

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 the three steps.

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

```
(lgut@kali)-[~]
└─$ sudo ls /dev/sd*
sudo] password for lgut:
dev/sda /dev/sda1 /dev/sda2 /dev/sda5
```

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

```
(lgut@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: 0x05ad5b11

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
```

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

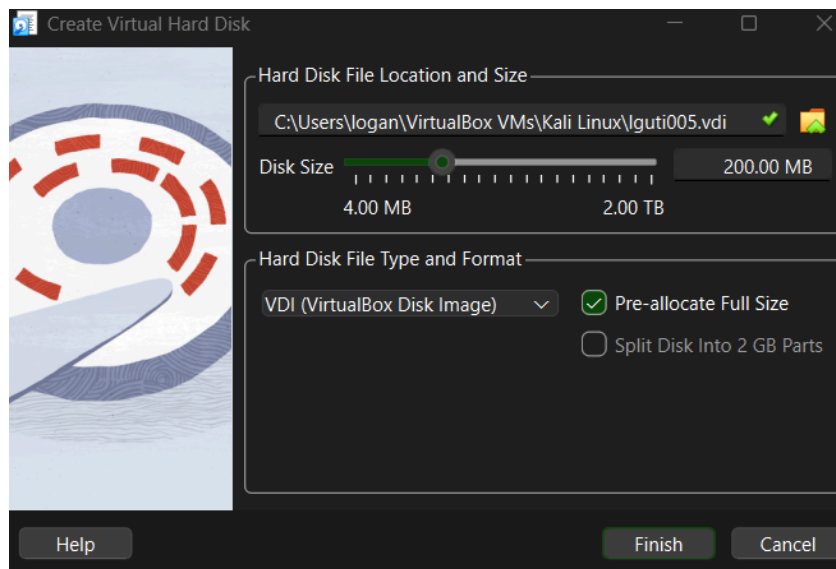
```
(lgut@kali)-[~]
└─$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 26.8GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

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
```

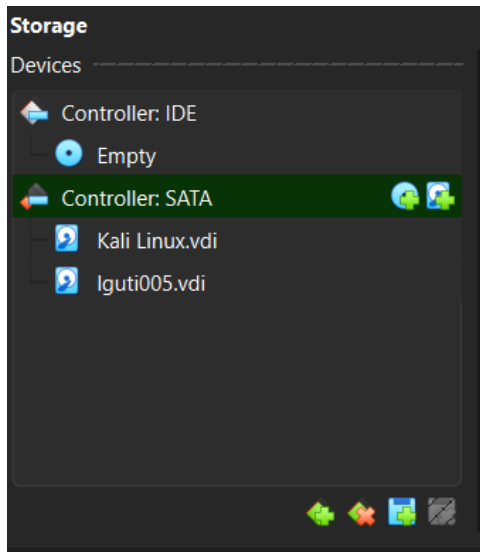
Part II– Create a new virtual disk (30 points)

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_midass.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.

```

(lgut@kali)-[~]
└─$ sudo ls /dev/sd*
[sudo] password for lgut:
/dev/sda /dev/sda1 /dev/sda2 /dev/sda5 /dev/sdb

(lgut@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: 0x05ad5b11

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

(lgut@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)

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.

```
(lgut@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 0x5995d367.

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):
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.

```
(lgut@kali)-[~]
└─$ sudo mkfs -t ext4 /dev/sdb1
mke2fs 1.47.2 (1-Jan-2025)
Creating filesystem with 203776 1k blocks and 51000 inodes
Filesystem UUID: b056bc0a-9473-43f5-9eef-17deacd507e9
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.

```

(lgut@kali)-[~]
└─$ ls /dev/sd*
/dev/sda /dev/sda1 /dev/sda2 /dev/sda5 /dev/sdb /dev/sdb1

(lgut@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: 0x05ad5b11

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
Disklabel type: dos
Disk identifier: 0x5995d367

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

```

```

(lgut@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: msdos
Disk Flags:

Number  Start   End     Size    Type     File system  Flags
  1      1049kB 210MB  209MB  primary ext4

```

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

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

(lgut@kali)-[~]
└─$ ls /cyse

(lgut@kali)-[~]
└─$ sudo mount /dev/sdb1 /cyse
```

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

```
(lgut@kali)-[~]
└─$ sudo df
Filesystem      1K-blocks    Used Available Use% Mounted on
udev            4001568         0   4001568  0% /dev
tmpfs           813896         1000    812896  1% /run
/dev/sda1      24253528 14988720   8007440  66% /
tmpfs          4069472         4   4069468  1% /dev/shm
tmpfs           5120          0        5120  0% /run/lock
tmpfs           1024          0         1024  0% /run/credentials/systemd-journald.service
tmpfs          4069476         8   4069468  1% /tmp
tmpfs           1024          0         1024  0% /run/credentials/getty@tty1.service
tmpfs           813892        116   813776  1% /run/user/1000
/dev/sdb1      185325         63   170999  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.

```
(lgut@kali)-[~/cyse]
└─$ sudo nano lguti005.txt

(lgut@kali)-[~/cyse]
└─$ cat lguti005.txt
Logan

(lgut@kali)-[~/cyse]
└─$ ls
lguti005.txt  lost+found
```

I wanted to try out nano as my vi editor did not want to work.

Step 7. Unmount /cyse directory.

```
HOME  
[lgut@kali]~  
$ sudo umount /cyse
```

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

```
HOME  
[lgut@kali]~  
$ cd /cyse  
  
[lgut@kali]~/cyse  
$ ls  
  
[lgut@kali]~/cyse  
$
```

There is nothing within the directory.