

# 590029302\_Exp[2]Scriptlog

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## Experiment [2]: [Linux file systems permissions and essential commands]

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### AIM:

- [To Learn linux file systems permissions and essential commands]

### Requirements:

- [Any Linux Distro, any kind of text editor (vs code, vim, notepad, nano, etc)]

### Theory:

- [Basic Linux file systems permissions and essential commands]

## Procedure & Observations

### Practice Exercises

#### Exercise 1: File System Navigation

```
cd
pwd
mkdir -p projects/linux_practice/{scripts,documents,backup}
cd projects/linux_practice/scripts
touch setup.sh cleanup.sh readme.txt
ls -la
cd ..
ls -la
```

### Output:

```

tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay$ pwd
/mnt/c/Users/Tanmay
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay$ cd desktop
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop$ cd linux
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux$ ls
EVERYDAY EXP1 EXP2 EXP4 EXP5 EXP6 'Study Material' string.sh
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux$ cd exp2
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ mkdir scripts
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ touch setup.sh cleanup.sh re
adme.txt
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ ls -la
total 12
drwxrwxrwx 1 tanmay tanmay 512 Sep 25 15:39 .
drwxrwxrwx 1 tanmay tanmay 512 Sep 24 17:18 ..
-rwxrwxrwx 1 tanmay tanmay 9765 Sep 25 15:29 '590029302_Exp[2]Scriptlog.md'
drwxrwxrwx 1 tanmay tanmay 512 Sep 22 14:17 backup
-rwxrwxrwx 1 tanmay tanmay 0 Sep 25 15:39 cleanup.sh
drwxrwxrwx 1 tanmay tanmay 512 Sep 22 17:56 img
-rwxrwxrwx 1 tanmay tanmay 0 Sep 25 15:39 readme.txt
drwxrwxrwx 1 tanmay tanmay 512 Sep 25 15:38 scripts
-rwxrwxrwx 1 tanmay tanmay 0 Sep 25 15:39 setup.sh
drwxrwxrwx 1 tanmay tanmay 512 Sep 22 17:54 test_project
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ cd ..
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux$ ls -la
total 0
drwxrwxrwx 1 tanmay tanmay 512 Sep 24 17:18 .
drwxrwxrwx 1 tanmay tanmay 512 Sep 24 14:10 ..
drwxrwxrwx 1 tanmay tanmay 512 Sep 22 18:22 git
drwxrwxrwx 1 tanmay tanmay 512 Sep 16 11:47 EVERYDAY
drwxrwxrwx 1 tanmay tanmay 512 Sep 16 23:48 EXP1
drwxrwxrwx 1 tanmay tanmay 512 Sep 25 15:39 EXP2
drwxrwxrwx 1 tanmay tanmay 512 Sep 10 22:43 EXP4
drwxrwxrwx 1 tanmay tanmay 512 Sep 11 21:59 EXP5
drwxrwxrwx 1 tanmay tanmay 512 Sep 24 17:15 EXP6
drwxrwxrwx 1 tanmay tanmay 512 Sep 5 13:08 'Study Material'
-rwxrwxrwx 1 tanmay tanmay 316 Sep 24 17:18 string.sh
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux$ |

```

## Exercise 2: File Operations and Permissions

```

cd ~/projects/linux_practice/documents
echo "This is a practice document" > practice.txt
ls -l practice.txt
chmod 644 practice.txt
cp practice.txt ../backup/
cp practice.txt ../backup/practice_backup_$(date +%Y%m%d).txt
ls -la ../backup/

```

Output:

```
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/scripts$ cd..
cd.: command not found
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/scripts$ cd ..
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2$ ls
'590029302_Exp[2]Scriptlog.md'  cleanup.sh  readme.txt  setup.sh
backup  img  scripts  test_project
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2$ mkdir documents
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2$ cd documents
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ echo "This is a practice document" > practice.txt
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ ls -l practice.txt
-rwxrwxrwx 1 tanmay tanmay 28 Sep 25 16:18 practice.txt
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ chmod 644 practice.txt
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ cp practice.txt ../backup/
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ cp practice.txt ../backup/practice_backup_$(date +%Y%m%d).txt
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ ls -la ../backup/
total 4
drwxrwxrwx 1 tanmay tanmay 512 Sep 25 16:19 .
drwxrwxrwx 1 tanmay tanmay 512 Sep 25 15:43 ..
-rwxrwxrwx 1 tanmay tanmay 56 Sep 22 14:17 config.txt
-rwxrwxrwx 1 tanmay tanmay 16 Sep 22 14:17 notes.txt
-rwxrwxrwx 1 tanmay tanmay 51 Sep 22 14:17 numbers.txt
-rwxrwxrwx 1 tanmay tanmay 28 Sep 25 16:19 practice.txt
-rwxrwxrwx 1 tanmay tanmay 28 Sep 25 16:19 practice_backup_20250925.txt
-rwxrwxrwx 1 tanmay tanmay 22 Sep 22 14:17 project_info.txt
-rwxrwxrwx 1 tanmay tanmay 22 Sep 22 14:17 readme.txt
-rwxrwxrwx 1 tanmay tanmay 869 Sep 22 14:17 system_info.txt
-rwxrwxrwx 1 tanmay tanmay 0 Sep 22 14:17 todo.txt
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ |
```

### Exercise 3: Text Editing and Viewing

```
cd ~/projects/linux_practice/documents
seq 1 50 > numbers.txt
head numbers.txt
tail -n 5 numbers.txt
cat numbers.txt | grep "25"
nano numbers.txt
cat numbers.txt
```

Output:

```
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ seq 1 50 > numbers
.txt
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ head numbers.txt
1
2
3
4
5
6
7
8
9
10
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ tail -n 5 numbers.
txt
46
47
48
49
50
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ cat numbers.txt |
grep "25"
25
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ nano numbers.txt
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ cat numbers.txt
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
```

## Exercise 4: System Exploration

```
uname -a
df -h
history 10
who
whoami
top
```

Output:

```
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ uname -a
Linux DESKTOP-350DD6R 6.6.87.2-microsoft-standard-WSL2 #1 SMP PREEMPT_DYNAMIC Thu Jun  5 18:30:46 UTC 2025 x86_64 x86_64 x86_64 GNU/Linux
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ df -h
Filesystem      Size  Used Avail Use% Mounted on
none            1.9G   0 1.9G   0% /usr/lib/modules/6.6.87.2-microsoft-standard-WSL2
none            1.9G  4.0K 1.9G   1% /mnt/wsl
drivers         238G  109G  130G  46% /usr/lib/wsl/drivers
/dev/sdd        1007G   2.4G  954G   1% /
none            1.9G   80K 1.9G   1% /mnt/wslg
none            1.9G   0 1.9G   0% /usr/lib/wsl/lib
rootfs          1.9G   2.7M 1.9G   1% /init
none            1.9G  508K 1.9G   1% /run
none            1.9G   0 1.9G   0% /run/lock
none            1.9G   0 1.9G   0% /run/shm
none            1.9G   76K 1.9G   1% /mnt/wslg/versions.txt
none            1.9G   76K 1.9G   1% /mnt/wslg/doc
C:\             238G  109G  130G  46% /mnt/c
tmpfs           1.9G   4.0K 1.9G   1% /run/user/1000
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ history 10
752 seq 1 50 > numbers.txt
753 head numbers.txt
754 tail -n 5 numbers.txt
755 cat numbers.txt | grep "25"
756 nano numbers.txt
757 cat numbers.txt
758 clear
759 uname -a
760 df -h
761 history 10
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ who
tanmay pts/1 2025-09-25 15:35
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ whoami
tanmay
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ top
top - 16:23:08 up 49 min, 1 user, load average: 0.00, 0.00, 0.00
Tasks: 25 total, 1 running, 24 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.0 us, 1.4 sy, 0.0 ni, 98.6 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 3804.2 total, 3282.6 free, 341.0 used, 180.7 buff/cache
MiB Swap: 1024.0 total, 1024.0 free, 0.0 used, 3328.3 avail Mem
```

| PID  | USER     | PR | NI | VIRT   | RES   | SHR   | S | %CPU | %MEM | TIME+   | COMMAND         |
|------|----------|----|----|--------|-------|-------|---|------|------|---------|-----------------|
| 1015 | tanmay   | 20 | 0  | 7808   | 3712  | 3072  | R | 5.9  | 0.1  | 0:00.05 | top             |
| 1    | root     | 20 | 0  | 165852 | 10456 | 7896  | S | 0.0  | 0.3  | 0:01.91 | systemd         |
| 2    | root     | 20 | 0  | 3060   | 1664  | 1664  | S | 0.0  | 0.0  | 0:00.03 | init-systemd(Ub |
| 6    | root     | 20 | 0  | 3076   | 1792  | 1792  | S | 0.0  | 0.0  | 0:00.00 | init            |
| 63   | root     | 19 | -1 | 64196  | 17964 | 17196 | S | 0.0  | 0.5  | 0:00.87 | systemd-journal |
| 92   | root     | 20 | 0  | 22972  | 5888  | 4608  | S | 0.0  | 0.2  | 0:00.50 | systemd-udevd   |
| 148  | systemd+ | 20 | 0  | 26200  | 13920 | 8960  | S | 0.0  | 0.4  | 0:00.43 | systemd-resolve |
| 179  | systemd+ | 20 | 0  | 89364  | 7168  | 6400  | S | 0.0  | 0.2  | 0:00.53 | systemd-timesyn |
| 195  | root     | 20 | 0  | 4308   | 2560  | 2432  | S | 0.0  | 0.1  | 0:00.03 | cron            |
| 196  | message+ | 20 | 0  | 8588   | 4352  | 3968  | S | 0.0  | 0.1  | 0:00.29 | dbus-daemon     |
| 200  | root     | 20 | 0  | 30092  | 18560 | 9856  | S | 0.0  | 0.5  | 0:00.32 | networkd-dispat |
| 201  | syslog   | 20 | 0  | 222404 | 4864  | 4096  | S | 0.0  | 0.1  | 0:00.09 | rsyslogd        |
| 205  | root     | 20 | 0  | 15332  | 7296  | 6528  | S | 0.0  | 0.2  | 0:00.34 | systemd-logind  |
| 229  | root     | 20 | 0  | 3240   | 2048  | 2048  | S | 0.0  | 0.1  | 0:00.01 | agetty          |
| 232  | root     | 20 | 0  | 3196   | 2048  | 1920  | S | 0.0  | 0.1  | 0:00.01 | agetty          |
| 244  | root     | 20 | 0  | 107164 | 21496 | 13312 | S | 0.0  | 0.6  | 0:00.31 | unattended-upgr |
| 328  | root     | 20 | 0  | 7520   | 4608  | 3840  | S | 0.0  | 0.1  | 0:00.02 | login           |
| 417  | tanmay   | 20 | 0  | 16968  | 9472  | 7936  | S | 0.0  | 0.2  | 0:00.13 | systemd         |
| 418  | tanmay   | 20 | 0  | 103368 | 5148  | 1664  | S | 0.0  | 0.1  | 0:00.00 | (sd-pam)        |
| 423  | tanmay   | 20 | 0  | 6236   | 4992  | 3328  | S | 0.0  | 0.1  | 0:00.03 | bash            |
| 514  | root     | 20 | 0  | 3068   | 896   | 896   | S | 0.0  | 0.0  | 0:00.00 | SessionLeader   |
| 515  | root     | 20 | 0  | 3084   | 1152  | 1024  | S | 0.0  | 0.0  | 0:00.11 | Relay(516)      |
| 516  | tanmay   | 20 | 0  | 6256   | 5120  | 3328  | S | 0.0  | 0.1  | 0:00.22 | bash            |
| 930  | root     | 20 | 0  | 293020 | 19968 | 17152 | S | 0.0  | 0.5  | 0:00.07 | packagekitd     |
| 934  | root     | 20 | 0  | 234508 | 7168  | 6528  | S | 0.0  | 0.2  | 0:00.01 | polkitd         |

## Exercise 5: Cleanup

```
cd ~/projects/linux_practice
rm -i documents/numbers.txt
rmdir backup
rm -r backup
ls -la
history | tail -20
```

Output:

```

tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ rm -i numbers.txt
rm: remove regular file 'numbers.txt'? y
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/documents$ cd ..
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ ls
'590029302_Exp[2]Scriptlog.md'  cleanup.sh  log  scripts  test_project
backup  documents  readme.txt  setup.sh
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ rmdir backup
rmdir: failed to remove 'backup': Directory not empty
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ rm -r backup
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ ls -la
total 12
drwxrwxrwx 1 tanmay tanmay 512 Sep 25 16:26 .
drwxrwxrwx 1 tanmay tanmay 512 Sep 25 15:51 ..
-rwxrwxrwx 1 tanmay tanmay 10878 Sep 25 15:43 '590029302_Exp[2]Scriptlog.md'
-rwxrwxrwx 1 tanmay tanmay 0 Sep 25 15:39 cleanup.sh
drwxrwxrwx 1 tanmay tanmay 512 Sep 25 16:26 documents
drwxrwxrwx 1 tanmay tanmay 512 Sep 22 17:56 log
-rwxrwxrwx 1 tanmay tanmay 0 Sep 25 15:39 readme.txt
drwxrwxrwx 1 tanmay tanmay 512 Sep 25 15:38 scripts
-rwxrwxrwx 1 tanmay tanmay 0 Sep 25 15:39 setup.sh
drwxrwxrwx 1 tanmay tanmay 512 Sep 22 17:54 test_project
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ history | tail -20
754 tail -n 5 numbers.txt
755 cat numbers.txt | grep "25"
756 nano numbers.txt
757 cat numbers.txt
758 clear
759 uname -a
760 df -h
761 history 10
762 who
763 whoami
764 top
765 clear
766 rm -i documents/numbers.txt
767 rm -i numbers.txt
768 cd ..
769 ls
770 rmdir backup
771 rm -r backup
772 ls -la
773 history | tail -20
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$

```

## TASK 1: [Directory Navigation]

### Task Statement:

- [Create a directory called test\_project in your home directory, then create subdirectories docs, scripts, and data inside it. Navigate to the scripts directory and display your current path.]

### Explanation:

- [ Use mkdir to create the wanted directory we can use cd to navigate and use pwd to show current path ]

### Command(s):

```

'''
mkdir test_project
cd test_project
mkdir docs scripts data

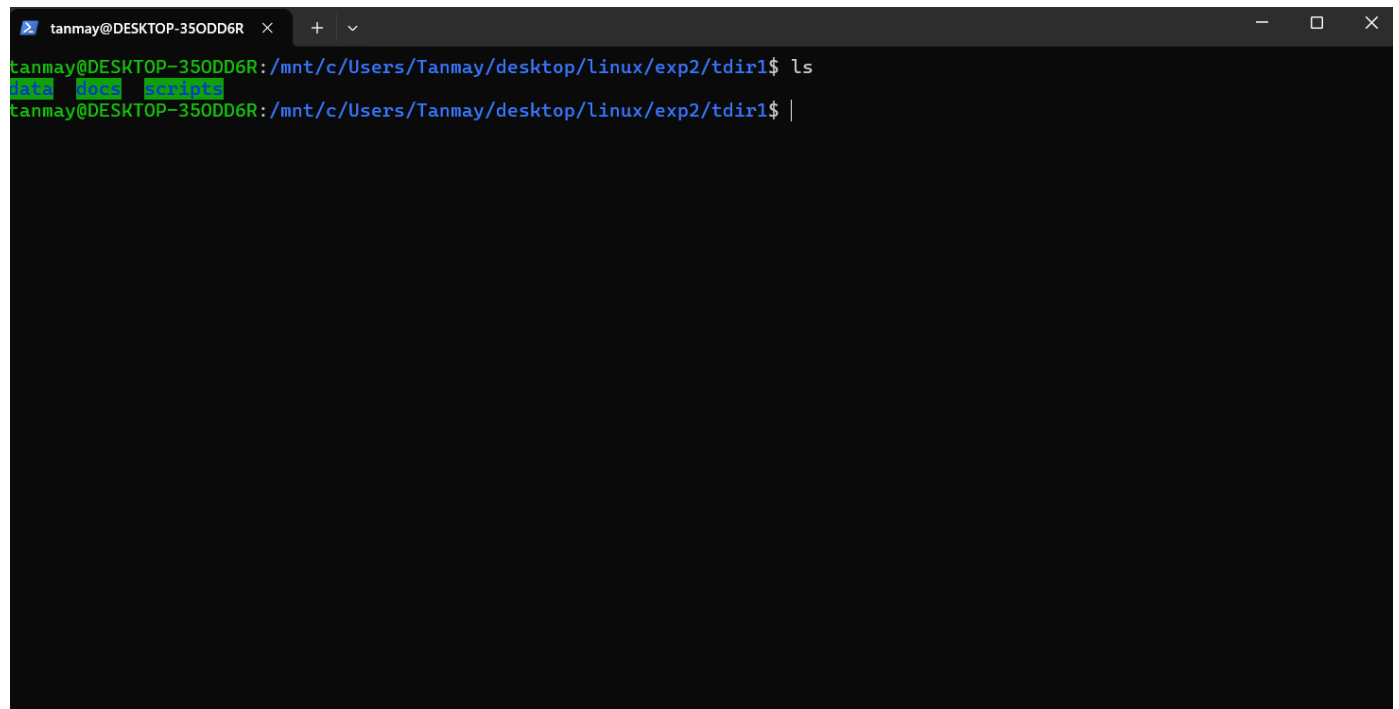
```

```
cd scripts
```

```
pwd
```

```
'''
```

## Output:

A terminal window titled 'tanmay@DESKTOP-350DD6R' with standard window controls. The prompt is 'tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1\$'. The command 'ls' has been entered, and the output shows three files: '1.txt', '2.txt', and '3.txt', each with permissions 'drwxr-xr-x' and size '4096 B'.

```
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1$ ls
1.txt  2.txt  3.txt
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1$ |
```

## TASK 2: [File Creation and Content]

### Task Statement:

- [Create three files in the docs directory: readme.txt, notes.txt, and todo.txt. Add the text "Project documentation" to readme.txt and "Important notes" to notes.txt. Display the contents of both files.]

### Explanation:

- [We can use touch to create empty files and using echo "text" > file.txt to add content to a file and using cat to display file contents]

### Command(s):

```
cd docs
touch readme.txt notes.txt todo.txt
echo "Project documentation" > readme.txt
echo "Important notes" > notes.txt
cat notes.txt
cat readme.txt
```

### Output:

```
tanmay@DESKTOP-350DD6R x + v
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/docs$ ls
notes.txt  readme.txt  todo.txt
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/docs$ cat notes.txt
Important Notes
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/docs$ cat readme.txt
Project Documentation
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/docs$ |
```

## TASK 3: [File Operations]

### Task Statement:

- [Copy readme.txt to the data directory and rename the copy to project\_info.txt. Then move todo.txt from docs to scripts directory.]

### Explanation:

- [- We can use the cp source destination to copy files and using the mv oldname newname to rename files also using the same command mv file directory/ to move files to another directory we can also combine copy and rename: cp file.txt newdir/newname.txt]

### Command(s):

```
cp readme.txt data/project_info.txt
```

### Output:



```
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/test_project/data$ ls
project_info.txt
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/test_project/data$ cat project_info.txt
Project Documentation
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/test_project/data$
```

## TASK 4: [File Permissions]

### Task Statement:

- [Create a shell script file called backup.sh in the scripts directory. Add the content `#!/bin/bash` and `echo "Backup complete"` to it. Make the file executable only for the owner.]

### Explanation:

- [Using `chmod u+x filename` we can make the file executable for user only using `ls -l` to check for permissions also script files typically need executable permission to run]

### Command(s):

```
cd scripts
touch backup.sh > echo "Backup complete"
chmod u+x backup.sh
```

### Output:

```
tanmay@DESKTOP-350DD6R x + v
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1$ ls
data  docs  scripts
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1$ cd scripts
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ ls
backup.sh  config.txt  numbers.txt  todo.txt
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$
```

```
tanmay@DESKTOP-350DD6R x + v
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ vim backup.sh
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ chmod u+x backup.sh
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ ./backup.sh
Backup Complete
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ |
```

## TASK 5: [File Viewing]

### Task Statement:

- [Create a file called numbers.txt with numbers 1 to 20 (each on a new line). Display only the first 5 lines, then only the last 3 lines, then search for lines containing the number "1".]

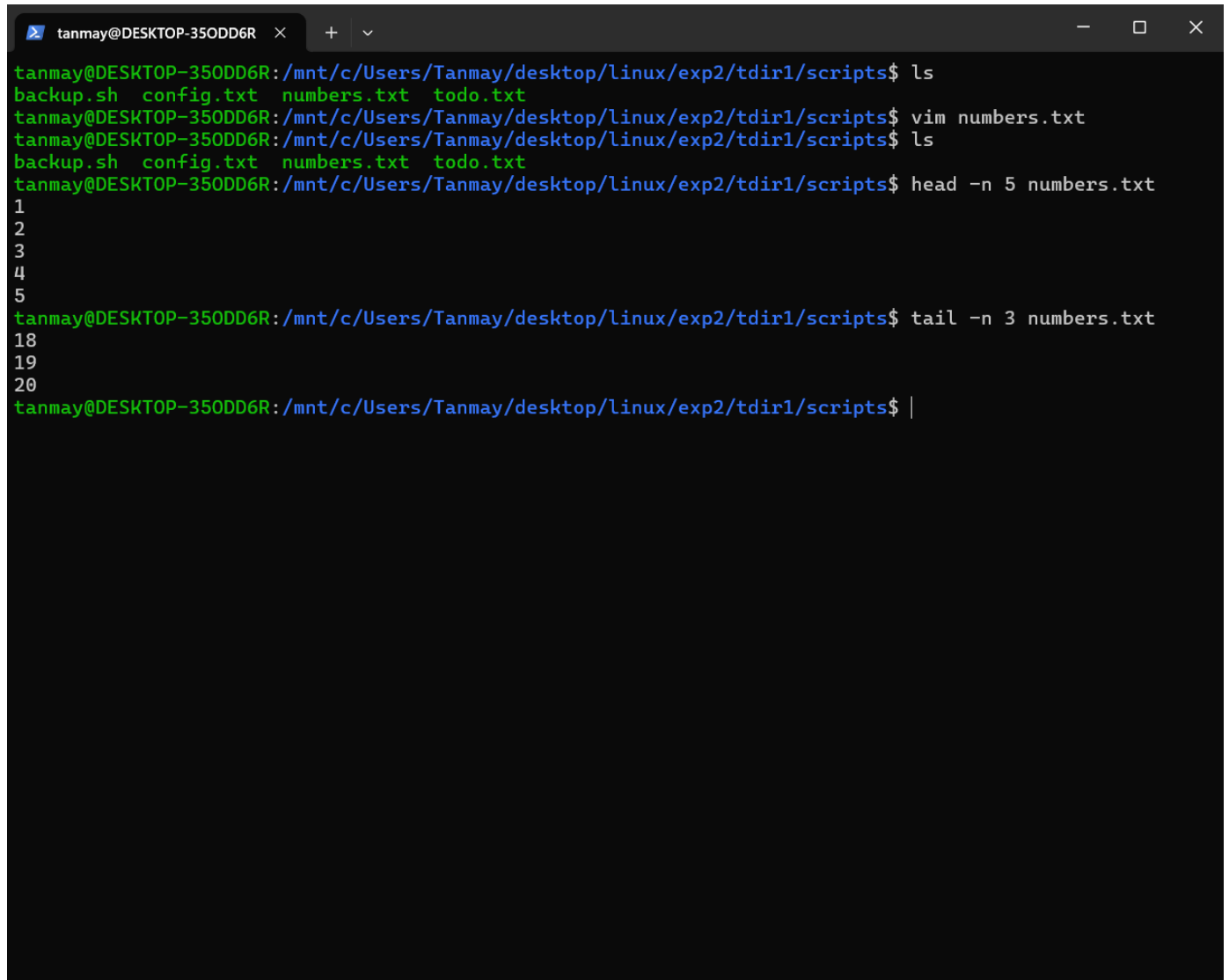
### Explanation:

- [ I can quickly generate a list of numbers by running `seq 1 20 > numbers.txt`. To check the first few numbers, I use `head -n 5` to see the first 5 lines, and `tail -n 3` to see the last 3 lines. If I want to find all numbers containing a "1", I can use `grep "1"`. Alternatively, I could create the list manually by using multiple `echo` commands.]

## Command(s):

```
seq 1 20 > numbers.txt  
head -n 5  
tail -n 3  
grep "1"
```

## Output:



```
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ ls  
backup.sh  config.txt  numbers.txt  todo.txt  
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ vim numbers.txt  
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ ls  
backup.sh  config.txt  numbers.txt  todo.txt  
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ head -n 5 numbers.txt  
1  
2  
3  
4  
5  
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ tail -n 3 numbers.txt  
18  
19  
20  
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ |
```

## TASK 6: [Text Editing]

### Task Statement:

- [Using nano, create a file called config.txt with the following content:

Database=localhost Port=5432 Username=admin

Save the file and then display its contents.]

### Explanation:

- [I open a file in Nano using nano filename.txt and type my content normally. Once I'm done, I press Ctrl+O to save the file and Ctrl+X to exit Nano. After that, I use cat to check the contents and make sure everything was saved correctly.]

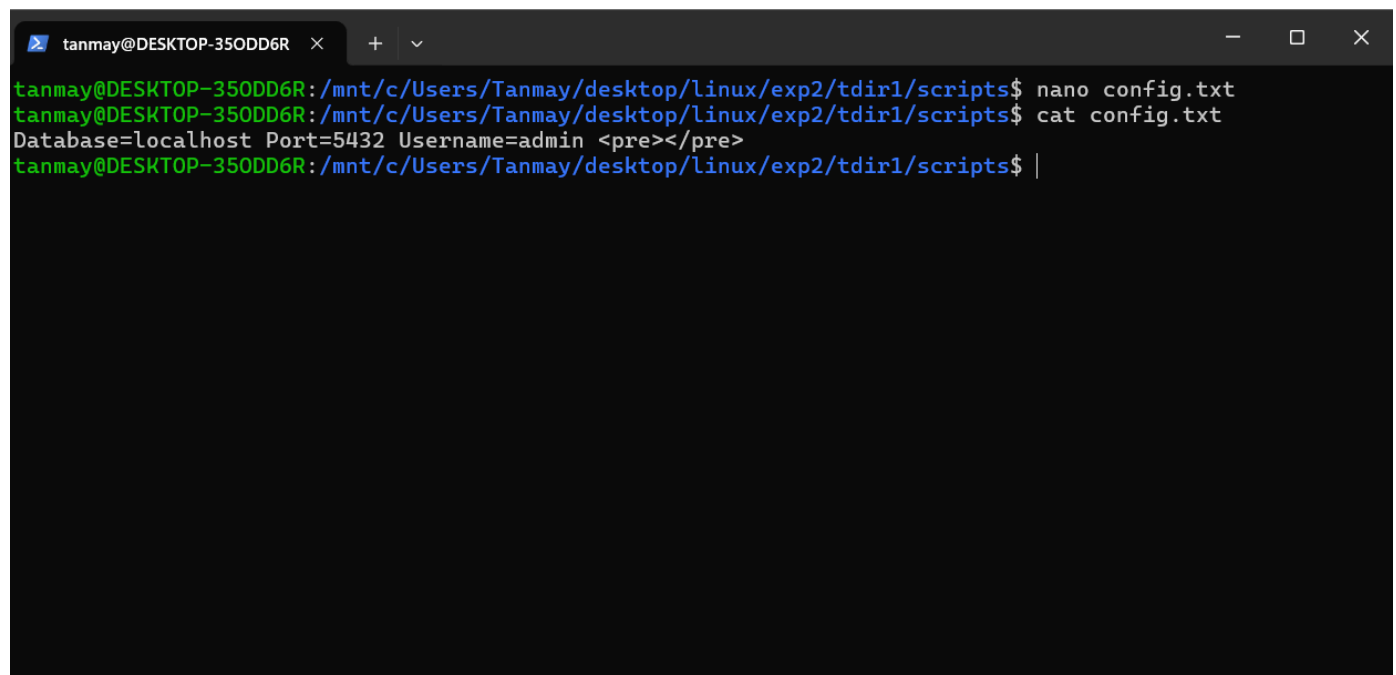
## Command(s):

```
vim config.txt  
cat config.txt
```

## Alternatively

```
nano config.txt  
cat config.txt
```

## Output:

A terminal window with a dark background and light green text. The window title is 'tanmay@DESKTOP-350DD6R'. The prompt is 'tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts\$'. The user enters 'nano config.txt', then 'cat config.txt'. The output of 'cat' is 'Database=localhost Port=5432 Username=admin <pre></pre>'. The prompt returns to the shell.

```
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ nano config.txt  
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ cat config.txt  
Database=localhost Port=5432 Username=admin <pre></pre>  
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/tdir1/scripts$ |
```

## TASK 7: [System Information]

### Task Statement:

- [Create a file called system\_info.txt that contains: your username, current date, your current directory, and disk usage information in human-readable format.  
]

### Explanation:

- [I can use whoami to check my username, date to see the current date, and pwd to know my current directory. To check disk usage, I use df -h. I can save the output of any command to a file by using redirection like command >> filename.txt. If I want to add labels, I use echo like this: echo "Username:" >> file.txt.]

## Command(s):

```

cd scripts
touch system_info.txt
echo "Username:" >> system_info.txt
whoami >> system_info.txt
echo "Date:" >> system_info.txt
date >> system_info.txt
echo "Current Directory:" >> system_info.txt
pwd >> system_info.txt
echo "Disk Usage:" >> system_info.txt
df -h >> system_info.txt

```

## Output:

```

tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/test_project/scripts$ cd scripts
touch system_info.txt
echo "Username:" >> system_info.txt
whoami >> system_info.txt
echo "Date:" >> system_info.txt
date >> system_info.txt
echo "Current Directory:" >> system_info.txt
pwd >> system_info.txt
echo "Disk Usage:" >> system_info.txt
df -h >> system_info.txt
-bash: cd: scripts: No such file or directory
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/test_project/scripts$ cat system_info.txt
Username:
tanmay
Date:
Mon Sep 22 16:12:30 IST 2025
Current Directory:
/mnt/c/Users/Tanmay/desktop/linux/exp2/test_project/scripts
Disk Usage:
Filesystem      Size  Used Avail Use% Mounted on
none            1.9G   0    1.9G   0% /usr/lib/modules/6.6.87.2-microsoft-standard-WSL2
none            1.9G  4.0K   1.9G   1% /mnt/wsl
drivers         238G   96G  142G  41% /usr/lib/wsl/drivers
/dev/sdd        1007G  2.4G  954G   1% /
none            1.9G 108K   1.9G   1% /mnt/wslg
none            1.9G   0    1.9G   0% /usr/lib/wsl/lib
rootfs          1.9G  2.7M   1.9G   1% /init
none            1.9G 508K   1.9G   1% /run
none            1.9G   0    1.9G   0% /run/lock
none            1.9G   0    1.9G   0% /run/shm
none            1.9G  76K   1.9G   1% /mnt/wslg/versions.txt
none            1.9G  76K   1.9G   1% /mnt/wslg/doc
C:\             238G   96G  142G  41% /mnt/c
tmpfs           1.9G  4.0K   1.9G   1% /run/user/1000
tanmay@DESKTOP-350DD6R: /mnt/c/Users/Tanmay/desktop/linux/exp2/test_project/scripts$ |

```

## TASK 8: [File Organisation]

### Task Statement:

- [In your test\_project directory, create a backup folder. Copy all .txt files from all subdirectories into this backup folder. Then list all files in the backup folder with detailed information.

]

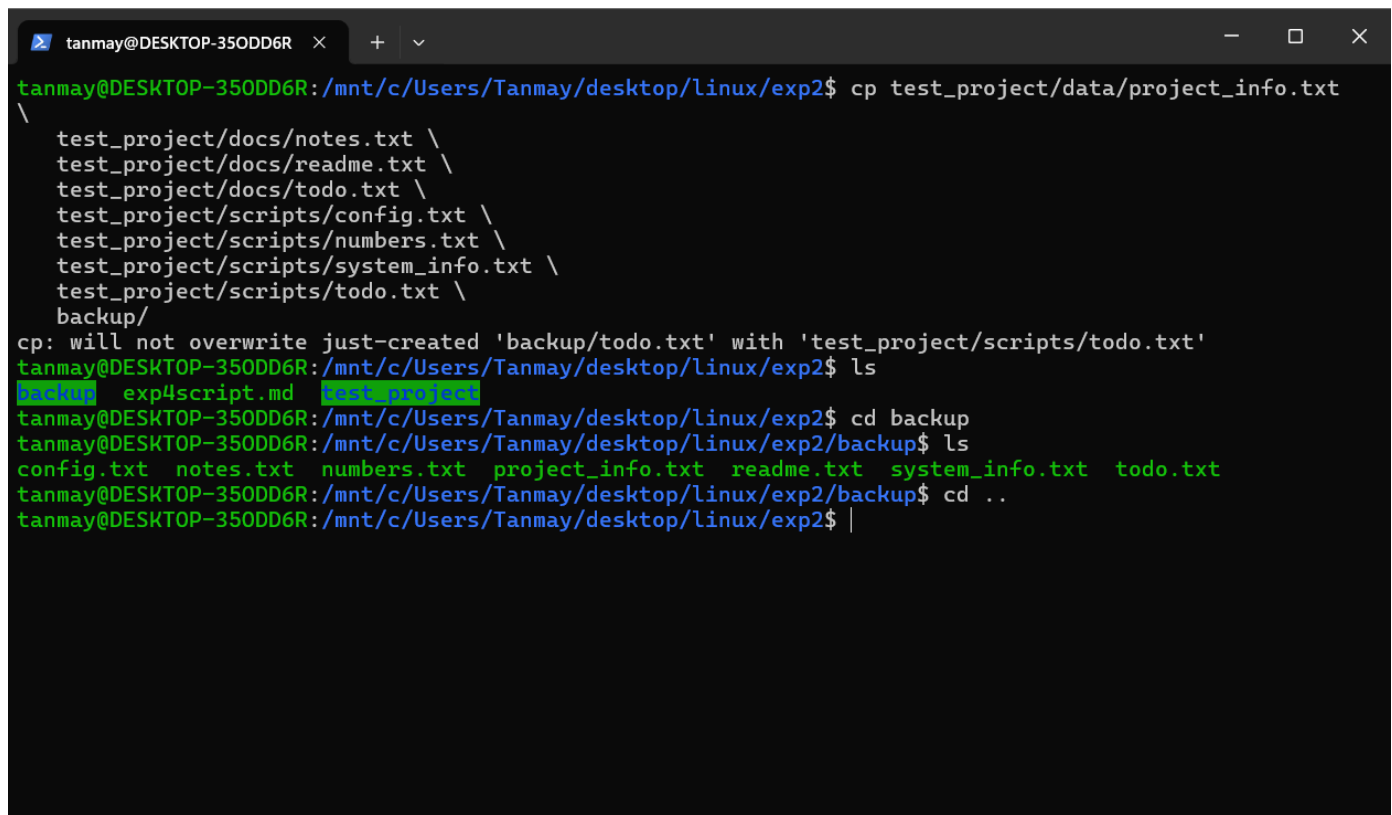
## Explanation:

- [I can use `find . -name "*.txt"` to locate all `.txt` files. Alternatively, I can navigate to each directory and copy files manually. To copy multiple files at once, I use `cp file1.txt file2.txt destination/`. If I want detailed information about the files, I use `ls -la`. The wildcard `*.txt` helps me match all files that end with `.txt`.]

## Command(s):

```
cp test_project/data/project_info.txt    test_project/docs/notes.txt
test_project/docs/readme.txt            test_project/docs/todo.txt
test_project/scripts/config.txt          test_project/scripts/numbers.txt
test_project/scripts/system_info.txt     test_project/scripts/todo.txt    backup/
```

## Output:

A terminal window titled 'tanmay@DESKTOP-350DD6R' with standard window controls. The terminal shows the execution of a command to copy files from 'test\_project/data/project\_info.txt' to 'test\_project/docs/notes.txt' and several other files to a 'backup/' directory. The output shows the files being copied, a warning about overwriting 'backup/todo.txt', and the successful completion of the command. Subsequent commands show the user navigating into the 'backup' directory and listing its contents, which now include all the copied files.

```
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ cp test_project/data/project_info.txt \
test_project/docs/notes.txt \
test_project/docs/readme.txt \
test_project/docs/todo.txt \
test_project/scripts/config.txt \
test_project/scripts/numbers.txt \
test_project/scripts/system_info.txt \
test_project/scripts/todo.txt \
backup/
cp: will not overwrite just-created 'backup/todo.txt' with 'test_project/scripts/todo.txt'
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ ls
backup  exp4script.md  test_project
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ cd backup
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/backup$ ls
config.txt  notes.txt  numbers.txt  project_info.txt  readme.txt  system_info.txt  todo.txt
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/backup$ cd ..
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2$ |
```

## TASK 9: [Process and History]

### Task Statement:

- [Display your command history and count how many commands you've executed. Then show the top 10 most recent commands.  
]

## Explanation:

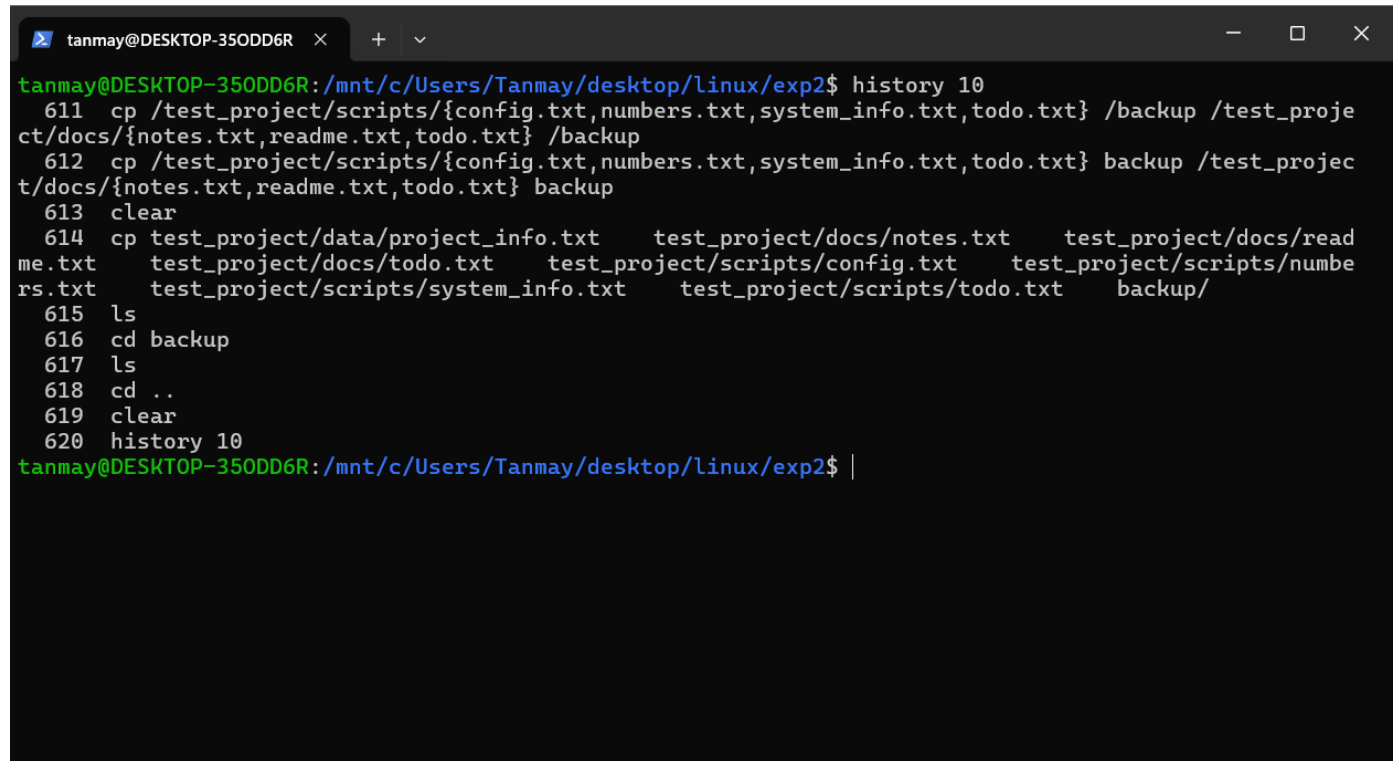
- [I can use `history` to see all the commands I've typed. To count the total number of commands, I use `history | wc -l`. If I want to view just the last 10 commands, I can use `history 10` or `history | tail -10`.

The `wc -l` command simply counts the number of lines in the output.]

## Command(s):

```
history 10
```

## Output:

A terminal window titled 'tanmay@DESKTOP-350DD6R' with a dark background. The prompt is 'tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2\$'. The user has entered 'history 10', and the terminal displays the last 10 commands: 611 cp /test\_project/scripts/{config.txt,numbers.txt,system\_info.txt,TODO.txt} /backup /test\_project/docs/{notes.txt,readme.txt,TODO.txt} /backup; 612 cp /test\_project/scripts/{config.txt,numbers.txt,system\_info.txt,TODO.txt} backup /test\_project/docs/{notes.txt,readme.txt,TODO.txt} backup; 613 clear; 614 cp test\_project/data/project\_info.txt test\_project/docs/notes.txt test\_project/docs/readme.txt test\_project/docs/TODO.txt test\_project/scripts/config.txt test\_project/scripts/numbers.txt test\_project/scripts/system\_info.txt test\_project/scripts/TODO.txt backup/; 615 ls; 616 cd backup; 617 ls; 618 cd ..; 619 clear; 620 history 10. The prompt is now 'tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2\$ |'.

## TASK 10: [Comprehensive Cleanup]

### Task Statement:

- [Set the permissions of your `backup.sh` script to be readable, writable, and executable by owner, readable and executable by group, and readable by others. Then create a summary file that lists the total number of files and directories in your entire `test_project`.]

### Explanation:

- [I can set permissions for `backup.sh` using `chmod 754 backup.sh` to give `rw-r--r--` permissions. Alternatively, I can use `chmod u=rwx,g=rx,o=r backup.sh`. To count all files, I use `find . -type f | wc -l`, and to count directories, I use `find . -type d | wc -l`. If I want to see the full directory structure recursively, I use `ls -R`. I can also combine multiple commands with `&&` or save the outputs to a summary file for later reference.]

## Command(s):

```
chmod 754 backup.sh
```

```
echo "Total files:" > summary.txt
```

```
find . -type f | wc -l >> summary.txt
echo "Total directories:" >> summary.txt
find . -type d | wc -l >> summary.txt
```

## Output:

```
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/test_project/scripts$
chmod 754 backup.sh
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/test_project/scripts$ cd ..
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/test_project$
echo "Total files:" > summary.txt
find . -type f | wc -l >> summary.txt
echo "Total directories:" >> summary.txt
find . -type d | wc -l >> summary.txt
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/test_project$ cat summary.txt
Total files:
11
Total directories:
4
tanmay@DESKTOP-350DD6R:/mnt/c/Users/Tanmay/desktop/linux/exp2/test_project$ |
```

## Result

- Successfully created, copied, moved, and deleted files.
- Practiced viewing file contents and monitoring logs.
- Explored file permissions and ownership management.
- Used `find` and `grep` to locate and filter data.
- Created archives and compressed files.
- Demonstrated both hard and symbolic links.

## Challenges Faced & Learning Outcomes

- Challenge 1: Accidentally deleted files with `rm` without `-i`. Learned to use `rm -i` for safety.
- Challenge 2: Remembering numeric vs symbolic permissions in `chmod`. Fixed through repeated practice.

## Learning:

- Gained practical skills with file manipulation and permission commands.
- Learned how to efficiently search files and patterns in Linux.
- Understood how to archive and compress files for better storage management.
- Understood differences between hard and symbolic links.

## Conclusion



This experiment provided hands-on experience with core Linux file management, permissions, searching, archiving, and linking. These are foundational skills for effective Linux system administration and daily usage.