CYSE 270: Linux System for Cybersecurity

Lab 7 – Manage Local Storage

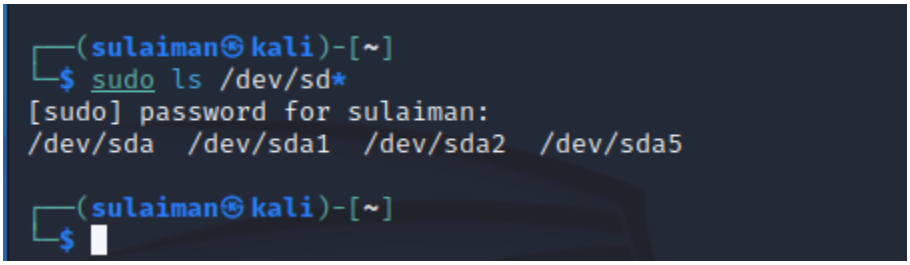
CYSE 270: Linux System for Cybersecurity

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

Submit the screenshot for All three steps.

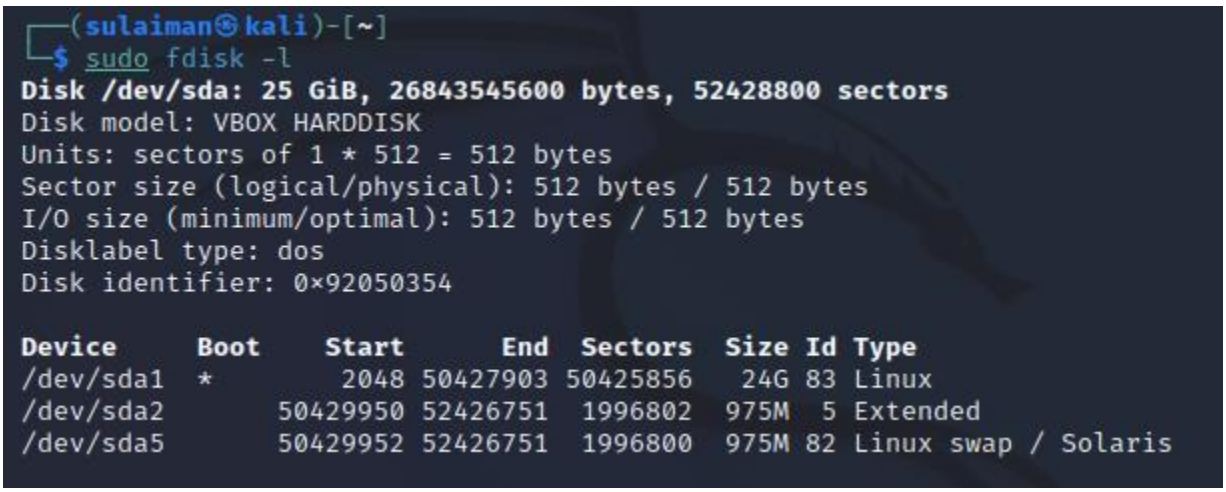
Step 1. Execute the ls /dev/sd* command to see the current hard disk devices. [use sudo]

I used the sudo ls /dev/sd* command to see the current hard disk devices.



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

To check the current hard disk partition, I used the sudo fdisk -l command.



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

To check the current hard disk partition table, I used the sudo parted -l command.

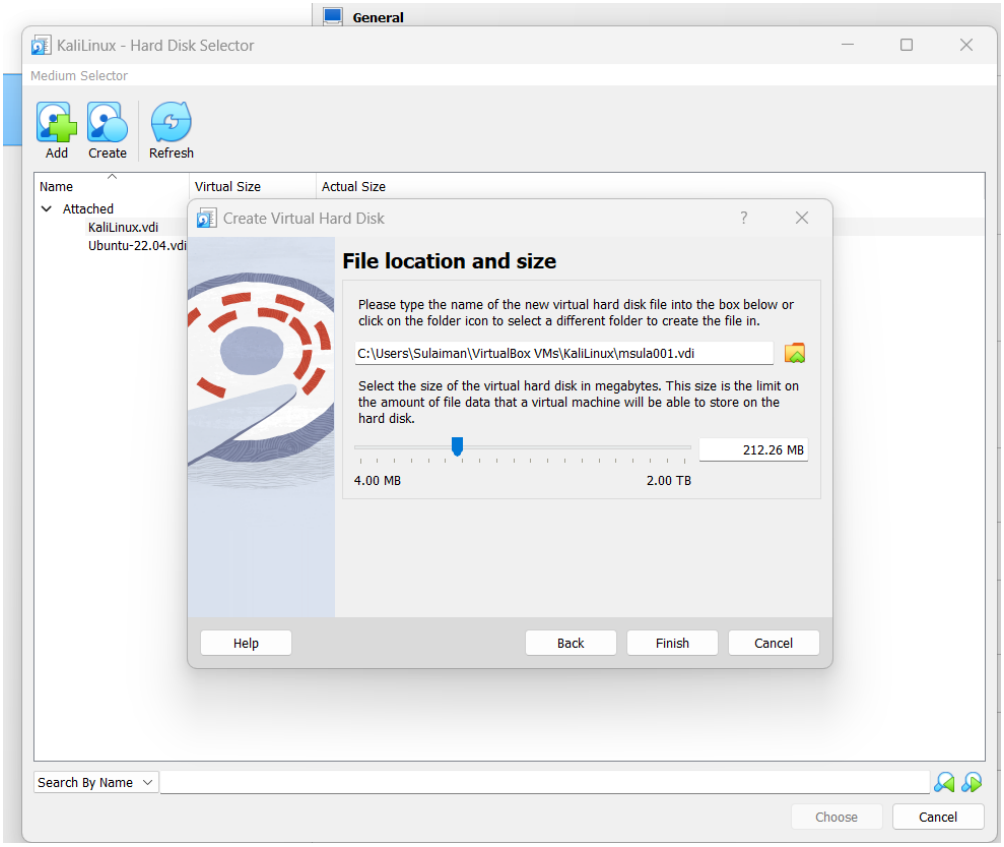
```
┌──(sulaiman㉿kali)-[~]
└─$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 26.8GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End     Size    Type      File system     Flags
 1      1049kB  25.8GB  25.8GB  primary   ext4            boot
 2      25.8GB  26.8GB  1022MB  extended
 5      25.8GB  26.8GB  1022MB  logical   linux-swap(v1)  swap
```

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

Submit the screenshot for All the three steps.

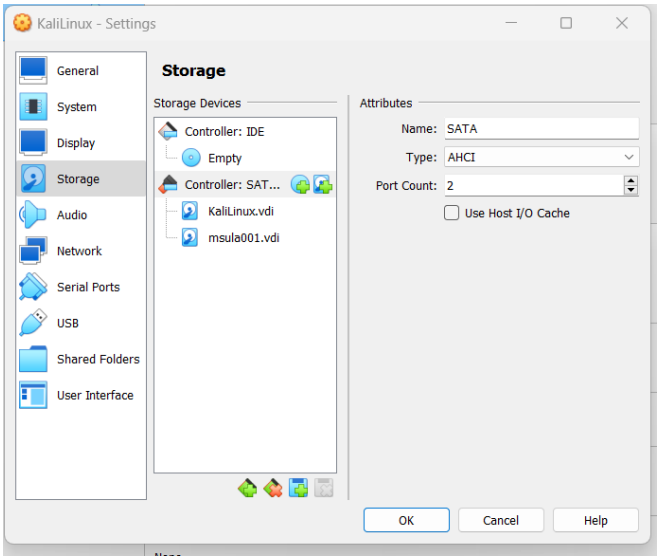
Step 1. In the VM setting, attach a new virtual hard disk with the size of 200 MB to our current Linux VM. Name it as “your_midas.vdi” [HINT: Please refer to the slides and discussion during the class for week 7]

I powered off my machine and created a new storage about 212MB from the settings and named it as msula001.



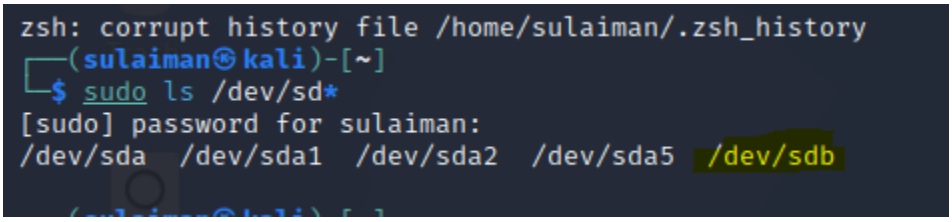
Step 2. Load this virtual hard disk to your virtual machine.

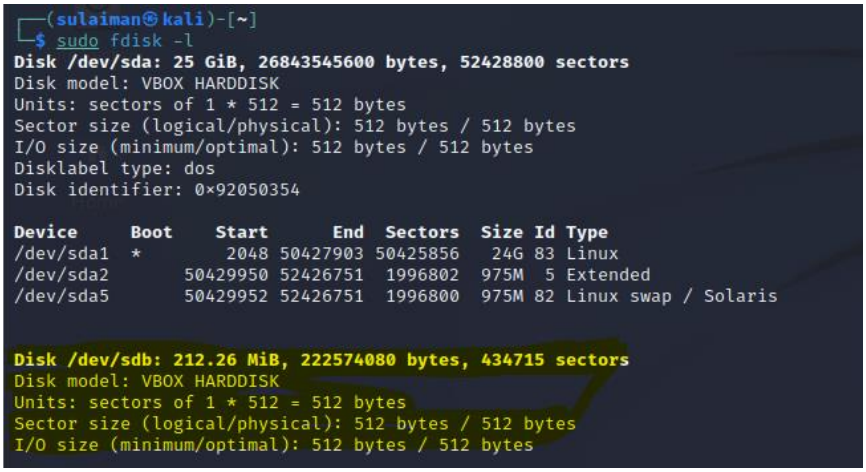
In the below screenshot, you can see that I loaded the virtual hard disk on my virtual machine.



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

I have highlighted the differences below in the screenshots.





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

Number  Start   End     Size    Type      File system     Flags
 1      1049kB  25.8GB  25.8GB  primary   ext4            boot
 2      25.8GB  26.8GB  1022MB  extended
 5      25.8GB  26.8GB  1022MB  logical   linux-swap(v1)  swap


Error: /dev/sdb: unrecognised disk label
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 223MB
Sector size (logical/physical): 512B/512B
Partition Table: unknown
Disk Flags:
```

Part III– Creating Partitions and Filesystems (60 points)

Submit the screenshot for All 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.

To create a new primary partition, I used the sudo fdisk /dev/sdb command. Then, I hit n to add a new partition, I selected p to create the primary type, and I also selected 1 as the partition number and saved changes using the w command.

```
┌──(sulaiman㉿kali)-[~]
└─$ sudo fdisk /dev/sdb

Welcome to fdisk (util-linux 2.38.1).
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 0x2500e2e8.

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 (2048-434714, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-434714, default 434714):

Created a new partition 1 of type 'Linux' and of size 211.3 MiB.

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

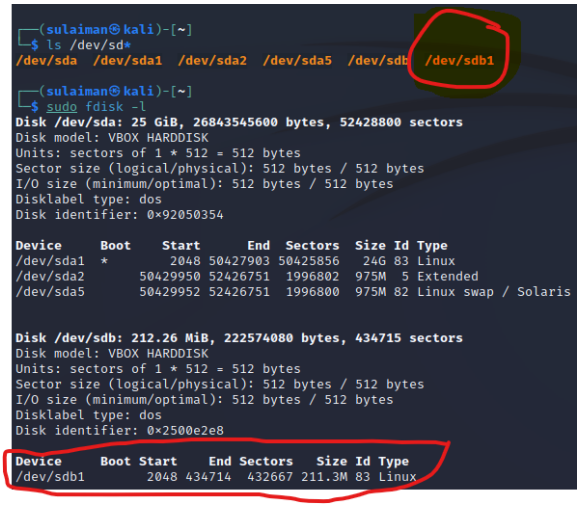
Step 2. Use the correct command to create an ext4 filesystem on the new partition.

I used the sudo mkfs -t ext4 /dev/sdb1 command to create ab ext4 filesystem on the new partition.

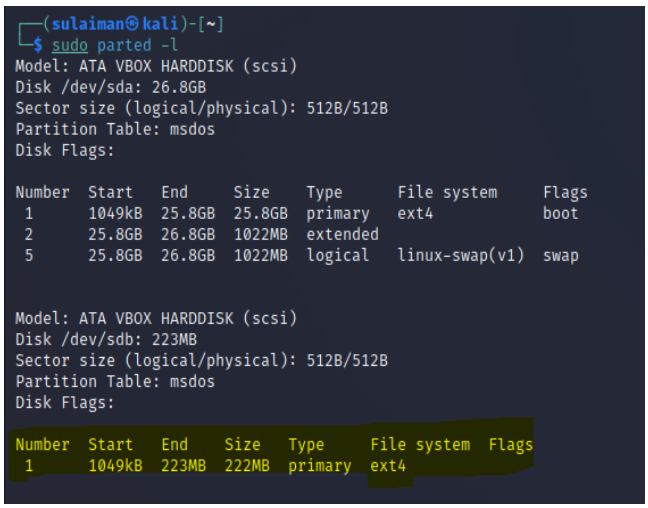
```
┌──(sulaiman㉿kali)-[~]
└─$ sudo mkfs -t  ext4  /dev/sdb1
mke2fs 1.46.6-rc1 (12-Sep-2022)
Creating filesystem with 216332 1k blocks and 54000 inodes
Filesystem UUID: 0555c1d5-d6f8-49d0-8060-7fb2d8f3889a
Superblock backups stored on blocks:
        8193, 24577, 40961, 57345, 73729, 204801

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.

The differences are marked below on the screenshots.



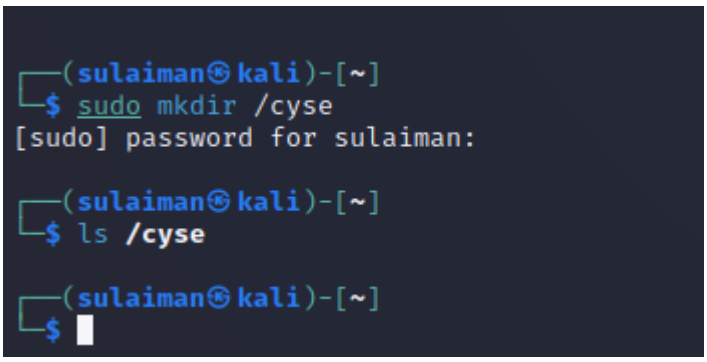
```
┌──(sulaiman㉿kali)-[~]
└─$ ls /dev/sd*
/dev/sda  /dev/sda1  /dev/sda2  /dev/sda5  /dev/sdb  /dev/sdb1

┌──(sulaiman㉿kali)-[~]
└─$ sudo fdisk -l
Disk /dev/sda: 25 GiB, 26843545600 bytes, 52428800 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: 0x92050354

Device     Boot    Start      End  Sectors  Size Id Type
/dev/sda1  *        2048 50427903 50425856   24G 83 Linux
/dev/sda2       50429950 52426751  1996802  975M  5 Extended
/dev/sda5       50429952 52426751  1996800  975M 82 Linux swap / Solaris


Disk /dev/sdb: 212.26 MiB, 222574080 bytes, 434715 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: 0x2500e2e8

Device     Boot Start    End Sectors   Size Id Type
/dev/sdb1        2048 434714  432667 211.3M 83 Linux
```



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

Number  Start   End     Size    Type      File system     Flags
 1      1049kB  25.8GB  25.8GB  primary   ext4            boot
 2      25.8GB  26.8GB  1022MB  extended
 5      25.8GB  26.8GB  1022MB  logical   linux-swap(v1)  swap


Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 223MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End    Size   Type     File system  Flags
 1      1049kB  223MB  222MB  primary  ext4
```

c

I made a new directory using the sudo mkdir /cyse command.



```
┌──(sulaiman㉿kali)-[~]
└─$ sudo mkdir /cyse
[sudo] password for sulaiman:

┌──(sulaiman㉿kali)-[~]
└─$ ls /cyse

┌──(sulaiman㉿kali)-[~]
└─$
```

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

I used the sudo df command to check the mounting point.

```
┌──(sulaiman㉿kali)-[~]
└─$ sudo df
Filesystem     1K-blocks     Used Available Use% Mounted on
udev             4261652        0   4261652   0% /dev
tmpfs             859976      960    859016   1% /run
/dev/sda1       24640544 13326448  10037068  58% /
tmpfs            4299876        0   4299876   0% /dev/shm
tmpfs               5120        0      5120   0% /run/lock
tmpfs             859972       80    859892   1% /run/user/1000
/dev/sdb1         196868       14    181942   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.

To create a file, I switched to cyse directory using the cd /cyse command. Then, I used the sudo nano msula001.txt to create a file and entered my name Sulaiman. To save the content on the file I hit ctrl+x and confirmed using enter.

```
┌──(sulaiman㉿kali)-[/cyse]
└─$ pwd
/cyse

┌──(sulaiman㉿kali)-[/cyse]
└─$ sudo nano msula001.txt

┌──(sulaiman㉿kali)-[/cyse]
└─$ cat msula001.txt
Sulaiman

┌──(sulaiman㉿kali)-[/cyse]
└─$ ls
lost+found  msula001.txt
```

Step 7. Unmount /cyse directory.

I used the sudo umount /cyse command to unmount the /cyse directory.

```
┌──(sulaiman㉿kali)-[~]
└─$ sudo umount /cyse
```

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

To check the contents I went back to the directory using the cd /cyse command and used the ls command but the file name msula001.txt was not there.

```
┌──(sulaiman㉿kali)-[~]
└─$ sudo df
Filesystem     1K-blocks     Used Available Use% Mounted on
udev             4261652        0   4261652   0% /dev
tmpfs             859976      960    859016   1% /run
/dev/sda1       24640544 13326508  10037008  58% /
tmpfs            4299876        0   4299876   0% /dev/shm
tmpfs               5120        0      5120   0% /run/lock
tmpfs             859972       80    859892   1% /run/user/1000

┌──(sulaiman㉿kali)-[~]
└─$ cd /cyse

┌──(sulaiman㉿kali)-[/cyse]
└─$ ls

┌──(sulaiman㉿kali)-[/cyse]
└─$
```

I also unmounted the entire directory using the sudo umount /dev/sdb1 /cyse and mounted it back sudo mount /dev/sdb1 /cyse and to check the contents I used the sudo df.

```
┌──(sulaiman㉿kali)-[/cyse]
└─$ sudo mount /dev/sdb1  /cyse

┌──(sulaiman㉿kali)-[/cyse]
└─$ sudo df
Filesystem     1K-blocks     Used Available Use% Mounted on
udev             4261652        0   4261652   0% /dev
tmpfs             859976      960    859016   1% /run
/dev/sda1       24640544 13326524  10036992  58% /
tmpfs            4299876        0   4299876   0% /dev/shm
tmpfs               5120        0      5120   0% /run/lock
tmpfs             859972       80    859892   1% /run/user/1000
/dev/sdb1         196868       15    181941   1% /cyse

┌──(sulaiman㉿kali)-[/cyse]
└─$
```