Ava McLaughlin

CYSE 270: Linux System for Cybersecurity

Lab 7 – Manage Local Storage

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]

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

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

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]

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.

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.

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

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

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

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

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.

Step 7. **Unmount** /cyse directory.

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

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Part 1:

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

┌──(ava-mclaughlin㉿ 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: 0x202d03b7

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

┌──(ava-mclaughlin㉿ 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 2, step 1:

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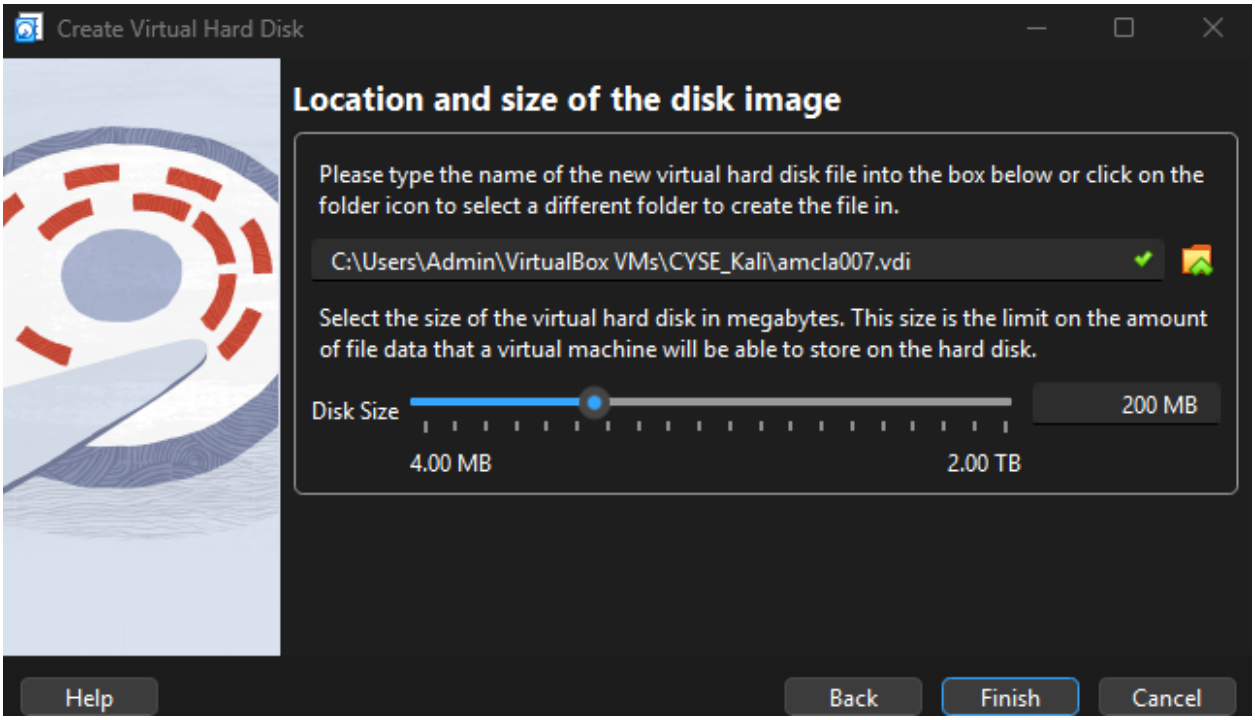

Part 2, steps 2 & 3: Changes have been highlighted in yellow in the screenshot.

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```
└─$ sudo ls /dev/sd*
[sudo] password for ava-mclaughlin:
/dev/sda  /dev/sda1  /dev/sda2  /dev/sda5  /dev/sdb

┌──(ava-mclaughlin㉿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
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Device     Boot    Start      End  Sectors  Size Id Type
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/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

┌──(ava-mclaughlin㉿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 3, step 1:

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```
┌──(ava-mclaughlin♦ 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 0xf5d122b8.

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.
```

Part 3, step 2:

```
┌──(ava-mclaughlin♦ kali)-[~]
└─$ sudo mkfs.ext4 /dev/sdb1
mke2fs 1.47.2 (1-Jan-2025)
Creating filesystem with 203776 1k blocks and 51000 inodes
Filesystem UUID: 243ac9ba-b67e-41e7-b2fd-79e7fa3fd1d4
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
```

Part 3, step 3: Changes have been highlighted in yellow in the screenshots.

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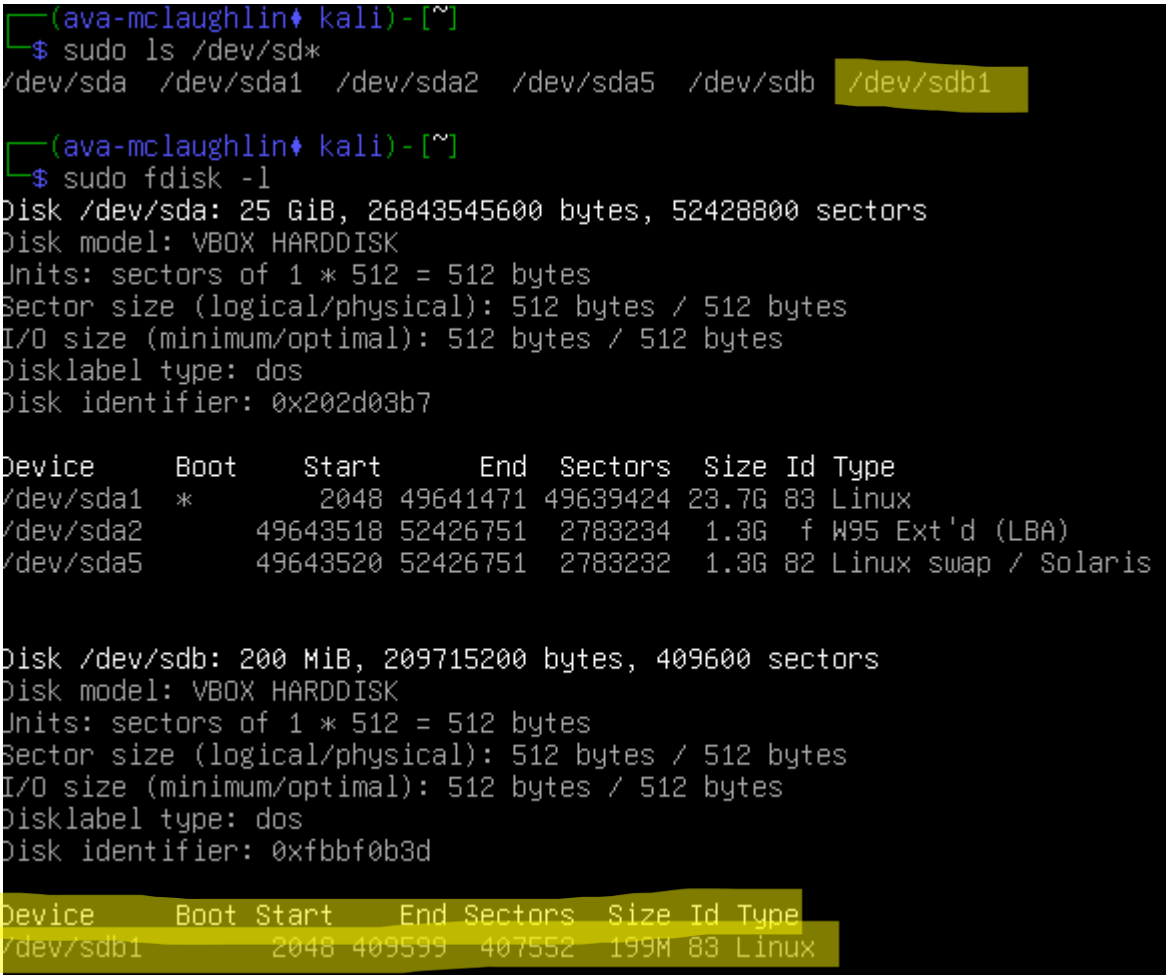

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```
┌──(ava-mclaughlin♦ kali)-[~]
└─$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 26.8GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End     Size    Type      File system     Flags
 1      1049kB  25.4GB  25.4GB  primary   ext4            boot
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 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
```

Part 3, steps 4 & 5:

```
┌──(ava-mclaughlin♦ kali)-[~]
└─$ sudo mkdir /cyse

┌──(ava-mclaughlin♦ kali)-[~]
└─$ sudo mount /dev/sdb1 /cyse

┌──(ava-mclaughlin♦ kali)-[~]
└─$ sudo df
Filesystem     1K-blocks    Used Available Use% Mounted on
udev              981924       0    981924   0% /dev
tmpfs             202136     532    201604   1% /run
/dev/sda1       24253528 1625672  21370488   8% /
tmpfs            1010664       0   1010664   0% /dev/shm
tmpfs               5120       0      5120   0% /run/lock
tmpfs               1024       0      1024   0% /run/credentials/systemd-journald.service
tmpfs            1010668       0   1010668   0% /tmp
tmpfs               1024       0      1024   0% /run/credentials/getty@tty1.service
tmpfs             202132       4    202128   1% /run/user/1000
/dev/sdb1         185325      63    170999   1% /cyse
```

Part 3, step 6:

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```
┌──(ava-mclaughlin㉿ kali)-[~]
└─$ cd /cyse

┌──(ava-mclaughlin㉿ kali)-[/cyse]
└─$ sudo echo "Ava McLaughlin" > /cyse/amcla007.txt
-bash: /cyse/amcla007.txt: Permission denied

┌──(ava-mclaughlin㉿ kali)-[/cyse]
└─$ echo "Ava McLaughlin" | sudo tee /cyse/amcla007.txt
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┌──(ava-mclaughlin㉿ kali)-[/cyse]
└─$ ls /cyse
amcla007.txt  lost+found

┌──(ava-mclaughlin㉿ kali)-[/cyse]
└─$ cat /cyse/amcla007.txt
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```

Part 3, steps 7 & 8: The ls command didn't return anything, indicating that there is nothing in the /cyse directory.

```
┌──(ava-mclaughlin㉿ kali)-[/cyse]
└─$ cd ~

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

┌──(ava-mclaughlin㉿ kali)-[~]
└─$ ls /cyse

┌──(ava-mclaughlin㉿ kali)-[~]
└─$
```