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Student Name: Dishant Giri

London Met ID: 23048800

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I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order 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.

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1. Introduction

Unix is a powerful, multiuser, multitasking operating system initially developed in the 1960s by Ken Thompson, Dennis Ritchie. Unix is known for its simplicity, portability and robust security features. Later on Unix become the foundation tor popular OS like linux and macOS.

The concepts of hierarchical file systems, process management and inter process communication was introduced by Unix. Unix empowers users to perform complex operations by combining commands and its legacy is still continues to influence operating systems globally. (Abraham Silberschatz, 2021)

2. Objectives

The aim of this lab is to explore and understand about grep command and understand the functionality of history command in linux.

- To use grep command for searching specific pattern in file.
- To use grep command with options like -v, -n , '^' etc.
- To use history command to see recent commands.

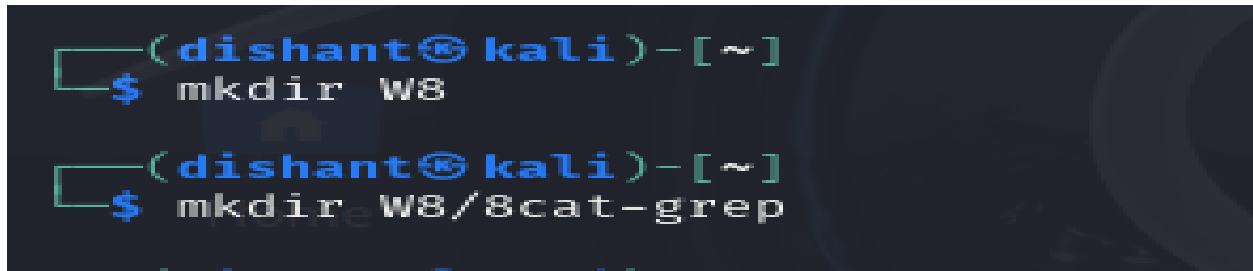# 3. Required tools and software's

3.1 kali Linux

kali Linux is a Debian-based GNU/Linux distribution to be used for penetration testing, digital forensics and ethical hacking. Originally created by offensive security and released in 2013 as the replacement for BackTrack, Kal Linux provides an extensive collection for tools used for penetration testing, security auditing, and more all of which come pre-installed. Because of its missing lettuce, extensive compatibility and support for a broad variety of hardware platforms Kali has been one of the go to platforms for security test research for both academic and profession world. (Wills, 2020)

3.2 Oracle VirtualBox

Oracle VirtualBox is a powerful open source virtualization program that allows to run multiple operating systems at the same time on one piece of hardware. It's versatile for testing, development and deployment, supporting multiple host and guest Operating Systems and is developed and supported by Oracle Corporation. (VirtualBox, n.d.)
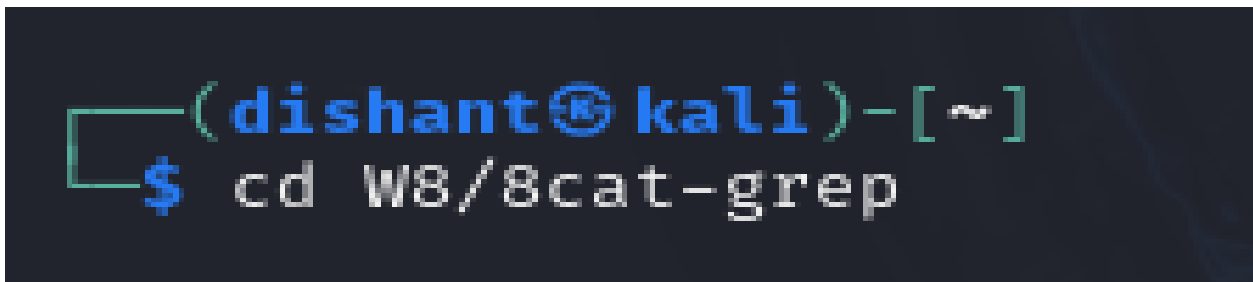
4. Task in detail:

4.1 Creating directory using mkdir

Figure 1: creating directory W8

4.2   Changing path to 8cat-grep

Figure 2: changing directory to W8/8cat-grep

4.3 Creating two files using cat utility

```
  ┌──(dishant☉kali)-[~/W8/8cat-grep]
  └─$ cat > testa << end
> kkkll
> kkkkk
> lllmm
> LLLLL
> oo-oo
> MMMMM
> DDDDD
> dddkk
> end

  ┌──(dishant☉kali)-[~/W8/8cat-grep]
  └─$ cat > testb << end
> KKKKK
> LLLL
> MMMMM
> DDDDD
> end
```

Figure 3: creating 2 files using cat utility

4.4 Giving grep commands with options

```
  ┌──(dishant☉kali)-[~/W8/8cat-grep]
  └─$ grep ll testa
kkkll
lllmm
```

Figure 4: typing grep ll testa command

```
  ┌──(dishant㉿kali)-[~/W8/8cat-grep]
  └─$ grep -v ll testa
kkkkk
LLLLL
oo-oo
MMMMM
DDDDD
dddkk
```

Figure 5: typing grep -v ll testa command

```
  ┌──(dishant㉿kali)-[~/W8/8cat-grep]
  └─$ grep -n ll testa
1:kkkll
3:lllmm
```

Figure 6: typing grep -n ll testa

```
  ┌──(dishant㉿kali)-[~/W8/8cat-grep]
  └─$ grep -l ll *
testa
```

*Figure 7: typing grep -l ll * command*

*Figure 8: typing grep -i ll, -i LL, -c ll * command*
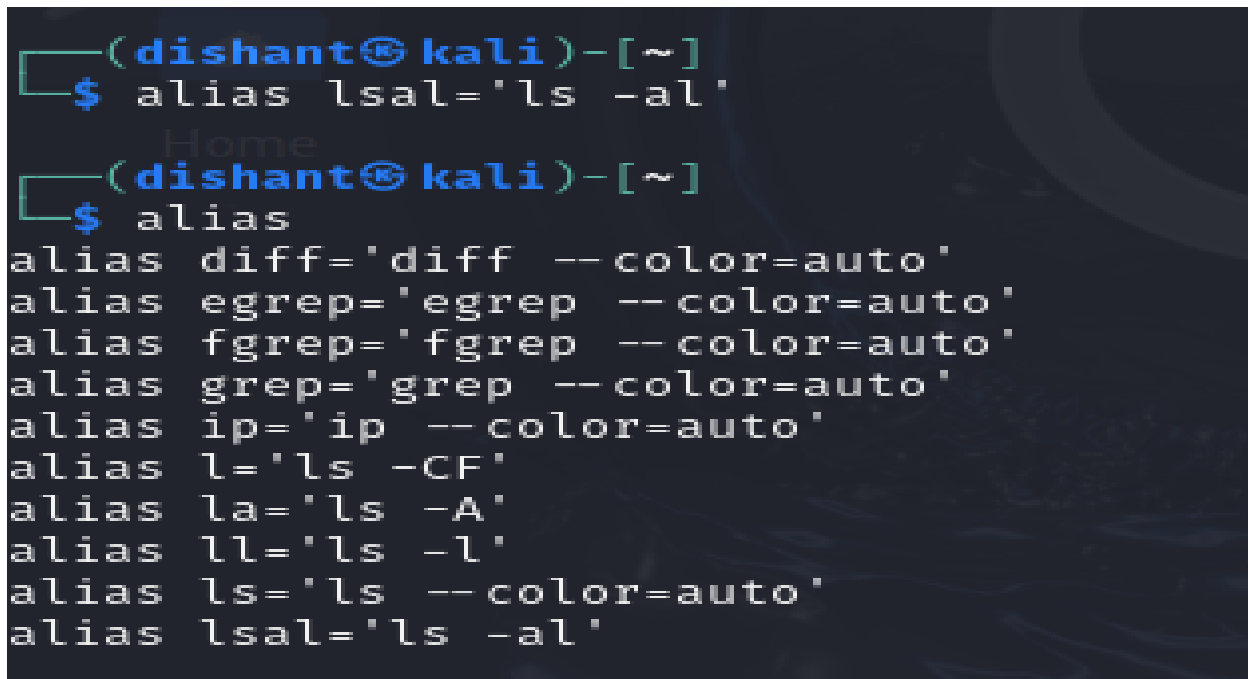
Figure 9: typing grep '^k' testa testb command

Figure 10: typing grep -n '^' testa

- **grep ll testa** searches for the string 'll' in the tile testa and display all matching lines.
- **grep -v ll testa** searches for lines in the file testa that do not contain the string 'll'.
- **grep -n ll testa** searches for the string 'll' in the file testa and displays matching lines along with their line numbers.
- **grep -l ll *** searches for the string 'll' in all files in the current directory and lists only the names of files that contain the string.
- **grep -i ll *** searches for the string 'll' in all files in the current directory, ignoring case.
- **grep -I LL *** searches for the string 'LL' in all files in the current directory, ignoring case.
- **grep -c ll *** counts the number of occurrences o the string 'll' in each file in the current directory.
- **grep '^k' testa testb** searches for the lines that start with the letter 'k' in both testa and testb.
- **grep -n '^' testa** displays all lines from the file testa along with their line numbers.

4.5 Defining the lsal alias for ls -al command

Figure 11: defining alias command

4.6 Removing the alias command


```
┌──(dishant㊶kali)-[~]
└─$ unalias lsal

┌──(dishant㊶kali)-[~]
└─$ 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 12: removing the alias command

4.7 Defining the alias command again


```
└─$ alias lsal='ls -al'

┌──(dishant㊶kali)-[~]
└─$ 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 13: redefining the alias comand

4.8 Defining the nwho alias

Figure 14: Defining the nwho alias

4.9 Giving nwho command

Figure 15: giving nwho command

4.10 Listing last commands using history

```
──(dishant㉿kali)-[~]
└─$ history
    1   who
    2   whoami
    3   finger dishant
    4   whoami
    5   who
    6   figer dishnt
    7   finger dishant
    8   date
    9   la
   10   ls
   11   ls -a
   12   ls -al
   13   echo my name is dishant > test1
   14   cat test1
   15   cat > test2
   16   cat test2
   17   cat test1 test2 > combinedTest
   18   ls
   19   cat combinedTest
   20   exit
   21   whoami
```

Figure 16: giving history command

4.11 Re- executing the last but one command using redo command

```
──(dishant㉿kali)-[~]
└─$ fc -r 161
nwho
58
```

Figure 17: re-executing the second last command

4.12 Re-executing the command given three commands ago

Figure 18: re-executing the command given three commands ago

4.13 Re-executing the last command which name begins with 'l'

Figure 19: re-executing the last command which name begins with 'i'

5. Summary

In this UNIX practical lab, we have created a directory, used the cat utility to create files, and practiced searching in them using various grep commands. We also defined, verified, and removed aliases like lsal and nwho, and worked with command history to re-execute previous commands. The lab provided practical experience with file manipulation, search operations, and system command management in UNIX.

Bibliography

Abraham Silberschatz, P. B. (2021). *Operating System Concepts* .

VirtualBox. (n.d.). Retrieved from VirtualBox: https://www.virtualbox.org/

Wills, J. W. (2020). *Mastering Kali Linux for Advanded Penetration Testing (3rd edition).* packet publishing.