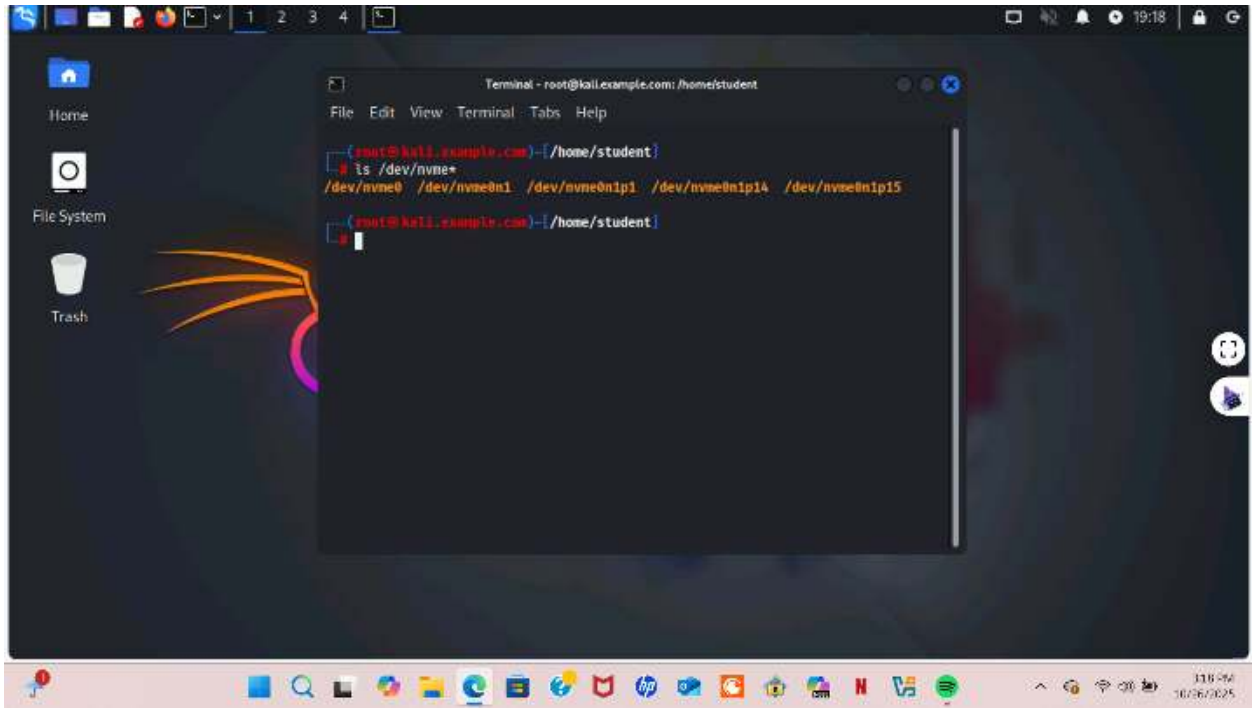
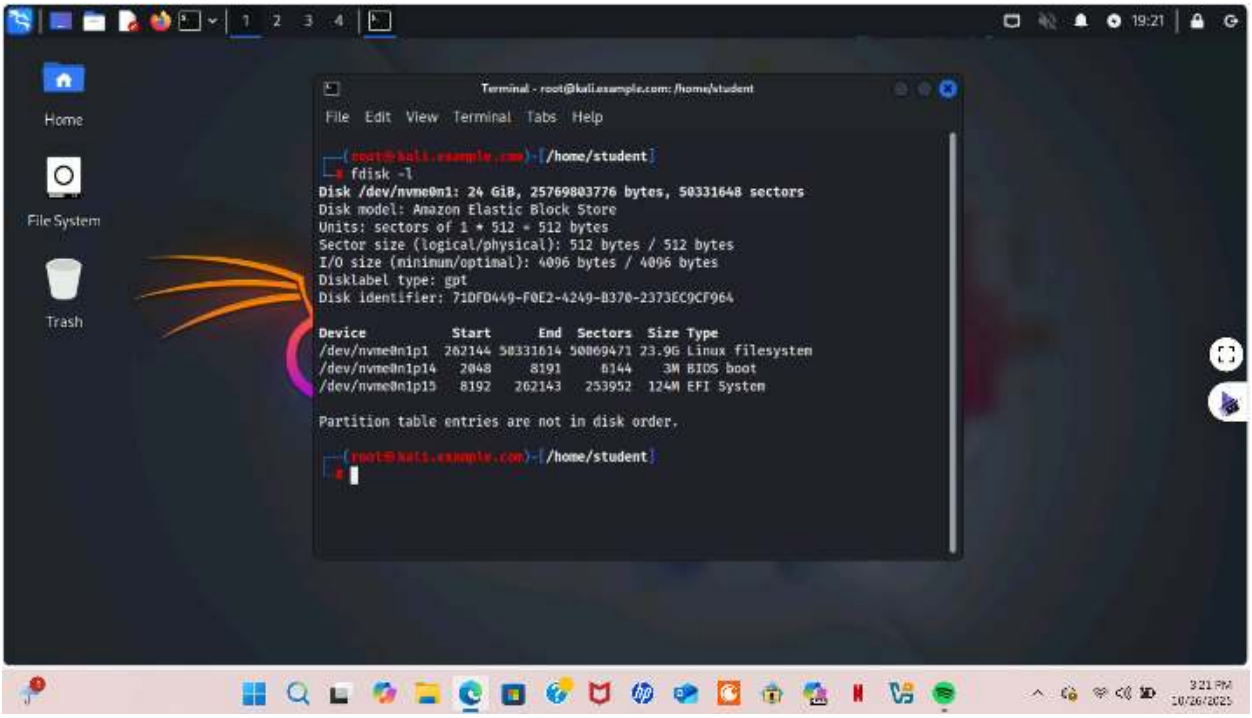
Part I: Check Your File System (20 Points)

Submit screenshots for each command output in this part

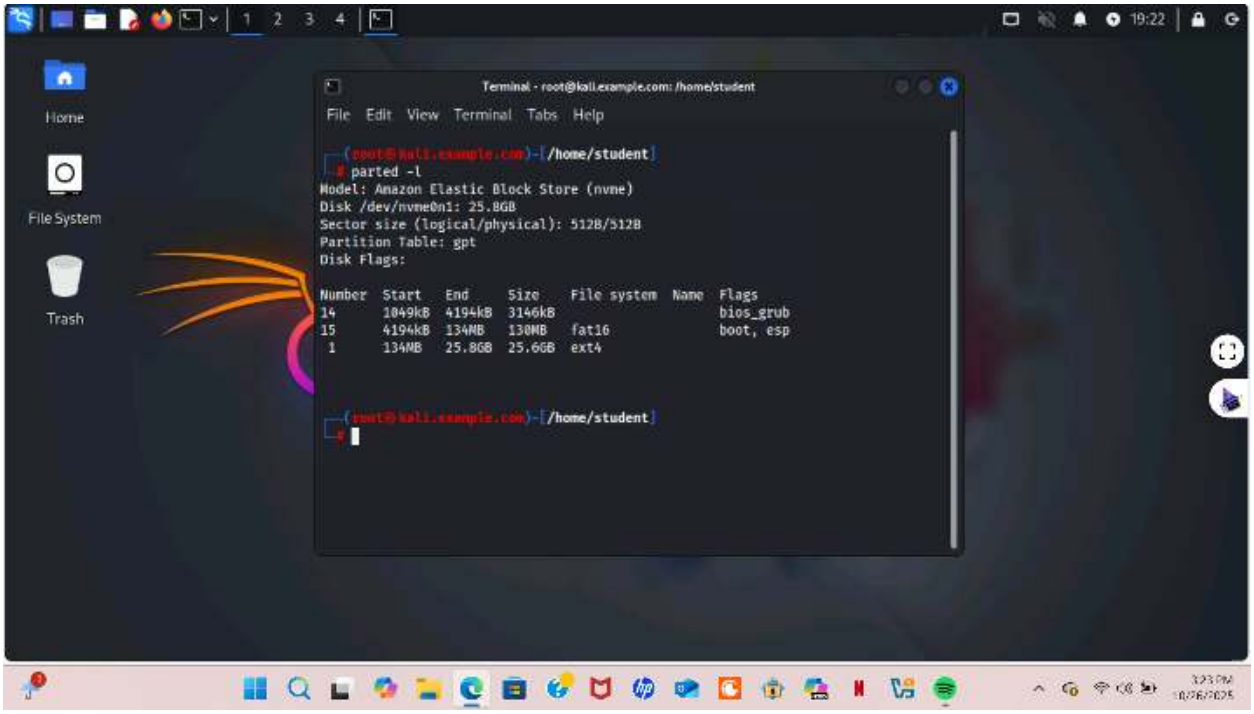
Step 1. Execute the ls /dev/sd* command to see the current hard disk devices.



Step 2. Execute the fdisk -l command to list the current hard disk partitions.



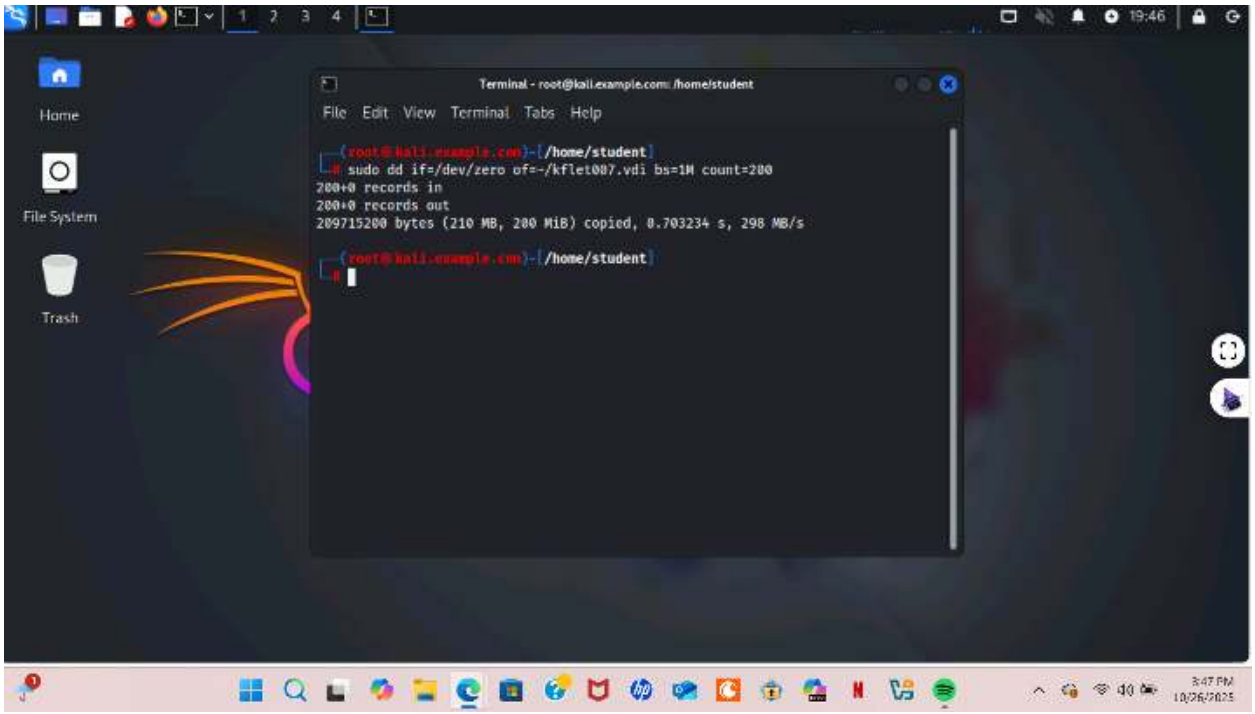
Step 3. Execute the parted -l command to list the current hard disk partition table.



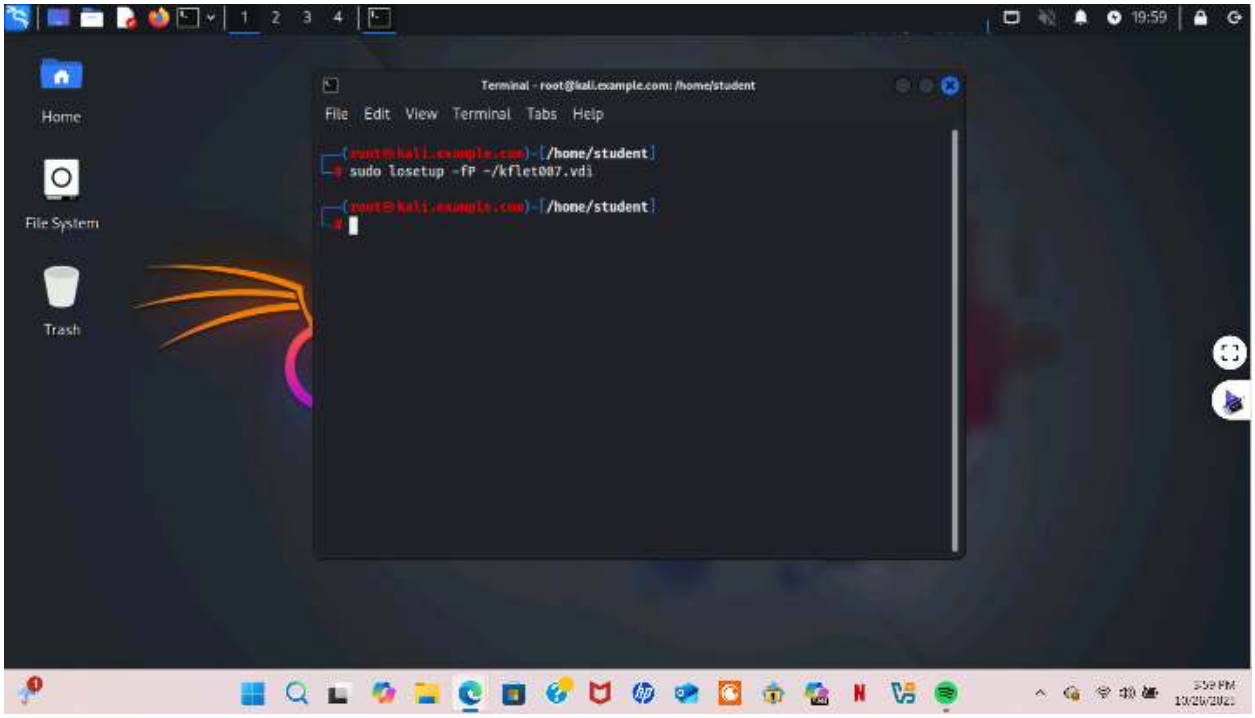
Part II– Create a new virtual disk file (20 points)

Step 1: Create a Virtual Disk File. Run this command to create a 200 MB virtual disk file. Replace YourMIDAS with your MIDAS ID.

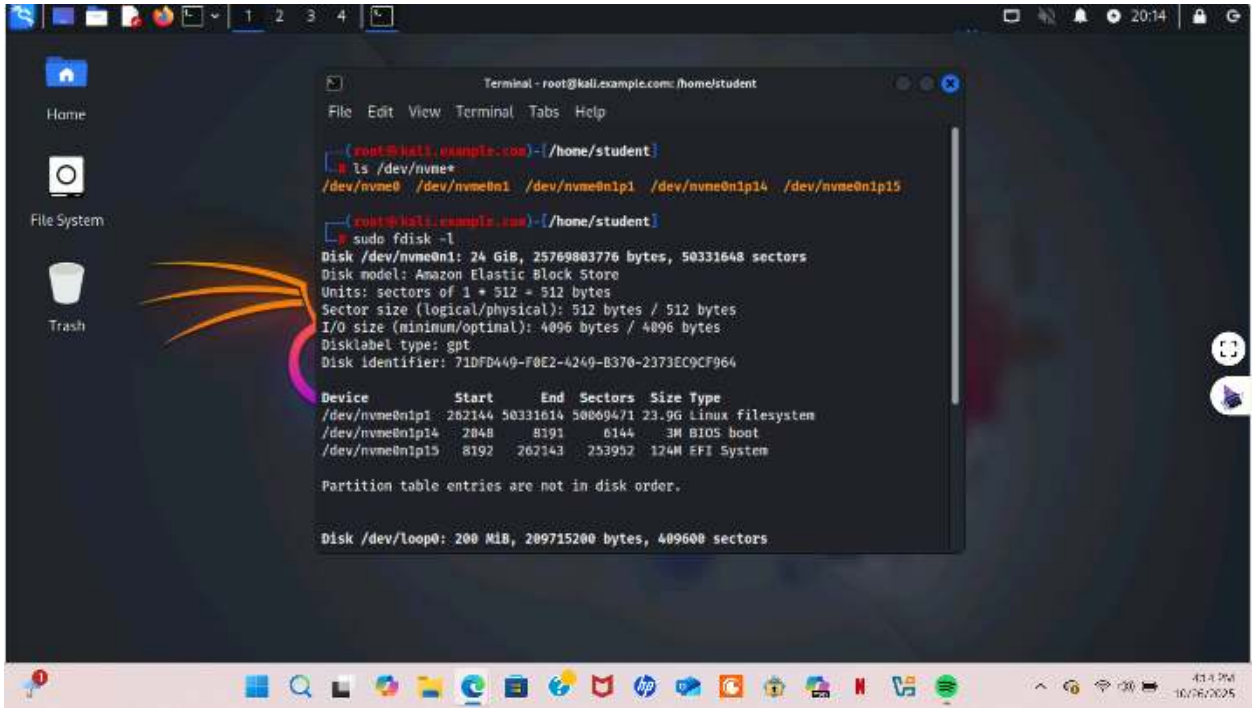
sudo dd if=/dev/zero of=~/ YourMIDAS .vdi bs=1M count=200

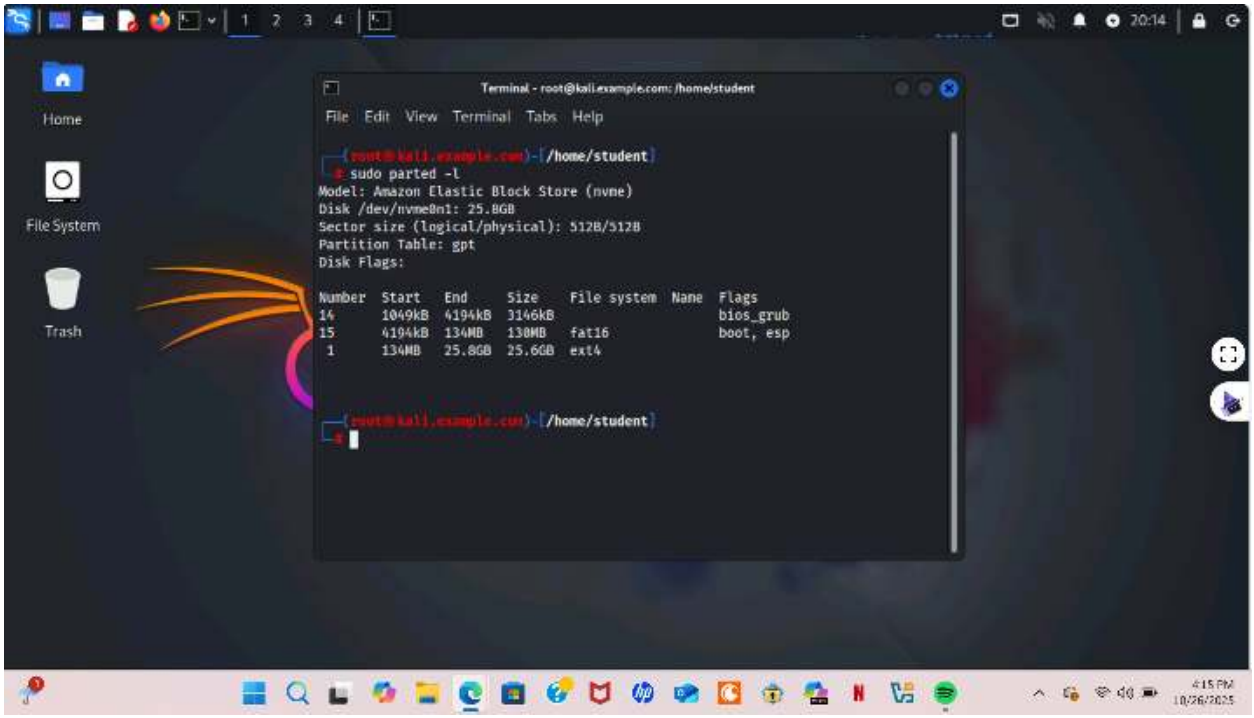


Step 2: Attach the Virtual Disk as a Loop Device



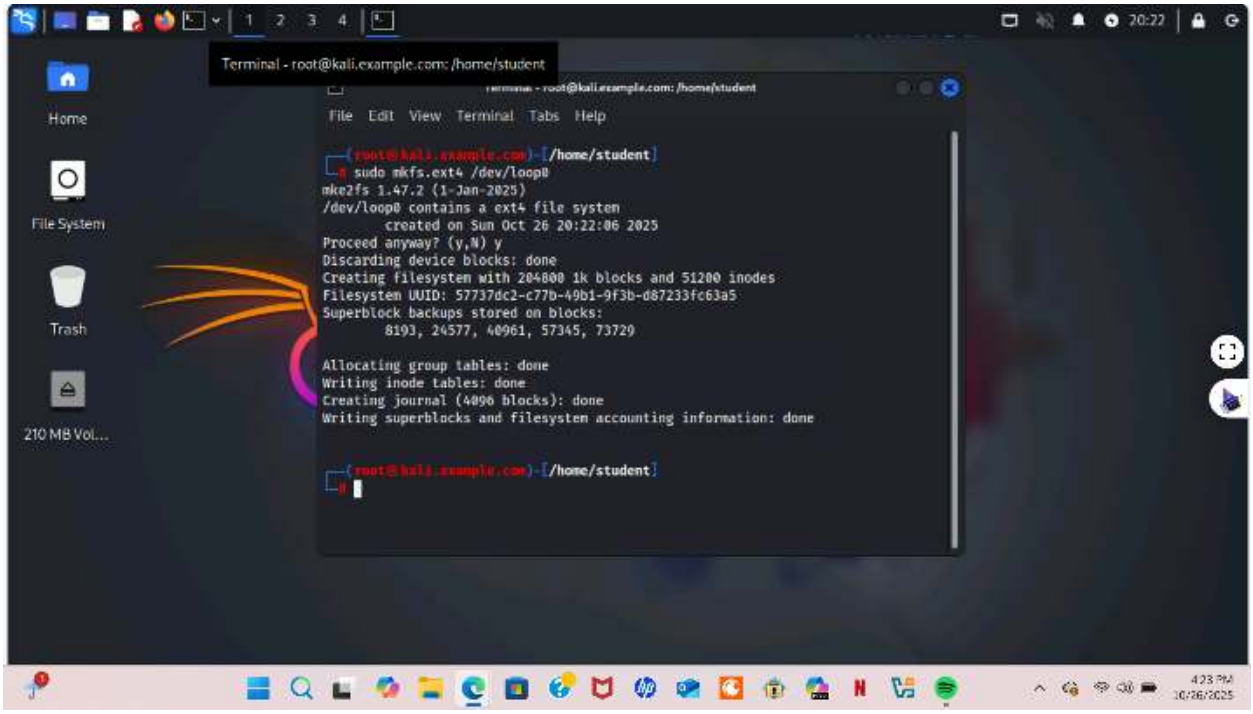
Step 3: Repeat Part I Commands and Highlight Differences



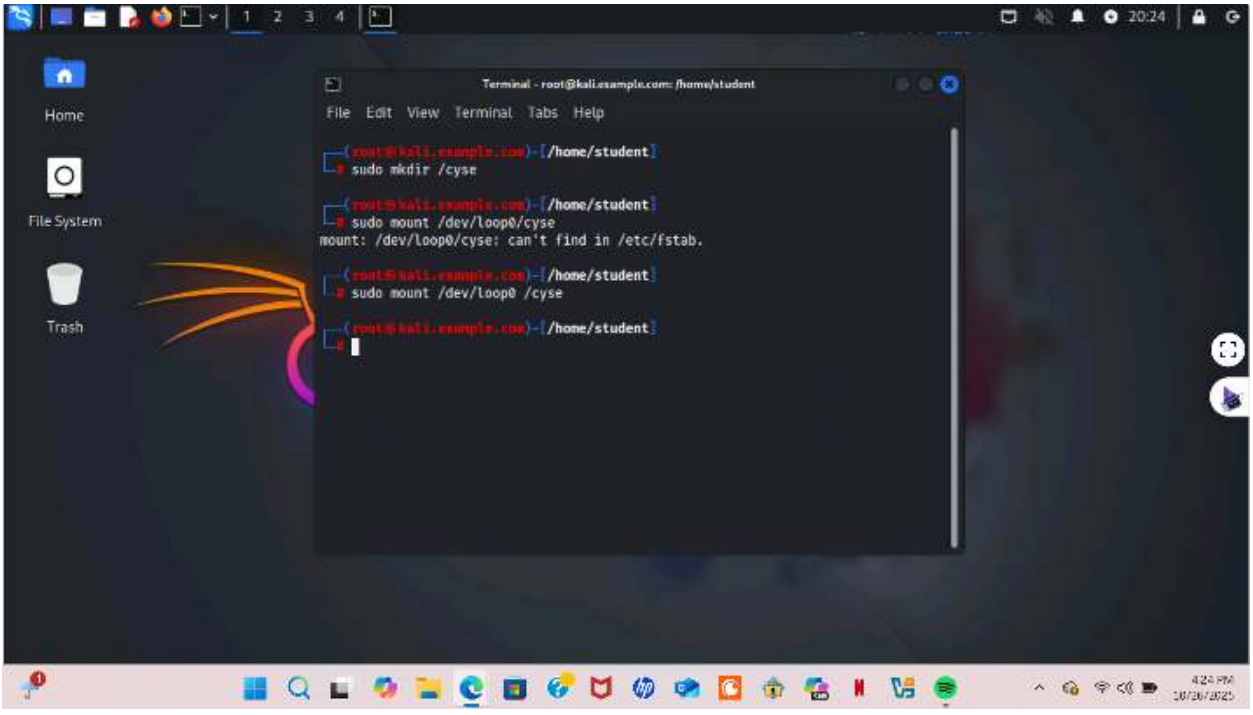


Part III: Creating Filesystems and Mounting the Virtual Disk

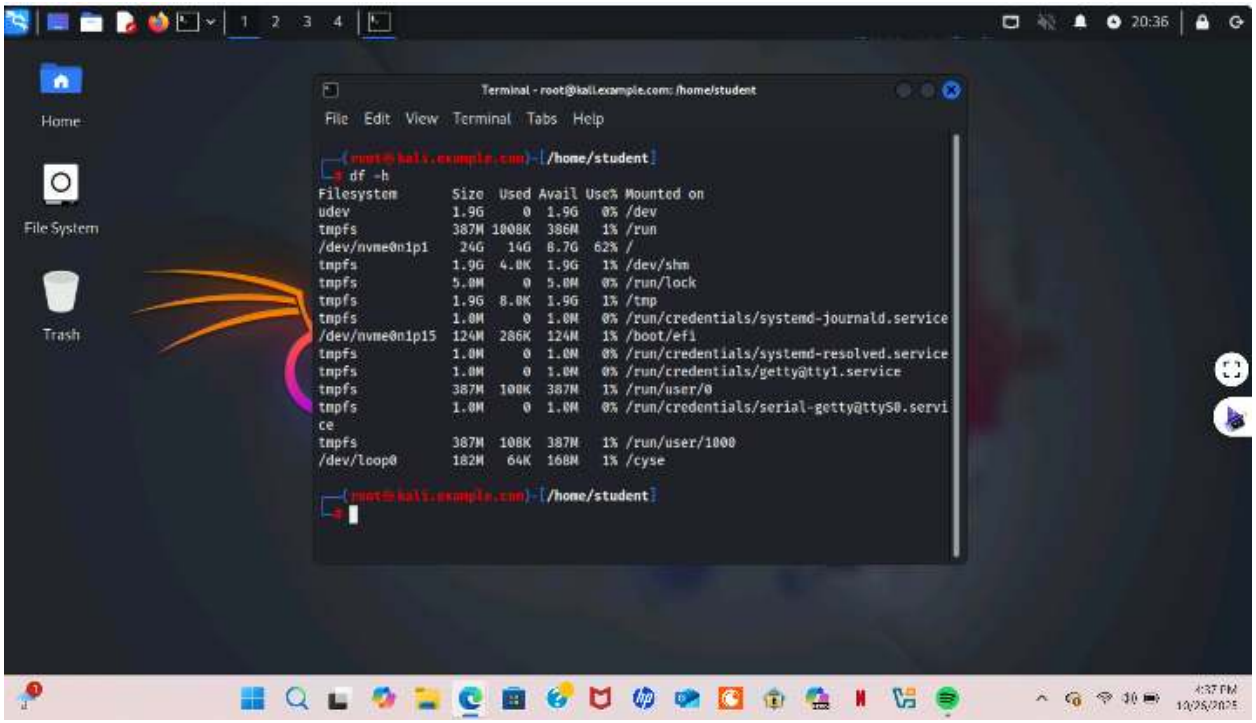
Step 1: Format the Loop Device Directly



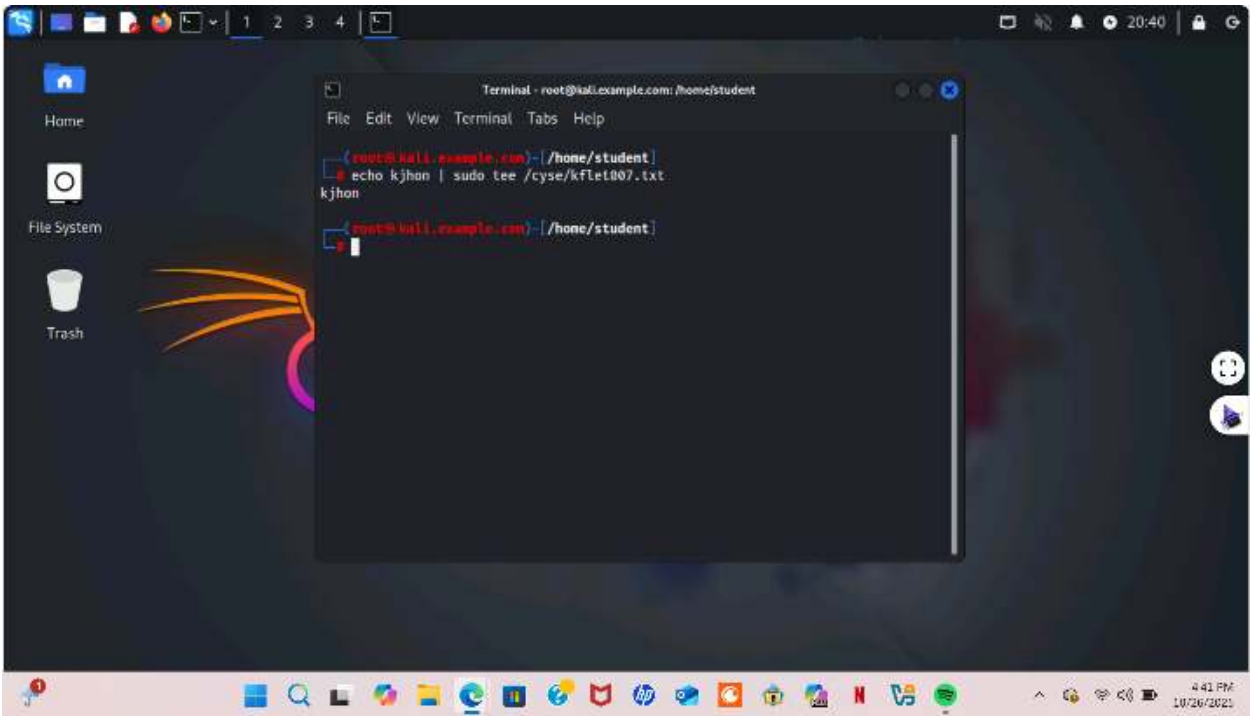
Step 2: Mount the Loop Device



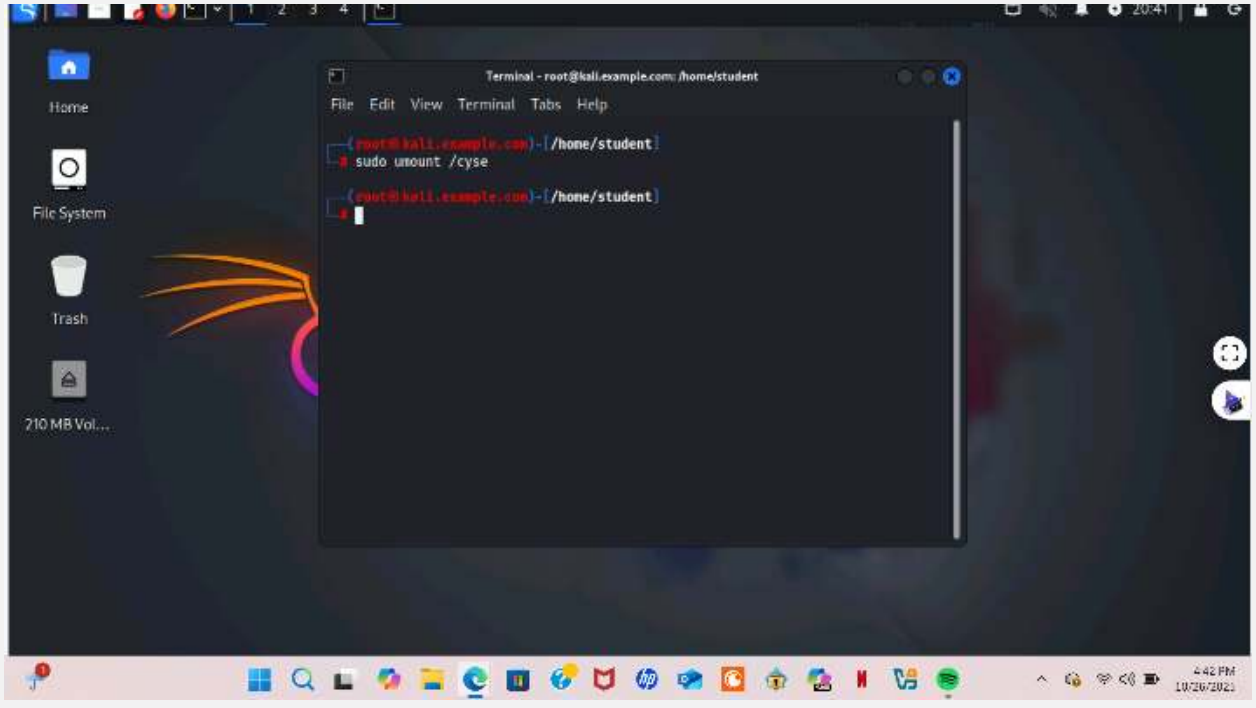
Step 3: Check the Mount Point



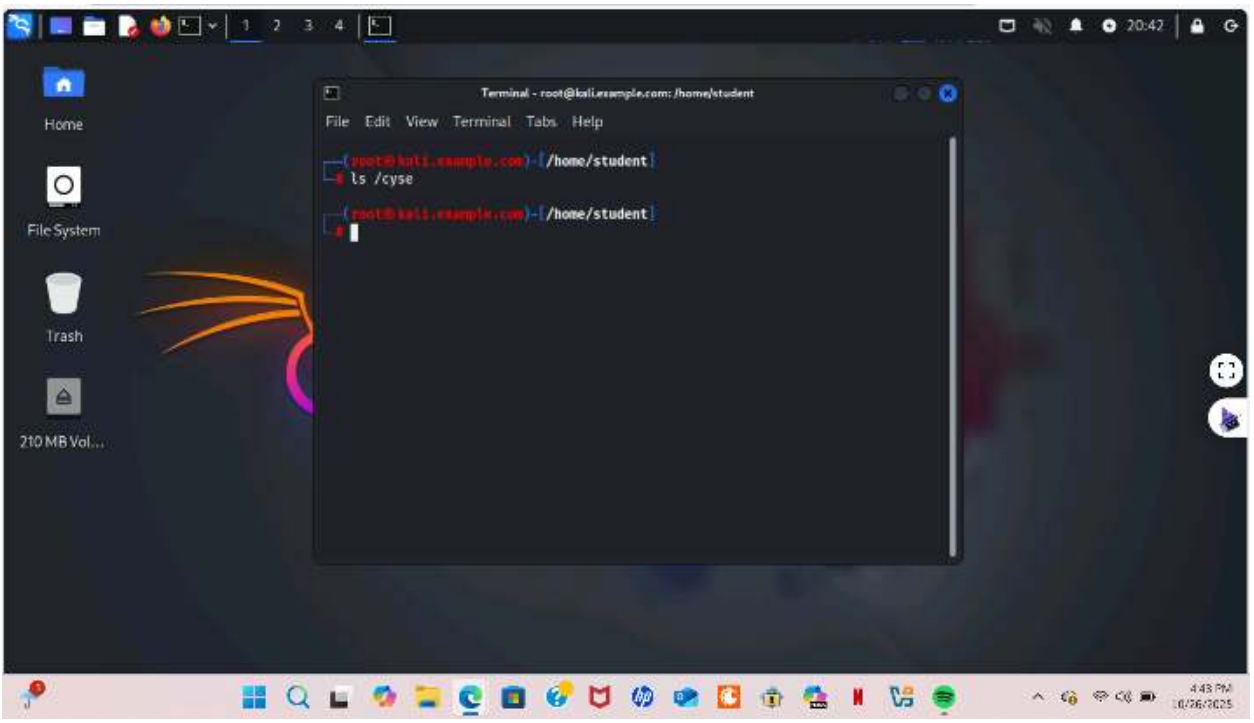
Step 4: Create a File Named YourMIDAS.txt



Step 5: Unmount the /cyse Directory



Step 6: Check the Contents of /cyse



Part I
V:
Answer the following questions

(30 Points)

1.
Explain the purpose of using the `sudo` command with `ls /dev/sd*` and `ls /dev/nvme*`. Why is administrator privilege required in this context?
When you run ls /dev/sd*, it lists all device files in /dev that start with sd, which typically represent storage devices like hard drives and SSDs. These device files often have restricted permissions to prevent accidental modification or access by regular users. Using sudo before the command elevates your privileges, enabling you to see all device files, including those with restricted permissions, and gather comprehensive information about storage devices.

2.
What is a loop device, and why do we use `losetup` to attach the virtual disk file as a device in this lab?
A loop device is a pseudo-device in Linux that allows a file to be treated as a block device, essentially enabling the system to access a file as if it were a physical disk.
The losetup command is used to attach a file to a loop device. It sets up the mapping between the file and the loop device, making the file accessible as a block device.

3.
Why do we format the virtual disk using `mkfs.ext4`? Explain what this command does and why we chose the `ext4` filesystem specifically.
The command mkfs.ext4 is used to format a storage device or partition with the ext4 filesystem, which is a widely used journaling file system in Linux environments. When you run this command, it initializes the disk or partition by creating the necessary filesystem structures, such as inodes, directories, and data blocks, enabling the operating system to store and retrieve files efficiently.
4.
After mounting the virtual disk to `/cyse`, what changes should you observe in the output of `df-h`? Explain how `df` helps
When you mount a virtual disk to /cyse, the df -h command should display the new disk's filesystem information, including its size, used space, available space, and mount point. Specifically, you should see an additional line in the output that corresponds to /cyse, indicating that the system recognizes the disk as mounted at that location.
5.
Why is it important to unmount a directory (like `/cyse` in this lab) before detaching a virtual disk? What could happen if you detach a disk without unmounting it first?
Unmounting a directory before detaching a virtual disk is crucial to ensure data integrity and prevent potential data loss or corruption. When a filesystem is mounted, the operating system manages read/write operations between the disk and the system.
6.
After creating a file on the mounted virtual disk and then unmounting the disk, what do you expect to see when you check the contents of `/cyse`? Explain why this happens.
When you create a file on a mounted virtual disk, the file is stored on that specific disk, and its contents are accessible through the mount point directory.
7.
How does using a virtual disk file differ from using a physical disk partition on your system? What are some advantages and disadvantages of using virtual disks in cybersecurity labs?
Using a virtual disk file differs from using a physical disk partition in that a virtual disk is a file stored on an existing physical disk, which emulates a separate storage device. This virtual disk can be mounted, formatted, and used like a physical disk, but it resides entirely within a file on the host system. Advantages of virtual disks in

cybersecurity labs include flexibility and ease of management.’

This lab It was pretty quick and only took a little time. I learned about the virtual disk
Also just about the file system as well. This lab wasn't too much on the hard side and
Also in overall just a pretty basic assignment.