

Chandler Anderson

CYSE 270

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3/12/2024

## Assignment 7

```
Chandler@Ubuntu:~$ sudo ls /dev/sd*
[sudo] password for Chandler:
/dev/sda /dev/sda1 /dev/sda2 /dev/sda3
Chandler@Ubuntu:~$ sudo fdisk -l
Disk /dev/loop0: 4 KiB, 4096 bytes, 8 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop1: 74.21 MiB, 77819904 bytes, 151992 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop2: 91.69 MiB, 96141312 bytes, 187776 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop3: 496.98 MiB, 521121792 bytes, 1017816 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop4: 12.32 MiB, 12922880 bytes, 25240 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop5: 266.63 MiB, 279584768 bytes, 546064 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop6: 452 KiB, 462848 bytes, 904 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop7: 40.43 MiB, 42393600 bytes, 82800 sectors
Units: sectors of 1 * 512 = 512 bytes
```

Part 1 Step 1,2

```

Disk /dev/loop6: 452 KiB, 462848 bytes, 904 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop7: 40.43 MiB, 42393600 bytes, 82800 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/sda: 21.6 GiB, 23192813568 bytes, 45298464 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: gpt
Disk identifier: 3CCD0D9A-6A1F-4F81-81F5-DB43968267C4

Device      Start      End  Sectors  Size Type
/dev/sda1    2048      4095    2048    1M BIOS boot
/dev/sda2    4096   1054719  1050624  513M EFI System
/dev/sda3   1054720 45297663 44242944 21.1G Linux filesystem
Chandler@Ubuntu:~$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 23.2GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start   End     Size    File system  Name                Flags
  1      1049kB  2097kB  1049kB              bios_grub
  2      2097kB  540MB   538MB   fat32         EFI System Partition  boot, esp
  3      540MB   23.2GB  22.7GB   ext4

```

```

Warning: Unable to open /dev/sr0 read-write (Read-only file system). /dev/sr0
has been opened read-only.
Error: /dev/sr0: unrecognised disk label
Model: VBOX CD-ROM (scsi)
Disk /dev/sr0: 53.5MB
Sector size (logical/physical): 2048B/2048B
Partition Table: unknown
Disk Flags:

```

Part 1 Step 3



Part 2, Steps 1-2

```
Chandler@Ubuntu:~$ sudo ls /dev/sd*  
/dev/sda /dev/sda1 /dev/sda2 /dev/sda3 /dev/sdb  
Chandler@Ubuntu:~$ sudo fdisk -l  
Disk /dev/loop0: 4 KiB, 4096 bytes, 8 sectors  
Units: sectors of 1 * 512 = 512 bytes  
Sector size (logical/physical): 512 bytes / 512 bytes  
I/O size (minimum/optimal): 512 bytes / 512 bytes  
  
Disk /dev/loop1: 74.21 MiB, 77819904 bytes, 151992 sectors  
Units: sectors of 1 * 512 = 512 bytes  
Sector size (logical/physical): 512 bytes / 512 bytes  
I/O size (minimum/optimal): 512 bytes / 512 bytes  
  
Disk /dev/loop2: 266.63 MiB, 279584768 bytes, 546064 sectors  
Units: sectors of 1 * 512 = 512 bytes  
Sector size (logical/physical): 512 bytes / 512 bytes  
I/O size (minimum/optimal): 512 bytes / 512 bytes  
  
Disk /dev/loop3: 496.98 MiB, 521121792 bytes, 1017816 sectors  
Units: sectors of 1 * 512 = 512 bytes  
Sector size (logical/physical): 512 bytes / 512 bytes  
I/O size (minimum/optimal): 512 bytes / 512 bytes  
  
Disk /dev/loop4: 91.69 MiB, 96141312 bytes, 187776 sectors  
Units: sectors of 1 * 512 = 512 bytes  
Sector size (logical/physical): 512 bytes / 512 bytes  
I/O size (minimum/optimal): 512 bytes / 512 bytes  
  
Disk /dev/loop5: 12.32 MiB, 12922880 bytes, 25240 sectors  
Units: sectors of 1 * 512 = 512 bytes  
Sector size (logical/physical): 512 bytes / 512 bytes  
I/O size (minimum/optimal): 512 bytes / 512 bytes  
  
Disk /dev/loop6: 40.43 MiB, 42393600 bytes, 82800 sectors  
Units: sectors of 1 * 512 = 512 bytes  
Sector size (logical/physical): 512 bytes / 512 bytes  
I/O size (minimum/optimal): 512 bytes / 512 bytes  
  
Disk /dev/loop7: 452 KiB, 462848 bytes, 904 sectors  
Units: sectors of 1 * 512 = 512 bytes  
Sector size (logical/physical): 512 bytes / 512 bytes
```

Part 2 Step 3 (New hard disk is highlighted)

```

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: gpt
Disk identifier: 3CCD0D9A-6A1F-4F81-81F5-DB43968267C4

Device      Start      End      Sectors  Size Type
/dev/sda1    2048       4095     2048     1M BIOS boot
/dev/sda2    4096    1054719  1050624   513M EFI System
/dev/sda3   1054720  45297663 44242944 21.1G Linux filesystem

Disk /dev/sdb: 230.95 MiB, 242168320 bytes, 472985 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
Chandler@Ubuntu:~$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 23.2GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start   End     Size    File system  Name              Flags
  1      1049kB  2097kB  1049kB             bios_grub
  2      2097kB  540MB   538MB    fat32        EFI System Partition  boot, esp
  3      540MB   23.2GB  22.7GB    ext4

Error: /dev/sdb: unrecognised disk label
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 242MB
Sector size (logical/physical): 512B/512B
Partition Table: unknown
Disk Flags:

Warning: Unable to open /dev/sr0 read-write (Read-only file system). /dev/sr0
has been opened read-only.
Error: /dev/sr0: unrecognised disk label
Model: VBOX CD-ROM (scsi)
Disk /dev/sr0: 53.5MB
Sector size (logical/physical): 2048B/2048B
Partition Table: unknown
Disk Flags:

```

Part 2 Step 3 (Continued) I highlighted the created virtual hard disk when running the fdisk command, as well as the results from the parted command, which shows “unrecognized disk label”

```

DOS (MBR)
a  toggle a bootable flag
b  edit nested BSD disklabel
c  toggle the dos compatibility flag

Generic
d  delete a partition
F  list free unpartitioned space
l  list known partition types
n  add a new partition
p  print the partition table
t  change a partition type
v  verify the partition table
i  print information about a partition

Misc
M  print this menu
u  change display/entry units
x  extra functionality (experts only)

Script
I  load disk layout from sfdisk script file
O  dump disk layout to sfdisk script file

Save & Exit
w  write table to disk and exit
q  quit without saving changes

Create a new label
g  create a new empty GPT partition table
G  create a new empty SGI (IRIX) partition table
o  create a new empty DOS partition table
s  create a new empty Sun partition table

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): 1
First sector (2048-472984, default 2048):
Last sector, +/-sectors or +/-size[K,M,G,T,P] (2048-472984, default 472984):

Created a new partition 1 of type 'Linux' and of size 229.9 MiB.

Command (m for help): w
```

Part 3 Step 1, 2: This is a screenshot showing that I created a primary partition 1. I do not have a screenshot, but the following images will show that I used the command correctly for step 2 (sudo mkfs.ext4 /dev/sdb1)

```

Chandler@Ubuntu:~$ sudo ls /dev/sd*
/dev/sda /dev/sda1 /dev/sda2 /dev/sda3 /dev/sdb /dev/sdb1
Chandler@Ubuntu:~$ sudo fdisk -l
Disk /dev/loop0: 4 KiB, 4096 bytes, 8 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop1: 74.21 MiB, 77819904 bytes, 151992 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop2: 266.63 MiB, 279584768 bytes, 546064 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop3: 496.98 MiB, 521121792 bytes, 1017816 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop4: 91.69 MiB, 96141312 bytes, 187776 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop5: 12.32 MiB, 12922880 bytes, 25240 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop6: 40.43 MiB, 42393600 bytes, 82800 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop7: 452 KiB, 462848 bytes, 904 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes

```

Part 3 Step 3. The `ls /dev/sd*` command now shows the `sdb1` partition.

```

Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop5: 12.32 MiB, 12922880 bytes, 25240 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop6: 40.43 MiB, 42393600 bytes, 82800 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop7: 452 KiB, 462848 bytes, 904 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/sda: 21.6 GiB, 23192813568 bytes, 45298464 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: gpt
Disk identifier: 3CCD0D9A-6A1F-4F81-81F5-DB43968267C4

Device            Start      End  Sectors  Size Type
/dev/sda1          2048      4095      2048    1M BIOS boot
/dev/sda2          4096 1054719 1050624   513M EFI System
/dev/sda3        1054720 45297663 44242944 21.1G Linux filesystem

Disk /dev/sdb: 230.95 MiB, 242168320 bytes, 472985 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: 0xcdf44deb

Device    Boot Start      End  Sectors  Size Id Type
/dev/sdb1            2048 472984  470937  229.9M 83 Linux

```

This screenshot also shows the result of running the fdisk command, which also displays the /dev/sdb1 partition.



```
/dev/sda1  2048    4095    2048    1M BIOS boot
/dev/sda2  4096  1054719  1050624  513M EFI System
/dev/sda3 1054720 45297663 44242944 21.1G Linux filesystem

Disk /dev/sdb: 230.95 MiB, 242168320 bytes, 472985 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: 0xcdf44deb

Device      Boot Start    End Sectors  Size Id Type
/dev/sdb1   2048 472984  470937  229.9M 83 Linux
Chandler@Ubuntu:~$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 23.2GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start   End     Size    File system  Name            Flags
  1      1049kB  2097kB  1049kB                bios_grub
  2      2097kB  540MB   538MB    fat32         EFI System Partition  boot, esp
  3      540MB   23.2GB  22.7GB    ext4

Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 242MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End     Size    Type        File system  Flags
  1      1049kB  242MB   241MB   primary     ext4

Warning: Unable to open /dev/sr0 read-write (Read-only file system). /dev/sr0
has been opened read-only.
Error: /dev/sr0: unrecognised disk label
Model: VBOX CD-ROM (scsi)
Disk /dev/sr0: 53.5MB
Sector size (logical/physical): 2048B/2048B
Partition Table: unknown
Disk Flags:
```

This screenshot is the result of running the parted -l command, which shows sdb1 as well as the file extension created which was ext4.

```

Chandler@Ubuntu:~$ sudo mkdir /cyse
[sudo] password for Chandler:
Chandler@Ubuntu:~$ cd /cyse
Chandler@Ubuntu:~$ cd
Chandler@Ubuntu:~$ sudo mount /dev/sdb1 /cyse
Chandler@Ubuntu:~$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
tmpfs           369972      1528   368444    1% /run
/dev/sda3       21597704 12136264  8338984   60% /
tmpfs          1849852      0 1849852    0% /dev/shm
tmpfs           5120         4    5116    1% /run/lock
/dev/sda2       524252      6220   518032    2% /boot/efi
tmpfs          369968      112   369856    1% /run/user/1001
/dev/sr0        52272      52272      0 100% /media/Chandler/VBox_GAs_7.0.14
/dev/sdb1       204108       24   187604    1% /cyse
Chandler@Ubuntu:~$ cd /cyse
Chandler@Ubuntu:~$ touch cande041.txt
touch: cannot touch 'cande041.txt': Permission denied
Chandler@Ubuntu:~$ sudo touch cande041.txt
Chandler@Ubuntu:~$ sudo echo "Chandler Anderson" > cande041.txt
bash: cande041.txt: Permission denied
Chandler@Ubuntu:~$ vi cande041.txt
Chandler@Ubuntu:~$ sudo vi cande041.txt
Chandler@Ubuntu:~$ ls
cande041.txt  lost+found
Chandler@Ubuntu:~$ cat cande041.txt
Chandler Anderson
Chandler@Ubuntu:~$ cd
Chandler@Ubuntu:~$ sudo umount /dev/sdb1
Chandler@Ubuntu:~$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
tmpfs           369972      1520   368452    1% /run
/dev/sda3       21597704 12136276  8338972   60% /
tmpfs          1849852      0 1849852    0% /dev/shm
tmpfs           5120         4    5116    1% /run/lock
/dev/sda2       524252      6220   518032    2% /boot/efi
tmpfs          369968      108   369860    1% /run/user/1001
/dev/sr0        52272      52272      0 100% /media/Chandler/VBox_GAs_7.0.14
Chandler@Ubuntu:~$ cd /cyse
Chandler@Ubuntu:~$ ls
Chandler@Ubuntu:~$

```

Part 3, Steps 4-8: The final 4 steps are shown in the screenshot above. When I mounted the partition on the cyse directory, I was able to create a file and display it as well as view the contents. When I unmounted the partition, I was no longer able to see the sdb1 partition, and when I changed to the cyse directory, I was not able to view the file I created.