Pràctica: Gestió Avançada de Particions

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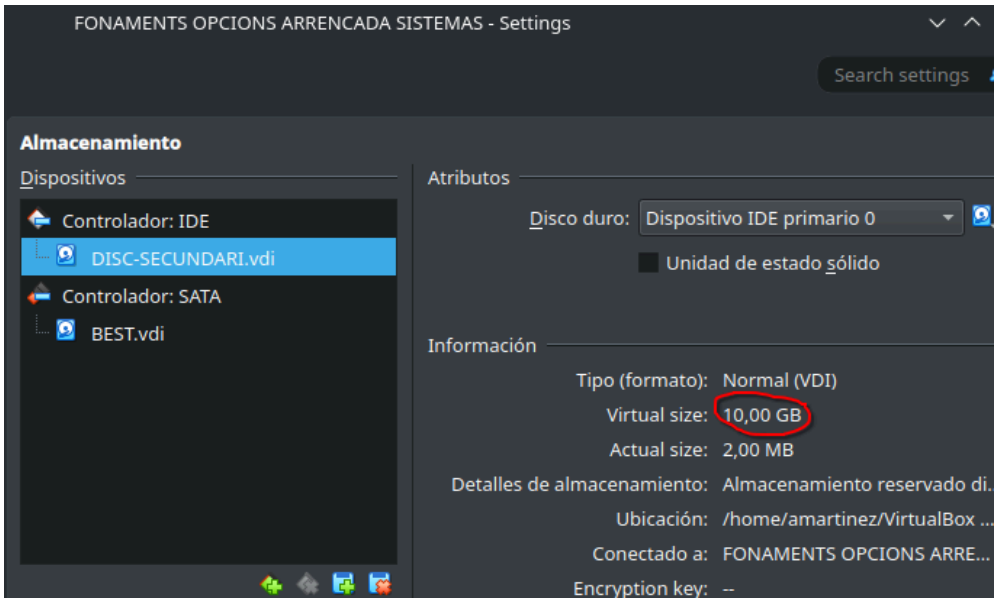
Introducció a la pràctica

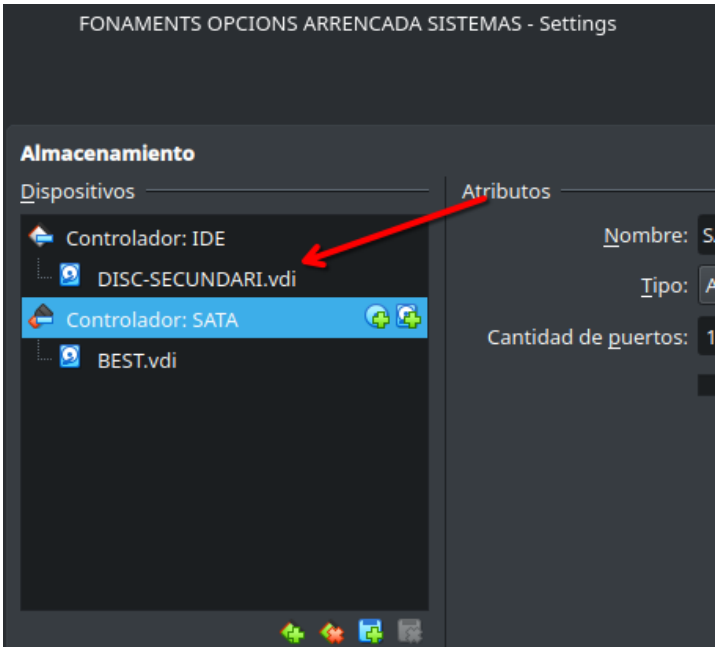
En aquesta pràctica, sobre la gestió avançada de particions, la faré amb una màquina virtual Ubuntu 22.04. L'objectiu de la pràctica és aprendre a crear, configurar i muntar particions manualment. D'aquesta manera aprendré aplicar sistemes de fitxers i configurar l'automuntatge.
Finalment, faré proves de rendiment de l'eficiència del sistema en les particions.

1. Configuració del disc virtual

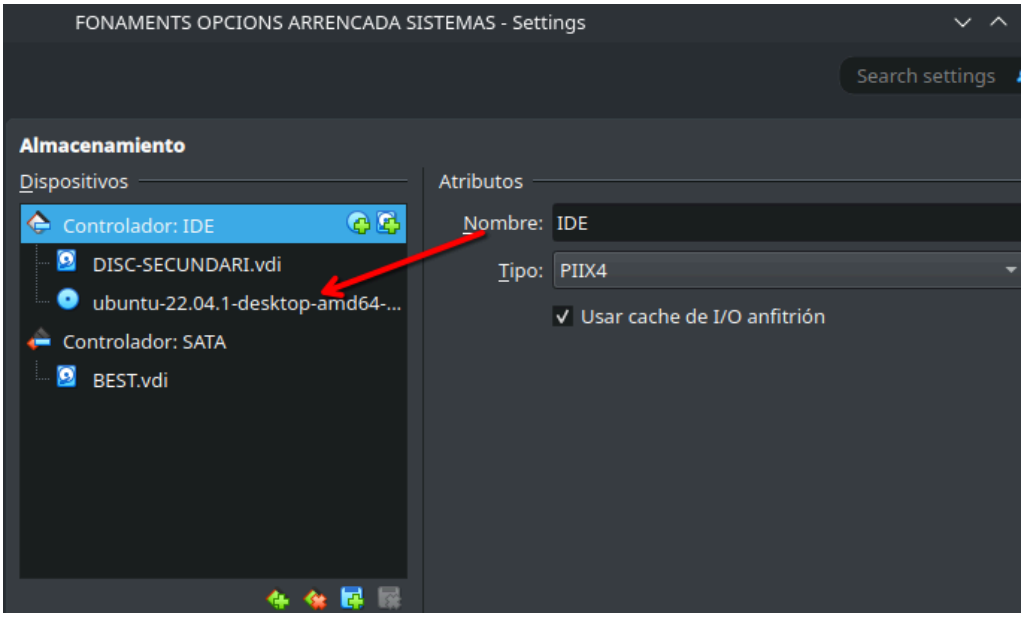
- Crear el disc virtual (disc-secundari.vdi) de mida 10 GB.



- Aquí ja tenim el nostre nou disc creat en la nostra màquina virtual d'Ubuntu.



- He afegit l'Ubuntu 22.04.1 com a disc a la màquina virtual.



- Comprovació que el disc sdb.

```
abel@abel-VirtualBox:~$ lsblk
NAME   MAJ:MIN RM   SIZE RO TYPE MOUNTPOINTS
loop0    7:0    0     4K  1 loop /snap/bare/5
loop1    7:1    0    62M  1 loop /snap/core20/1587
loop2    7:2    0 163,3M  1 loop /snap/firefox/1635
loop3    7:3    0  91,7M  1 loop /snap/gtk-common-themes/1535
loop4    7:4    0 400,8M  1 loop /snap/gnome-3-38-2004/112
loop5    7:5    0  45,9M  1 loop /snap/snap-store/582
loop6    7:6    0    47M  1 loop /snap/snapd/16292
loop7    7:7    0   284K  1 loop /snap/snapd-desktop-integration/14
sda      8:0    0    50G  0 disk
├─sda1   8:1    0     1M  0 part
├─sda2   8:2    0   513M  0 part /boot/efi
├─sda3   8:3    0    30G  0 part
└─sda4   8:4    0  19,5G  0 part /
sdb      8:16   0    10G  0 disk
sr0     11:0    1  1024M  0 rom
sr1     11:1    1  1024M  0 rom
```

2. Creació de particions

- Creem una nova taula de particions al disc

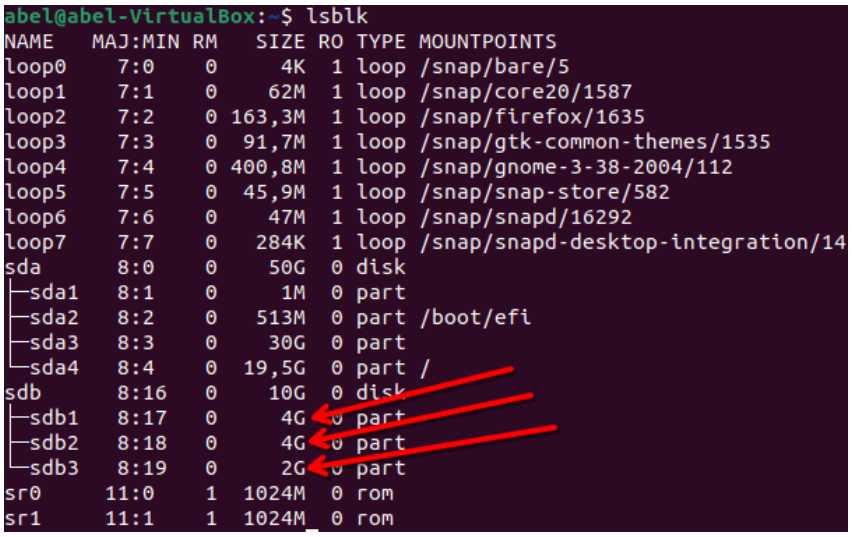
```
abel@abel-VirtualBox:~$ sudo fdisk /dev/sdb
```

- Posem g per crear una nova etiqueta, és a dir, una carpeta dins del disc.
  Després crem les particions seguin la guia següent:
  Partició 1: 4G
  Partició 2: 4G
  Partició 3: 2G

```
Orden (m para obtener ayuda): g
Se ha creado una nueva etiqueta de disco GPT (GUID: 99D9C94F-74E9-DE47-B15D-DD3D4D1A6C0A).

Orden (m para obtener ayuda): n
Número de partición (1-128, valor predeterminado 1): 1
Primer sector (2048-20971486, valor predeterminado 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-20971486, valor predeterminado 20971486): +
4G

Crea una nueva partición 1 de tipo 'Linux filesystem' y de tamaño 4 GiB.

Orden (m para obtener ayuda): n
Número de partición (2-128, valor predeterminado 2): 2
Primer sector (8390656-20971486, valor predeterminado 8390656):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (8390656-20971486, valor predeterminado 20971486)
: +4G
```

```
Orden (m para obtener ayuda): n
Número de partición (3-128, valor predeterminado 3): 3
Primer sector (16779264-20971486, valor predeterminado 16779264):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (16779264-20971486, valor predeterminado 20971486
):

Crea una nueva partición 3 de tipo 'Linux filesystem' y de tamaño 2 GiB.

Orden (m para obtener ayuda): w
Se ha modificado la tabla de particiones.
Llamando a ioctl() para volver a leer la tabla de particiones.
Se están sincronizando los discos.
```

- Posem lsblk per veure quines particions ha creat dins del nostre disc.



```
abel@abel-VirtualBox:~$ lsblk
NAME   MAJ:MIN RM   SIZE RO TYPE MOUNTPOINTS
loop0    7:0    0     4K  1 loop /snap/bare/5
loop1    7:1    0    62M  1 loop /snap/core20/1587
loop2    7:2    0 163,3M  1 loop /snap/firefox/1635
loop3    7:3    0  91,7M  1 loop /snap/gtk-common-themes/1535
loop4    7:4    0 400,8M  1 loop /snap/gnome-3-38-2004/112
loop5    7:5    0  45,9M  1 loop /snap/snap-store/582
loop6    7:6    0    47M  1 loop /snap/snapd/16292
loop7    7:7    0   284K  1 loop /snap/snapd-desktop-integration/14
sda      8:0    0    50G  0 disk
├─sda1   8:1    0     1M  0 part
├─sda2   8:2    0   513M  0 part /boot/efi
├─sda3   8:3    0    30G  0 part
└─sda4   8:4    0  19,5G  0 part /
sdb      8:16   0    10G  0 disk
├─sdb1   8:17   0     4G  0 part
├─sdb2   8:18   0     4G  0 part
└─sdb3   8:19   0     2G  0 part
sr0     11:0    1  1024M  0 rom
sr1     11:1    1  1024M  0 rom
```

3. Preparació i formatació

- Partició 1 fitxer ext4

```
abel@abel-VirtualBox:~$ sudo mkfs.ext4 /dev/sdb1
mke2fs 1.46.5 (30-Dec-2021)
Se está creando un sistema de ficheros con 1048576 bloques de 4k y 262144 nodos-i
UUID del sistema de ficheros: 3fef7cd5-fa64-47c7-9099-abea0d0b0ee2
Respaldos del superbloque guardados en los bloques:
        32768, 98304, 163840, 229376, 294912, 819200, 884736

Reservando las tablas de grupo: hecho
Escribiendo las tablas de nodos-i: hecho
Creando el fichero de transacciones (16384 bloques): hecho
Escribiendo superbloques y la información contable del sistema de archivos: hecho
```

- Partició 2 fitxer NTFS

```
abel@abel-VirtualBox:~$ sudo mkfs.ntfs /dev/sdb2
[sudo] contraseña para abel:
Cluster size has been automatically set to 4096 bytes.
Initializing device with zeroes: 100% - Done.
Creating NTFS volume structures.
mkntfs completed successfully. Have a nice day.
```

- Partició 3

```
abel@abel-VirtualBox:~$ sudo mkswap /dev/sdb3
Configurando espacio de intercambio versión 1, tamaño = 2 GiB (2146410496 bytes)
sin etiqueta, UUID=b04439c7-6fea-4823-aeb6-8ded82354ff1
```

- Confirmació de què estan llestes per utilitzar-les (les particions).

```
abel@abel-VirtualBox:~$ df -h
S.ficheros     Tamaño Usados  Disp Uso% Montado en
tmpfs             392M   1,5M  391M   1% /run
/dev/sda4          20G    11G  7,7G  58% /
tmpfs             2,0G      0  2,0G   0% /dev/shm
tmpfs             5,0M   4,0K  5,0M   1% /run/lock
/dev/sda2         512M   6,1M  506M   2% /boot/efi
tmpfs             392M   108K  392M   1% /run/user/1000
abel@abel-VirtualBox:~$ swapon --show
NAME      TYPE      SIZE USED PRIO
/swapfile file        2G 268K   -2
/dev/sdb3 partition   2G   0B   -3
```

```
sdb       8:16   0    10G  0 disk
├─sdb1    8:17   0     4G  0 part
├─sdb2    8:18   0     4G  0 part
└─sdb3    8:19   0     2G  0 part [SWAP]
```

```
abel@abel-VirtualBox:~$ sudo blkid
/dev/sda4: UUID="e5b95d60-3eb7-4e03-96ab-01a3ba1680cc" BLOCK_SIZE="4096" TYPE="e
xt4" PARTUUID="6a72b6e3-051a-42de-b125-4463e2eefde1"
/dev/loop1: TYPE="squashfs"
/dev/sdb2: BLOCK_SIZE="512" UUID="0A8777572631D271" TYPE="ntfs" PARTUUID="c2da00
24-f0fd-674e-9816-1d739096a04a"
/dev/sdb3: UUID="b04439c7-6fea-4823-aeb6-8ded82354ff1" TYPE="swap" PARTUUID="dfb
09b63-a6af-e646-bfc6-8c770c7a8627"
/dev/sdb1: UUID="3fef7cd5-fa64-47c7-9099-abea0d0b0ee2" BLOCK_SIZE="4096" TYPE="e
xt4" PARTUUID="ab19f511-08d0-4b4e-a3ed-6f25dbd899f0"
/dev/loop6: TYPE="squashfs"
/dev/loop4: TYPE="squashfs"
/dev/loop2: TYPE="squashfs"
/dev/loop0: TYPE="squashfs"
/dev/loop7: TYPE="squashfs"
/dev/sda2: UUID="3E8C-4E3E" BLOCK_SIZE="512" TYPE="vfat" PARTLABEL="EFI System P
artition" PARTUUID="4ef623af-2bdb-4b69-ba37-4ebddb339bd9"
/dev/sda3: UUID="22734393-da2b-46af-8ccd-ac4d5fe1f217" BLOCK_SIZE="4096" TYPE="e
xt4" PARTUUID="69eb6e14-42c1-4845-97db-09c888ffd143"
/dev/sda1: PARTUUID="f1544188-b1d5-486c-bf78-04411b6170af"
/dev/loop5: TYPE="squashfs"
/dev/loop3: TYPE="squashfs"
```

4. Muntatge i desmuntatge

- Creació punts de muntatge.

```
abel@abel-VirtualBox:~$ sudo mkdir -p /mnt/particio1
[sudo] contraseña para abel:
abel@abel-VirtualBox:~$ sudo mkdir -p /mnt/particio2
```

```
abel@abel-VirtualBox:~$ sudo mount /dev/sdb1 /mnt/particio1
```

```
abel@abel-VirtualBox:~$ sudo mount /dev/sdb2 /mnt/particio2
```

- Comprovació muntatges amb df -h.

```
abel@abel-VirtualBox:~$ df -h
S.ficheros     Tamaño Usados  Disp Uso% Montado en
tmpfs             392M   1,5M  391M   1% /run
/dev/sda4          20G    11G  7,7G  58% /
tmpfs             2,0G      0  2,0G   0% /dev/shm
tmpfs             5,0M   4,0K  5,0M   1% /run/lock
/dev/sda2         512M   6,1M  506M   2% /boot/efi
tmpfs             392M   108K  392M   1% /run/user/1000
/dev/sdb1         3,9G    24K  3,7G   1% /mnt/particio1
/dev/sdb2         4,0G    22M  4,0G   1% /mnt/particio2
```

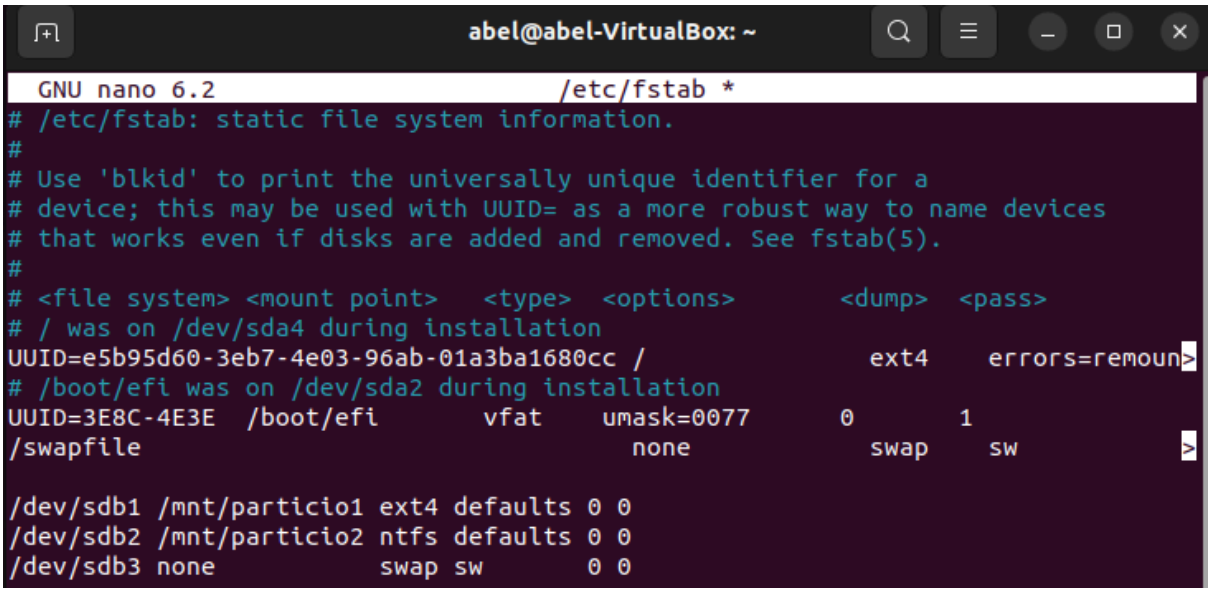
- Desmuntar particions.

```
abel@abel-VirtualBox:~$ sudo umount /mnt/particio1
abel@abel-VirtualBox:~$ sudo umount /mnt/particio2
```

5. Automuntatge al sistema

- Automuntem les particions

```
abel@abel-VirtualBox:~$ sudo nano /etc/fstab
```



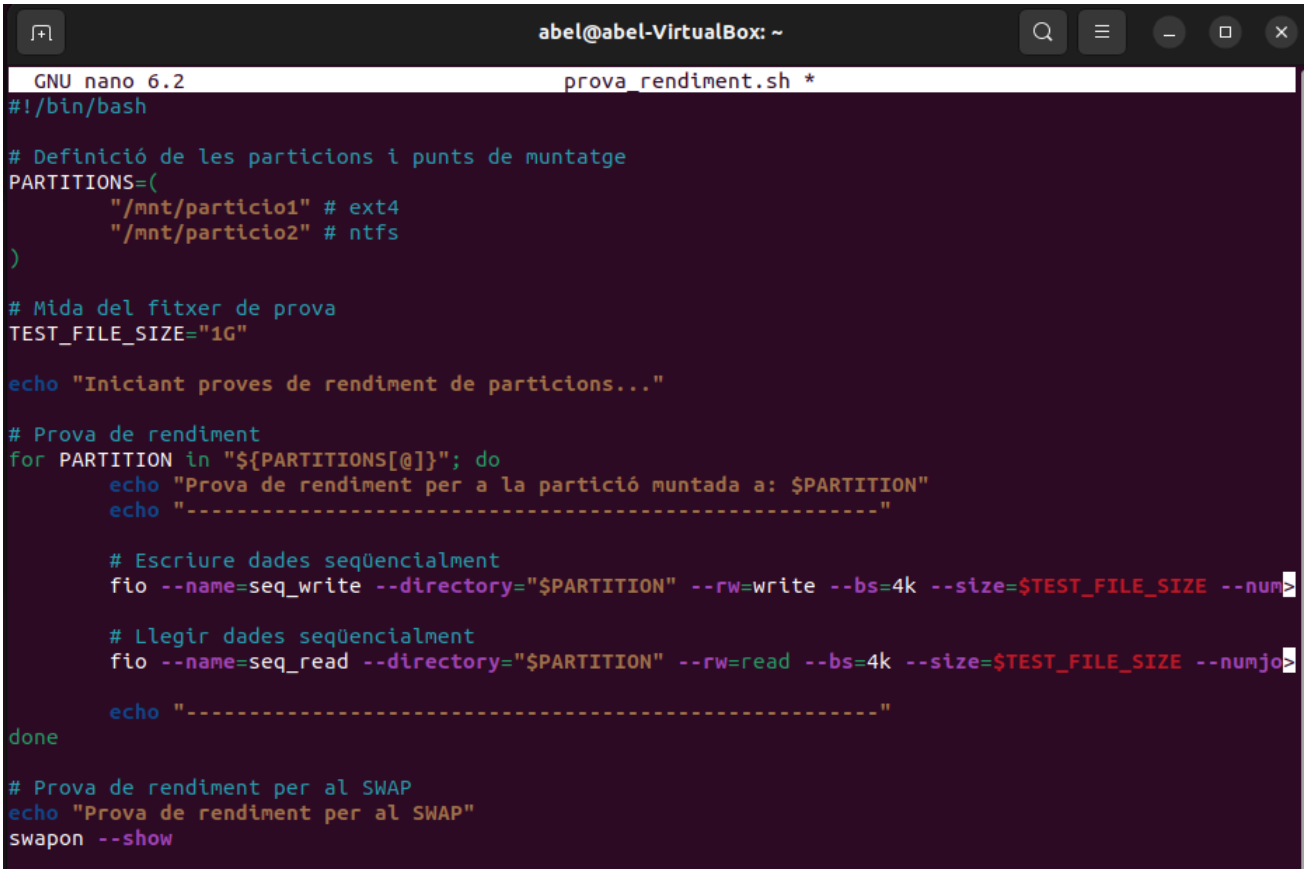
- Comprovació de les particions muntades (1,2,3).

```
abel@abel-VirtualBox:~$ df -h
S.ficheros      Tamaño Usados  Disp Uso% Montado en
tmpfs             392M   1,5M  391M   1% /run
/dev/sda4          20G    11G  7,6G  58% /
tmpfs             2,0G      0  2,0G   0% /dev/shm
tmpfs             5,0M   4,0K  5,0M   1% /run/lock
/dev/sda2         512M   6,1M  506M   2% /boot/efi
/dev/sdb1         3,9G    24K  3,7G   1% /mnt/particio1
/dev/sdb2         4,0G    22M  4,0G   1% /mnt/particio2
tmpfs             392M   2,4M  390M   1% /run/user/1000
```

6. Anàlisi de rendiment

- Amb aquesta nova creació de fitxer li posarem les particions amb el nano i tota la informació que tenim de les particions 1 i 2. D'aquesta manera podré comprovar finalment el rendiment de les dues particions creades anteriorment.

```
abel@abel-VirtualBox:~$ nano prova_rendiment.sh
```



- Canvio els permisos perquè sigui executable.

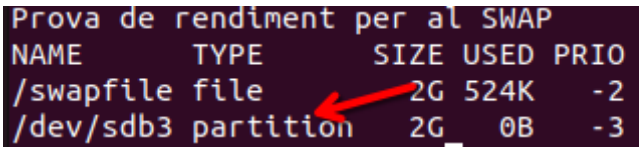
```
abel@abel-VirtualBox:~$ chmod +x prova_rendiment.sh
```

- Executo l'escript per poder-lo veure i comparar el rendiment de les particions.

```
abel@abel-VirtualBox:~$ sudo ./prova_rendiment.sh
Iniciant proves de rendiment de particions...
Prova de rendiment per a la partició muntada a: /mnt/particio1
-----------------------------------------------------
seq_write: (g=0): rw=write, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B, ioengine=psync, iode
pth=1
fio-3.28
Starting 1 process
seq_write: Laying out IO file (1 file / 1024MiB)
Jobs: 1 (f=1): [W(1)][13.3%][w=40.8MiB/s][w=10.4k IOPS][eta 00m:26s]
```

```
abel@abel-VirtualBox:~$ sudo ./prova_rendiment.sh
Iniciant proves de rendiment de particions...
Prova de rendiment per a la partició muntada a: /mnt/particio1
-----------------------------------------------------
seq_write: (g=0): rw=write, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B, ioengine=psync, iodepth=1
fio-3.28
Starting 1 process
seq_write: Laying out IO file (1 file / 1024MiB)
Jobs: 1 (f=1): [W(1)][100.0%][eta 00m:00s]
seq_write: (groupid=0, jobs=1): err= 0: pid=6747: Tue Jan 28 20:08:34 2025
  write: IOPS=4867, BW=19.0MiB/s (19.9MB/s)(571MiB/30008msec); 0 zone resets
    clat (nsec): min=1824, max=1584.5M, avg=204912.89, stdev=8634985.01
     lat (nsec): min=1852, max=1584.5M, avg=204984.79, stdev=8634989.74
    clat percentiles (nsec):
     |  1.00th=[     1928],  5.00th=[     1944], 10.00th=[     1976],
     | 20.00th=[     2024], 30.00th=[     2040], 40.00th=[     2096],
     | 50.00th=[     2128], 60.00th=[     2288], 70.00th=[     2992],
     | 80.00th=[    11456], 90.00th=[    11968], 95.00th=[    14144],
     | 99.00th=[    64768], 99.50th=[ 13041664], 99.90th=[ 28180480],
     | 99.95th=[ 36438016], 99.99th=[206569472]
   bw (  KiB/s): min=   24, max=656568, per=100.00%, avg=22726.82, stdev=91142.21, samples=51
   iops        : min=    6, max=164142, avg=5681.63, stdev=22785.56, samples=51
  lat (usec)   : 2=15.18%, 4=57.91%, 10=4.83%, 20=19.67%, 50=1.17%
  lat (usec)   : 100=0.41%, 250=0.13%, 500=0.02%, 750=0.01%, 1000=0.01%
  lat (msec)   : 2=0.01%, 4=0.01%, 10=0.01%, 20=0.45%, 50=0.18%
  lat (msec)   : 100=0.01%, 250=0.02%, 1000=0.01%, 2000=0.01%
  cpu          : usr=0.65%, sys=2.35%, ctx=1013, majf=0, minf=16
  IO depths    : 1=100.0%, 2=0.0%, 4=0.0%, 8=0.0%, 16=0.0%, 32=0.0%, >=64=0.0%
     submit    : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
     complete  : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
     issued rwts: total=0,146078,0,0 short=0,0,0,0 dropped=0,0,0,0
     latency   : target=0, window=0, percentile=100.00%, depth=1

Run status group 0 (all jobs):
  WRITE: bw=19.0MiB/s (19.9MB/s), 19.0MiB/s-19.0MiB/s (19.9MB/s-19.9MB/s), io=571MiB (598MB), run=30008-30008msec

Disk stats (read/write):
  sdb: ios=0/364, merge=0/34, ticks=0/533240, in_queue=541503, util=98.45%
seq_read: (g=0): rw=read, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B, ioengine=psync, iodepth=1
```

```
Run status group 0 (all jobs):
   READ: bw=1865MiB/s (1956MB/s), 1865MiB/s-1865MiB/s (1956MB/s-1956MB/s), io=54.6GiB (58.7GB), run=30001-30001mse

Disk stats (read/write):
  sdb: ios=526/0, merge=0/0, ticks=9785/0, in_queue=9786, util=18.87%
-----------------------------------------------------
Prova de rendiment per al SWAP
NAME      TYPE      SIZE USED PRIO
/swapfile file        2G 524K   -2
/dev/sdb3 partition   2G   0B   -3
```



Partició1 /mnt/particio1:

- Escriptura: 19.0 MiB/s (4,867 IOPS)
- Lectura: 28.2 MiB/s (7,224 IOPS)

Partició2 /mnt/particio2:

- Escriptura: 20.8 MiB/s (5,322 IOPS)
- Lectura: 1,865 MiB/s (476,154 IOPS)

Com a resum del rendiment que he fet, podem veure amb claredat que la partició 2 ha mostrat un rendiment molt superior en lectura, amb velocitats molt altes de 1,865 MiB/s. En escriptura, totes dues tenen un rendiment similar, encara que la partició 1 té una latència una mica més variable.

6. Conclusió de la pràctica

En conclusió, en aquesta pràctica he après a mesurar el rendiment del disc, a crear configurar i muntar particions de sistemes de fitxers i configurar l'automuntatge. També ser realitzar codis per configurar les particions fins a comprovar el seu rendiment.

Finalment, els resultats obtinguts en terminal mostren diferents nivells de rendiment en les particions. Ja que amb la partició 1 destaca en la lectura, mentre que la partició 2 mostra una latència controlada, amb valors més baixos de lectura, però d'escriptura una mica més alta.

En definitiva, aquesta m'ajuda a millorar amb la creació de particions i amb el muntatge i configuracions finalitzant amb una comparació dels rendiments entre les particions creades.

7. Bibliografies web

https://github.com/HectorPascualIesCarlesVallbona/ASX01-fonaments-maquinari/blob/main/01-RAs/RA03/02-practica/04-practica03-particions.md

https://linux.die.net/man/8/fdisk

https://archive.kernel.org/oldwiki/ext4.wiki.kernel.org/

8. Annexa

Codi del rendiment

```
(abel@abel-VirtualBox:~$ sudo ./prova_rendiment.sh
Iniciant proves de rendiment de particions...
Prova de rendiment per a la partició muntada a: /mnt/particio1
-----------------------------------------------------
seq_write: (g=0): rw=write, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B,
ioengine=psync, iodepth=1
fio-3.28
Starting 1 process
seq_write: Laying out IO file (1 file / 1024MiB)
Jobs: 1 (f=1): [W(1)][100.0%][eta 00m:00s]
seq_write: (groupid=0, jobs=1): err= 0: pid=6747: Tue Jan 28 20:08:34 2025
  write: IOPS=4867, BW=19.0MiB/s (19.9MB/s)(571MiB/30008msec); 0 zone resets
            clat (nsec): min=1824, max=1584.5M, avg=204912.89, stdev=8634985.01
            lat (nsec): min=1852, max=1584.5M, avg=204984.79, stdev=8634989.74
            clat percentiles (nsec):
            |  1.00th=[         1928],  5.00th=[         1944], 10.00th=[         1976],
            | 20.00th=[         2024], 30.00th=[         2040], 40.00th=[         2096],
            | 50.00th=[         2128], 60.00th=[         2288], 70.00th=[         2992],
            | 80.00th=[        11456], 90.00th=[        11968], 95.00th=[        14144],
            | 99.00th=[        64768], 99.50th=[ 13041664], 99.90th=[ 28180480],
            | 99.95th=[ 36438016], 99.99th=[206569472]
   bw (  KiB/s): min=   24, max=656568, per=100.00%, avg=22726.82, stdev=91142.21, samples=51
   iops        : min=    6, max=164142, avg=5681.63, stdev=22785.56, samples=51
  lat (usec)   : 2=15.18%, 4=57.91%, 10=4.83%, 20=19.67%, 50=1.17%
  lat (usec)   : 100=0.41%, 250=0.13%, 500=0.02%, 750=0.01%, 1000=0.01%
  lat (msec)   : 2=0.01%, 4=0.01%, 10=0.01%, 20=0.45%, 50=0.18%
  lat (msec)   : 100=0.01%, 250=0.02%, 1000=0.01%, 2000=0.01%
  cpu          : usr=0.65%, sys=2.35%, ctx=1013, majf=0, minf=16
  IO depths    : 1=100.0%, 2=0.0%, 4=0.0%, 8=0.0%, 16=0.0%, 32=0.0%, >=64=0.0%
            submit   : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
            complete  : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
            issued rwts: total=0,146078,0,0 short=0,0,0,0 dropped=0,0,0,0
            latency   : target=0, window=0, percentile=100.00%, depth=1

Run status group 0 (all jobs):
  WRITE: bw=19.0MiB/s (19.9MB/s), 19.0MiB/s-19.0MiB/s (19.9MB/s-19.9MB/s), io=571MiB (598MB),
run=30008-30008msec

Disk stats (read/write):
  sdb: ios=0/364, merge=0/34, ticks=0/533240, in_queue=541503, util=98.45%
seq_read: (g=0): rw=read, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B,
ioengine=psync, iodepth=1
fio-3.28
Starting 1 process
seq_read: Laying out IO file (1 file / 1024MiB)
Jobs: 1 (f=1): [R(1)][100.0%][r=30.5MiB/s][r=7808 IOPS][eta 00m:00s]
seq_read: (groupid=0, jobs=1): err= 0: pid=7059: Tue Jan 28 20:11:57 2025
```

```
  read: IOPS=7224, BW=28.2MiB/s (29.6MB/s)(847MiB/30003msec)
            clat (nsec): min=528, max=102863k, avg=137664.33, stdev=1542967.19
            lat (nsec): min=546, max=102863k, avg=137751.53, stdev=1542968.44
            clat percentiles (nsec):
            |  1.00th=[         572],  5.00th=[   596], 10.00th=[  612],
            | 20.00th=[         652], 30.00th=[  692], 40.00th=[  812],
            | 50.00th=[        3024], 60.00th=[        3504], 70.00th=[        3632],
            | 80.00th=[        3728], 90.00th=[        3920], 95.00th=[        4512],
            | 99.00th=[ 6389760], 99.50th=[ 7110656], 99.90th=[15400960],
            | 99.95th=[40632320], 99.99th=[45875200]
   bw (  KiB/s): min=11776, max=35328, per=100.00%, avg=28930.97, stdev=3574.81, samples=59
   iops        : min= 2944, max= 8832, avg=7232.64, stdev=893.71, samples=59
  lat (nsec)   : 750=36.62%, 1000=7.07%
  lat (usec)   : 2=3.86%, 4=44.72%, 10=5.22%, 20=0.41%, 50=0.30%
  lat (usec)   : 100=0.15%, 250=0.08%, 500=0.02%, 750=0.01%, 1000=0.01%
  lat (msec)   : 2=0.01%, 4=0.25%, 10=1.09%, 20=0.11%, 50=0.08%
  lat (msec)   : 100=0.01%, 250=0.01%
  cpu          : usr=1.32%, sys=3.74%, ctx=3389, majf=0, minf=16
  IO depths    : 1=100.0%, 2=0.0%, 4=0.0%, 8=0.0%, 16=0.0%, 32=0.0%, >=64=0.0%
            submit   : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
            complete  : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
            issued rwts: total=216765,0,0,0 short=0,0,0,0 dropped=0,0,0,0
            latency   : target=0, window=0, percentile=100.00%, depth=1

Run status group 0 (all jobs):
   READ: bw=28.2MiB/s (29.6MB/s), 28.2MiB/s-28.2MiB/s (29.6MB/s-29.6MB/s), io=847MiB (888MB),
run=30003-30003msec

Disk stats (read/write):
  sdb: ios=3372/4, merge=0/1, ticks=58242/64, in_queue=58369, util=95.45%
-----------------------------------------------------------
Prova de rendiment per a la partició muntada a: /mnt/particio2
-----------------------------------------------------------
seq_write: (g=0): rw=write, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B,
ioengine=psync, iodepth=1
fio-3.28
Starting 1 process
seq_write: Laying out IO file (1 file / 1024MiB)
Jobs: 1 (f=1): [W(1)][100.0%][w=136KiB/s][w=34 IOPS][eta 00m:00s]
seq_write: (groupid=0, jobs=1): err= 0: pid=7064: Tue Jan 28 20:12:28 2025
  write: IOPS=5322, BW=20.8MiB/s (21.8MB/s)(627MiB/30157msec); 0 zone resets
            clat (usec): min=18, max=209009, avg=187.27, stdev=4474.12
            lat (usec): min=18, max=209009, avg=187.34, stdev=4474.13
            clat percentiles (usec):
            |  1.00th=[         19],  5.00th=[     20], 10.00th=[     21], 20.00th=[     35],
            | 30.00th=[         38], 40.00th=[     39], 50.00th=[     39], 60.00th=[     40],
            | 70.00th=[         41], 80.00th=[     45], 90.00th=[     57], 95.00th=[     77],
            | 99.00th=[  1909], 99.50th=[  2008], 99.90th=[ 11994], 99.95th=[ 14877],
            | 99.99th=[208667]
   bw (  KiB/s): min=   23, max=132508, per=100.00%, avg=21383.78, stdev=40580.10, samples=60
   iops        : min=    5, max=33127, avg=5345.87, stdev=10145.06, samples=60
  lat (usec)   : 20=10.18%, 50=75.73%, 100=9.94%, 250=1.39%, 500=0.49%
```

```
  lat (usec)   : 750=0.14%, 1000=0.05%
  lat (msec)   : 2=1.57%, 4=0.34%, 10=0.01%, 20=0.11%, 50=0.01%
  lat (msec)   : 250=0.05%
  cpu          : usr=0.98%, sys=5.60%, ctx=321307, majf=0, minf=17
  IO depths    : 1=100.0%, 2=0.0%, 4=0.0%, 8=0.0%, 16=0.0%, 32=0.0%, >=64=0.0%
     submit    : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
     complete  : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
     issued rwts: total=0,160512,0,0 short=0,0,0,0 dropped=0,0,0,0
     latency   : target=0, window=0, percentile=100.00%, depth=1

Run status group 0 (all jobs):
  WRITE: bw=20.8MiB/s (21.8MB/s), 20.8MiB/s-20.8MiB/s (21.8MB/s-21.8MB/s), io=627MiB (657MB),
run=30157-30157msec

Disk stats (read/write):
  sdb: ios=5/176, merge=0/30640, ticks=774/401500, in_queue=402274, util=83.45%
seq_read: (g=0): rw=read, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B,
ioengine=psync, iodepth=1
fio-3.28
Starting 1 process
seq_read: Laying out IO file (1 file / 1024MiB)
Jobs: 1 (f=1): [R(1)][100.0%][r=2372MiB/s][r=607k IOPS][eta 00m:00s]
seq_read: (groupid=0, jobs=1): err= 0: pid=7070: Tue Jan 28 20:15:39 2025
  read: IOPS=478k, BW=1865MiB/s (1956MB/s)(54.6GiB/30001msec)
     clat (nsec): min=508, max=325149k, avg=1739.62, stdev=213051.99
     lat (nsec): min=527, max=325149k, avg=1759.86, stdev=213052.21
     clat percentiles (nsec):
     |  1.00th=[   540],  5.00th=[   548], 10.00th=[   556], 20.00th=[   564],
     | 30.00th=[   572], 40.00th=[   580], 50.00th=[   580], 60.00th=[   596],
     | 70.00th=[   620], 80.00th=[   660], 90.00th=[   708], 95.00th=[   812],
     | 99.00th=[ 33536], 99.50th=[ 37120], 99.90th=[ 77312], 99.95th=[112128],
     | 99.99th=[234496]
   bw (  MiB/s): min=    0, max= 2472, per=99.72%, avg=1859.98, stdev=853.78, samples=59
   iops        : min=  192, max=632920, avg=476154.75, stdev=218567.82, samples=59
  lat (nsec)   : 750=93.56%, 1000=3.51%
  lat (usec)   : 2=0.88%, 4=0.19%, 10=0.11%, 20=0.13%, 50=1.36%
  lat (usec)   : 100=0.19%, 250=0.05%, 500=0.01%, 750=0.01%, 1000=0.01%
  lat (msec)   : 2=0.01%, 4=0.01%, 10=0.01%, 20=0.01%, 50=0.01%
  lat (msec)   : 100=0.01%, 250=0.01%, 500=0.01%
  cpu          : usr=16.59%, sys=59.89%, ctx=23552, majf=0, minf=20
  IO depths    : 1=100.0%, 2=0.0%, 4=0.0%, 8=0.0%, 16=0.0%, 32=0.0%, >=64=0.0%
     submit    : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
     complete  : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
     issued rwts: total=14325495,0,0,0 short=0,0,0,0 dropped=0,0,0,0
     latency   : target=0, window=0, percentile=100.00%, depth=1

Run status group 0 (all jobs):
   READ: bw=1865MiB/s (1956MB/s), 1865MiB/s-1865MiB/s (1956MB/s-1956MB/s), io=54.6GiB
(58.7GB), run=30001-30001msec

Disk stats (read/write):
  sdb: ios=526/0, merge=0/0, ticks=9785/0, in_queue=9786, util=18.87%
```

Prova de rendiment per al SWAP
NAME TYPE SIZE USED PRIO
/swapfile file 2G 524K -2
/dev/sdb3 partition 2G 0B -3

Partició 1 (/mnt/particio1)

Prova d'escriptura:

Prova de rendiment per a la partició muntada a: /mnt/particio1
---
seq_write: (g=0): rw=write, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B, ioengine=psync, iodepth=1
fio-3.28
Starting 1 process
seq_write: Laying out IO file (1 file / 1024MiB)
Jobs: 1 (f=1): [W(1)][100.0%][eta 00m:00s]
...
write: IOPS=4867, BW=19.0MiB/s (19.9MB/s)(571MiB/30008msec);
lat (nsec): min=1824, max=1584.5M, avg=204912.89, stdev=8634985.01
lat (usec): 2=15.18%, 4=57.91%, 10=4.83%, 20=19.67%, 50=1.17%

Prova de lectura:

seq_read: (g=0): rw=read, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B, ioengine=psync, iodepth=1
fio-3.28
Starting 1 process
seq_read: Laying out IO file (1 file / 1024MiB)
Jobs: 1 (f=1): [R(1)][100.0%][r=30.5MiB/s][r=7808 IOPS][eta 00m:00s]
...
read: IOPS=7224, BW=28.2MiB/s (29.6MB/s)(847MiB/30003msec)
lat (nsec): min=528, max=102863k, avg=137664.33, stdev=1542967.19
lat (usec): 2=3.86%, 4=44.72%, 10=5.22%, 20=0.41%, 50=0.30%

Partició 2 (/mnt/particio2)

Aquest és l'output de les proves realitzades sobre la segona partició.

Prova d'escriptura:

Prova de rendiment per a la partició muntada a: /mnt/particio2
---
seq_write: (g=0): rw=write, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B, ioengine=psync, iodepth=1
fio-3.28
Starting 1 process
seq_write: Laying out IO file (1 file / 1024MiB)

```
Jobs: 1 (f=1): [W(1)][100.0%][w=136KiB/s][w=34 IOPS][eta 00m:00s]
...
  write: IOPS=5322, BW=20.8MiB/s (21.8MB/s)(627MiB/30157msec);
  lat (usec): min=18, max=209009, avg=187.27, stdev=4474.12
  lat (usec): 20=10.18%, 50=75.73%, 100=9.94%, 250=1.39%, 500=0.49%
```

Prova de lectura:

```
seq_read: (g=0): rw=read, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T) 4096B-4096B,
ioengine=psync, iodepth=1
fio-3.28
Starting 1 process
seq_read: Laying out IO file (1 file / 1024MiB)
Jobs: 1 (f=1): [R(1)][100.0%][r=2372MiB/s][r=607k IOPS][eta 00m:00s]
...
  read: IOPS=478k, BW=1865MiB/s (1956MB/s)(54.6GiB/30001msec)
  lat (nsec): min=508, max=325149k, avg=1739.62, stdev=213051.99
  lat (usec): 2=0.88%, 4=0.19%, 10=0.11%, 20=0.13%, 50=1.36%
```