Experiment 3: Linux File Manipulation and System Manipulation I

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Aim:

- To practice Linux file manipulation commands like `touch`, `cp`, `mv`, `rm`, `cat`, `less`, `head`, `tail`.
- To explore file permissions and ownership with `ls -l`, `chmod`, `chown`, and `chgrp`.
- To search and filter files using `find` and `grep`.
- To understand archiving and compression with `tar`, `gzip`, and `gunzip`.
- To create and manage links (`ln`) for both hard and symbolic links.

Requirements

- A Linux machine with bash shell (Ubuntu/Fedora/other).
- User privileges to create, modify, and delete files and directories.
- Access to system utilities like `tar`, `gzip`, `grep`, and `find`.

Theory

Linux file management involves creating, copying, moving, removing, and viewing files. File permissions and ownership ensure secure access control. Searching and filtering tools like `grep` and `find` help locate information efficiently. Archiving with `tar` and compression with `gzip` reduce storage usage and simplify file transfer. Links (`ln`) allow multiple references to the same file data (hard links) or path references (symbolic links).

Procedure & Observations

Exercise 1: Creating and Managing Files

Task Statement:

Create files and manage timestamps using `touch`.

Command(s):

```
touch myfile.txt
touch file1.txt file2.txt file3.txt
```

Output:

Exercise 2: Copying, Moving, and Deleting Files

Task Statement:

Use `cp`, `mv`, and `rm` to copy, rename, move, and delete files and directories.

Command(s):

```
cp document.txt backup_document.txt
mv oldname.txt newname.txt
rm unwanted_file.txt
rm -r old_directory/
```

Output:


```
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cp file1 file2
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cp -v file1 file2
'file1' -> 'file2'
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cp myfile.txt -/documents/
cp: invalid option -- '/'
Try 'cp --help' for more information.
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cp myfile.txt documents
cp: cannot stat 'myfile.txt': No such file or directory
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ touch myfile.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cp myfile.txt documents
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cp -v myfile.txt documents
'myfile.txt' -> 'documents'
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cp original.txt myfile.txt
cp: cannot stat 'original.txt': No such file or directory
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cp original.txt backup_original.txt
cp: cannot stat 'original.txt': No such file or directory
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ touch original.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cp original.txt backup_original.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cp -r dir1 dir2
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cp -v dir1 dir2
cp: -r not specified; omitting directory 'dir1'
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cp file2 backup_file.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$
```



```
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ rm myfile.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive2.tar       dir2      error.log      exp6       exp6.sh     exper6.sh    expp6.sh  file2.gz    file5   lin
archive1.tar.gz   backup_file.txt    dir_1     exoperim6.sh   exp6.1.sh  expe6.sh    experi6.sh   fil.txt   file3.sh    file6   ori
archive1tar.bz2   backup_original.txt documents exp.2.sh      exp6.2.sh  expee6.sh   expfunction.sh file.txt file3.sh.gz home   ori
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ rm fil.txt file2
rm: cannot remove 'file2': No such file or directory
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ rm fil.txt file.txt
rm: cannot remove 'fil.txt': No such file or directory
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive2.tar       dir2      error.log      exp6       exp6.sh     exper6.sh    expp6.sh  file3.sh.gz  home
archive1.tar.gz   backup_file.txt    dir_1     exoperim6.sh   exp6.1.sh  expe6.sh    experi6.sh   file2.gz  file5        link.txt
archive1tar.bz2   backup_original.txt documents exp.2.sh      exp6.2.sh  expee6.sh   expfunction.sh file3.sh file6        orig.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ rm -r documents
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive2.tar       dir2      exoperim6.sh   exp6.1.sh  expe6.sh    experi6.sh   file2.gz   file5    link.txt
archive1.tar.gz   backup_file.txt    dir_1     exp.2.sh       exp6.2.sh  expee6.sh   expfunction.sh file3.sh  file6    orig.txt
archive1tar.bz2   backup_original.txt error.log exp6          exp6.sh    exper6.sh   expp6.sh     file3.sh.gz home     original.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$
```

Exercise 3: Viewing File Contents

Task Statement:

Display file contents using `cat`, `less`, `head`, and `tail`.

Command(s):

```
cat filename.txt
less /var/log/syslog
head -n 5 filename.txt
tail -n 20 filename.txt
tail -f /var/log/syslog
```

Output:


```
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive2.tar      dir2      exoperim6.sh  exp6.1.sh  expe6.sh   experi6.sh    file2.gz      file5  link.txt
archive1.tar.gz   backup_file.txt   dir_1     exp.2.sh      exp6.2.sh  expee6.sh  expfunction.sh file3.sh      file6  orig.txt
archive1tar.bz2   backup_original.txt  error.log  exp6       exp6.sh   exper6.sh  expp6.sh      file3.sh.gz   home   original.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cat file2.gz
◆{◆hX~=@l9q5◆◆◆2vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cat file3.sh file5
echo "enter your age"
read age
if [$age -18]
then
        echo "You're eligible to vote"
else
        echo "You're not eligible to vote"
fi

vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cat -n file3.sh
     1  echo "enter your age"
     2  read age
     3  if [$age -18]
     4  then
     5          echo "You're eligible to vote"
     6  else
     7          echo "You're not eligible to vote"
     8  fi
     9
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ cat > file4.sh
ls
```



```
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\DELL\Desktop\New folder\linux> wsl
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      backup_file.txt      error.log      exp6.1.sh  expee6.sh      expp6.sh      file4.sh   link.txt
archive1.tar.gz   backup_original.txt  exoperim6.sh   exp6.2.sh  exper6.sh      file2.gz      file5      orig.txt
archive1tar.bz2   dir2                 exp.2.sh       exp6.sh    experi6.sh     file3.sh      file6      original.txt
archive2.tar      dir_1                exp6           expe6.sh   expfunction.sh file3.sh.gz   home       script.sh
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ less file3.sh
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ less file3.sh
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ more file3.sh
echo "enter your age"
read age
if [$age -18]
then
        echo "You're eligible to vote"
else
        echo "You're not eligible to vote"
fi
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$
```

Exercise 4: File Searching with `find`

Task Statement:

Search files by name, type, size, and permissions using `find`.

Command(s):

```
find /home -name "*.txt"
find /home -type f -size +100M
find /etc -name "*conf*"
find /tmp -type f -empty -delete
```

find /home -name "*.txt"
find /home -type f -size +100M
find /etc -name "*conf*"
find /tmp -type f -empty -delete

Output:

```
vaishnavii29@DESKTOP-BSKS    ×    +    ∨

vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find /home -name file3
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find /home -iname FILE3
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find . /home -type d -name dir_1
./dir_1
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find . /home -type f -name file3
./dir_1/file3
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find /home -type l
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find ./home -type l-
find: Must separate multiple arguments to -type using: ','
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find . /home -type l
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find /home -size +100M
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find /home -size +1KB
find: invalid -size type 'B'
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find /home -size +1k
/home
/home/vaishnavii29
/home/vaishnavii29/a.out
/home/vaishnavii29/.cache
/home/vaishnavii29/.bash_history
/home/vaishnavii29/VirtualBox VMs
/home/vaishnavii29/VirtualBox VMs/linux
/home/vaishnavii29/VirtualBox VMs/linux/linux.vbox
/home/vaishnavii29/VirtualBox VMs/linux/linux.vdi
/home/vaishnavii29/VirtualBox VMs/linux/linux.vbox-prev
/home/vaishnavii29/public_folder
/home/vaishnavii29/documents
/home/vaishnavii29/documents/projects
/home/vaishnavii29/documents/projects/linux_tutorial
/home/vaishnavii29/.scriptexp5.sh.swo
/home/vaishnavii29/.bashrc
/home/vaishnavii29/dir3
/home/vaishnavii29/dir1
/home/vaishnavii29/.landscape
/home/vaishnavii29/.local
/home/vaishnavii29/.local/share
/home/vaishnavii29/.local/share/nano
/home/vaishnavii29/.local/share/gedit
/home/vaishnavii29/.local/share/flatpak
/home/vaishnavii29/.local/share/flatpak/db
/home/vaishnavii29/.local/share/recently-used.xbel
/home/vaishnavii29/dir11
```

```
vaishnavii29@DESKTOP-BSKS    ×    +    ∨

/home/vaishnavii29/.viminfo
/home/vaishnavii29/.scriptexp5.sh.swp
/home/vaishnavii29/dir2
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find /home -mtime -7
/home/vaishnavii29
/home/vaishnavii29/a.out
/home/vaishnavii29/.motd_shown
/home/vaishnavii29/first.c
/home/vaishnavii29/.bash_history
/home/vaishnavii29/.lesshst
/home/vaishnavii29/VirtualBox VMs
/home/vaishnavii29/VirtualBox VMs/linux
/home/vaishnavii29/VirtualBox VMs/linux/linux.vbox
/home/vaishnavii29/VirtualBox VMs/linux/linux.vdi
/home/vaishnavii29/VirtualBox VMs/linux/linux.vbox-prev
/home/vaishnavii29/public_folder
/home/vaishnavii29/documents
/home/vaishnavii29/documents/projects
/home/vaishnavii29/documents/projects/linux_tutorial
/home/vaishnavii29/first2.c
/home/vaishnavii29/dir3
/home/vaishnavii29/dir1
/home/vaishnavii29/.local/share
/home/vaishnavii29/.local/share/gedit
/home/vaishnavii29/.local/share/gedit/gedit-metadata.xml
/home/vaishnavii29/.local/share/flatpak
/home/vaishnavii29/.local/share/flatpak/db
/home/vaishnavii29/.local/share/recently-used.xbel
/home/vaishnavii29/dir11
/home/vaishnavii29/exp2
/home/vaishnavii29/.config
/home/vaishnavii29/.config/gedit
/home/vaishnavii29/.config/gedit/accels
/home/vaishnavii29/.config/htop
/home/vaishnavii29/.config/htop/htoprc
/home/vaishnavii29/.config/VirtualBox
/home/vaishnavii29/.config/VirtualBox/selectorwindow.log.2
/home/vaishnavii29/.config/VirtualBox/VBoxSVC.log.7
/home/vaishnavii29/.config/VirtualBox/VBoxSVC.log.6
/home/vaishnavii29/.config/VirtualBox/selectorwindow.log.3
/home/vaishnavii29/.config/VirtualBox/selectorwindow.log.5
```

```
/home/vaishnavii29/.config/QtProject.conf
/home/vaishnavii29/.viminfo
/home/vaishnavii29/dir2
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find /home -atime +30
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find /home -ctime -1
/home/vaishnavii29/.motd_shown
/home/vaishnavii29/.bash_history
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find /home -perm 644
/home/vaishnavii29/.bash_logout
/home/vaishnavii29/.cache/motd.legal-displayed
/home/vaishnavii29/.profile
/home/vaishnavii29/.scriptexp5.sh.swo
/home/vaishnavii29/.bashrc
/home/vaishnavii29/first2.c
/home/vaishnavii29/file1
/home/vaishnavii29/.landscape/sysinfo.log
/home/vaishnavii29/.local/share/gedit/gedit-metadata.xml
/home/vaishnavii29/exp2
/home/vaishnavii29/.config/gedit/accels
/home/vaishnavii29/.config/enchant/en_US.exc
/home/vaishnavii29/.config/enchant/en_US.dic
/home/vaishnavii29/.config/QtProject.conf
/home/vaishnavii29/.scriptexp5.sh.swp
/home/vaishnavii29/.sudo_as_admin_successful
/home/vaishnavii29/file2
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find /home -perm -644
/home
/home/vaishnavii29/.bash_logout
/home/vaishnavii29/a.out
/home/vaishnavii29/.motd_shown
/home/vaishnavii29/scriptexp5.sh
/home/vaishnavii29/.cache/motd.legal-displayed
/home/vaishnavii29/.profile
/home/vaishnavii29/test1.sh
/home/vaishnavii29/first.c
/home/vaishnavii29/VirtualBox VMs
/home/vaishnavii29/VirtualBox VMs/linux
/home/vaishnavii29/public_folder
/home/vaishnavii29/documents
/home/vaishnavii29/documents/projects
/home/vaishnavii29/documents/projects/linux_tutorial
```

```
/home/vaishnavii29/.sudo_as_admin_successful
/home/vaishnavii29/file2
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ find /home -perm /111
/home
/home/vaishnavii29
/home/vaishnavii29/a.out
/home/vaishnavii29/scriptexp5.sh
/home/vaishnavii29/.cache
/home/vaishnavii29/test1.sh
/home/vaishnavii29/first.c
/home/vaishnavii29/VirtualBox VMs
/home/vaishnavii29/VirtualBox VMs/linux
/home/vaishnavii29/public_folder
/home/vaishnavii29/documents
/home/vaishnavii29/documents/projects
/home/vaishnavii29/documents/projects/linux_tutorial
/home/vaishnavii29/dir3
/home/vaishnavii29/dir1
/home/vaishnavii29/.landscape
/home/vaishnavii29/.local
/home/vaishnavii29/.local/share
/home/vaishnavii29/.local/share/nano
/home/vaishnavii29/.local/share/gedit
/home/vaishnavii29/.local/share/flatpak
/home/vaishnavii29/.local/share/flatpak/db
/home/vaishnavii29/dir11
/home/vaishnavii29/script5.sh
/home/vaishnavii29/.config
/home/vaishnavii29/.config/gedit
/home/vaishnavii29/.config/htop
/home/vaishnavii29/.config/VirtualBox
/home/vaishnavii29/.config/dconf
/home/vaishnavii29/.config/procps
/home/vaishnavii29/.config/enchant
/home/vaishnavii29/script.sh
/home/vaishnavii29/dir2
```

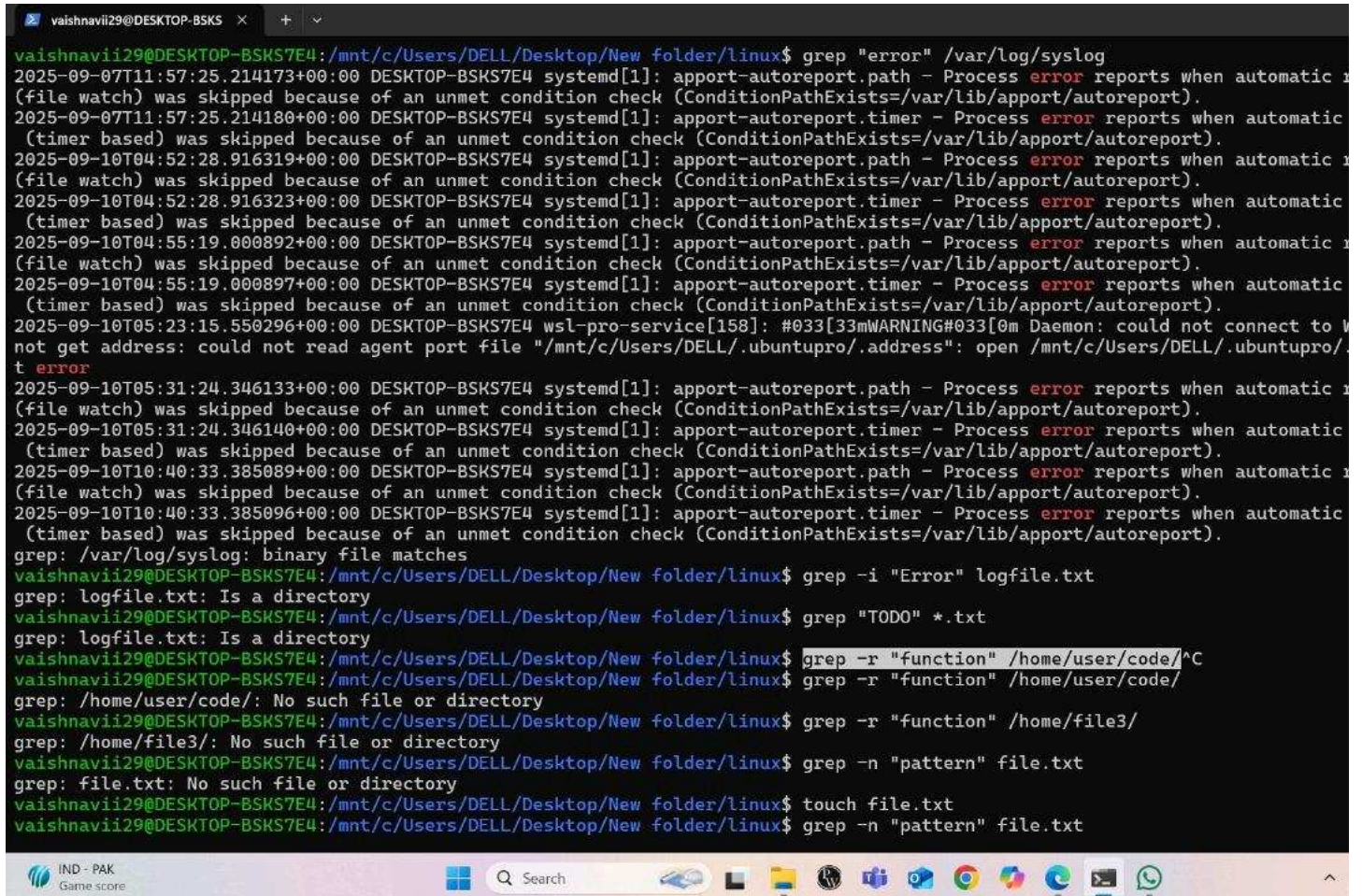# Exercise 5: Pattern Searching with grep

Task Statement:

Search for patterns in files using grep.

Command(s):

```
grep "error" /var/log/syslog
grep -i "Error" logfile.txt
grep -r "function" ~/code/
grep -n "TODO" *.txt
```

Output:

Exercise 6: Archiving and Compression

Task Statement:

Create and extract archives using `tar`, compress and decompress with `gzip`/`gunzip`.

Command(s):

```
tar -czf backup.tar.gz /home/user/documents
tar -xzf backup.tar.gz -C /restore/
gzip largefile.txt
gunzip largefile.txt.gz
```

Output:


```
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ tar -cf backup.tar file6
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      backup.tar        dir_1        exp6       expe6.sh    expfunction.sh  file2.gz     file5
archive1.tar.gz   backup_file.txt   error.log    exp6.1.sh  expee6.sh   expp6.sh        file3.sh     file6
archive1tar.bz2   backup_original.txt exoperim6.sh exp6.2.sh exper6.sh   file.txt        file3.sh.gz  home
archive2.tar      dir2              exp.2.sh     exp6.sh    experi6.sh  file1.txt.save  file4.sh     link.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ tar -czf backup.tar.gz file5
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ;s
-bash: syntax error near unexpected token ';'
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      backup.tar.gz     error.log    exp6.2.sh  experi6.sh  file2.gz     file6          original.t
archive1.tar.gz   backup_file.txt   exoperim6.sh exp6.sh    expfunction.sh file3.sh  home           script.sh
archive1tar.bz2   backup_original.txt exp.2.sh   expe6.sh   expp6.sh    file3.sh.gz  link.txt
archive2.tar      dir2              exp6         expee6.sh  file.txt     file4.sh     logfile.txt
backup.tar        dir_1             exp6.1.sh    exper6.sh  file1.txt.save file5       orig.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ tar -cjf backup.tar.bz2 file6
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      backup.tar.bz2    dir_1        exp6.1.sh  exper6.sh    file1.txt.save file5        orig.tx
archive1.tar.gz   backup.tar.gz     error.log    exp6.2.sh  experi6.sh   file2.gz       file6        origina
archive1tar.bz2   backup_file.txt   exoperim6.sh exp6.sh    expfunction.sh file3.sh     home         script.
archive2.tar      backup_original.txt exp.2.sh   expe6.sh   expp6.sh     file3.sh.gz    link.txt
backup.tar        dir2              exp6         expee6.sh  file.txt      file4.sh       logfile.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ tar -cvf backup.tar file6
file6
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ |
```



```
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ tar -cf backup.tar file6
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      backup.tar        dir_1        exp6       expe6.sh    expfunction.sh  file2.gz     file5
archive1.tar.gz   backup_file.txt   error.log    exp6.1.sh  expee6.sh   expp6.sh        file3.sh     file6
archive1tar.bz2   backup_original.txt exoperim6.sh exp6.2.sh exper6.sh   file.txt        file3.sh.gz  home
archive2.tar      dir2              exp.2.sh     exp6.sh    experi6.sh  file1.txt.save  file4.sh     link.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ tar -czf backup.tar.gz file5
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ;s
-bash: syntax error near unexpected token ';'
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      backup.tar.gz     error.log    exp6.2.sh  experi6.sh  file2.gz     file6          original.t
archive1.tar.gz   backup_file.txt   exoperim6.sh exp6.sh    expfunction.sh file3.sh  home           script.sh
archive1tar.bz2   backup_original.txt exp.2.sh   expe6.sh   expp6.sh    file3.sh.gz  link.txt
archive2.tar      dir2              exp6         expee6.sh  file.txt     file4.sh     logfile.txt
backup.tar        dir_1             exp6.1.sh    exper6.sh  file1.txt.save file5       orig.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ tar -cjf backup.tar.bz2 file6
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      backup.tar.bz2    dir_1        exp6.1.sh  exper6.sh    file1.txt.save file5        orig.tx
archive1.tar.gz   backup.tar.gz     error.log    exp6.2.sh  experi6.sh   file2.gz       file6        origina
archive1tar.bz2   backup_file.txt   exoperim6.sh exp6.sh    expfunction.sh file3.sh     home         script.
archive2.tar      backup_original.txt exp.2.sh   expe6.sh   expp6.sh     file3.sh.gz    link.txt
backup.tar        dir2              exp6         expee6.sh  file.txt      file4.sh       logfile.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ tar -cvf backup.tar file6
file6
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ tar -xf backup.tar
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ tar -xf backup.tar -C /restore/home
tar: /restore/home: Cannot open: No such file or directory
tar: Error is not recoverable: exiting now
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ tar -xf backup.tar -C dir_1
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      backup.tar.bz2    dir_1        exp6.1.sh  exper6.sh    file1.txt.save file5        orig.tx
archive1.tar.gz   backup.tar.gz     error.log    exp6.2.sh  experi6.sh   file2.gz       file6        origina
archive1tar.bz2   backup_file.txt   exoperim6.sh exp6.sh    expfunction.sh file3.sh     home         script.
archive2.tar      backup_original.txt exp.2.sh   expe6.sh   expp6.sh     file3.sh.gz    link.txt
backup.tar        dir2              exp6         expee6.sh  file.txt      file4.sh       logfile.txt
```

```
vaishnavii29@DESKTOP-BSKS7E4:~$  tar -xzf backup.tar.gz file6
vaishnavii29@DESKTOP-BSKS7E4:~$ tar -tf backup.tar
file2.txt
vaishnavii29@DESKTOP-BSKS7E4:~$ |
```

```
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive1tar.bz2  dir1  file1 file2.gz file3.sh file5   home      orig.txt
archive1.tar.gz   archive2.tar     dir2  file2 file3    file4    file6   link.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ gunzip -k file2.gz
gzip: file2 already exists; do you wish to overwrite (y or n)? y
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive1tar.bz2  dir1  file1 file2.gz file3.sh file5   home      orig.txt
archive1.tar.gz   archive2.tar     dir2  file2 file3    file4    file6   link.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ gunzip -t file2.gz
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive1tar.bz2  dir1  file1 file2.gz file3.sh file5   home      orig.txt
archive1.tar.gz   archive2.tar     dir2  file2 file3    file4    file6   link.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ echo $?
0
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ zcat file2.gz
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ vim file2.gz
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ gzip -k file3.sh
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive1tar.bz2  dir1  file1 file2.gz file3.sh    file4 file6 link.txt
archive1.tar.gz   archive2.tar     dir2  file2 file3    file3.sh.gz file5 home  orig.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ zcat file3.sh.gz
echo "enter your age"
read age
if [$age -18]
then
        echo "You're eligible to vote"
else
        echo "You're not eligible to vote"
fi

vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ zless file3.sh.gz
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ zgrep "pattern" file3.sh.gz
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive1tar.bz2  dir1  file1 file2.gz file3.sh    file4 file6 link.txt
archive1.tar.gz   archive2.tar     dir2  file2 file3    file3.sh.gz file5 home  orig.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ zgrep "pattern" file3.sh.gz
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ |
```

```
gzip: file5: No such file or directory
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive1tar.bz2  dir1  file1.gz file3    file4    home      orig.txt
archive1.tar.gz   archive2.tar     dir2  file2.gz file3.sh file5.gz link.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ gzip file3 file4
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive1tar.bz2  dir1  file1.gz file3.gz file4.gz home      orig.txt
archive1.tar.gz   archive2.tar     dir2  file2.gz file3.sh file5.gz link.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ gzip -v file5.gz
gzip: file5.gz already has .gz suffix -- unchanged
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ vim file6
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive1tar.bz2  dir1  file1.gz file3.gz file4.gz file6 link.txt
archive1.tar.gz   archive2.tar     dir2  file2.gz file3.sh file5.gz home  orig.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ gzip -v file6
file6:     0.0% -- replaced with file6.gz
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ gzip -k file1 file2 file3 file4 file5 file6
gzip: file1: No such file or directory
gzip: file2: No such file or directory
gzip: file3: No such file or directory
gzip: file4: No such file or directory
gzip: file5: No such file or directory
gzip: file6: No such file or directory
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive1tar.bz2  dir1  file1.gz file3.gz file4.gz file6.gz link.txt
archive1.tar.gz   archive2.tar     dir2  file2.gz file3.sh file5.gz home     orig.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ gzip -k file1
gzip: file1: No such file or directory
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ gunzip file1.gz
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive1tar.bz2  dir1  file1    file3.gz file4.gz file6.gz link.txt
archive1.tar.gz   archive2.tar     dir2  file2.gz file3.sh file5.gz home     orig.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ gunzip file2.gz file3.gz file4.gz file5.gz file6.gz
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive1tar.bz2  dir1  file1 file3    file4 file6 link.txt
archive1.tar.gz   archive2.tar     dir2  file2 file3.sh file5 home  orig.txt
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ gunzip -k file2.gz
gzip: file2.gz: No such file or directory
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ gzip -k file2
vaishnavii29@DESKTOP-BSKS7E4:/mnt/c/Users/DELL/Desktop/New folder/linux$ ls
archive1.tar      archive1tar.bz2  dir1  file1 file2.gz file3.sh file5   home      orig.txt
```

Exercise 7: Creating Links

Task Statement:

Create and test hard and symbolic links using `ln`.

Command(s):

```
echo "Hello" > original.txt
ln original.txt hardlink.txt
ln -s original.txt symlink.txt
ls -li original.txt hardlink.txt symlink.txt
```

Output:

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.