

Exploring Linux Commands: File System Operations and Permissions Management

Objective:

The objective of the commands used in the scenario is to illustrate various file system operations and permissions management in a Linux environment. These commands cover tasks such as navigating directories, creating, modifying, and deleting files, as well as managing file permissions, ownership, and group ownership.

1. Navigation Commands:

- **ls**: Lists files and directories in the current directory.
- **cd**: Changes the current directory.
- **pwd**: Prints the current working directory.
- **mkdir**: Creates a new directory.
- **touch**: Creates a new file or updates the timestamp of an existing file.

2. File System Operations:

- **mv**: Moves or renames files or directories.
- **cp**: Copies files or directories.
- **rm**: Removes (deletes) files or directories.
- **cat**: Displays the contents of a file or concatenates multiple files.
- **nano, vi, vim, gedit**: Text editors used to create or edit files.

3. File Permissions:

- **chmod**: Changes file permissions.
- **chown**: Changes file ownership.
- **chgrp**: Changes file group ownership.
- **ls -l**: Lists files and directories in long format, including permissions, ownership, and group.

4. File Input/Output:

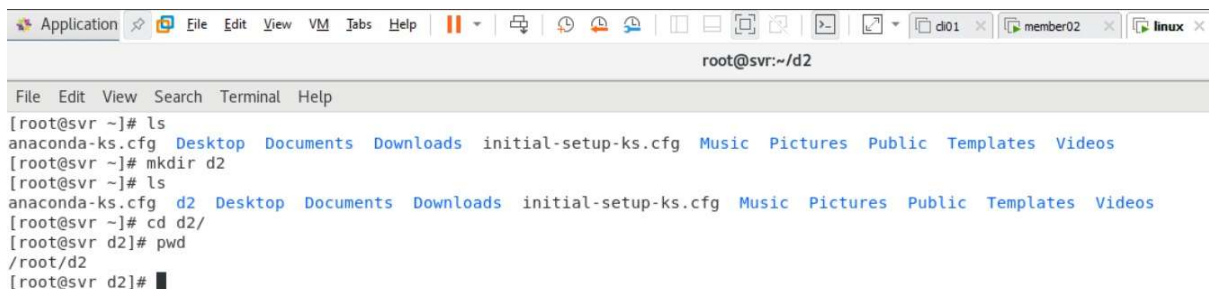
- **cat > file**: Creates a new file or overwrites existing content with input from the command line.
- **history > file**: Redirects command history to a file.

5. Directory Operations:

- **rm -rf**: Removes directories and their contents recursively.
- **ls -R**: Lists files and directories recursively.
- **ls -a**: Lists all files and directories, including hidden ones.

6. Miscellaneous:

- **date**: Displays the current date and time.
- **cal**: Displays a calendar.
- **wc**: Prints newline, word, and byte counts for each file.
- **man**: Displays the manual pages for a command.

A screenshot of a terminal window titled 'root@svr:~/d2'. The window shows a series of commands and their outputs. The commands are: 'ls', 'mkdir d2', 'ls', 'cd d2/', and 'pwd'. The outputs are: 'anaconda-ks.cfg Desktop Downloads initial-setup-ks.cfg Music Pictures Public Templates Videos', the same list of files and directories, and '/root/d2'. The terminal window has a menu bar with 'File', 'Edit', 'View', 'VM', 'Tabs', and 'Help'. There are also icons for file operations like copy, paste, and search.

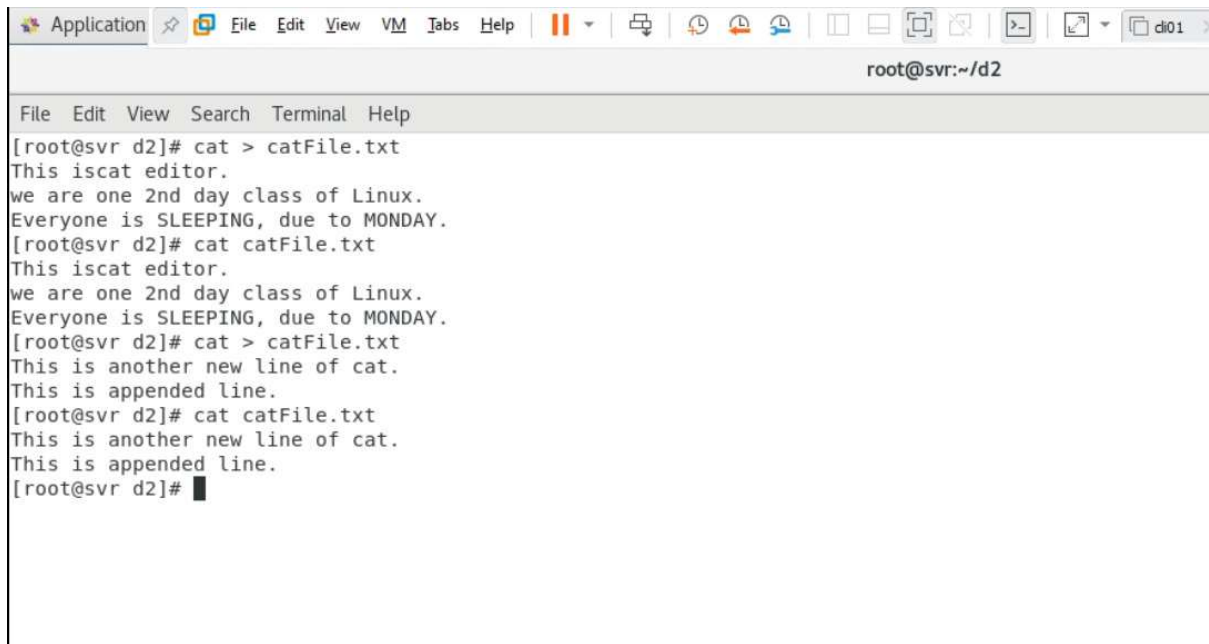
```
[root@svr ~]# ls
anaconda-ks.cfg Desktop Downloads initial-setup-ks.cfg Music Pictures Public Templates Videos
[root@svr ~]# mkdir d2
[root@svr ~]# ls
anaconda-ks.cfg d2 Desktop Downloads initial-setup-ks.cfg Music Pictures Public Templates Videos
[root@svr ~]# cd d2/
[root@svr d2]# pwd
/root/d2
[root@svr d2]#
```

ls	This command lists the files and directories in the current directory.
mkdir d2	This command creates a new directory named d2.
ls	Lists the files and directories again to show the newly created directory d2.
cd d2/	Changes the current directory to d2.
pwd	Prints the current working directory, which should now be d2.

```
Application File Edit View VM Tabs Help
root@svr:~/d2
File Edit View Search Terminal Help
valid_lft forever preferred_lft forever
4: virbr0-nic: <BROADCAST,MULTICAST> mtu 1500 qdisc fq_codel master virbr0 state DOWN group default qlen 1000
link/ether 52:54:00:d7:89:13 brd ff:ff:ff:ff:ff:ff
[root@svr ~]# ip add show ens33
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
link/ether 00:0c:29:d5:a5:63 brd ff:ff:ff:ff:ff:ff
inet 192.168.19.134/24 brd 192.168.19.255 scope global noprefixroute dynamic ens33
valid_lft 1404sec preferred_lft 1404sec
inet6 fe80::3c5f:f322:14ea:b97/64 scope link noprefixroute
valid_lft forever preferred_lft forever
[root@svr ~]#
[root@svr ~]# ls
anaconda-ks.cfg Desktop Documents Downloads initial-setup-ks.cfg Music Pictures Public Templates Videos
[root@svr ~]# mkdir d2
[root@svr ~]# ls
anaconda-ks.cfg d2 Desktop Documents Downloads initial-setup-ks.cfg Music Pictures Public Templates Videos
[root@svr ~]# cd d2/
[root@svr d2]# pwd
/root/d2
[root@svr d2]# ls
[root@svr d2]# touch touchFile.txt
[root@svr d2]# ls
touchFile.txt
[root@svr d2]# date
Mon Apr 22 15:09:26 IST 2024
[root@svr d2]# ls -l
total 0
-rw-r--r-- 1 root root 0 Apr 22 15:02 touchFile.txt
[root@svr d2]#
```

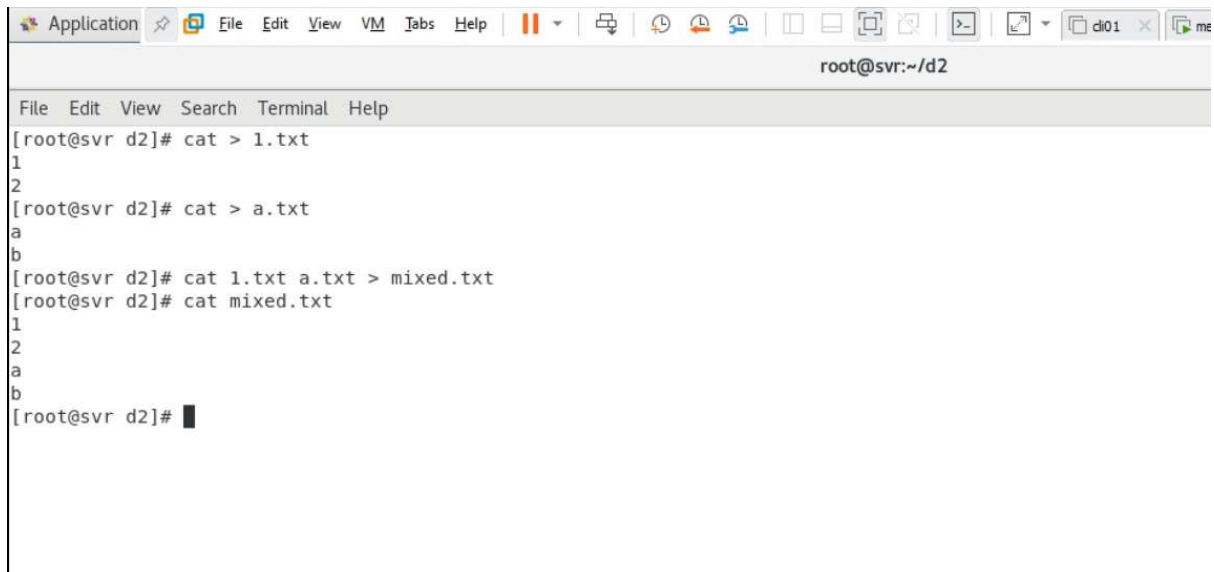
Activate Windows
Go to Settings to activate Windows.

ls	Lists the files and directories in the d2 directory.
touch touchFile.txt	Creates a new empty file named touchFile.txt.
ls	Lists the files and directories again to show the newly created file.
date	Prints the current date and time.
ls -l	Lists the files and directories in long format, providing detailed information about each file or directory.



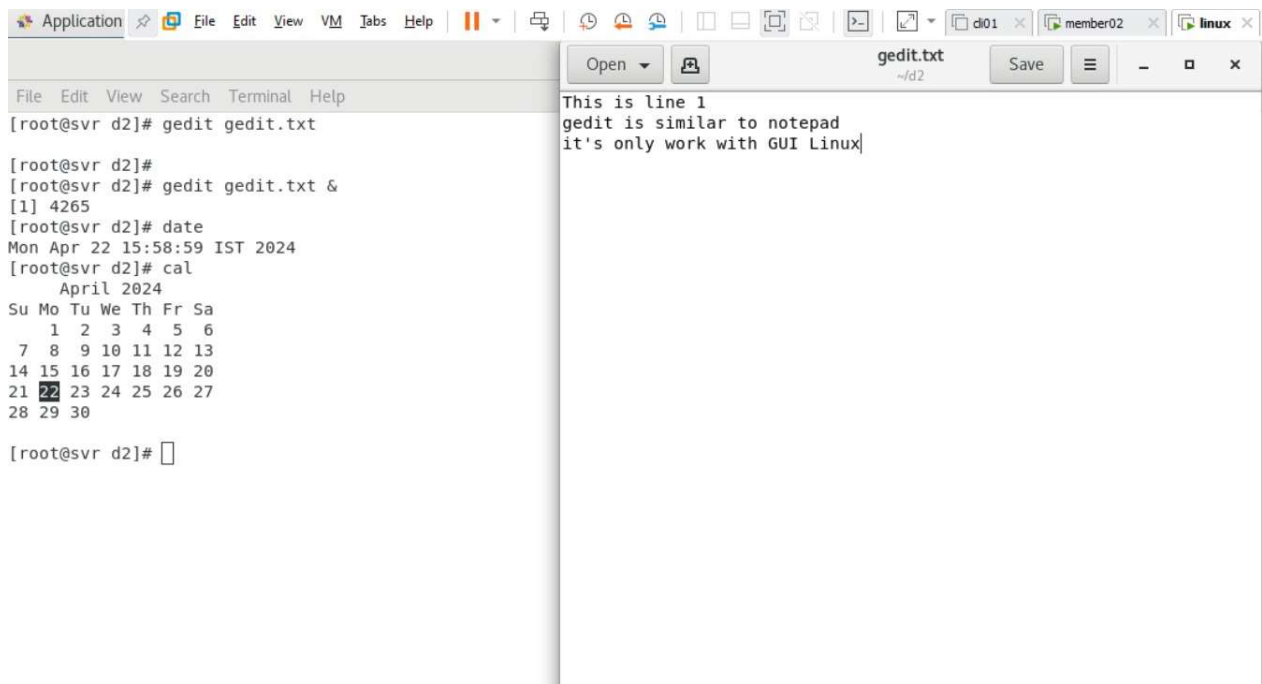
```
[root@svr d2]# cat > catFile.txt
This iscat editor.
we are one 2nd day class of Linux.
Everyone is SLEEPING, due to MONDAY.
[root@svr d2]# cat catFile.txt
This iscat editor.
we are one 2nd day class of Linux.
Everyone is SLEEPING, due to MONDAY.
[root@svr d2]# cat > catFile.txt
This is another new line of cat.
This is appended line.
[root@svr d2]# cat catFile.txt
This is another new line of cat.
This is appended line.
[root@svr d2]#
```

cat > catFile.txt	Begins creating a new file named catFile.txt and allows the user to input text into it. The user can type text into the terminal, and it will be saved to the file until they exit with Ctrl + D.
cat catFile.txt	Displays the contents of the file catFile.txt.
cat /etc/shells	Displays the contents of the /etc/shells file, which typically lists the valid login shells on the system.
cat > catFile.txt	this begins creating a new catFile.txt and allows the user to input text.
cat catFile.txt	Displays the contents of catFile.txt.
cat >> catFile.txt	Appends more text to the existing catFile.txt file.
cat catFile.txt	Displays the contents of catFile.txt after appending text.
ls	Lists the files and directories in the current directory.

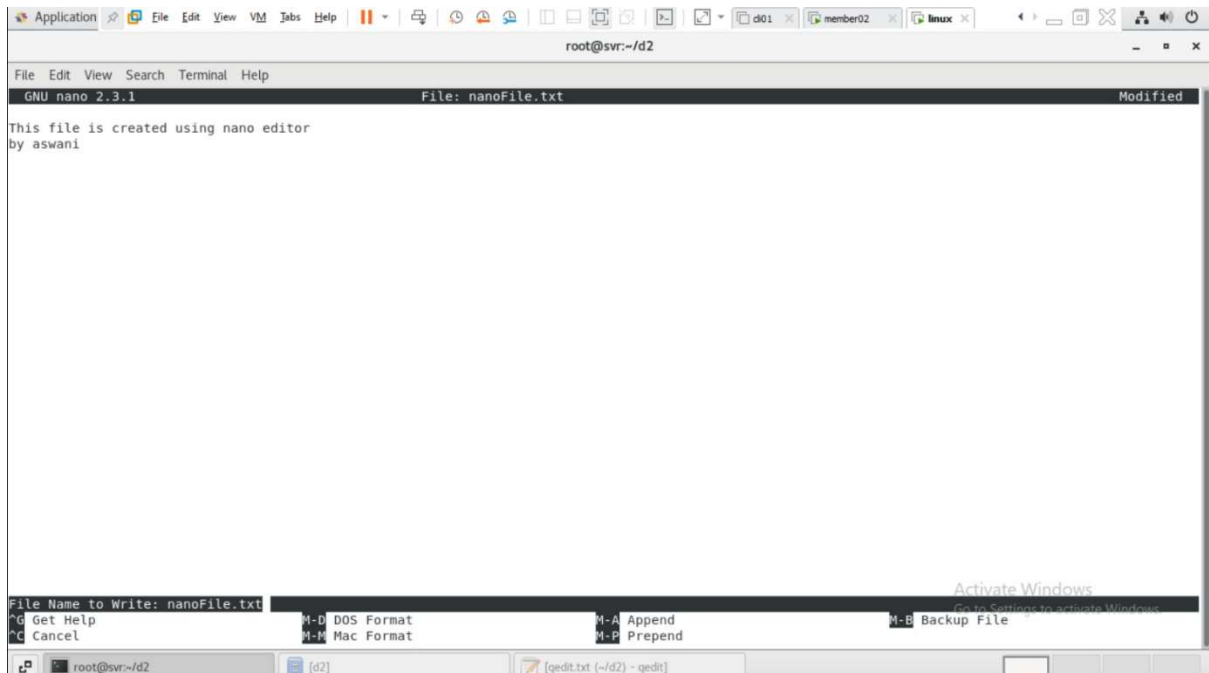


```
Application  File Edit View VM Tabs Help  root@svr:~/d2
File Edit View Search Terminal Help
[root@svr d2]# cat > 1.txt
1
2
[root@svr d2]# cat > a.txt
a
b
[root@svr d2]# cat 1.txt a.txt > mixed.txt
[root@svr d2]# cat mixed.txt
1
2
a
b
[root@svr d2]#
```

cat 1.txt	Attempts to display the contents of a file named 1.txt, assuming it exists in the current directory.
cat > 1.txt	Starts creating a new file named 1.txt and allows the user to input text.
cat > a.txt	Creates a new file named a.txt and allows the user to input text.
cat 1.txt a.txt > mixed.txt	Concatenates the contents of 1.txt and a.txt into a new file named mixed.txt.
cat mixed.txt	Displays the contents of the file mixed.txt.
cat > mixed.txt	Starts creating a new file named mixed.txt and allows the user to input text.
cat mixed.txt	Displays the contents of the file mixed.txt, which should now contain the newly inputted text.



gedit gedit.txt	Opens the text editor Gedit and creates/open a file named gedit.txt for editing. The ampersand (&) at the end allows the command prompt to return immediately for further commands.
date	Prints the current date and time.
cal	Displays a calendar for the current month.



nano nanoFile.txt	Opens the text editor Nano and creates/opens a file named nanoFile.txt for editing.
cat nanoFile.txt	Displays the contents of the file nanoFile.txt.

: wq !

vi /etc/passwd	Opens the file /etc/passwd in the Vi text editor for viewing/editing.
vim vimFile.txt	Opens the file vimFile.txt in the Vim text editor for viewing/editing.
cat vimFile.txt	Displays the contents of the file vimFile.txt.


```

Application  File Edit View VM Tabs Help
root@svr:~/d2
File Edit View Search Terminal Tabs Help
root@svr:~/d2
[root@svr d2]# ls
1.txt a.txt catFile.txt gedit.txt mixed.txt nanoFile.txt touchFile.txt vimFile.txt
[root@svr d2]# rm nanoFile.txt
rm: remove regular file 'nanoFile.txt'? n
[root@svr d2]# rm -f nanoFile.txt
[root@svr d2]# ls
1.txt a.txt catFile.txt gedit.txt mixed.txt touchFile.txt vimFile.txt
[root@svr d2]#

```

ls	Lists the files and directories in the current directory.
rm nanoFile.txt	Removes (deletes) the file nanoFile.txt.
rm -f nanoFile.txt	Removes (deletes) the file nanoFile.txt forcefully without prompting for confirmation.

```

File Edit View Search Terminal Tabs Help
root@svr:~/d2
[root@svr d2]# touch t{1..100}.txt
[root@svr d2]# ls | wc -l
107
[root@svr d2]# rm -f t*.txt
[root@svr d2]# ls | wc -l
6
[root@svr d2]# ls
1.txt a.txt catFile.txt gedit.txt mixed.txt vimFile.txt
[root@svr d2]#

```

touch t{1..100}.txt	Creates 100 empty files named t1.txt, t2.txt, ..., t100.txt using brace expansion.
ls	Lists the files and directories in the current directory, showing the newly created files.
ls wc -l	Counts the number of files and directories in the current directory.
ls	Lists the files and directories in the current directory.

```

File Edit View Search Terminal Tabs Help
root@svr:~/d2
[root@svr d2]# rm -f t???.txt
[root@svr d2]# ls
1.txt catFile.txt mixed.txt t1.txt t3.txt t5.txt t7.txt t9.txt vimFile.txt
a.txt gedit.txt t100.txt t2.txt t4.txt t6.txt t8.txt touchFile.txt
[root@svr d2]# rm -f t???.txt
[root@svr d2]# ls
1.txt a.txt catFile.txt gedit.txt mixed.txt t1.txt t2.txt t3.txt t4.txt t5.txt t6.txt t7.txt t8.txt t9.txt touchFile.txt vimFile.txt
[root@svr d2]# rm -f t7.txt
[root@svr d2]# ls
1.txt a.txt catFile.txt gedit.txt mixed.txt touchFile.txt vimFile.txt
[root@svr d2]# ls | wc -l
7
[root@svr d2]#

```

rm -f t?.txt	Removes (deletes) files with a single character wildcard in their name followed by .txt, for example, t1.txt, t2.txt, but not t10.txt.
ls	Lists the files and directories in the current directory after removal.
ls wc -l	Counts the number of files and directories in the current directory.
ls	Lists the files and directories in the current directory.
rm -f t???.txt	Removes (deletes) files with a double character wildcard in their name followed by .txt, for example, t10.txt, t20.txt, but not t100.txt.
ls wc -l	Counts the number of files and directories in the current directory.
ls	Lists the files and directories in the current directory.
rm -f t????.txt	Removes (deletes) files with a triple character wildcard in their name followed by .txt, for example, t100.txt, but not t10.txt, t20.txt.
ls	Lists the files and directories in the current directory after removal.

```

Application  File Edit View VM Tabs Help
root@svr:~/d2
File Edit View Search Terminal Tabs Help
root@svr:~/d2
[root@svr d2]# mkdir -p d1/d2/d3/d4
[root@svr d2]# ls
1.txt a.txt catFile.txt d1 gedit.txt mixed.txt vimFile.txt
[root@svr d2]# ls -R d1/
d1/:
d2

d1/d2:
d3

d1/d2/d3:
d4

d1/d2/d3/d4:
[root@svr d2]#

```

mkdir -p dir1/dir2/dir3/dir4/dir5/dir6	Recursively creates directories as necessary to create the specified directory structure.
ls	Lists the files and directories in the current directory.
ls -R dir1/	Lists the files and directories in the dir1 directory recursively, showing its subdirectories and their contents.

```

File Edit View Search Terminal Tabs Help
root@svr:~/d2
root
[root@svr d2]# ls
1.txt a.txt catFile.txt d1 gedit.txt mixed.txt number.txt vimFile.txt
[root@svr d2]# mv a.txt alpha.txt
[root@svr d2]# ls alpha.txt
alpha.txt
[root@svr d2]# ls
1.txt alpha.txt catFile.txt d1 gedit.txt mixed.txt number.txt vimFile.txt
[root@svr d2]# mv 1.txt alphabet.txt
[root@svr d2]# ls
alphabet.txt alpha.txt catFile.txt d1 gedit.txt mixed.txt number.txt vimFile.txt
[root@svr d2]# cat alphabet.txt
1
2
[root@svr d2]# cat alpha.txt
a
b
[root@svr d2]#

```

ls	Lists the files and directories in the current directory.
mv a.txt alpha.txt	Renames the file a.txt to alpha.txt.
ls	Lists the files and directories in the current directory after renaming.
cat alpha.txt	Displays the contents of the file alpha.txt.
ls	Lists the files and directories in the current directory.
mv 1.txt alphabet.txt	Renames the file 1.txt to alphabet.txt.
ls	Lists the files and directories in the current directory after renaming.
cat alphabet.txt	Displays the contents of the file alphabet.txt.

```

File Edit View Search Terminal Tabs Help
root@svr:~/d2 x root@svr:~/d2
[root@svr d2]# ls
alphabet.txt alpha.txt catFile.txt d1 gedit.txt mixed.txt number.txt vimFile.txt
[root@svr d2]# mv catFile.txt .catFile.txt
[root@svr d2]# ls
alphabet.txt alpha.txt d1 gedit.txt mixed.txt number.txt vimFile.txt
[root@svr d2]# ls -a
. . . alphabet.txt alpha.txt .catFile.txt d1 gedit.txt mixed.txt number.txt vimFile.txt
[root@svr d2]# mv .catFile.txt catFile.txt
[root@svr d2]# ls
alphabet.txt alpha.txt catFile.txt d1 gedit.txt mixed.txt number.txt vimFile.txt
[root@svr d2]#

```

ls	Lists the files and directories in the current directory.
mv catFile.txt .catFile.txt	Moves (renames) the file catFile.txt to .catFile.txt. The . at the beginning makes the file hidden.
ls	Lists the files and directories in the current directory after the renaming.
ls -a	Lists all files and directories in the current directory, including hidden ones.
mv .catFile.txt catFile.txt	Renames the hidden file .catFile.txt back to catFile.txt.
ls	Lists the files and directories in the current directory after the renaming.

```
File Edit View Search Terminal Tabs Help
root@svr:~/d2
[root@svr d2]# pwd
/root/d2
[root@svr d2]# ls
alphabet.txt alpha.txt catFile.txt d1 gedit.txt mixed.txt number.txt vimFile.txt
[root@svr d2]# cat alphabet.txt
1
2
[root@svr d2]# cd /tmp
[root@svr tmp]# cat alphabet.txt
cat: alphabet.txt: No such file or directory
[root@svr tmp]# ls
anaconda.log
hsperfdata_root
ifcfg.log
ks-script-NlwC7u
packaging.log
program.log
sensitive-info.log
ssh-K8DH1sCdQfJ8
ssh-RzZ5JD4YqSAV
storage.log
systemd-private-68eb1a952df94d20ba4db2a4c7e93202-bolt.service-VzF8xd
systemd-private-68eb1a952df94d20ba4db2a4c7e93202-colord.service-0pg0WL
systemd-private-68eb1a952df94d20ba4db2a4c7e93202-cups.service-Z8veP8
[root@svr tmp]# cd -
/root/d2
[root@svr d2]# cat /root/d2/alphabet.txt
1
2
[root@svr d2]# cd -
/tmp
[root@svr tmp]# cat /root/d2/alphabet.txt
1
2
systemd-private-68eb1a952df94d20ba4db2a4c7e93202-fwupd.service-TE2dA0
systemd-private-68eb1a952df94d20ba4db2a4c7e93202-rtkit-daemon.service-geJTvb
systemd-private-daea4823745f4calaee3c70f302bc4eb-bolt.service-Ggqxt0
systemd-private-daea4823745f4calaee3c70f302bc4eb-colord.service-pJL60k
systemd-private-daea4823745f4calaee3c70f302bc4eb-cups.service-oPPqXa
systemd-private-daea4823745f4calaee3c70f302bc4eb-fwupd.service-sp99eS
systemd-private-daea4823745f4calaee3c70f302bc4eb-rtkit-daemon.service-qmKnMb
tracker-extract-files.0
tracker-extract-files.1000
vmware-root_737-4257003961
vmware-root_757-4281843244
vmware-root_769-4248090657
yum.log
Activate Windows
Go to Settings to activate Windows.
```

```
root@svr:~/d2
[root@svr d2]# cat alphabet.txt
1
2
[root@svr d2]# cd /tmp
[root@svr tmp]# cat alphabet.txt
cat: alphabet.txt: No such file or directory
[root@svr tmp]# ls
anaconda.log
hsperfdata_root
ifcfg.log
ks-script-NlwC7u
packaging.log
program.log
sensitive-info.log
ssh-K8DH1sCdQfJ8
ssh-RzZ5JD4YqSAV
storage.log
systemd-private-68eb1a952df94d20ba4db2a4c7e93202-bolt.service-VzF8xd
systemd-private-68eb1a952df94d20ba4db2a4c7e93202-colord.service-0pg0WL
systemd-private-68eb1a952df94d20ba4db2a4c7e93202-cups.service-Z8veP8
[root@svr tmp]# cd -
/root/d2
[root@svr d2]# cat /root/d2/alphabet.txt
1
2
[root@svr d2]# cd -
/tmp
[root@svr tmp]# cat /root/d2/alphabet.txt
1
2
[root@svr tmp]# cd -
/root/d2
[root@svr d2]# █
systemd-private-68eb1a952df94d20ba4db2a4c7e93202-fwupd.service-TE2dA0
systemd-private-68eb1a952df94d20ba4db2a4c7e93202-rtkit-daemon.service-geJTvb
systemd-private-daea4823745f4calaee3c70f302bc4eb-bolt.service-Ggqxt0
systemd-private-daea4823745f4calaee3c70f302bc4eb-colord.service-pJL60k
systemd-private-daea4823745f4calaee3c70f302bc4eb-cups.service-oPPqXa
systemd-private-daea4823745f4calaee3c70f302bc4eb-fwupd.service-sp99eS
systemd-private-daea4823745f4calaee3c70f302bc4eb-rtkit-daemon.service-qmKnMb
tracker-extract-files.0
tracker-extract-files.1000
vmware-root_737-4257003961
vmware-root_757-4281843244
vmware-root_769-4248090657
yum.log
Activate Windows
Go to Settings to activate Windows.
```

pwd	Prints the current working directory.
ls	Lists the files and directories in the current directory.
cat alphabet.txt	Displays the contents of the file alphabet.txt.
cd /tmp	Changes the current directory to /tmp.
cat alphabet.txt	Attempts to display the contents of the file alphabet.txt in the /tmp directory.
ls	Lists the files and directories in the current directory (/tmp).
cd -	Changes the current directory to the previous directory.

cat /root/d2/alphabet.txt	Attempts to display the contents of the file alphabet.txt located in the /root/d2/ directory.
cd -	Changes the current directory to the previous directory.
history	Displays a list of previously executed commands.

```

104  pwd
105  ls
106  cat alphabet.txt
107  cd /tmp
108  cat alphabet.txt
109  ls
110  cd -
111  cat /root/d2/alphabet.txt
112  cd -
113  cat /root/d2/alphabet.txt
114  cd -
115  history

```

```

File Edit View Search Terminal Tabs Help
root@svr:~/d2
[root@svr d2]# pwd
/root/d2
[root@svr d2]# mkdir /day2
[root@svr d2]# ls
alphabet.txt alpha.txt catFile.txt d1 gedit.txt mixed.txt number.txt vimFile.txt
[root@svr d2]# ls /
bin boot day2 dev etc home lib lib64 media mnt opt proc root run sbin srv sys tmp usr var
[root@svr d2]# touch /day2/d2-commands.txt
[root@svr d2]# ls /day2/
d2-commands.txt
[root@svr d2]# rm /day2/d2-commands.txt
rm: remove regular empty file '/day2/d2-commands.txt'? y
[root@svr d2]# ls /day2/
d2-commands.txt
[root@svr d2]#

```

```

[root@svr d2]# touch /day2/d2-commands.txt
[root@svr d2]# ls
alphabet.txt alpha.txt catFile.txt d1 gedit.txt mixed.txt number.txt vimFile.txt
[root@svr d2]# mv /day2/d2-commands.txt .
[root@svr d2]# ls
alphabet.txt alpha.txt catFile.txt d1 d2-commands.txt gedit.txt mixed.txt number.txt vimFile.txt
[root@svr d2]#

```

pwd	Prints the current working directory.
mkdir /day2	Attempts to create a directory named day2 in the root directory /.
ls	Lists the files and directories in the current directory.

ls /	Lists the files and directories in the root directory /.
touch /day2/d2-commands.txt	Creates an empty file named d2-commands.txt in the directory /day2.
ls /day2/	Lists the files and directories in the directory /day2.
rm /day2/d2-commands.txt	Removes (deletes) the file d2-commands.txt from the directory /day2.
ls /day2/	Lists the files and directories in the directory /day2.
touch /day2/d2-commands.txt	Creates an empty file named d2-commands.txt in the directory /day2.
ls	Lists the files and directories in the current directory.
mv /day2/d2-commands.txt .	Moves the file d2-commands.txt from the directory /day2 to the current directory (. represents the current directory).
ls	Lists the files and directories in the current directory.

Permissions:

types of permissions:

```
- read      (r) -> 4
- write     (w) -> 2
- execute   (x) -> 1
```

```
-----
total              -> 7
-----
```

types of users (on which permissions are applied):

```
- owner/user    -> u
- group         -> g
- others        -> o
```

```
-----
all             -> a
-----
```

- **Types of Permissions:**

- **Read (r):** Allows viewing the contents of the file or directory, represented by the number **4**.
- **Write (w):** Grants the ability to modify or delete the file or directory, denoted by the number **2**.

- **Execute (x)**: Permits running the file as a program or accessing the directory, indicated by the number **1**.
- **Total**: The sum of these permissions is **7**, which represents full access (read, write, execute).
- **Permission Categories:**
 - **Owner/User (u)**: The file or directory creator, who has certain default permissions.
 - **Group (g)**: Users who are part of a group that has specific permissions for the file or directory.
 - **Others (o)**: All other users who have access to the file system.
 - **All (a)**: A shorthand for setting permissions for all categories (owner, group, others).

types of files in linux:

1. - -> file (txt, pdf, mp3, cfg, etc...)
2. d -> directory
3. l -> link (symobolic link files - hard link & soft link)
4. c -> char device file
5. s -> local socket file
6. p -> named pipe file
7. b -> block device file

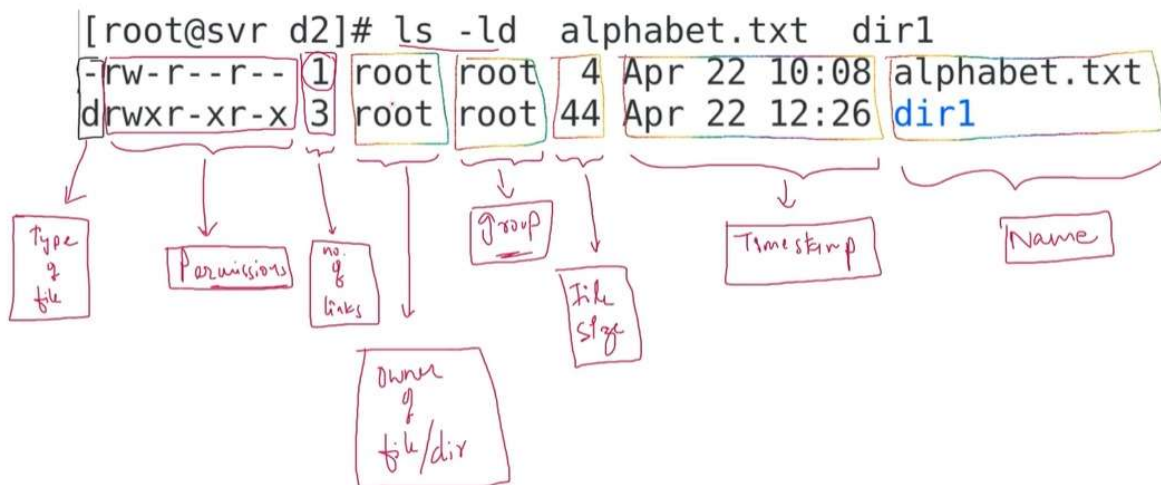
to list all various types

```
# ls -l /dev
```

- **File Types:**
 - **Regular Files (-)**: Standard files like text, PDF, MP3, etc.
 - **Directory (d)**: Folders that contain other files or directories.
 - **Symbolic Link (l)**: Shortcuts or references to other files or directories.
 - **Local Socket (s)**: Endpoints for inter-process communication.
 - **Named Pipe (p)**: Mechanisms for inter-process communication using a pipe.
 - **Character Device (c)**: Files that represent devices and support character-by-character access.
 - **Block Device (b)**: Files that represent devices and support block-oriented access.


```
[root@svr d2]# ls -l /dev
total 0
crw-rw---- 1 root video 10, 175 Apr 22 14:23 agpgart
crw----- 1 root root 10, 235 Apr 22 14:23 autofs
drwxr-xr-x 2 root root 160 Apr 22 14:23 block
drwxr-xr-x 2 root root 80 Apr 22 14:23 bsg
crw----- 1 root root 10, 234 Apr 22 14:23 btrfs-control
drwxr-xr-x 3 root root 60 Apr 22 14:23 bus
lrwxrwxrwx 1 root root 3 Apr 22 14:23 cdrom -> sr0
drwxr-xr-x 2 root root 80 Apr 22 14:23 centos
drwxr-xr-x 2 root root 3080 Apr 22 14:23 char
crw----- 1 root root 5, 1 Apr 22 14:23 console
lrwxrwxrwx 1 root root 11 Apr 22 14:23 core -> /proc/kcore
drwxr-xr-x 4 root root 80 Apr 22 14:23 cpu
crw----- 1 root root 10, 61 Apr 22 14:23 cpu_dma_latency
crw----- 1 root root 10, 62 Apr 22 14:23 crash
drwxr-xr-x 6 root root 120 Apr 22 14:23 disk
brw-rw---- 1 root disk 253, 0 Apr 22 14:23 dm-0
brw-rw---- 1 root disk 253, 1 Apr 22 14:23 dm-1
crw-rw----+ 1 root audio 14, 9 Apr 22 14:23 dmmidi
drwxr-xr-x 2 root root 80 Apr 22 14:23 dri
crw-rw---- 1 root video 29, 0 Apr 22 14:23 fb0
lrwxrwxrwx 1 root root 13 Apr 22 14:23 fd -> /proc/self/fd
crw-rw-rw- 1 root root 1, 7 Apr 22 14:23 full
crw-rw-rw- 1 root root 10, 229 Apr 22 14:23 fuse
crw----- 1 root root 246, 0 Apr 22 14:23 hidraw0
crw----- 1 root root 10, 228 Apr 22 14:23 hpet
drwxr-xr-x 3 root root 0 Apr 22 14:23 hugepages
crw----- 1 root root 10, 183 Apr 22 14:23 hwrng
lrwxrwxrwx 1 root root 25 Apr 22 14:23 initctl -> /run/systemd/initctl/fifo
```

- The command `# ls -l /dev` is used to list all devices in the `/dev` directory with detailed information.



```
File Edit View Search Terminal Tabs Help
root@svr:~/d2
[root@svr d2]# ls
alphabet.txt  alpha.txt  catFile.txt  d1  d2-commands.txt  gedit.txt  mixed.txt  number.txt  vimFile.txt
[root@svr d2]# pwd
/root/d2
[root@svr d2]# rm -f *.txt
[root@svr d2]# ls
d1
[root@svr d2]# rm -rf d1/
[root@svr d2]# ls
[root@svr d2]#
```

ls	Lists the files and directories in the current directory.
pwd	Prints the current working directory.
rm -f *.txt	Removes (deletes) all files with a .txt extension in the current directory. The -f option forces the removal without asking for confirmation.
ls	Lists the files and directories in the current directory after the removal of .txt files.
rm -rf dir1/ newdir/	Removes (deletes) the directories dir1 and newdir along with their contents. The -r option recursively removes directories and their contents, and the -f option forces the removal without asking for confirmation.
ls	Lists the files and directories in the current directory after the removal of dir1 and newdir.

```
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root@svr:~/d2

[root@svr d2]# touch t1 t2 t3
[root@svr d2]# ll
total 0
-rw-r--r-- 1 root root 0 Apr 22 21:11 t1
-rw-r--r-- 1 root root 0 Apr 22 21:11 t2
-rw-r--r-- 1 root root 0 Apr 22 21:11 t3
[root@svr d2]# chmod 666 t1
[root@svr d2]# ll t1
-rw-rw-rw- 1 root root 0 Apr 22 21:11 t1
[root@svr d2]# chmod 777 t1
[root@svr d2]# ll t1
-rwxrwxrwx 1 root root 0 Apr 22 21:11 t1
[root@svr d2]#
```

touch t1 t2 t3	Creates three empty files named t1, t2, and t3.
ll	It seems like a typo; ll is not a standard Unix command. It could be a custom alias or shorthand for another command like ls -l which lists files and directories in long format. Assuming it behaves like ls -l, it lists detailed information about the files t1, t2, and t3.
chmod 666 t1	Changes the permissions of the file t1 to allow read and write access for the owner, group, and others.
ll t1	Lists detailed information about the file t1, including its permissions after the chmod command in step 166.
chmod 777 t1	Changes the permissions of the file t1 to allow read, write, and execute access for the owner, group, and others.
ll t1	Lists detailed information about the file t1, including its permissions after the chmod command in step 168.
chmod 764 t1	Changes the permissions of the file t1 to allow read, write, and execute access for the owner, read and write access for the group, and read-only access for others.
ll t1	Lists detailed information about the file t1, including its permissions after the chmod command in step 170.

```
File Edit View Search Terminal Tabs Help
root@svr:~/d2

[root@svr d2]# ll
total 0
-rwxrwxrwx 1 root root 0 Apr 22 21:11 t1
-rwxrw-r-- 1 root root 0 Apr 22 21:11 t2
-rw-r--r-- 1 root root 0 Apr 22 21:11 t3
[root@svr d2]# chmod 777 t3
[root@svr d2]# ll
total 0
-rwxrwxrwx 1 root root 0 Apr 22 21:11 t1
-rwxrw-r-- 1 root root 0 Apr 22 21:11 t2
-rwxrwxrwx 1 root root 0 Apr 22 21:11 t3
[root@svr d2]# ll t3
-rwxrwxrwx 1 root root 0 Apr 22 21:11 t3
[root@svr d2]#
```

ll	This command seems like a custom alias or shorthand for another command, possibly ls -l, which lists files and directories in long format, including detailed information like permissions, ownership, size, and modification date.
chmod 777 t3	Changes the permissions of the file t3 to allow read, write, and execute access for the owner, group, and others.
ll	Lists the files and directories in the current directory in long format, including the file t3 with its updated permissions after the chmod command in step 2.
ll t3	Lists detailed information about the file t3, including its permissions.

```
File Edit View Search Terminal Tabs Help
root@svr:~/d2
[root@svr d2]# chmod ugo=rwx t2
[root@svr d2]# ls -l t2
-rwxrwxrwx 1 root root 0 Apr 22 21:11 t2
[root@svr d2]# chmod a-x t2
[root@svr d2]# ls -l t2
-rw-rw-rw- 1 root root 0 Apr 22 21:11 t2
[root@svr d2]# chmod o-w t2
[root@svr d2]# ls -l t2
-rw-rw-r-- 1 root root 0 Apr 22 21:11 t2
[root@svr d2]#
```

chmod ugo=rwx t2	Changes the permissions of the file t2 to allow read, write, and execute access for the owner, group, and others. The ugo=rwx syntax specifies permissions for user (owner), group, and others.
ls -l t2	Lists detailed information about the file t2, including its permissions.
chmod ugo=rwx t2	Changes the permissions of the file t2 to allow read, write, and execute access for the owner, group, and others. This command repeats the permission change from command 173.
ls -l t2	Lists detailed information about the file t2, including its permissions after the chmod command in step 176.
chmod a-x t2	Removes execute permissions for all users (owner, group, and others) from the file t2.
ls -l t2	Lists detailed information about the file t2, including its permissions after the chmod command in step 178.
chmod o-w t2	Removes write permissions for others (users who are not the owner or in the file's group) from the file t2.
ls -l t2	Lists detailed information about the file t2, including its permissions after the chmod command in step 180.

```
root@svr
File Edit View Search Terminal Tabs Help
root@svr:~/d2
[root@svr d2]# chown aswani t2
[root@svr d2]# ls -l t2
-rw-rw-r-- 1 aswani root 0 Apr 22 21:11 t2
[root@svr d2]# chgrp wheel t2
[root@svr d2]# ls -l t2
-rw-rw-r-- 1 aswani wheel 0 Apr 22 21:11 t2
[root@svr d2]#
```

```
File Edit View Search Terminal Tabs Help
root@svr:~/d2
[root@svr d2]# chown aswani t2
[root@svr d2]# ls -l t2
-rw-rw-r-- 1 aswani root 0 Apr 22 21:11 t2
[root@svr d2]# chgrp wheel t2
[root@svr d2]# ls -l t2
-rw-rw-r-- 1 aswani wheel 0 Apr 22 21:11 t2
[root@svr d2]# ls -l t3
-rwxrwxrwx 1 root root 0 Apr 22 21:11 t3
[root@svr d2]# chown aswani:wheel t3
[root@svr d2]# ls -l t3
-rwxrwxrwx 1 aswani wheel 0 Apr 22 21:11 t3
[root@svr d2]#
```

chown aswani t2	Changes the ownership of the file t2 to the user aswani.
ls -l t2	Lists detailed information about the file t2, including its permissions, ownership, and group.
chgrp wheel t2	Changes the group ownership of the file t2 to the group wheel.
ls -l t2	Lists detailed information about the file t2 after the ownership and group ownership changes.

ls -l t3	Lists detailed information about the file t3, including its permissions, ownership, and group.
chown aswani:wheel t3	Changes the ownership of the file t3 to the user aswani and the group wheel.
ls -l t3	Lists detailed information about the file t3 after the ownership and group ownership changes.

```

File Edit View Search Terminal Tabs Help
root@svr:~/d2
[root@svr d2]# cat > /ReadMe.txt
this is root
[root@svr d2]# ls -l /ReadMe.txt
-rw-r--r-- 1 root root 13 Apr 22 22:22 /ReadMe.txt
[root@svr d2]# chmod o-r /ReadMe.txt
[root@svr d2]# ls -l /ReadMe.txt
-rw-r----- 1 root root 13 Apr 22 22:22 /ReadMe.txt
[root@svr d2]# chgrp wheel /ReadMe.txt
[root@svr d2]# ls -l /ReadMe.txt
-rw-r----- 1 root wheel 13 Apr 22 22:22 /ReadMe.txt
[root@svr d2]# █

```

cat > /ReadMe.txt	Creates a new file named ReadMe.txt in the root directory (/) and allows the user to input text.
ls -l /ReadMe.txt	Lists detailed information about the file ReadMe.txt located in the root directory.
chmod o-r /ReadMe.txt	Removes read permissions for others from the file ReadMe.txt.
ls -l /ReadMe.txt	Lists detailed information about the file ReadMe.txt, including its permissions after the chmod command in step 191.
chgrp wheel /ReadMe.txt	Changes the group ownership of the file ReadMe.txt to the group wheel.
ls -l /ReadMe.txt	Lists detailed information about the file ReadMe.txt, including its permissions, ownership, and group after the chgrp command in step 193.