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1. Introduction

Linux is an unix-like open source OS. It provides robust environments for developers and users. Kali Linux is Debian based linux which is designed for testing, cybersecurity, penetration and ethical hacking. The CLI of Kali Linux interact directly with the OS.

Commands like whoami and who provides information about users of the system and finger provides more detailed information. Command like date display current date and other command like ls, cat, echo are used for list files and directories display file content and print and write file.

2. Objective

The workshop tends to provide us the experience using grep, cat, and aliases command for file management using linux terminal.

3. Tools and Software used

- i. Virtual Box
Virtual box is a free cross-platform virtualization tool which helps to run multiple operating systems on single device. It is mostly used by developers to efficiently test and deploy applications. (What is in Oracle VM VirtualBox Enterprise)
- ii. Kali linux
It is a debian based OS mainly used for the purpose of cyber security. Terminal directly interacts with OS which makes it powerful to be used for doing security tasks and management of files. (KALI)

4. Steps

4.1 Directory Structure and File creation

A terminal window titled 'kali@kali: ~/w8/8cat-grep' with a menu bar (File, Actions, Edit, View, Help). The terminal shows the following commands and output:

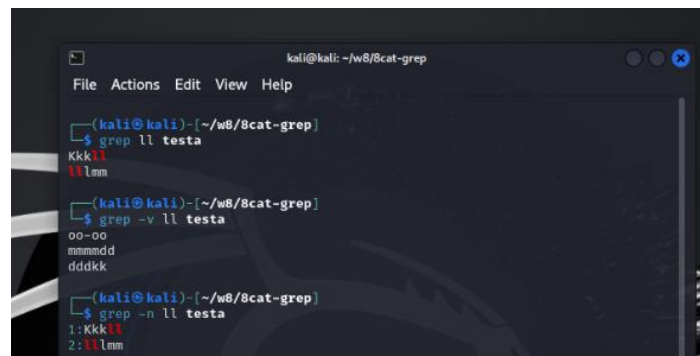
```
(kali@kali)-[~]  
$ mkdir -p w8/8cat-grep  
(kali@kali)-[~]  
$ cd w8/8cat-grep  
(kali@kali)-[~/w8/8cat-grep]  
$ cat > testa  
Kkkll  
llmm  
oo-oo  
mmmmdd  
dddkk  
(kali@kali)-[~/w8/8cat-grep]  
$ cat > testb  
KKKKK  
LLLLL  
MMMMM  
DDDDD  
(kali@kali)-[~/w8/8cat-grep]  
$
```

Figure 1: Creating directory structure and using cat to create two files inside directory

4.2 Using grep commands

- i. `grep ll testa`
It displays lines in testa with substring 'll'
- ii. `grep -v ll testa`
It displays lines in testa not with substring 'll'
- iii. `grep -n ll testa`
It displays line containing 'll' in testa with line number
- iv. `grep -l ll *`
list file names from current directory containing substring 'll'
- v. `grep -i ll *`
It search line in all files 'll' without considering case sensitivity
- vi. `grep -i LL *`
It search line in all files 'll' without considering case sensitivity
- vii. `grep -c ll*`
Counts the number of lines with 'll' in all files
- viii. `grep '^K' testa testb`
Displays lines starting with letter 'K' in testa and testb
- ix. `grep -n '^' testa`

Displays all lines in testa with their line numbers



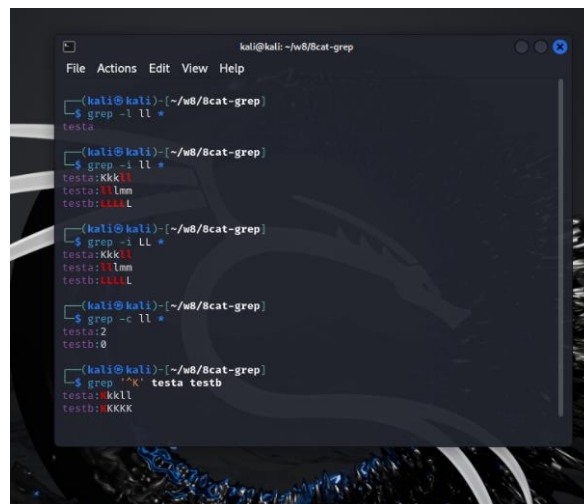
```
kali@kali: ~/w8/8cat-grep
File Actions Edit View Help

(kali@kali)-[~/w8/8cat-grep]
$ grep ll testa
Kkkll
llmm

(kali@kali)-[~/w8/8cat-grep]
$ grep -v ll testa
oo-oo
mmmmdd
dddkk

(kali@kali)-[~/w8/8cat-grep]
$ grep -n ll testa
1:Kkkll
2:llmm
```

Figure 2: `grep ll testa`, `grep -v ll testa`, `grep -n ll`



```
kali@kali: ~/w8/8cat-grep
File Actions Edit View Help

(kali@kali)-[~/w8/8cat-grep]
$ grep -l ll *
testa

(kali@kali)-[~/w8/8cat-grep]
$ grep -i ll *
testa:Kkkll
testa:llmm
testb:llllL

(kali@kali)-[~/w8/8cat-grep]
$ grep -i LL *
testa:Kkkll
testa:llmm
testb:llllL

(kali@kali)-[~/w8/8cat-grep]
$ grep -c ll *
testa:2
testb:0

(kali@kali)-[~/w8/8cat-grep]
$ grep '^K' testa testb
testa:Kkkll
testb:Kkkk
```

Figure 3: `grep -l ll *`, `grep -i ll *`, `grep -i LL *`, `grep -c ll *`, `grep '^K' testa testb`

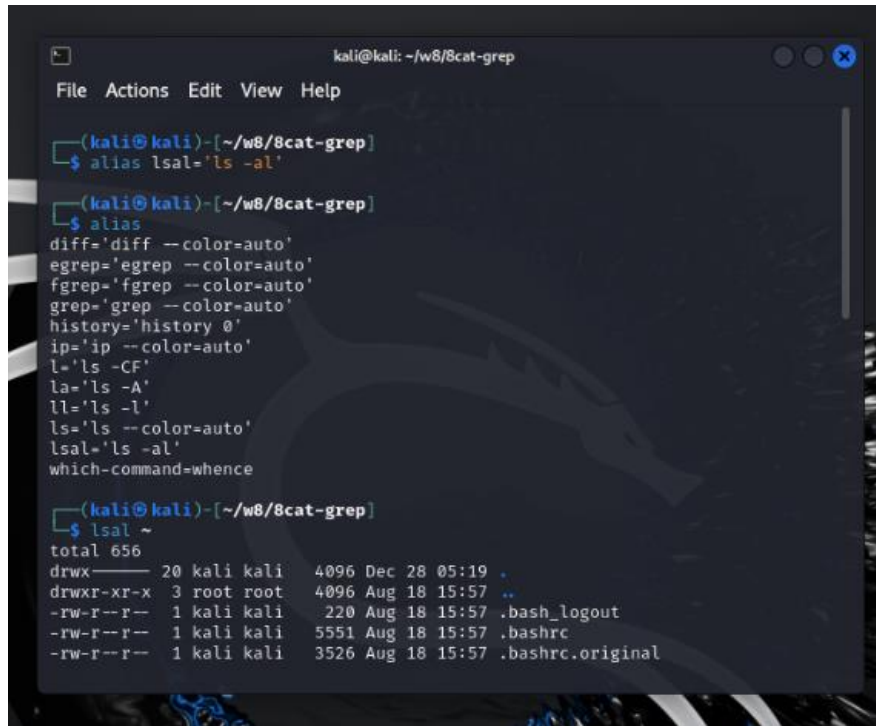


```
(kali@kali)-[~/w8/8cat-grep]
$ grep -n '^' testa
1:Kkkll
2:llmm
3:oo-oo
4:mmmmdd
5:dddkk

(kali@kali)-[~/w8/8cat-grep]
$
```

Figure 4: `grep -n '^' testa`

4.3 Alias creation and management



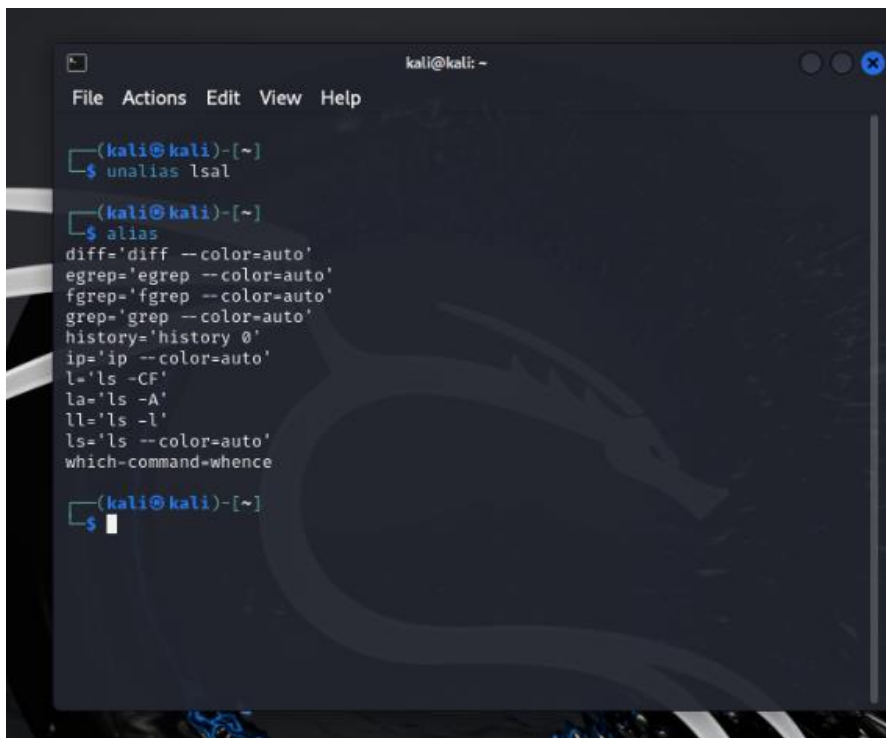
A terminal window titled 'kali@kali: ~/w8/8cat-grep' with a menu bar (File, Actions, Edit, View, Help). The user enters the command `alias lsal='ls -al'`. Then, they enter `alias`, which lists all current aliases, including the newly created `lsal`. Finally, they enter `lsal ~`, which runs `ls -al` on the home directory, displaying a detailed directory listing.

```
(kali@kali)-[~/w8/8cat-grep]
$ alias lsal='ls -al'

(kali@kali)-[~/w8/8cat-grep]
$ alias
diff='diff --color=auto'
egrep='egrep --color=auto'
fgrep='fgrep --color=auto'
grep='grep --color=auto'
history='history 0'
ip='ip --color=auto'
l='ls -CF'
la='ls -A'
ll='ls -l'
ls='ls --color=auto'
lsal='ls -al'
which-command=whence

(kali@kali)-[~/w8/8cat-grep]
$ lsal ~
total 656
drwx----- 20 kali kali   4096 Dec 28 05:19 .
drwxr-xr-x  3 root root   4096 Aug 18 15:57 ..
-rw-r--r--  1 kali kali    220 Aug 18 15:57 .bash_logout
-rw-r--r--  1 kali kali   5551 Aug 18 15:57 .bashrc
-rw-r--r--  1 kali kali   3526 Aug 18 15:57 .bashrc.original
```

Figure 5: defining alias and verifyig



A terminal window titled 'kali@kali: ~' with a menu bar (File, Actions, Edit, View, Help). The user enters `unalias lsal`. Then, they enter `alias`, which lists all current aliases, and the `lsal` alias is no longer present. The prompt is then shown with a cursor, indicating the user is ready for the next command.

```
(kali@kali)-[~]
$ unalias lsal

(kali@kali)-[~]
$ alias
diff='diff --color=auto'
egrep='egrep --color=auto'
fgrep='fgrep --color=auto'
grep='grep --color=auto'
history='history 0'
ip='ip --color=auto'
l='ls -CF'
la='ls -A'
ll='ls -l'
ls='ls --color=auto'
which-command=whence

(kali@kali)-[~]
$
```

Figure 6: removing alias and confirming

```

kali@kali: ~
File Actions Edit View Help
kali@kali: ~/w8/8cat-grep x kali@kali: ~/w8/8cat-grep x kali@kali: ~ x
GNU nano 8.1 .zshrc *
zstyle ':completion:*:kill:*:processes' list-colors '=(#b) #([0-9]#)*>
fi

# some more ls aliases
alias ll='ls -l'
alias la='ls -A'
alias l='ls -CF'

# enable auto-suggestions based on the history
if [ -f /usr/share/zsh-autosuggestions/zsh-autosuggestions.zsh ]; then
. /usr/share/zsh-autosuggestions/zsh-autosuggestions.zsh
# change suggestion color
ZSH_AUTOSUGGEST_HIGHLIGHT_STYLE='fg=#999'
fi

# enable command-not-found if installed
if [ -f /etc/zsh_command_not_found ]; then
. /etc/zsh_command_not_found
fi

alias lsal="ls -al"
^G Help      ^O Write Out ^F Where Is  ^K Cut       ^T Execute
^X Exit      ^R Read File ^N Replace   ^U Paste     ^J Justify

```

Figure 7: defining alias and preserving it for next session

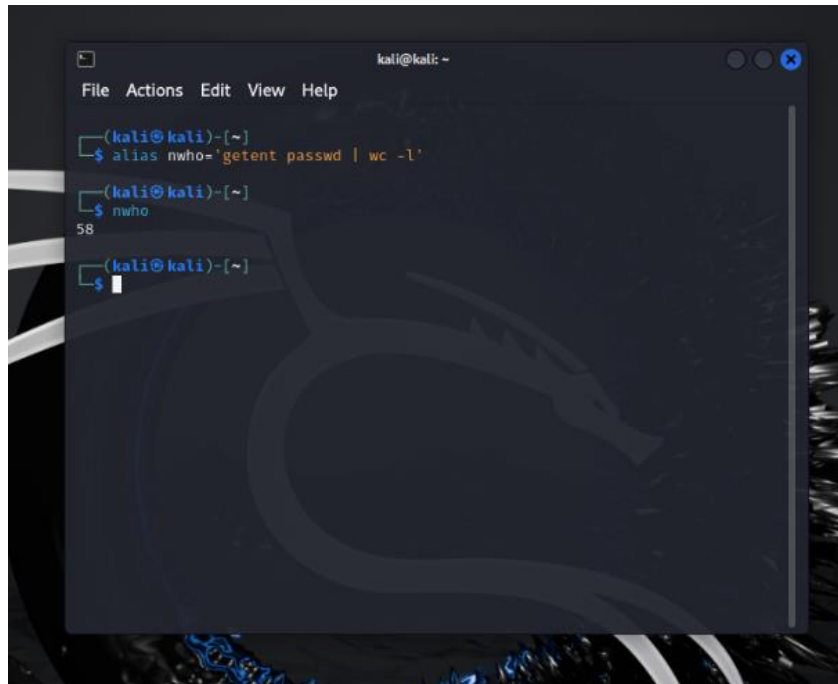
```

kali@kali: ~
File Actions Edit View Help
(kali@kali)-[~]
$ lsal
total 672
drwx----- 20 kali kali 4096 Dec 28 08:51 .
drwxr-xr-x  3 root root 4096 Aug 18 15:57 ..
-rw-r--r--  1 kali kali  220 Aug 18 15:57 .bash_logout
-rw-r--r--  1 kali kali 5570 Dec 28 05:31 .bashrc
-rw-r--r--  1 kali kali 3526 Aug 18 15:57 .bashrc.original
drwxrwxr-x  3 kali kali 4096 Dec 22 01:31 .BIT
drwxrwxr-x  8 kali kali 4096 Dec 22 01:31 .cache
drwxr-xr-x 13 kali kali 4096 Dec 21 10:27 .config
drwxr-xr-x  2 kali kali 4096 Dec 21 06:56 .Desktop
-rw-r--r--  1 kali kali  35 Dec 21 06:56 .dmrc
drwxr-xr-x  2 kali kali 4096 Dec 21 06:56 .Documents
drwxr-xr-x  2 kali kali 4096 Dec 21 06:56 .Downloads
-rw-r--r--  1 kali kali 11759 Aug 18 15:57 .face
lrwxrwxrwx  1 kali kali  5 Aug 18 15:57 .face.icon -> .face
-rw-rw-r--  1 kali kali  14 Dec 21 07:00 file1.txt
-rw-rw-r--  1 kali kali  14 Dec 21 07:00 file2.txt
drwx-----  3 kali kali 4096 Dec 21 06:56 .gnupg
-rw-----  1 kali kali  0 Dec 21 06:56 .ICEauthority
drwxr-xr-x  3 kali kali 4096 Aug 18 15:57 .java
drwxr-xr-x  4 kali kali 4096 Dec 21 06:56 .local
drwxr-xr-x  2 kali kali 4096 Dec 21 06:56 .Music
drwxr-xr-x  2 kali kali 4096 Dec 28 08:22 .Pictures
-rw-r--r--  1 kali kali  807 Aug 18 15:57 .profile
drwxr-xr-x  2 kali kali 4096 Dec 21 06:56 .Public

```

Figure 8: verifying alias across sessions

4.4 Alias for System file count

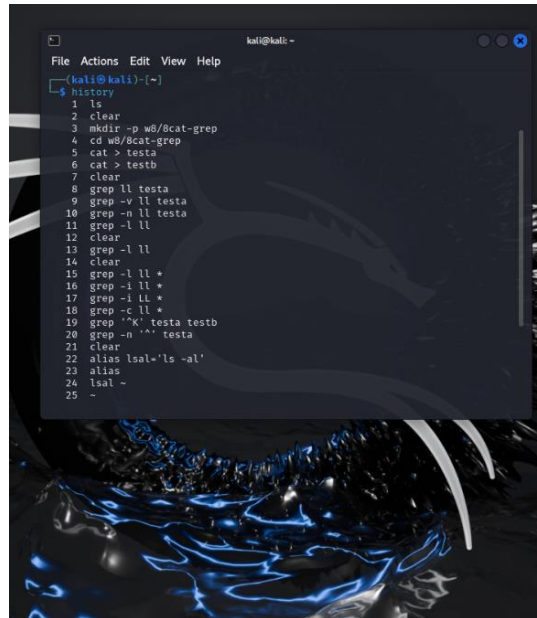
A terminal window titled 'kali@kali: ~' with a menu bar containing 'File', 'Actions', 'Edit', 'View', and 'Help'. The terminal shows the following commands and output:

```
(kali@kali)~  
$ alias nwwho='getent passwd | wc -l'  
(kali@kali)~  
$ nwwho  
58  
(kali@kali)~  
$
```

The background of the terminal window features a faint, stylized dragon logo, characteristic of Kali Linux.

Figure 9: using alias nwwho for counting system files

4.5 Command history and re-execution

A terminal window titled 'kali@kali: ~' with a menu bar (File, Actions, Edit, View, Help). The command history is displayed, listing 25 commands from 1 to 25. The background of the terminal features a Kali Linux dragon logo and a blue, abstract, liquid-like pattern at the bottom.

```
kali@kali: ~  
$ history  
1 ls  
2 clear  
3 mkdir -p w6/8cat-grep  
4 cd w6/8cat-grep  
5 cat > testa  
6 cat > testb  
7 clear  
8 grep ll testa  
9 grep -v ll testa  
10 grep -n ll testa  
11 grep -l ll  
12 clear  
13 grep -l ll  
14 clear  
15 grep -l ll *  
16 grep -i ll *  
17 grep -i ll *  
18 grep -c ll *  
19 grep 'x' testa testb  
20 grep -n '^' testa  
21 clear  
22 alias lsal='ls -al'  
23 alias  
24 lsal ~  
25 ~
```

Figure 10: listing last commands executed using history

A terminal window titled 'kali@kali: ~' with a menu bar (File, Actions, Edit, View, Help). The window shows a command prompt 'ls' followed by a large number of lines of error messages. The errors are related to the 'r' command and the file '/tmp/zshHF3DYt'. The background of the terminal features a Kali Linux dragon logo and a blue, abstract, liquid-like pattern at the bottom.

```
kali@kali: ~  
ls  
...  
"/tmp/zshHF3DYt" 1L, 3B  
...  
1,1  
All
```

Figure 11: facing error using r comand

```
kali@kali: ~  
File Actions Edit View Help  
kali@kali: ~ x kali@kali: ~ x  
62 sudo reboot  
63 lsal  
64 la -a  
65 ~  
66 la -a  
67 nano .zshrc  
68 cat .zshrc  
69 cat .zshrc  
70 cat .zshrc  
71 cd w8/8cat-grep  
72 lsal  
73 clear  
74 nano .zshrc  
75 history  
76 fc 72  
77 fc -r  
78 echo 'a'  
79 echo 'b'  
80 echo 'c'  
  
(kali@kali)-[~]  
$ !-1  
  
(kali@kali)-[~]  
$ history
```

Figure 12; re-executing the command using negative integer

```
kali@kali: ~  
File Actions Edit View Help  
kali@kali: ~ x kali@kali: ~ x  
79 echo 'b'  
80 echo 'c'  
  
(kali@kali)-[~]  
$ fc -s l  
lsal  
total 672  
drwx----- 20 kali kali 4096 Dec 28 08:27 .  
drwxr-xr-x 3 root root 4096 Aug 18 15:57 ..  
-rw-r--r-- 1 kali kali 220 Aug 18 15:57 .bash_logout  
-rw-r--r-- 1 kali kali 5570 Dec 28 05:31 .bashrc  
-rw-r--r-- 1 kali kali 3526 Aug 18 15:57 .bashrc.original  
drwxrwxr-x 3 kali kali 4096 Dec 22 01:31 .BIT  
drwxrwxr-x 8 kali kali 4096 Dec 22 01:31 .cache  
drwxr-xr-x 13 kali kali 4096 Dec 21 10:27 .config  
drwxr-xr-x 2 kali kali 4096 Dec 21 06:56 Desktop  
-rw-r--r-- 1 kali kali 35 Dec 21 06:56 .dmrc  
drwxr-xr-x 2 kali kali 4096 Dec 21 06:56 Documents  
drwxr-xr-x 2 kali kali 4096 Dec 21 06:56 Downloads  
-rw-r--r-- 1 kali kali 11759 Aug 18 15:57 .face  
lrwxrwxrwx 1 kali kali 5 Aug 18 15:57 .face.icon -> .face  
-rw-rw-r-- 1 kali kali 14 Dec 21 07:00 file1.txt  
-rw-rw-r-- 1 kali kali 14 Dec 21 07:00 file2.txt  
drwx----- 3 kali kali 4096 Dec 21 06:56 .gnupg  
-rw----- 1 kali kali 0 Dec 21 06:56 .ICEauthority
```

Figure 13; re-executing the command using l command

5. Conclusion

This workshop has enhanced the skill regarding managing files, writing on zshrc and using grep to sort the strings and substring using the unix command in kali linux terminal.

6. References

(KALI)

(What is in Oracle VM VirtualBox Enterprise)