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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 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

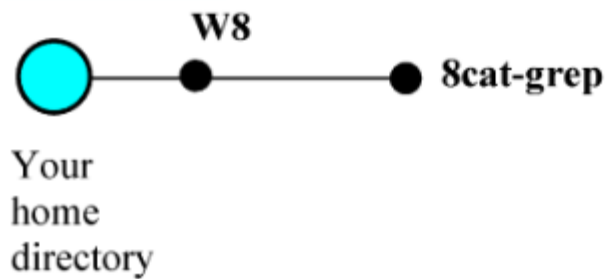
Linux is an operating system with open-source, and everybody can use it, modify its code and share it with others. It was developed in 1991 and turned into a strong and protected OS, suitable for computers, smartphones, and servers. Linux is known for its efficiency, stability and security, for that reason, Linux version can be installed on both home and computers. Some operating systems are more straight forward but Linux offers people a classic environment with a lot of freedom, even though Linux maintains a graphical user interface.

Ubuntu, Debian, Fedora are just some various operating systems that fulfill all the needs of regular user, developer or server. Linux is clearly known for its reliability, security and consistency. They are not at risk of break down and every operating system gets updated to use both powerful computer and slow computers. It is very secure operating system. Since operating system is freely available in Linux, the os is constantly tested for errors and various levels of security. Some of the commonly used versions of Linux are Ubuntu, that is simple to use and widely utilized in computers. Debian which is a well- known for its consistency and reliability and Fedora, which is focused on modern technology. By handling both simple devices and powerful servers in its operating system, this has helped in its growth throughout the Internet of Things (IOT).

Kali continues to be an open- source project that is free. Most importantly, it is well supported by an active online community. The purpose of Kali Linux is to secure things and bundle all the tools to provide a single platform for penetration testers. (Velu, Jun 30, 2017)

1. Week 8 Workshop Tasks

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



```
(nirjalaa@kali)-[~]
└─$ cd

(nirjalaa@kali)-[~]
└─$ mkdir W8

(nirjalaa@kali)-[~]
└─$ mkdir W8/8cat-grep

(nirjalaa@kali)-[~]
└─$ tree W8
W8
├─ 8cat-grep

2 directories, 0 files

(nirjalaa@kali)-[~]
└─$
```

Figure 1: Creating the directory structure

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

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

(nirjalaa@kali)-[~/W8/8cat-grep]
└─$
```

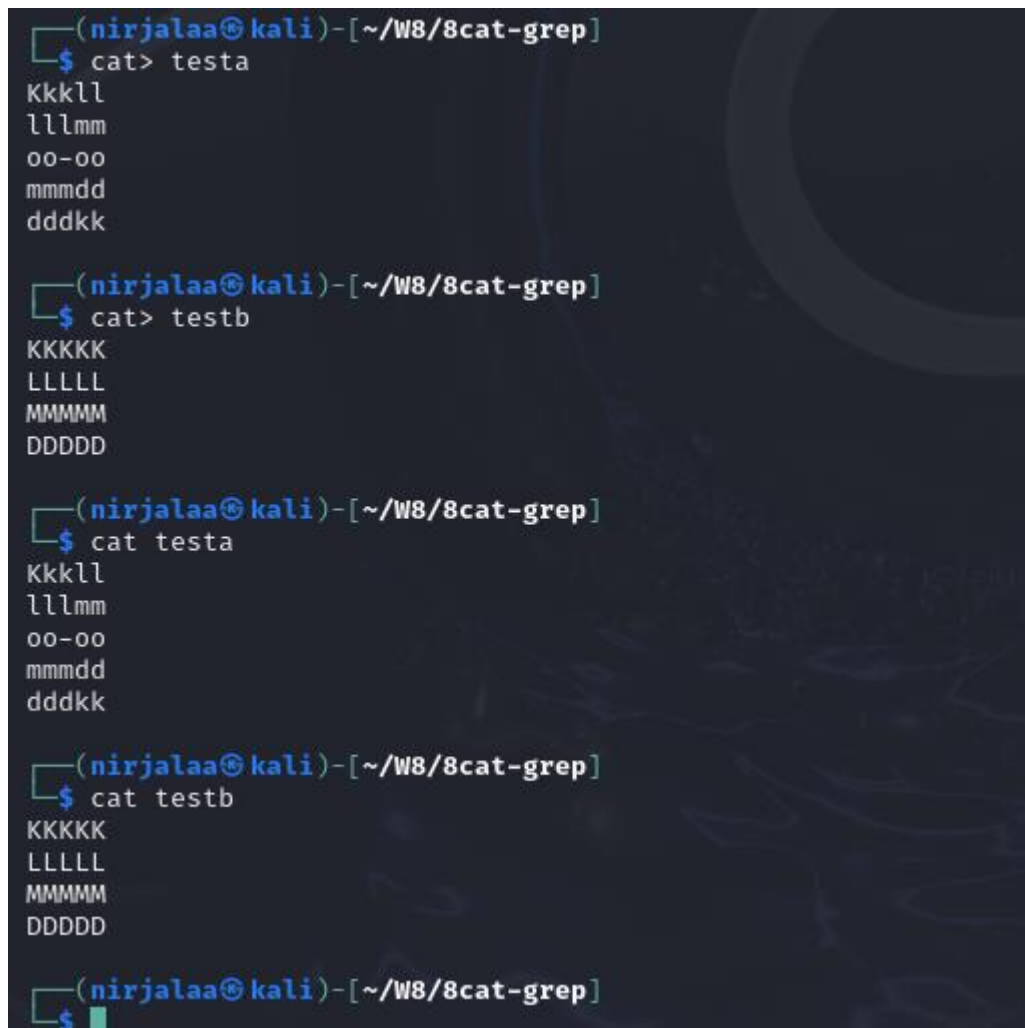
Figure 2: Changing the 8cat-grep directory

3. Using the **cat** utility, create two files

File testa	File testb
------------	------------

Kkkll	KKKKK
lllmm	LLLLL
oo-oo	MMMMM
mmmdd	DDDDD
dddkk	

-



```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ cat> testa
Kkkll
lllmm
oo-oo
mmmdd
dddkk

(nirjalaa@kali)-[~/W8/8cat-grep]
$ cat> testb
KKKKK
LLLLL
MMMMM
DDDDD

(nirjalaa@kali)-[~/W8/8cat-grep]
$ cat testa
Kkkll
lllmm
oo-oo
mmmdd
dddkk

(nirjalaa@kali)-[~/W8/8cat-grep]
$ cat testb
KKKKK
LLLLL
MMMMM
DDDDD

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

Figure 3: Creating 2 files

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

- **grep ll testa**
- **grep -v ll testa**
- **grep -n ll testa**
- **grep -l ll ***
- **grep -i ll ***
- **grep -i LL ***
- **grep -c ll ***
- **grep '^K' testa testb**
- **grep -n '^' testa**
- **grep '^K' testa testb**
- **grep -n '^' testa**

-

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep ll testa
Kkkll
lllmm

(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep -v ll testa
oo-oo
mmdd
dddkk

(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep -n ll testa
1:Kkkll
2:lllmm
```

Figure 4 `grep ll testa`, `grep -v ll testa`, `grep -n ll testa`

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep -l ll* testa
testa

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

Figure 5 `grep -l ll *` :

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep -i ll* testa
Kkkll
lllmm

(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep -i ll* testb
lllll
```

Figure 6 : grep -i ll *

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep -i LL* testa
Kkkll
lllmm

(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep -i LL* testB
grep: testB: No such file or directory

(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep -i LL* testb
lllll

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

Figure 7: grep -i LL *

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep -c ll* testa
2

(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep -c ll* testb
0
```

Figure 8 : grep -c ll *

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep '^K' testa testb
testa:Kkkll
testb:KKKK

(nirjalaa@kali)-[~/W8/8cat-grep]
$ grep -n '^' testa
1:Kkkll
2:lllmm
3:oo-oo
4:mmdd
5:dddkk
```

Figure 9: grep '^K' testa test, grep -n '^' testa

5. Define the **lsal** alias for **ls -al** command

Show that your system stores it giving the **alias** command (without arguments).
Use it in your home directory.

-

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ lsal
total 16
drwxrwxr-x 2 nirjalaa nirjalaa 4096 Dec 24 05:34 .
drwxrwxr-x 3 nirjalaa nirjalaa 4096 Dec 24 05:30 ..
-rw-rw-r-- 1 nirjalaa nirjalaa  30 Dec 24 05:33 testa
-rw-rw-r-- 1 nirjalaa nirjalaa  24 Dec 24 05:34 testb
```

Figure 10: *lsal* alias for *ls -al* command

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

(nirjalaa@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 11 : *alias* command

6. Remove the alias.

Show that your system does not store it.

-

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ unalias lsal

(nirjalaa@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'
```

Figure 12: *Remove the alias*

7. Define this alias again preserving it for the next session
Show that the system still keep this your alias.

- First I went at the end of the line and again put the alias `lsal='ls -al'`

```
GNU nano 8.1 /home/nirjalaa/.bashrc
# If this is an xterm set the title to user@host:dir
case "$TERM" in
xterm*|rxvt*|Eterm|aterm|kterm|gnome*|alacritty)
    PS1="\[\e]0;${debian_chroot:+($debian_chroot)}\u@\h: \w\a\]$PS1"
    ;;
*)
    ;;
esac

[ "$NEWLINE_BEFORE_PROMPT" = yes ] && PROMPT_COMMAND="PROMPT_COMMAND=echo"

# enable color support of ls, less and man, and also add handy aliases
if [ -x /usr/bin/dircolors ]; then
    test -r ~/.dircolors && eval "$(dircolors -b ~/.dircolors)" || eval "$(dircolors -b)"
    export LS_COLORS="$LS_COLORS:ow=30;44:" # fix ls color for folders with 777 permissions

    alias ls='ls --color=auto'
    #alias dir='dir --color=auto'
    #alias vdir='vdir --color=auto'

    alias grep='grep --color=auto'
    alias fgrep='fgrep --color=auto'
    alias egrep='egrep --color=auto'
    alias diff='diff --color=auto'
    alias ip='ip --color=auto'

    export LESS_TERMCAP_mb='${\E[1;31m}' # begin blink
    export LESS_TERMCAP_md='${\E[1;36m}' # begin bold
    export LESS_TERMCAP_me='${\E[0m}' # reset bold/blink
    export LESS_TERMCAP_so='${\E[01;33m}' # begin reverse video
    export LESS_TERMCAP_se='${\E[0m}' # reset reverse video
    export LESS_TERMCAP_us='${\E[1;32m}' # begin underline
    export LESS_TERMCAP_ue='${\E[0m}' # reset underline
fi

# colored GCC warnings and errors
export GCC_COLORS='error=01;31:warning=01;35:note=01;36:caret=01;32:locus=01:quote=01'

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

```
Save modified buffer?
Y Yes
N No ^C Cancel
```

```
(nirjalaa@kali)~[/W8/8cat-grep]
$ nano ~/.bashrc
(nirjalaa@kali)~[/W8/8cat-grep]
$ source ~/.bashrc
(nirjalaa@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 13: the system still keep this your alias.

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

alias nwho='getent passwd|wc -l'

```
(nirjalaa@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'
```

```
export LESS_TERMCAP_us=$'\E[1;32m' # begin underline
export LESS_TERMCAP_ue=$'\E[0m' # reset underline
fi

# colored GCC warnings and errors
#export GCC_COLORS='error=01;31:warning=01;35:note=01;36:caret=01;32:locus=01:quote=01'

# some more ls aliases
alias ll='ls -l'
alias la='ls -A'
alias l='ls -CF'
alias lsal='ls -al'
alias nwho='getent passwd|wc -l'

# Alias definitions.
# You may want to put all your additions into a separate file like
# ~/.bash_aliases, instead of adding them here directly.
# See /usr/share/doc/bash-doc/examples in the bash-doc package.

if [ -f ~/.bash_aliases ]; then
```

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ nano ~/.bashrc

(nirjalaa@kali)-[~/W8/8cat-grep]
$ source ~/.bashrc

(nirjalaa@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'
alias nwho='getent passwd|wc -l'
```

Figure 14: alias nwho='getent passwd|wc -l'

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

-

```
(nirjalaa@kali)-[~]
$ nwho
59

(nirjalaa@kali)-[~]
$ nwho
59
```

Figure 15: the command nwho

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

```
(nirjalaa@kali) - [~/W8/8cat-grep]
$ history
1 cd
2 mkdir W8
3 mkdir W8/8cat-grep
4 tree W8
5 cd W8/8cat-grep
6 cat> testa
7 cat> testb
8 cat testa
9 cat testb
10 grep ll testa
11 grep -v ll testa
12 grep -n ll testa
13 grep -i ll*
14 grep -l ll*
15 grep -i ll*
16 grep -l ll*
17 grep -i ll*
18 grep -i ll*
19 grep -i ll*
20 Grep
21 grep -l ll* testa
22 cat> testa
23 cat> testb
24 grep -l ll* testa
25 grep -l ll*
26 grep -i ll* testa
27 grep -i ll* testb
28 grep -i ll* testa
29 grep -i ll* testb
30 grep -c ll* testa
31 grep -i ll* testa
32 grep -c ll* testa
33 grep -c ll* testb
34 grep '^K' testa testb
35 grep -n '^' testa
36 alias lsal="ls -al"
37 alias
38 lsal
39 nano ~/.bashrc
40 alias lsal="ls -al"
41 alias
42 lsal
43 lsal='ls -al'
```

```
78 ! -3  
79 history  
80 tree W8  
81 ! -3  
82 history  
83 tree W8  
84 ls  
85 mkdir W8/scat-grep  
86 cd W8/scat-grep  
87 grep -i ll* testa  
88 gre[ -l -ll* testa; ; ; ; gre[ -l -ll* testa; ; ; ; ; ; ; ; ;  
89 cd W8/scat-grep  
90 grep -l -ll* testa  
91 grep -l -ll*  
92 grep -i ll* testa  
93 grep -i ll* testb  
94 grep -i LL* testa  
95 grep -i LL* testB  
96 grep -i LL* testb  
97 grep -c LL* testa  
98 grep -c ll* testa  
99 grep -c ll* testb  
100 grep '^K' testa testb  
101 grep -n '^' testa  
102 grep -l ll* testa  
103 alias lsal="ls -al"  
104 alias  
105 lsal  
106 nano ~/.bashrc  
107 alias lsal="ls -al"  
108 alias  
109 lsal  
110 unalias lsal  
111 alias  
112 nano ~/.bash.rc  
113 nano ~/.bashrc  
114 alias lsal='ls-al'  
115 nano ~/.bashrc  
116 source ~/bash.rc  
117 nano ~/.bashrc  
118 source ~/.bashrc  
119 alias  
120 source ~/.bashrc  
121 nano ~/.bashrc  
122 source ~/.bashrc  
123 alias  
124 nwho  
125 history  
126 alias  
127 history
```

Figure 16: Full history command

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ history 10
119 alias
120 source ~/.bashrc
121 nano ~/.bashrc
122 source ~/.bashrc
123 alias
124 nwho
125 history
126 alias
127 history
128 history 10
```

Figure 17: last commands executed giving the history command

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

fc -r

-

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ history
1 cd
2 mkdir W8
3 mkdir W8/8cat-grep
4 tree W8
5 cd W8/8cat-grep
6 cat> testa
7 cat> testb
8 cat testa
9 cat testb
10 grep ll testa
11 grep -v ll testa
12 grep -n ll testa
13 grep -i ll*
14 grep -l ll*
15 grep -i ll*
16 grep -l 11*
17 grep -l ll*
18 grep -i ll*
```

Figure 18: History command

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ fc -r 4

tree W8
W8
├── 8cat-grep

2 directories, 0 files

(nirjalaa@kali)-[~/W8/8cat-grep]
```

Figure 19: fc -r command

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

!*-3*

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ fc -r 4

tree W8
W8
└─ 8cat-grep

2 directories, 0 files

(nirjalaa@kali)-[~/W8/8cat-grep]
$ !-3
tree W8
W8
└─ 8cat-grep

2 directories, 0 files
```

Figure 20: using the negative integer.

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

fc -e- l

```
(nirjalaa@kali)-[~/W8/8cat-grep]
$ fc -e- l

lsal
total 20
drwxrwxr-x 3 nirjalaa nirjalaa 4096 Dec 24 07:22 .
drwxrwxr-x 3 nirjalaa nirjalaa 4096 Dec 24 05:30 ..
-rw-rw-r-- 1 nirjalaa nirjalaa 30 Dec 24 05:33 testa
-rw-rw-r-- 1 nirjalaa nirjalaa 24 Dec 24 05:34 testb
drwxrwxr-x 3 nirjalaa nirjalaa 4096 Dec 24 07:23 W8

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

Figure 21: last command which name begins with 'l'.

2. References

Velu, V. K. (Jun 30, 2017). *Mastering Kali Linux for Advanced Penetration Testing*.
UK: Packt Publishing Ltd.

3. Conclusion

In conclusion, Linux is a free to use operating system which is used in computer systems at home, on the job, and in businesses. It is safe, flexible and able to modify to fulfill particular needs. Furthermore, it is a reliable and secure choice for users that require security, power and proper management since it is a open source and can be utilized by many engineers as well. For developers, server managers or simply the user who wants a safe, versatile and adaptable operating system Linux offers a wide range of tools.