DAT470 Assignment 1

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March 2025

Problem 1

a)

```
$ ssh CID@minerva.cse.chalmers.se
```

c)

```
$ tar -xvJf linux-6.13.5.tar.xz
```

d)

The size of the tarball.

```
$ wc -c linux-6.13.5.tar.xz
148547124 linux-6.13.5.tar.xz
```

The size of the extracted contents.

```
$ du -hs linux-6.13.5
1.7G    linux-6.13.5
```

e)

Header files:

```
$ find linux-6.13.5 -name "*.h" -type f | wc -l
26387
```

Source files:

```
$ find linux-6.13.5 -name "*.c" -type f | wc -l
34787
```

f)

```
$ find linux-6.13.5 -type f -name "*.c" -exec wc -l {} +
| sort -nr | grep -v "total" | head -n 1
57159 linux-6.13.5/drivers/net/wireless/realtek/rtw89/rtw8852c_table.c
```

The .C file with the most lines has 57159 lines.

g)

```
$ find linux-6.13.5 -type f \( -name "*.c" -o -name "*.h" \)
-exec grep -E '#include\s+("[^"]+"|<[^>]+>)' {} + |    awk -F '["<>]'
'{print $2}' | sort -f | uniq -ic | sort -nr | head -n 10
```

```
14090 linux/module.h
 9146 linux/kernel.h
 9010 linux/slab.h
 6949 linux/types.h
 6275 linux/init.h
 6078 linux/platform_device.h
 5394 linux/delay.h
 4480 linux/of.h
 4318 linux/interrupt.h
 4262 linux/io.h
```

h)

```
$ scp meps.csv CID@minerva.cse.chalmers.se:~
```

i)

```
CID@minerva:~$ cut -d ';' -f6,7 meps.csv
| grep "Sweden" | grep "10" | wc -l
21
```

j)

```
CID@minerva:~$ cut -d ';' -f7,8 meps.csv | grep "10"
| cut -d ';' -f2 | sort -f | uniq -ic | sort -nr | head

188 European People's Party group
136 Progressive Alliance of Socialists and Democrats
 86 Patriots for Europe
 79 European Conservatives and Reformists
 77 Renew Europe
 53 The Greens-European Free Alliance
 45 European United Left-Nordic Green Left
 32 Non-Inscrits
 25 Europe of Sovereign Nations
```

The largest parliamentary group is European People's Party group

k)

```
$ cut -d ';' -f5,1 meps.csv | grep -E '^[^;]*;[0-9]{4}-[0-9]{2}-[0-9]{2}'
| sort -k2 -t ';' -nr | head -n 1
Lena Schilling;2001-01-08

$ cut -d ';' -f5,1 meps.csv | grep -E '^[^;]*;[0-9]{4}-[0-9]{2}-[0-9]{2}'
| sort -k2 -t ';' -n | head -n 1
Louise Weiss;1893-01-25
```

l)

```
CID@minerva:~$ x=$(cut -d ';' -f4 meps.csv | sort -n |
uniq -ic | grep -v "sex or gender" | grep "female" |
awk '{print $1}')
CID@minerva:~$ y=$(cut -d ';' -f4 meps.csv | sort -n |
uniq -ic | grep -v "sex or gender" |
awk '{sum += $1} END {print sum}')
CID@minerva:~$ echo "scale=4; $x / $y" | bc
.2967
```

Problem 2

Property	Minerva	Callisto	Neptune
CPU Model	Intel(R) Xeon(R) Silver 4410Y	Model: INTEL(R) XEON(R) GOLD 6548N	INTEL(R) XEON(R) GOLD 6548N
CPU Frequency	3900.0000 MHz	Information Missing	Information Missing
Physical CPUs (sockets)	1	2	2
Cores per CPU Socket	12	32	32
Threads per Core	2	2	2
Total Hardware Threads	24	128	128
Instruction Set Architecture	x86_64	x86_64	x86_64
Cache Line Length	64 Bytes	64 Bytes	64 Bytes
L1d Cache	576 KiB	3 MiB	3 MiB
L1i Cache	384 KiB	2 MiB	2 MiB
L2 Cache	24 MiB	128 MiB	128 MiB
L3 Cache	30 MiB	120 MiB	120 MiB
Total System RAM	128325 MB or 125.31 GB	515453 MB or 503.37 GB	515453 MB or 503.37 GB
Number of GPUs	0	8	4
GPU model	n/a	NVIDIA L4	NVIDIA L40S
GPU Memory	n/a	23034 MiB	46068 MiB
Filesystem type	zfs	nfs4	nfs4
Total disk space	62305046528 KiB or 59 TB	62305046528 KiB or 59 TB	62305047552 KiB or 59 TB
Free disk space	61057675904 KiB or 57 TB	61057567744 KiB or 57 TB	61067897856 KiB or 57 TB
Linux Kernel version	6.8.0-57-generic	6.8.0-57-generic	6.8.0-57-generic
Distribution	Ubuntu 24.04.2 LTS	Ubuntu 24.04.2 LTS	Ubuntu 24.04.2 LTS
Python Interpreter	/usr/bin/python3	/usr/bin/python3	/usr/bin/python3
Python Version	Python 3.12.3	Python 3.12.3	Python 3.12.3