**Name : Kartik Jain** **TR : 2** **Assignment Number : 1**

**Q1 : What does CLI stand for, and how does it differ from GUI?**
Ans :

- CLI stands for **Command-Line Interface**. It allows users to interact with the operating system by typing commands in a terminal.
- GUI (Graphical User Interface) uses visual elements like icons, buttons, and windows for interaction.
  **Difference:**
- CLI is faster and uses fewer resources.
- GUI is easier for beginners as it provides a visual representation of tasks.

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**Q2 : Open a terminal and execute a simple command such as echo "Hello". Can you perform a similar action in a GUI? What are the advantages of using a CLI compared to a GUI?**

Ans :
Theory:

- CLI provides precision, faster automation, and access to advanced options not always available in GUI.
- GUIs are slower but more user-friendly.

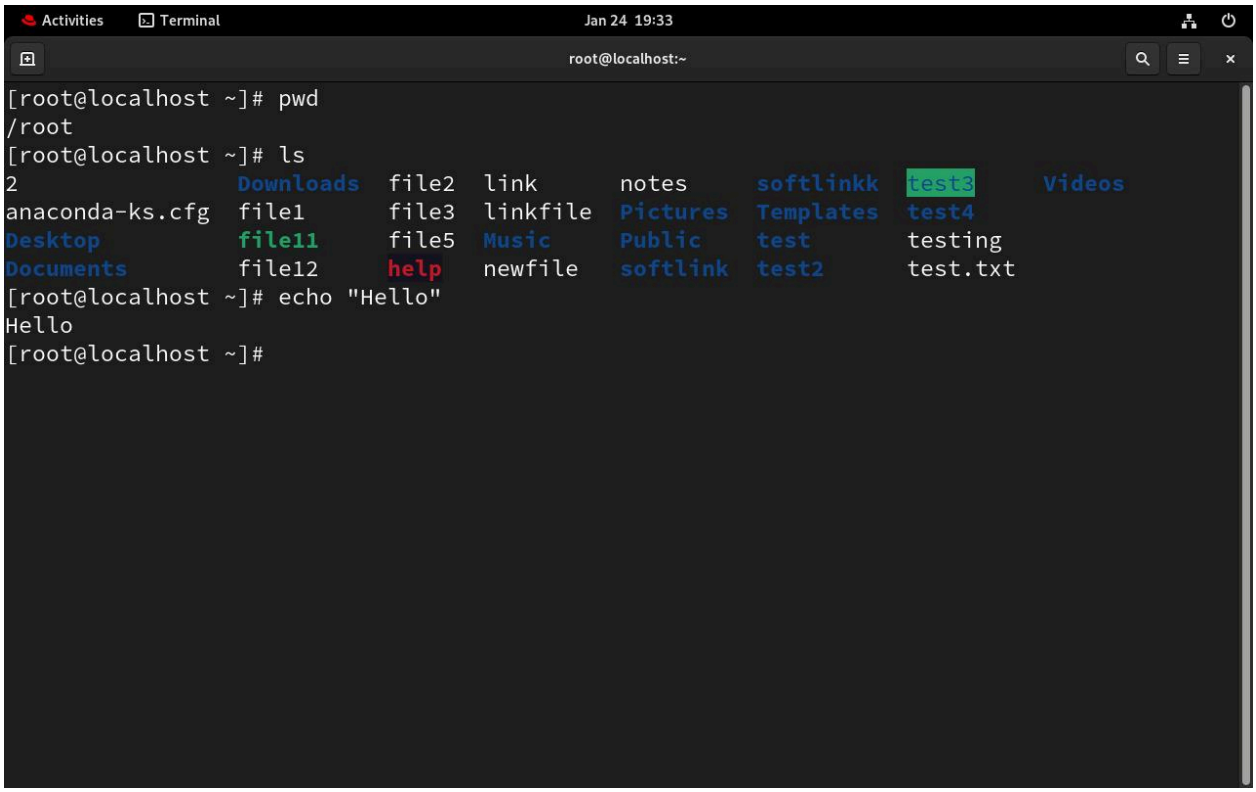
**Command :** `echo "Hello"`

GUI equivalent: Create a text file and type “Hello” manually.

**Advantages of CLI:**

- Speed and automation.
- Can be run remotely and in scripts.

Q2 Image

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**Q3 : To convert a minimal CLI-based Linux interface into a GUI-based one, which packages are typically required? Find them**

Ans :

**Theory:**

- For GUI, you need packages like a **Display Server (Xorg)**, **Window Manager**, and a **Desktop Environment** like GNOME or KDE.

**Commands to install GNOME Desktop Environment on RHEL:**

```
sudo yum groupinstall "Server with GUI" -y
```

```
sudo systemctl set-default graphical.target

sudo systemctl reboot
```

---

**Q4 : What are terminals in Linux? How many virtual terminals are available on your system, and which key combination is used to access them?**

ANS :

**Theory:**

- Terminals are interfaces to interact with the Linux system.
- Linux provides **6 virtual consoles** (tty1–tty6) by default.

**Command to switch between terminals:**
Press `Ctrl + Alt + F1` to `F6` to access virtual consoles.

Use `Ctrl + Alt + F7` to return to the GUI.

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**Q5 : Write the commands to check a file and a directory in a long listing format. How can you determine whether it is a file or a directory?**

ANS :

**Theory:**

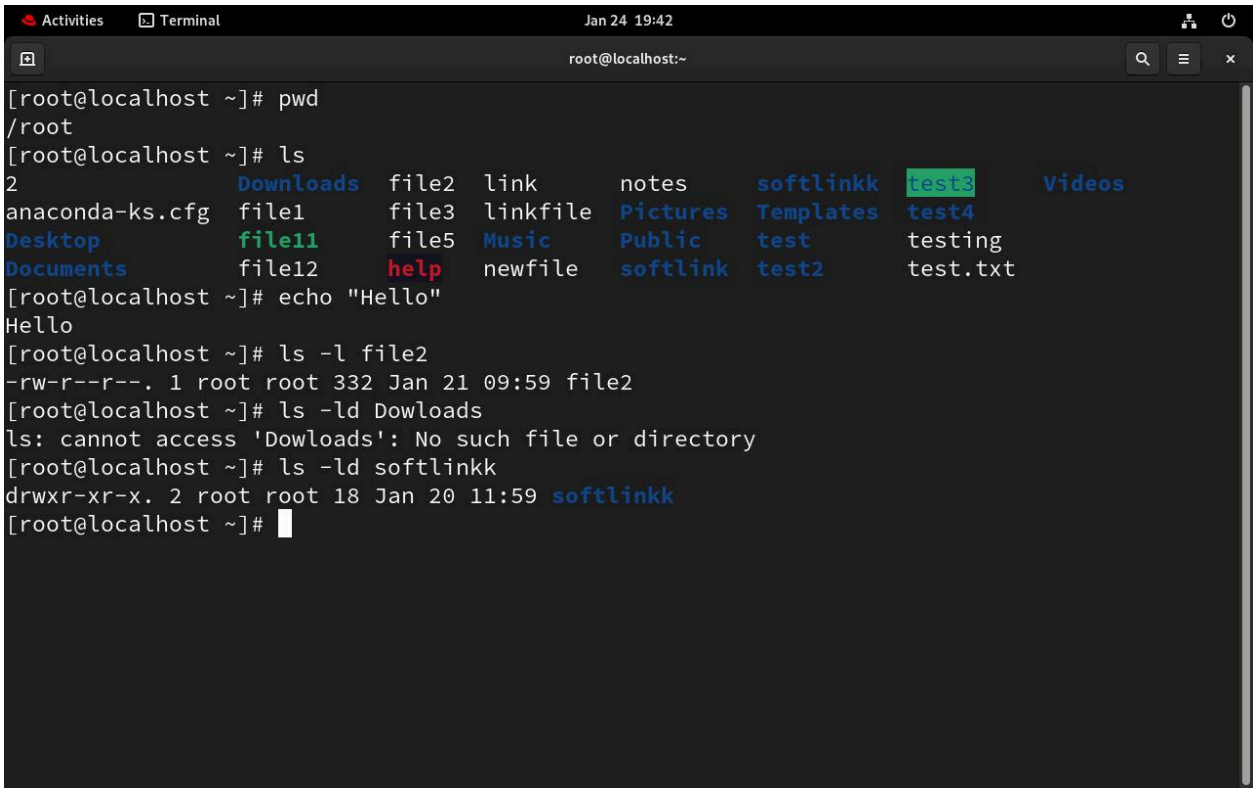
- The `ls -l` command displays file types and permissions.
- Directories start with `d` in the output.

**Command:**

`ls -l filename`

`ls -ld directory name`

Q5 Image



**Q6 : . Which Linux commands are used to view the content of files and directories? Write the commands.**

ANS :

**Theory:**

- Use commands like `cat`, `less`, and `more` to view file content.

**Commands:**

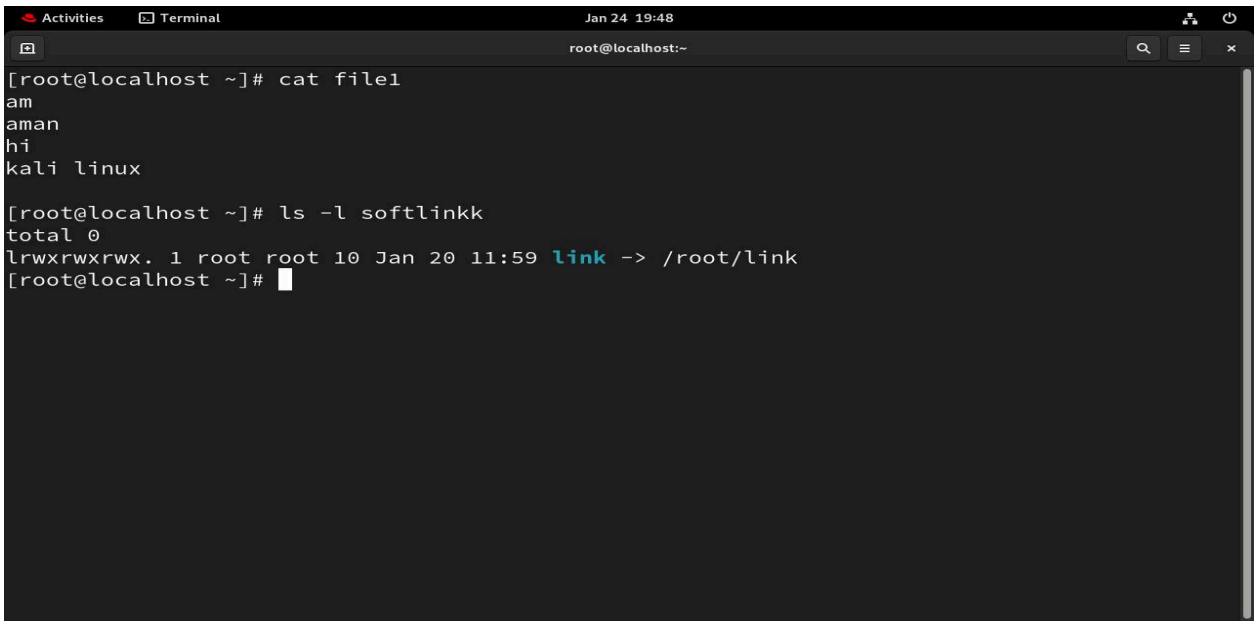
```
cat filename     # Show all content at once.

less filename    # Scroll through content.

more filename    # Similar to less but less flexible.

ls -l directory  # View directory details.
```

Q6 IMAGE :



**Q7. Change your current location to the /etc/yum.repos.d directory.**

**a. Using the relative path method, create a file named xyz.repo under the /etc/yum.repos.d/ directory.**

**b. Using the absolute path method, create a file named xyz.conf under the /etc/rsyslog.d/ directory.**

**c. What differences did you observe between using a relative path and an absolute path?**

a. Using Relative Path

```
cd /etc/yum.repos.d
```

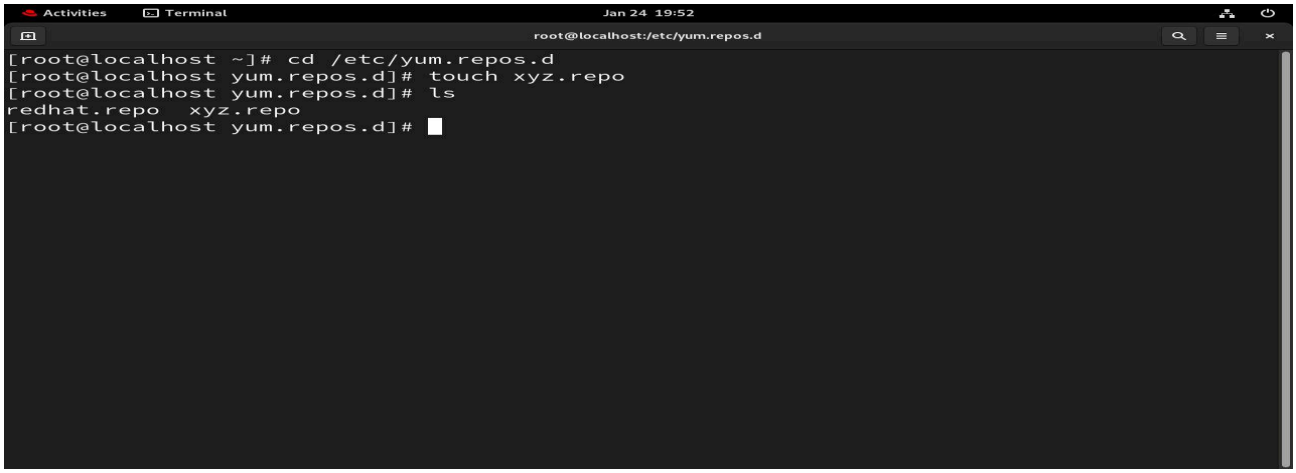
```
touch xyz.repo
```

b : Using Absolute Path:

```
touch /etc/rsyslog.d/xyz.conf
```

c : Relative paths depend on the current directory, while absolute paths are independent

Q7 Image :

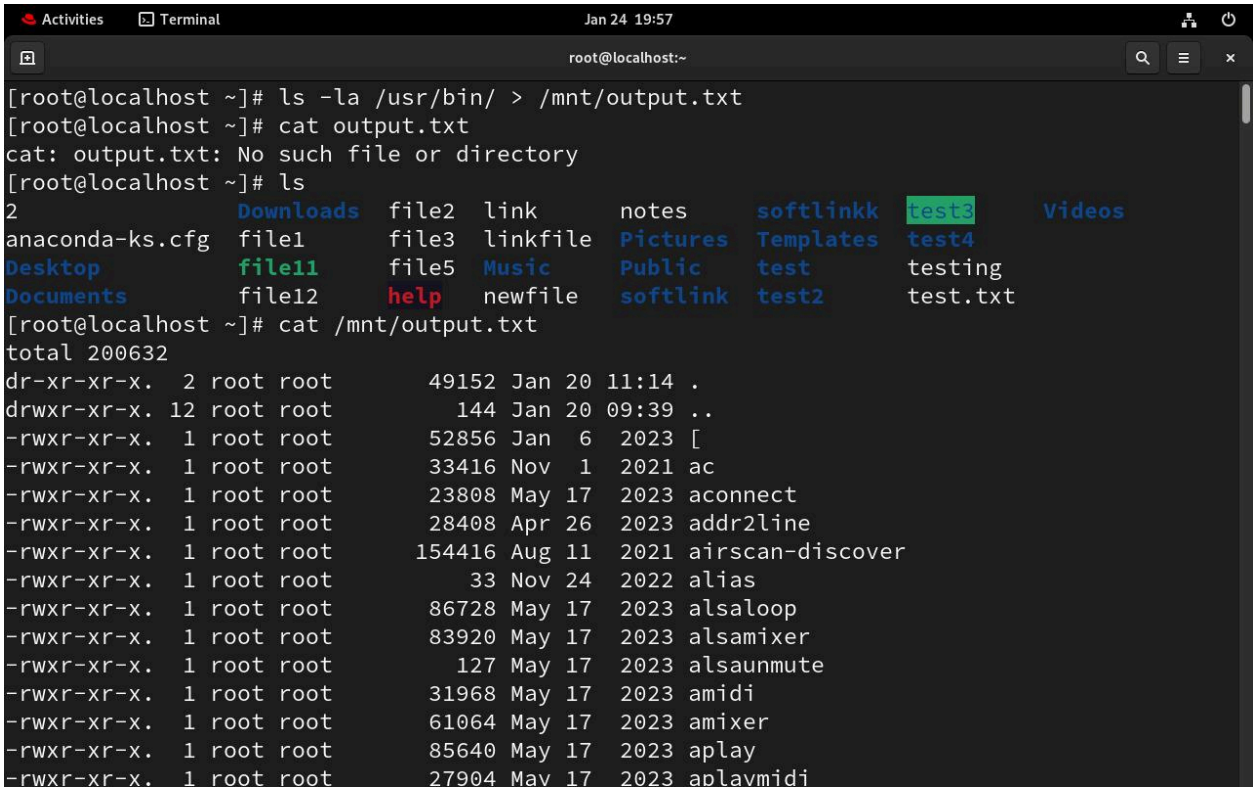


**Q8 : . List all files, including hidden ones, in the /usr/bin/ directory with details like file permissions. Save the output to a file named output.txt in the /mnt directory. Write the command**

ANS :

**Command:** `ls -la /usr/bin > /mnt/output.txt`

Q8 IMAGE :



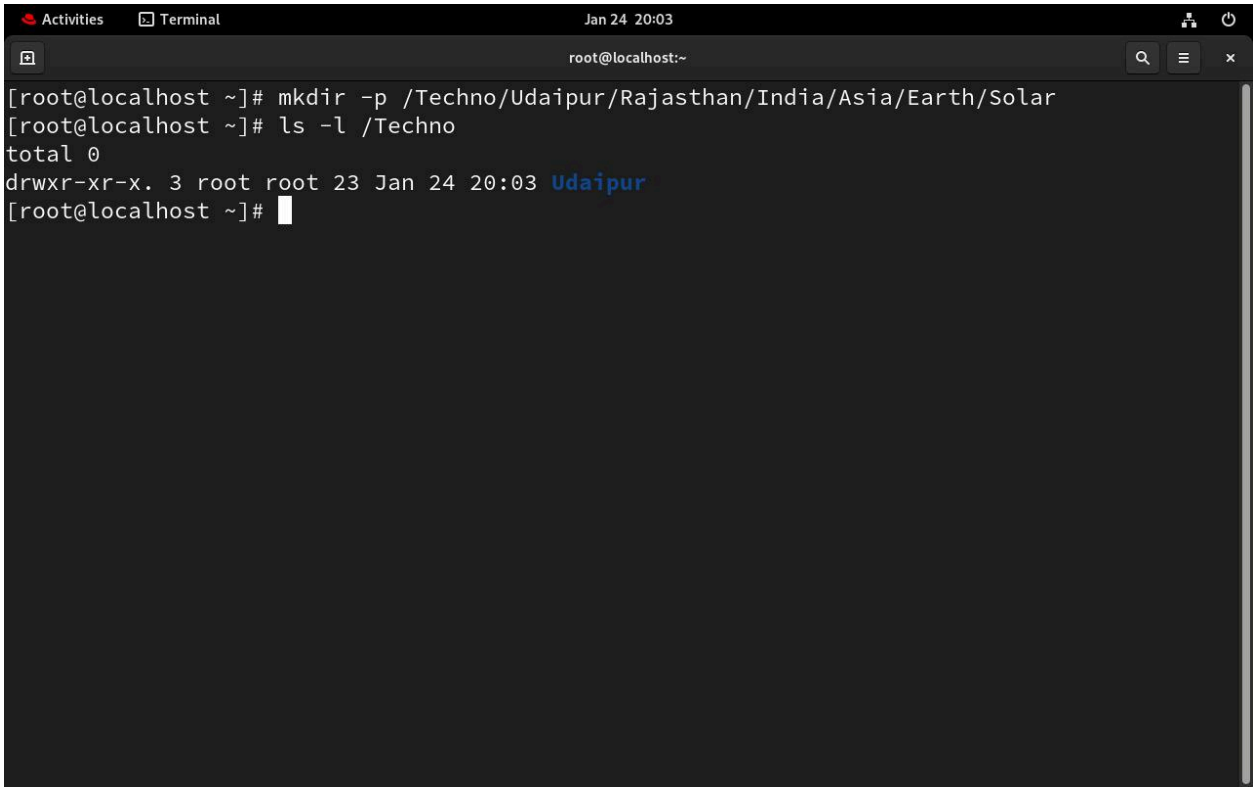
**Q9. Create nested directories and check the structure in a long listing format.**

**Command:**

```
mkdir -p
/Techno/Udaipur/Rajasthan/India/Asia/Earth/Solar

ls -lR /Techno
```

Q9 IMAGE :

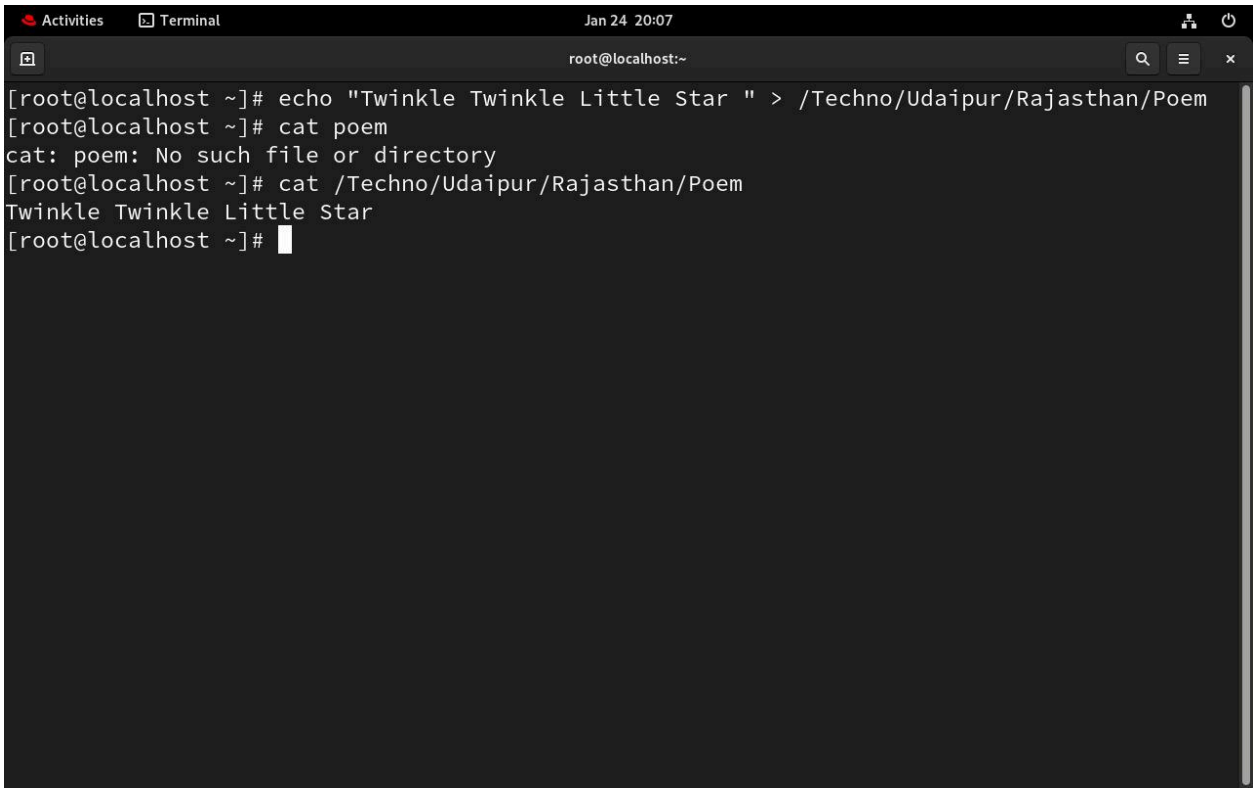


**10. Create a file named “Poem” under the /Techno/Udaipur/Rajasthan/ directory. Write the text "Twinkle Twinkle Little Star" into the file and save it. Perform all actions using the absolute path method.**

**Commands:**

```
echo "Twinkle Twinkle Little Star" >
/Techno/Udaipur/Rajasthan/Poem
```

Q10 IMAGE :



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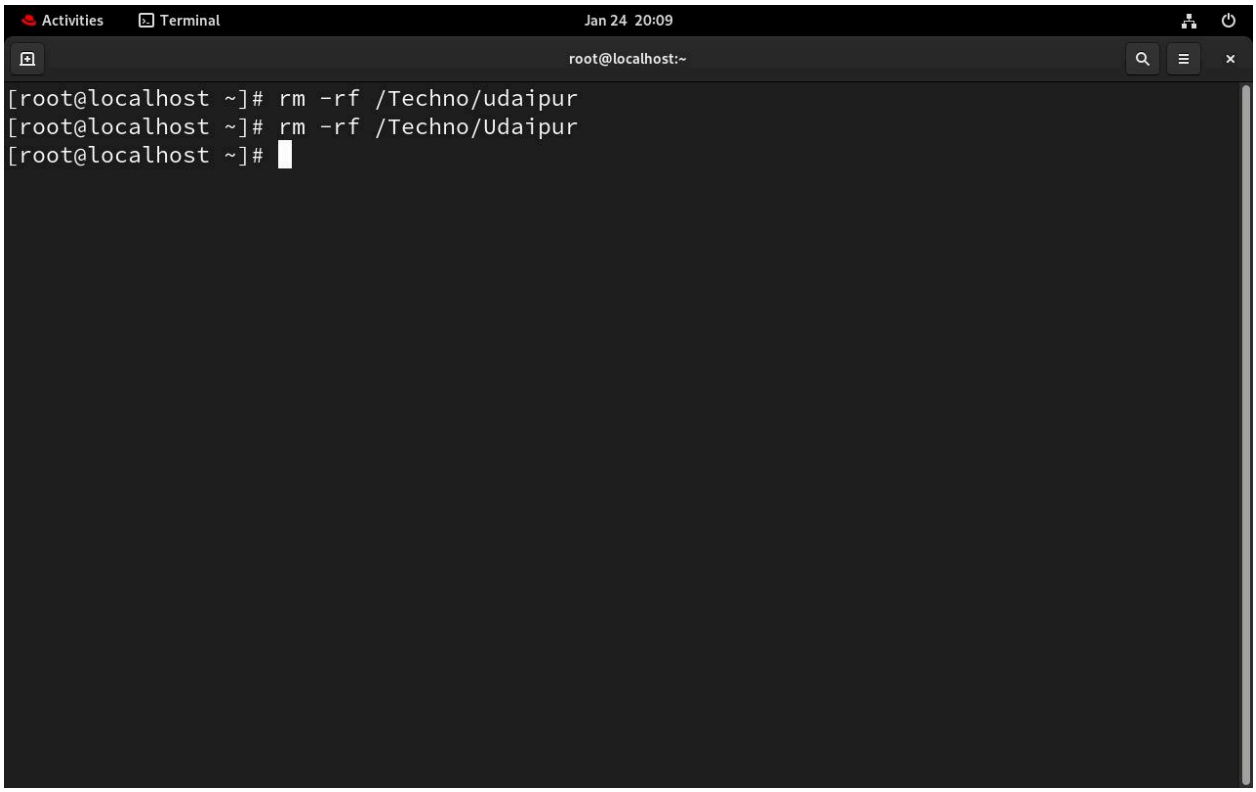
**11. Delete the `/Techno/Udaipur` directory and its contents.**

**Command:**

```
rm -rf /Techno/Udaipur
```

Q11 IMAGE :



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**12. How can you view the manual page for the useradd command? From the manual page, identify which files are important for user administration.**

**Command:**

```
man useradd
```

---

**13. You have two files: Fruits.txt and Vegetables.txt, each containing related content.**

**a. Write content in fruits.txt using vi. (EX: mango, apple, kiwi, grapes, cherry).**

```
vi Fruits.txt   # Add: mango, apple, kiwi, grapes, cherry.
```

**b. Write content in vegetables.txt using nano. (Ex: potato, tomato, onion, chilli, garlic).**

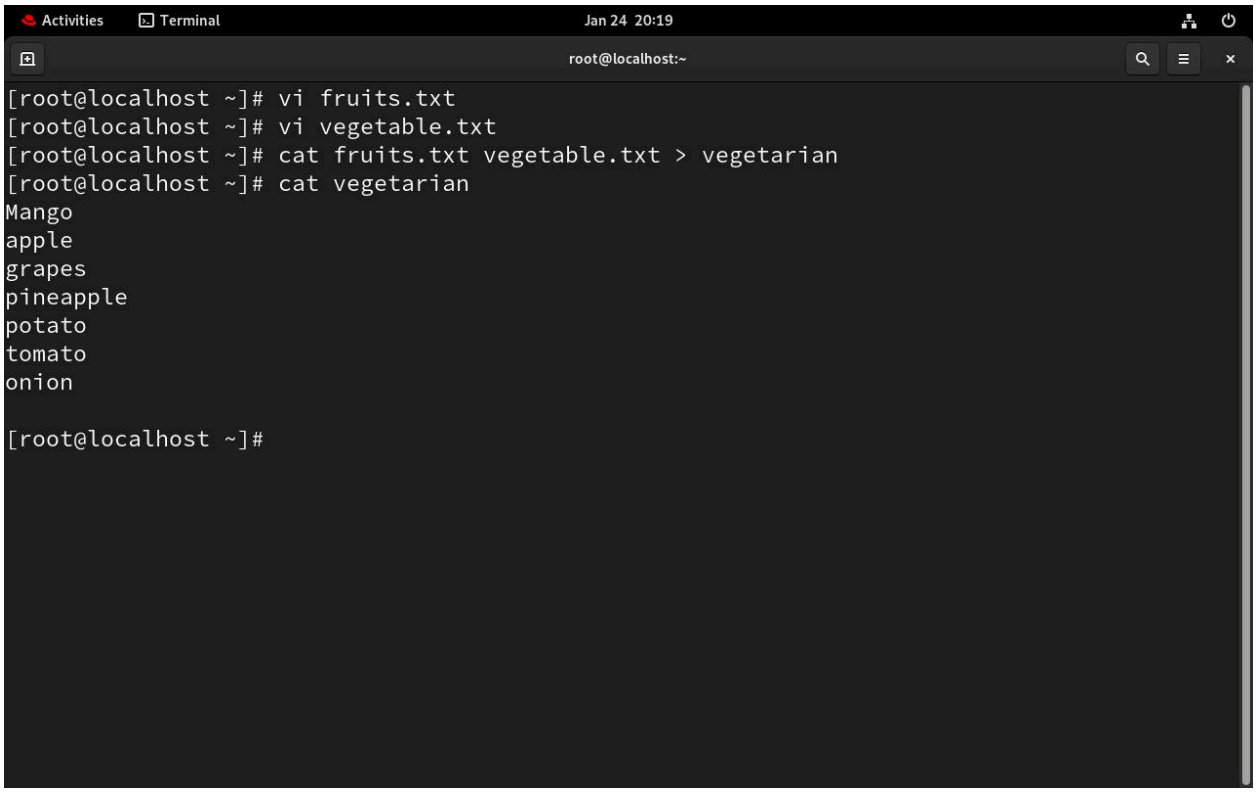
```
nano Vegetables.txt   # Add: potato, tomato, onion, chili, garlic.
```

**c. Write the single command to Combine the contents of both files into a single file named vegetarian and display its content.**

```
cat Fruits.txt Vegetables.txt > vegetarian
```

```
cat vegetarian
```

**Q13 IMAGE :**

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**14. . Write the command to copy all files, including related sub-files, from /var to a new location /tmp/data/. The output should be displayed during the copying process..**

**Command:**

```
cp -r /var /tmp/data
```

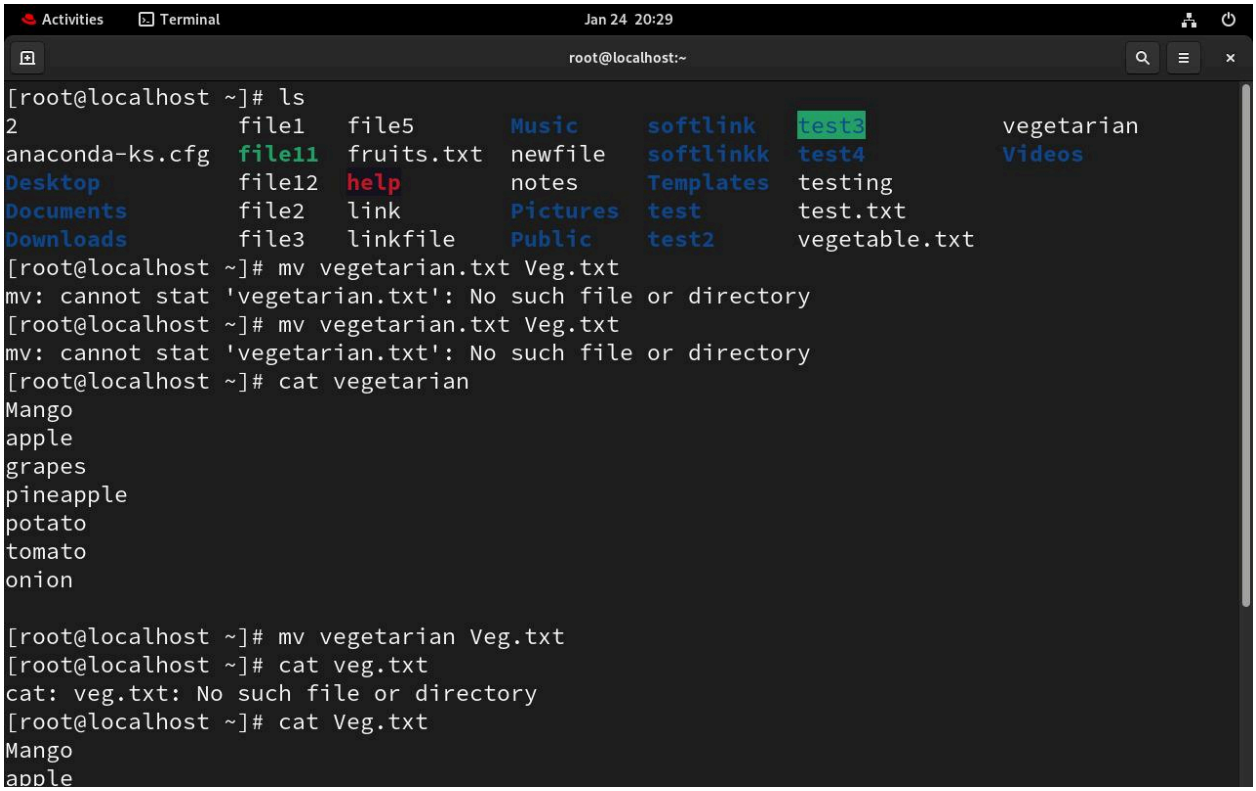
---

**15. Rename the file “Vegetrian.txt” to “Veg.txt”. Write the command.**

**Command:**

```
mv Vegetarian Veg.txt
```

Q15 IMAGE :

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**16. Open the file “/etc/passwd and locate the following lines using less and more.**

**Commands:**

a. Search "Root" using `less`:

```
less /etc/passwd
```

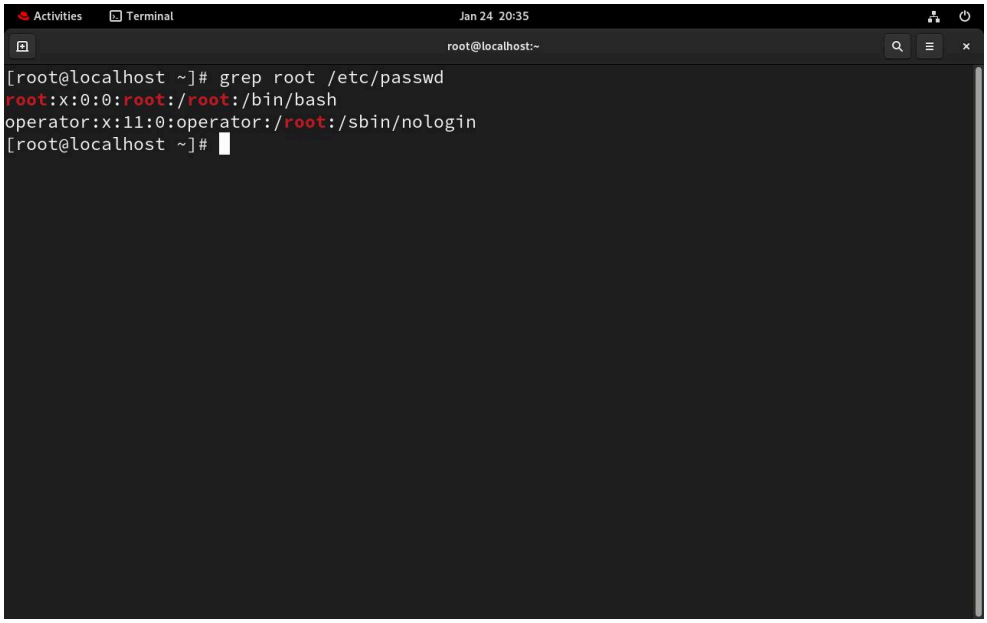
```
/SearchText
```

b. Search "root" using `grep`:

```
grep root /etc/passwd
```

**Difference:**
`less` scrolls interactively; `grep` filters results directly.

Q16 IMAGE :

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**17. Display specific lines from files:**

**Commands:**
a. Display the top 7th line of the /etc/passwd file.

```
sed -n '7p' /etc/passwd
```

b. Display the last 3 lines of the /etc/group file.

```
tail -n 3 /etc/group
```

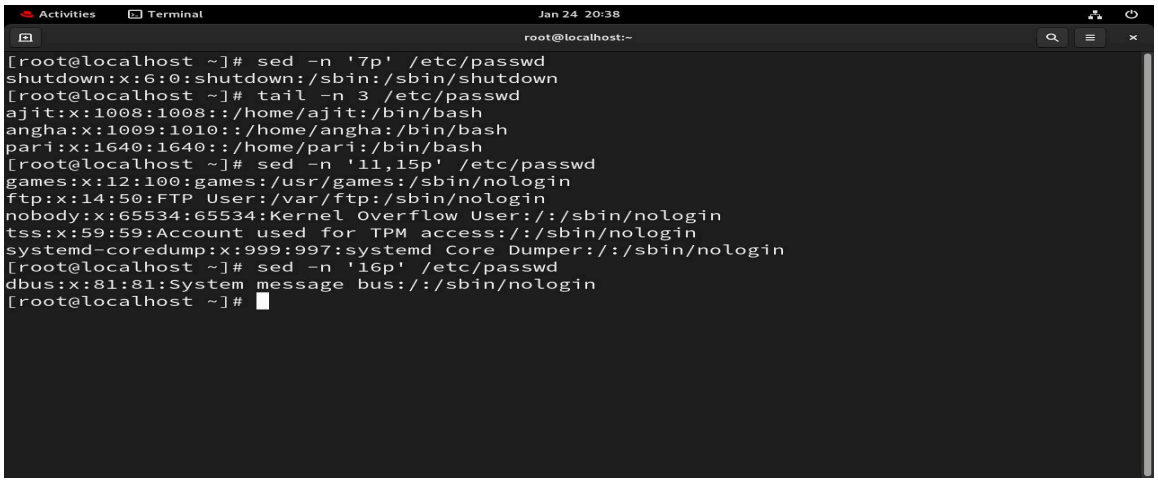
c. Display the lines 11th to 15th from the /etc/shadow file using a pipeline

```
sed -n '11,15p' /etc/shadow
```

d. Display only the 16th line of the /etc/passwd file

```
sed -n '16p' /etc/passwd
```

Q17 IMAGE :

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**18. Search with `grep` and save matches:**

**Commands:**

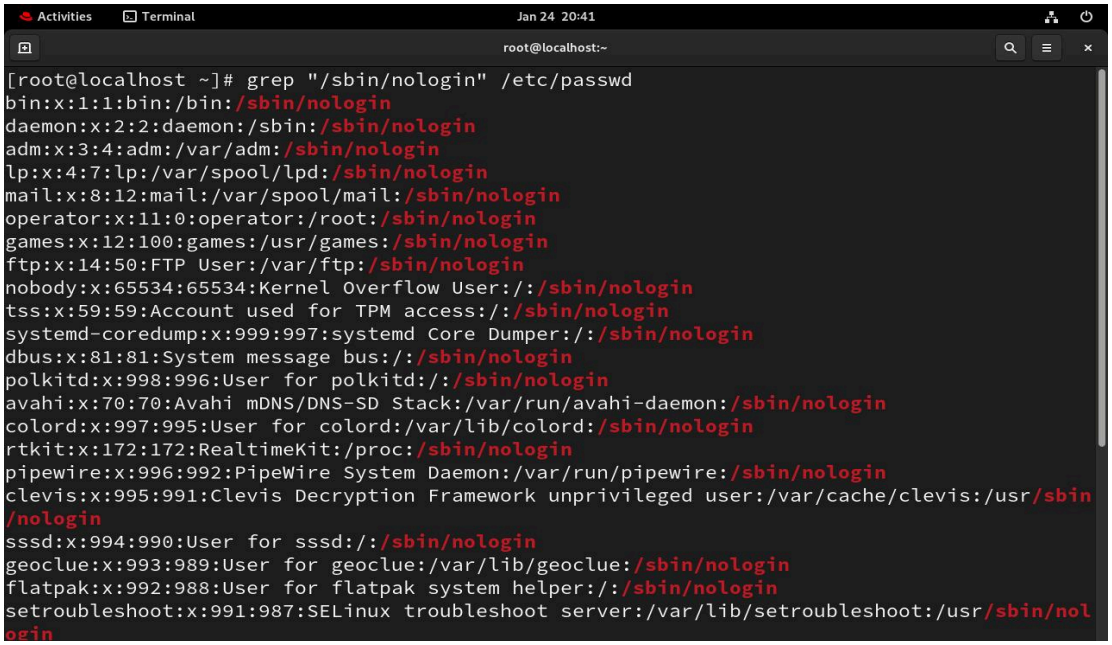
a. a. Write a command to match and display lines containing the word /sbin/nologin

```
grep "/sbin/nologin" /etc/passwd
```

b. . Write a command to match and display lines containing the multiple words (root, sbin, and /home) simultaneously, ignoring typographical case errors. Save the output for all three matches into the file /root/test. Without loosing data. :

```
grep -iE "root|sbin|/home" /etc/passwd > /root/test
```

Q18 IMAGE :

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**19. Replace text using `sed` and count lines with "success":**

**Commands:**

a. . Write the command to replace the word localhost with localhost.localhost in the file /etc/hosts without opening the file in an editor

```
sed -i 's/localhost/localhost.localhost/g' /etc/hosts
```

b. The /var/log/audit/audit.log file contains audit log messages, some of which include the word “success.” Write the command to count how many lines contain the word success.

```
grep -c "success" /var/log/audit/audit.log
```

---

**20. . Create a directory named “demo” on “/root”:**

**Commands:**

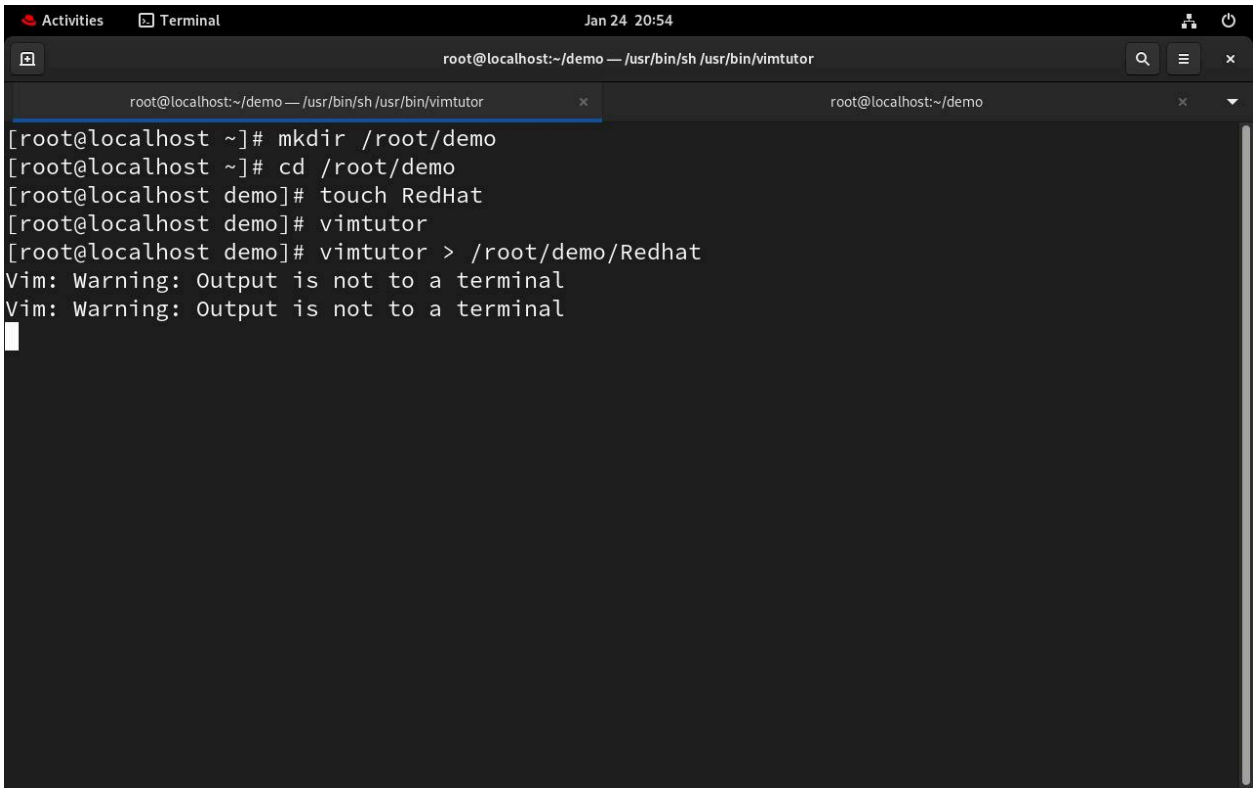
**a. Create a file “RedHat” under the “demo” directory:**

```
mkdir /root/demo

touch /root/demo/RedHat

vimtutor > /root/demo/RedHat
```

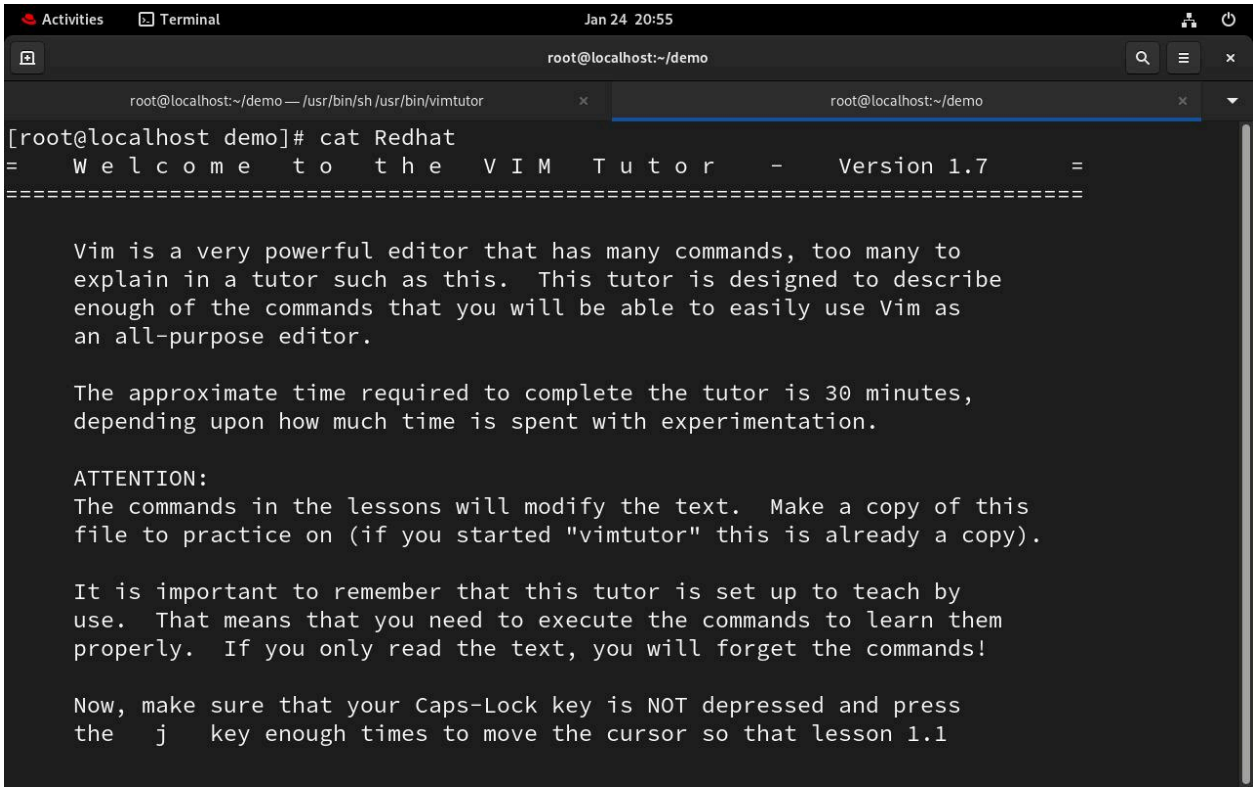
Q20 (a) Image :



**b. Run the command “vimtutor” and save the output to the “RedHat” file:**

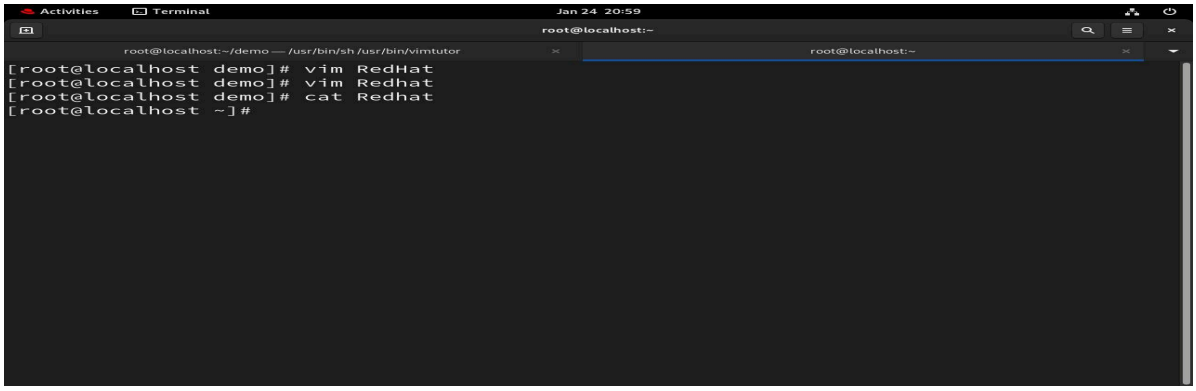
Command : vimtutor > /root/demo/RedHat

Q20 (b) image :




**c. Now create a soft link of “RedHat” to “/etc/” location.**

Command : `ln -s /root/demo/RedHat /etc/RedHat`




## D . Create a hard link of /var/log/messages to /etc/log.

Command : `ln /var/log/messages /etc/log`