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CYSE 270
Assignment 7 - Storage Management
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]

```
┌──(zyron㉿kali)-[~]
└─$ sudo ls /dev/sd*
[sudo] password for zyron:
/dev/sda  /dev/sda1  /dev/sda2  /dev/sda3  /dev/sda4

┌──(zyron㉿kali)-[~]
└─$
```

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

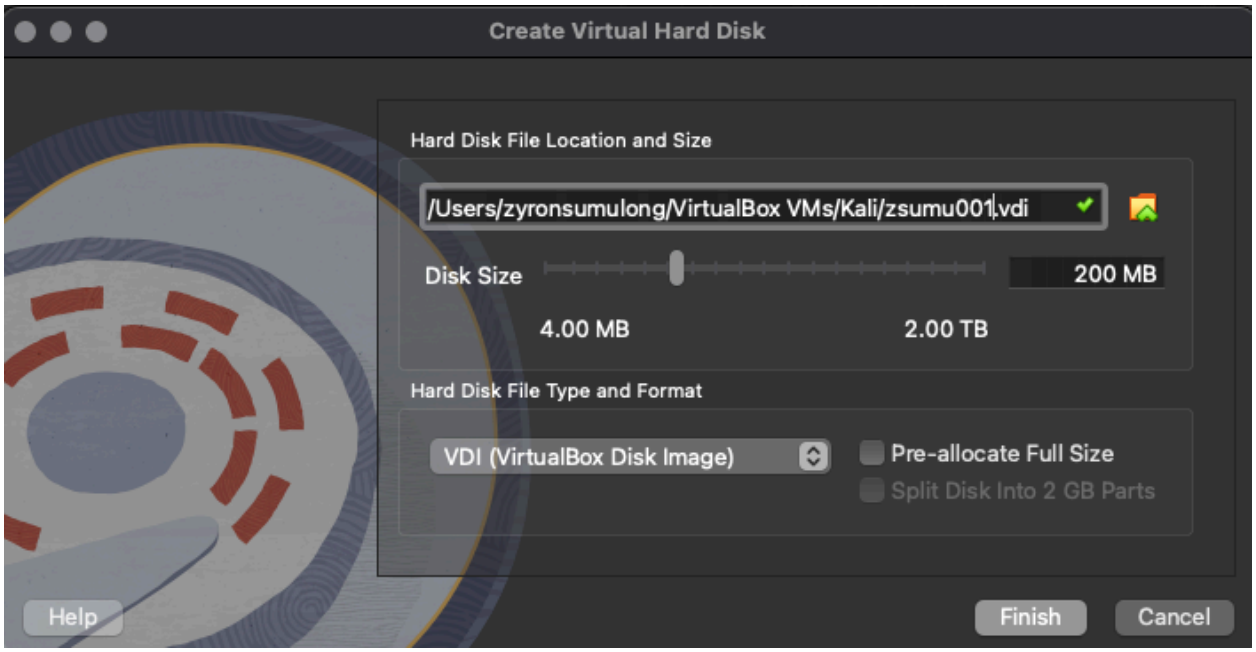
```
┌──(zyron㉿kali)-[~]
└─$ sudo fdisk -l
Disk /dev/sda: 25 GiB, 26843545600 bytes, 52428800 sectors
Disk model: HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: D30F195E-00DB-46A4-A40B-BB8A71198CD7

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
```

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

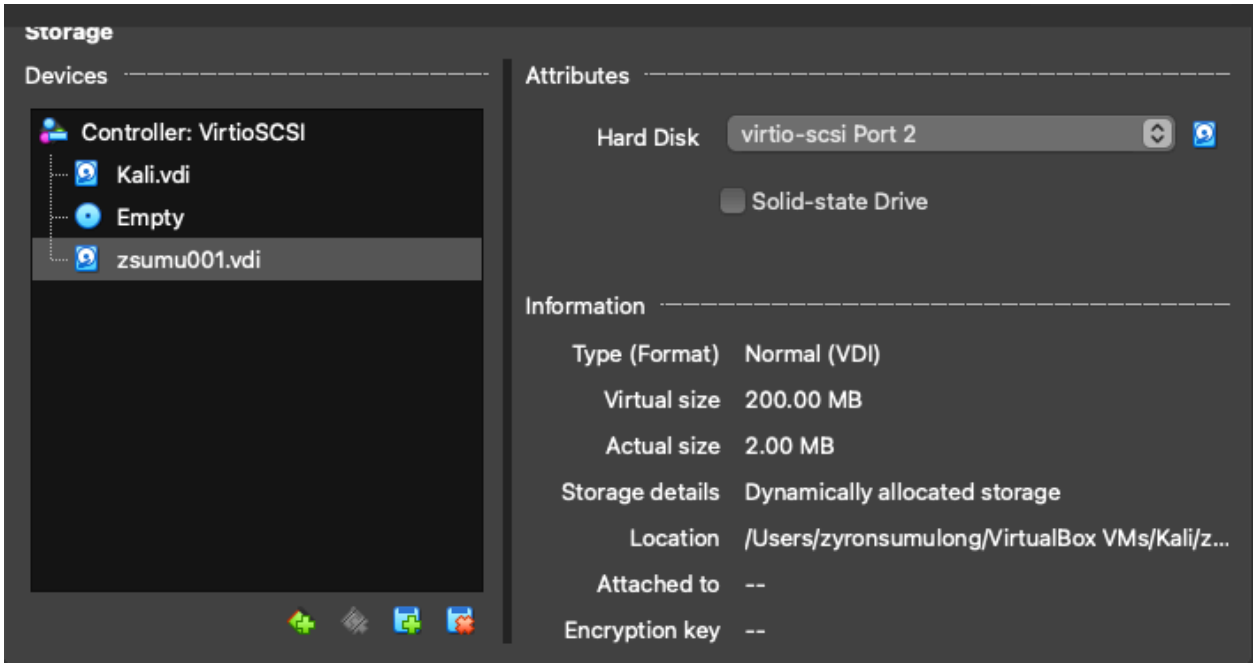
```
┌──(zyron㉿kali)-[~]
└─$ sudo parted -l
Model: VBOX HARDDISK (scsi)
Disk /dev/sda: 26.8GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

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
```

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”



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.

```
┌──(zyron㉿kali)-[~]
└─$ sudo ls /dev/sd*
[sudo] password for zyron:
/dev/sda  /dev/sda1  /dev/sda2  /dev/sda3  /dev/sda4  /dev/sdb
```

```
┌──(zyron㉿kali)-[~]
└─$ sudo fdisk -l
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


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: D30F195E-00DB-46A4-A40B-BB8A71198CD7

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
```

```
┌──(zyron㉿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


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:
```

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.
Command: sudo fdisk /dev/sdb

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

Welcome to fdisk (util-linux 2.41.1).
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 (MBR) disklabel with disk identifier 0x9ec9343d.

Command (m for help): m
```

```
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): 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): wq
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.
Command: sudo mkfs.ext4 /dev/sdb1

```
┌──(zyron㉿kali)-[~]
└─$ sudo mkfs.ext4 /dev/sdb1
mke2fs 1.47.2 (1-Jan-2025)
Creating filesystem with 203776 1k blocks and 51000 inodes
Filesystem UUID: a5b7656c-6d51-4e3a-ab96-b2e79e90e6cb
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.

```
┌──(zyron㉿kali)-[~]
└─$ sudo ls /dev/sd*
/dev/sda  /dev/sda1  /dev/sda2  /dev/sda3  /dev/sda4  /dev/sdb  /dev/sdb1
```

d

```
┌──(zyron㉿kali)-[~]
└─$ sudo fdisk -l
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
Disklabel type: dos
Disk identifier: 0x9ec9343d

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


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: D30F195E-00DB-46A4-A40B-BB8A71198CD7

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
```

```
┌──(zyron㉿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: 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.
Commands: sudo mkdir /cyse
sudo mount /dev/sdb1 /cyse

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

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

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

```
┌──(zyron㉿kali)-[~]
└─$ sudo df
Filesystem     1K-blocks     Used Available Use% Mounted on
udev              915916        0    915916   0% /dev
tmpfs             201296      960    200336   1% /run
/dev/sda3       23286176 13280028   8797932  61% /
tmpfs            1006464        4   1006460   1% /dev/shm
efivarfs             256       32       225  13% /sys/firmware/efi/efivars
tmpfs               5120        0      5120   0% /run/lock
tmpfs               1024        0      1024   0% /run/credentials/systemd-journald.service
tmpfs            1006468      100   1006368   1% /tmp
/dev/sda2        1000160      368    999792   1% /boot/efi
tmpfs               1024        0      1024   0% /run/credentials/getty@tty1.service
tmpfs             201292      112    201180   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.
Command: sudo nano zsumu001.txt

```
┌──(zyron㉿kali)-[~]
└─$ sudo nano zsumu001.txt
```

```
  GNU nano 8.6                          zsumu001.txt *
Zyron Sumulong

^G Help      ^O Write Out  ^F Where Is   ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File  ^\ Replace    ^U Paste     ^J Justify   ^/ Go To Line
```

Step 7. Unmount /cyse directory.
Command: sudo umount /dev/sdb1

```
┌──(zyron㉿kali)-[~]
└─$ cd ~

┌──(zyron㉿kali)-[~]
└─$ sudo umount /dev/sdb1
```

Step 8. Check the contents in /cyse directory. What do you find?
I found that zsumu001.txt was missing.

```
┌──(zyron㉿kali)-[~]
└─$ cat /cyse/zsumu001.txt
cat: /cyse/zsumu001.txt: No such file or directory

┌──(zyron㉿kali)-[~]
└─$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos

┌──(zyron㉿kali)-[~]
└─$ cd cyse
cd: no such file or directory: cyse

┌──(zyron㉿kali)-[~]
└─$ cd /cyse

┌──(zyron㉿kali)-[/cyse]
└─$ ls

┌──(zyron㉿kali)-[/cyse]
└─$
```