



Module Code & Module Title

Level 5 – Network Operating System

Assessment Type

Logbook 8

Semester

2024 Spring

Student Name: Yogesh Dhakal

London Met ID: 23057067

College ID: NP04CP4S240032

Assignment Submission Date: 28th December 2024

Submitted To: Mr. Prashant Adhikari

I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a mark of zero will be awarded.

Table of Contents

| | |
|---|----|
| Introduction..... | 4 |
| Objective | 4 |
| 1. Create the directory structure presented in the figure below. | 5 |
| 2. Change to the 8cat-grep directory by one step using a relative pathname. | 5 |
| 3. Using the cat utility, create two files. | 6 |
| 4. Give the following commands and explain the results for yourself | 7 |
| 5. Define the lsall alias for ls -al command. Show that your system stores it giving the alias command (without arguments)..... | 9 |
| 6. Remove the alias. | 10 |
| 7. Define this alias again preserving it for the next session..... | 10 |
| 8. Define the nwho alias for the number of system file at UNIX computers..... | 11 |
| 9. Give the command nwho. Compare the figure displayed with ones got by you UNIX-mates..... | 11 |
| 10. List your last commands executed giving the history command. | 12 |
| 11. Re-execute the last but one command using the redo(r) command and the number of the event fc-r. | 12 |
| 12. Re-execute the command given three commands ago using the negative integer. | 13 |
| 13. Re-execute the last command which name begins with 'l'. fc -e l..... | 13 |
| Conclusion..... | 14 |

Table of figures

| | |
|---|----|
| Figure 1: Creating home directory | 5 |
| Figure 2: Changing to directory by one step | 5 |
| Figure 3: Creating testa file | 6 |
| Figure 4: Creating testb file | 6 |
| Figure 5: Using grep II testa command | 7 |
| Figure 6: Using grep -v II testa command | 7 |
| Figure 7: Using grep -n II testa command | 7 |
| Figure 8: Using grep -l II * command | 7 |
| Figure 9: Using grep -i II * command | 8 |
| Figure 10: Using grep -c II * command | 8 |
| Figure 11: Using grep '^K' testa testb command | 8 |
| Figure 12: Using grep -n'^' testa command | 8 |
| Figure 13: Defining the lsal alias for ls -al | 9 |
| Figure 14: Using the lsal command | 9 |
| Figure 15: Removing the alias | 10 |
| Figure 16: Saving the command and using it in next session | 10 |
| Figure 17: Defining the nwho | 11 |
| Figure 18: Used nwho | 11 |
| Figure 19: History of commands | 12 |
| Figure 20: Used to see the most recent command | 12 |
| Figure 21: To re execute the command we used 3 commands ago | 13 |
| Figure 22: To re execute the command that start wit | 13 |

Introduction

We have some exercises which have tried to hone our command line sharpening and also to bring training on how UNIX operates. UNIX is an operating system providing utility programs for managing files and directories as well as achieving operations on the system. By creating a directory structure, generating files, and running different commands, we come across ordinary to even advanced features from cat, grep, alias, and history. These utilities are among the most important tools for performing everyday tasks and processes in UNIX.

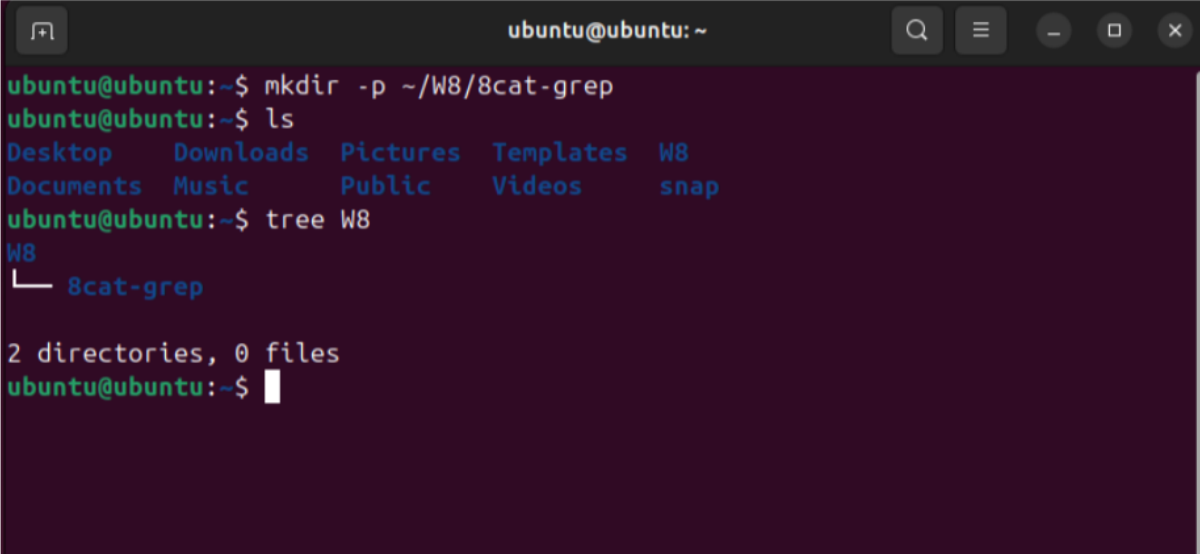
Exercises are made to hone the command line and training on how UNIX works. UNIX is an operating system which provides utility programs for managing files, directories, and performing work on systems. We created a directory structure, created files, and ran a range of commands. Thus, we experienced through ordinary to advanced features of cat, grep, alias, and history. These utilities are some of the important tools for routine tasks and processes in UNIX.

Objective

The primary objective of this task is to:

1. Familiarize ourselves with common UNIX utilities such as cat and grep.
2. Understand how to create, navigate, and manipulate files and directories using commands.
3. Learn how to define, use, and remove command aliases.
4. Practice accessing and managing command history for efficiency.
5. Compare results with peers to improve understanding of system configurations.

1. Create the directory structure presented in the figure below.

A terminal window titled 'ubuntu@ubuntu: ~' with standard window controls. The user enters 'mkdir -p ~/W8/8cat-grep', then 'ls' showing a list of system directories including Desktop, Downloads, Pictures, Templates, W8, Documents, Music, Public, Videos, and snap. Then 'tree W8' is entered, showing a tree structure with 'W8' as the root and '8cat-grep' as its child. The output concludes with '2 directories, 0 files'.

```
ubuntu@ubuntu:~$ mkdir -p ~/W8/8cat-grep
ubuntu@ubuntu:~$ ls
Desktop    Downloads  Pictures   Templates  W8
Documents  Music      Public     Videos     snap
ubuntu@ubuntu:~$ tree W8
W8
├── 8cat-grep

2 directories, 0 files
ubuntu@ubuntu:~$
```

Figure 1: Creating home directory

First, we started by making the directory using mkdir with the option -p.

2. Change to the 8cat-grep directory by one step using a relative pathname.

A terminal window showing the user entering 'cd W8/8cat-grep' and the prompt changing to 'ubuntu@ubuntu:~/W8/8cat-grep\$'.

```
ubuntu@ubuntu:~$ cd W8/8cat-grep
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 2: Changing to directory by one step

Then after we were done making the directory we used cd to move to that folder.

3. Using the cat utility, create two files.

```
ubuntu@ubuntu:~/W8/8cat-grep$ cat >> testa
Kkkll
llllmm
oo-oo
mmdd
ddkkk
ubuntu@ubuntu:~/W8/8cat-grep$ ls
testa
ubuntu@ubuntu:~/W8/8cat-grep$ cat testa
Kkkll
llllmm
oo-oo
mmdd
ddkkk
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 3: Creating testa file

```
ubuntu@ubuntu:~/W8/8cat-grep$ cat > testb
KKKKK
LLLLL
MMMMM
DDDDD
ubuntu@ubuntu:~/W8/8cat-grep$ ls
testa  testb
ubuntu@ubuntu:~/W8/8cat-grep$ cat testb
KKKKK
LLLLL
MMMMM
DDDDD
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 4: Creating testb file

4. Give the following commands and explain the results for yourself

- `grep ll testa`

```
ubuntu@ubuntu:~/W8/8cat-grep$ grep ll testa
Kkkll
llllmm
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 5: Using `grep ll testa` command

- `grep -v ll testa`

```
ubuntu@ubuntu:~/W8/8cat-grep$ grep -v ll testa
oo-oo
mmdd
ddkkk
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 6: Using `grep -v ll testa` command

- `grep -n ll testa`

```
ubuntu@ubuntu:~/W8/8cat-grep$ grep -n ll testa
1:Kkkll
2:llllmm
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 7: Using `grep -n ll testa` command

- `grep -l ll *`

```
ubuntu@ubuntu:~/W8/8cat-grep$ grep -l ll *
testa
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 8: Using `grep -l ll *` command

- `grep -i ll *`

```
ubuntu@ubuntu:~/W8/8cat-grep$ grep -i ll *
testa:Kkkll
testa:llllmm
testb:LLLLL
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 9: Using `grep -i ll *` command

- `grep -c ll *`

```
ubuntu@ubuntu:~/W8/8cat-grep$ grep -c ll *
testa:2
testb:0
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 10: Using `grep -c ll *` command

- `grep '^k' testa testb`

```
ubuntu@ubuntu:~/W8/8cat-grep$ grep '^K' testa testb
testa:Kkkll
testb:KKKKK
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 11: Using `grep '^K' testa testb` command

- `grep -n '^' testa`

```
ubuntu@ubuntu:~/W8/8cat-grep$ grep -n '^' testa
1:Kkkll
2:llllmm
3:oo-oo
4:mmdd
5:ddkkk
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 12: Using `grep -n '^' testa` command

5. Define the `lsal` alias for `ls -al` command. Show that your system stores it giving the alias command (without arguments)

```
ubuntu@ubuntu:~/W8/8cat-grep$ alias lsal='ls -al'
ubuntu@ubuntu:~/W8/8cat-grep$ alias
alias alert='notify-send --urgency=low -i "${[ $? = 0 ]}&& echo terminal || echo error" "$(history|tail -n1|sed -e '\''s/^\s*[0-9]\+\s*//;s/[\;&]\s*alert$//'\`)'
alias egrep='egrep --color=auto'
alias fgrep='fgrep --color=auto'
alias grep='grep --color=auto'
alias l='ls -CF'
alias la='ls -A'
alias ll='ls -alF'
alias ls='ls --color=auto'
alias lsal='ls -al'
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 13: Defining the `lsal` alias for `ls -al`

```
ubuntu@ubuntu:~/W8/8cat-grep$ cd ~
ubuntu@ubuntu:~$ lsal
total 12
drwxr-x--- 18 ubuntu ubuntu 440 Dec 27 06:46 .
drwxr-xr-x  1 root  root   80 Dec 27 06:41 ..
-rw-r--r--  1 ubuntu ubuntu 220 Dec 27 06:40 .bash_logout
-rw-r--r--  1 ubuntu ubuntu 3771 Dec 27 06:40 .bashrc
drwx-----  9 ubuntu ubuntu 200 Dec 27 06:45 .cache
drwxr-xr-x 12 ubuntu ubuntu 400 Dec 27 06:45 .config
drwx-----  2 ubuntu ubuntu  80 Dec 27 06:45 .gnupg
drwx-----  2 ubuntu ubuntu  40 Dec 27 06:40 .gvfs
drwx-----  4 ubuntu ubuntu  80 Dec 27 06:41 .local
-rw-r--r--  1 ubuntu ubuntu 807 Dec 27 06:40 .profile
drwx-----  2 ubuntu ubuntu  40 Dec 27 06:45 .ssh
-rw-r--r--  1 ubuntu ubuntu   0 Dec 27 06:42 .sudo_as_admin_successful
drwxr-xr-x  2 ubuntu ubuntu  60 Dec 27 06:40 Desktop
drwxr-xr-x  2 ubuntu ubuntu  40 Dec 27 06:42 Documents
drwxr-xr-x  2 ubuntu ubuntu  40 Dec 27 06:42 Downloads
drwxr-xr-x  2 ubuntu ubuntu  40 Dec 27 06:42 Music
drwxr-xr-x  2 ubuntu ubuntu  40 Dec 27 06:42 Pictures
drwxr-xr-x  2 ubuntu ubuntu  40 Dec 27 06:42 Public
drwxr-xr-x  2 ubuntu ubuntu  40 Dec 27 06:42 Templates
drwxr-xr-x  2 ubuntu ubuntu  40 Dec 27 06:42 Videos
```

Figure 14: Using the `lsal` command

6. Remove the alias.

```
ubuntu@ubuntu:~$ unalias lsal
ubuntu@ubuntu:~$ alias
alias alert='notify-send --urgency=low -i "${[ $? = 0 ]} && echo terminal || echo error)" "$(history|tail -n1|sed -e '\''s/^\s*[0-9]\+\s*//;s/[\;:&]\s*alert$//'\''
)'"'
alias egrep='egrep --color=auto'
alias fgrep='fgrep --color=auto'
alias grep='grep --color=auto'
alias l='ls -CF'
alias la='ls -A'
alias ll='ls -alF'
alias ls='ls --color=auto'
ubuntu@ubuntu:~$
```

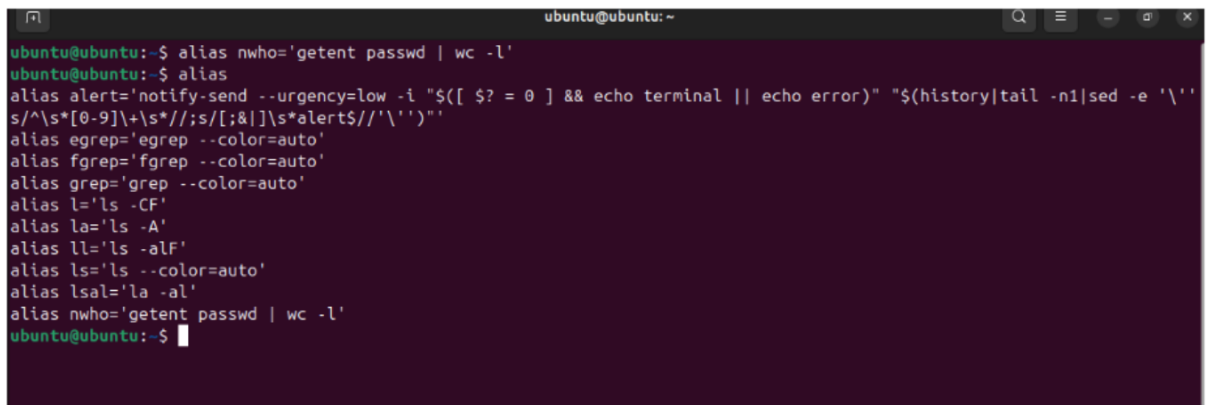
Figure 15: Removing the alias

7. Define this alias again preserving it for the next session.

```
ubuntu@ubuntu:~$ lsal
total 16
drwxr-xr-x 18 ubuntu ubuntu 460 Dec 27 07:02 .
drwxr-xr-x 1 root root 80 Dec 27 06:41 ..
-rw-r--r-- 1 ubuntu ubuntu 220 Dec 27 06:40 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3791 Dec 27 07:06 .bashrc
drwx----- 9 ubuntu ubuntu 200 Dec 27 06:45 .cache
drwxr-xr-x 12 ubuntu ubuntu 400 Dec 27 06:45 .config
drwx----- 2 ubuntu ubuntu 80 Dec 27 06:45 .gnupg
drwx----- 2 ubuntu ubuntu 40 Dec 27 06:40 .gvfs
drwx----- 4 ubuntu ubuntu 80 Dec 27 06:41 .local
-rw-r--r-- 1 ubuntu ubuntu 807 Dec 27 06:40 .profile
drwx----- 2 ubuntu ubuntu 40 Dec 27 06:45 .ssh
-rw-r--r-- 1 ubuntu ubuntu 0 Dec 27 06:42 .sudo_as_admin_successful
-rw-rw-r-- 1 ubuntu ubuntu 20 Dec 27 07:02 .zshrc
drwxr-xr-x 2 ubuntu ubuntu 60 Dec 27 06:40 Desktop
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 27 06:42 Documents
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 27 06:42 Downloads
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 27 06:42 Music
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 27 06:42 Pictures
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 27 06:42 Public
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 27 06:42 Templates
drwxr-xr-x 2 ubuntu ubuntu 40 Dec 27 06:42 Videos
drwxrwxr-x 3 ubuntu ubuntu 60 Dec 27 06:46 W8
drwx----- 4 ubuntu ubuntu 80 Dec 27 06:42 snap
ubuntu@ubuntu:~$ unalias lsal
ubuntu@ubuntu:~$ alias
alias alert='notify-send --urgency=low -i "${[ $? = 0 ]} && echo terminal || echo error)" "$(history|tail -n1|sed -e '\''s/^\s*[0-9]\+\s*//;s/[\;:&]\s*alert$//'\''
)'"'
alias egrep='egrep --color=auto'
alias fgrep='fgrep --color=auto'
alias grep='grep --color=auto'
alias l='ls -CF'
alias la='ls -A'
alias ll='ls -alF'
alias ls='ls --color=auto'
ubuntu@ubuntu:~$ echo $SHELL
/bin/bash
ubuntu@ubuntu:~$ echo "alias lsal='ls -al'" >> ~/.zshrc
ubuntu@ubuntu:~$ echo "alias lsal='la -al'" >> ~/.bashrc
ubuntu@ubuntu:~$
```

Figure 16: Saving the command and using it in next session

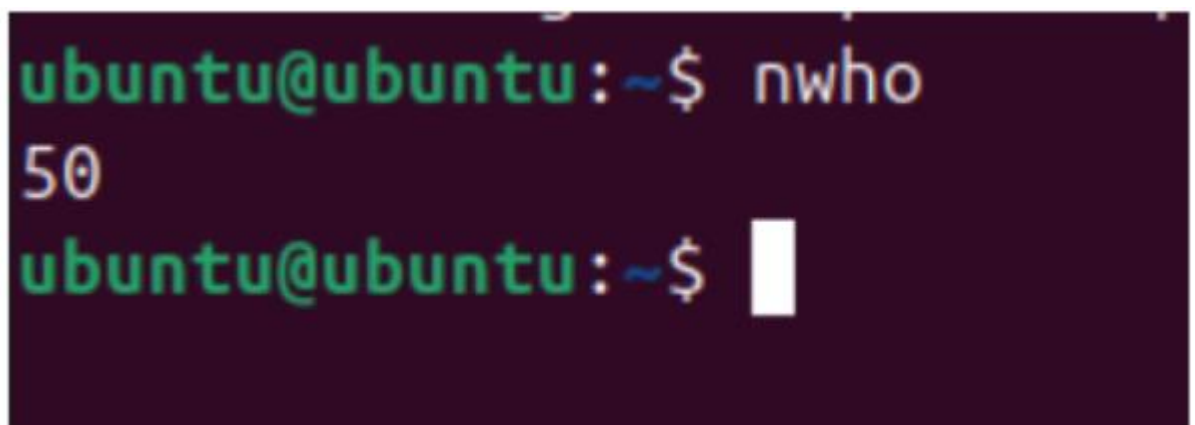
8. Define the nwho alias for the number of system file at UNIX computers.

A terminal window with a dark purple background and green text. The prompt is 'ubuntu@ubuntu:~'. The user enters 'alias nwho='getent passwd | wc -l''. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters 'alias'. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters a long alias definition for 'alert'. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters 'alias egrep='egrep --color=auto''. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters 'alias fgrep='fgrep --color=auto''. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters 'alias grep='grep --color=auto''. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters 'alias l='ls -CF''. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters 'alias la='ls -A''. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters 'alias ll='ls -alF''. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters 'alias ls='ls --color=auto''. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters 'alias lsa='ls -al''. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters 'alias nwho='getent passwd | wc -l''. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters a blank line.

```
ubuntu@ubuntu:~$ alias nwho='getent passwd | wc -l'
ubuntu@ubuntu:~$ alias
alias alert='notify-send --urgency=low -i "${[ $? = 0 ] && echo terminal || echo error}" "${history|tail -n1|sed -e '\''
s/^\\s*[0-9]\\+\\s*//;s/[;&|]\\s*alert$//'\''}"'
alias egrep='egrep --color=auto'
alias fgrep='fgrep --color=auto'
alias grep='grep --color=auto'
alias l='ls -CF'
alias la='ls -A'
alias ll='ls -alF'
alias ls='ls --color=auto'
alias lsa='ls -al'
alias nwho='getent passwd | wc -l'
ubuntu@ubuntu:~$
```

Figure 17: Defining the nwho

9. Give the command nwho. Compare the figure displayed with ones got by you UNIX-mates.

A terminal window with a dark purple background and green text. The prompt is 'ubuntu@ubuntu:~\$'. The user enters 'nwho'. The output is '50'. The prompt changes to 'ubuntu@ubuntu:~\$' and the user enters a blank line.

```
ubuntu@ubuntu:~$ nwho
50
ubuntu@ubuntu:~$
```

Figure 18: Used nwho

10. List your last commands executed giving the history command.

```
ubuntu@ubuntu:~$ history
 1  lsal
 2  clear
 3  alias nwho='getent passwd | wc -l'
 4  alias
 5  nwho
 6  history
ubuntu@ubuntu:~$
```

Figure 19: History of commands

11. Re-execute the last but one command using the redo(r) command and the number of the event fc-r.

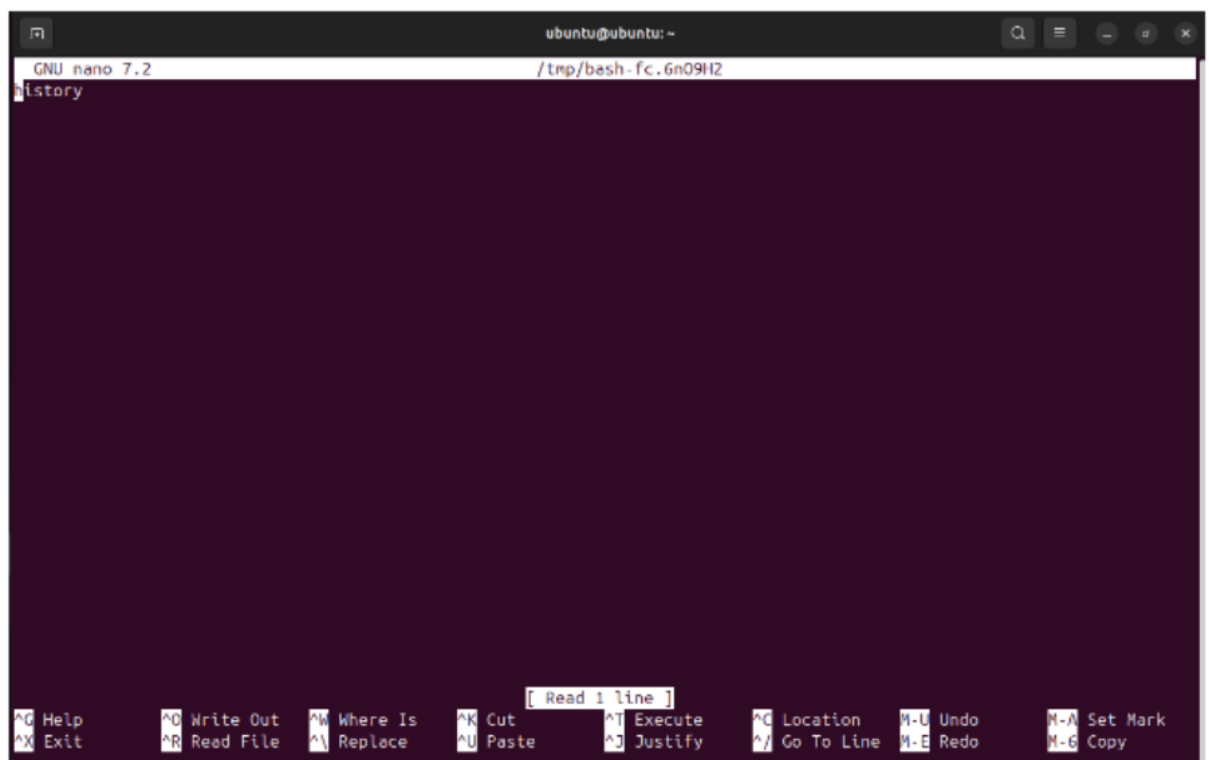
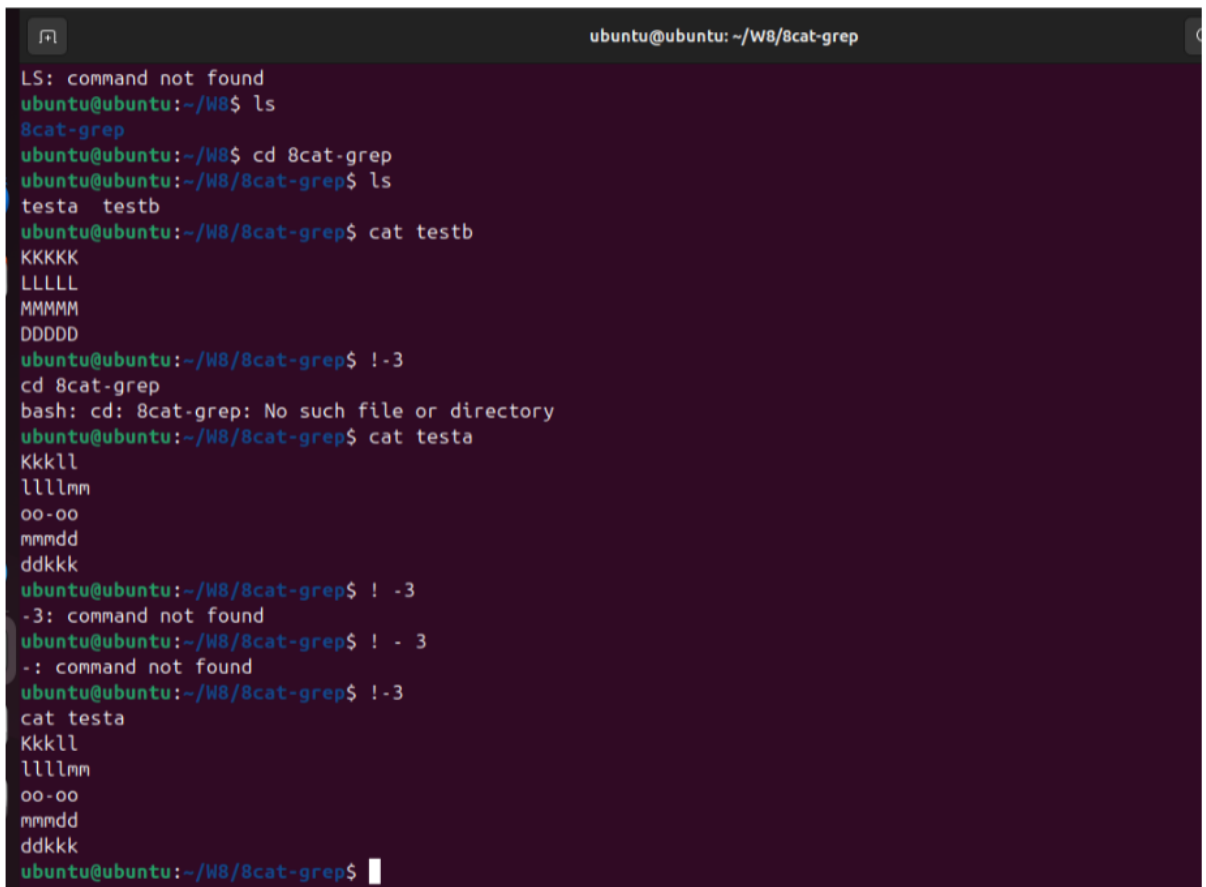


Figure 20: Used to see the most recent command

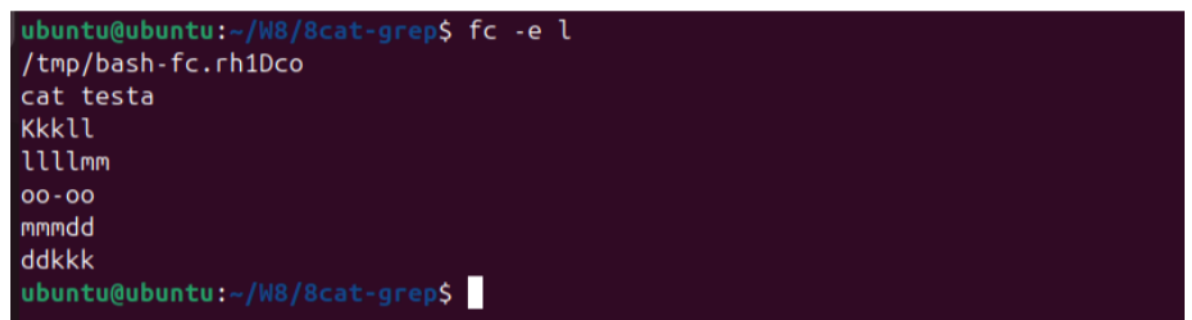
12. Re-execute the command given three commands ago using the negative integer.



```
ubuntu@ubuntu: ~/W8/8cat-grep
LS: command not found
ubuntu@ubuntu:~/W8$ ls
8cat-grep
ubuntu@ubuntu:~/W8$ cd 8cat-grep
ubuntu@ubuntu:~/W8/8cat-grep$ ls
testa testb
ubuntu@ubuntu:~/W8/8cat-grep$ cat testb
KKKKKK
LLLLLL
MMMMMM
DDDDDD
ubuntu@ubuntu:~/W8/8cat-grep$ !-3
cd 8cat-grep
bash: cd: 8cat-grep: No such file or directory
ubuntu@ubuntu:~/W8/8cat-grep$ cat testa
Kkklll
llllmm
oo-oo
mmdd
ddkkk
ubuntu@ubuntu:~/W8/8cat-grep$ !-3
-3: command not found
ubuntu@ubuntu:~/W8/8cat-grep$ !-3
-: command not found
ubuntu@ubuntu:~/W8/8cat-grep$ !-3
cat testa
Kkklll
llllmm
oo-oo
mmdd
ddkkk
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 21: To re execute the command we used 3 commands ago

13. Re-execute the last command which name begins with 'l'. `fc -e l`



```
ubuntu@ubuntu:~/W8/8cat-grep$ fc -e l
/tmp/bash-fc.rh1Dco
cat testa
Kkklll
llllmm
oo-oo
mmdd
ddkkk
ubuntu@ubuntu:~/W8/8cat-grep$
```

Figure 22: To re execute the command that start wit i

Conclusion

The practice improved our skills in the effective use of essential UNIX commands. We learned how to create files and directories, search for information in files using grep, and change how a command behaves using an alias. We also explored the history of the commands and how to re-execute them to save some time and effort. These are the skills needed for task management in UNIX and lay the groundwork for advanced scripting in addition to system administration. Comparing results with peers also made us realize the differences between system configurations and outputs that helped widen our understanding of UNIX systems.