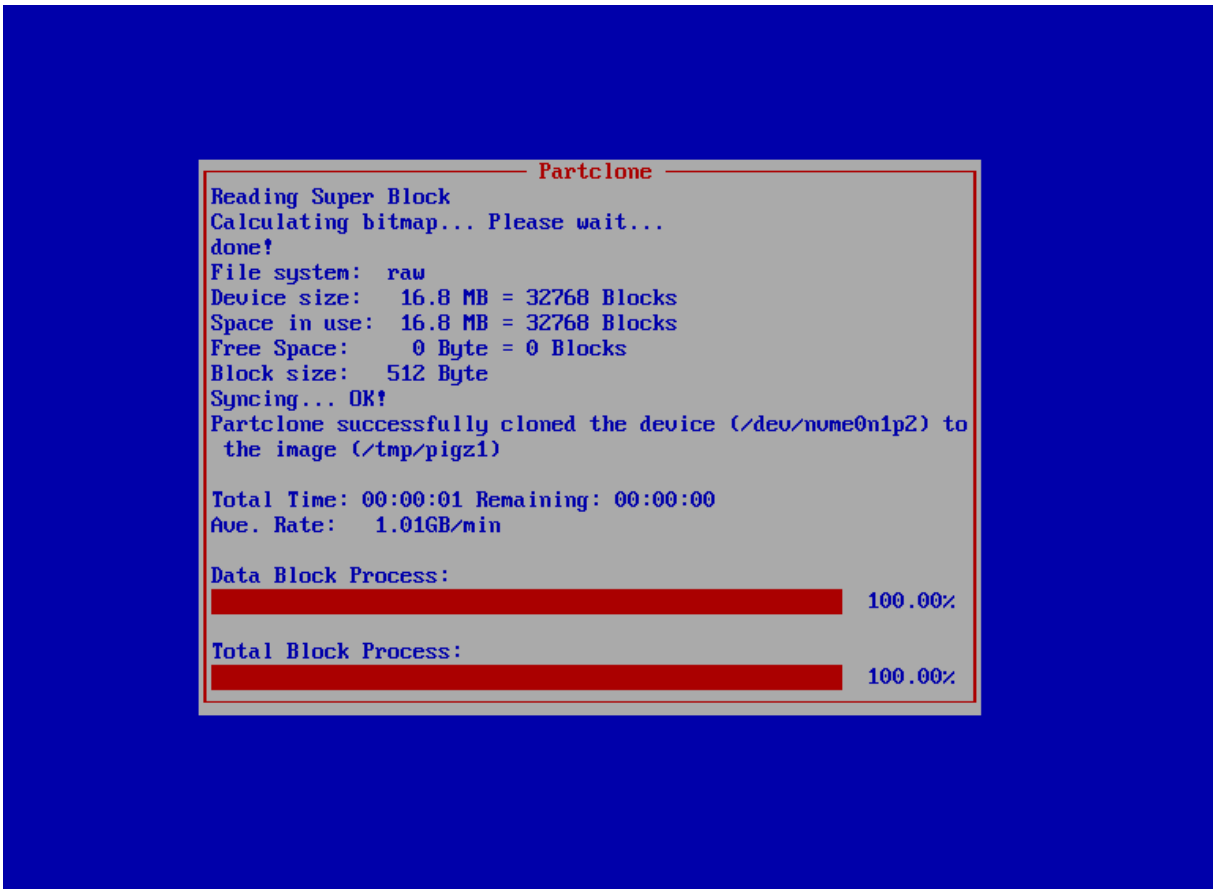
```
mat2004@mat2004-VMware-Virtual-Platform:~$ base64 -d ~/email-base64.txt > ~/outp
ut.gif
mat2004@mat2004-VMware-Virtual-Platform:~$ xdg-open ~/output.gif
mat2004@mat2004-VMware-Virtual-Platform:~$
```

```
mat2004@mat2004-VMware-Virtual-Platform:~/Downloads$ steghide extract -sf apple2
.jpg
Enter passphrase:
wrote extracted data to "message.txt".
mat2004@mat2004-VMware-Virtual-Platform:~/Downloads$
mat2004@mat2004-VMware-Virtual-Platform:~/Downloads$ cat message.txt
Hello class.
You have almost completed Week 5.
```

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.



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