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Roll Number – 2022EBCS321
Course Name -- Command Line Interfaces and Scripting
Cohort – 1

Graded Lab Assignment: Modules 1-4

Question 1 [5 points] Imagine you are a junior system administrator responsible for managing a Linux server. Your supervisor has given you various tasks related to common Linux commands. Your goal is to demonstrate your knowledge and proficiency in using these commands to maintain and troubleshoot the server effectively.

Answer ==

a) Change your user account's password to "SecurePwd123."

Bash –

```
passwd
```

Enter your current password and then type in your new password twice.

b) List all users currently logged into the server.

Bash –

```
who
```

This will display a list of all users currently logged into the server, along with their login time and terminal number.

c) Determine your own username and user ID (UID) on the server.

Bash –

```
whoami
```

```
id
```

The `whoami` command will display your username, while the `id` command will display your username, UID, and other information about your user account.

d) Create a text file named "important_notes.txt" and write the message "Confidential: For authorized personnel only" into the file.

Bash-

```
touch important_notes.txt
echo "Confidential: For authorized personnel only" >
important_notes.txt
```

The `touch` command creates an empty file, and the `echo` command writes the specified message to the file.

e) Access the manual page for the "ls" command to learn more about its options and usage.

```
Bash-
man ls
```

```
// Tried Installing man incase not found by this code -sudo apt-get install
man
```

This will open the man page for the `ls` command, which provides detailed information about the command's options and usage.

f) List the contents of a directory, including hidden files and directories, in long format.

```
Bash -
ls -la
```

The `-l` option tells `ls` to display files in long format, which includes information about the file's permissions, owner, group, size, and modification time. The `-a` option tells `ls` to display all files, including hidden files and directories.

g) Replace all occurrences of the letter 'a' with 'A' in a text file named "text.txt."

```
Bash -

sed -i 's/a/A/g' text.txt
```

The `sed` command is a stream editor that can be used to search for and replace text in files. The `-i` option tells `sed` to modify the file in place, rather than printing the modified text to the screen. The `s/a/A/g` command tells `sed` to replace all occurrences of the letter 'a' with the letter 'A' in the file.

h) Display the hostname of your server.

Bash -
hostname

This will display the hostname of your server.

- i) Trace the network route from your local machine to the 'www.example.com' server (I used google for simple use)

Bash -

tracert www.google.com

The `tracert` command traces the network route from your local machine to the specified host. It displays a list of hops along the route, along with the time it takes to reach each hop.

- j) Perform a basic port scan of a target server with the IP address "10.0.0.1."

Bash -

`nmap 10.0.0.1`

The `nmap` command is a port scanner that can be used to scan a target server for open ports. The `nmap 10.0.0.1` command will scan all TCP ports on the server with the IP address "10.0.0.1" and display a list of open ports and their associated services.

```

coursera
Applications  Terminal - coder@7fc5f... 15:29 cod
Terminal - coder@7fc5fdce5b65: ~
oder@7fc5fdce5b65:~$ passwd
changing password for coder.
current) UNIX password:
passwd: Authentication token manipulation error
passwd: password unchanged
oder@7fc5fdce5b65:~$ who
oder@7fc5fdce5b65:~$ whoami
oder
oder@7fc5fdce5b65:~$ id
id=1000(coder) gid=1000(coder) groups=1000(coder),27(sudo)
oder@7fc5fdce5b65:~$ touch important_notes.txt
oder@7fc5fdce5b65:~$ echo "Confidential: For authorized personal only">important_notes.txt
oder@7fc5fdce5b65:~$ man ls
to manual entry for ls
see 'man 7 undocumented' for help when manual pages are not available.
oder@7fc5fdce5b65:~$ man 7 undocumented
to manual entry for undocumented in section 7
oder@7fc5fdce5b65:~$ ls -la
total 57
-rwxr-xr-x 28 coder coder    48 Nov 17 14:14 .
-rwxr-xr-x  4 root  root     4 Apr 12  2023 ..
-rw-r--r--  1 coder coder   557 Nov 17 14:22 .bash_history
-rw-r--r--  1 coder coder   220 Jun 26 23:20 .bash_logout
-rw-r--r--  1 coder coder  3771 Jun 26 23:20 .bashrc
-rwx----- 6 coder coder    6 Nov 17 13:59 .cache

```

```

Terminal - coder@7fc5fdce5b65: ~
File Edit View Terminal Tabs Help
coder@7fc5fdce5b65: ~
rw-r--r-- 1 coder coder 11316 Jun 26 23:20 package-lock.json
rwxr-xr-x 2 coder coder 2 Nov 17 13:58 Pictures
rw-r--r-- 1 coder coder 807 Jun 26 23:20 .profile
rwxr-xr-x 2 coder coder 2 Nov 17 13:58 Public
rw-r--r-- 1 coder coder 0 Nov 17 14:14 rext.txt
rw-r--r-- 1 coder coder 0 Jun 26 23:20 .sudo_as_admin_successful
rwxr-xr-x 2 coder coder 2 Nov 17 13:58 Templates
rwxr-xr-x 2 coder coder 2 Nov 17 13:58 Videos
rwxr-xr-x 2 coder coder 7 Nov 17 13:58 .vnc
rw-r--r-- 1 root root 177 Apr 12 2023 .wget-hsts
rw-r--r-- 1 coder coder 60 Nov 17 13:58 wm.log
rwxr-xr-x 1 coder coder 308 Jun 26 23:20 wm_startup.sh
rwxr-xr-x 2 coder coder 2 Jun 26 23:20 workspace
rwxr-xr-x 1 coder coder 314 Jun 26 23:20 wrapper_process.sh
rw-r----- 1 coder coder 106 Nov 17 13:58 .Xauthority
rw-r----- 1 coder coder 11811 Nov 17 14:19 .xsession-errors
coder@7fc5fdce5b65:~$ sed -i 's/a/A/g' text.txt
sed: can't read text.txt: No such file or directory
coder@7fc5fdce5b65:~$ hostname
fc5fdce5b65
coder@7fc5fdce5b65:~$ traceroute www.google.com
traceroute to www.google.com (172.253.62.104), 30 hops max, 60 byte packets
1 ip-172-18-0-1.ec2.internal (172.18.0.1) 0.030 ms 0.008 ms 0.008 ms
2 ip-172-18-0-1.ec2.internal (172.18.0.1) 0.011 ms 0.008 ms 0.008 ms

```

```

54045/tcp open unknown
54328/tcp open unknown
55055/tcp open unknown
55056/tcp open unknown
55555/tcp open unknown
55600/tcp open unknown
56737/tcp open unknown
56738/tcp open unknown
57294/tcp open unknown
57797/tcp open unknown
58080/tcp open unknown
60020/tcp open unknown
60443/tcp open unknown
61532/tcp open unknown
61900/tcp open unknown
62078/tcp open iphone-sync
63331/tcp open unknown
64623/tcp open unknown
64680/tcp open unknown
65000/tcp open unknown
65129/tcp open unknown
65389/tcp open unknown
Nmap done: 1 IP address (1 host up) scanned in 2.88 seconds
coder@7fc5fdce5b65:~$

```

Question 2 –

You are working as a junior system administrator in a company that uses Linux servers for various tasks. Your supervisor has assigned you a series of tasks related to file permissions, file and directory operations, copying, and moving files and directories using Linux commands. Your goal is to successfully complete these tasks to ensure the proper management of the company's data and files.

Answer ==

1. Create a "reports" directory in your home folder with permissions set so that only the owner has read, write, and execute privileges while others have no access.

- To navigate to the home directory and create the directory:

Bash --

```
mkdir reports  
chmod 700 reports
```

2. Inside the "reports" directory, generate a file named "monthly_report.txt" allowing the owner to read and write, the group to read, and others to have no access.

- Creating the file and setting permissions:

```
Bash --  
cd reports  
touch monthly_report.txt  
chmod 640 monthly_report.txt
```

3. Copy the "monthly_report.txt" file to another directory while preserving its original permissions.

- Copying the file to a new location:

```
Bash --  
cp -p ~/reports/monthly_report.txt ~/reports_temp
```

4. Move the "monthly_report.txt" file from a different directory to the "reports" directory ensuring it retains its initial permissions.

- Moving the file while retaining permissions:

```
Bash --  
mv ~/reports_temp/monthly_report.txt ~/reports
```

5. List all files and directories within the "reports" directory, including hidden ones.**

- Displaying contents of the directory:

```
Bash --  
ls -la ~/reports
```

6. Rename the "reports" directory to "quarterly_reports" without altering its location or content.

- Renaming the directory:

```
Bash --  
mv ~/reports ~/quarterly_reports
```

7. Create a "backups" directory in your home directory and make "daily" and "weekly" subdirectories inside it.

- Creating the directory structure:

Bash –

```
mkdir ~/backups  
mkdir ~/backups/daily  
mkdir ~/backups/weekly
```

8. Generate an empty file named "important.txt" in the "daily" subdirectory within the "backups" directory.

- Creating an empty file:

Bash –

```
touch ~/backups/daily/important.txt
```

9. Move the "important.txt" file from the "daily" subdirectory to the "weekly" subdirectory while ensuring the file keeps its original name.

- Moving the file while retaining its name:

Bash --

```
mv ~/backups/daily/important.txt ~/backups/weekly
```

10. Display the absolute path of your present working directory.

- Showing the absolute path:

Bash --

```
pwd
```

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Applications Terminal - coder@5a73... 16:06 cod

Terminal - coder@5a7318d9ef2a: ~/reports

```

File Edit View Terminal Tabs Help
coder@5a7318d9ef2a:~$ mkdir report
coder@5a7318d9ef2a:~$ mkdir reports
coder@5a7318d9ef2a:~$ chmod 700 reports
coder@5a7318d9ef2a:~$ cd reports
coder@5a7318d9ef2a:~/reports$ touch monthly_report.txt
coder@5a7318d9ef2a:~/reports$ chmod 640 monthly_report.txt
coder@5a7318d9ef2a:~/reports$ cp -p ~/reports/monthly_report.txt~/reports/temp
cp: missing destination file operand after '~/reports/monthly_report.txt~/reports/temp'
Try 'cp --help' for more information.
coder@5a7318d9ef2a:~/reports$ cp monthly_report.txt /path/to/destination/directory
cp: cannot create regular file '/path/to/destination/directory': No such file or directory
coder@5a7318d9ef2a:~/reports$ mv ~/reports/temp/monthly_report.txt~/reports
mv: missing destination file operand after '~/reports/temp/monthly_report.txt~/reports'
Try 'mv --help' for more information.
coder@5a7318d9ef2a:~/reports$ cd ~/reports
bash: cd: ~/reports: No such file or directory
coder@5a7318d9ef2a:~/reports$ ls -la
total 4
-rwx----- 2 coder coder 3 Nov 17 15:48 .
-rwxr-xr-x 30 coder coder 45 Nov 17 15:48 ..
-rw-r----- 1 coder coder 0 Nov 17 15:48 monthly_report.txt
coder@5a7318d9ef2a:~/reports$ ls -la reports
ls: cannot access 'reports': No such file or directory
coder@5a7318d9ef2a:~/reports$ mv reports quarterly_reports
mv: cannot stat 'reports': No such file or directory
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups/daily/
mkdir: cannot create directory '~/backups/daily/': No such file or directory

```

```

ry 'mv --help' for more information.
coder@5a7318d9ef2a:~/reports$ cd ~/reports
bash: cd: ~/reports: No such file or directory
coder@5a7318d9ef2a:~/reports$ ls -la
total 4
-rwx----- 2 coder coder 3 Nov 17 15:48 .
-rwxr-xr-x 30 coder coder 45 Nov 17 15:48 ..
-rw-r----- 1 coder coder 0 Nov 17 15:48 monthly_report.txt
coder@5a7318d9ef2a:~/reports$ ls -la reports
ls: cannot access 'reports': No such file or directory
coder@5a7318d9ef2a:~/reports$ mv reports quarterly_reports
mv: cannot stat 'reports': No such file or directory
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups/daily/
mkdir: cannot create directory '~/backups/daily/': No such file or directory
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups/daily
mkdir: cannot create directory '~/backups/daily': No such file or directory
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups/daily
mkdir: cannot create directory '/home/coder/backups/daily': No such file or directory
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups/daily
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups/weekly
coder@5a7318d9ef2a:~/reports$ touch ~/backup/daily/important.txt
touch: cannot touch '/home/coder/backup/daily/important.txt': No such file or directory
coder@5a7318d9ef2a:~/reports$ touch ~/backups/daily/important.txt
coder@5a7318d9ef2a:~/reports$ mv ~/backups/daily/important.txt ~/backups/weekly
coder@5a7318d9ef2a:~/reports$

```

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Applications Terminal - coder@5a73... 16:06 coder

Terminal - coder@5a7318d9ef2a: ~/reports

```

File Edit View Terminal Tabs Help
ash: cd: ~/reports: No such file or directory
coder@5a7318d9ef2a:~/reports$ ls -la
total 4
-rwx----- 2 coder coder 3 Nov 17 15:48 .
-rwxr-xr-x 30 coder coder 45 Nov 17 15:48 ..
-rw-r----- 1 coder coder 0 Nov 17 15:48 monthly_report.txt
coder@5a7318d9ef2a:~/reports$ ls -la reports
ls: cannot access 'reports': No such file or directory
coder@5a7318d9ef2a:~/reports$ mv reports quarterly_reports
mv: cannot stat 'reports': No such file or directory
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups/daily/
mkdir: cannot create directory '~/backups/daily/': No such file or directory
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups/daily
mkdir: cannot create directory '~/backups/daily': No such file or directory
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups/daily
mkdir: cannot create directory '/home/coder/backups/daily': No such file or directory
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups/daily
coder@5a7318d9ef2a:~/reports$ mkdir ~/backups/weekly
coder@5a7318d9ef2a:~/reports$ touch ~/backup/daily/important.txt
ouch: cannot touch '/home/coder/backup/daily/important.txt': No such file or directory
coder@5a7318d9ef2a:~/reports$ touch ~/backups/daily/important.txt
coder@5a7318d9ef2a:~/reports$ mv ~/backups/daily/important.txt ~/backups/weekly
coder@5a7318d9ef2a:~/reports$ pwd
/home/coder/reports
coder@5a7318d9ef2a:~/reports$

```

Question 3 - You have been hired as a junior system administrator for a company that manages a Linux server hosting critical data and applications. Your supervisor has assigned you a series of tasks related to understanding and managing links, inodes, and superblocks using Linux commands. Your goal is to successfully complete these tasks to ensure the proper maintenance of the server.

Answer –

1. Create a hard link from the "important_data.txt" file in the root directory to your home directory and confirm the linkage by checking the inode.

- Command:

Bash--

```
ln ~/important_data.txt ~/hl_data.txt  
ls -li ~/important_data.txt ~/hl_data.txt
```

2. In your home directory, generate a symbolic link to the "important_data.txt" file located in the root directory. Verify permissions and the symbolic link's inode number.

- Command:

Bash --

```
ln -s ~/important_data.txt ~/sl_data.txt  
ls -li ~/sl_data.txt
```

3. Display all hard links to the "important_data.txt" file, including their full paths.**

- Command:

Bash --

```
find / -samefile /important_data.txt 2>/dev/null
```

4. Retrieve detailed information about the "important_data.txt" file, such as its size, owner, group, and permissions.

- Command:

Bash --

```
ls -li ~/important_data.txt
```

5. Display the disk space usage of the filesystem where the "important_data.txt" file is located, showing available space, used space, and filesystem size.

- Command: (This would depend on the filesystem and its corresponding command, e.g.,
`df -h /path/to/filesystem`)

6. Extract and present details about the superblock of the filesystem where "important_data.txt" resides, including block size and filesystem features.

- Command:

Bash -

dumpe2fs /dev/sda2

7. Create a "backup" subdirectory in your home directory, move "important_data.txt" into it from the root directory, and check the file's inode post-relocation.

- Command:

Bash --

mkdir ~/backup

mv ~/important_data.txt ~/backup/

ls -li ~/backup/important_data.txt

8. Generate a new symbolic link in your home directory pointing to the relocated "important_data.txt" file within the "backup" directory. Confirm the validity of the link.

- Command:

bash --

ln -s ~/backup/important_data.txt ~/sl_backup_data.txt

ls -li ~/sl_backup_data.txt

9. Explain why hard links cannot span across different filesystems, referencing inodes and superblocks.

- **Explanation:**

Hard links rely on the inode structure within a single filesystem. Each inode uniquely identifies a file within that filesystem. As different filesystems have their independent inode structures and superblocks, a hard link cannot cross filesystems since the inode numbers aren't synchronized between them.

10. Outline a backup strategy for "important_data.txt" ensuring link integrity and efficient disk usage.

- Strategy: Utilize a backup tool compatible with hard and symbolic links, like rsync with the `-H` option. For instance:

Bash --

rsync -a -H ~/backup/important_data.txt ~/

This command preserves hard links and properly handles symbolic links, ensuring link integrity and efficient disk usage during backup.

coursera Applications Terminal - coder@1f309... 17:34 coder

File Edit View Terminal Tabs Help

```

coder@1f30941be6b0:~$ ln ~/important_data.txt ~/hl_data.txt
ln: failed to access '/home/coder/important_data.txt': No such file or directory
coder@1f30941be6b0:~$ ls -i ~/important_data.txt ~/hl_data.txt
ls: cannot access '/home/coder/important_data.txt': No such file or directory
ls: cannot access '/home/coder/hl_data.txt': No such file or directory
coder@1f30941be6b0:~$ ln -s ~/important_data.txt ~/sl_data.txt
coder@1f30941be6b0:~$ ls -li ~/sl_data.txt
232576 lrwxrwxrwx 1 coder coder 31 Nov 17 17:21 /home/coder/sl_data.txt -> /home/coder/important_data.txt
coder@1f30941be6b0:~$ find/-samefile/important_data.txt2>dev/nul
bash: dev/nul: No such file or directory
coder@1f30941be6b0:~$ find/-samefile/important_data.txt 2>dev/nul
bash: /dev/nul: Permission denied
coder@1f30941be6b0:~$ ls -l ~/important_data.txt
ls: cannot access '/home/coder/important_data.txt': No such file or directory
coder@1f30941be6b0:~$ df -h ~/important_data.txt
df: /home/coder/important_data.txt: No such file or directory
coder@1f30941be6b0:~$ dmp2fs/dev/sda2
bash: dmp2fs/dev/sda2: No such file or directory
coder@1f30941be6b0:~$ mkfs.ext4 -n dev/sda2
mkfs 1.44.1 (24-Mar-2018)
The file dev/sda2 does not exist and no size was specified.
coder@1f30941be6b0:~$ mkdir ~/backup
coder@1f30941be6b0:~$ mv ~/important_data.txt ~/backup/

```

coursera Applications Terminal - coder@1f309... 17:34 coder

File Edit View Terminal Tabs Help

```

/coder/important_data.txt
coder@1f30941be6b0:~$ find/-samefile/important_data.txt2>dev/nul
bash: dev/nul: No such file or directory
coder@1f30941be6b0:~$ find/-samefile/important_data.txt 2>dev/nul
bash: /dev/nul: Permission denied
coder@1f30941be6b0:~$ ls -l ~/important_data.txt
ls: cannot access '/home/coder/important_data.txt': No such file or directory
coder@1f30941be6b0:~$ df -h ~/important_data.txt
df: /home/coder/important_data.txt: No such file or directory
coder@1f30941be6b0:~$ dmp2fs/dev/sda2
bash: dmp2fs/dev/sda2: No such file or directory
coder@1f30941be6b0:~$ mkfs.ext4 -n dev/sda2
mkfs 1.44.1 (24-Mar-2018)
The file dev/sda2 does not exist and no size was specified.
coder@1f30941be6b0:~$ mkdir ~/backup
coder@1f30941be6b0:~$ mv ~/important_data.txt ~/backup/
mv: cannot stat '/home/coder/important_data.txt': No such file or directory
coder@1f30941be6b0:~$ ln -s ~/backup/important_data.txt ~/sl_backup_data.txt
coder@1f30941be6b0:~$ ls -li ~/sl_backup_data.txt
230658 lrwxrwxrwx 1 coder coder 37 Nov 17 17:31 /home/coder/sl_backup_data.txt -> /home/coder/backup/important_data.txt
> /home/coder/backup/important_data.txt
coder@1f30941be6b0:~$ rsync -a -H ~/backup/important_data.txt~/
bash: rsync: command not found
coder@1f30941be6b0:~$

```

Question 4 -You have been assigned the role of a system administrator for a Linux server responsible for managing multiple hard disks. Your supervisor has tasked you with various responsibilities related to inspecting hard disks, partitions, and sectors using various Linux commands. Your objective is to successfully complete these tasks to ensure the proper maintenance and monitoring of the server's storage components.

Answer ==

1. List all available block devices on the system, showcasing device names, sizes, and mount points where applicable.

- Command:

Bash-

lsblk

2. Access detailed information about a specific hard disk, including its model, size, and SMART status using the suitable command.

- Command:

Bash-

smartctl -a /dev/sda

3. Display details about the partitions on a specific hard disk, highlighting their sizes and filesystem types, covering both mounted and unmounted partitions.

- Command:

Bash -

blkid /dev/sda2

4. Check available disk space on the system and present it in a human-readable format, illustrating total size, used space, and available space for each mounted filesystem.

- Command:

Bash-

df -H

5. Examine the partition table of a specific hard disk, detailing partition sizes, types, and start sectors.

- Commands:

Bash-

sudo fdisk /dev/sda

sudo parted /dev/sda print

6. **Inspect sector-level information of a specific partition on a hard disk, retrieving data like sector size, total sectors, and used sectors.**

- Command:
Bash-
sudo fdisk -l /dev/sda

7. Check the SMART status of a particular hard disk, interpreting results to identify potential disk health issues.

- Command:
Bash-
smartctl -H /dev/sda

8. Create a new partition on a specific hard disk, specifying partition type, size, and filesystem, explaining the purpose of the new partition.

- Command:
Bash -
mkpart primary ext4 1MB 1855MB

- **Explanation:** The command establishes an ext4 filesystem, initializing a partition starting at 1MB and ending at 1855MB.

9. Perform data recovery from a damaged sector on a partition, outlining steps involved in the data recovery process.

- **My Response:** If a sector is damaged, data recovery can be challenging. Typically, utilizing backup copies of the data, if available, is the first step. Tools like **ddrescue** or specialized recovery software might be used. It's crucial to work on a copy of the damaged partition to avoid further data loss.

10. Determine disk usage of a specific directory and its subdirectories, showcasing space consumed by each subdirectory.

- Command:
Bash --
du -h --max-depth=2 ~/

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Applications **Terminal - coder@f1452...** 17:11 cod

Terminal - coder@f14527175a38: ~

```
File Edit View Terminal Tabs Help
coder@f14527175a38:~$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
oos1         7:1    0  25.1M 1 loop
oos2         7:2    0  24.9M 1 loop
oos3         7:3    0  55.6M 1 loop
oos4         7:4    0  91.9M 1 loop
oos6         7:6    0  67.8M 1 loop
oos7         7:7    0   62M 1 loop
oos8         7:8    0  22.8M 1 loop
oos10        7:10   0  40.9M 1 loop
oos11        7:11   0  63.5M 1 loop
oos12        7:12   0  55.7M 1 loop
vme0n1       259:0    0   96G 0 disk
--nvme0n1p1 259:1    0   96G 0 part
vme1n1       259:2    0  200G 0 disk
--nvme1n1p1 259:6    0  200G 0 part
--nvme1n1p9 259:7    0    8M 0 part
vme2n1       259:3    0  600G 0 disk
--nvme2n1p1 259:4    0  600G 0 part
--nvme2n1p9 259:5    0    8M 0 part
coder@f14527175a38:~$ smartctl -a /dev/sda
smartctl 6.6 2016-05-31 r4324 [x86_64-linux-5.15.0-1017-aws] (local build)
Copyright (C) 2002-16, Bruce Allen, Christian Franke, www.smartmontools.org

===== UNRECOGNIZED OPTION: /

se smartctl -h to get a usage summary
```

coursera Navigate Lab Files Help

Applications **Terminal - coder@f1452...** 17:11 cod

Terminal - coder@f14527175a38: ~

```
File Edit View Terminal Tabs Help
--nvme2n1p1 259:4    0  600G 0 part
--nvme2n1p9 259:5    0    8M 0 part
coder@f14527175a38:~$ smartctl -a /dev/sda
smartctl 6.6 2016-05-31 r4324 [x86_64-linux-5.15.0-1017-aws] (local build)
Copyright (C) 2002-16, Bruce Allen, Christian Franke, www.smartmontools.org

===== UNRECOGNIZED OPTION: /

se smartctl -h to get a usage summary

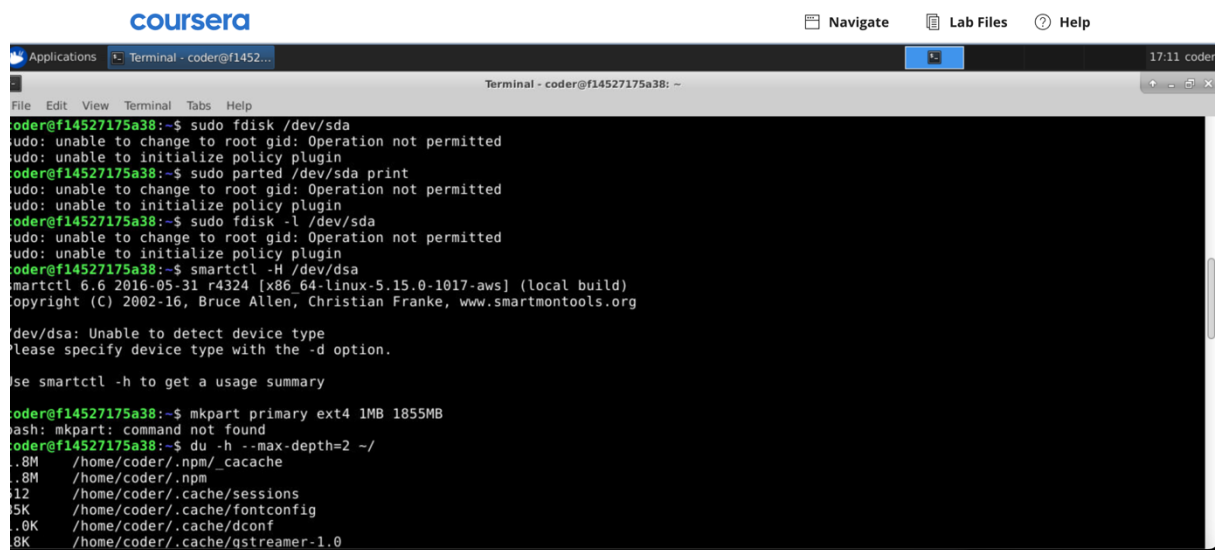
coder@f14527175a38:~$ blkid /dev/sda2
coder@f14527175a38:~$ df -H
Filesystem
ooskerPool/827dd8c79e8260c2d579dccc5ed639f0a8edfffc5016d2a0d0798e1522e44da980
mpfs
mpfs
hm
ooskerPool
s-6d8deb25.efs.us-east-1.amazonaws.com:/workspaces/ecylfbehfpy/volumes/thrW2I55/files
s-6d8deb25.efs.us-east-1.amazonaws.com:/templates/eXGG4Sr4/v2/files
evtmpfs
mpfs
mpfs
mpfs
mpfs
Size      Used Avail Use% Mounted on
14G      4.0G   10G  29% /
68M       0   68M   0% /dev
134G      0  134G   0% /sys/fs/cgroup
68M       0   68M   0% /dev/shm
344G     3.9G  340G   2% /etc/hosts
9.3E     27T   9.3E   1% /home/coder/Desktop
9.3E     27T   9.3E   1% /home/coder/Desktop-ro
134G      0  134G   0% /dev/tty
134G      0  134G   0% /proc/acpi
134G      0  134G   0% /proc/scsi
134G      0  134G   0% /sys/firmware
coder@f14527175a38:~$ sudo fdisk /dev/sda
udo: unable to change to root gid: Operation not permitted
udo: unable to initialize policy plugin
```

coursera Navigate Lab Files Help

Applications **Terminal - coder@f1452...** 17:11 cod

Terminal - coder@f14527175a38: ~

```
File Edit View Terminal Tabs Help
3.5K /home/coder/node_modules/ms
14K /home/coder/node_modules/next-tick
88K /home/coder/node_modules/es6-symbol
13K /home/coder/node_modules/debug
2.2M /home/coder/node_modules
1.0K /home/coder/.java
7.5K /home/coder/.vnc
612 /home/coder/.eclipse
612 /home/coder/Pictures
612 /home/coder/Downloads
612 /home/coder/.gnupg/private-keys-v1.d
4.0K /home/coder/.gnupg
612 /home/coder/Videos
6K /home/coder/Desktop
1.3M /home/coder/.local/share
1.3M /home/coder/.local
1.5K /home/coder/.dbus/session-bus
2.0K /home/coder/.dbus
8.5K /home/coder/coursera/.coursera-dotfiles
612 /home/coder/coursera/eclipse-workspace
4.5K /home/coder/coursera
612 /home/coder/Music
9.5K /home/coder/data/examples
0K /home/coder/data
8.8M /home/coder/
coder@f14527175a38:~$
```



The screenshot shows a terminal window within a Coursera lab environment. The terminal title is "Terminal - coder@f14527175a38...". The user is logged in as "coder" on a machine named "f14527175a38". The terminal shows the following commands and output:

```
coder@f14527175a38:~$ sudo fdisk /dev/sda
sudo: unable to change to root gid: Operation not permitted
sudo: unable to initialize policy plugin
coder@f14527175a38:~$ sudo parted /dev/sda print
sudo: unable to change to root gid: Operation not permitted
sudo: unable to initialize policy plugin
coder@f14527175a38:~$ sudo fdisk -l /dev/sda
sudo: unable to change to root gid: Operation not permitted
sudo: unable to initialize policy plugin
coder@f14527175a38:~$ smartctl -H /dev/dsa
smartctl 6.6 2016-05-31 r4324 [x86_64-linux-5.15.0-1017-aws] (local build)
Copyright (C) 2002-16, Bruce Allen, Christian Franke, www.smartmontools.org

/dev/dsa: Unable to detect device type
Please specify device type with the -d option.

Use smartctl -h to get a usage summary

coder@f14527175a38:~$ mkpart primary ext4 1MB 1855MB
bash: mkpart: command not found
coder@f14527175a38:~$ du -h --max-depth=2 ~/
..8M    /home/coder/.npm/_cacache
..8M    /home/coder/.npm
12      /home/coder/.cache/sessions
5K      /home/coder/.cache/fontconfig
..0K    /home/coder/.cache/dconf
8K      /home/coder/.cache/qstreamer-1.0
```