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# 1. Introduction

This project mainly focuses on accessing and manipulating the files present in any linux system using Shell . We explored multiple fundamental Linux commands to interact with the OS and manage the files . We used commands like grep , alias and mkdir to create directories, search files in directories and save a particular bunch of commands in short form or a word using alias. Additionally, you will explore shell history features to reuse and manipulate previous commands.

## 2. Objectives

The objectives of this work are :

- Practice basic UNIX utilities: Learn how to navigate directories, create and manipulate files using commands like cat, grep, and ls.
- searching: Use grep to search for patterns within files, and understand various grep options such as -v, -n, -i, and -c.
- Set and remove alias: Define and manage aliases to simplify common tasks in the terminal.
- shell history: Use history features like fc and event designators (!) to recall and re-execute previous commands, improving efficiency in future sessions.

## 3. Required tools and Software

### 3.1 Kali linux OS

Kali Linux (formerly known as BackTrack Linux) is an open-source, Debian-based Linux distribution which allows users to perform advanced penetration testing and security auditing. It runs on multiple platforms and is freely available and accessible to both information security professionals and hobbyists.

This distribution has several hundred tools, configurations, and scripts with industry-specific modifications that allow users to focus on tasks such as computer forensics, reverse engineering, and vulnerability detection, instead of dealing with unrelated activities. (Introduction, n.d.)

### 3.2 Linux terminal

The Linux command line is a text interface to your computer. Often referred to as the shell, terminal, console, prompt or various other names, it can give the appearance of being complex and confusing to use. Yet the ability to copy and paste commands from a website, combined with the power and flexibility the command line offers, means that using it may be essential when trying to follow instructions online, including many on this very website! (Tutorials, n.d.)

## 4. Steps to replicate

### 4.1 Question no 1

Creating W8 directory and again creating 8cat-grep directory inside W8.

```
(bishowshrestha@kali)-[~]  
$ mkdir W8  
  
(bishowshrestha@kali)-[~]  
$ cd W8  
  
(bishowshrestha@kali)-[~/W8]  
$ mkdir 8cat-grep
```

Figure 1 Question no 1

### 4.2 Question no 2

Going to 8cat-grep from W8 using real pathname

```
(bishowshrestha@kali)-[~/W8]  
$ cd 8cat-grep
```

Figure 2 Qn no 2

### 4.3 Question no 3

Using cat command to create multi line files inside 8cat-grep directory.

```
(bishowshrestha@kali)-[~/W8/8cat-grep]  
$ cat>>testA  
aaa  
bbb  
ccc  
ddd  
  
(bishowshrestha@kali)-[~/W8/8cat-grep]  
$ cat>>testB  
AAA  
BBB  
CCC  
DDD
```

Figure 3 Qn no 3

### 4.4 Question no 4

Using grep with different arguments like

- v is used for showing everything except the searched one.
- n is used to show the number of line the searched word is present in the particular file.
- l is used to show the file name in which the searched value is located in.
- i is used to ignore the casing (upper or lower) while searching and show the searched value's file location.
- c is used to count the number of lines

-n is used to show the line numbers along with the matching line for the search patterns.

```
(bishowshrestha@kali)~[/W8/8cat-grep]
$ grep aa testA
aaa

(bishowshrestha@kali)~[/W8/8cat-grep]
$ grep -v aa testA
bbb
ccc
ddd

(bishowshrestha@kali)~[/W8/8cat-grep]
$ grep -n aa testA
1:aaa

(bishowshrestha@kali)~[/W8/8cat-grep]
$ grep -l aa *
testA

(bishowshrestha@kali)~[/W8/8cat-grep]
$ grep -i aa *
testA:aaa
testB:AAA

(bishowshrestha@kali)~[/W8/8cat-grep]
$ grep -i AA *
testA:aaa
testB:AAA

(bishowshrestha@kali)~[/W8/8cat-grep]
$ grep -c aa *
testA:1
testB:0
```

Figure 4 Qn no 4

```
(bishowshrestha@kali)~[/W8/8cat-grep]
$ grep '^B' testA testB
testB:BBB

(bishowshrestha@kali)~[/W8/8cat-grep]
$ grep -n '^' testA
1:aaa
2:bbb
3:ccc
4:ddd
```

Figure 5 Qn no 4 (2)

## 4.5 Question no 5

Creating alias lsal and showing the system store it and using it in home directory.

```
(bishowshrestha@kali)~[/W8/8cat-grep]
$ alias lsal='ls -al'

(bishowshrestha@kali)~[/W8/8cat-grep]
$ alias
alias diff='diff --color=auto'
alias egrep='egrep --color=auto'
alias fgrep='fgrep --color=auto'
alias grep='grep --color=auto'
alias ip='ip --color=auto'
alias l='ls -CF'
alias la='ls -A'
alias ll='ls -l'
alias ls='ls --color=auto'
alias lsal='ls -al'
```

Figure 6 Qn no 5 (1)

```

(bishowshrestha@kali)-[~]
$ lsal
total 252
drwxrwxr-x 2 bishowshrestha bishowshrestha 4096 Dec 19 10:01 .
drwx----- 26 bishowshrestha bishowshrestha 4096 Dec 28 00:32 ..
drwxr-xr-x 4 root root 4096 Dec 12 00:25 .
drwxrwxr-x 2 bishowshrestha bishowshrestha 4096 Dec 19 10:01 '}'
drwxrwxr-x 2 bishowshrestha bishowshrestha 4096 Dec 19 10:01 2level3
drwxrwxr-x 2 bishowshrestha bishowshrestha 4096 Dec 19 10:02 2level3}
drwxrwxr-x 2 bishowshrestha bishowshrestha 4096 Dec 19 10:01 4level3}
-rw-rw-r-- 1 bishowshrestha bishowshrestha 12288 Dec 12 01:34 alscript
-rw-rw-r-- 1 bishowshrestha bishowshrestha 8120 Dec 12 00:44 alscript
-rw-rw-r-- 1 bishowshrestha bishowshrestha 1762 Dec 28 00:32 .bash_history
-rw-rw-r-- 1 bishowshrestha bishowshrestha 220 Dec 12 00:25 .bash_logout
-rw-rw-r-- 1 bishowshrestha bishowshrestha 5618 Dec 28 00:22 .bashrc
-rw-rw-r-- 1 bishowshrestha bishowshrestha 3526 Dec 12 00:25 .bashrc.original
drwxrwxr-x 3 bishowshrestha bishowshrestha 4096 Dec 22 01:24 BIT
drwxrwxr-x 2 bishowshrestha bishowshrestha 4096 Dec 15 01:24 .bully
drwxrwxr-x 11 bishowshrestha bishowshrestha 4096 Dec 19 09:49 .cache
-rw-rw-r-- 1 bishowshrestha bishowshrestha 176 Dec 12 00:42 combinedFileIand
2
drwxr-xr-x 13 bishowshrestha bishowshrestha 4096 Dec 15 01:19 .config
drwxr-xr-x 2 bishowshrestha bishowshrestha 4096 Dec 12 02:55 Desktop
-rw-rw-r-- 1 bishowshrestha bishowshrestha 35 Dec 12 02:55 .dmrc
drwxr-xr-x 2 bishowshrestha bishowshrestha 4096 Dec 12 02:55 Documents
drwxr-xr-x 2 bishowshrestha bishowshrestha 4096 Dec 12 02:55 Downloads
-rw-rw-r-- 1 bishowshrestha bishowshrestha 11759 Dec 12 00:25 .face
lrwxrwxrwx 1 bishowshrestha bishowshrestha 5 Dec 12 00:25 .face.icon -> .f
ace
drwx----- 3 bishowshrestha bishowshrestha 4096 Dec 12 02:55 .gnupg
-rw----- 1 bishowshrestha bishowshrestha 0 Dec 12 02:55 .ICEauthority
drwxr-xr-x 3 bishowshrestha bishowshrestha 4096 Dec 12 00:25 .java
drwx----- 2 bishowshrestha bishowshrestha 4096 Dec 15 01:32 .john

```

Figure 7 Qn no 5(2)

## 4.6 Question no 6

Removing alias lsal using unalias command and showing it's not in system.

```

(bishowshrestha@kali)-[~]
$ unalias lsal
(bishowshrestha@kali)-[~]
$ alias
alias diff='diff --color=auto'
alias egrep='egrep --color=auto'
alias fgrep='fgrep --color=auto'
alias grep='grep --color=auto'
alias ip='ip --color=auto'
alias l='ls -CF'
alias la='ls -A'
alias ll='ls -l'
alias ls='ls --color=auto'

```

Figure 8 Qn no 6

## 4.7 Question no 7

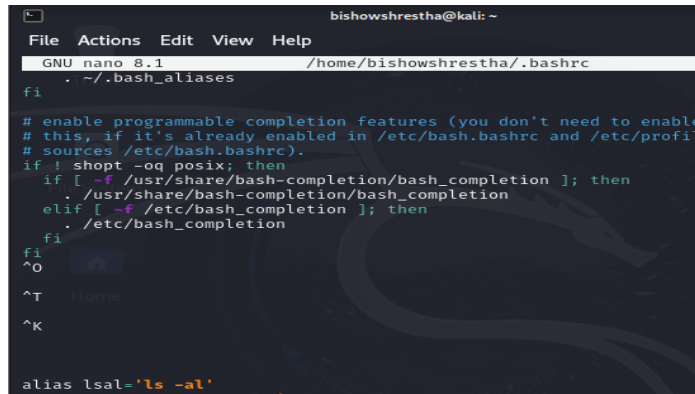
Defining the alias lsal again and preserving it for next session and showing the system still keeps it.

```

(bishowshrestha@kali)-[~]
$ echo "alias lsal='ls -al'" >> ~/.bashrc

```

Figure 9 QN no 7 (1)



```
bishowshrestha@kali: ~
File Actions Edit View Help
GNU nano 8.1 /home/bishowshrestha/.bashrc
. ~/.bash_aliases
fi

# enable programmable completion features (you don't need to enable
# this, if it's already enabled in /etc/bash.bashrc and /etc/profile
# sources /etc/bash.bashrc).
if ! shopt -oq posix; then
  if [ -f /usr/share/bash-completion/bash_completion ]; then
    . /usr/share/bash-completion/bash_completion
  elif [ -f /etc/bash_completion ]; then
    . /etc/bash_completion
  fi
fi

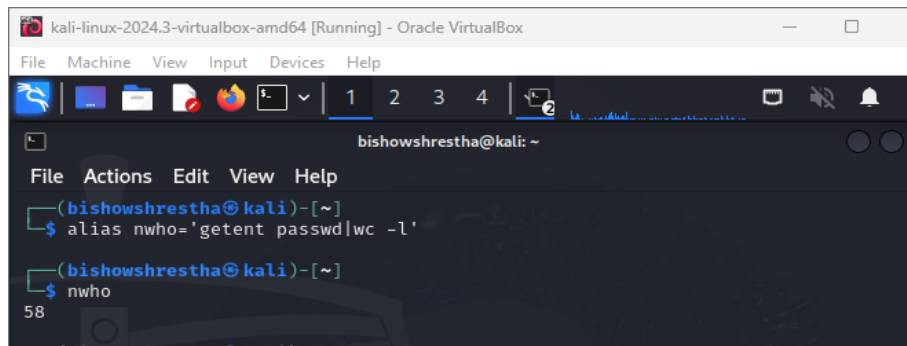
^O
^T home
^K

alias lsal='ls -al'
```

Figure 10 Qn no 7(2)

## 4.8 Question no 8

Defining nwwho alias which shows the number of system file in UNIX computer and running nwwho in home directory.



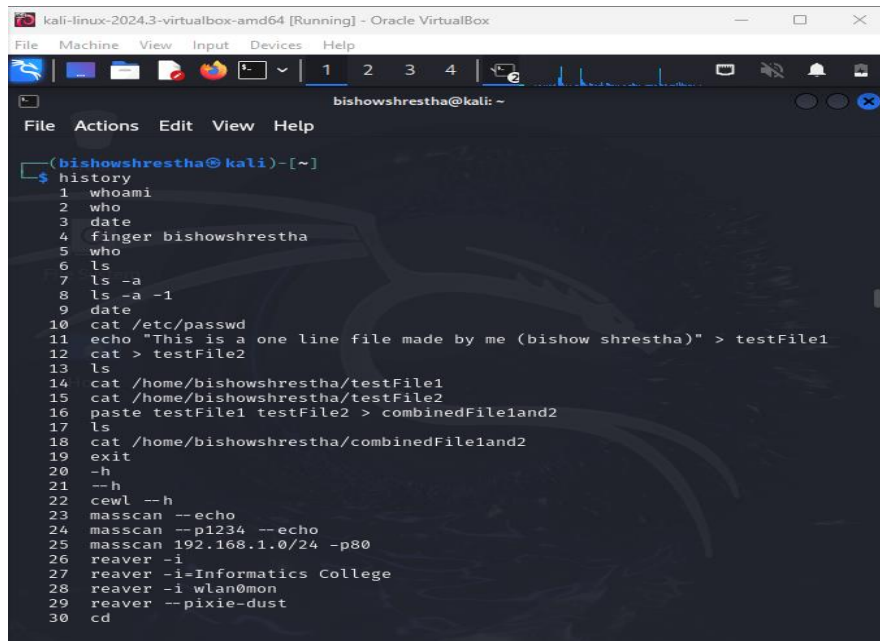
```
kali-linux-2024.3-virtualbox-amd64 [Running] - Oracle VirtualBox
File Machine View Input Devices Help
1 2 3 4 5 6
bishowshrestha@kali: ~
File Actions Edit View Help
(bishowshrestha@kali)-[~]
$ alias nwwho='getent passwd|wc -l'
(bishowshrestha@kali)-[~]
$ nwwho
58
```

Figure 11 Qn no 8

## 4.9 Question no 9

Listing my last commands using history command





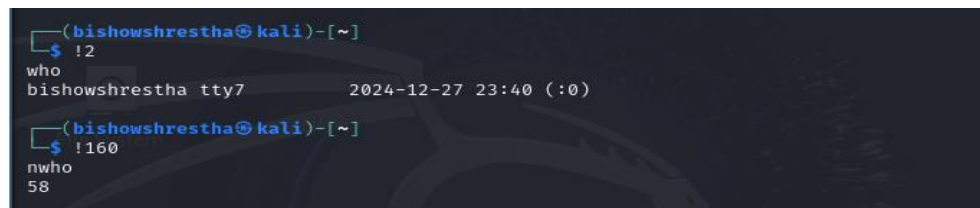
```
kali-linux-2024.3-virtualbox-amd64 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
bishowshrestha@kali: ~
File Actions Edit View Help
(bishowshrestha@kali)-[~]
$ history
1  whoami
2  who
3  date
4  finger bishowshrestha
5  who
6  ls
7  ls -a
8  ls -a -l
9  date
10 cat /etc/passwd
11 echo "This is a one line file made by me (bishow shrestha)" > testFile1
12 cat > testFile2
13 ls
14 cat /home/bishowshrestha/testFile1
15 cat /home/bishowshrestha/testFile2
16 paste testFile1 testFile2 > combinedFile1and2
17 ls
18 cat /home/bishowshrestha/combinedFile1and2
19 exit
20 --h
21 --h
22 cewl --h
23 masscan --echo
24 masscan --p1234 --echo
25 masscan 192.168.1.0/24 -p80
26 reaver -i
27 reaver -i=Informatics College
28 reaver -i wlan0mon
29 reaver --pixie-dust
30 cd
```

Figure 12 Qn no 9

## 4.10 Question no 10

Re-executing second and 160th command using "!" <number of command>" command.

note: "!" this is a event designator which allows us to refer previous commands from our history.



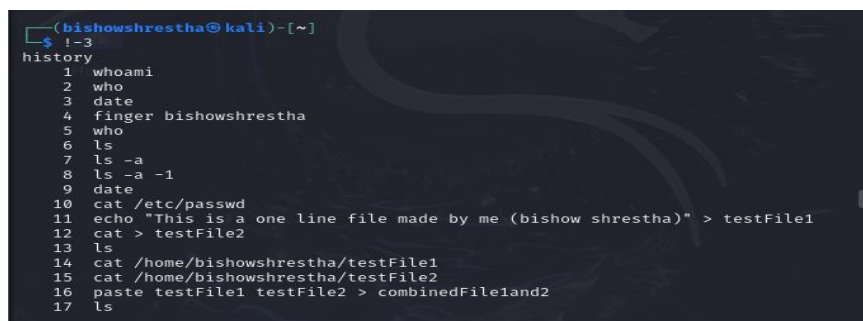
```
(bishowshrestha@kali)-[~]
$ !2
who
bishowshrestha tty7 2024-12-27 23:40 (:0)

(bishowshrestha@kali)-[~]
$ !160
nwho
58
```

Figure 13 Qn no 10

## 4.11 Question no 11

Re-executing third command from history using negative integer.



```
(bishowshrestha@kali)-[~]
$ !!-3
history
1  whoami
2  who
3  date
4  finger bishowshrestha
5  who
6  ls
7  ls -a
8  ls -a -l
9  date
10 cat /etc/passwd
11 echo "This is a one line file made by me (bishow shrestha)" > testFile1
12 cat > testFile2
13 ls
14 cat /home/bishowshrestha/testFile1
15 cat /home/bishowshrestha/testFile2
16 paste testFile1 testFile2 > combinedFile1and2
17 ls
```

Figure 14 Question no 11

## 4.12 Question no 12

Re-executing command from history which begins with letter 'n' using "!<letter>" command.

A terminal window with a dark background. The prompt is (bishowshrestha@kali)-[~]. The command history is shown as a list: nwho, 58, Home. The command !n is entered at the prompt.

Figure 15 Question no 12

## 5. Conclusion

In this project, I got to learn many essential linux commands like alias, grep and history. I learned how to navigate directories, manage files and search for patterns using grep. I also explored powerful features like shell history to quickly repeat or modify previous commands, and i created helpful aliases to simplify common tasks.

## References

*Tutorials.* (n.d.). Retrieved from ubuntu.com: <https://ubuntu.com/tutorials/command-line-for-beginners#1-overview>

*Introduction.* (n.d.). Retrieved from kali.org: <https://www.kali.org/docs/introduction/what-is-kali-linux/>