

CYSE 270: Linux System for Cybersecurity

Frederick Gervacio

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]

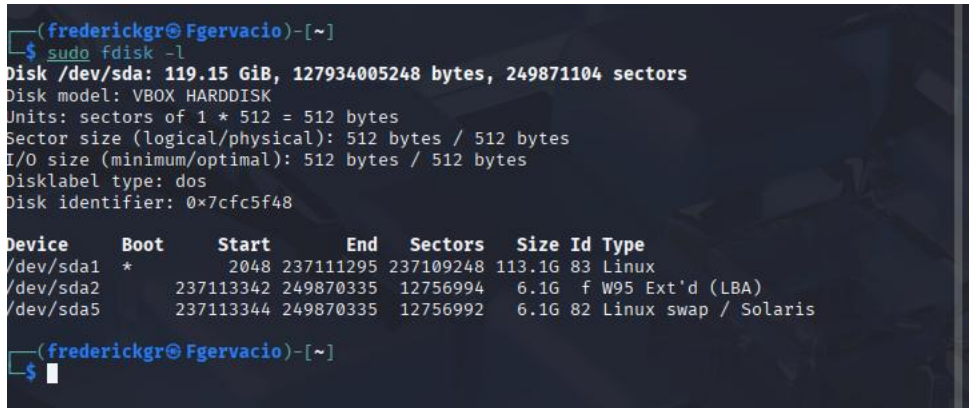
Used suo `ls /dev/sd*` command to see current hard disk devices as requested and added a space after “ls”



```
frederickgr@Fgervacio: ~  
File Actions Edit View Help  
zsh: corrupt history file /home/frederickgr/.zsh_history  
(frederickgr@Fgervacio)-[~]  
$ sudo ls /dev/sd*  
[sudo] password for frederickgr:  
/dev/sda /dev/sda1 /dev/sda2 /dev/sda5  
(frederickgr@Fgervacio)-[~]  
$
```

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

Used “sudo” command with `fdisk -l` to show all current hard disk partitions.



```
(frederickgr@Fgervacio)-[~]  
$ sudo fdisk -l  
Disk /dev/sda: 119.15 GiB, 127934005248 bytes, 249871104 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: 0x7cfc5f48  
  
Device Boot Start End Sectors Size Id Type  
/dev/sda1 * 2048 237111295 237109248 113.1G 83 Linux  
/dev/sda2 237113342 249870335 12756994 6.1G f W95 Ext'd (LBA)  
/dev/sda5 237113344 249870335 12756992 6.1G 82 Linux swap / Solaris  
  
(frederickgr@Fgervacio)-[~]  
$
```

Step 3. Execute the **parted -l** command to list the current hard disk partition table. [use Sudo] The sudo command with parted -l shows list of current hard disk partition table.

```
(frederickgr@fgervacio)-[~]
└─$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 128GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

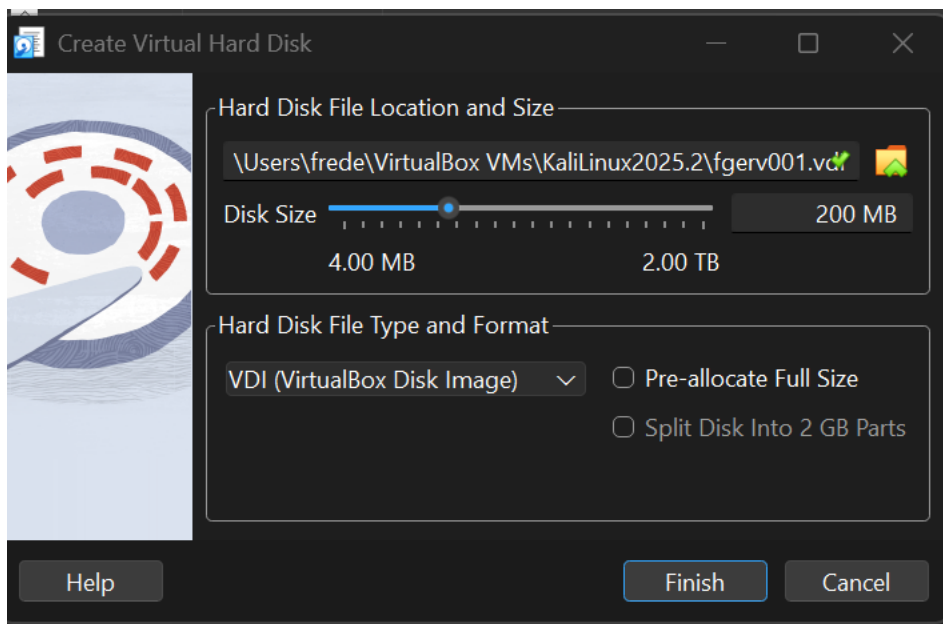
Number  Start   End     Size    Type     File system  Flags
  1      1049kB  121GB   121GB   primary  ext4          boot
  2      121GB   128GB   6532MB  extended lba
  5      121GB   128GB   6532MB  logical  linux-swap(v1) swap

(frederickgr@fgervacio)-[~]
└─$
```

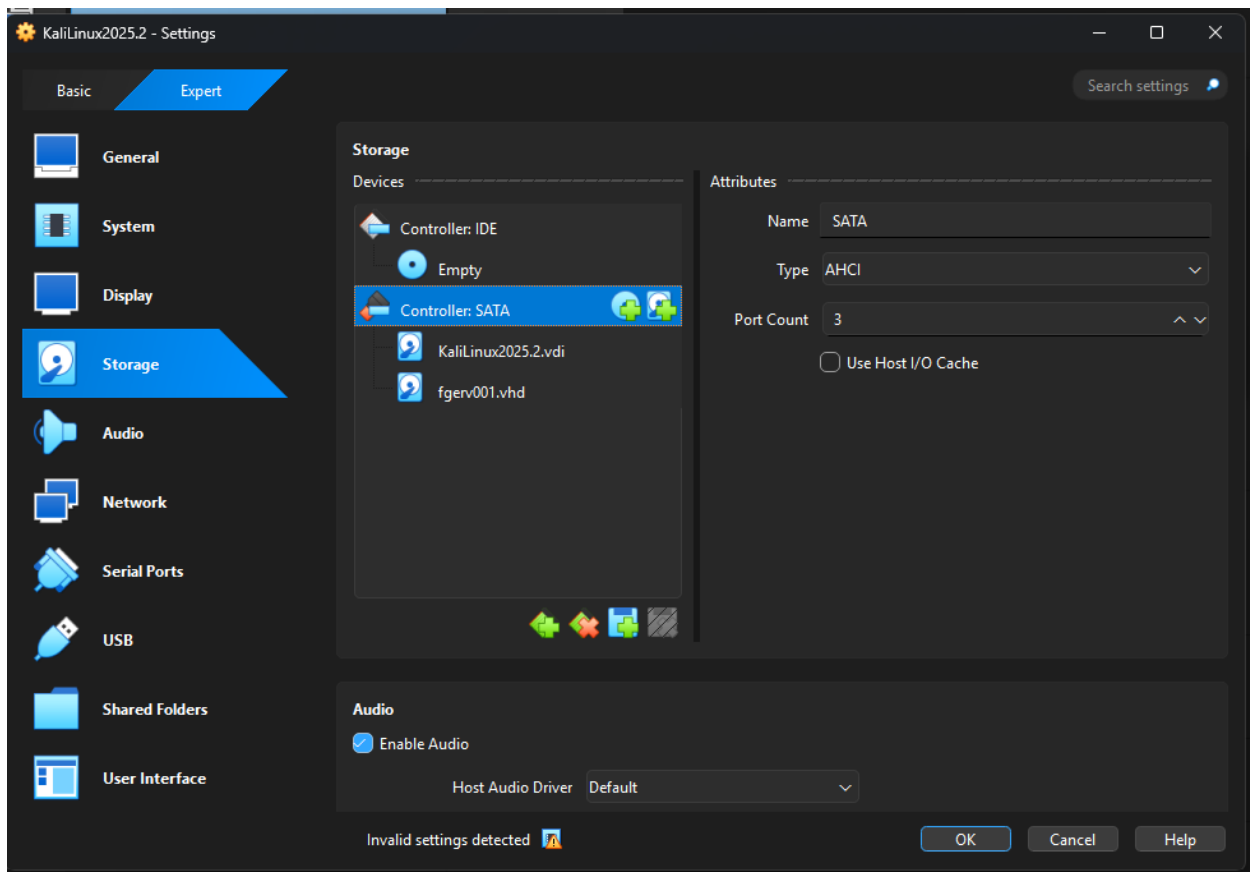
Part II- Create a new virtual disk (30 points)

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] Powered off the machine, clicked settings, then storage and on ‘Controller: SATA’ click add hard drive. Created a new Virtual hard Drive as requested with 200 MB in size and named fgerv001.



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



Step 3. Repeat the steps in Part I and **highlight the differences** after adding the new virtual hard disk. In step one there another hard disk being shown /dev/sdb

```
frederickgr@Fgervacio: ~  
File Actions Edit View Help  
zsh: corrupt history file /home/frederickgr/.zsh_history  
(frederickgr@Fgervacio)-[~]  
└─$ sudo ls /dev/sd*  
[sudo] password for frederickgr:  
/dev/sda /dev/sda1 /dev/sda2 /dev/sda5 /dev/sdb  
(frederickgr@Fgervacio)-[~]  
└─$
```

In step 2 is showing the disk information for the new virtual hard drive Disk /dev/sdb with the size of 200MB

```
frederickgr@Fgervacio: ~  
File Actions Edit View Help  
zsh: corrupt history file /home/frederickgr/.zsh_history  
(frederickgr@Fgervacio)-[~]  
$ sudo ls /dev/sd*  
[sudo] password for frederickgr:  
/dev/sda /dev/sda1 /dev/sda2 /dev/sda5 /dev/sdb  
  
(frederickgr@Fgervacio)-[~]  
$ sudo fdisk -l  
Disk /dev/sdb: 200 MiB, 209715200 bytes, 409600 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  
  
Disk /dev/sda: 119.15 GiB, 127934005248 bytes, 249871104 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: 0x7cfc5f48  
  
Device Boot Start End Sectors Size Id Type  
/dev/sda1 * 2048 237111295 237109248 113.1G 83 Linux  
/dev/sda2 237113342 249870335 12756994 6.1G f W95 Ext'd (LBA)  
/dev/sda5 237113344 249870335 12756992 6.1G 82 Linux swap / Solaris  
  
(frederickgr@Fgervacio)-[~]  
$
```

In step 3 is showing the same information as before except that there's an error for the new virtual hard drive as it can't recognize the disk.

```
(frederickgr@Fgervacio)-[~]  
$ sudo parted -l  
Model: ATA VBOX HARDDISK (scsi)  
Disk /dev/sda: 128GB  
Sector size (logical/physical): 512B/512B  
Partition Table: msdos  
Disk Flags:  
  
Number Start End Size Type File system Flags  
1 1049kB 121GB 121GB primary ext4 boot  
2 121GB 128GB 6532MB extended lba  
5 121GB 128GB 6532MB logical linux-swap(v1) swap  
  
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:  
  
(frederickgr@Fgervacio)-[~]  
$
```

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.

Used the `sudo fdisk /dev/sdb` command to create a new primary partition on the virtual

hard drive. Then following the prompt entered **n** to add new partition, selected **p** to create the primary type, and selected **1** as the partition. Had to hit enter allow setup completion and **w** to save all changes.

```
(frederickgr@Fgervacio)-[~]
└─$ sudo fdisk /dev/sdb

Welcome to fdisk (util-linux 2.41).
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 0xd85bcd81.

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): 1
Value out of range.
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): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.

(frederickgr@Fgervacio)-[~]
└─$
```

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

Used the **sudo mkfs -t ext4 /dev/sdb1** command to create the ext4 filesystem on the new partition .

```
(frederickgr@Fgervacio)-[~]
└─$ sudo mkfs -t ext4 /dev/sdb1
mke2fs 1.47.2 (1-Jan-2025)
Creating filesystem with 203776 1k blocks and 51000 inodes
Filesystem UUID: 9db08aa3-0a9b-40a8-9a29-cf839f306488
Superblock backups stored on blocks:
    8193, 24577, 40961, 57345, 73729

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

(frederickgr@Fgervacio)-[~]
└─$
```

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

Now in this step is showing the new partition that was allocated and it isn't showing an error for step 3 of part 1.

```
(frederickgr@Fgervacio)-[~]
└─$ sudo ls /dev/sd*
/dev/sda /dev/sda1 /dev/sda2 /dev/sda5 /dev/sdb /dev/sdb1

(frederickgr@Fgervacio)-[~]
└─$
```

```
(frederickgr@Fgervacio)-[~]
└─$ sudo fdisk -l
Disk /dev/sdb: 200 MiB, 209715200 bytes, 409600 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: 0xd85bcd81

Device      Boot Start    End Sectors  Size Id Type
/dev/sdb1           2048 409599   407552  199M 83 Linux

Disk /dev/sda: 119.15 GiB, 127934005248 bytes, 249871104 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: 0x7cfc5f48

Device      Boot    Start        End    Sectors  Size Id Type
/dev/sda1   *           2048 237111295 237109248 113.1G 83 Linux
/dev/sda2           237113342 249870335 12756994   6.1G  f W95 Ext'd (LBA)
/dev/sda5           237113344 249870335 12756992   6.1G  82 Linux swap / Solaris

(frederickgr@Fgervacio)-[~]
└─$
```

```
(frederickgr@Fgervacio)-[~]
└─$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 128GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End     Size    Type     File system  Flags
  1      1049kB 121GB   121GB   primary  ext4         boot
  2      121GB  128GB   6532MB  extended lba
  5      121GB  128GB   6532MB  logical  linux-swap(v1) swap

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

(frederickgr@Fgervacio)-[~]
└─$
```

Step 4. Make a new directory named **/cyse**. And **mount** the new partition under this directory. Made a new directory using the `sudo mkdir /cyse` command.

```
(frederickgr@Fgervacio)-[~]
└─$ sudo mkdir /cyse

(frederickgr@Fgervacio)-[~]
└─$ ls /cyse

(frederickgr@Fgervacio)-[~]
└─$
```

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

Used the sudo df command to check the mounting point of the new partition.

```
(frederickgr@Fgervacio)-[~]
└─$ sudo df
Filesystem      1K-blocks    Used Available Use% Mounted on
udev            11909956      0  11909956   0% /dev
tmpfs           2395576     1016   2394560   1% /run
/dev/sda1      116107256 14894344  95268800  14% /
tmpfs           11977860      4  11977856   1% /dev/shm
tmpfs           5120          0     5120    0% /run/lock
tmpfs           1024          0     1024    0% /run/credentials/systemd-journald.servi
ce
tmpfs           11977864     88  11977776   1% /tmp
tmpfs           1024          0     1024    0% /run/credentials/getty@tty1.service
tmpfs           2395572     116   2395456   1% /run/user/1000

(frederickgr@Fgervacio)-[~]
└─$
```

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.

Switched over the directory with **/cyse** and created the file using **sudo nano fgerv001.txt** command, then wrote my name Frederick Gervacio in the file and saved it. Then confirmed the file was in the directory with **ls** command.

```
sn: corrupt history file /home/frederickgr/.zsh_history
(frederickgr@Fgervacio)-[~]
└─$ /cyse

(frederickgr@Fgervacio)-[~/cyse]
└─$ ls
fgerv001.txt.save

(frederickgr@Fgervacio)-[~/cyse]
└─$
```

Step 7. Unmount **/cyse** directory.

Used the **sudo umount /cyse** command to unmount the directory as requested.

```
(frederickgr@Fgervacio)-[~/cyse]
└─$ sudo umount /cyse
[sudo] password for frederickgr:
umount: /cyse: not mounted.
```

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

Found the fgerv001.txt file inside the /cyse directory.

```
(frederickgr@Fgervacio)-[/cyse]
└─$ ls
fgerv001.txt.save
└─$
```