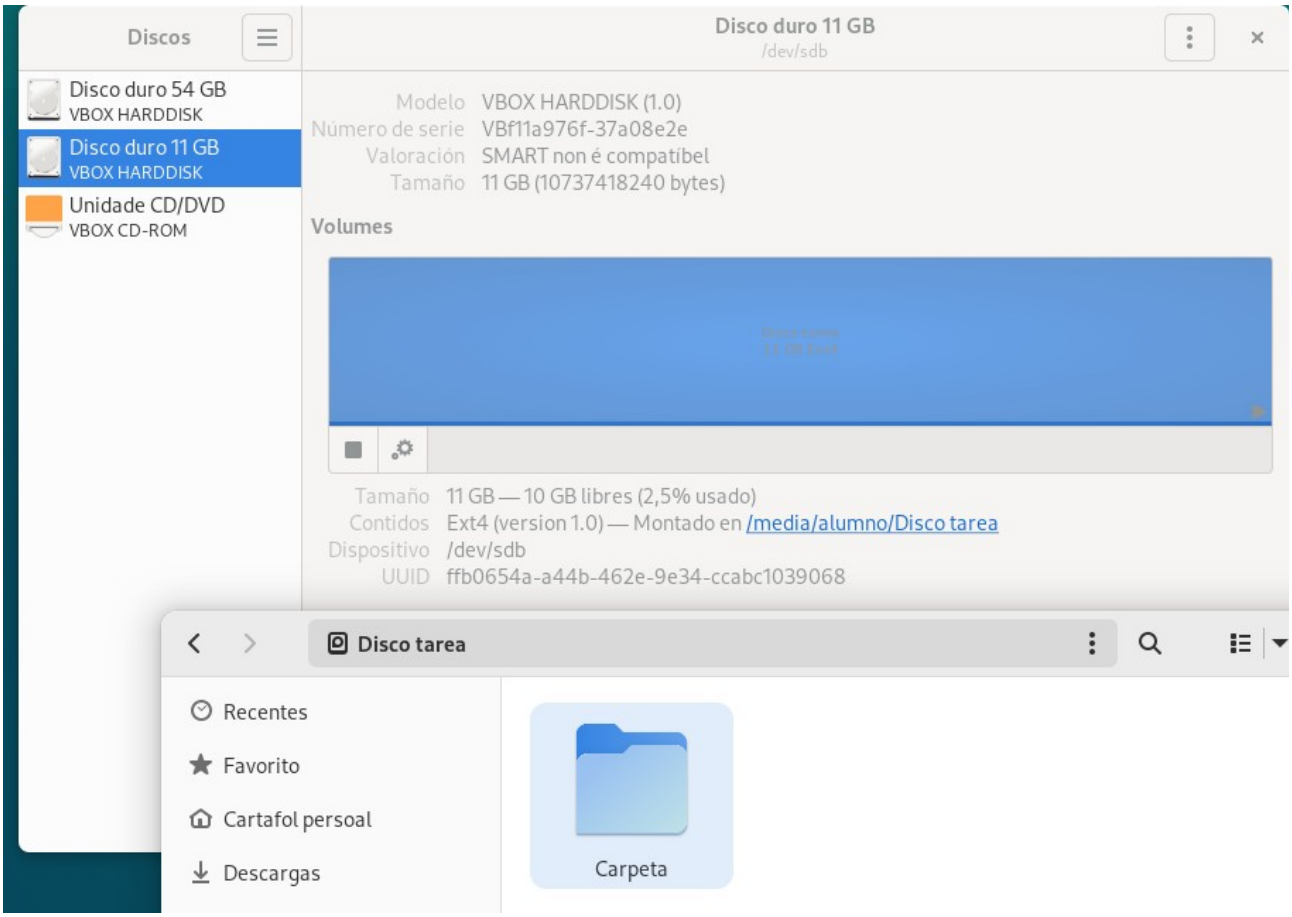
PRÁCTICA DE SISTEMAS DE ARQUIVOS

1 Arrinca o sistema operativo e comproba se podes utilizar o espazo de almacenamento dese disco. Podes? Por que? Xustifica a resposta.

Non, porque non está formateado en ningún sistema de archivos.

. Tiveches que facer algo máis? Montar o novo disco? Acceder como administrador? Si, tivemos que iniciar sesión como administrador. Si, montamos o disco no formato indicado.



```
Disk /dev/sda: 50 GiB, 53687091200 bytes, 104857600 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0xc44e03ef

Device     Boot     Start       End   Sectors  Size Id tipo
/dev/sda1  *         2048 102856703 102854656   49G 83 Linux
/dev/sda2       102858750 104855551   1996802  975M  5 Extended
/dev/sda5       102858752 104855551   1996800  975M 82 Linux swap / Solaris
root@debian:~# lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda      8:0    0   50G  0 disk
├─sda1   8:1    0   49G  0 part /
├─sda2   8:2    0    1K  0 part
└─sda5   8:5    0  975M  0 part [SWAP]
sdb      8:16   0   10G  0 disk /media/alumno/Disco tarea
sr0     11:0    1 1024M  0 rom
root@debian:~#
```

1. Imprimir por pantalla a táboa de particións do disco

```
Command (m for help): p
Disk /dev/sdb: 10 GiB, 10737418240 bytes, 20971520 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x26e22b57

It's recommended to umount all file systems, and swapoff all swap
partitions on this disk.

The device contains 'ext4' signature and it will be removed by a write command.
See fdisk(8) man page and --wipe option for more details.

Device does not contain a recognized partition table.
Created a new DOS (MBR) disklabel with disk identifier 0x26e22b57.

Command (m for help):
```

2,Eliminade a partición anteriormente creada (se xa usaches Discos, pode que non che deixe pola incompatibilidade entre a creación da partición de Discos e fdisk). Podes borrala con Discos se ese é o caso

```
Command (m for help): d
No partition is defined yet!
```

3. Creade unha nova partición da metade de tamaño do disco. Como o calculaches?

```
Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1):
First sector (2048-20971519, default 2048): +5G
Value out of range.
First sector (2048-20971519, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-20971519, default 20971519):
 +5G

Created a new partition 1 of type 'Linux' and of size 5 GiB.
```

4. Volve a imprimir por pantalla a táboa de particións do disco a ver se ves cambios

```
Command (m for help): p
Disk /dev/sdb: 10 GiB, 10737418240 bytes, 20971520 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x26e22b57

Device     Boot Start      End  Sectors Size Id tipo
/dev/sdb1        2048 10487807 10485760   5G 83 Linux
```

5. Creade outra partición co espazo restante

```
Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (2-4, default 2):
First sector (10487808-20971519, default 10487808):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (10487808-20971519, default 209715
19):

Created a new partition 2 of type 'Linux' and of size 5 GiB.
```

6. Establecede o código identificador do sistema de arquivos que vai albergar a partición (ver nota máis abaixo)

```
Command (m for help): t
Partition number (1,2, default 2): 2
Hex code or alias (type L to list all): L

00 Empty            27 Hidden NTFS Win  82 Linux swap / So  c1 DRDOS/sec (FAT-
01 FAT12            39 Plan 9           83 Linux            c4 DRDOS/sec (FAT-
02 XENIX root       3c PartitionMagic   84 OS/2 hidden or   c6 DRDOS/sec (FAT-
```

```
   linuxex         - 85
Hex code or alias (type L to list all): 07

Changed type of partition 'Linux' to 'HPFS/NTFS/exFAT'.

Command (m for help):
```

7. Verifica a táboa de particións

```
Command (m for help): v
No errors detected.
```

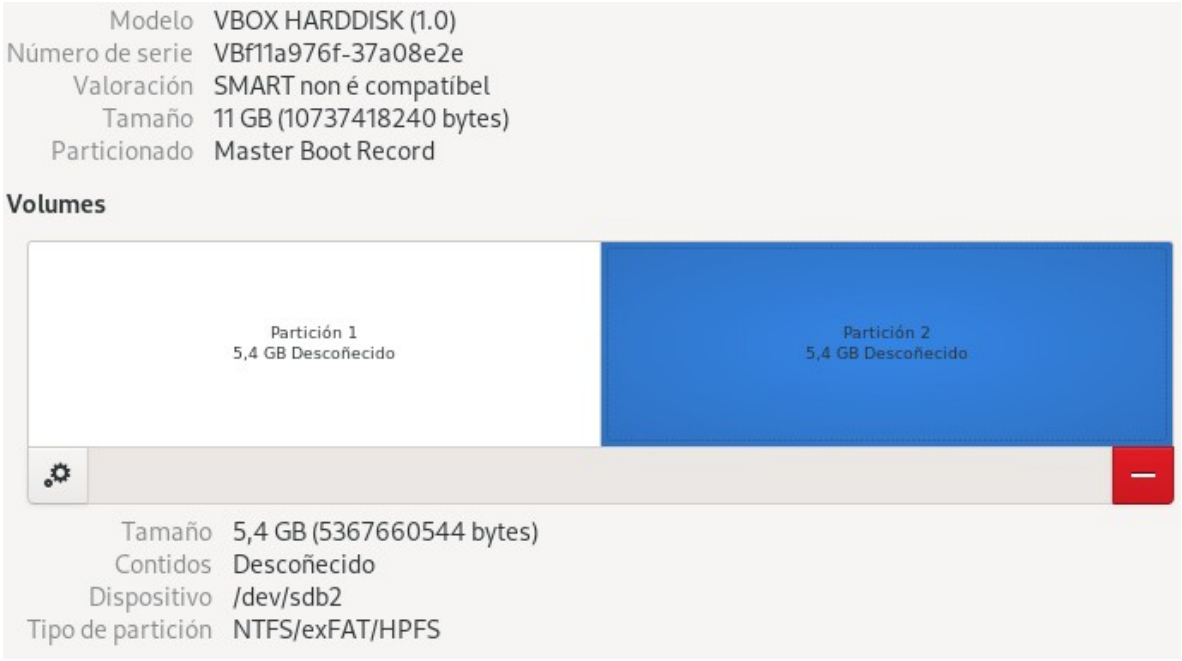
8. Imprime de novo a táboa de particións

```
Device     Boot    Start      End  Sectors Size Id tipo
/dev/sdb1           2048 10487807 10485760   5G 83 Linux
/dev/sdb2       10487808 20971519 10483712   5G  7 HPFS/NTFS/exFAT
```

9. Garda os cambios no disco e sae (Se non se executa este paso non gardará os cambios)

```
Command (m for help): w
The partition table has been altered.
Syncing disks.
```

10. Ves algún cambio en Discos?




```
root@debian:~# mkfs.ext4 /dev/sdb2
mke2fs 1.47.0 (5-Feb-2023)
Creating filesystem with 1310464 4k blocks and 327680 inodes
Filesystem UUID: 5307dd7f-0b37-497e-be19-df27bbc73acb
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736

Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done

root@debian:~# mkfs.ntfs /dev/sdb2
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.
root@debian:~#
```

Montaxe do Sistema de Arquivos nunha ruta de directorio

```
root@debian:~# mkdir /mnt/part1
root@debian:~# mkdir /mnt/part2
root@debian:~# mount /dev/sdb1 /mnt/part1
root@debian:~# mount /dev/sdb2 /mnt/part2
root@debian:~#
```

Os comandos “mount”, montan as particións nos directorios 3 previamente creados. Que ocorreu en Discos? Cambiou algo? Si, aparecen co directorio donde están montados e o formato de sistema de aquivos.

Se agora reinicias a máquina, que ocorre? Seguen montadas as particións? Non.

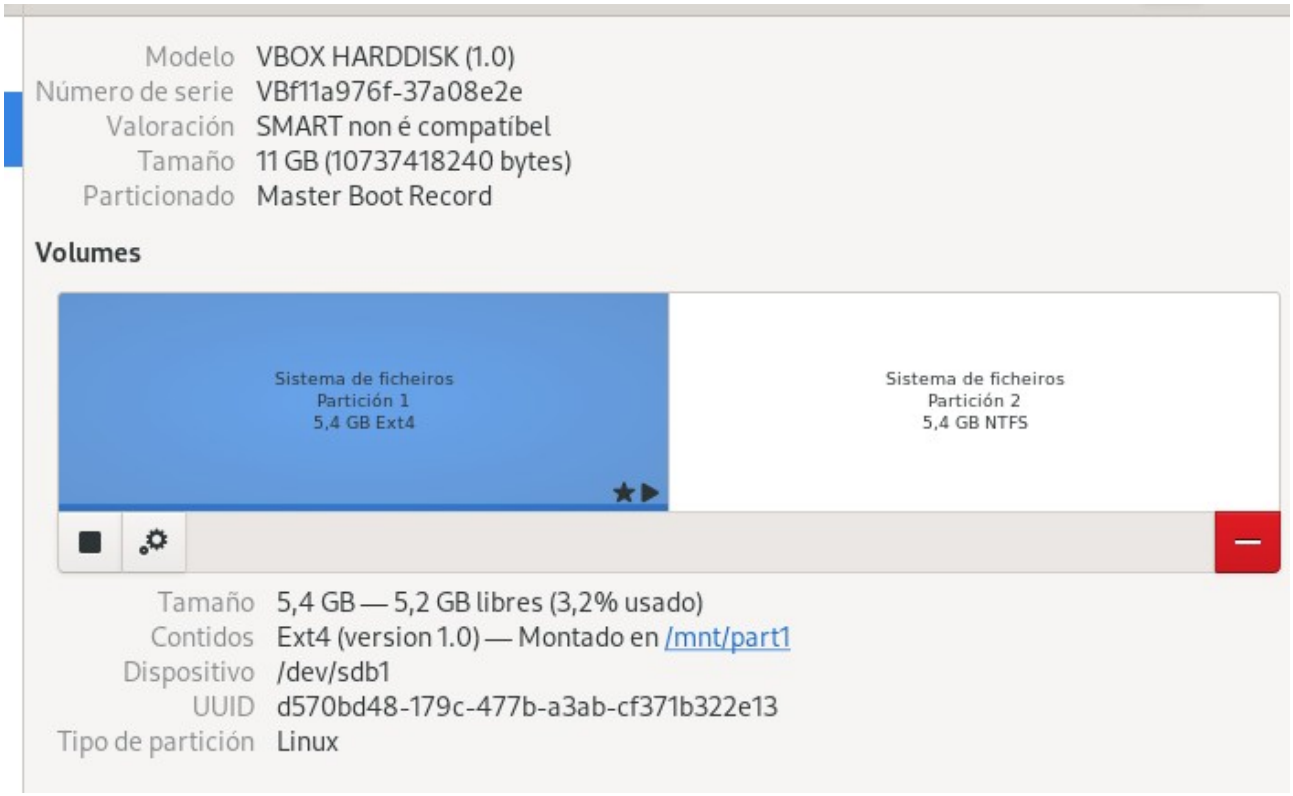
Hai que montar as particións cada vez que se reinicia a máquina? Si.

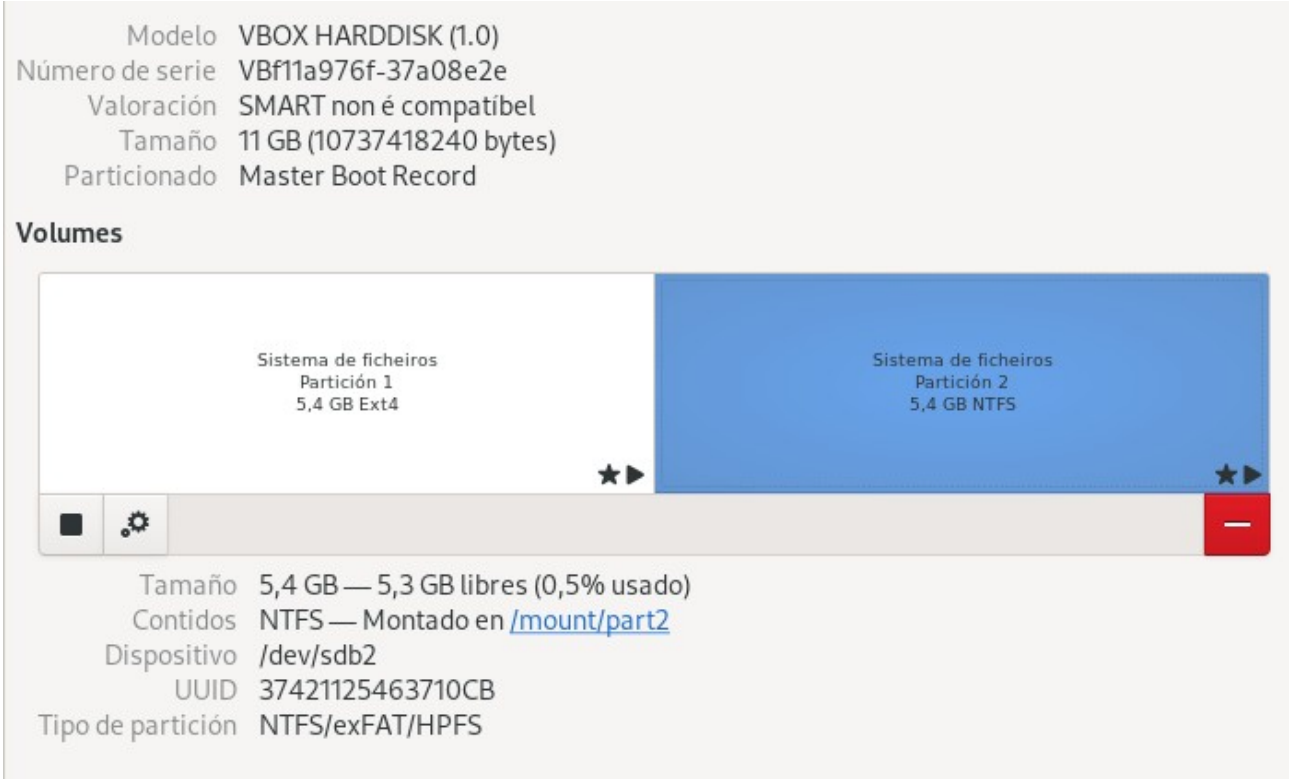
1. Identifica o uuid da partición que queres facer permanente, neste caso a 1 que está en ext4. Para elo utiliza o comando blkid. 2. Agora edita (co gedit, por exemplo) o arquivo fstab. 3. Temos que engadir a seguinte liña: ◦ UUID= ◦ mount point=o directorio /mnt/part1 creado anteriormente ◦ tipo=ext4 ◦ options=defaults ◦ dump-freq=0 (ten que ver cos respaldos do sistema de ficheiros) ◦ pass-num=1 (revisión de erros no inicio, se é 0 non se chequea) Se agora reinicias, que ocorre? Saca capturas do proceso e do resultado

```
root@debian:~# blkid
/dev/sdb2: BLOCK_SIZE="512" UUID="37421125463710CB" TYPE="ntfs" PARTUUID="26e22b
57-02"
/dev/sdb1: UUID="d570bd48-179c-477b-a3ab-cf371b322e13" BLOCK_SIZE="4096" TYPE="e
xt4" PARTUUID="26e22b57-01"
/dev/sda5: UUID="04a43e5c-62c3-4c36-aa13-5946d19c6f28" TYPE="swap" PARTUUID="c44
e03ef-05"
/dev/sda1: UUID="1225c06f-8f21-4827-8366-ceb9584d49b1" BLOCK_SIZE="4096" TYPE="e
xt4" PARTUUID="c44e03ef-01"
```

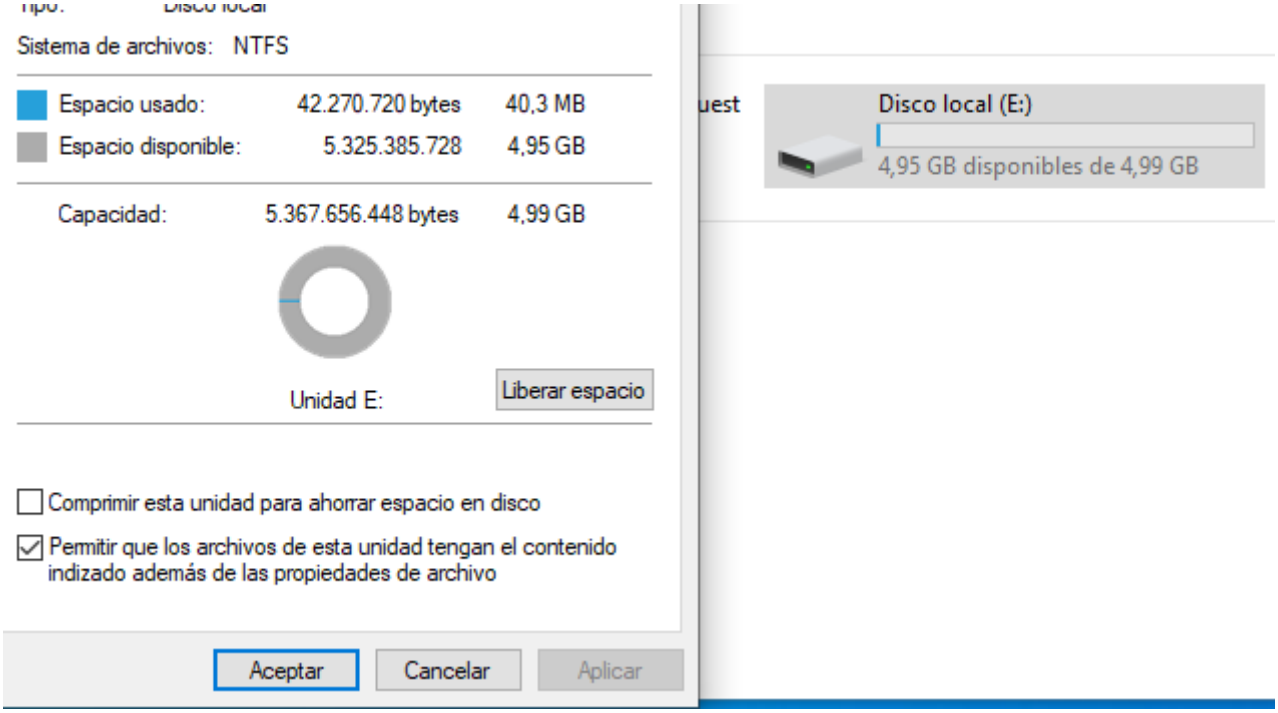
```
#
# <file system> <mount point>   <type>  <options>       <dump>  <pass>
# / was on /dev/sda1 during installation
UUID=1225c06f-8f21-4827-8366-ceb9584d49b1 /               ext4    errors=remoun>
# swap was on /dev/sda5 during installation
UUID=04a43e5c-62c3-4c36-aa13-5946d19c6f28 none            swap    sw            >
/dev/sr0        /media/cdrom0   udf,iso9660 user,noauto     0       0

UUID=d570bd48-179c-477b-a3ab-cf371b322e13       /mnt/part1      ext4    default>

UUID=37421125463710CB   /mount/part2    ntfs    defaults        0       1


^G Axuda      ^O Gravar     ^W ¿U-lo?     ^K Cortar     ^T Executar   ^C Posición
^X Saír       ^R Ler Fich   ^\ Substituir ^U Pegar      ^J Xustificar ^/ Ir á liña
```

Se agora reinicias, que ocorre? Agora xa “memoriza o sistema de arquivos.
Saca capturas do proceso e do resultado.





Agora apagaremos a máquina Linux e arrincaremos dende un Windows, ao que teremos que conectar previamente o disco creado na práctica. Unha vez arrinque comprobade se tedes acceso ao disco e, de ser o caso, a que particións dentro del. Que conclusións obtedes? Xustificade a resposta.



Solo detecta o de formato soportado por windows, NTFS.

Outras accións sobre Sistemas de Arquivos

```
root@debian:~# mount -l
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
udev on /dev type devtmpfs (rw,nosuid,relatime,size=1972876k,nr_inodes=493219,mode=
755,inode64)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=0
00)
tmpfs on /run type tmpfs (rw,nosuid,nodev,noexec,relatime,size=400952k,mode=755,ino
de64)
/dev/sda1 on / type ext4 (rw,relatime,errors=remount-ro)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime
)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev,inode64)
tmpfs on /run/lock type tmpfs (rw,nosuid,nodev,noexec,relatime,size=5120k,inode64)
cgroup2 on /sys/fs/cgroup type cgroup2 (rw,nosuid,nodev,noexec,relatime,nsdelegate,
memory_recursiveprot)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
bpf on /sys/fs/bpf type bpf (rw,nosuid,nodev,noexec,relatime,mode=700)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=29,pgrp=1,timeout
=0,minproto=5,maxproto=5,direct,pipe_ino=13675)
debugfs on /sys/kernel/debug type debugfs (rw,nosuid,nodev,noexec,relatime)
mqueue on /dev/mqueue type mqueue (rw,nosuid,nodev,noexec,relatime)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime,pagesize=2M)
```

```
root@debian:~# df -h
Sist. Fich     Tamaño Usado  Disp Uso% Montado en
udev             1,9G     0  1,9G   0% /dev
tmpfs            392M  1,3M  391M   1% /run
/dev/sda1         48G  7,3G   39G  16% /
tmpfs            2,0G     0  2,0G   0% /dev/shm
tmpfs            5,0M  8,0K  5,0M   1% /run/lock
/dev/sdb2        5,0G   27M  5,0G   1% /mount/part2
/dev/sdb1        4,9G   24K  4,6G   1% /mnt/part1
tmpfs            392M   88K  392M   1% /run/user/1000
root@debian:~# man df
root@debian:~#
```

Amosa a información dos discos en formato -h, mellor comprensión humana.

```
root@debian:~# sfdisk -d /dev/sdb | sfdisk /dev/sdc
Checking that no-one is using this disk right now ... OK

Disk /dev/sdc: 10 GiB, 10737418240 bytes, 20971520 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

>>> Script header accepted.
>>> Script header accepted.
>>> Script header accepted.
>>> Script header accepted.
>>> Script header accepted.
>>> Created a new DOS (MBR) disklabel with disk identifier 0x26e22b57.
/dev/sdc1: Created a new partition 1 of type 'Linux' and of size 5 GiB.
/dev/sdc2: Created a new partition 2 of type 'HPFS/NTFS/exFAT' and of size 5 GiB.
/dev/sdc3: Done.

New situation:
Disklabel type: dos
Disk identifier: 0x26e22b57

Device     Boot    Start      End  Sectors Size Id tipo
/dev/sdc1           2048 10487807 10485760   5G 83 Linux
/dev/sdc2       10487808 20971519 10483712   5G  7 HPFS/NTFS/exFAT

The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
root@debian:~#
```

```
root@debian:~# sfdisk -l /dev/sdc
Disk /dev/sdc: 10 GiB, 10737418240 bytes, 20971520 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x26e22b57

Device     Boot    Start      End  Sectors Size Id tipo
/dev/sdc1           2048 10487807 10485760   5G 83 Linux
/dev/sdc2       10487808 20971519 10483712   5G  7 HPFS/NTFS/exFAT
root@debian:~#
```

```
root@debian:~# dd if=/dev/sdb1 of=/dev/sdc1 bs=1M status=progress
4629463040 bytes (4,6 GB, 4,3 GiB) copied, 6 s, 771 MB/s
5120+0 records in
5120+0 records out
5368709120 bytes (5,4 GB, 5,0 GiB) copied, 7,24736 s, 741 MB/s
root@debian:~#
```

```
root@debian:~# dd if=/dev/sdb2 of=/dev/sdc2 bs=1M status=progress
4688183296 bytes (4,7 GB, 4,4 GiB) copied, 6 s, 781 MB/s
5119+0 records in
5119+0 records out
5367660544 bytes (5,4 GB, 5,0 GiB) copied, 7,41987 s, 723 MB/s
root@debian:~#
```

```
root@debian:~# mkdir /mnt/sdc1 /mnt/sdc2
root@debian:~# mount /dev/sdc1 /mnt/sdc1
root@debian:~# mount /dev/sdc2 /mnt/sdc2
root@debian:~#
```

```
/dev/sdc1 on /mnt/sdc1 type ext4 (rw,relatime)
/dev/sdc2 on /mnt/sdc2 type fuseblk (rw,relatime,user_id=0,group_id=0,allow_other,
blksize=4096)
```

Exame dun sistema de arquivos

```
root@debian:~# umount /mnt/sdc1
root@debian:~# fsck /dev/sdc1
fsck from util-linux 2.38.1
e2fsck 1.47.0 (5-Feb-2023)
/dev/sdc1: clean, 11/327680 files, 42078/1310720 blocks
root@debian:~# umount /mnt/sdc2
root@debian:~# ntfsfix /dev/sdc2
Mounting volume... OK
Processing of $MFT and $MFTMirr completed successfully.
Checking the alternate boot sector... OK
NTFS volume version is 3.1.
NTFS partition /dev/sdc2 was processed successfully.
root@debian:~#
```