

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 lba
 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:

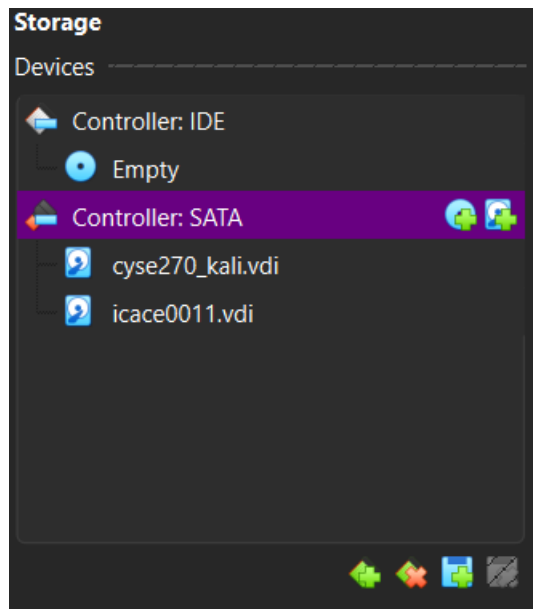
Number  Start   End     Size    Type     File system  Flags
 1      1049kB  1074MB  1073MB  primary  ext4
```

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.

```

didi@kali: ~
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-swapt1 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 lba  
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