

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]

```
alex@kali: ~  
File Actions Edit View Help  
(alex@kali)-[~]  
└─$ sudo ls /dev/sd*  
[sudo] password for alex:  
/dev/sda /dev/sda1 /dev/sda2 /dev/sda3 /dev/sda4
```

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

```
(alex@kali)-[~]  
└─$ sudo fdisk -l  
Disk /dev/sda: 25 GiB, 26843545600 bytes, 52428800 sectors  
Disk model: 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: 663A9DED-E516-4DA7-89F2-7596A99970F8  
  
Device          Start      End          Sectors      Size Type  
/dev/sda1       2048       34815       32768        16M Linux filesystem  
/dev/sda2       34816     2035711    2000896      977M EFI System  
/dev/sda3      2035712   49709055   47673344    22.7G Linux filesystem  
/dev/sda4      49709056  52426751   2717696      1.3G Linux swap  
  
(alex@kali)-[~]  
└─$ █
```

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

```
(alex@kali)-[~]
└─$ sudo parted -l
Model: VBOX HARDDISK (scsi)
Disk /dev/sda: 26.8GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

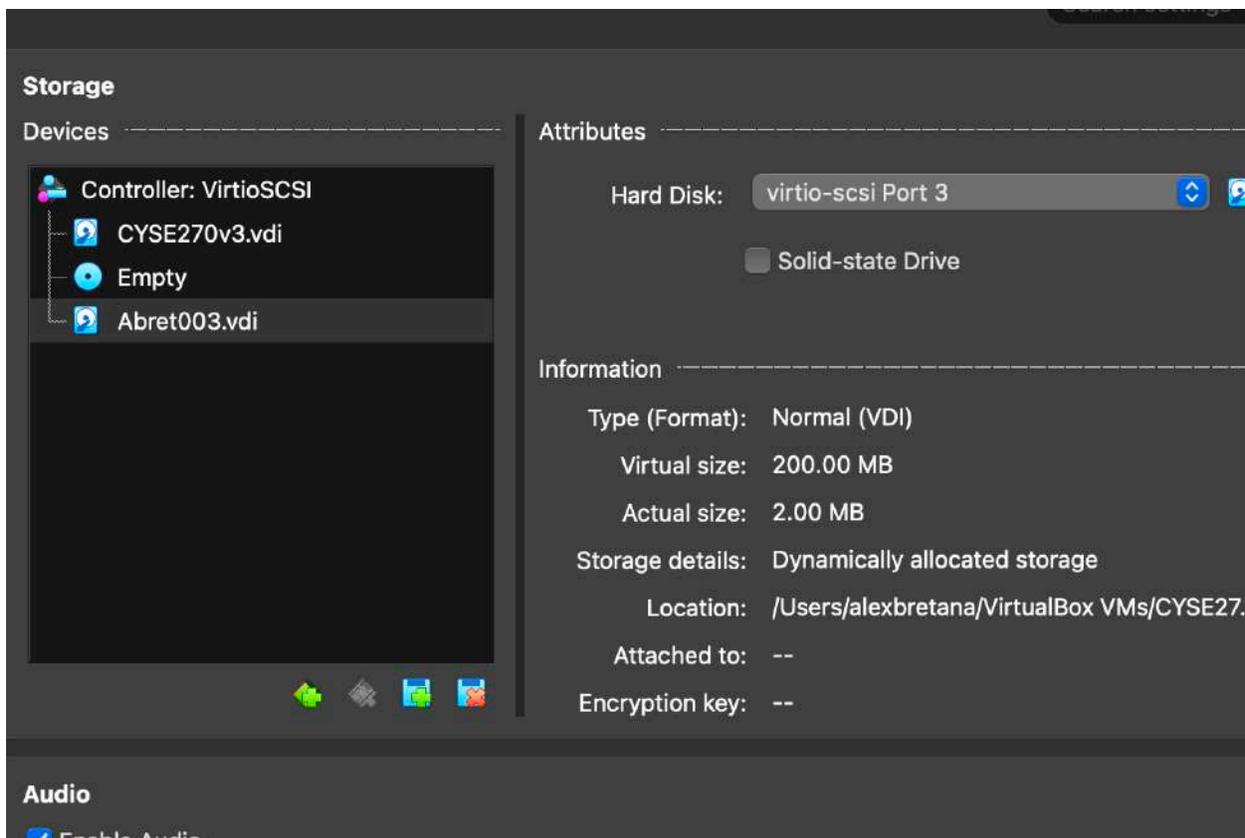
Number   Start   End     Size    File system  Name  Flags
  1       1049kB  17.8MB  16.8MB                boot, esp
  2       17.8MB  1042MB  1024MB  fat16
  3       1042MB  25.5GB  24.4GB  ext4
  4       25.5GB  26.8GB  1391MB  linux-swap(v1)  swap

(alex@kali)-[~]
└─$
```

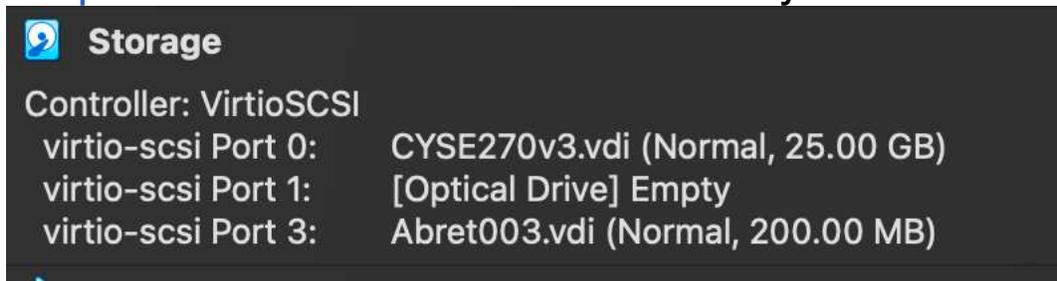
Part II– Create a new virtual disk (30 points)

Submit the screenshot for All the three steps.

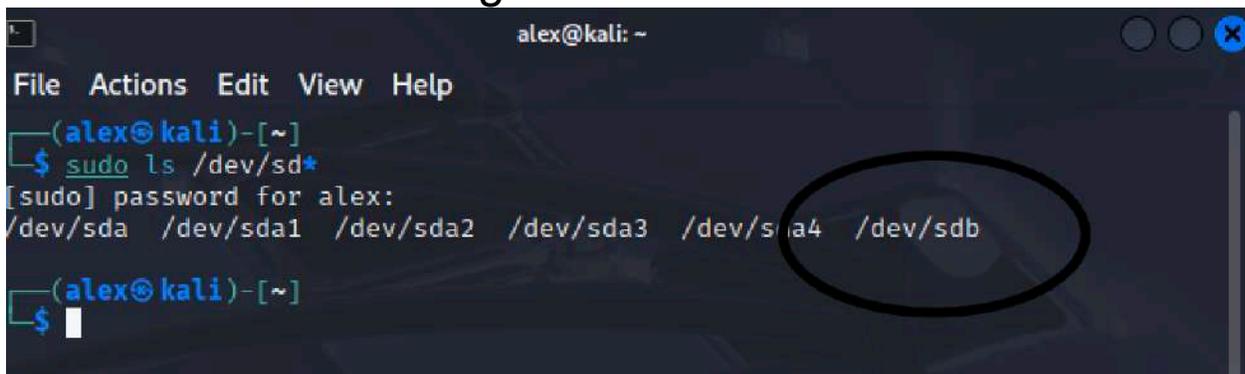
Step 1. In the VM setting, attach a new virtual hard disk with the size of 200 MB to our current Linux VM. Name it as “your_midas.vdi” [HINT: Please refer to the slides and discussion during the class for week 7]



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



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



```
(alex@kali)-[~]
```

```
$ sudo fdisk -l
```

```
Disk /dev/sda: 25 GiB, 26843545600 bytes, 52428800 sectors
```

```
Disk model: 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: 663A9DED-E516-4DA7-89F2-7596A99970F8
```

Device	Start	End	Sectors	Size	Type
/dev/sda1	2048	34815	32768	16M	Linux filesystem
/dev/sda2	34816	2035711	2000896	977M	EFI System
/dev/sda3	2035712	49709055	47673344	22.7G	Linux filesystem
/dev/sda4	49709056	52426751	2717696	1.3G	Linux swap

```
Disk /dev/sdb: 200 MiB, 209715200 bytes, 409600 sectors
```

```
Disk model: 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
```

```
(alex@kali)-[~]
```

```
alex@kali: ~  
File Actions Edit View Help  
Sector size (logical/physical): 512 bytes / 512 bytes  
I/O size (minimum/optimal): 512 bytes / 512 bytes  
  
(alex@kali)-[~]  
└─$ sudo parted -l  
Model: 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  17.8MB  16.8MB                boot, esp  
2       17.8MB  1042MB  1024MB  fat16  
3       1042MB  25.5GB  24.4GB  ext4  
4       25.5GB  26.8GB  1.3GB   linux-swap(v1)  swap  
  
Error: /dev/sdb: unrecognised disk label  
Model: VBOX HARDDISK (scsi)  
Disk /dev/sdb: 210MB  
Sector size (logical/physical): 512B/512B  
Partition Table: unknown  
Disk Flags:  
  
(alex@kali)-[~]  
└─$
```

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.

(fdisk /dev/sdb)

```
alex@kali: ~  
File Actions Edit View Help  
(alex@kali)-[~]  
└─$ sudo fdisk /dev/sdb  
[sudo] password for alex:  
  
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.  
  
The device contains 'ext4' signature and it will be removed by a write command.  
See fdisk(8) man page and --wipe option for more details.  
  
Device does not contain a recognized partition table.  
Created a new DOS (MBR) disklabel with disk identifier 0x8aa24b54.  
  
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):  
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):
```

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

```
alex@kali: ~  
File Actions Edit View Help  
(alex@kali)-[~]  
└─$ sudo mkfs -t ext4 /dev/sdb  
[sudo] password for alex:  
mkfs2fs 1.47.2 (1-Jan-2025)  
/dev/sdb contains a ext4 file system  
   created on Sun Oct 26 16:59:45 2025  
Proceed anyway? (y,N) y  
Creating filesystem with 204800 1k blocks and 51200 inodes  
Filesystem UUID: 38d9d194-5eeb-4535-8163-82b4fe9e50d1  
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  
  
(alex@kali)-[~]  
└─$
```

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

```
alex@kali: ~  
File Actions Edit View Help  
alex@kali)~  
$ sudo ls /dev/sd*  
[sudo] password for alex:  
/dev/sda /dev/sda1 /dev/sda2 /dev/sda3 /dev/sda4 /dev/sdb  
alex@kali)~  
$  
alex@kali)~  
$ sudo parted -l  
Model: 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  17.8MB  16.8MB  
2      17.8MB  1042MB  1024MB  fat16        boot, esp  
3      1042MB  25.5GB  24.4GB  ext4  
4      25.5GB  26.8GB  1391MB  linux-swap(v1)  swap  
Model: 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  
alex@kali: ~  
File Actions Edit View Help  
alex@kali)~  
$ sudo fdisk -l  
Disk /dev/sda: 25 GiB, 26843545600 bytes, 52428800 sectors  
Disk model: 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: 663A9DED-E516-4DA7-89F2-7596A99970F8  
Device      Start  End  Sectors  Size Type  
/dev/sda1   2048   34815  32768   16M Linux filesystem  
/dev/sda2   34816  2035711  2000896  977M EFI System  
/dev/sda3   2035712  49709055  47673344  22.7G Linux filesystem  
/dev/sda4   49709056  52428800  2719744  1.2G Linux swap  
Disk /dev/sdb: 200 MiB, 209715200 bytes, 409600 sectors  
Disk model: 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  
alex@kali)~  
$
```

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

```
(alex@kali)-[~]
└─$ sudo mkdir /cyse

(alex@kali)-[~]
└─$ ls /cyse

(alex@kali)-[~]
└─$ sudo mount /dev/sdb /cyse
```

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

```
(alex@kali)-[~]
└─$ sudo df
```

Filesystem	1K-blocks	Used	Available	Use%	Mounted on
udev	916252	0	916252	0%	/dev
tmpfs	201288	940	200348	1%	/run
/dev/sda3	23286176	13035788	9042172	60%	/
tmpfs	1006428	4	1006424	1%	/dev/shm
efivarfs	256	11	246	4%	/sys/firmware/efi/efivars
tmpfs	5120	0	5120	0%	/run/lock
tmpfs	1024	0	1024	0%	/run/credentials/systemd-jou
rnald.service					
tmpfs	1006428	72	1006356	1%	/tmp
/dev/sda2	1000160	192	999968	1%	/boot/efi
tmpfs	1024	0	1024	0%	/run/credentials/getty@tty1.
service					
tmpfs	201284	116	201168	1%	/run/user/1000
/dev/sdb	186299	64	171899	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.

```
(alex@kali)-[~]
└─$ cd /cyse

(alex@kali)-[/cyse]
└─$ sudo vi abret003.txt

(alex@kali)-[/cyse]
└─$ ls
abret003.txt  lost+found

(alex@kali)-[/cyse]
└─$
```

Step 7. Unmount /cyse directory.

```
(alex@kali)-[~]
└─$ sudo umount /cyse
```

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

Nothing, there is no cyse directory since it was unmounted.

```
(alex@kali)-[~]
└─$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
```