

OPERATING SYSTEM LAB

ASSIGNMENT - 1

TITLE

Implement the following basic Commands used in LINUX, UNIX,

OS (Also perform all the commands with their switches as

assignment). Is, man, pwd, who, whoami, date, cal, mkdir, rm,

rmdir, cat, head, tail, more, less, cp, mv, echo.

Submitted by Krishnaveer Chahar

Roll No. 45

Section B

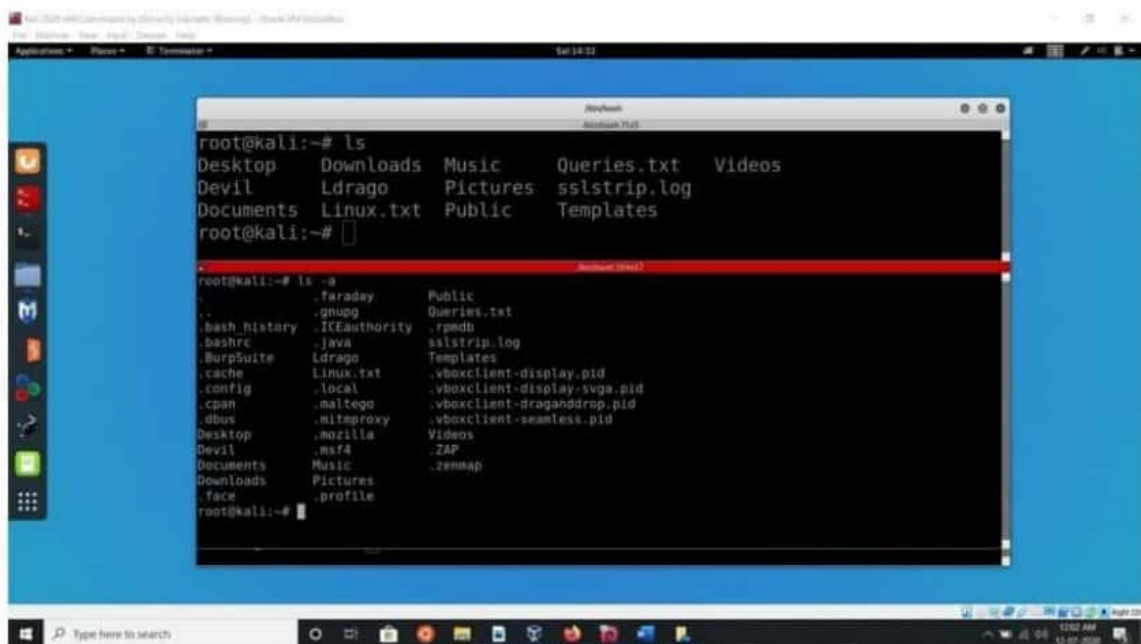
Subject Operating System-Lab

Submitted to -: Mr Akhilesh Kumar singh sir

Scanned with CamScanner

ls -: The **ls** command will list the files and directories within the current working directory. There are a few options you can use with **ls**, and the format, or syntax of the command is....

SYNTAX -: **ls [options] [file]**



The screenshot shows a Kali Linux desktop environment with a terminal window open. The terminal displays the output of the 'ls' command, listing files and directories in the current directory. The output is as follows:

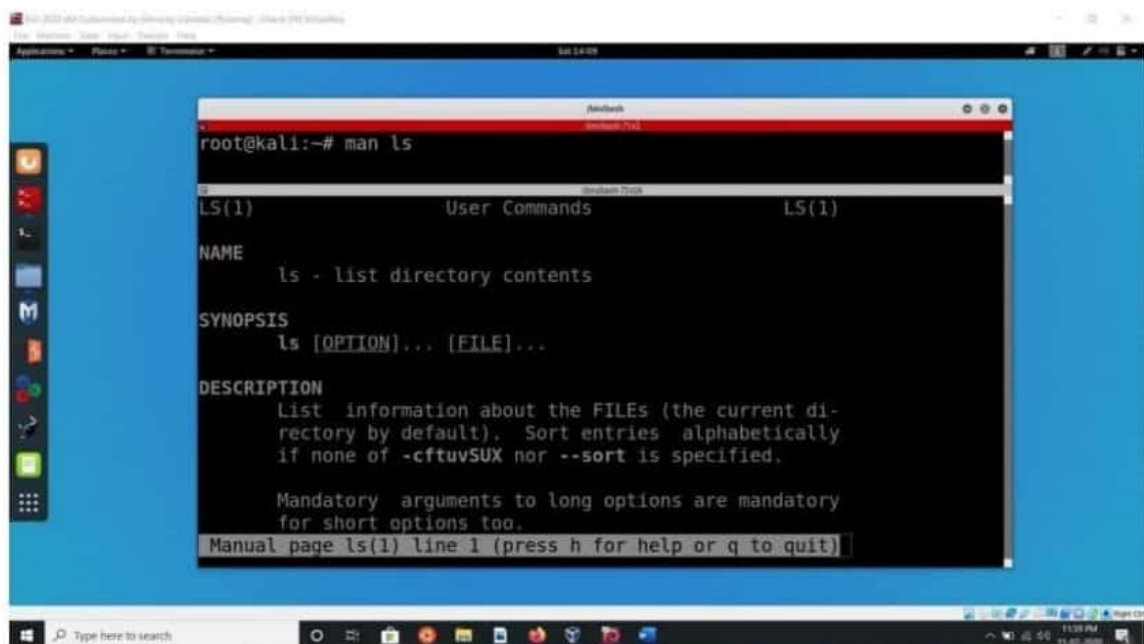
```
root@kali:~# ls
Desktop  Downloads  Music      Queries.txt  Videos
Devil    Ldrago     Pictures   sslstrip.log
Documents Linux.txt   Public     Templates
root@kali:~#
```

Below the first output, there is a red horizontal line, and then the output of the 'ls -la' command is shown, listing all files and directories with their permissions, owner, group, and size:

```
root@kali:~# ls -la
total 104
drwxr-xr-x 1 root root 4096 Nov 14 12:12 .
drwxr-xr-x 1 root root 4096 Nov 14 12:12 ..
-rw-r--r-- 1 root root  120 Nov 14 12:12 .bash_history
-rw-r--r-- 1 root root  120 Nov 14 12:12 .bashrc
-rw-r--r-- 1 root root  120 Nov 14 12:12 .burpsuite
-rw-r--r-- 1 root root  120 Nov 14 12:12 .cache
-rw-r--r-- 1 root root  120 Nov 14 12:12 .config
-rw-r--r-- 1 root root  120 Nov 14 12:12 .cpm
-rw-r--r-- 1 root root  120 Nov 14 12:12 .dbus
-rw-r--r-- 1 root root  120 Nov 14 12:12 .Desktop
-rw-r--r-- 1 root root  120 Nov 14 12:12 .Devil
-rw-r--r-- 1 root root  120 Nov 14 12:12 .Documents
-rw-r--r-- 1 root root  120 Nov 14 12:12 .Downloads
-rw-r--r-- 1 root root  120 Nov 14 12:12 .face
-rw-r--r-- 1 root root  120 Nov 14 12:12 .profile
-rw-r--r-- 1 root root  120 Nov 14 12:12 .Public
-rw-r--r-- 1 root root  120 Nov 14 12:12 .gnupg
-rw-r--r-- 1 root root  120 Nov 14 12:12 .ICEauthority
-rw-r--r-- 1 root root  120 Nov 14 12:12 .java
-rw-r--r-- 1 root root  120 Nov 14 12:12 .Ldrago
-rw-r--r-- 1 root root  120 Nov 14 12:12 .Linux.txt
-rw-r--r-- 1 root root  120 Nov 14 12:12 .local
-rw-r--r-- 1 root root  120 Nov 14 12:12 .maltego
-rw-r--r-- 1 root root  120 Nov 14 12:12 .mitmproxy
-rw-r--r-- 1 root root  120 Nov 14 12:12 .mozilla
-rw-r--r-- 1 root root  120 Nov 14 12:12 .msf4
-rw-r--r-- 1 root root  120 Nov 14 12:12 .Music
-rw-r--r-- 1 root root  120 Nov 14 12:12 .Pictures
-rw-r--r-- 1 root root  120 Nov 14 12:12 .Templates
-rw-r--r-- 1 root root  120 Nov 14 12:12 .vboxclient-display.pid
-rw-r--r-- 1 root root  120 Nov 14 12:12 .vboxclient-display.svga.pid
-rw-r--r-- 1 root root  120 Nov 14 12:12 .vboxclient-draganddrop.pid
-rw-r--r-- 1 root root  120 Nov 14 12:12 .vboxclient-seamless.pid
-rw-r--r-- 1 root root  120 Nov 14 12:12 .Videos
-rw-r--r-- 1 root root  120 Nov 14 12:12 .ZAP
-rw-r--r-- 1 root root  120 Nov 14 12:12 .zenmap
```

man -: **man** is used to display the user manual of any command that we can run on the terminal. It provides a detailed view of the command which includes **Name, Synopsis, Description, Options, Exit, Status, Return Values, Errors, Files, Version, Examples.....etc.**

SYNTAX -: **man [command name]**



```
root@kali:~# man ls
LS(1)                                User Commands                                LS(1)

NAME
  ls - list directory contents

SYNOPSIS
  ls [OPTION]... [FILE]...

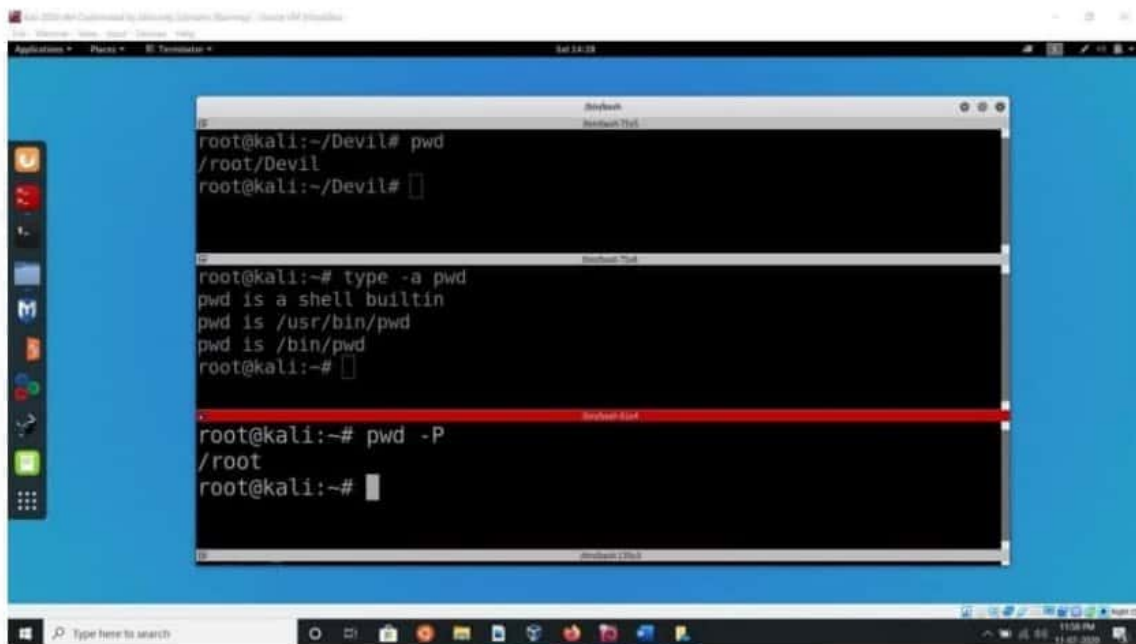
DESCRIPTION
  List information about the FILES (the current directory by default). Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

  Mandatory arguments to long options are mandatory for short options too.

Manual page ls(1) line 1 (press h for help or q to quit)
```

pwd -: **pwd** stands for Print Working Directory. It prints the full path of the working directory, starting from the root.

SYNTAX-: **pwd [option]**



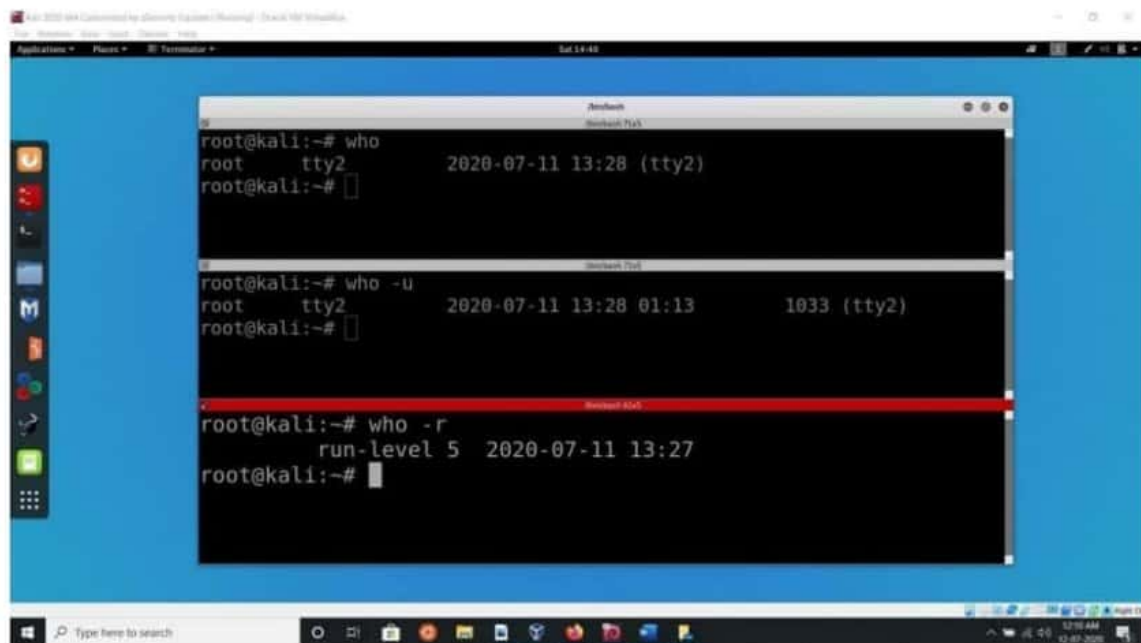
```
root@kali:~/Devil# pwd
/root/Devil
root@kali:~/Devil#

root@kali:~# type -a pwd
pwd is a shell builtin
pwd is /usr/bin/pwd
pwd is /bin/pwd
root@kali:~#

root@kali:~# pwd -P
/root
root@kali:~#
```

who -: The standard Unix command who displays a list of users who are currently logged into the computer. The **who** command is related to the command **w**, which provides the same information but also displays additional data and statistics.

SYNTAX - : who [options] [filename]



The screenshot shows a Kali Linux desktop environment with a terminal window open. The terminal displays the output of three different 'who' commands. The first command 'who' shows a single user 'root' on 'tty2' at '2020-07-11 13:28 (tty2)'. The second command 'who -u' shows the same user with additional fields '01:13' and '1033 (tty2)'. The third command 'who -r' shows the system 'run-level 5' at '2020-07-11 13:27'.

```
root@kali:~# who
root    tty2          2020-07-11 13:28 (tty2)
root@kali:~#

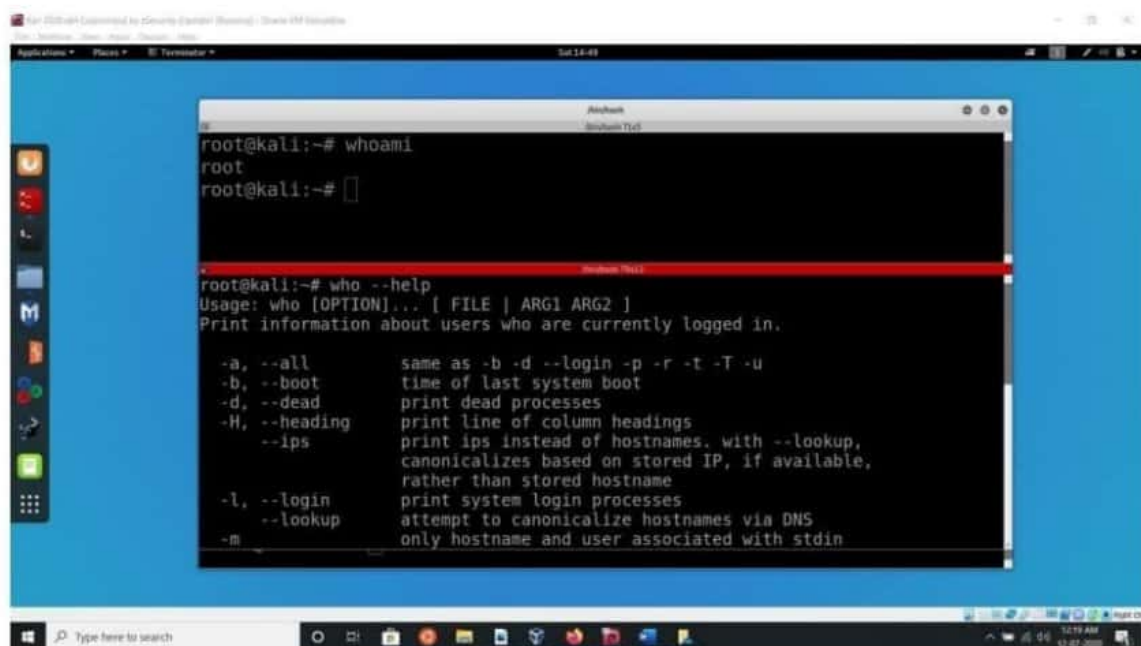
root@kali:~# who -u
root    tty2          2020-07-11 13:28 01:13      1033 (tty2)
root@kali:~#

root@kali:~# who -r
run-level 5  2020-07-11 13:27
root@kali:~#
```

whoami -: **whoami** command is used both in Unix

Operating System and as well as in Windows Operating System. It is basically the concatenation of the strings **"who","am","i"** as **whoami**. It displays the username of the current user when this command is invoked.

SYNTAX -: **whoami [OPTION]**



The screenshot shows a Kali Linux desktop environment with a terminal window open. The terminal displays the following commands and output:

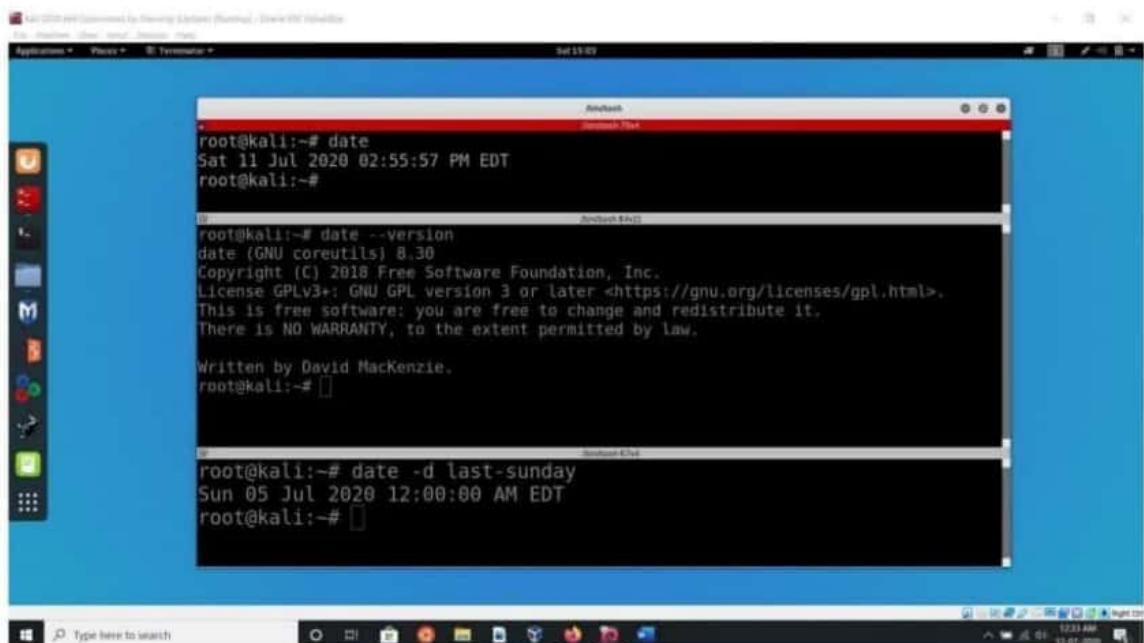
```
root@kali:~# whoami
root
root@kali:~#
```

```
root@kali:~# who --help
Usage: who [OPTION]... [ FILE | ARG1 ARG2 ]
Print information about users who are currently logged in.

-a, --all             same as -b -d --login -p -r -t -T -u
-b, --boot            time of last system boot
-d, --dead            print dead processes
-H, --heading         print line of column headings
--ips                print ips instead of hostnames. with --lookup,
                    canonicalizes based on stored IP, if available,
                    rather than stored hostname
-l, --login           print system login processes
--lookup             attempt to canonicalize hostnames via DNS
-m                  only hostname and user associated with stdin
```

date -: **date** command is used to display the system date and time. date command is also used to set date and time of the system. By default the date command displays the date in the time zone on which unix/linux operating system is configured.

SYNTAX -: **date [OPTION]... [+FORMAT]**



```
root@kali:~# date
Sat 11 Jul 2020 02:55:57 PM EDT
root@kali:~#

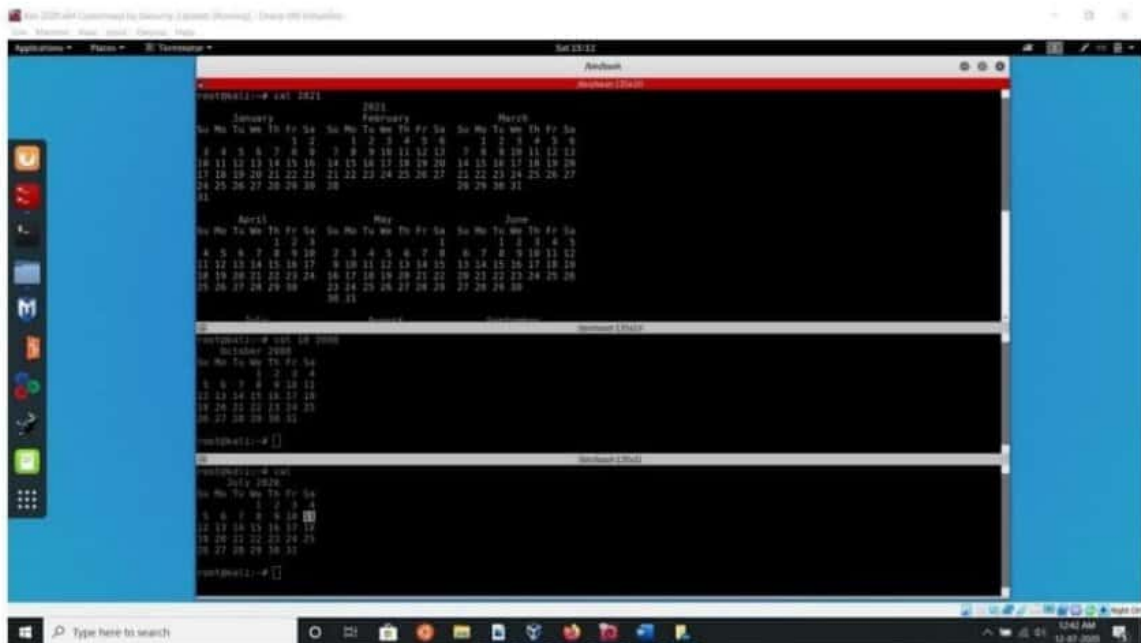
root@kali:~# date --version
date (GNU coreutils) 8.30
Copyright (C) 2018 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.
This is free software; you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

Written by David MacKenzie.
root@kali:~#

root@kali:~# date -d last-sunday
Sun 05 Jul 2020 12:00:00 AM EDT
root@kali:~#
```

cal -: **cal** command is a calendar command in Linux which is used to see the calendar of a specific month or a whole year.

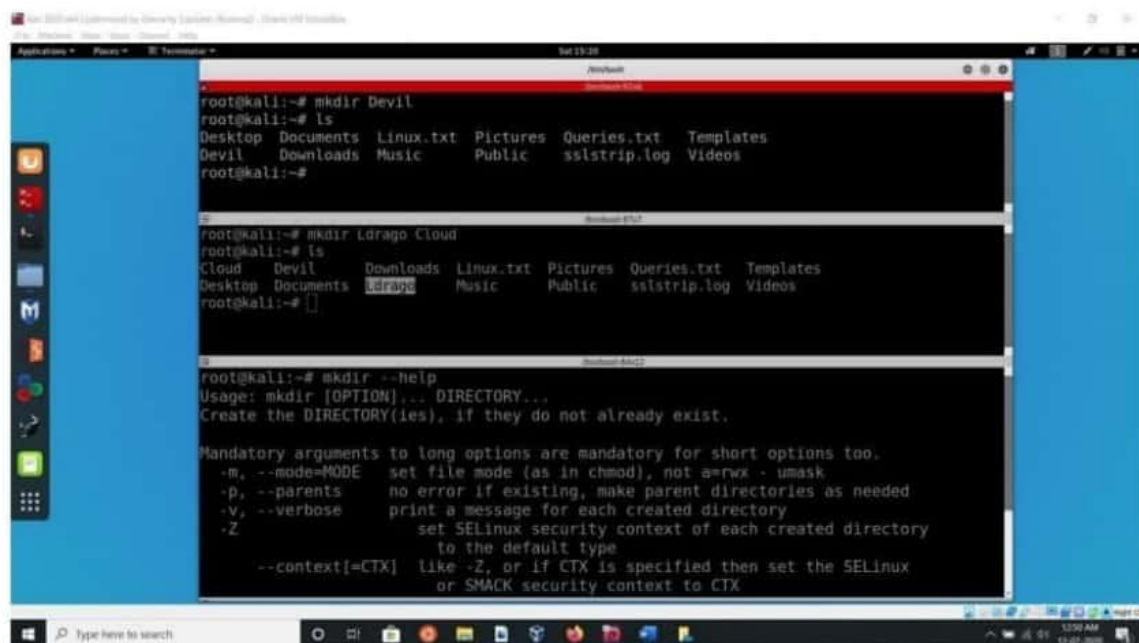
SYNTAX -: **cal [[month] year]**



```
root@kali:~# cal 2021
      2021
January February March
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
April May June
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
July August September October November December
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
root@kali:~# cal 10 2020
      2020
October
Su Mo Tu We Th Fr Sa
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
root@kali:~# cal 11 2020
      2020
November
Su Mo Tu We Th Fr Sa
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
```


mkdir -: **mkdir** command in Linux allows the user to create directories. This command can create multiple directories at once as well as set the permissions for the directories.

SYNTAX -: **mkdir [options...] [directories ...]**



```
root@kali:~# mkdir Devil
root@kali:~# ls
Desktop  Documents  Linux.txt  Pictures  Queries.txt  Templates
Devil    Downloads  Music     Public    sslstrip.log  Videos
root@kali:~#

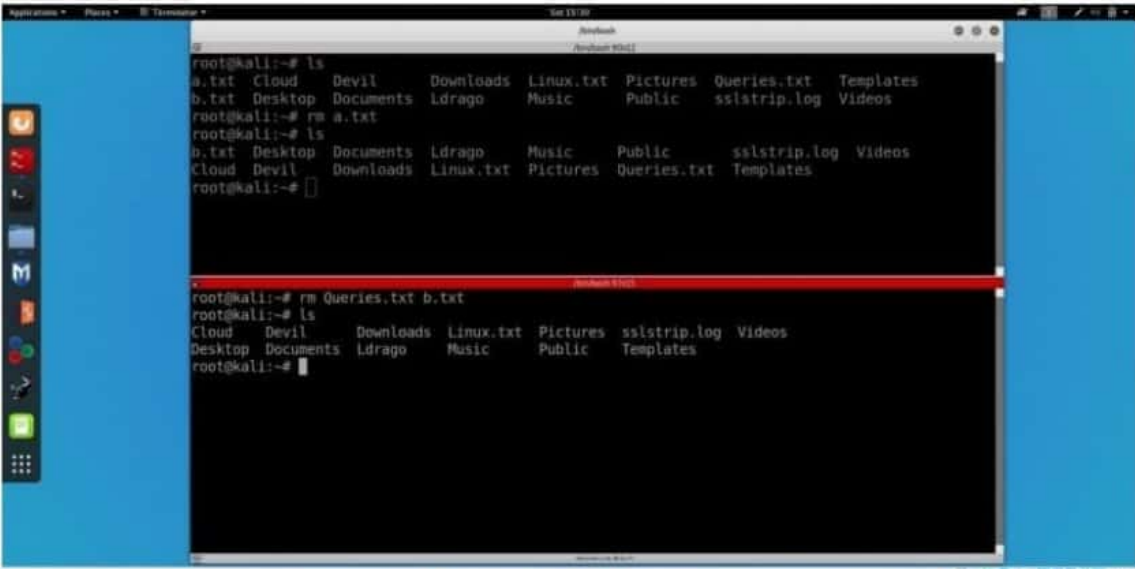
root@kali:~# mkdir Ldrago Cloud
root@kali:~# ls
Cloud  Devil    Downloads  Linux.txt  Pictures  Queries.txt  Templates
Desktop Documents  Ldrago     Music     Public    sslstrip.log  Videos
root@kali:~#

root@kali:~# mkdir --help
Usage: mkdir [OPTION]... DIRECTORY...
Create the DIRECTORY(ies), if they do not already exist.

Mandatory arguments to long options are mandatory for short options too.
-m, --mode=MODE    set file mode (as in chmod), not a=rwx - umask
-p, --parents       no error if existing, make parent directories as needed
-v, --verbose       print a message for each created directory
-Z,               set SELinux security context of each created directory
                  to the default type
--context[=CTX]    like -Z, or if CTX is specified then set the SELinux
                  or SMACK security context to CTX
```

rm -: rm command is used to remove objects such as files, directories, symbolic links and so on from the file system like UNIX. We remove multiple files at once.

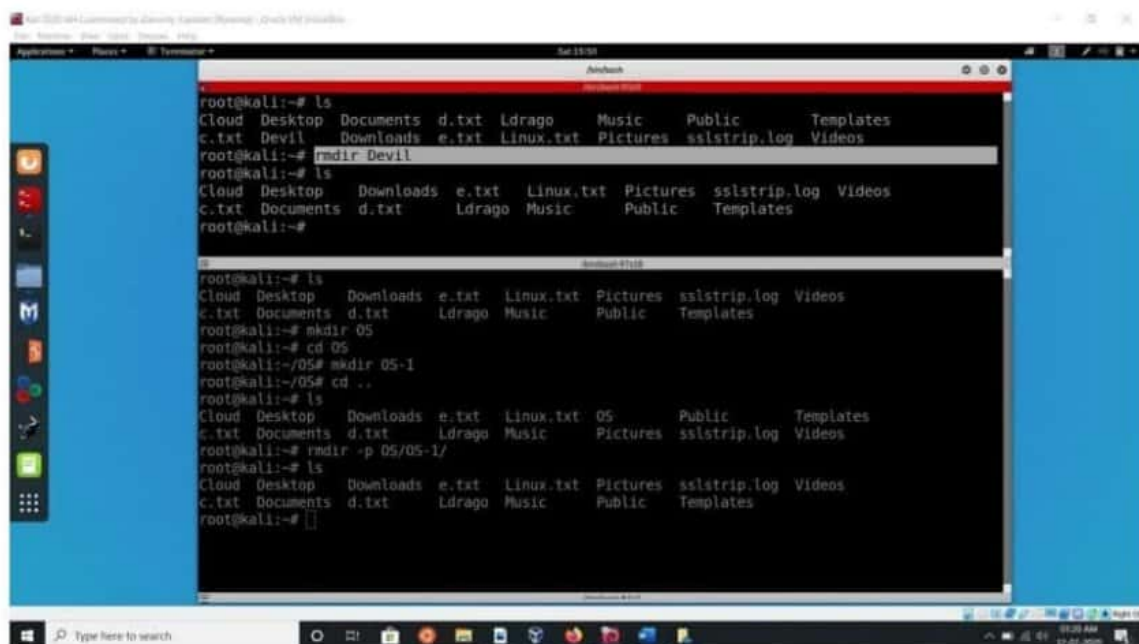
SYNTAX - :rm [OPTION]... FILE...



```
root@kali:~# ls
a.txt  Cloud  Devil  Downloads  Linux.txt  Pictures  Queries.txt  Templates
b.txt  Desktop Documents Ldrago    Music     Public    sslstrip.log  Videos
root@kali:~# rm a.txt
root@kali:~# ls
b.txt  Desktop Documents Ldrago    Music     Public    sslstrip.log  Videos
Cloud  Devil   Downloads Linux.txt  Pictures  Queries.txt  Templates
root@kali:~#
root@kali:~# rm Queries.txt b.txt
root@kali:~# ls
Cloud  Devil   Downloads Linux.txt  Pictures  sslstrip.log  Videos
Desktop Documents Ldrago    Music     Public    Templates
root@kali:~#
```

rmdir -: rmdir command is used remove empty directories from the filesystem in Linux. The rmdir command removes each and every directory specified in the command line only if these directories are empty. So if the specified directory has some directories or files in it then this cannot be removed by rmdir command.

SYNTAX - : rmdir [OPTION]...DIRECTORY...



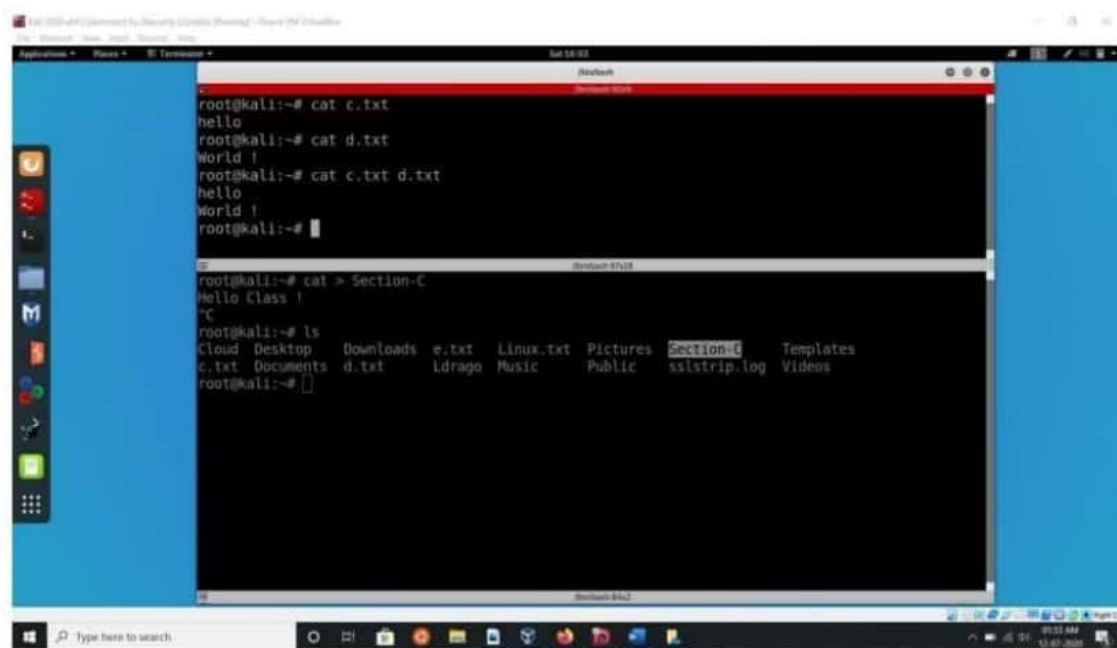
```
root@kali:~# ls
Cloud Desktop  Documents  d.txt  Ldrago  Music  Public  Templates
c.txt  Devil  Downloads  e.txt  Linux.txt  Pictures  sslstrip.log  Videos
root@kali:~# rmdir Devil
root@kali:~# ls
Cloud Desktop  Downloads  e.txt  Linux.txt  Pictures  sslstrip.log  Videos
c.txt  Documents  d.txt  Ldrago  Music  Public  Templates
root@kali:~#

root@kali:~# ls
Cloud Desktop  Downloads  e.txt  Linux.txt  Pictures  sslstrip.log  Videos
c.txt  Documents  d.txt  Ldrago  Music  Public  Templates
root@kali:~# mkdir OS
root@kali:~# cd OS
root@kali:~# cd OS
root@kali:~# cd ..
root@kali:~# ls
Cloud Desktop  Downloads  e.txt  Linux.txt  OS  Public  Templates
c.txt  Documents  d.txt  Ldrago  Music  Pictures  sslstrip.log  Videos
root@kali:~# rmdir -p OS/OS-1/
root@kali:~# ls
Cloud Desktop  Downloads  e.txt  Linux.txt  Pictures  sslstrip.log  Videos
c.txt  Documents  d.txt  Ldrago  Music  Public  Templates
root@kali:~#
```

cat -: **cat** command is very frequently used in Linux.

It reads data from the file and gives their content as output. It helps us to create, view, concatenate files. So let us see some frequently used **cat** commands. And also **cat** command can be used to join multiple files together and print the result on screen.

SYNTAX -: **cat** [**OPTION**]... [**FILE**]...



The screenshot shows a Kali Linux desktop environment with a terminal window open. The terminal displays the following commands and their outputs:

```
root@kali:~# cat c.txt
hello
root@kali:~# cat d.txt
World !
root@kali:~# cat c.txt d.txt
hello
World !
root@kali:~#
```

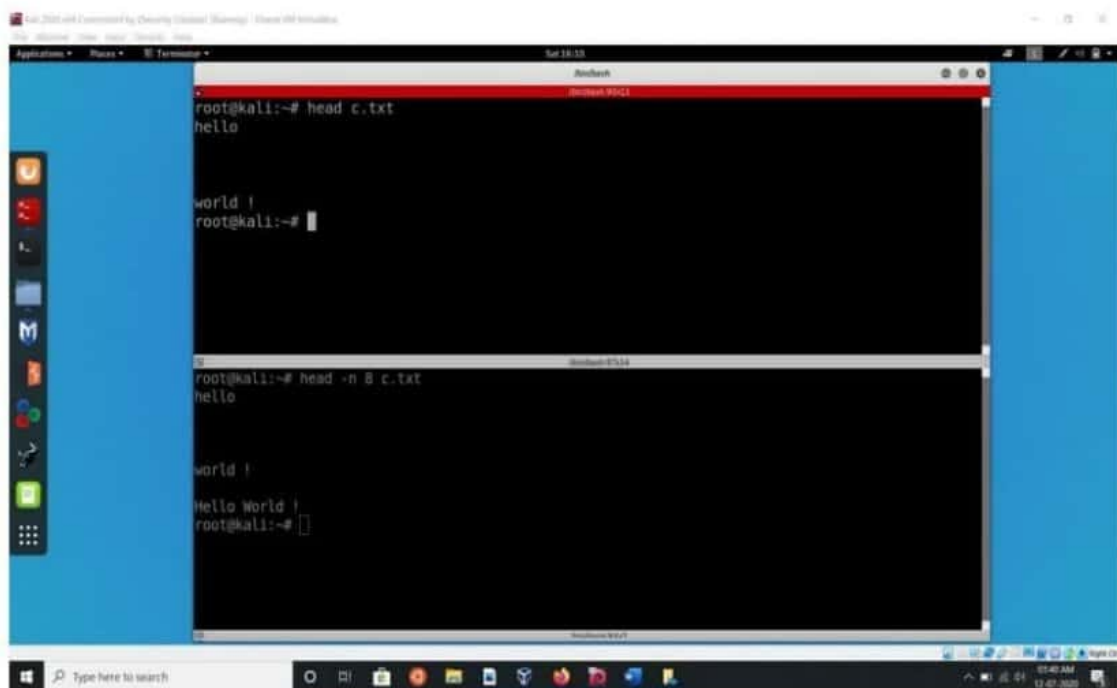
Below this, a new terminal window titled "Section-C" is shown with the following commands and output:

```
root@kali:~# cat > Section-C
Hello Class !
^C
root@kali:~# ls
Cloud Desktop  Downloads  e.txt  Linux.txt  Pictures  Section-C  Templates
c.txt  Documents  d.txt  Ldrago  Music  Public  sslstrip.log  Videos
root@kali:~#
```

head -: It is the complementary of Tail command.

The **head** command, as the name implies, print the top N number of data of the given input. By default, it prints the first 10 lines of the specified files. If more than one file name is provided then data from each file is preceded by its file name.

SYNTAX -: **head [OPTION]... [FILE]...**



The screenshot shows a Kali Linux desktop environment with a terminal window open. The terminal displays the following commands and output:

```
root@kali:~# head c.txt
hello

world !
root@kali:~#

root@kali:~# head -n 8 c.txt
hello

world !

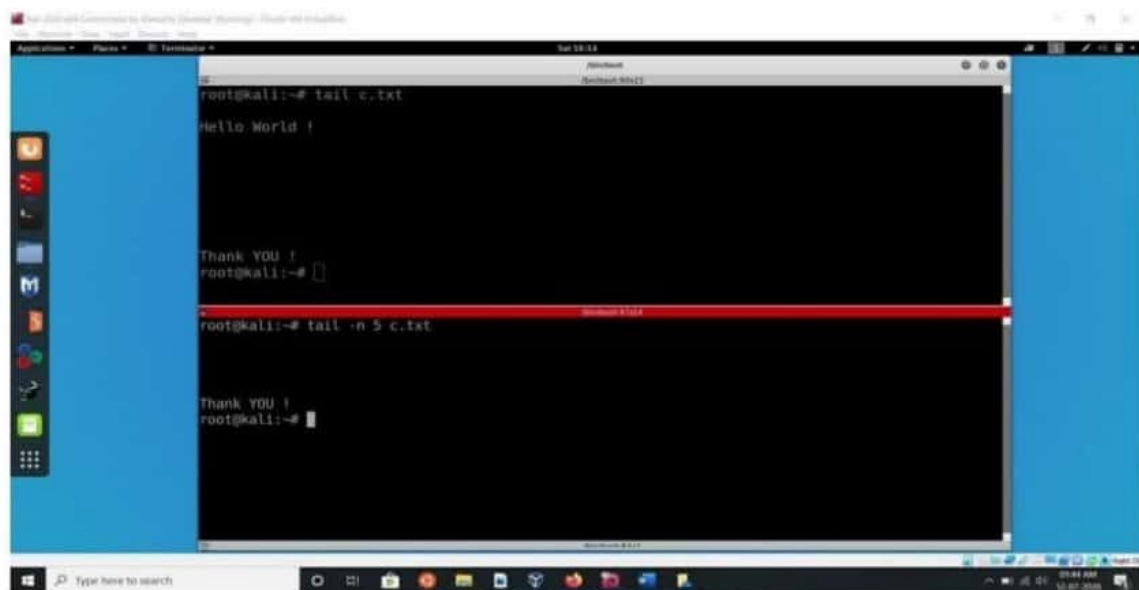
Hello World !
root@kali:~#
```

The terminal window is titled "Terminal" and shows the user is root@kali. The desktop background is blue, and the taskbar at the bottom shows various application icons and the system clock.

tail -: It is the complementary of head command. The

tail command, as the name implies, print the last N number of data of the given input. By default it prints the last 10 lines of the specified files. If more than one file name is provided then data from each file is precedes by its file name.

SYNTAX -: **tail** [OPTION]... [FILE]...



The screenshot shows a Kali Linux desktop environment with a terminal window open. The terminal displays the following commands and output:

```
root@kali:~# tail c.txt
Hello World !

Thank YOU !
root@kali:~#

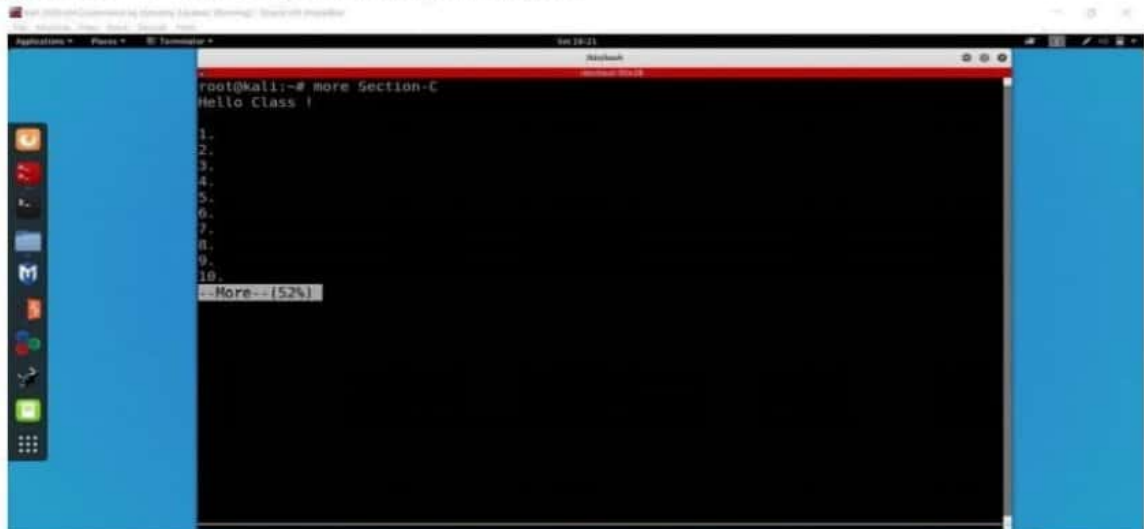
root@kali:~# tail -n 5 c.txt

Thank YOU !
root@kali:~#
```

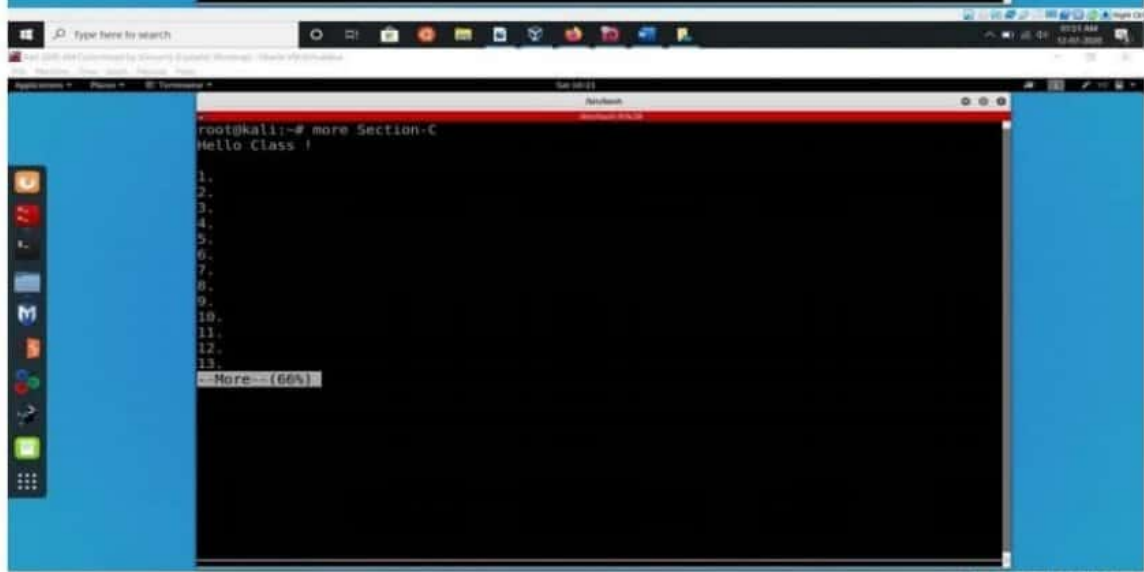
The terminal window has a title bar that reads "Terminal" and "Kali Linux". The desktop background is blue, and there is a taskbar at the bottom with various application icons.

more -: **more** command is used to view the text files in the command prompt, displaying one screen at a time in case the file is large. The **more** command also allows the user to scroll up and down through the page.

SYNTAX -: **more [OPTION]... FILE...**



```
root@kali:~# more Section-C
Hello Class !
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
--More--(52%)
```



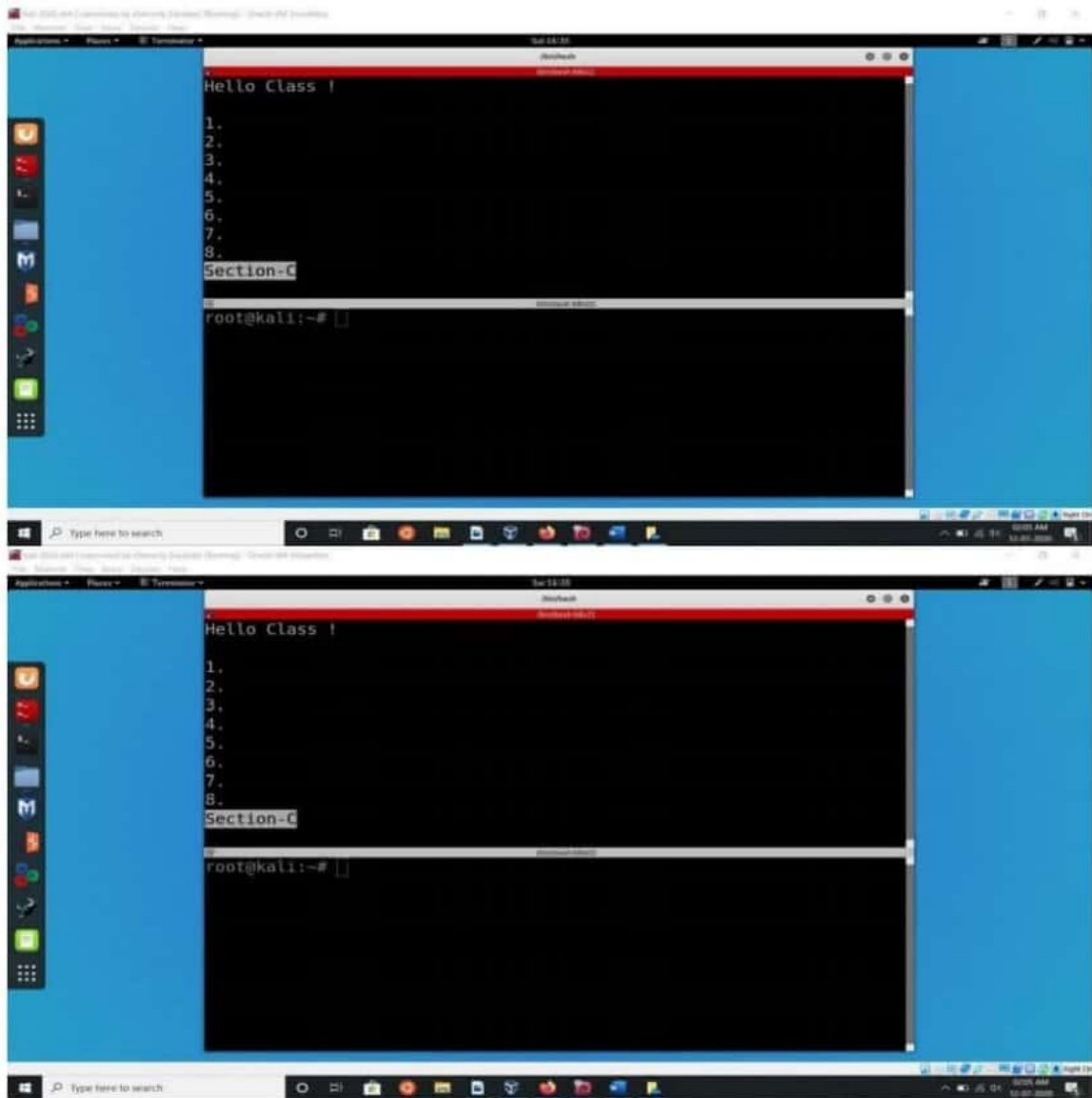
```
root@kali:~# more Section-C
Hello Class !
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
--More--(66%)
```

s -: **less** command is linux utility which can be used to read contents

of text file one page per time. It

has faster access because if file is large, it doesn't access complete file, but access it page by page.

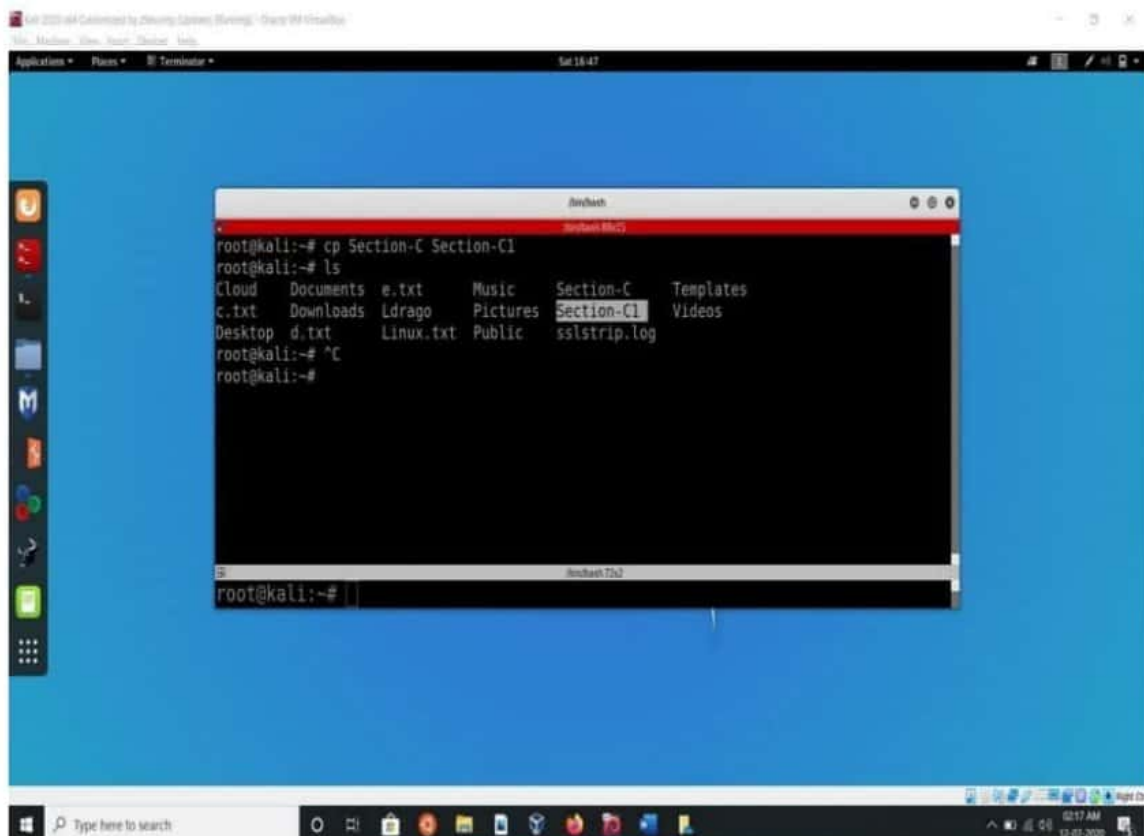
SYNTAX -: **less Filename...**



cp -: cp stands for copy. This command is used to copy files or group of files or directory. It creates an exact image of a file on a disk with different file name.

cp command require at least two filenames in its arguments.

SYNTAX - :cp [options] source dest..



The screenshot shows a Kali Linux desktop environment. A terminal window titled 'bash' is open, displaying the following commands and output:

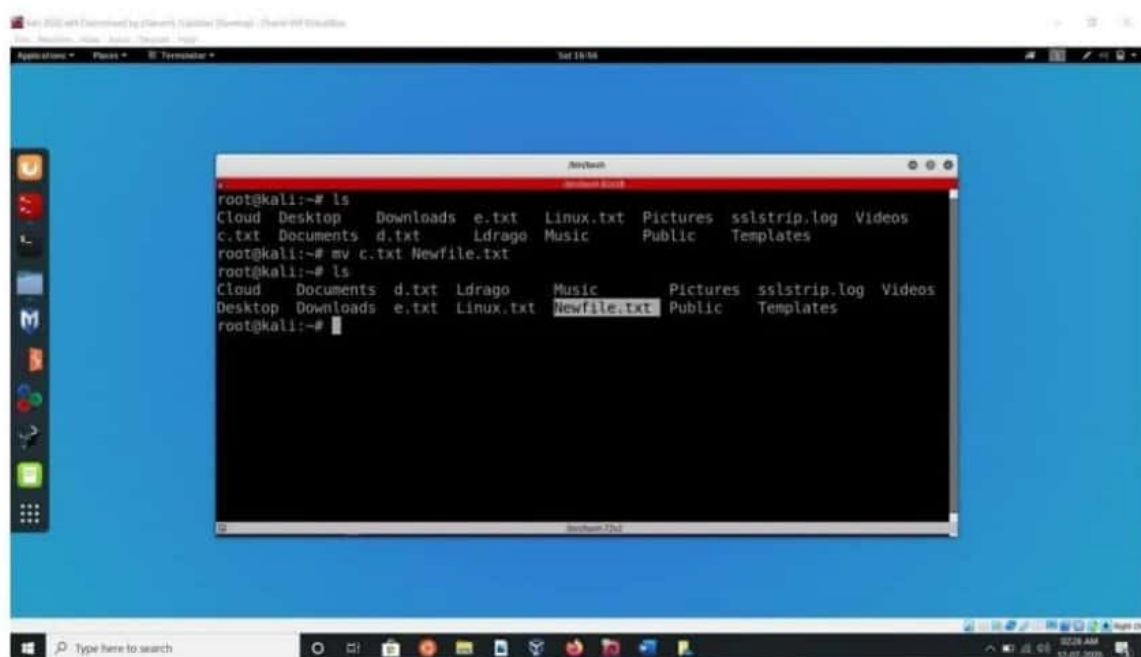
```
root@kali:~# cp Section-C Section-C1
root@kali:~# ls
Cloud  Documents  e.txt      Music    Section-C  Templates
c.txt  Downloads  ldrago    Pictures  Section-C1  Videos
Desktop d.txt      Linux.txt  Public   sslstrip.log
root@kali:~# ^C
root@kali:~#
```

The terminal window is titled 'bash' and has a red title bar. The desktop background is blue. The taskbar at the bottom shows various application icons and the system clock indicating 12:17 AM on 12-07-2020.

mv -: **mv** stands for move. mv is used to move one or more files or directories from one place to another in file system like UNIX. It has two distinct functions:

- (i) It rename a file or folder.
- (ii) It moves group of files to different directory. No additional space is consumed on a disk during renaming. This command normally works silently means no prompt for confirmation.

SYNTAX -: **mv [options] source dest..**



The screenshot shows a Kali Linux desktop environment with a terminal window open. The terminal displays the following commands and output:

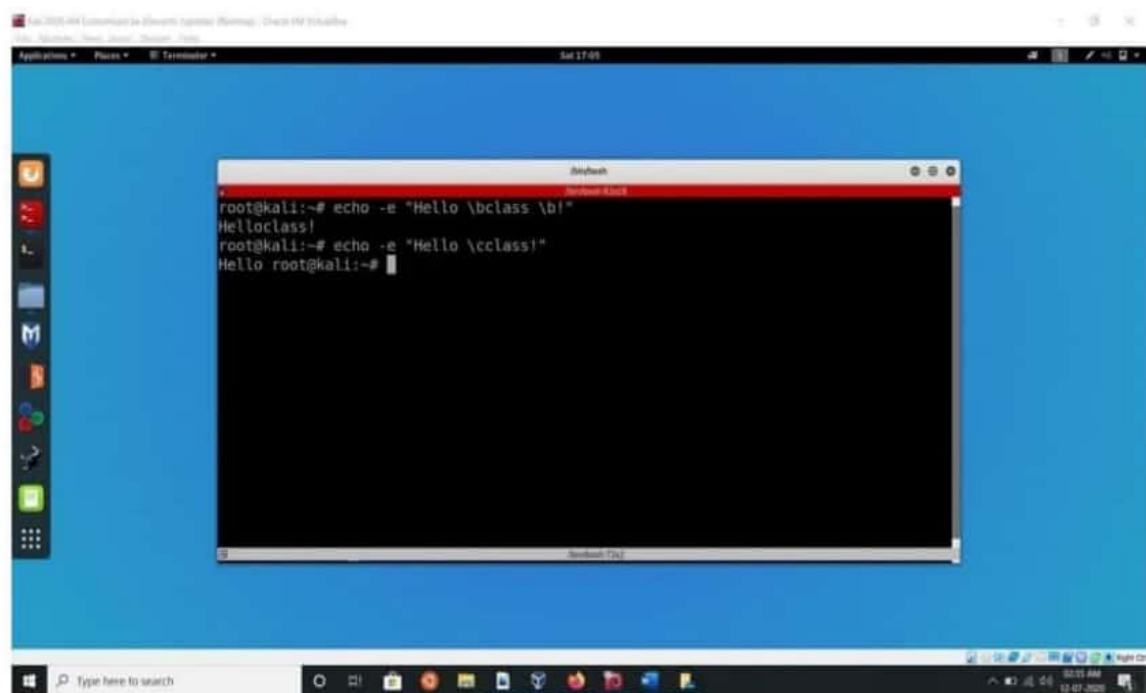
```
root@kali:~# ls
Cloud Desktop Downloads e.txt Linux.txt Pictures sslstrip.log Videos
c.txt Documents d.txt Ldrago Music Public Templates
root@kali:~# mv c.txt Newfile.txt
root@kali:~# ls
Cloud Documents d.txt Ldrago Music Pictures sslstrip.log Videos
Desktop Downloads e.txt Linux.txt Newfile.txt Public Templates
root@kali:~#
```

The terminal window is titled "Terminal" and shows the successful execution of the `mv c.txt Newfile.txt` command. The file `c.txt` has been renamed to `Newfile.txt`, as evidenced by the second `ls` command output.

echo -: **echo** command in linux is used to display line of text/string that are passed as an argument .

This is a built in command that is mostly used in shell scripts and batch files to output status text to the screen.

SYNTAX - : **echo [option] [string] or echo [string]**



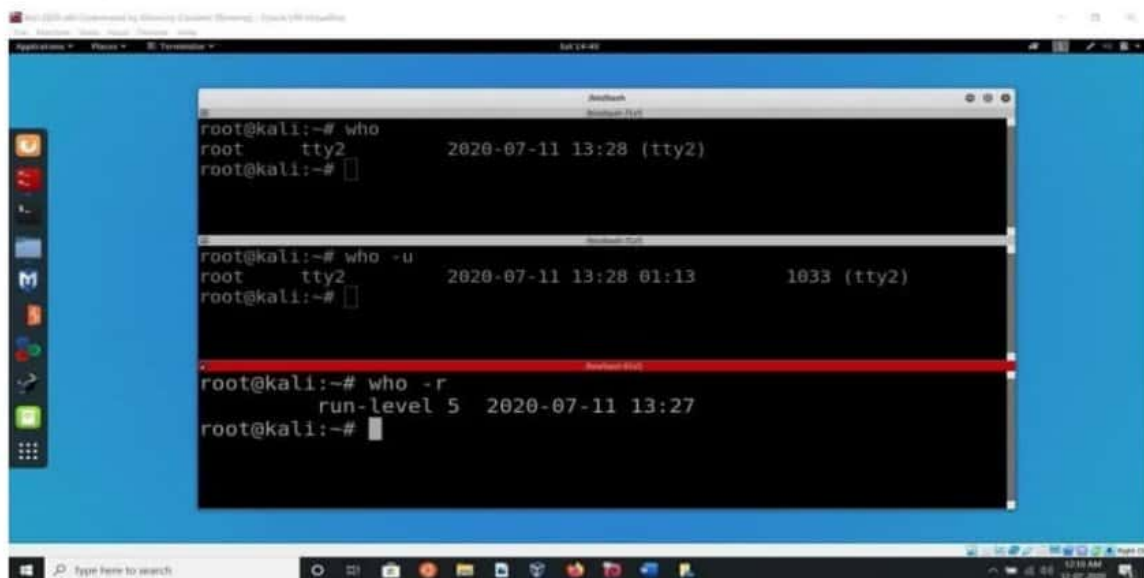
The screenshot shows a Kali Linux desktop with a blue background. A terminal window is open, displaying the following commands and their outputs:

```
root@kali:~# echo -e "Hello \bclass \b!"  
Hello\bclass!  
root@kali:~# echo -e "Hello \cclass!"  
Hello root@kali:~#
```

QUERIES

A.

Who is current user?
By Using **who** Command.



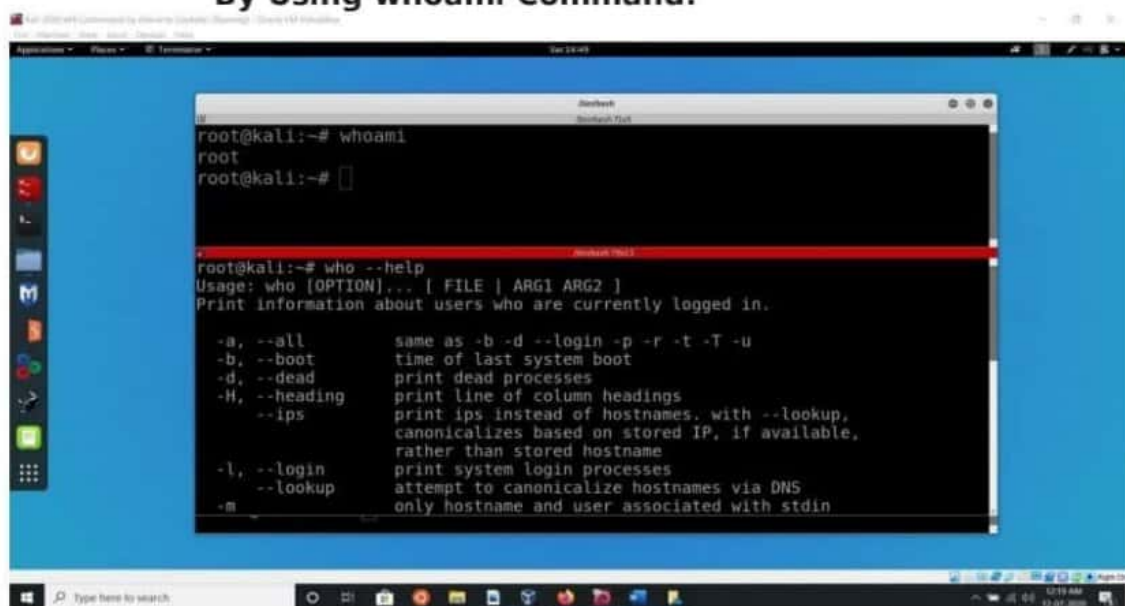
```
root@kali:~# who
root    tty2          2020-07-11 13:28 (tty2)
root@kali:~#

root@kali:~# who -u
root    tty2          2020-07-11 13:28 01:13      1033 (tty2)
root@kali:~#

root@kali:~# who -r
run-level 5  2020-07-11 13:27
root@kali:~#
```

B.

What is current login name?
By Using **whoami** Command.



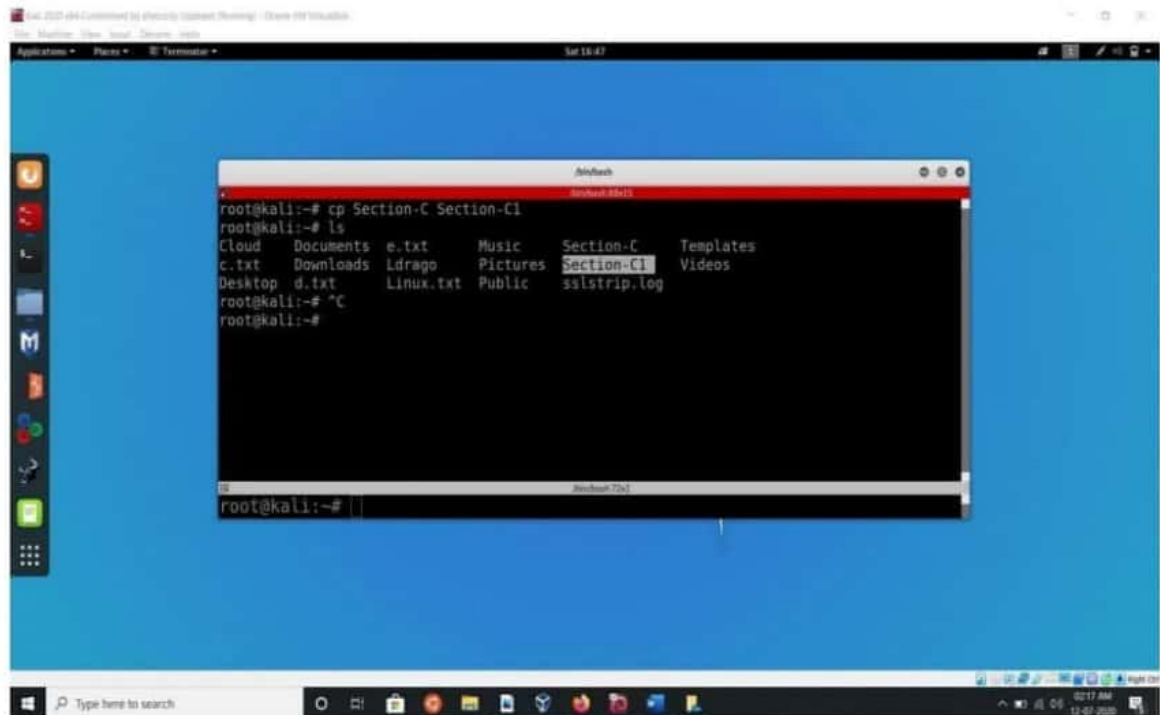
```
root@kali:~# whoami
root
root@kali:~#

root@kali:~# who --help
Usage: who [OPTION]... [ FILE | ARG1 ARG2 ]
Print information about users who are currently logged in.

-a, --all             same as -b -d --login -p -r -t -T -u
-b, --boot            time of last system boot
-d, --dead            print dead processes
-H, --heading         print line of column headings
--ips                print ips instead of hostnames, with --lookup,
                    canonicalizes based on stored IP, if available,
                    rather than stored hostname
-l, --login           print system login processes
--lookup             attempt to canonicalize hostnames via DNS
-m                   only hostname and user associated with stdin
```

C.

How to take backup of a file?
By using cp Command.



The screenshot shows a Kali Linux desktop environment with a blue background. A terminal window is open, displaying the following commands and output:

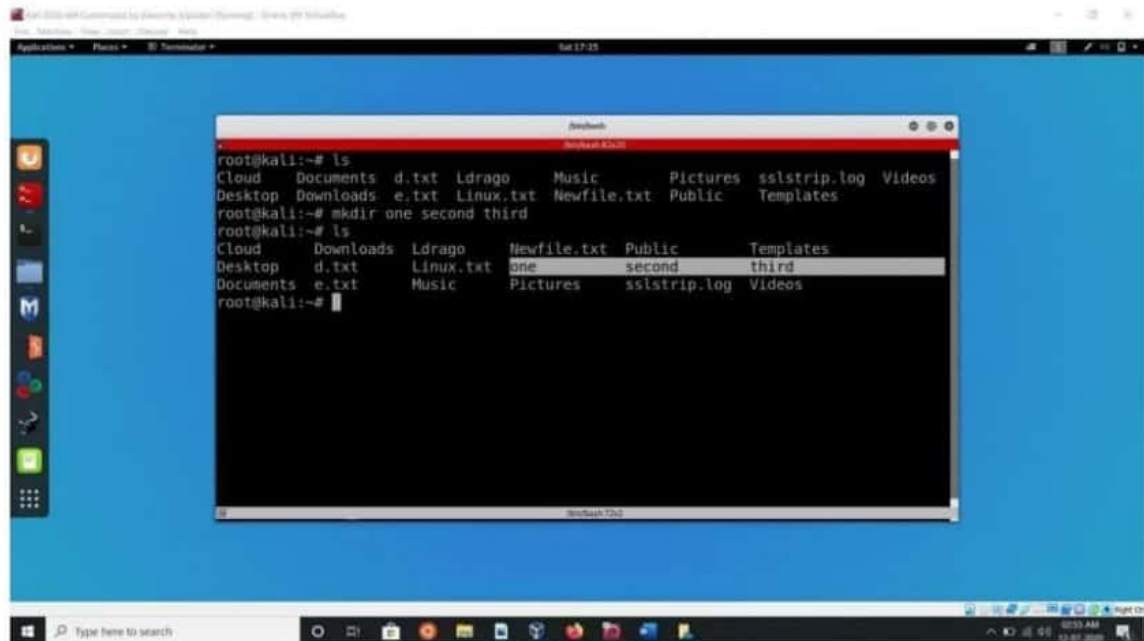
```
root@kali:~# cp Section-C Section-C1
root@kali:~# ls
Cloud  Documents  e.txt      Music  Section-C  Templates
c.txt  Downloads  ldrago     Pictures Section-C1  Videos
Desktop d.txt      Linux.txt  Public  ssstrip.log
root@kali:~# ^C
root@kali:~#
```

The terminal window has a title bar that reads "Arifhach" and "Arifhach 88x13". The desktop environment includes a sidebar with application icons and a taskbar at the bottom with a search bar and system tray.

D.

How to create 3 sub directories in a directory using single line Command?

By Using **mkdir** Command.



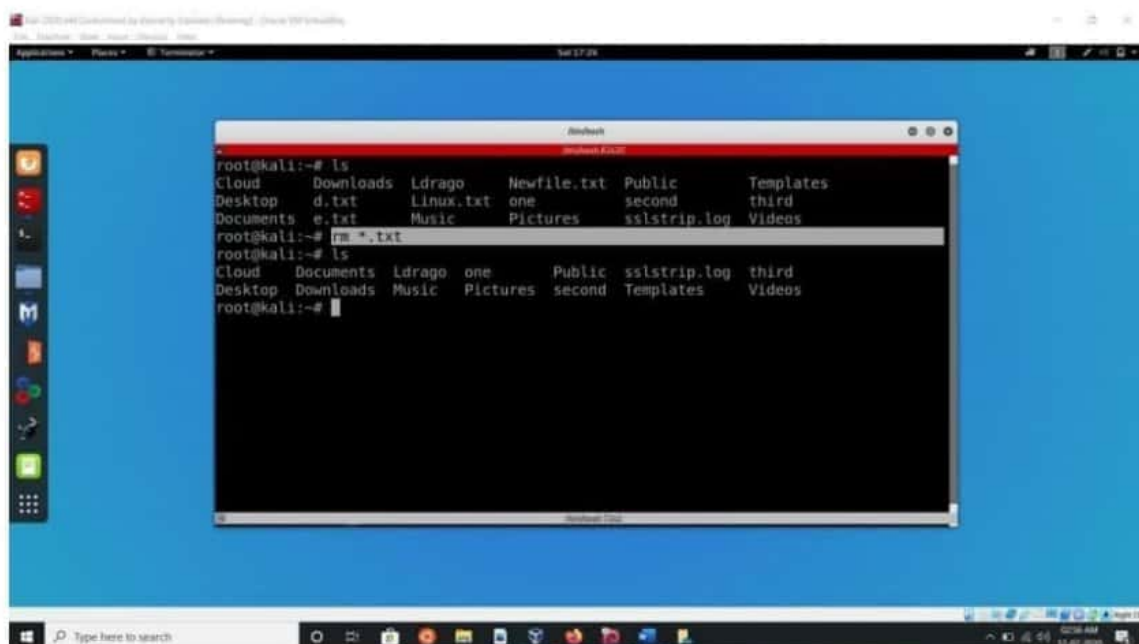
The screenshot shows a Kali Linux desktop environment with a terminal window open. The terminal displays the following commands and output:

```
root@kali:~# ls
Cloud  Documents  d.txt  ldrago  Music  Pictures  sslstrip.log  Videos
Desktop Downloads  e.txt  Linux.txt  Newfile.txt  Public  Templates
root@kali:~# mkdir one second third
root@kali:~# ls
Cloud  Downloads  ldrago  Newfile.txt  Public  Templates
Desktop  d.txt      Linux.txt  one      second  third
Documents e.txt      Music     Pictures  sslstrip.log  Videos
root@kali:~#
```

E.

remove file of .txt extension?

rm Command.



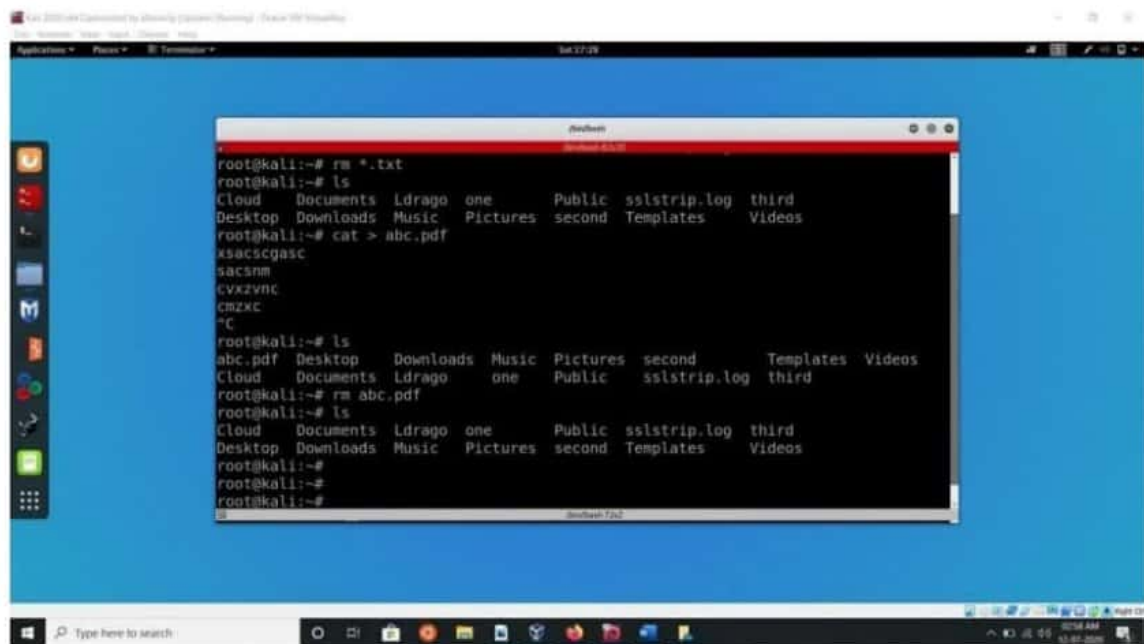
The screenshot shows a Kali Linux desktop environment with a terminal window open. The terminal displays the following commands and output:

```
root@kali:~# ls
Cloud  Downloads  ldrago  Newfile.txt  Public  Templates
Desktop d.txt      Linux.txt  one      second  third
Documents e.txt      Music     Pictures  sslstrip.log  Videos
root@kali:~# rm *.txt
root@kali:~# ls
Cloud  Documents  ldrago  one  Public  sslstrip.log  third
Desktop Downloads  Music  Pictures  second  Templates  Videos
root@kali:~#
```

F.

How to remove file of any extension?

By Using **rm** Command.



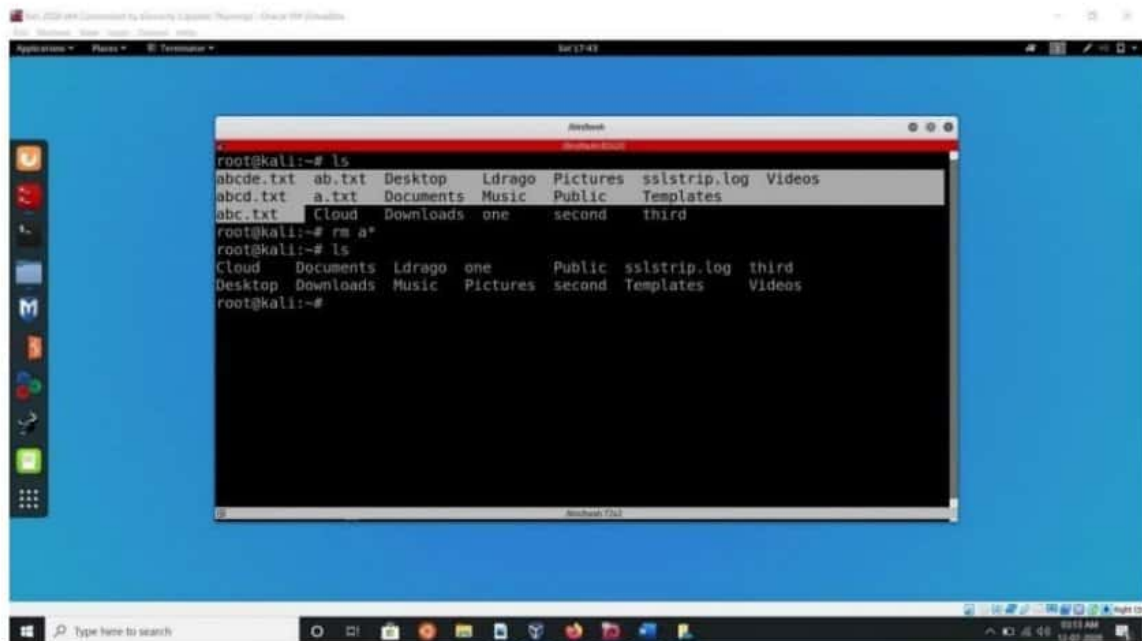
The screenshot shows a Kali Linux desktop environment with a terminal window open. The terminal displays the following commands and output:

```
root@kali:~# rm *.txt
root@kali:~# ls
Cloud  Documents  ldrago  one      Public  sslstrip.log  third
Desktop Downloads  Music  Pictures  second  Templates  Videos
root@kali:~# cat > abc.pdf
xsacscgasc
sacsnm
cvxzvnc
cmzxc
"C
root@kali:~# ls
abc.pdf Desktop Downloads Music Pictures second Templates Videos
Cloud Documents ldrago one Public sslstrip.log third
root@kali:~# rm abc.pdf
root@kali:~# ls
Cloud Documents ldrago one Public sslstrip.log third
Desktop Downloads Music Pictures second Templates Videos
root@kali:~#
root@kali:~#
root@kali:~#
```

The terminal window is titled "root@kali:~" and shows the successful execution of the `rm *.txt` command, followed by the creation of a file `abc.pdf` using `cat > abc.pdf`, and its subsequent removal with `rm abc.pdf`. The `ls` command is used multiple times to verify the state of the file system.

G.

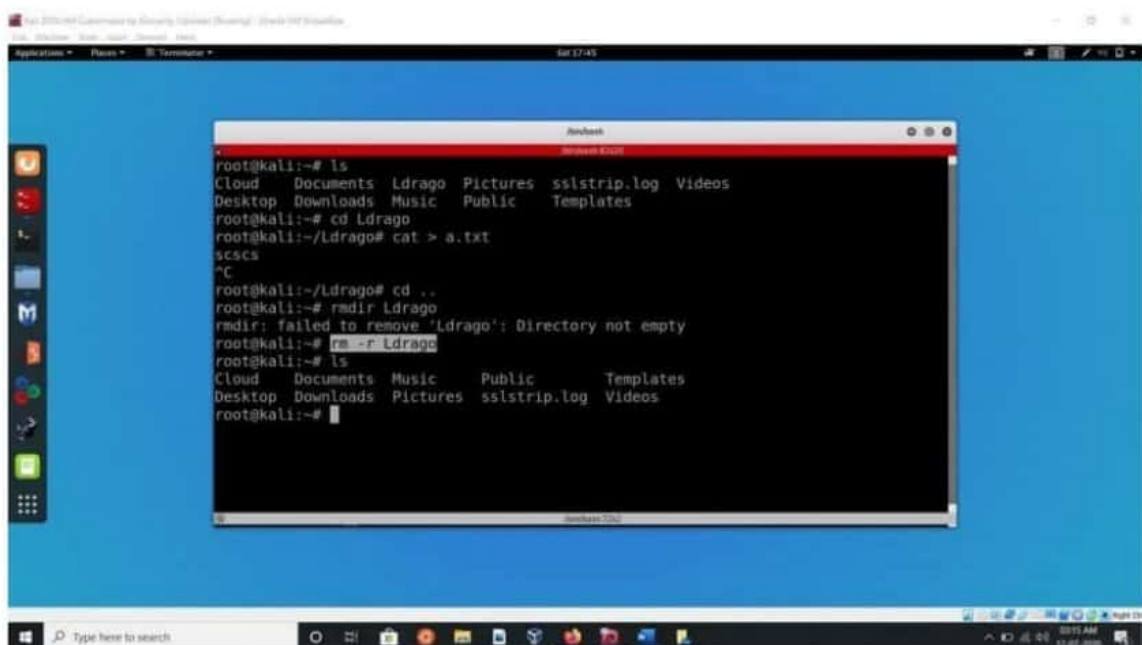
remove file starting with "a"?
rm Command.



```
root@kali:~# ls
abcde.txt  ab.txt  Desktop  Ldrago  Pictures  sslstrip.log  Videos
abcd.txt   a.txt   Documents Music    Public    Templates
abc.txt    Cloud  Downloads one      second    third
root@kali:~# rm a*
root@kali:~# ls
Cloud  Documents  Ldrago  one      Public  sslstrip.log  third
Desktop Downloads  Music   Pictures second  Templates    Videos
root@kali:~#
```

H.

How to remove non empty directory? By
Using **rm -r** Command.



```
root@kali:~# ls
Cloud  Documents  Ldrago  Pictures  sslstrip.log  Videos
Desktop Downloads  Music   Public    Templates
root@kali:~# cd Ldrago
root@kali:~/Ldrago# cat > a.txt
scscs
"C
root@kali:~/Ldrago# cd ..
root@kali:~# rmdir Ldrago
rmdir: failed to remove 'Ldrago': Directory not empty
root@kali:~# rm -r Ldrago
root@kali:~# ls
Cloud  Documents  Music   Public    Templates
Desktop Downloads  Pictures  sslstrip.log  Videos
root@kali:~#
```