

OLD DOMINION UNIVERSITY
CYSE 270 LINUX SYSTEM FOR CYBERSECURITY

Assignment #7 Manage Local Storage

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TASK A

```
cam@cam-linux:~$ ls /dev/sd*
/dev/sda  /dev/sda1  /dev/sda2  /dev/sda5

cam@cam-linux:~$ sudo fdisk -l
[Good] password for cam:
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: 55.45 MiB, 58130432 bytes, 113536 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: 219 MiB, 229638144 bytes, 448512 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: 65.1 MiB, 68259840 bytes, 133320 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: 65.22 MiB, 68378624 bytes, 133552 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: 66.64 MiB, 69054472 bytes, 136456 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: 50.98 MiB, 53432320 bytes, 104360 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: 11.102 GiB, 12083853312 bytes, 2363776 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
Disklabel type: dos
Disk Identifier: 0x47022ed6

Device Boot Start End Sectors Size Id Type
/dev/sda1 * 2048 10506015 10506016 12.9G FAT32
/dev/sda2 1052670 25161727 24109058 11.5G 5 extended
/dev/sda5 1052672 25161727 24109056 11.5G 83 Linux

Disk /dev/loop7: 32.42 MiB, 33980416 bytes, 66368 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/loop8: 32.45 MiB, 34017280 bytes, 66440 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
cam@cam-linux:~$
```

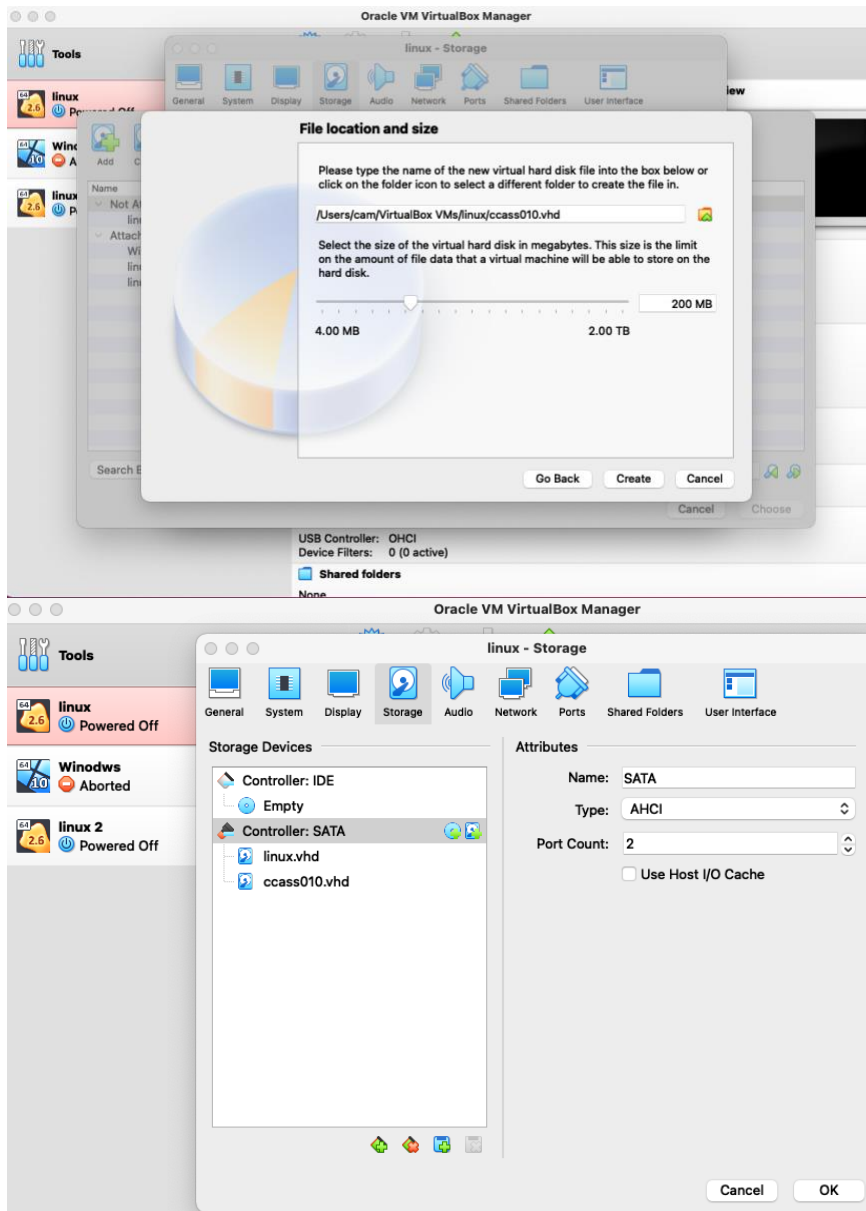
```
cam@cam-linux:~$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 12.9GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number Start End Size Type File system Flags
 1 1049kB 538MB 537MB primary fat32 boot
 2 539MB 12.9GB 12.3GB extended
 5 539MB 12.9GB 12.3GB logical ext4
cam@cam-linux:~$
```

Explanation (Step 1-3)

- I use “ls /dev/sd*” to see the current hard disk devices.
- I use “sudo fdisk -l” to list the current hard disk partitions.
- I use “sudo parted -l” to list the current hard disk partition table

TASK B



Explanation (Step 1-2)

- In the Oracle VM VirtualBox setting, I attach a new virtual hard disk with the size of 200 MB to my current Linux VM and name it as “ccass010.vdi”
- I load this virtual hard disk to my virtual machine.

The image consists of two screenshots of a Linux terminal window. The top screenshot shows the output of the `ls /dev/sd*` command, listing disks `/dev/sda` through `/dev/sdb`. It then shows the output of `sudo fdisk -l`, displaying detailed information for disks `/dev/loop0` through `/dev/loop7`. The bottom screenshot shows the output of `sudo parted -l`, displaying the partition table for disks `/dev/sda` and `/dev/sdb`. The partition table for `/dev/sda` shows three partitions: a primary fat32 boot partition, an extended partition, and a logical ext4 partition. The partition table for `/dev/sdb` is unknown.

```
cam@cam-linux:~$ ls /dev/sd*
/dev/sda  /dev/sda1  /dev/sda2  /dev/sda5  /dev/sdb
cam@cam-linux:~$ sudo fdisk -l
[sudo] password for cam:
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

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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: 65.1 MiB, 68259840 bytes, 133320 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: 66.64 MiB, 69865472 bytes, 136456 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: 65.22 MiB, 68378624 bytes, 133552 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: 50.98 MiB, 53432320 bytes, 104360 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: 32.42 MiB, 33980416 bytes, 66368 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

cam@cam-linux:~$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 12.9GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End     Size    Type     File system  Flags
  1      1049kB  538MB   537MB   primary  fat32        boot
  2      539MB   12.9GB  12.3GB  extended
  5      539MB   12.9GB  12.3GB  logical  ext4

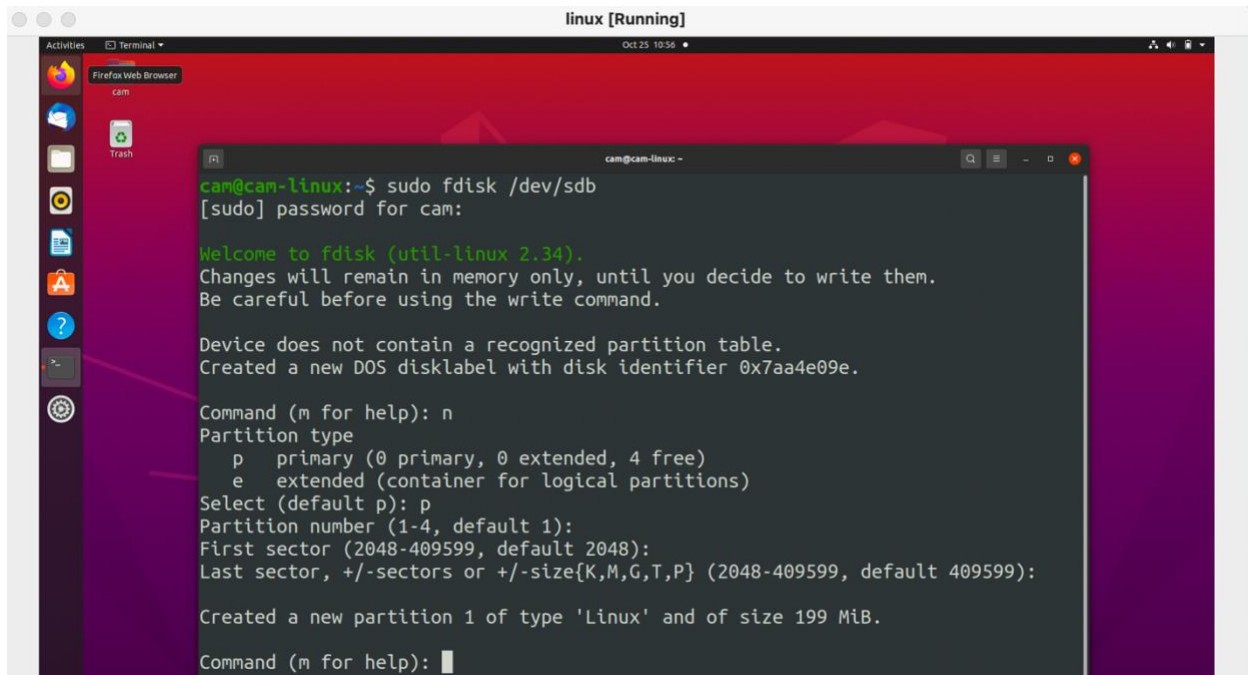
Error: /dev/sdb: unrecognised disk label
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 210MB
Sector size (logical/physical): 512B/512B
Partition Table: unknown
Disk Flags:

cam@cam-linux:~$
```

Explanation (Step 3)

- I repeat the steps in Task A. When I ran it this time a new disk appears (`/dev/sdb`)

TASK C



```
linux [Running]
Oct 25 10:56

cam@cam-linux:~$ sudo fdisk /dev/sdb
[sudo] password for cam:

Welcome to fdisk (util-linux 2.34).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0x7aa4e09e.

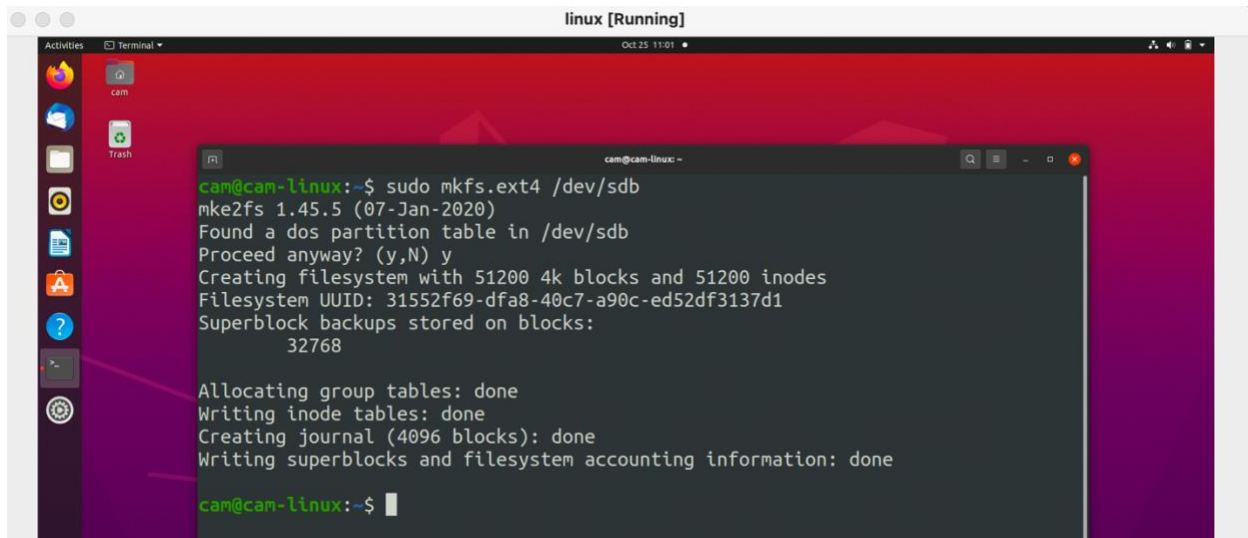
Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1):
First sector (2048-409599, default 2048):
Last sector, +/-sectors or +/-size[K,M,G,T,P] (2048-409599, default 409599):

Created a new partition 1 of type 'Linux' and of size 199 MiB.

Command (m for help):
```

Explanation (Step 1)

- I use the fdisk command to create a new primary partition on the new virtual hard disk attached in Part II.



```
linux [Running]
Oct 25 11:01

cam@cam-linux:~$ sudo mkfs.ext4 /dev/sdb
mke2fs 1.45.5 (07-Jan-2020)
Found a dos partition table in /dev/sdb
Proceed anyway? (y,N) y
Creating filesystem with 51200 4k blocks and 51200 inodes
Filesystem UUID: 31552f69-dfa8-40c7-a90c-ed52df3137d1
Superblock backups stored on blocks:
    32768

Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Writing superblocks and filesystem accounting information: done

cam@cam-linux:~$
```

Explanation (Step 2)

- I use “sudo mkfs.ext4 /dev/sdb” to create an ext4 filesystem on the new partition.

The image consists of two screenshots of a Linux terminal window. The top screenshot shows the output of the `ls /dev/sd*` command, listing several disk devices. The bottom screenshot shows the output of the `sudo parted -l` command, displaying detailed information about the disks `/dev/sda` and `/dev/sdb`, including their models, sizes, sector sizes, partition tables, and flags.

```
linux [Running]
cam@cam-linux:~$ ls /dev/sd*
/dev/sda /dev/sda1 /dev/sda2 /dev/sda5 /dev/sdb
cam@cam-linux:~$ sudo fdisk -l
Disk /dev/loop0: 4 KiB, 4096 bytes, 8 sectors
Units: sectors of 1 * 512 = 512 bytes
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cam@cam-linux:~$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 12.9GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

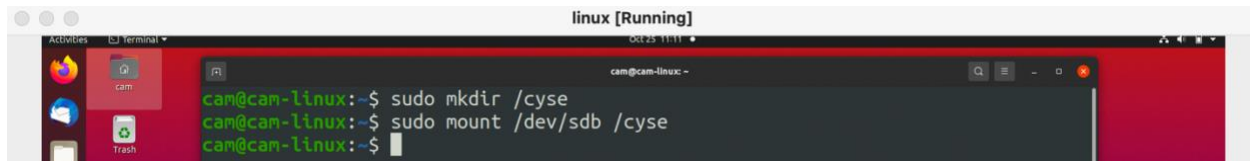
Number  Start   End     Size    Type     File system  Flags
  1      1049kB  538MB   537MB   primary  fat32        boot
  2      539MB   12.9GB  12.3GB   extended
  5      539MB   12.9GB  12.3GB   logical  ext4

Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 210MB
Sector size (logical/physical): 512B/512B
Partition Table: loop
Disk Flags:

Number  Start   End     Size    File system  Flags
  1      0.00B   210MB   210MB   ext4
```

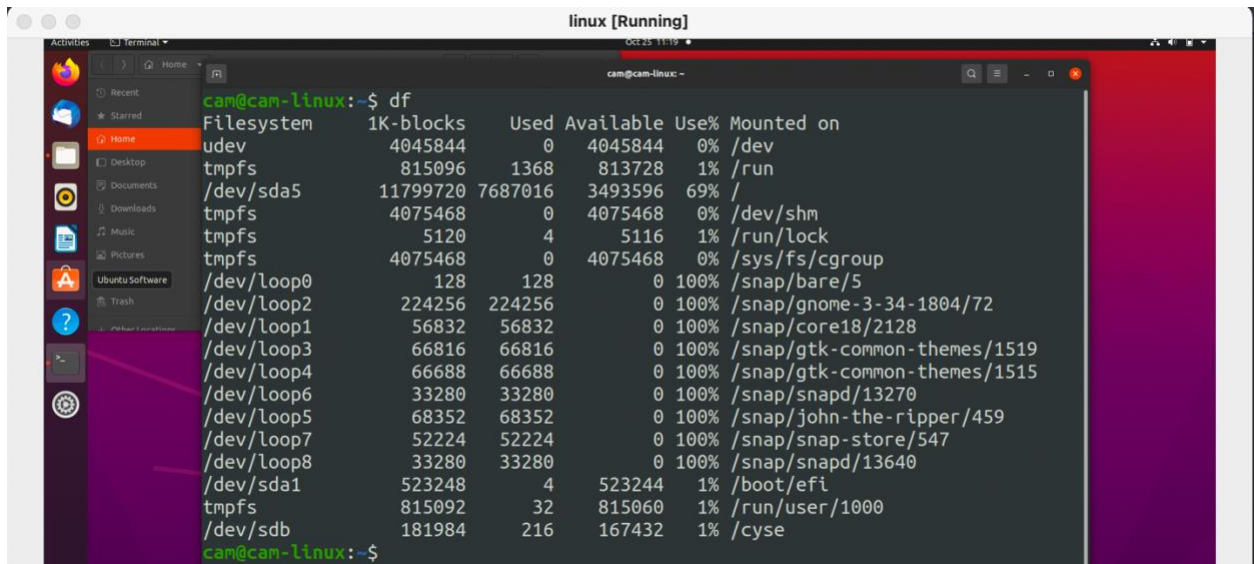
Explanation (Step 3)

- I repeat the steps in Part I
 - `/dev/sdb` now has a disk label and partition table. Also has the file system of `ext4`.



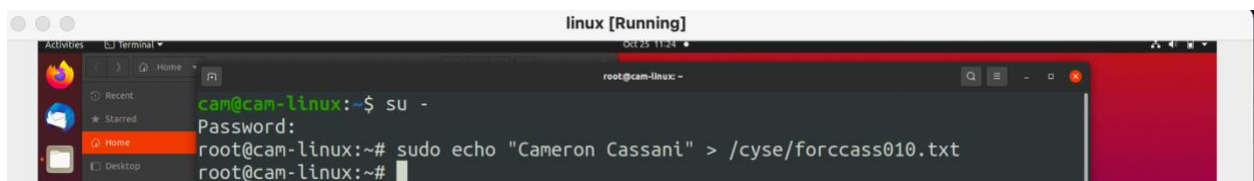
Explanation (Step 4)

- I make a new directory named /cyse using “sudo mkdir /cyse”. I mount the new partition under this directory using “sudo mount /dev/sdb /cyse”.



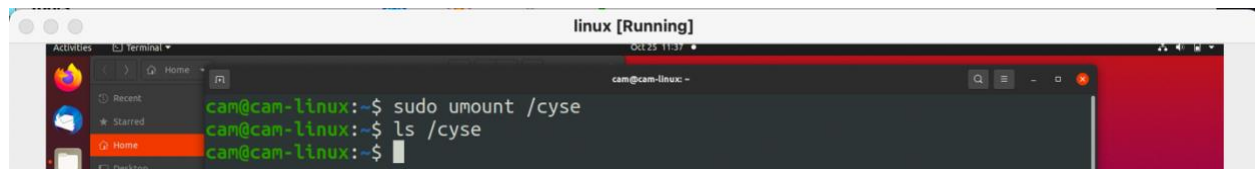
Explanation (Step 5)

- I use the “df” command to check the mounting point of the new partition.



Explanation (Step 6)

- I create a new file “forccass010.txt in the directory /cyse and put my name in that file using “sudo echo “Cameron Cassani” > /cyse/forccass010.txt”



Explanation (Step 7-8)

- I use “sudo umount /cyse” to unmount the /cyse directory.
- I use “ls /cyse” to check the contents in /cyse directory.
 - No files show up