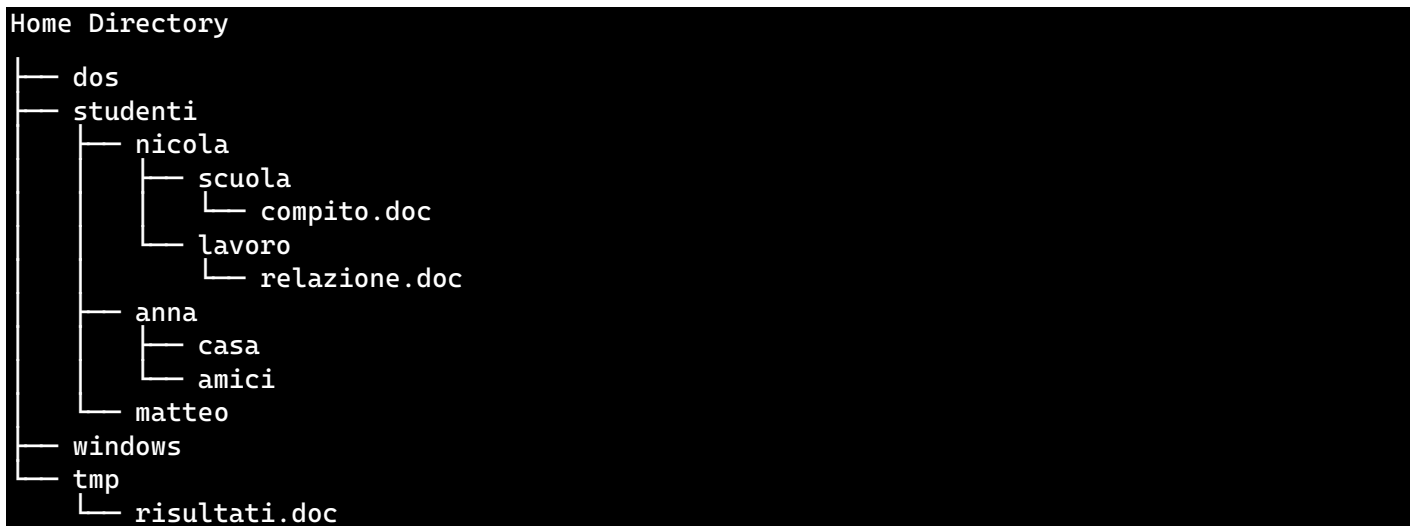


In this report the basic commands of the Kali Linux shell will be analysed.

## TASK

Create the following folders and subfolders starting from your HOME directory and display them on the screen:



#1 You are in the 'lavoro' directory (under 'nicola'). Write the command to move to the 'home' directory (under 'anna') using both the relative and absolute paths.

#2 Copy the file 'compito.doc' (from the 'scuola' directory) to the current directory ('casa').

#3 Move the file 'relazione.doc' to the current directory ('casa').

#4 Delete the folder 'tmp'.

#5 Create the file 'pippo.txt' in the 'lavoro' directory.

#6 Change the permissions of the file 'pippo.txt' to make it readable and writable only for the owner, but readable for everyone else.

#7 Hide the contents of the 'anna' folder.

#8 Move to the 'lavoro' directory and display the contents of the file 'pippo.txt'.

#9 Remove the 'amici' folder.

#10 Remove all the folders created previously.

# EXECUTION

## Folders and files Creation

Using **mkdir** to create folders

Using **touch** to create files

**ls** to check the correct file/folder creation inside the folder

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

(kali@kali)-[~]
$ mkdir studenti

(kali@kali)-[~]
$ mkdir windows

(kali@kali)-[~]
$ mkdir tmp

(kali@kali)-[~]
$

(kali@kali)-[~/studenti]
$ cd studenti

(kali@kali)-[~/studenti]
$ mkdir nicola

(kali@kali)-[~/studenti]
$ mkdir anna

(kali@kali)-[~/studenti]
$ mkdir matteo

(kali@kali)-[~/studenti]
$

(kali@kali)-[~/tmp]
$ cd /home/kali/tmp

(kali@kali)-[~/tmp]
$ touch risultati.doc

(kali@kali)-[~/tmp]
$ ls
risultati.doc

(kali@kali)-[~/tmp]
$

(kali@kali)-[~/studenti/nicola]
$ cd /home/kali/studenti/nicola

(kali@kali)-[~/studenti/nicola]
$ mkdir scuola lavoro

(kali@kali)-[~/studenti/nicola]
$ ls
lavoro scuola

(kali@kali)-[~/studenti/nicola]
$

(kali@kali)-[~/studenti/nicola/scuola]
$ cd scuola

(kali@kali)-[~/studenti/nicola/scuola]
$ touch relazione.doc

(kali@kali)-[~/studenti/nicola/scuola]
$ touch compito.doc

(kali@kali)-[~/studenti/nicola/scuola]
$ ls
compito.doc relazione.doc

(kali@kali)-[~/studenti/nicola/scuola]
$

(kali@kali)-[~/studenti/anna]
$ cd /home/kali/studenti/anna

(kali@kali)-[~/studenti/anna]
$ mkdir casa

(kali@kali)-[~/studenti/anna]
$ mkdir /home/kali/studenti/matteo/amici

(kali@kali)-[~/studenti/anna]
$ ls
casa

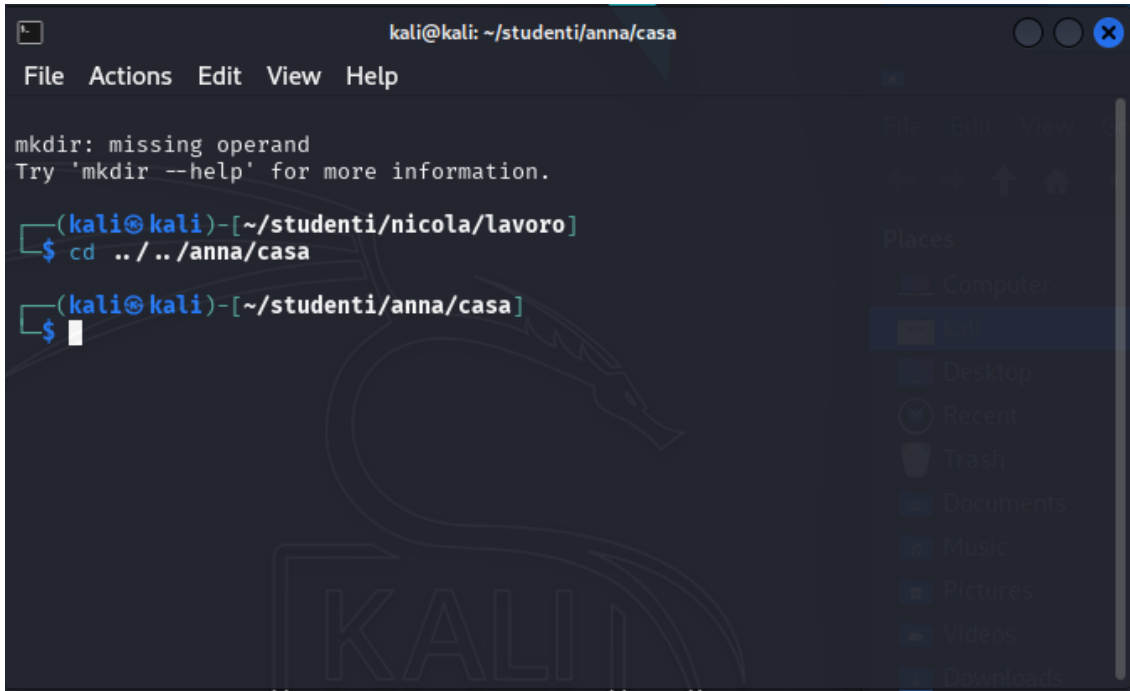
(kali@kali)-[~/studenti/anna]
$ cd /home/kali/studenti/matteo

(kali@kali)-[~/studenti/matteo]
$ ls
amici
```

## #1

You are in the 'lavoro' directory (under 'nicola'). Write the command to move to the 'home' directory (under 'anna') using both the relative and absolute paths.

Relative path

A terminal window titled 'kali@kali: ~/studenti/anna/casa' with a menu bar (File, Actions, Edit, View, Help). The terminal shows a sequence of commands: first, an error 'mkdir: missing operand' followed by 'Try \'mkdir --help\' for more information.'; then, the user enters '(kali@kali)-[~/studenti/nicola/lavoro]' and '\$ cd ../../anna/casa'; finally, the prompt changes to '(kali@kali)-[~/studenti/anna/casa]' and the user enters '\$'. A file manager sidebar on the right shows 'Places' with 'Home' selected.

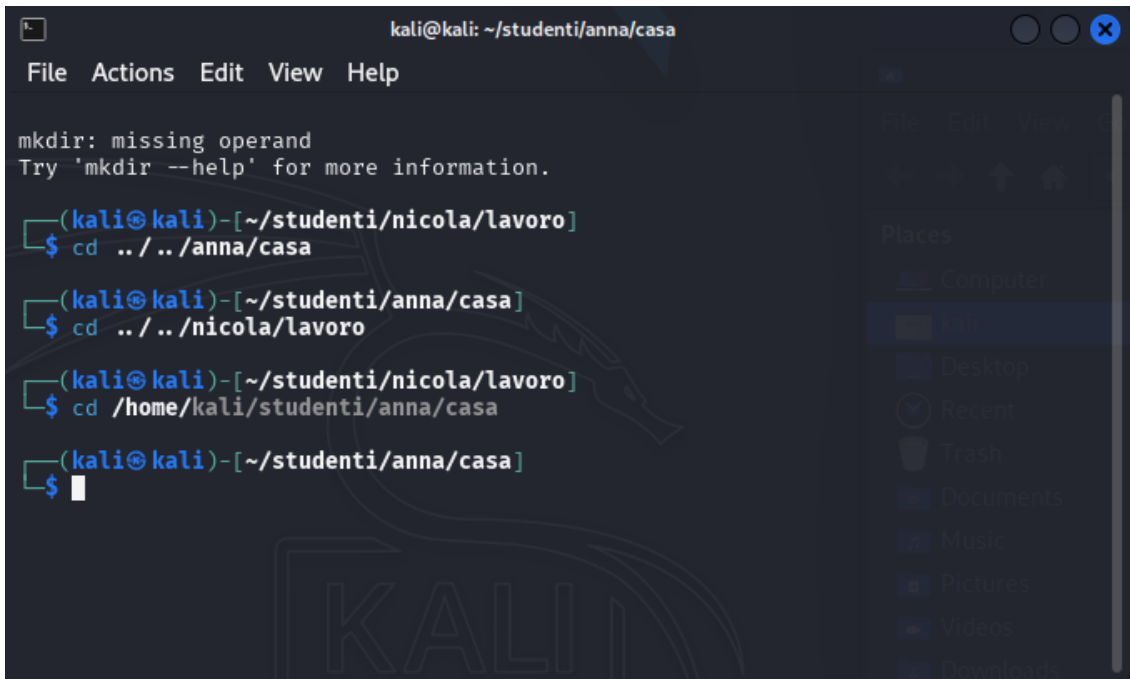
```
kali@kali: ~/studenti/anna/casa
File Actions Edit View Help

mkdir: missing operand
Try 'mkdir --help' for more information.

(kali@kali)-[~/studenti/nicola/lavoro]
$ cd ../../anna/casa

(kali@kali)-[~/studenti/anna/casa]
$
```

Absolute path

A terminal window titled 'kali@kali: ~/studenti/anna/casa' with a menu bar (File, Actions, Edit, View, Help). The terminal shows a sequence of commands: first, an error 'mkdir: missing operand' followed by 'Try \'mkdir --help\' for more information.'; then, the user enters '(kali@kali)-[~/studenti/nicola/lavoro]' and '\$ cd ../../anna/casa'; then, the prompt changes to '(kali@kali)-[~/studenti/anna/casa]' and the user enters '\$ cd ../../nicola/lavoro'; then, the prompt changes to '(kali@kali)-[~/studenti/nicola/lavoro]' and the user enters '\$ cd /home/kali/studenti/anna/casa'; finally, the prompt changes to '(kali@kali)-[~/studenti/anna/casa]' and the user enters '\$'. A file manager sidebar on the right shows 'Places' with 'Home' selected.

```
kali@kali: ~/studenti/anna/casa
File Actions Edit View Help

mkdir: missing operand
Try 'mkdir --help' for more information.

(kali@kali)-[~/studenti/nicola/lavoro]
$ cd ../../anna/casa

(kali@kali)-[~/studenti/anna/casa]
$ cd ../../nicola/lavoro

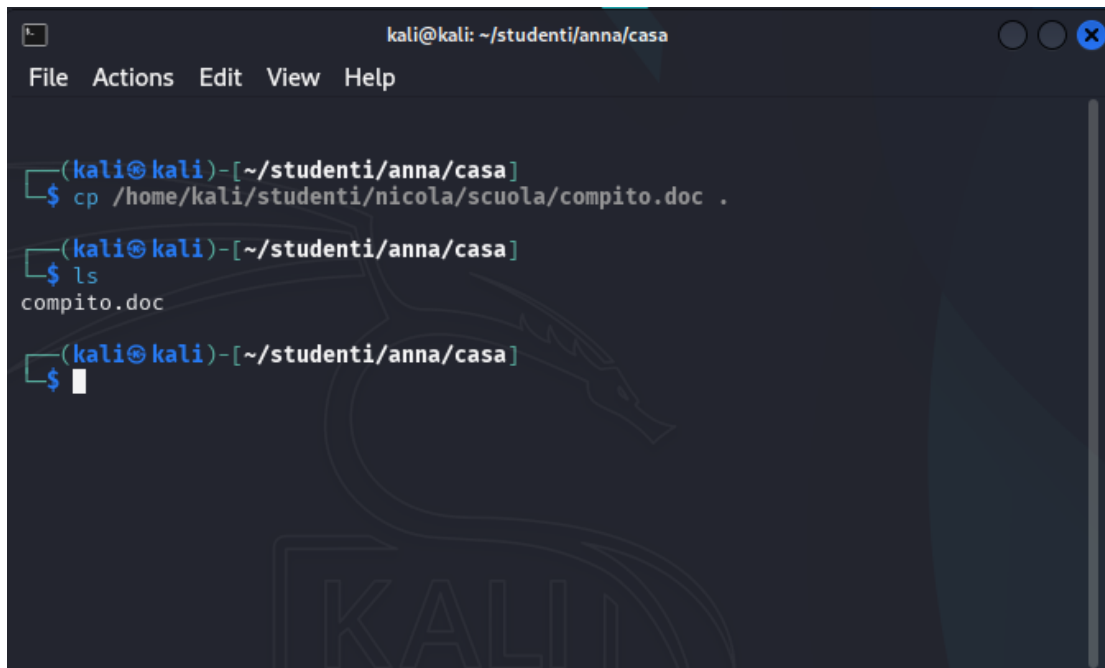
(kali@kali)-[~/studenti/nicola/lavoro]
$ cd /home/kali/studenti/anna/casa

(kali@kali)-[~/studenti/anna/casa]
$
```

../ This commando is used to return to the parent folder

## #2

Copy the file 'compito.doc' (from the 'scuola' directory) to the current directory ('casa').

A terminal window titled 'kali@kali: ~/studenti/anna/casa' with a menu bar (File, Actions, Edit, View, Help). The terminal shows three commands: 1. `(kali@kali)-[~/studenti/anna/casa]`  
`$ cp /home/kali/studenti/nicola/scuola/compito.doc .` 2. `(kali@kali)-[~/studenti/anna/casa]`  
`$ ls` followed by the output `compito.doc` 3. `(kali@kali)-[~/studenti/anna/casa]`  
`$` with a cursor. A faint Kali Linux dragon logo is visible in the background.

```
kali@kali: ~/studenti/anna/casa
File Actions Edit View Help

(kali@kali)-[~/studenti/anna/casa]
$ cp /home/kali/studenti/nicola/scuola/compito.doc .

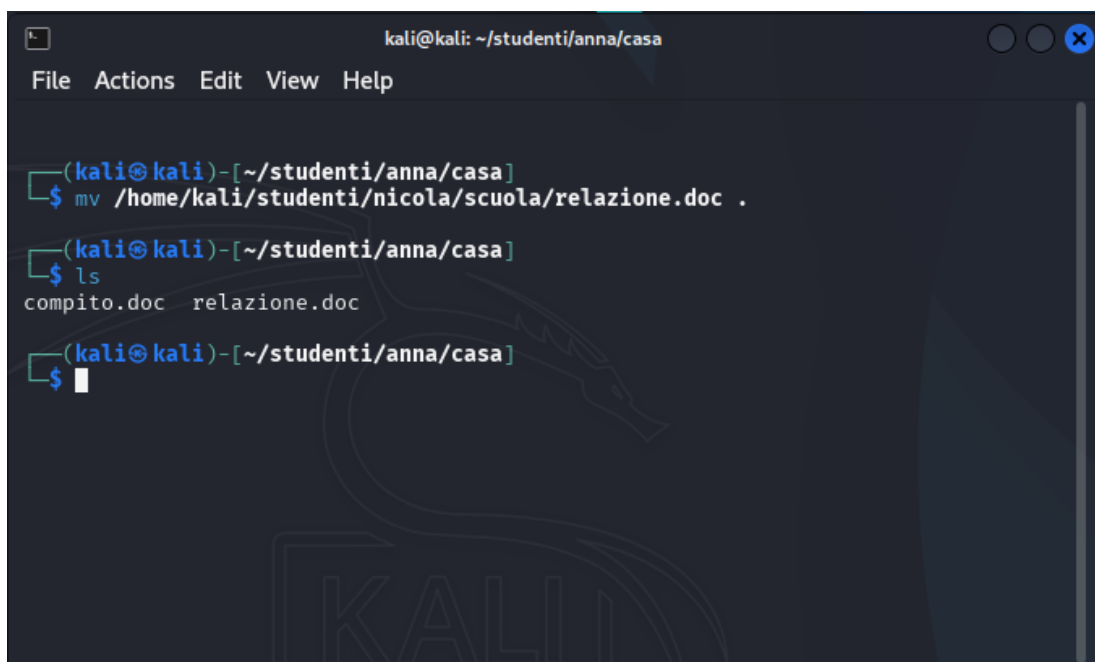
(kali@kali)-[~/studenti/anna/casa]
$ ls
compito.doc

(kali@kali)-[~/studenti/anna/casa]
$
```

To copy a file into the folder you are in, use the `cp` command, indicating the source path of the file.

## #3

Move the file 'relazione.doc' to the current directory ('casa').

A terminal window titled 'kali@kali: ~/studenti/anna/casa' with a menu bar (File, Actions, Edit, View, Help). The terminal shows three commands: 1. `(kali@kali)-[~/studenti/anna/casa]`  
`$ mv /home/kali/studenti/nicola/scuola/relazione.doc .` 2. `(kali@kali)-[~/studenti/anna/casa]`  
`$ ls` followed by the output `compito.doc relazione.doc` 3. `(kali@kali)-[~/studenti/anna/casa]`  
`$` with a cursor. A faint Kali Linux dragon logo is visible in the background.

```
kali@kali: ~/studenti/anna/casa
File Actions Edit View Help

(kali@kali)-[~/studenti/anna/casa]
$ mv /home/kali/studenti/nicola/scuola/relazione.doc .

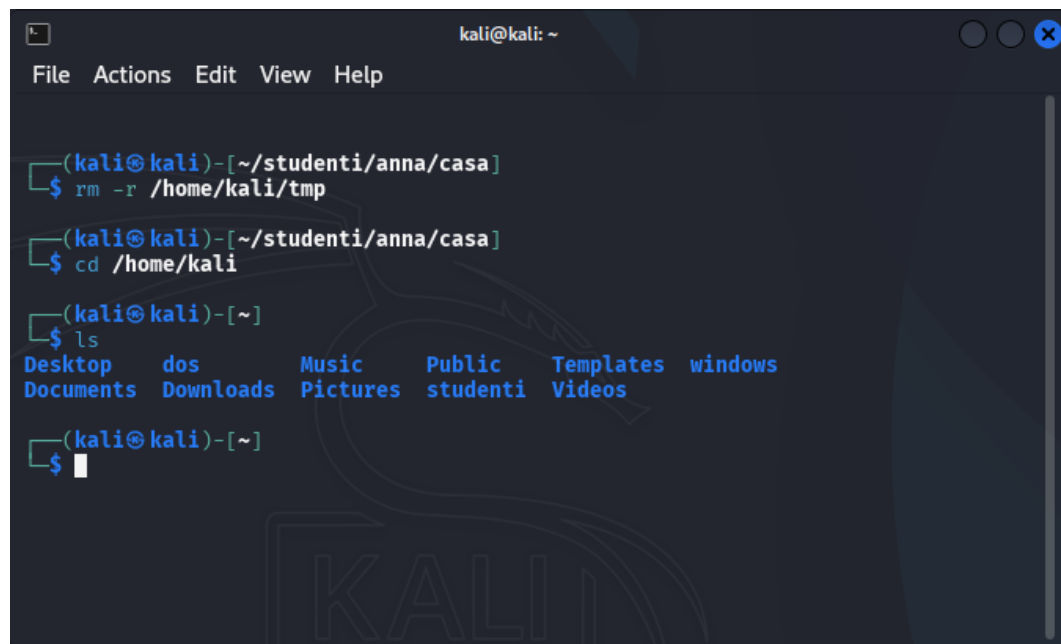
(kali@kali)-[~/studenti/anna/casa]
$ ls
compito.doc relazione.doc

(kali@kali)-[~/studenti/anna/casa]
$
```

To move a file into the folder you are in, use the `mv` command, indicating the source path of the file.

## #4

Delete the folder 'tmp'.

A terminal window titled 'kali@kali: ~' with a menu bar (File, Actions, Edit, View, Help). The prompt is '(kali@kali)-[~/studenti/anna/casa]'. The user enters '\$ rm -r /home/kali/tmp'. The prompt changes to '(kali@kali)-[~/studenti/anna/casa]'. The user enters '\$ cd /home/kali'. The prompt changes to '(kali@kali)-[~]'. The user enters '\$ ls'. The output shows a directory listing: Desktop, Documents, dos, Downloads, Music, Pictures, Public, studenti, Templates, Videos, windows. The prompt returns to '(kali@kali)-[~]' with a new '\$' prompt line below it.

```
(kali@kali)-[~/studenti/anna/casa]
$ rm -r /home/kali/tmp

(kali@kali)-[~/studenti/anna/casa]
$ cd /home/kali

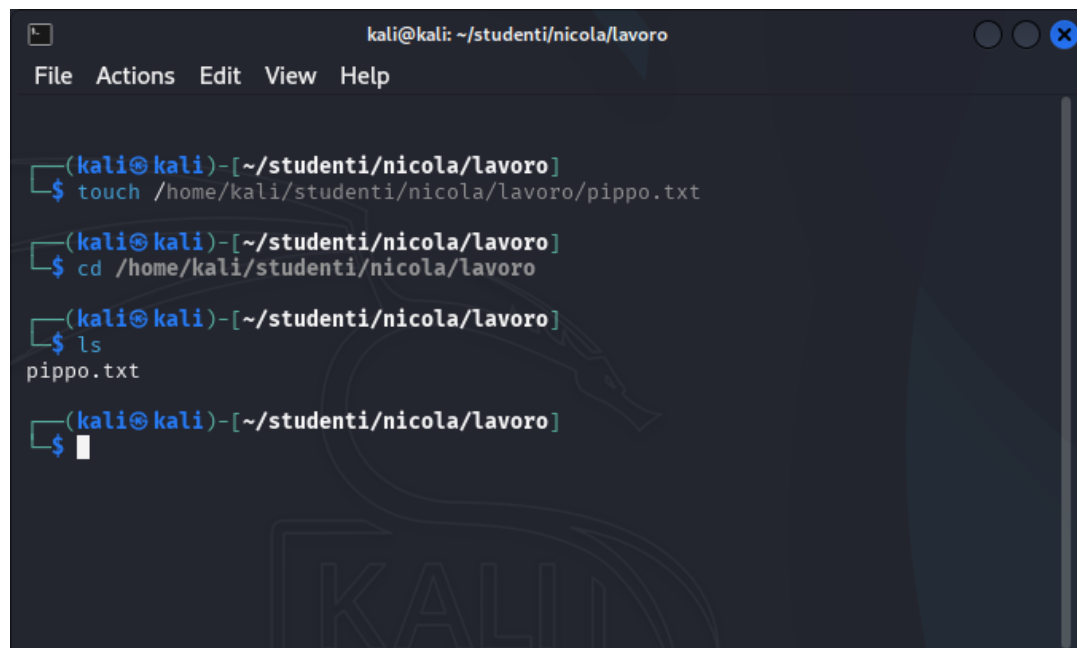
(kali@kali)-[~]
$ ls
Desktop  dos      Music    Public   Templates windows
Documents Downloads Pictures  studenti Videos

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

'rm -r' is used to remove a file/directory, the adding of the '-r' allows the command to delete also everything is inside the folder.

## #5

Create the file 'pippo.txt' in the 'lavoro' directory.

A terminal window titled 'kali@kali: ~/studenti/nicola/lavoro' with a menu bar (File, Actions, Edit, View, Help). The prompt is '(kali@kali)-[~/studenti/nicola/lavoro]'. The user enters '\$ touch /home/kali/studenti/nicola/lavoro/pippo.txt'. The prompt changes to '(kali@kali)-[~/studenti/nicola/lavoro]'. The user enters '\$ cd /home/kali/studenti/nicola/lavoro'. The prompt changes to '(kali@kali)-[~/studenti/nicola/lavoro]'. The user enters '\$ ls'. The output shows 'pippo.txt'. The prompt returns to '(kali@kali)-[~/studenti/nicola/lavoro]' with a new '\$' prompt line below it.

```
(kali@kali)-[~/studenti/nicola/lavoro]
$ touch /home/kali/studenti/nicola/lavoro/pippo.txt

(kali@kali)-[~/studenti/nicola/lavoro]
$ cd /home/kali/studenti/nicola/lavoro

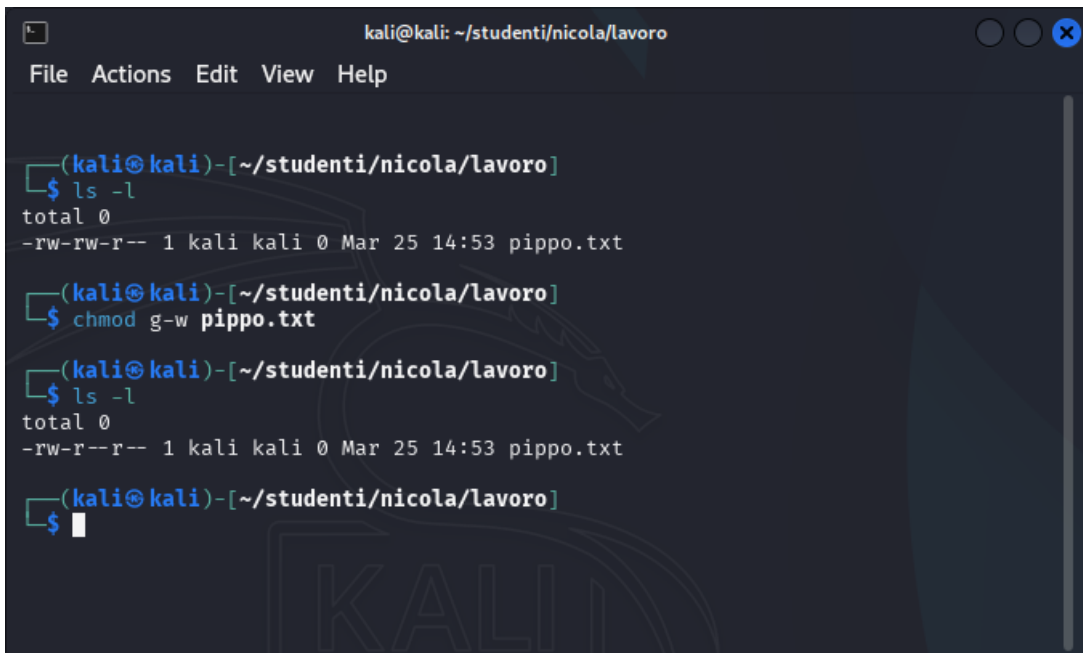
(kali@kali)-[~/studenti/nicola/lavoro]
$ ls
pippo.txt

(kali@kali)-[~/studenti/nicola/lavoro]
$
```

Using **touch** to create the file.

## #6

Change the permissions of the file 'pippo.txt' to make it readable and writable only for the owner, but readable for everyone else.

A terminal window titled 'kali@kali: ~/studenti/nicola/lavoro' with a menu bar (File, Actions, Edit, View, Help). The terminal shows the following commands and output:

```
(kali@kali)-[~/studenti/nicola/lavoro]
$ ls -l
total 0
-rw-rw-r-- 1 kali kali 0 Mar 25 14:53 pippo.txt

(kali@kali)-[~/studenti/nicola/lavoro]
$ chmod g-w pippo.txt

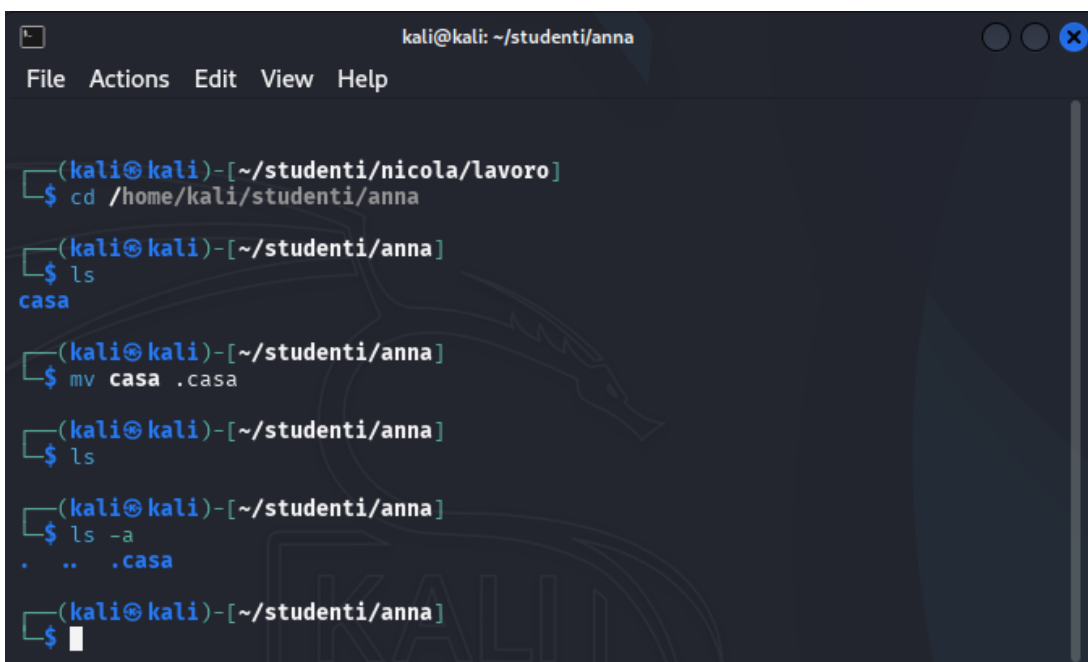
(kali@kali)-[~/studenti/nicola/lavoro]
$ ls -l
total 0
-rw-r--r-- 1 kali kali 0 Mar 25 14:53 pippo.txt

(kali@kali)-[~/studenti/nicola/lavoro]
$
```

The `ls -l` command allows you to show the active permissions of files in the folder. The command `chmod` allows you to change the permission of the selected file.

## #7

Hide the contents of the 'anna' folder.

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

```
(kali@kali)-[~/studenti/nicola/lavoro]
$ cd /home/kali/studenti/anna

(kali@kali)-[~/studenti/anna]
$ ls
casa

(kali@kali)-[~/studenti/anna]
$ mv casa .casa

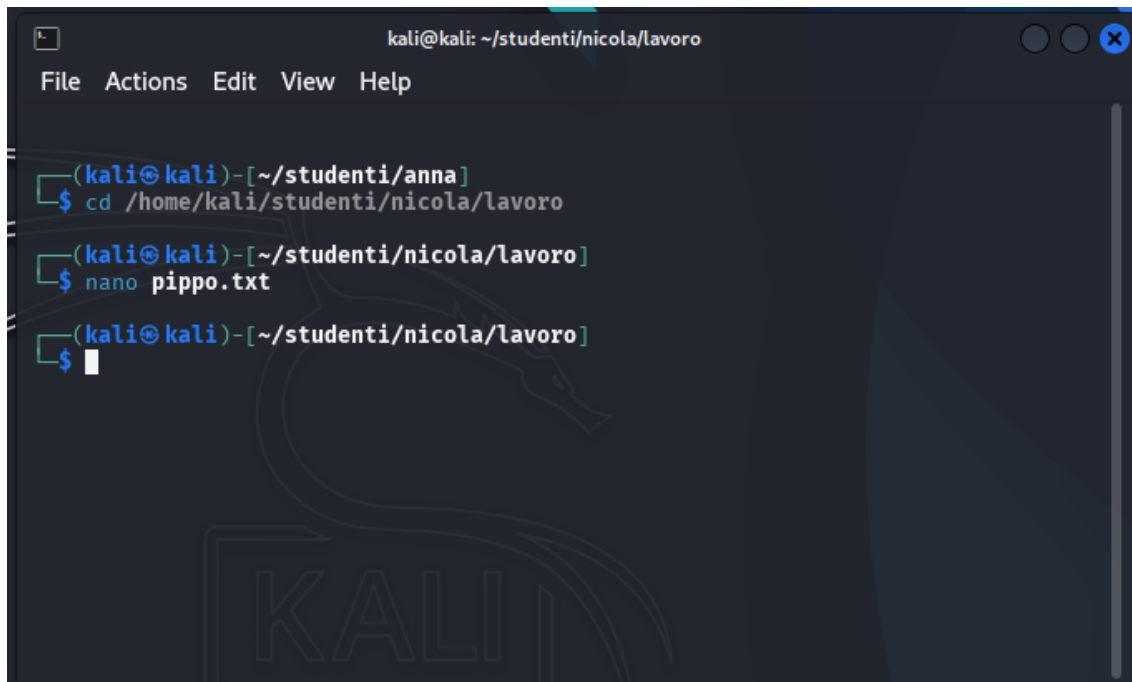
(kali@kali)-[~/studenti/anna]
$ ls
. . .casa

(kali@kali)-[~/studenti/anna]
$
```

To hide a folder, we can use the `mv` command by moving the folder and adding a *dot* before its name.

## #8

Move to the 'lavoro' directory and display the contents of the file 'pippo.txt'.

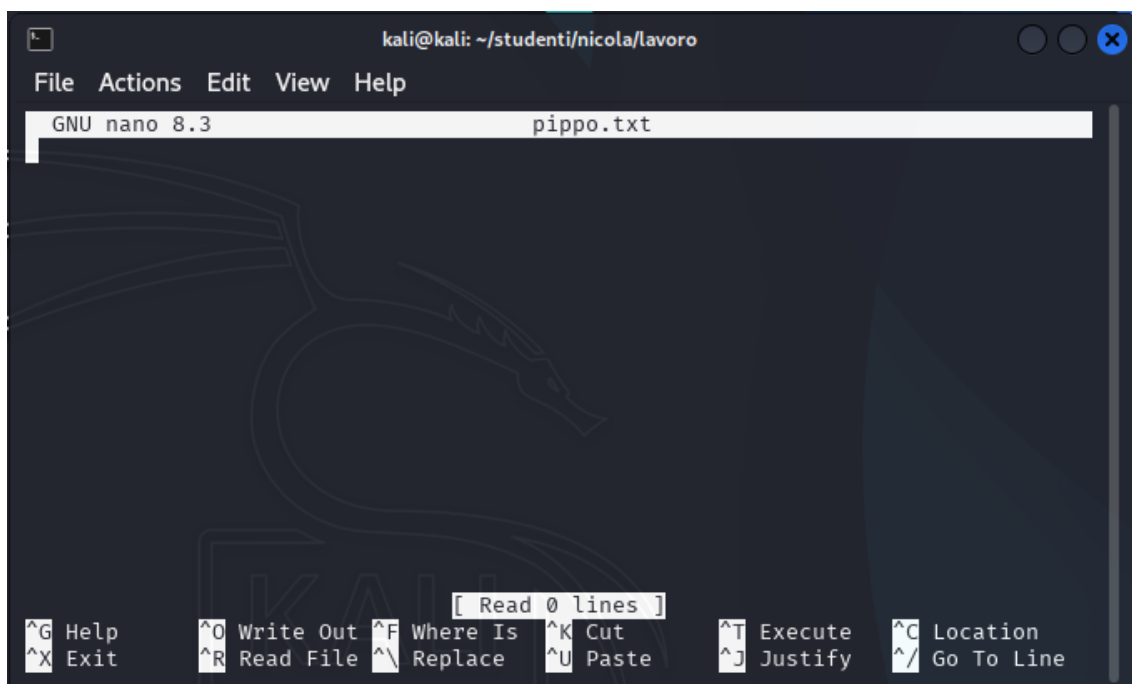


A terminal window titled 'kali@kali: ~/studenti/nicola/lavoro' with a menu bar (File, Actions, Edit, View, Help). The terminal shows the following commands and output:

```
(kali@kali)-[~/studenti/anna]
$ cd /home/kali/studenti/nicola/lavoro
(kali@kali)-[~/studenti/nicola/lavoro]
$ nano pippo.txt
(kali@kali)-[~/studenti/nicola/lavoro]
$
```

The background features a faint Kali Linux dragon logo.

To open a .txt file we can use the text editor **nano**.



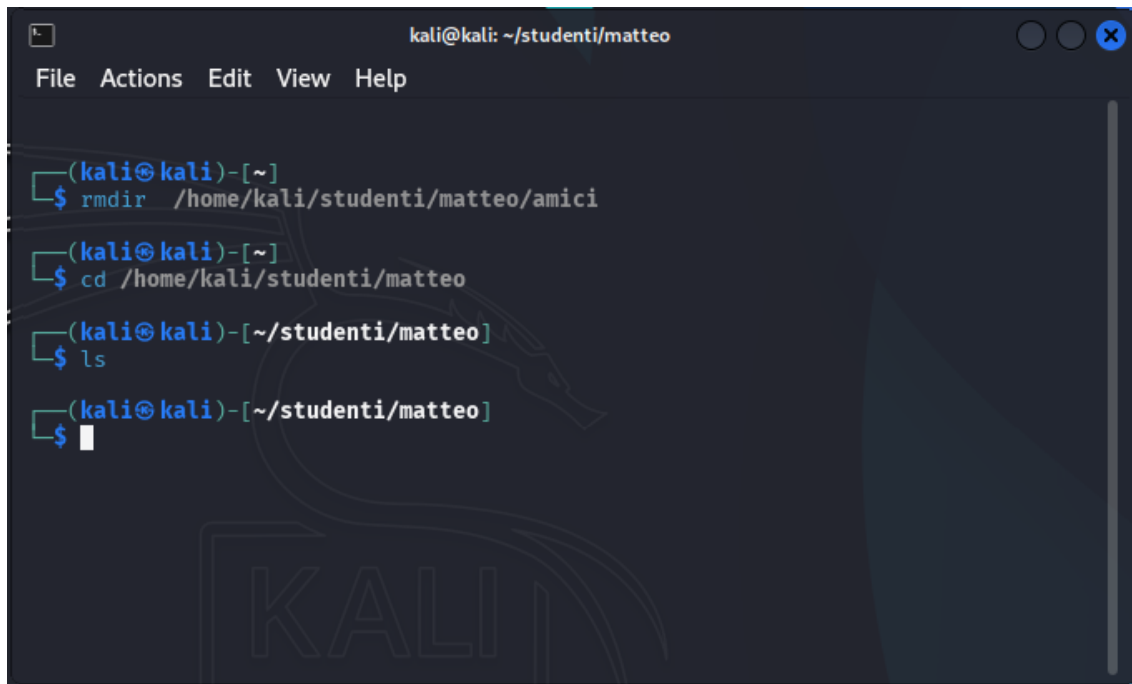
The same terminal window now shows the nano text editor interface for 'pippo.txt'. The title bar reads 'GNU nano 8.3 pippo.txt'. The editor area is empty. At the bottom, a status bar shows '[ Read 0 lines ]' and a list of keyboard shortcuts:

<b>^G</b> Help	<b>^O</b> Write Out	<b>^F</b> Where Is	<b>^K</b> Cut	<b>^T</b> Execute	<b>^C</b> Location
<b>^X</b> Exit	<b>^R</b> Read File	<b>^N</b> Replace	<b>^U</b> Paste	<b>^J</b> Justify	<b>^_</b> Go To Line

The background features a faint Kali Linux dragon logo.

## #9

Remove the 'amici' folder.

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

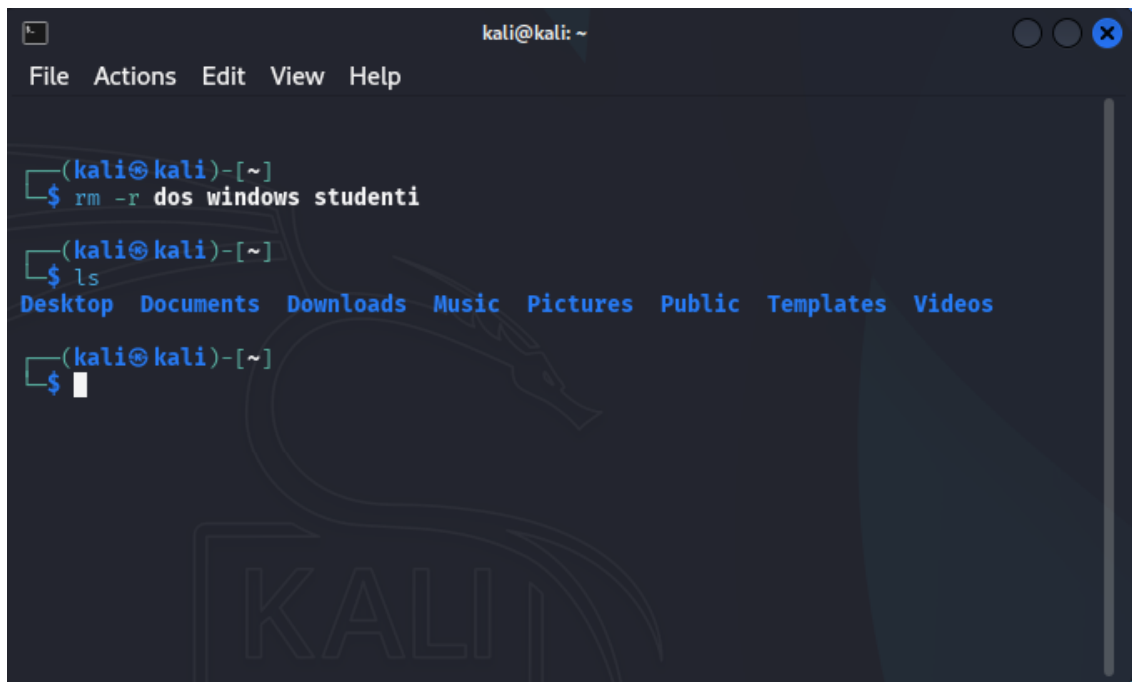
```
(kali@kali)-[~]  
$ rmdir /home/kali/studenti/matteo/amici  
  
(kali@kali)-[~]  
$ cd /home/kali/studenti/matteo  
  
(kali@kali)-[~/studenti/matteo]  
$ ls  
  
(kali@kali)-[~/studenti/matteo]  
$
```

The background features a faint Kali Linux dragon logo and the word 'KALI'.

The command `rmdir` is used to delete a directory

## #10

Remove all the folders created previously.

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

```
(kali@kali)-[~]  
$ rm -r dos windows studenti  
  
(kali@kali)-[~]  
$ ls  
Desktop Documents Downloads Music Pictures Public Templates Videos  
  
(kali@kali)-[~]  
$
```

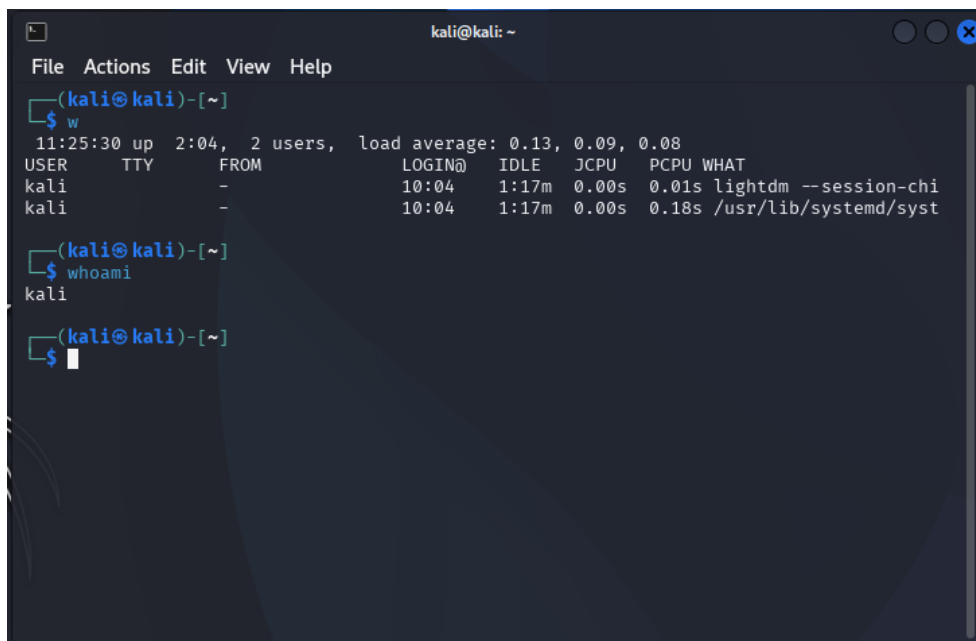
The background features a faint Kali Linux dragon logo and the word 'KALI'.



# OPTIONAL EXERCISES

---

#1 Try the command: `w`, `who`, `whoami`.



```
kali@kali: ~  
File Actions Edit View Help  
(kali@kali)-[~]  
$ w  
11:25:30 up 2:04, 2 users, load average: 0.13, 0.09, 0.08  
USER      TTY      FROM          LOGIN@   IDLE   JCPU   PCPU WHAT  
kali      -        -             10:04    1:17m  0.00s  0.01s lightdm --session-chi  
kali      -        -             10:04    1:17m  0.00s  0.18s /usr/lib/systemd/syst  
  
(kali@kali)-[~]  
$ whoami  
kali  
  
(kali@kali)-[~]  
$
```

**w**: It shows users who are logged into the system and what they are doing, including downtime and active processes.

**whoami**: Indicates the name of the user currently logged in, useful for verifying one's identity in the system.

The **who** command does not work because it is based on the `/var/run/utmp` file, which may be missing, empty, or not configured on the system. Alternatively, the **w** command can be used, as it does not depend only on `utmp` and provides more detailed information about the logged-in users and their activities.

## #2

### #2.1 Read the manual of the command: `jobs`, `ps` and `kill`

To read the `ps` manual, type: `ps --help all`

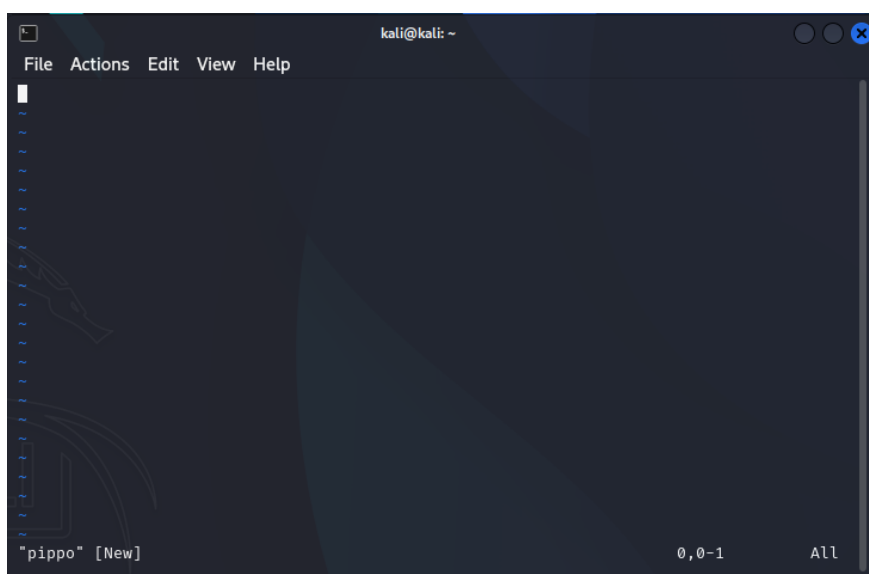
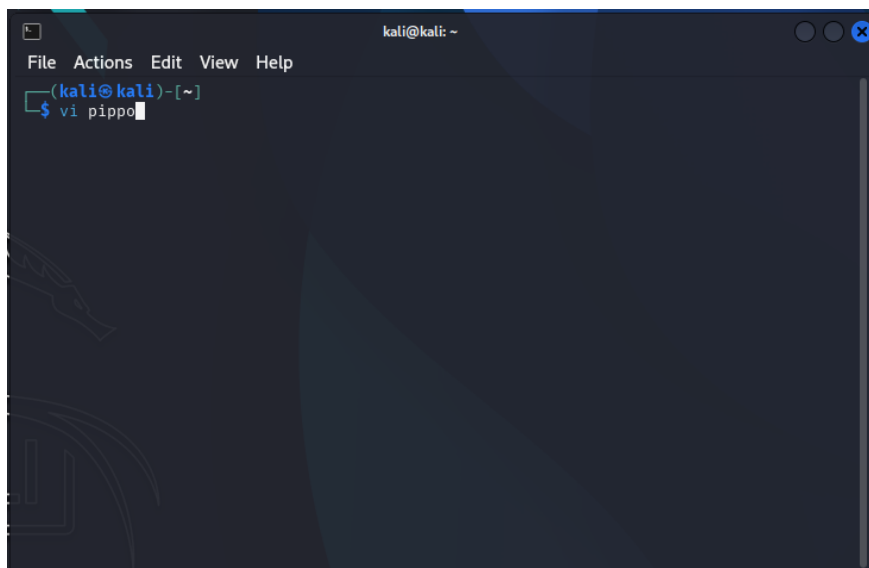
```
kali@kali: ~  
File Actions Edit View Help  
ps --help all  
  
Usage:  
ps [options]  
  
Basic options:  
-A, -e          all processes  
-a             all with tty, except session leaders  
-a             all with tty, including other users  
-d             all except session leaders  
-N, --deselect  negate selection  
r             only running processes  
T             all processes on this terminal  
x             processes without controlling ttys  
  
Selection by list:  
-C <command>    command name  
-G, --Group <GID> real group id or name  
-g, --group <group> session or effective group name  
-p, p, --pid <PID> process id  
      --ppid <PID> parent process id  
-q, q, --quick-pid <PID> process id (quick mode)  
-s, --sid <session> session id  
-t, t, --tty <tty> terminal
```

The manuals of `jobs` and `kill` are in the `bash` manual, that you can find typing: `bash man`

```
kali@kali: ~  
File Actions Edit View Help  
is supplied as an argument to -d, or the history expansion supplied as an argument to -p fails.  
  
jobs [-lnprs] [ jobspec ... ]  
jobs -x command [ args ... ]  
The first form lists the active jobs. The options have the following meanings:  
-l List process IDs in addition to the normal information.  
-n Display information only about jobs that have changed status since the user was last notified of their status.  
-p List only the process ID of the job's process group leader.  
-r Display only running jobs.  
-s Display only stopped jobs.  
  
If jobspec is given, output is restricted to information about that job. The return status is 0 unless an invalid option is encountered or an invalid jobspec is supplied.  
  
If the -x option is supplied, jobs replaces any jobspec found in command or args with the corresponding process group ID, and executes command passing it args, returning its exit status.  
  
kill [-s sigspec | -n signum | -sigspec] [pid | jobspec] ...  
Manual page bash(1) line 5183/6591 79% (press h for help or q to quit)
```

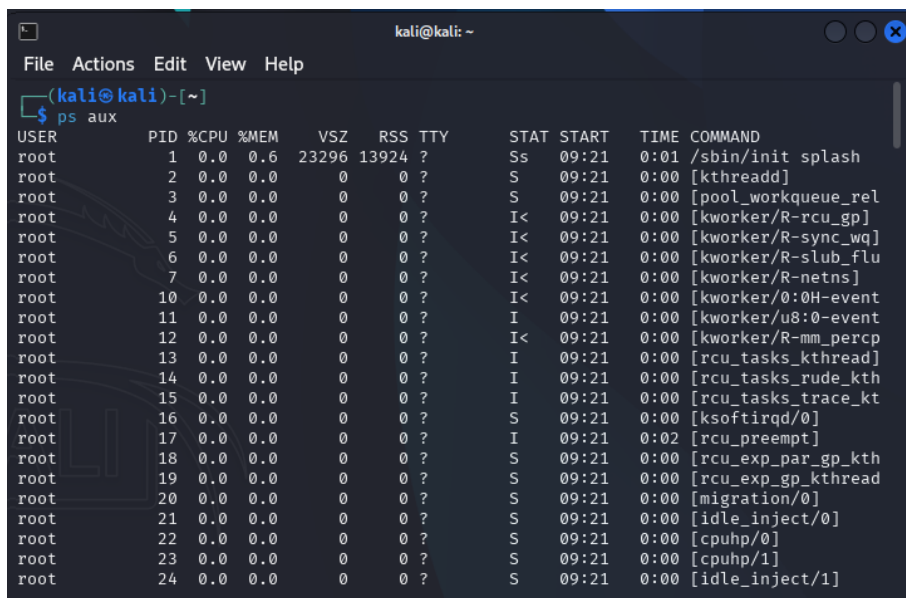
```
kali@kali: ~  
File Actions Edit View Help  
cutes command passing it args, returning its exit status.  
  
kill [-s sigspec | -n signum | -sigspec] [pid | jobspec] ...  
kill -l|-L [sigspec | exit status]  
Send the signal named by sigspec or signum to the processes named by pid or jobspec. sigspec is either a case-insensitive signal name such as SIGKILL (with or without the SIG prefix) or a signal number; signum is a signal number. If sigspec is not present, then SIGTERM is assumed. An argument of -l lists the signal names. If any arguments are supplied when -l is given, the names of the signals corresponding to the arguments are listed, and the return status is 0. The exit status argument to -l is a number specifying either a signal number or the exit status of a process terminated by a signal. The -L option is equivalent to -l. kill returns true if at least one signal was successfully sent, or false if an error occurs or an invalid option is encountered.  
  
let arg [arg ...]  
Each arg is an arithmetic expression to be evaluated (see ARITHMETIC EVALUATION above). If the last arg evaluates to 0, let returns 1; 0 is returned otherwise.  
  
Manual page bash(1) line 5204/6591 80% (press h for help or q to quit)
```

## #2.2 Launch the `vi` `pippo` command



### #2.3 Open a new terminal and view all processes

To display all active processes, we use the `ps aux` command



```
kali@kali: ~  
File Actions Edit View Help  
kali 1671 0.0 0.9 406420 18992 ? Ssl 10:04 0:00 /usr/libexec/xdg-des  
root 40756 0.0 0.0 0 0 ? I< 11:25 0:00 [kworker/u9:0]  
root 54010 0.0 0.0 0 0 ? I 11:53 0:01 [kworker/0:2-events]  
kali 55861 0.0 3.0 576760 61056 ? Sl 11:56 0:00 /usr/bin/qterminal  
kali 55867 0.0 0.3 10264 6212 pts/0 Ss 11:56 0:00 /usr/bin/zsh  
root 56394 0.0 0.0 0 0 ? I 11:57 0:00 [kworker/1:1-events]  
kali 56409 0.0 3.1 576764 62768 ? Sl 11:57 0:00 /usr/bin/qterminal  
kali 56415 0.0 0.3 10264 6248 pts/1 Ss 11:57 0:00 /usr/bin/zsh  
kali 56474 0.0 0.5 16052 10580 pts/1 Sl+ 11:57 0:00 vi pippo  
kali 56742 0.4 16.3 2902504 331116 ? Sl 11:57 0:06 /usr/lib/firefox-esr  
kali 56796 0.0 2.1 214604 43788 ? Sl 11:57 0:00 /usr/lib/firefox-esr  
kali 56824 0.0 4.5 2422164 92312 ? Sl 11:57 0:00 /usr/lib/firefox-esr  
kali 56857 0.0 5.3 2431848 107800 ? Sl 11:57 0:00 /usr/lib/firefox-esr  
kali 56887 0.0 4.6 2423776 94024 ? Sl 11:57 0:00 /usr/lib/firefox-esr  
kali 56928 0.0 2.0 211812 40732 ? Sl 11:57 0:00 /usr/lib/firefox-esr  
kali 56937 0.0 3.6 2398232 73652 ? Sl 11:57 0:00 /usr/lib/firefox-esr  
kali 56939 0.0 3.6 2398232 73480 ? Sl 11:57 0:00 /usr/lib/firefox-esr  
kali 56977 0.0 3.6 2398232 73736 ? Sl 11:57 0:00 /usr/lib/firefox-esr  
root 64821 0.0 0.0 0 0 ? I 12:13 0:00 [kworker/0:0-ata_sff  
root 67366 0.0 0.0 0 0 ? I 12:19 0:00 [kworker/0:1-ata_sff  
kali 68868 0.1 0.3 307528 6176 ? Ssl 12:22 0:00 /usr/lib/x86_64-linu  
kali 69010 100 0.2 9484 4276 pts/0 R+ 12:22 0:00 ps aux  
  
(kali@kali)-[~]  
$
```

## #2.4 “kill” the previous process

Using the `kill` command, followed by its PID number showed in the previous processes list.

```
kali@kali: ~  
File Actions Edit View Help  
(kali@kali)-[~]  
$ kill 56474
```

Result of the ending process:

```
kali@kali: ~  
File Actions Edit View Help  
Vim: Caught deadly signal TERM  
Vim: Finished.  
  
zsh: terminated vi pippo  
  
(kali@kali)-[~]  
$
```

## #2.5 Running the *firefox* command in the background, using the command *&* after the process name

```
kali@kali: ~  
File Actions Edit View Help  
(kali@kali)-[~]  
$ firefox &  
[1] 82527  
(kali@kali)-[~]  
$
```

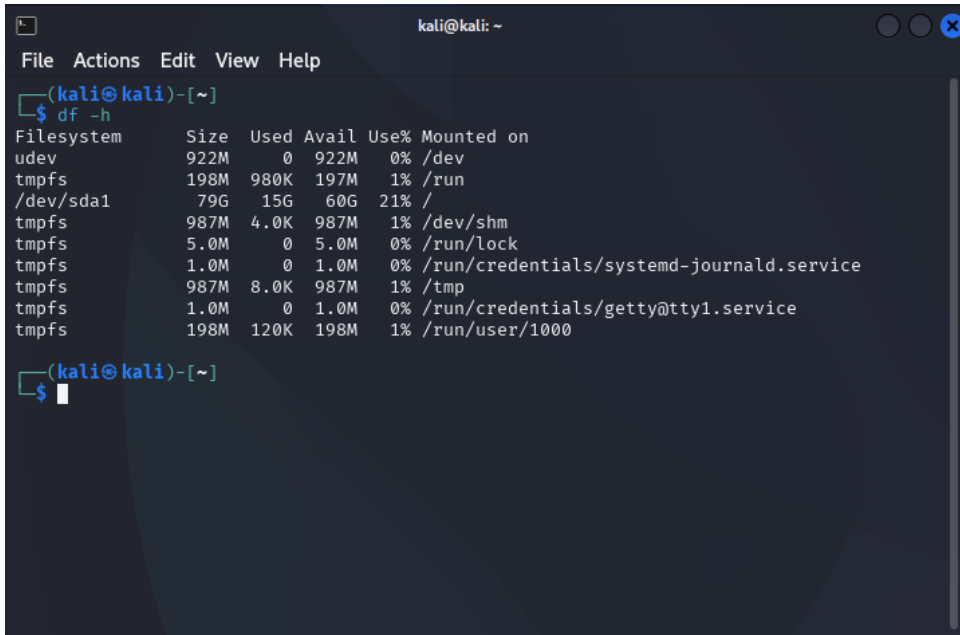
## #2.6 End the *firefox* process

Using *kill* again and the PID shown when the process was started.

```
kali@kali: ~  
File Actions Edit View Help  
(kali@kali)-[~]  
$ firefox &  
[1] 82527  
(kali@kali)-[~]  
$ kill 82527  
(kali@kali)-[~]  
$ Exiting due to channel error.  
Exiting due to channel error.  
Exiting due to channel error.  
Exiting due to channel error.  
Exiting due to channel error.  
[1] + terminated firefox  
(kali@kali)-[~]  
$
```

## #2.7 Check how much disk space is taking up

The `df -h` command will show the used and available space on all the disk partitions.



```
kali@kali: ~  
File Actions Edit View Help  
(kali@kali)~  
$ df -h  
Filesystem      Size  Used Avail Use% Mounted on  
udev            922M   0    922M   0% /dev  
tmpfs           198M  980K   197M   1% /run  
/dev/sda1       79G   15G   60G   21% /  
tmpfs           987M  4.0K   987M   1% /dev/shm  
tmpfs           5.0M   0    5.0M   0% /run/lock  
tmpfs           1.0M   0    1.0M   0% /run/credentials/systemd-journald.service  
tmpfs           987M  8.0K   987M   1% /tmp  
tmpfs           1.0M   0    1.0M   0% /run/credentials/getty@tty1.service  
tmpfs           198M  120K   198M   1% /run/user/1000  
  
(kali@kali)~  
$
```

The image shows a terminal window titled 'kali@kali: ~'. The window has a menu bar with 'File', 'Actions', 'Edit', 'View', and 'Help'. The prompt is '(kali@kali)~'. The user has entered the command 'df -h'. The output is a table showing disk space usage for various filesystems. The table has columns: Filesystem, Size, Used, Avail, Use%, and Mounted on. The rows are: udev (922M, 0, 922M, 0%, /dev), tmpfs (198M, 980K, 197M, 1%, /run), /dev/sda1 (79G, 15G, 60G, 21%, /), tmpfs (987M, 4.0K, 987M, 1%, /dev/shm), tmpfs (5.0M, 0, 5.0M, 0%, /run/lock), tmpfs (1.0M, 0, 1.0M, 0%, /run/credentials/systemd-journald.service), tmpfs (987M, 8.0K, 987M, 1%, /tmp), tmpfs (1.0M, 0, 1.0M, 0%, /run/credentials/getty@tty1.service), and tmpfs (198M, 120K, 198M, 1%, /run/user/1000). The prompt is now '(kali@kali)~' with a cursor.