Kowalski Lab 7 – Manage Local Storage

CYSE 270: Linux System for Cybersecurity

Part I– Check your file system (30 points).

Submit the screenshot for All the three steps.

Step 1. Execute the ls /dev/sd* command to see the current hard disk devices. [use sudo]

sudo ls /dev/sd*

```
prescott-kowalski@CYSE270Linux:~$ sudo ls /dev/sd*
/dev/sda  /dev/sda1  /dev/sda2
```

Step 2. Execute the fdisk -l command to list the current hard disk partitions. [use sudo]

sudo fdisk -l

```
prescott-kowalski@CYSE270Linux:~$ 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: 73.91 MiB, 77504512 bytes, 151376 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: 11.13 MiB, 11673600 bytes, 22800 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: 516.01 MiB, 541073408 bytes, 1056784 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
```

Step 3. Execute the parted -l command to list the current hard disk partition table. [use sudo]

sudo parted -l

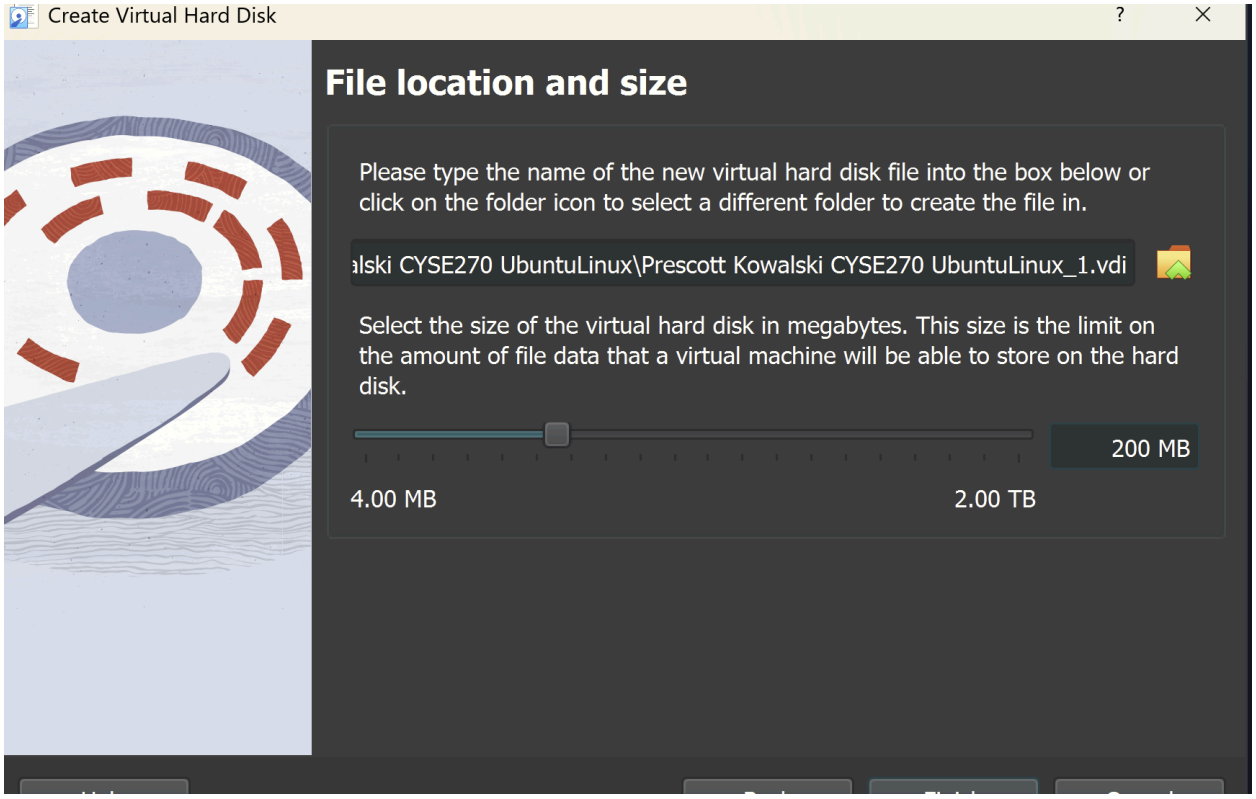
```
prescott-kowalski@CYSE270Linux:~$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 26.8GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start   End     Size    File system  Name  Flags
 1      1049kB  2097kB  1049kB                     bios_grub
 2      2097kB  26.8GB  26.8GB  ext4
```

Part II– Create a new virtual disk (30 points)

Submit the screenshot for All the three steps.

Step 1. In the VM setting, attach a new virtual hard disk with the size of 200 MB to our current Linux

VM. Name it as “your_midas.vdi” [HINT: Please refer to the slides and discussion during the class for week 7]



Step 2. Load this virtual hard disk to your virtual machine.

```
prescott-kowalski@CYSE270Linux:~$ sudo ls /dev/sd*
[sudo] password for prescott-kowalski:
/dev/sda  /dev/sda1  /dev/sda2  /dev/sdb
```

Step 3. Repeat the steps in Part I and highlight the differences after adding the new virtual hard disk.

```
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:
```

After I bolted on the new virtual disk, I reran the same three commands to see what changed. This time around, I spotted a fresh entry—/dev/sdb—that hadn't shown up before. It was sitting there, untouched, no partitions carved out yet. The fdisk readout

confirmed it: two disks now, with the new one clocking in at around 200 MB. parted backed it up, showing the space as raw and unclaimed. That was my proof—this thing was live, wired in, and waiting for me to shape it. I flagged every new piece in my screenshots to show the shift.

Part III– Creating Partitions and Filesystems (60 points)

Submit the screenshot for All the three eight steps.

Step 1. Use the fdisk command to create a new primary partition on the new virtual hard disk attached in Part II.

sudo fdisk /dev/sdb

```
prescott-kowalski@CYSE270Linux:~$ sudo fdisk /dev/sdb

Welcome to fdisk (util-linux 2.39.3).
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 (MBR) disklabel with disk identifier 0x9d27dbfb.

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 (2048-409599, default 2048): w
Value out of range.
First sector (2048-409599, default 2048): 2048
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-409599, default 409599): 409599

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

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
```

Step 2. Use the correct command to create an ext4 filesystem on the new partition.

sudo mkfs.ext4 /dev/sdb1

```
prescott-kowalski@CYSE270Linux:~$ sudo mkfs.ext4 /dev/sdb1
mke2fs 1.47.0 (5-Feb-2023)
Creating filesystem with 50944 4k blocks and 50944 inodes
Filesystem UUID: 2d5cce28-fcee-41e4-9815-9a64fe06ac43
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
```

Step 3. Repeat the steps in Part I and highlight the differences.

sudo ls /dev/sd*, sudo fdisk -l, sudo parted -l

Sdb1, new partitions and new loops

```
/dev/sdb1
```

```
Disk /dev/loop12: 209.98 MiB, 220176384 bytes, 430032 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/loop13: 73.91 MiB, 77500416 bytes, 151368 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/loop14: 249.22 MiB, 261324800 bytes, 510400 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
```

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

Number  Start   End    Size   Type     File system  Flags
 1      1049kB  210MB  209MB  primary  ext4
```

Step 4. Make a new directory named /cyse. And mount the new partition under this directory.

sudo mkdir /cyse

sudo mount /dev/sdb1 /cyse

```
prescott-kowalski@CYSE270Linux:~$ sudo mkdir /cyse
prescott-kowalski@CYSE270Linux:~$ sudo mount /dev/sdb1 /cyse
```

Step 5. Use the df command to check the mounting point of the new partition.

df -h

```
prescott-kowalski@CYSE270Linux:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           1.5G  1.6M  1.5G   1% /run
/dev/sda2        25G   12G   13G  49% /
tmpfs           7.2G     0  7.2G   0% /dev/shm
tmpfs           5.0M  8.0K  5.0M   1% /run/lock
tmpfs           1.5G  128K  1.5G   1% /run/user/1000
/dev/sdb1       171M   24K  157M   1% /cyse
```

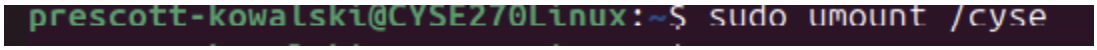
Step 6. Create a new file named for YourMIDAS.txt (replace YourMIDAS with your MIDAS ID) in the directory /cyse and put your name in that file.

echo "Prescott Kowalski" | sudo tee /cyse/pkowa002.txt

```
prescott-kowalski@CYSE270Linux:~$ echo "Prescott Kowalski" | sudo tee /cyse/pkowa002.txt
Prescott Kowalski
```

Step 7. Unmount /cyse directory.

sudo umount /cyse



Step 8. Check the contents in /cyse directory. What do you find?

ls /cyse

The directory is empty after unmounting