



UNIDA
PARAGUAY

**UNIVERSIDAD DE LA INTEGRACIÓN DE LAS
AMÉRICAS**

FACULTAD DE INGENIERÍA.

MATERIA

Sistemas Operativos.

TÍTULO

LABORATORIO DE ANÁLISIS DE SISTEMAS OPERATIVOS

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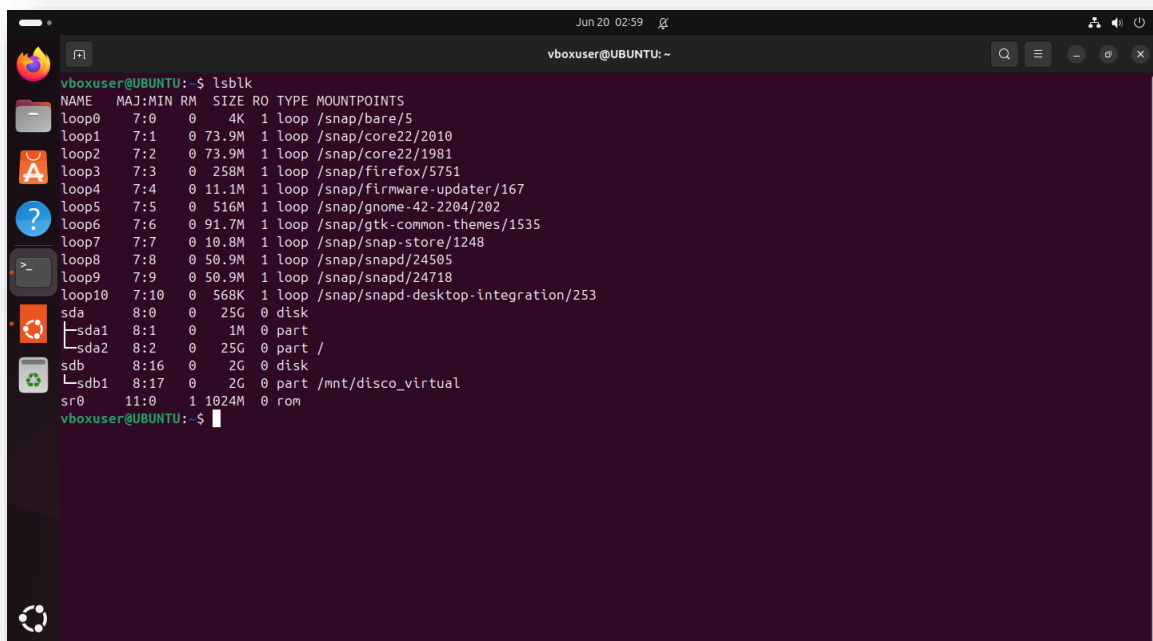
Laboratorio 3: Sistemas de Archivos

Parte 1 – Comparación de Sistemas de Archivos

Se realizaron pruebas utilizando un disco virtual, formateado en tres sistemas de archivos distintos: FAT32, NTFS y ext4.

FAT32

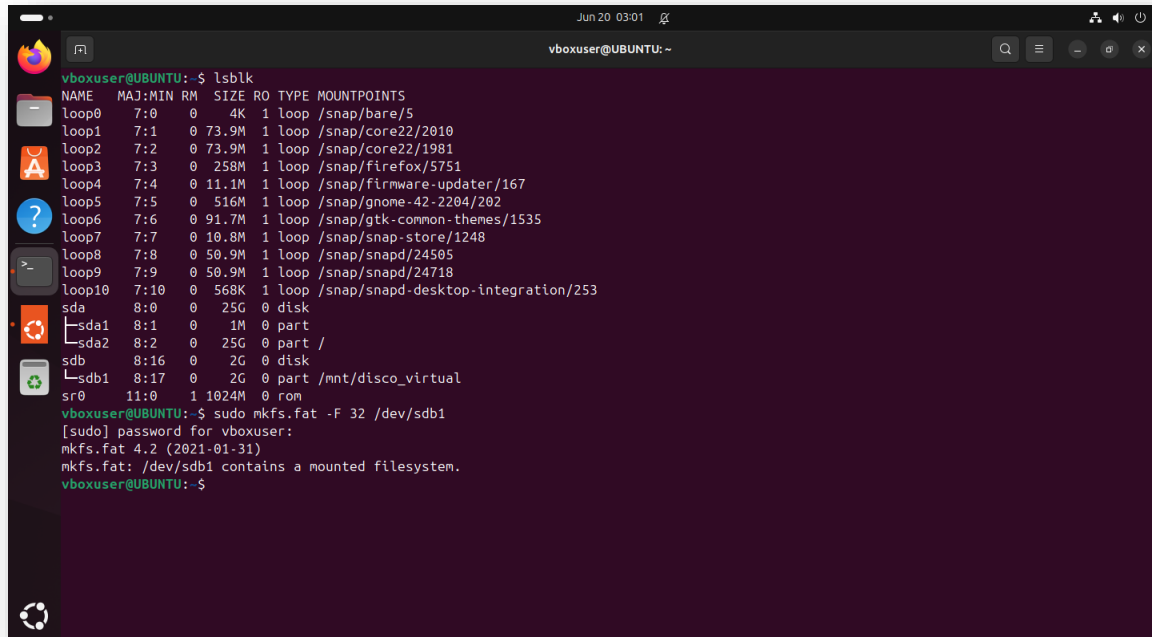
1. Verificación del disco virtual con lsblk.



The screenshot shows a terminal window titled 'vboxuser@UBUNTU: ~' with the command 'lsblk' executed. The output is a table of block devices. The 'sdb1' partition is highlighted with a green background, showing it is a 2G ext4 disk mounted at '/mnt/disco_virtual'.

NAME	MAJ:MIN	RM	SIZE	RO	TYPE	MOUNTPOINTS
loop0	7:0	0	4K	1	loop	/snap/bare/5
loop1	7:1	0	73.9M	1	loop	/snap/core22/2010
loop2	7:2	0	73.9M	1	loop	/snap/core22/1981
loop3	7:3	0	258M	1	loop	/snap/firefox/5751
loop4	7:4	0	11.1M	1	loop	/snap/firmware-updater/167
loop5	7:5	0	516M	1	loop	/snap/gnome-42-2284/202
loop6	7:6	0	91.7M	1	loop	/snap/gtk-common-themes/1535
loop7	7:7	0	10.8M	1	loop	/snap/snap-store/1248
loop8	7:8	0	50.9M	1	loop	/snap/snapd/24505
loop9	7:9	0	50.9M	1	loop	/snap/snapd/24718
loop10	7:10	0	568K	1	loop	/snap/snapd-desktop-integration/253
sda	8:0	0	25G	0	disk	
├─sda1	8:1	0	1M	0	part	
├─sda2	8:2	0	25G	0	part	/
sdb	8:16	0	2G	0	disk	
├─sdb1	8:17	0	2G	0	part	/mnt/disco_virtual
sr0	11:0	1	1024M	0	rom	

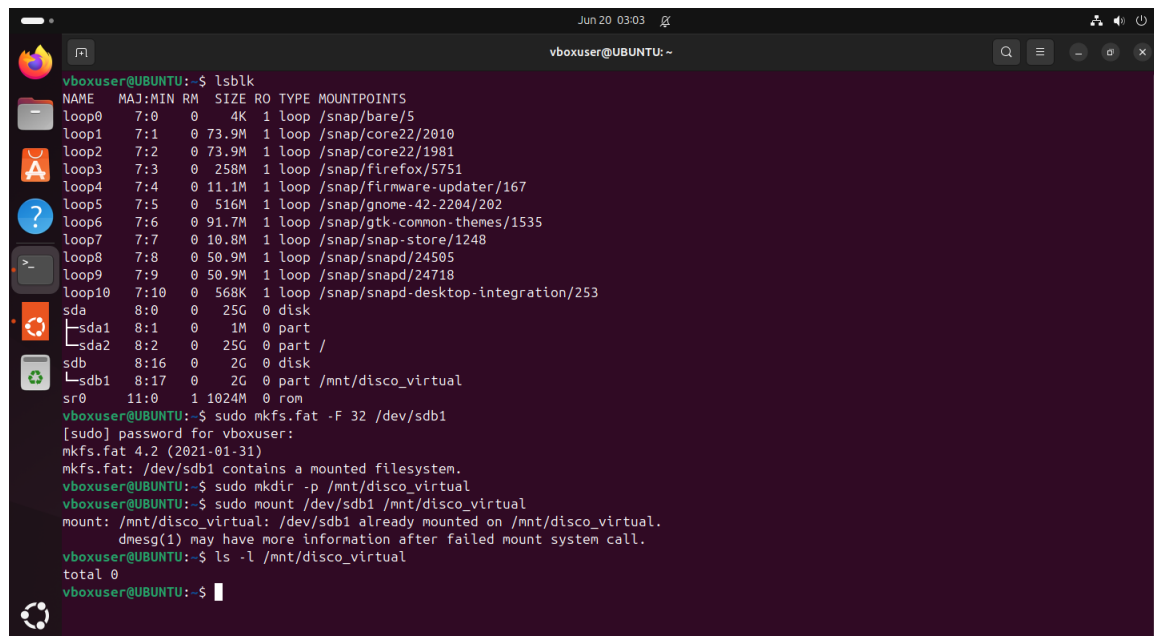
2. Formateo del disco virtual a FAT32.

A terminal window titled 'vboxuser@UBUNTU: ~' showing the process of formatting a virtual disk. The user runs 'lsblk' to list block devices. The output shows several loop devices and physical disks. The disk /dev/sdb1 is identified as the virtual disk. The user then runs 'sudo mkfs.fat -F 32 /dev/sdb1' to format it as FAT32. The terminal shows the password prompt and the successful completion of the formatting process.

```
vboxuser@UBUNTU:~$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
loop0       7:0    0     4K  1 loop /snap/bare/5
loop1       7:1    0   73.9M  1 loop /snap/core22/2010
loop2       7:2    0   73.9M  1 loop /snap/core22/1981
loop3       7:3    0   258M  1 loop /snap/firefox/5751
loop4       7:4    0   11.1M  1 loop /snap/firmware-updater/167
loop5       7:5    0   516M  1 loop /snap/gnome-42-2204/202
loop6       7:6    0   91.7M  1 loop /snap/gtk-common-themes/1535
loop7       7:7    0   10.8M  1 loop /snap/snap-store/1248
loop8       7:8    0   50.9M  1 loop /snap/snapd/24505
loop9       7:9    0   50.9M  1 loop /snap/snapd/24718
loop10      7:10   0   568K  1 loop /snap/snapd-desktop-integration/253
sda         8:0    0    25G  0 disk
├─sda1      8:1    0     1M  0 part
├─sda2      8:2    0    25G  0 part /
└─sdb       8:16   0     2G  0 disk
   └─sdb1    8:17   0     2G  0 part /mnt/disco_virtual
sr0        11:0    1  1024M  0 rom

vboxuser@UBUNTU:~$ sudo mkfs.fat -F 32 /dev/sdb1
[sudo] password for vboxuser:
mkfs.fat 4.2 (2021-01-31)
mkfs.fat: /dev/sdb1 contains a mounted filesystem.
vboxuser@UBUNTU:~$
```

3. Montaje del disco en /mnt/disco_virtual.

A terminal window titled 'vboxuser@UBUNTU: ~' showing the process of mounting the formatted virtual disk. The user runs 'lsblk' again to confirm the disk is still /dev/sdb1. Then, the user runs 'sudo mkfs.fat -F 32 /dev/sdb1' (which shows a warning about the existing filesystem) and 'sudo mkdir -p /mnt/disco_virtual'. Finally, the user runs 'sudo mount /dev/sdb1 /mnt/disco_virtual', which shows a warning that the device is already mounted. The user then runs 'ls -l /mnt/disco_virtual' to show the contents of the mounted disk, which is currently empty.

```
vboxuser@UBUNTU:~$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
loop0       7:0    0     4K  1 loop /snap/bare/5
loop1       7:1    0   73.9M  1 loop /snap/core22/2010
loop2       7:2    0   73.9M  1 loop /snap/core22/1981
loop3       7:3    0   258M  1 loop /snap/firefox/5751
loop4       7:4    0   11.1M  1 loop /snap/firmware-updater/167
loop5       7:5    0   516M  1 loop /snap/gnome-42-2204/202
loop6       7:6    0   91.7M  1 loop /snap/gtk-common-themes/1535
loop7       7:7    0   10.8M  1 loop /snap/snap-store/1248
loop8       7:8    0   50.9M  1 loop /snap/snapd/24505
loop9       7:9    0   50.9M  1 loop /snap/snapd/24718
loop10      7:10   0   568K  1 loop /snap/snapd-desktop-integration/253
sda         8:0    0    25G  0 disk
├─sda1      8:1    0     1M  0 part
├─sda2      8:2    0    25G  0 part /
└─sdb       8:16   0     2G  0 disk
   └─sdb1    8:17   0     2G  0 part /mnt/disco_virtual
sr0        11:0    1  1024M  0 rom

vboxuser@UBUNTU:~$ sudo mkfs.fat -F 32 /dev/sdb1
[sudo] password for vboxuser:
mkfs.fat 4.2 (2021-01-31)
mkfs.fat: /dev/sdb1 contains a mounted filesystem.
vboxuser@UBUNTU:~$ sudo mkdir -p /mnt/disco_virtual
vboxuser@UBUNTU:~$ sudo mount /dev/sdb1 /mnt/disco_virtual
mount: /mnt/disco_virtual: /dev/sdb1 already mounted on /mnt/disco_virtual.
dmesg(1) may have more information after failed mount system call.
vboxuser@UBUNTU:~$ ls -l /mnt/disco_virtual
total 0
vboxuser@UBUNTU:~$
```

4. Creación de archivos con dd: 10MB, 100MB y 500MB.

4.1 Medición de tiempo de copia usando time cp.

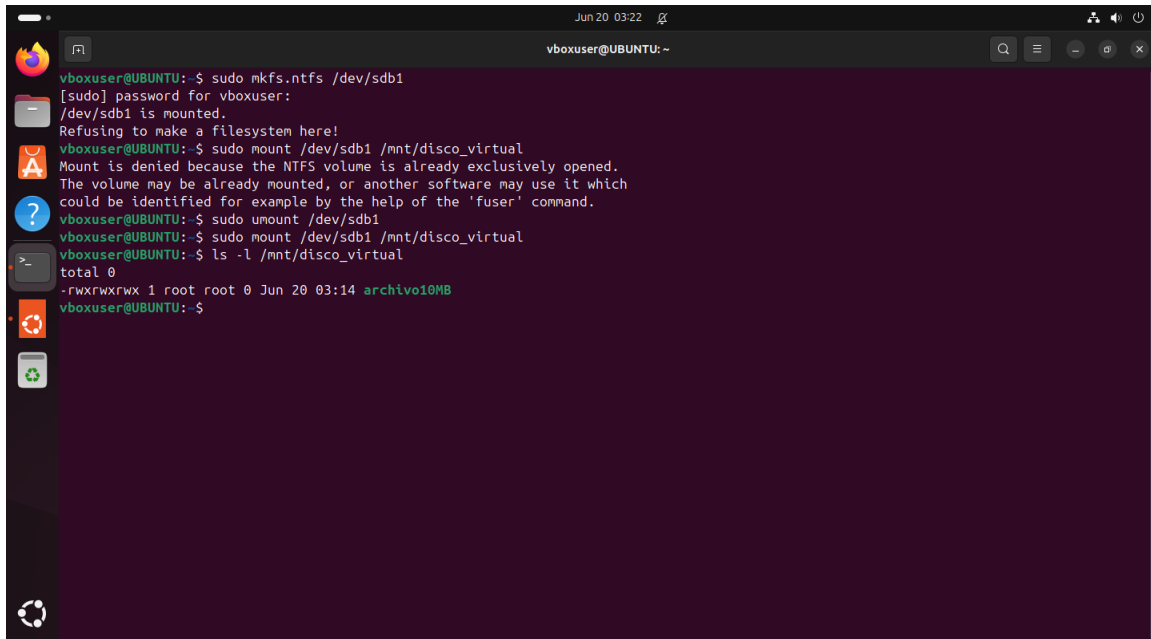
```
vboxuser@UBUNTU: ~  
mount: /mnt/disco_virtual: /dev/sdb1 already mounted on /mnt/disco_virtual.  
dmesg(1) may have more information after failed mount system call.  
vboxuser@UBUNTU:~$ ls -l /mnt/disco_virtual  
total 0  
vboxuser@UBUNTU:~$ fallocate -l 10M /mnt/disco_virtual/archivo10MB  
fallocate: cannot open /mnt/disco_virtual/archivo10MB: Permission denied  
vboxuser@UBUNTU:~$ fallocate -l 100M /mnt/disco_virtual/archivo100MB  
fallocate: cannot open /mnt/disco_virtual/archivo100MB: Permission denied  
vboxuser@UBUNTU:~$ fallocate -l 500M /mnt/disco_virtual/archivo500MB  
fallocate: cannot open /mnt/disco_virtual/archivo500MB: Permission denied  
vboxuser@UBUNTU:~$ time cp /mnt/disco_virtual/archivo10MB  
cp: missing destination file operand after '/mnt/disco_virtual/archivo10MB'  
Try 'cp --help' for more information.  
  
real    0m0.004s  
user    0m0.001s  
sys     0m0.002s  
vboxuser@UBUNTU:~$ time cp /mnt/disco_virtual/archivo100MB  
cp: missing destination file operand after '/mnt/disco_virtual/archivo100MB'  
Try 'cp --help' for more information.  
  
real    0m0.005s  
user    0m0.002s  
sys     0m0.001s  
vboxuser@UBUNTU:~$ time cp /mnt/disco_virtual/archivo500MB  
cp: missing destination file operand after '/mnt/disco_virtual/archivo500MB'  
Try 'cp --help' for more information.  
  
real    0m0.003s  
user    0m0.003s  
sys     0m0.000s  
vboxuser@UBUNTU:~$
```

NTFS

1. Formateo del disco virtual a NTFS.

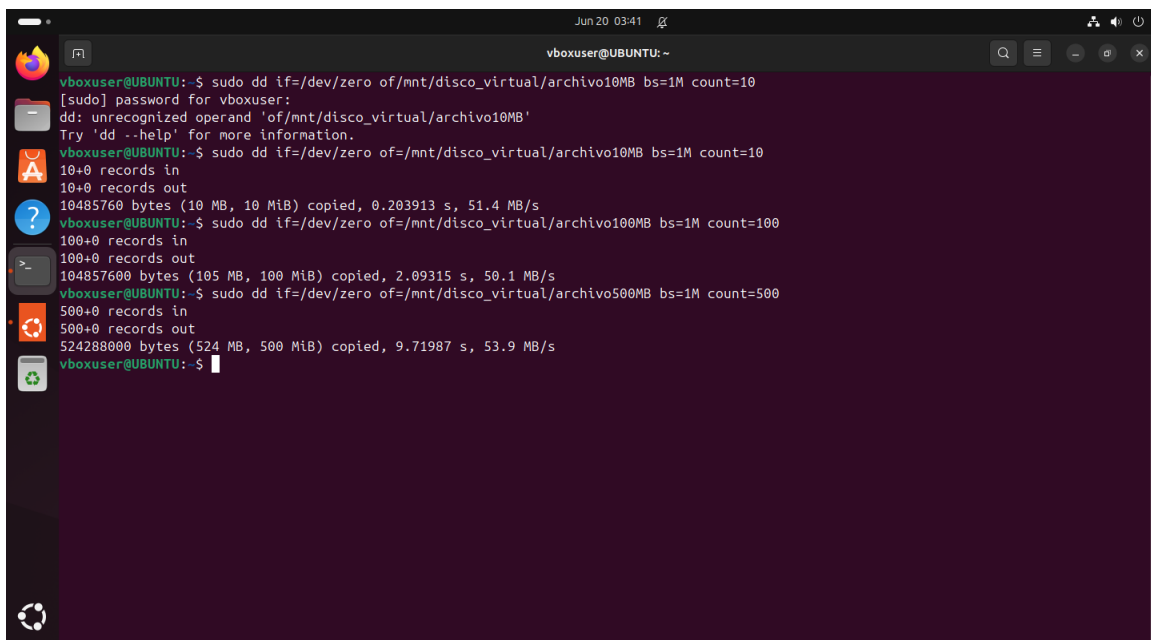
```
vboxuser@UBUNTU: ~  
vboxuser@UBUNTU:~$ sudo mkfs.ntfs /dev/sdb1  
[sudo] password for vboxuser:  
/dev/sdb1 is mounted.  
Refusing to make a filesystem here!  
vboxuser@UBUNTU:~$
```

2. Montaje del disco en /mnt/disco_virtual.

A terminal window titled 'vboxuser@UBUNTU: ~' with a search bar and window controls. The user 'vboxuser' is at the prompt. They run 'sudo mkfs.ntfs /dev/sdb1', which prompts for a password and then reports that /dev/sdb1 is mounted. They then run 'sudo mount /dev/sdb1 /mnt/disco_virtual', which is denied because the volume is already mounted. They run 'sudo umount /dev/sdb1' and then 'sudo mount /dev/sdb1 /mnt/disco_virtual' successfully. Finally, they run 'ls -l /mnt/disco_virtual', showing a file 'archivo10MB' with permissions '-rwxrwxrwx', size '1', owner 'root', group 'root', date 'Jun 20 03:14', and size 'archivo10MB'.

```
vboxuser@UBUNTU:~$ sudo mkfs.ntfs /dev/sdb1
[sudo] password for vboxuser:
/dev/sdb1 is mounted.
Refusing to make a filesystem here!
vboxuser@UBUNTU:~$ sudo mount /dev/sdb1 /mnt/disco_virtual
Mount is denied because the NTFS volume is already exclusively opened.
The volume may be already mounted, or another software may use it which
could be identified for example by the help of the 'fuser' command.
vboxuser@UBUNTU:~$ sudo umount /dev/sdb1
vboxuser@UBUNTU:~$ sudo mount /dev/sdb1 /mnt/disco_virtual
vboxuser@UBUNTU:~$ ls -l /mnt/disco_virtual
total 0
-rwxrwxrwx 1 root root 0 Jun 20 03:14 archivo10MB
vboxuser@UBUNTU:~$
```

3. Creación de archivos con dd: 10MB, 100MB y 500MB.

A terminal window titled 'vboxuser@UBUNTU: ~' with a search bar and window controls. The user 'vboxuser' is at the prompt. They run 'sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo10MB bs=1M count=10', which fails with 'dd: unrecognized operand 'of=/mnt/disco_virtual/archivo10MB''. They run 'sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo10MB bs=1M count=10' successfully, showing '10+0 records in', '10+0 records out', and '10485760 bytes (10 MB, 10 MiB) copied, 0.203913 s, 51.4 MB/s'. They then run 'sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo100MB bs=1M count=100' successfully, showing '100+0 records in', '100+0 records out', and '104857600 bytes (105 MB, 100 MiB) copied, 2.09315 s, 50.1 MB/s'. Finally, they run 'sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo500MB bs=1M count=500' successfully, showing '500+0 records in', '500+0 records out', and '524288000 bytes (524 MB, 500 MiB) copied, 9.71987 s, 53.9 MB/s'.

```
vboxuser@UBUNTU:~$ sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo10MB bs=1M count=10
[sudo] password for vboxuser:
dd: unrecognized operand 'of=/mnt/disco_virtual/archivo10MB'
Try 'dd --help' for more information.
vboxuser@UBUNTU:~$ sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo10MB bs=1M count=10
10+0 records in
10+0 records out
10485760 bytes (10 MB, 10 MiB) copied, 0.203913 s, 51.4 MB/s
vboxuser@UBUNTU:~$ sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo100MB bs=1M count=100
100+0 records in
100+0 records out
104857600 bytes (105 MB, 100 MiB) copied, 2.09315 s, 50.1 MB/s
vboxuser@UBUNTU:~$ sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo500MB bs=1M count=500
500+0 records in
500+0 records out
524288000 bytes (524 MB, 500 MiB) copied, 9.71987 s, 53.9 MB/s
vboxuser@UBUNTU:~$
```

4. Medición de tiempo de copia usando time cp.

```
vboxuser@UBUNTU: ~  
10+0 records out  
10485760 bytes (10 MB, 10 MiB) copied, 0.203913 s, 51.4 MB/s  
vboxuser@UBUNTU:~$ sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo100MB bs=1M count=100  
100+0 records in  
100+0 records out  
104857600 bytes (105 MB, 100 MiB) copied, 2.09315 s, 50.1 MB/s  
vboxuser@UBUNTU:~$ sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo500MB bs=1M count=500  
500+0 records in  
500+0 records out  
524288000 bytes (524 MB, 500 MiB) copied, 9.71987 s, 53.9 MB/s  
vboxuser@UBUNTU:~$ time cp /mnt/disco_virtual/archivo10MB  
cp: missing destination file operand after '/mnt/disco_virtual/archivo10MB'  
Try 'cp --help' for more information.  
  
real    0m0.004s  
user    0m0.001s  
sys     0m0.003s  
vboxuser@UBUNTU:~$ time cp /mnt/disco_virtual/archivo100MB  
cp: missing destination file operand after '/mnt/disco_virtual/archivo100MB'  
Try 'cp --help' for more information.  
  
real    0m0.004s  
user    0m0.001s  
sys     0m0.003s  
vboxuser@UBUNTU:~$ time cp /mnt/disco_virtual/archivo500MB  
cp: missing destination file operand after '/mnt/disco_virtual/archivo500MB'  
Try 'cp --help' for more information.  
  
real    0m0.004s  
user    0m0.000s  
sys     0m0.003s  
vboxuser@UBUNTU:~$
```

ext4

1. Formateo del disco virtual a ext4.

```
vboxuser@UBUNTU:~$ sudo mkfs.ext4 /dev/sdb1  
[sudo] password for vboxuser:  
mke2fs 1.47.0 (5-Feb-2023)  
/dev/sdb1 contains a ntfs file system  
Proceed anyway? (y,N) y  
Creating filesystem with 527915 4k blocks and 132192 inodes  
Filesystem UUID: 9bc7e6b2-9978-4f0f-b620-da3f708d67a2  
Superblock backups stored on blocks:  
32768, 98304, 163840, 229376, 294912  
  
Allocating group tables: done  
Writing inode tables: done  
Creating journal (16384 blocks): done  
Writing superblocks and filesystem accounting information:done 7  
  
vboxuser@UBUNTU:~$
```

2. Montaje del disco en /mnt/disco_virtual.

```
vboxuser@UBUNTU: ~  
vboxuser@UBUNTU:~$ sudo mkfs.ext4 /dev/sdb1  
[sudo] password for vboxuser:  
mke2fs 1.47.0 (5-Feb-2023)  
/dev/sdb1 contains a ntfs file system  
Proceed anyway? (y,N) y  
Creating filesystem with 527915 4k blocks and 132192 inodes  
Filesystem UUID: 9bc7e6b2-9978-4f0f-b620-da3f708d67a2  
Superblock backups stored on blocks:  
32768, 98304, 163840, 229376, 294912  
Allocating group tables: done  
Writing inode tables: done  
Creating journal (16384 blocks): done  
Writing superblocks and filesystem accounting information:done 7  
vboxuser@UBUNTU:~$ sudo mount /dev/sdb1 /mnt/disco_virtual  
vboxuser@UBUNTU:~$ ls -l /mnt/disco_virtual  
total 16  
drwx----- 2 root root 16384 Jun 20 03:50 lost+found  
vboxuser@UBUNTU:~$
```

3. Creación de archivos con dd: 10MB, 100MB y 500MB.

```
vboxuser@UBUNTU: ~  
vboxuser@UBUNTU:~$ sudo mkfs.ext4 /dev/sdb1  
[sudo] password for vboxuser:  
mke2fs 1.47.0 (5-Feb-2023)  
/dev/sdb1 contains a ntfs file system  
Proceed anyway? (y,N) y  
Creating filesystem with 527915 4k blocks and 132192 inodes  
Filesystem UUID: 9bc7e6b2-9978-4f0f-b620-da3f708d67a2  
Superblock backups stored on blocks:  
32768, 98304, 163840, 229376, 294912  
Allocating group tables: done  
Writing inode tables: done  
Creating journal (16384 blocks): done  
Writing superblocks and filesystem accounting information:done 7  
vboxuser@UBUNTU:~$ sudo mount /dev/sdb1 /mnt/disco_virtual  
vboxuser@UBUNTU:~$ ls -l /mnt/disco_virtual  
total 16  
drwx----- 2 root root 16384 Jun 20 03:50 lost+found  
vboxuser@UBUNTU:~$ sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo10MB bs=1M count=10  
10+0 records in  
10+0 records out  
10485760 bytes (10 MB, 10 MiB) copied, 0.0147652 s, 710 MB/s  
vboxuser@UBUNTU:~$ sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo100MB bs=1M count=100  
100+0 records in  
100+0 records out  
104857600 bytes (105 MB, 100 MiB) copied, 0.146505 s, 716 MB/s  
vboxuser@UBUNTU:~$ sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo500MB bs=1M count=500  
500+0 records in  
500+0 records out  
524288000 bytes (524 MB, 500 MiB) copied, 0.778729 s, 673 MB/s  
vboxuser@UBUNTU:~$
```

4. Medición de tiempo de copia usando time cp.

```
Jun 20 03:59
vboxuser@UBUNTU: ~
10+0 records out
10485760 bytes (10 MB, 10 MiB) copied, 0.0147652 s, 710 MB/s
vboxuser@UBUNTU:~$ sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo100MB bs=1M count=100
100+0 records in
100+0 records out
104857600 bytes (105 MB, 100 MiB) copied, 0.146505 s, 716 MB/s
vboxuser@UBUNTU:~$ sudo dd if=/dev/zero of=/mnt/disco_virtual/archivo500MB bs=1M count=500
500+0 records in
500+0 records out
524288000 bytes (524 MB, 500 MiB) copied, 0.778729 s, 673 MB/s
vboxuser@UBUNTU:~$ time cp /mnt/disco_virtual/archivo10MB
cp: missing destination file operand after '/mnt/disco_virtual/archivo10MB'
Try 'cp --help' for more information.

real    0m0.004s
user    0m0.000s
sys     0m0.004s
vboxuser@UBUNTU:~$ time cp /mnt/disco_virtual/archivo100MB
cp: missing destination file operand after '/mnt/disco_virtual/archivo100MB'
Try 'cp --help' for more information.

real    0m0.004s
user    0m0.000s
sys     0m0.004s
vboxuser@UBUNTU:~$ time cp /mnt/disco_virtual/archivo500MB
cp: missing destination file operand after '/mnt/disco_virtual/archivo500MB'
Try 'cp --help' for more information.

real    0m0.004s
user    0m0.002s
sys     0m0.002s
vboxuser@UBUNTU:~$
```

Parte 2 – Permisos y Seguridad

Esta parte se realizó solo con ext4, ya que FAT32 y NTFS no manejan permisos correctamente en Linux.

1. Formateo del disco a ext4.

```
Jun 20 04:06
vboxuser@UBUNTU: ~
vboxuser@UBUNTU:~$ sudo mkfs.ext4 /dev/sdb1
[sudo] password for vboxuser:
mke2fs 1.47.0 (5-Feb-2023)
/dev/sdb1 is mounted; will not make a filesystem here!
vboxuser@UBUNTU:~$ sudo umount /dev/sdb1
vboxuser@UBUNTU:~$ sudo mkfs.ext4 /dev/sdb1
mke2fs 1.47.0 (5-Feb-2023)
/dev/sdb1 contains a ext4 file system
last mounted on /mnt/disco_virtual on Fri Jun 20 03:51:22 2025
Proceed anyway? (y,N) y
Creating filesystem with 527915 4k blocks and 132192 inodes
Filesystem UUID: 2068f648-e5ad-4e49-8e1a-3143ce78bfc7
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912

Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information:done 7
vboxuser@UBUNTU:~$
```


2. Montaje de la partición ext4.

```
vboxuser@UBUNTU:~$ sudo mkfs.ext4 /dev/sdb1
[sudo] password for vboxuser:
mke2fs 1.47.0 (5-Feb-2023)
/dev/sdb1 is mounted; will not make a filesystem here!
vboxuser@UBUNTU:~$ sudo umount /dev/sdb1
vboxuser@UBUNTU:~$ sudo mkfs.ext4 /dev/sdb1
mke2fs 1.47.0 (5-Feb-2023)
/dev/sdb1 contains a ext4 file system
last mounted on /mnt/disco_virtual on Fri Jun 20 03:51:22 2025
Proceed anyway? (y,N) y
Creating filesystem with 527915 4k blocks and 132192 inodes
Filesystem UUID: 2068f648-e5ad-4e49-8e1a-3143ce78bfc7
Superblock backups stored on blocks:
32768, 98304, 163840, 229376, 294912
Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information:done 7

vboxuser@UBUNTU:~$ sudo mount /dev/sdb1 /mnt/disco_virtual

vboxuser@UBUNTU:~$ ls -l /mnt/disco_virtual
total 16
drwx----- 2 root root 16384 Jun 20 04:04 lost+found
vboxuser@UBUNTU:~$
```

3. Creación de carpetas con diferentes permisos.

```
vboxuser@UBUNTU:/mnt/disco_virtual$
/dev/sdb1 is mounted; will not make a filesystem here!
vboxuser@UBUNTU:~$ sudo umount /dev/sdb1
vboxuser@UBUNTU:~$ sudo mkfs.ext4 /dev/sdb1
mke2fs 1.47.0 (5-Feb-2023)
/dev/sdb1 contains a ext4 file system
last mounted on /mnt/disco_virtual on Fri Jun 20 03:51:22 2025
Proceed anyway? (y,N) y
Creating filesystem with 527915 4k blocks and 132192 inodes
Filesystem UUID: 2068f648-e5ad-4e49-8e1a-3143ce78bfc7
Superblock backups stored on blocks:
32768, 98304, 163840, 229376, 294912
Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information:done 7

vboxuser@UBUNTU:~$ sudo mount /dev/sdb1 /mnt/disco_virtual

vboxuser@UBUNTU:~$ ls -l /mnt/disco_virtual
total 16
drwx----- 2 root root 16384 Jun 20 04:04 lost+found
vboxuser@UBUNTU:~$ cd /mnt/disco_virtual
vboxuser@UBUNTU:/mnt/disco_virtual$ sudo mkdir privada publica
vboxuser@UBUNTU:/mnt/disco_virtual$ sudo chmod 700 privada
vboxuser@UBUNTU:/mnt/disco_virtual$ sudo chmod 777 publica
vboxuser@UBUNTU:/mnt/disco_virtual$ ls -l
total 24
drwx----- 2 root root 16384 Jun 20 04:04 lost+found
drwx----- 2 root root 4096 Jun 20 04:08 privada
drwxrwxrwx 2 root root 4096 Jun 20 04:08 publica
vboxuser@UBUNTU:/mnt/disco_virtual$
```

4. Creación del usuario de prueba.

```
Writing superblocks and filesystem accounting information:done 7
vboxuser@UBUNTU:~$ sudo mount /dev/sdb1 /mnt/disco_virtual
vboxuser@UBUNTU:~$ ls -l /mnt/disco_virtual
total 16
drwx----- 2 root root 16384 Jun 20 04:04 lost+found
vboxuser@UBUNTU:~$ cd /mnt/disco_virtual
vboxuser@UBUNTU:/mnt/disco_virtual$ sudo mkdir privada publica
vboxuser@UBUNTU:/mnt/disco_virtual$ sudo chmod 700 privada
vboxuser@UBUNTU:/mnt/disco_virtual$ sudo chmod 777 publica
vboxuser@UBUNTU:/mnt/disco_virtual$ ls -l
total 24
drwx----- 2 root root 16384 Jun 20 04:04 lost+found
drwx----- 2 root root 4096 Jun 20 04:08 privada
drwxrwxrwx 2 root root 4096 Jun 20 04:08 publica
vboxuser@UBUNTU:/mnt/disco_virtual$ sudo adduser prueba
info: Adding user 'prueba' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group 'prueba' (1001) ...
info: Adding new user 'prueba' (1001) with group 'prueba (1001)' ...
info: Creating home directory '/home/prueba' ...
info: Copying files from '/etc/skel' ...
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
Changing the user information for prueba
Enter the new value, or press ENTER for the default
  Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
```

5. Acceso con usuario prueba:

```
vboxuser@UBUNTU:/mnt/disco_virtual$ sudo chmod 777 publica
vboxuser@UBUNTU:/mnt/disco_virtual$ ls -l
total 24
drwx----- 2 root root 16384 Jun 20 04:04 lost+found
drwx----- 2 root root 4096 Jun 20 04:08 privada
drwxrwxrwx 2 root root 4096 Jun 20 04:08 publica
vboxuser@UBUNTU:/mnt/disco_virtual$ sudo adduser prueba
info: Adding user 'prueba' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group 'prueba' (1001) ...
info: Adding new user 'prueba' (1001) with group 'prueba (1001)' ...
info: Creating home directory '/home/prueba' ...
info: Copying files from '/etc/skel' ...
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
Changing the user information for prueba
Enter the new value, or press ENTER for the default
  Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
info: Adding new user 'prueba' to supplemental / extra groups 'users' ...
info: Adding user 'prueba' to group 'users' ...
vboxuser@UBUNTU:/mnt/disco_virtual$ su - prueba
Password:
prueba@UBUNTU:~$ cd /mnt/disco_virtual/privada
-bash: cd: /mnt/disco_virtual/privada: Permission denied
prueba@UBUNTU:~$
```

```
Jun 20 04:18
prueba@UBUNTU: /mnt/disco_virtual/publica

vboxuser@UBUNTU:/mnt/disco_virtual$ ls -l
total 24
drwx----- 2 root root 16384 Jun 20 04:04 lost+found
drwx----- 2 root root 4096 Jun 20 04:08 privada
drwxrwxrwx 2 root root 4096 Jun 20 04:08 publica
vboxuser@UBUNTU:/mnt/disco_virtual$ sudo adduser prueba
info: Adding user 'prueba' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group 'prueba' (1001) ...
info: Adding new user 'prueba' (1001) with group 'prueba (1001)' ...
info: Creating home directory '/home/prueba' ...
info: Copying files from '/etc/skel' ...
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
Changing the user information for prueba
Enter the new value, or press ENTER for the default
  Full Name []:
   Room Number []:
   Work Phone []:
   Home Phone []:
    Other []:
Is the information correct? [Y/n] y
info: Adding new user 'prueba' to supplemental / extra groups 'users' ...
info: Adding user 'prueba' to group 'users' ...
vboxuser@UBUNTU:/mnt/disco_virtual$ su - prueba
Password:
prueba@UBUNTU:~$ cd /mnt/disco_virtual/privada
-bash: cd: /mnt/disco_virtual/privada: Permission denied
prueba@UBUNTU:~$ cd /mnt/disco_virtual/publica
prueba@UBUNTU:/mnt/disco_virtual/publica$
```