

Lab 7 – Manage Local Storage

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

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

```
(didi㉿kali)-[~]
└─$ sudo ls /dev/sda
/dev/sda

(didi㉿kali)-[~]
└─$ sudo ls /dev/sda1
/dev/sda1

(didi㉿kali)-[~]
└─$ sudo ls /dev/sdb
/dev/sdb

(didi㉿kali)-[~]
└─$
```

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

```
(didi㉿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: 0x1d9f791e

Device      Boot   Start     End   Sectors  Size Id Type
/dev/sda1    *      2048 49641471 49639424 23.7G 83 Linux
/dev/sda2          49643518 52426751 2783234  1.3G  f W95 Ext'd (LBA)
/dev/sda5          49643520 52426751 2783232  1.3G 82 Linux swap / Solaris

Disk /dev/sdb: 1 GiB, 1073741824 bytes, 2097152 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
```

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

```
(didi@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  25.4GB  25.4GB  primary   ext4        boot
 2      25.4GB   26.8GB  1425MB  extended
 5      25.4GB   26.8GB  1425MB  logical   linux-swap(v1)  swap

Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 1074MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

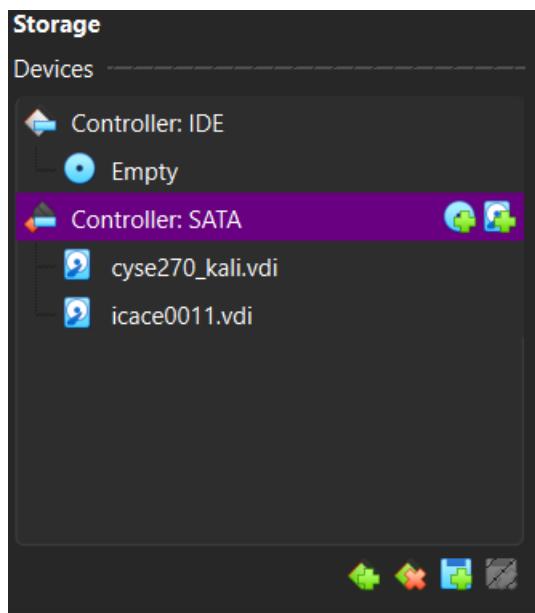
Number  Start   End     Size    Type      File system  Flags
 1      1049kB  1074MB  1073MB  primary   ext4
```

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

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]

Name	Virtual Size	Actual Size
Attached		
cyse270_kali.vdi	25.00 GB	15.91 GB
icace001.vdi	1.00 GB	1.00 GB
Not Attached		
icace0011.vdi	200.00 MB	202.00 MB

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.

```
File Actions Edit View Help
(didi@kali)-[~]
$ sudo ls /dev/sd*
/dev/sda  /dev/sda1  /dev/sda2  /dev/sda5  /dev/sdb

(didi@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: 0x1d9f791e

Device      Boot   Start     End   Sectors  Size Id Type
/dev/sda1    *      2048 49641471 49639424 23.7G 83 Linux
/dev/sda2          49643518 52426751 2783234   1.3G   f W95 Ext'd (LBA)
/dev/sda5          49643520 52426751 2783232   1.3G  82 Linux swap / Solaris

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

(didi@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  25.4GB  25.4GB  primary    ext4          boot
 2      25.4GB  26.8GB  1425MB  extended   lba
 5      25.4GB  26.8GB  1425MB  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:
```

Part III– Creating Partitions and Filesystems (60 points)

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

```
(didi㉿kali)-[~]
$ 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 0x98a1319f.

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): 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.

```
(didi㉿kali)-[~]
$ sudo mkfs -t ext4 /dev/sdb
mke2fs 1.47.2 (1-Jan-2025)
Found a dos partition table in /dev/sdb
Proceed anyway? (y,N) y
Creating filesystem with 204800 1k blocks and 51200 inodes
Filesystem UUID: c089fe12-4d14-488d-bdb3-ca5250715775
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
```

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

```
(didi㉿kali)-[~]
$ sudo ls /dev/sd*
/dev/sda  /dev/sda1  /dev/sda2  /dev/sda5  /dev/sdb

(didi㉿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: 0x1d9f791e

Device      Boot   Start     End   Sectors  Size Id Type
/dev/sda1    *      2048 49641471 49639424 23.7G 83 Linux
/dev/sda2        49643518 52426751 2783234  1.3G  f W95 Ext'd (LBA)
/dev/sda5        49643520 52426751 2783232  1.3G 82 Linux swap / Solaris

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

(didi㉿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  25.4GB  25.4GB  primary    ext4          boot
 2      25.4GB  26.8GB  1425MB  extended   -
 5      25.4GB  26.8GB  1425MB  logical    linux-swap(v1)  swap

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
```

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

```
(didi㉿kali)-[~]
$ sudo mkdir /cyse

(didi㉿kali)-[~]
$ sudo mount /dev/sdb /cyse
```

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

```
(didi㉿kali)-[~]
$ df
Filesystem 1K-blocks Used Available Use% Mounted on
udev 942832 0 942832 0% /dev
tmpfs 202136 996 201140 1% /run
/dev/sda1 24253528 15087252 7908908 66% /
tmpfs 1010664 4 1010660 1% /dev/shm
tmpfs 5120 0 5120 0% /run/lock
tmpfs 1024 0 1024 0% /run/credentials/systemd-jou
rnald.service
tmpfs 1010668 124 1010544 1% /tmp
tmpfs 1024 0 1024 0% /run/credentials/getty@tty1.
service
tmpfs 202132 116 202016 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.

```
(didi㉿kali)-[/cyse]
$ sudo touch icace001.txt

(didi㉿kali)-[/cyse]
$ sudo vi icace001.txt

(didi㉿kali)-[/cyse]
$
```

Step 7. Unmount /cyse directory.

```
(didi㉿kali)-[~]
$ sudo umount /cyse
```

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

```
(didi㉿kali)-[~]
$ cd /cyse

(didi㉿kali)-[/cyse]
$ ls

(didi㉿kali)-[/cyse]
$
```

It was empty