Experiment No. 2

Title

File and Directory Management and File Permissions in Linux

Aim

To study and practice Linux commands for file and directory management, understand Linux file and directory permissions, and create and edit files using text editors such as `nano` and `vi`.

Theory

Linux File System

Linux follows a hierarchical file system starting from the root directory `/`. All files and directories are arranged in a tree structure, allowing efficient organization and secure access control.

Files and Directories

- **Files** store data such as text, programs, or scripts.
- **Directories** store files and subdirectories.

File and Directory Permissions

Linux uses permissions to control access:

- **Read (r)** – Read file contents / list directory
- **Write (w)** – Modify file or directory
- **Execute (x)** – Execute file or access directory

Permissions apply to:

- **Owner**
- **Group**
- **Others**

Text Editors

- **nano:** Simple and beginner-friendly text editor
- **vi:** Powerful editor with command and insert modes

Commands Used

Commands	Description
pwd	Display current directory
ls	List files and directories
ls -l	Display detailed file information
cd	Change directory
mkdir	Create directory
rmdir	Remove empty directory
touch	Create empty file
cat	Display file contents
nano	Edit files using nano editor
vi	Edit files using vi editor
chmod	Change file permissions
stat	Display file status

Procedure / Steps

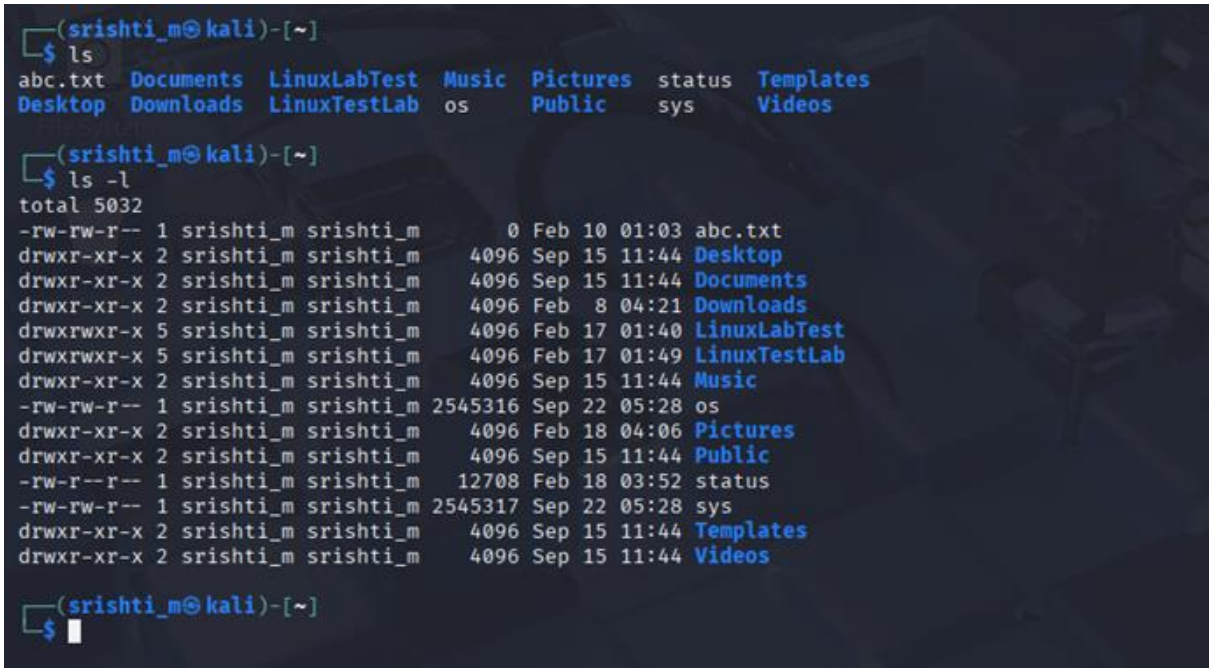
Step 1: Login

- Log in to the Linux virtual machine and open the **Terminal**.

Step 2: Display the Current Directory using `pwd command.`

Step 3: List Files and Directories using:

- `ls`
- `ls -l`



Step 4: Create a New Directory

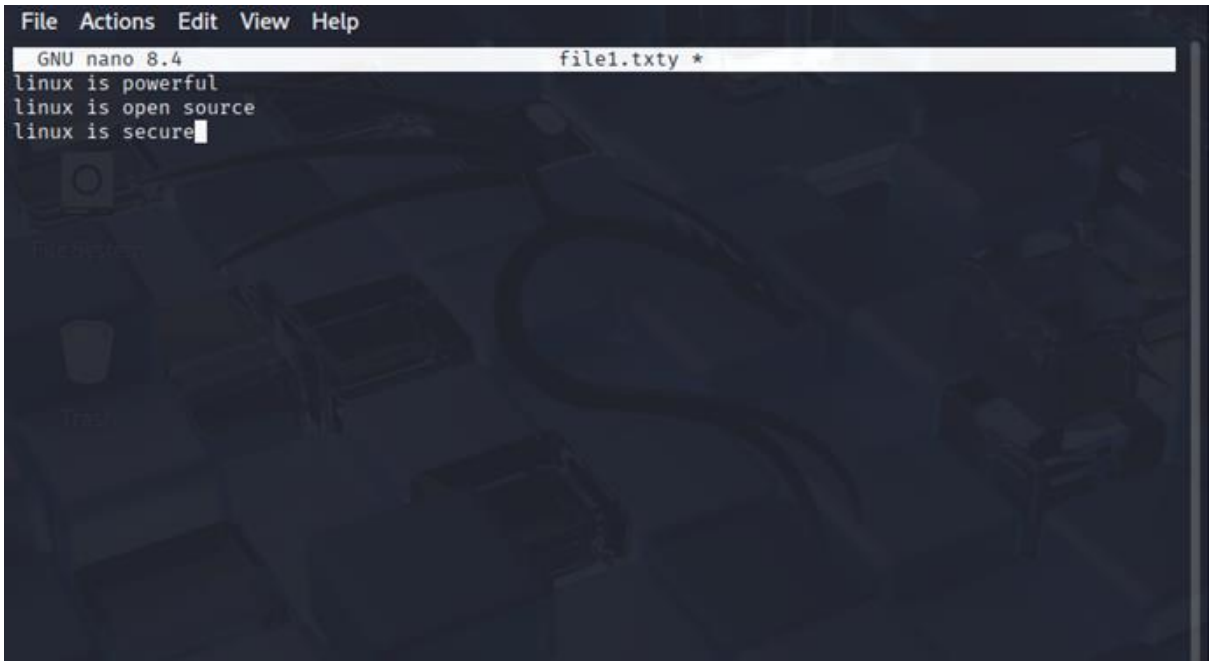
```
mkdir linux_lab
cd linux_lab
```

- `linux_lab` directory is created and entered.

Step 5: Create Files using : `-touch file1.txt file2.txt`

Step 6: Edit File Using : `nano file1.txt`

- Type some text
- Press **Ctrl + O** → Enter (save)
- Press **Ctrl + X** (exit)



Step 7: Edit File Using : `vi file2.txt`

```
┌──(srishti_m㉿kali)-[~]
└─$ mkdir linux_lab2

┌──(srishti_m㉿kali)-[~]
└─$ cd linux_lab2

┌──(srishti_m㉿kali)-[~/linux_lab2]
└─$ touch file1.txt file2.txt

┌──(srishti_m㉿kali)-[~/linux_lab2]
└─$ nano file1.txt

┌──(srishti_m㉿kali)-[~/linux_lab2]
└─$ vi file2.txt
```

Then,

- Press **i** to enter insert mode
- Type text
- Press **Esc**
- Type: **:** `wq`
- Press Enter

Step 8: Display File Content Using:

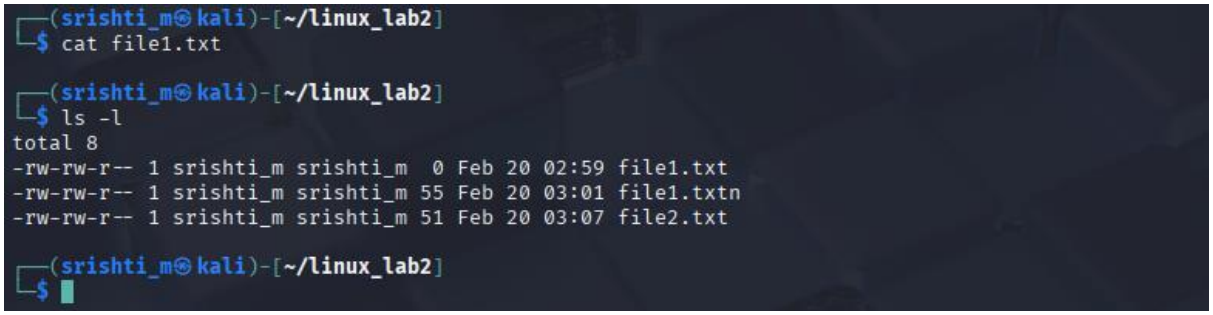
- `cat file1.txt`

```
┌──(srishti_m㉿kali)-[~/linux_lab2]
└─$ cat file1.txt

┌──(srishti_m㉿kali)-[~/linux_lab2]
└─$
```

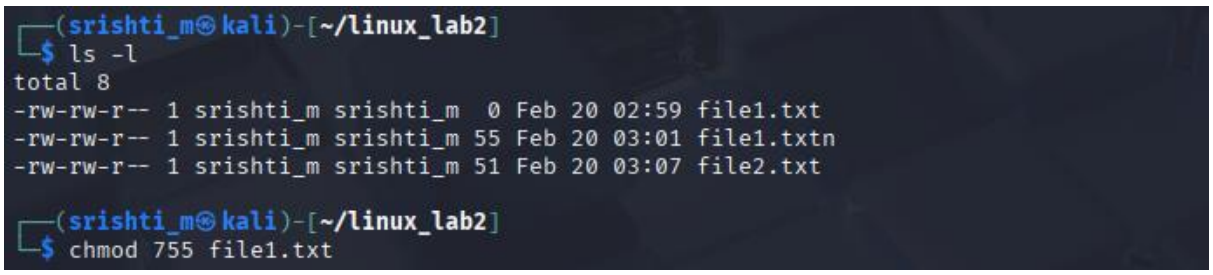
Step 9: Check File Permissions

- `ls -l`



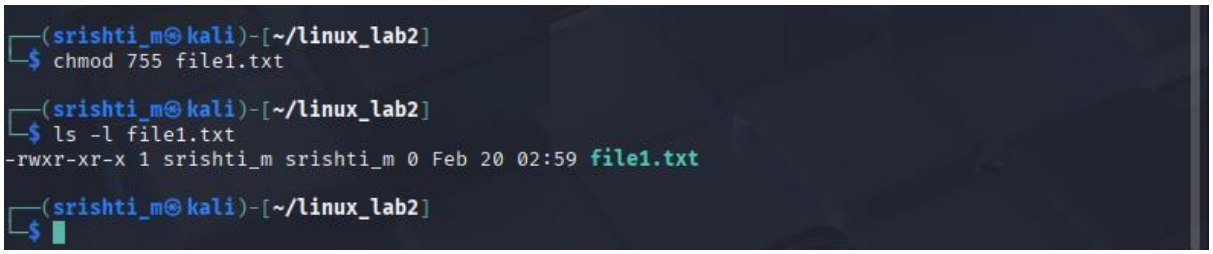
Step 10: Change File Permissions using:

- `chmod 755 file1.txt`



Step 11: Verify Updated Permissions Using:

- `ls -l file1.txt`
- we will observe permission format: `-rw-r--r–`



Outcomes

- ✓ Successful creation of directories and files
- ✓ Files edited using `nano` and `vi`
- ✓ File contents displayed using `cat`
- ✓ File permissions viewed and modified using `chmod`

Result

- ❖ Thus, file and directory management commands were successfully executed in Linux. The student learned to create, edit, and manage files and directories, understand file permissions, and use text editors such as `nano` and `vi`.