

**NETWORKING AND SYSTEM ADMINISTRATION LAB  
RECORD**

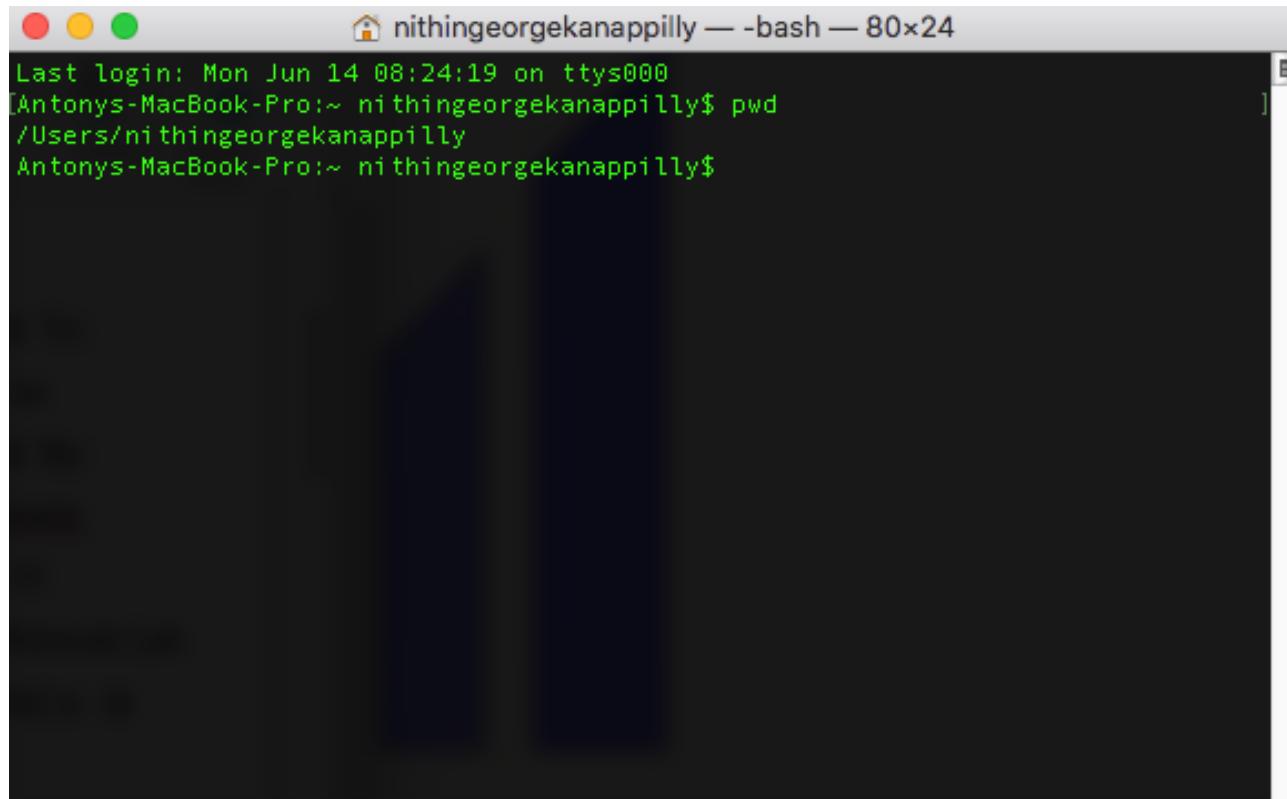
**ANTONY SCARIA  
MCA A SEM-II**

**ROLL NO -23**

## **BASIC LINUX COMMANDS**

### **1. pwd (Print Working Directory)**

Use the `pwd` command to find out the path of the current working directory (folder) you're in.

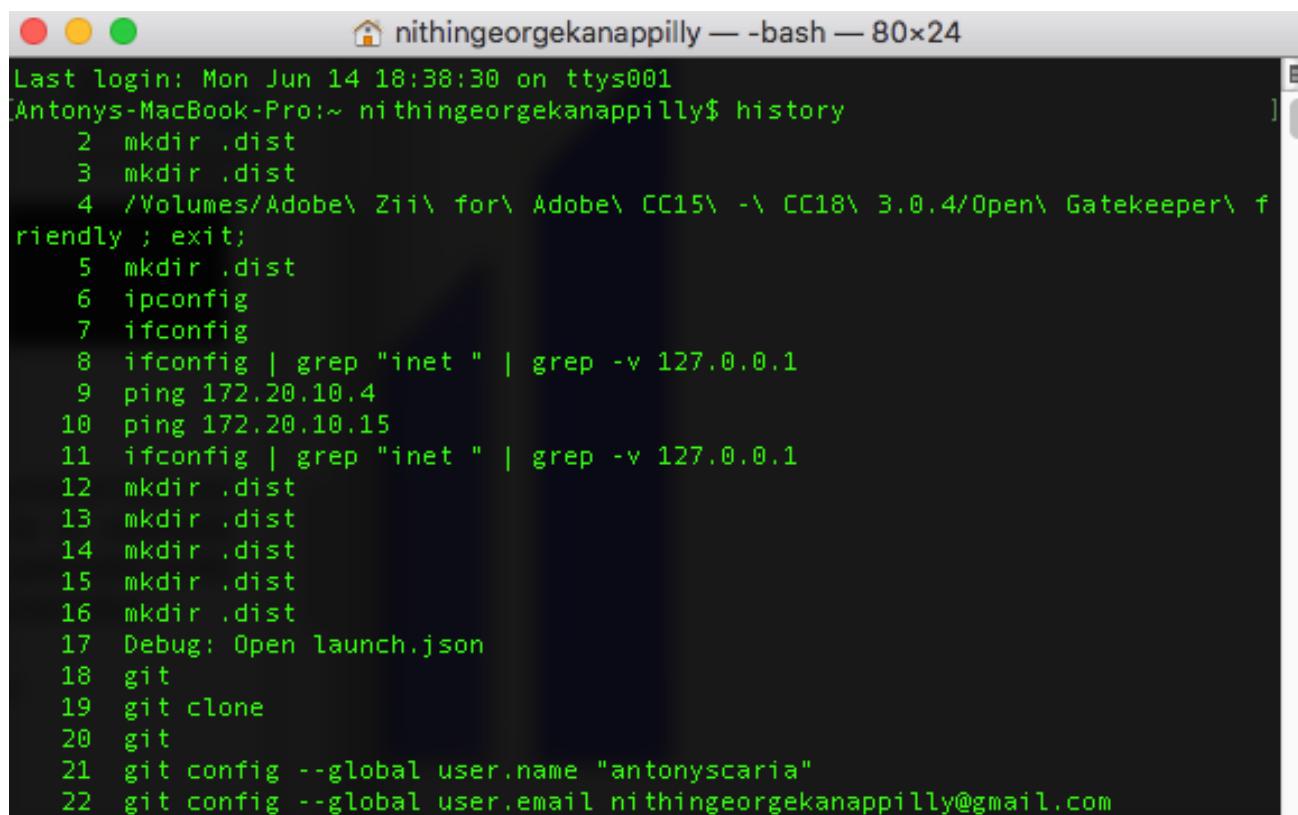


A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the following text:

```
Last login: Mon Jun 14 08:24:19 on ttys000
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ pwd
/Users/nithingeorgekanappilly
Antonys-MacBook-Pro:~ nithingeorgekanappilly$
```

## 2. history

- When you have been using Linux for a certain period of time, you will quickly notice that you can run hundreds of commands everyday. As such, running history command is particularly useful if you want to review the commands you have entered before.
- history
- !command number to run a command from history



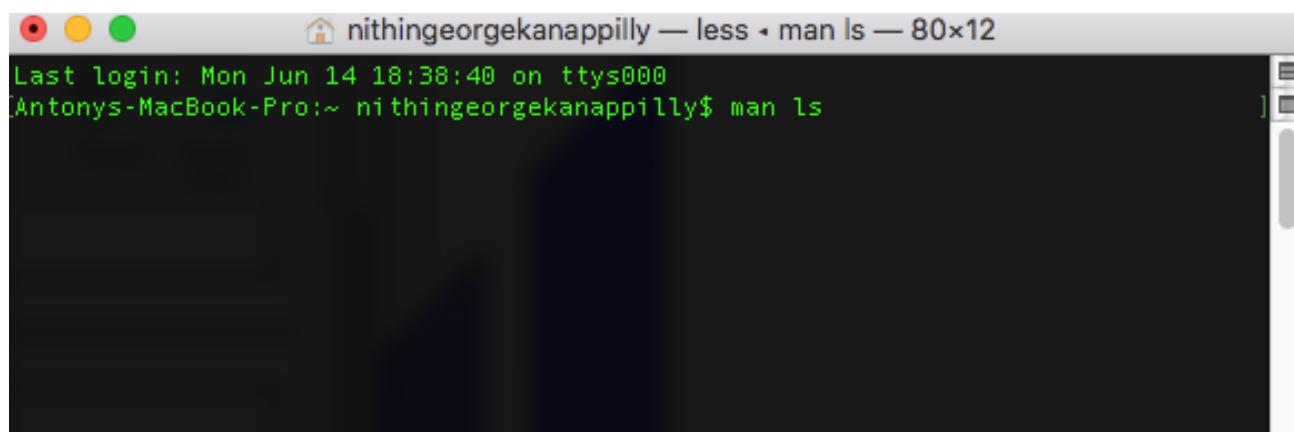
The screenshot shows a terminal window on a Mac OS X desktop. The title bar reads "nithingeorgekanappilly — bash — 80x24". The window contains the output of the "history" command, which lists 22 previous commands run by the user. The commands include directory creation ("mkdir .dist"), network configuration ("ipconfig", "ifconfig", "ping"), and Git operations ("git clone", "git config"). The terminal has a dark background with light green text.

```
Last login: Mon Jun 14 18:38:30 on ttys001
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ history
 2 mkdir .dist
 3 mkdir .dist
 4 /Volumes/Adobe\ Zii\ for\ Adobe\ CC15\ -\ CC18\ 3.0.4/Open\ Gatekeeper\ friendly ; exit;
 5 mkdir .dist
 6 ipconfig
 7 ifconfig
 8 ifconfig | grep "inet " | grep -v 127.0.0.1
 9 ping 172.20.10.4
10 ping 172.20.10.15
11 ifconfig | grep "inet " | grep -v 127.0.0.1
12 mkdir .dist
13 mkdir .dist
14 mkdir .dist
15 mkdir .dist
16 mkdir .dist
17 Debug: Open launch.json
18 git
19 git clone
20 git
21 git config --global user.name "antonyscarria"
22 git config --global user.email nithingeorgekanappilly@gmail.com
```

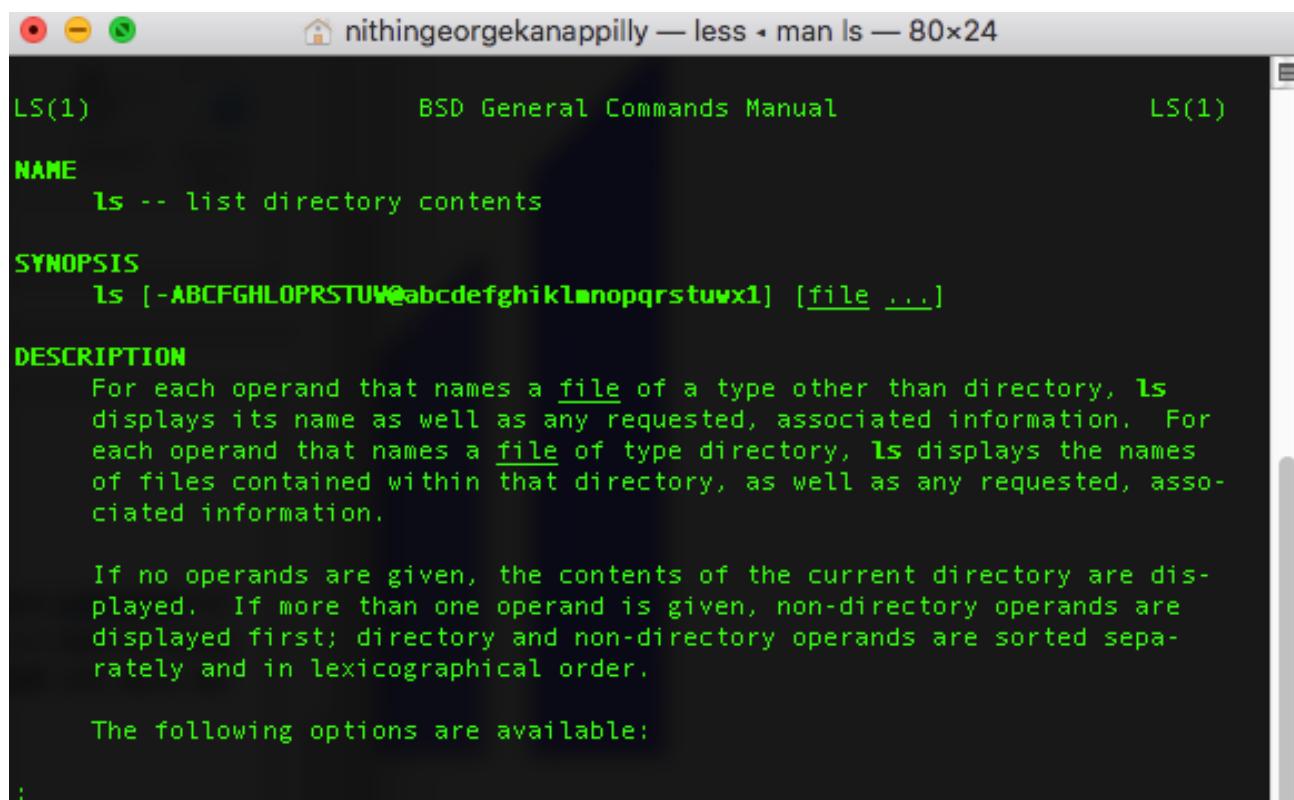
### 3. man

If we are confused about the function of certain Linux commands we can easily learn how to use them right from Linux's shell by using the **man** command. For instance, entering **man tail** will show the manual instruction of the **tail** command.

#### **man ls**



A screenshot of a Mac OS X terminal window titled "nithingeorgekanappilly — less - man ls — 80x12". The window shows the beginning of the man page for the "ls" command. The text includes the command history ("Last login: Mon Jun 14 18:38:40 on ttys000") and the command itself ("Antonys-MacBook-Pro:~ nithingeorgekanappilly\$ man ls"). The rest of the page is blank.



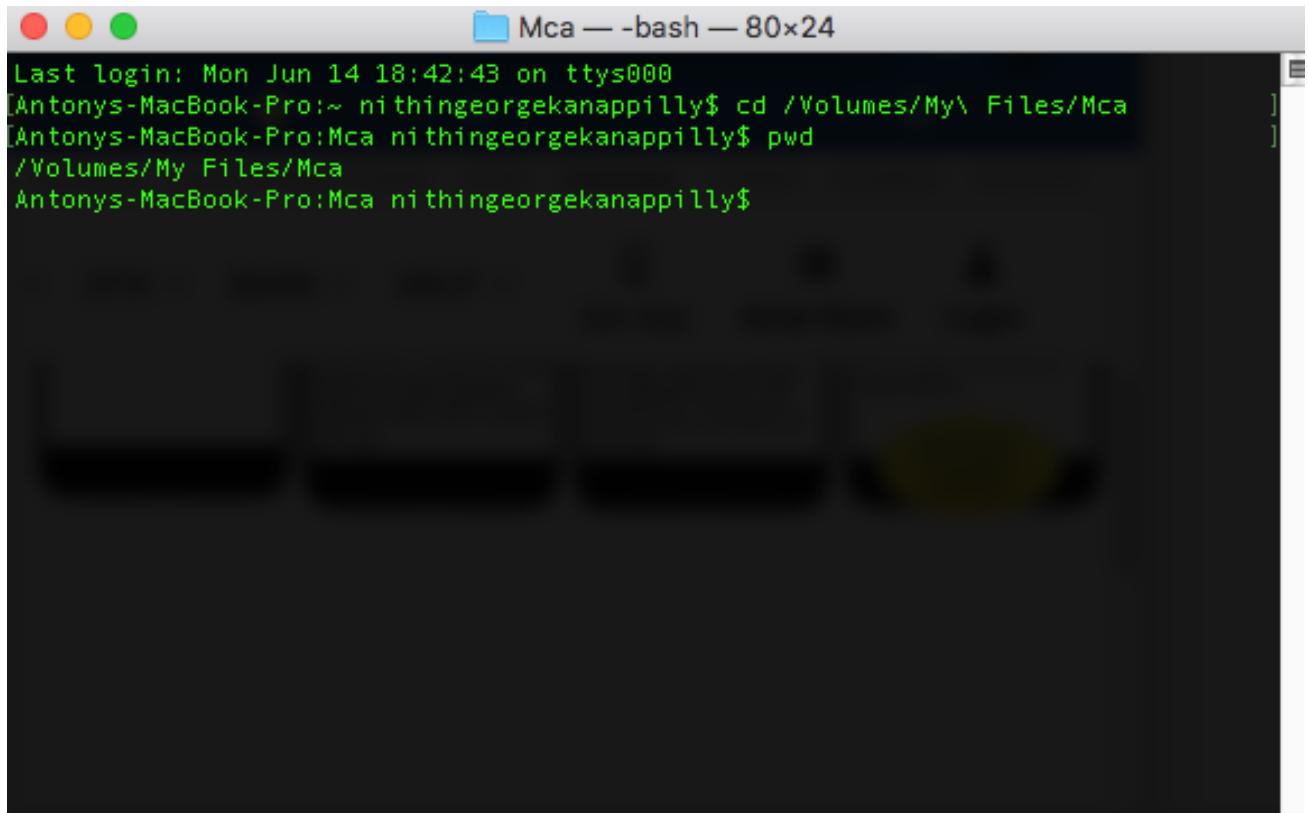
A screenshot of a Mac OS X terminal window titled "nithingeorgekanappilly — less - man ls — 80x24". The window displays the full man page for the "ls" command. The page is organized into sections: NAME, SYNOPSIS, DESCRIPTION, and OPTIONS. The NAME section defines "ls" as "list directory contents". The SYNOPSIS section shows the command syntax: "ls [-ABCFGHLOPRSTUW@abcdefghijklmnopqrstuvwxyz] [file ...]". The DESCRIPTION section explains that for non-directory operands, it lists files and their associated information, while for directory operands, it lists the files within those directories. It also notes that if no operands are given, the current directory is listed. The OPTIONS section lists several options: -A, -B, -C, -F, -G, -H, -L, -O, -P, -R, -S, -T, -U, -W, and @. The page ends with a prompt for more text.

## 4. cd

To navigate through the Linux files and directories, use the `cd`. It requires either the full path or the name of the directory, depending on the current working directory that you're in.

Shortcuts to help you navigate quickly:

- `cd ..` (with two dots) to move one directory up
- `cd` to go straight to the home folder
- `cd-` (with a hyphen) to move to your previous directory



The screenshot shows a terminal window on a Mac OS X desktop. The window title is "Mca — -bash — 80x24". The terminal content is as follows:

```
Last login: Mon Jun 14 18:42:43 on ttys000
[Antony's-MacBook-Pro:~ nithingeorgekanappilly$ cd /Volumes/My\ Files/Mca
[Antony's-MacBook-Pro:Mca nithingeorgekanappilly$ pwd
/Volumes/My Files/Mca
Antony's-MacBook-Pro:Mca nithingeorgekanappilly$
```

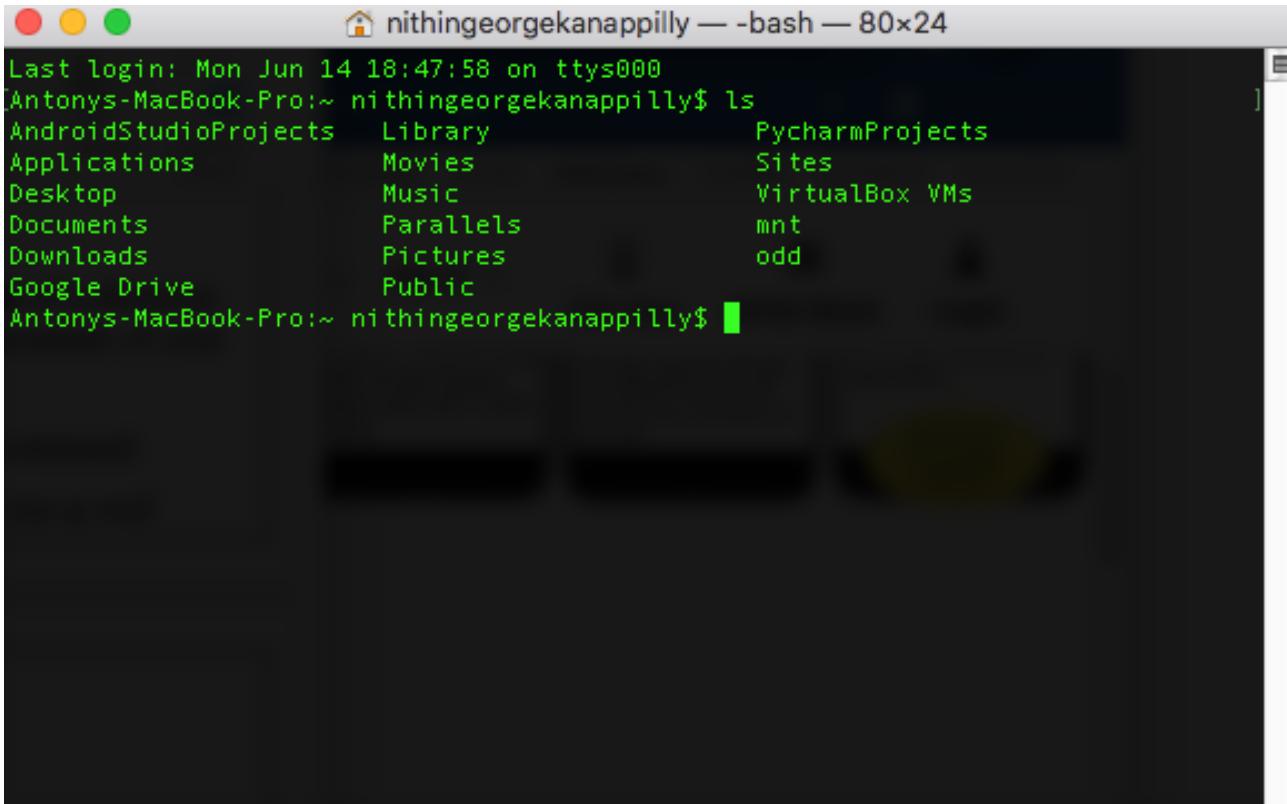
## 5. ls

The `ls` command is used to view the contents of a directory. By default, this command will display the contents of your current working directory.

There are variations you can use with the `ls` command:

- `ls -R` will list all the files in the sub-directories as well

- **ls -l** – long listing
- **ls -a** will show the hidden files
- **ls -al** will list the files and directories with detailed information like the permissions, size, owner, etc.
- **ls -t** lists files sorted in the order of “last modified”.
- **ls -r** option will reverse the natural sorting order. Usually used in combination with other switches such as ls -tr. This will reverse the time-wise listing.



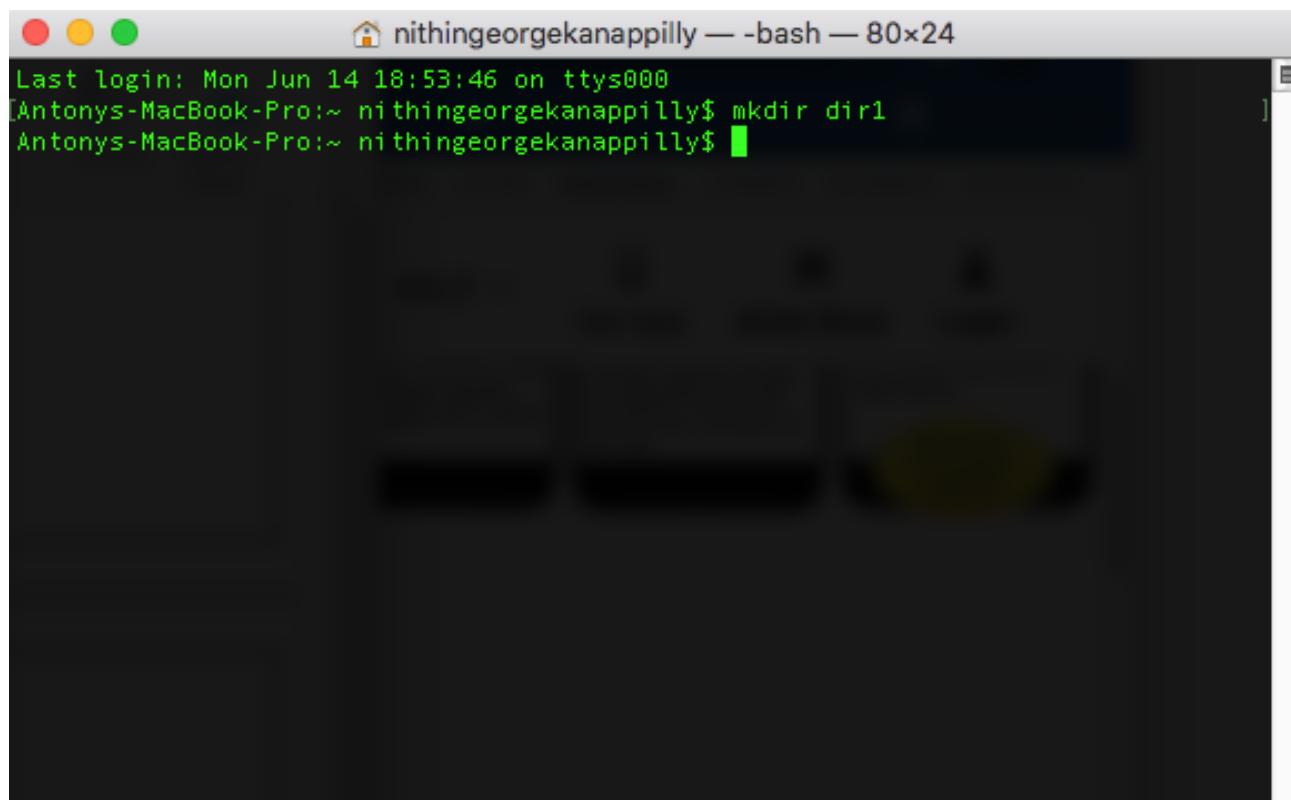
The screenshot shows a terminal window titled "nithingeorgekanappilly — bash — 80x24". The window has three colored window controls (red, yellow, green) in the top-left corner. The terminal content is as follows:

```
Last login: Mon Jun 14 18:47:58 on ttys000
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ ls
AndroidStudioProjects    Library                  PycharmProjects
Applications              Movies                   Sites
Desktop                   Music                   VirtualBox VMs
Documents                 Parallels                mnt
Downloads                 Pictures                odd
Google Drive               Public
```

## 6. mkdir

Use mkdir command to make a new directory .

To generate a new directory inside another directory, use this Linux basic command.



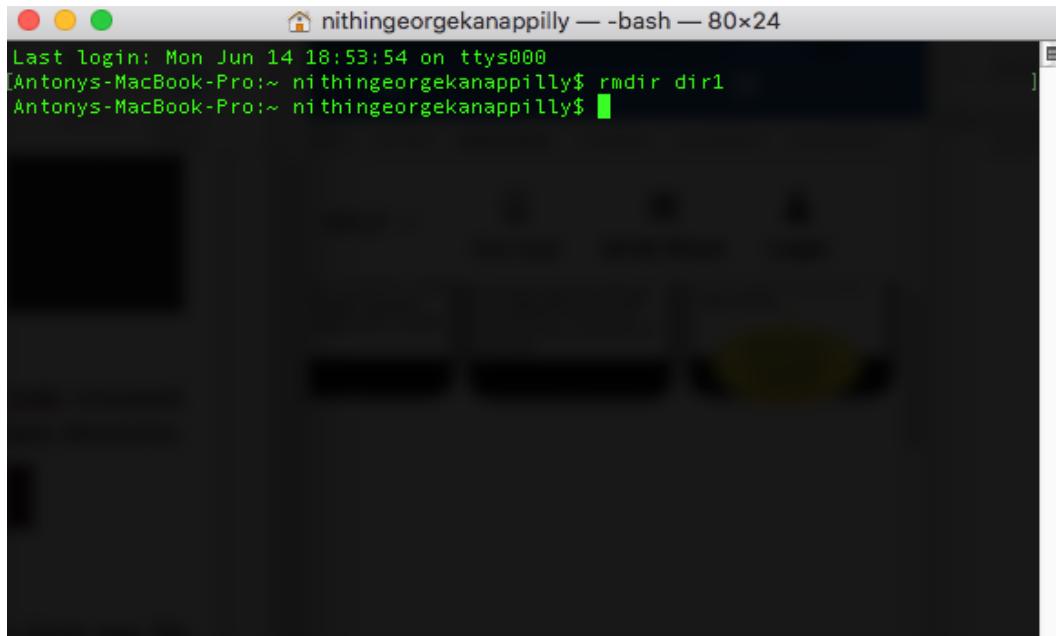
A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the following text:

```
Last login: Mon Jun 14 18:53:46 on ttys000
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ mkdir dir1
Antonys-MacBook-Pro:~ nithingeorgekanappilly$ ]
```

The terminal window has a dark background with light-colored text. The title bar includes the user's name, the terminal type, and the window size. The cursor is visible at the end of the command line.

## 7. rmdir

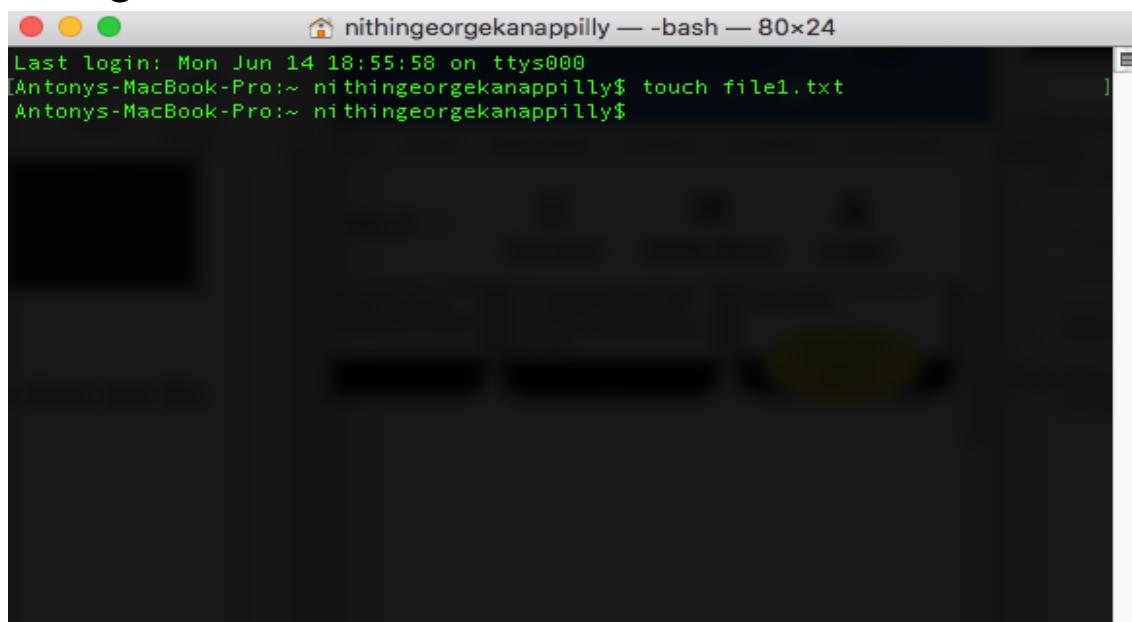
If you need to delete a directory, use the `rmdir` command. However, `rmdir` only allows you to delete empty directories.



A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the command line interface with the following text:  
Last login: Mon Jun 14 18:53:54 on ttys000  
[Antony's-MacBook-Pro:~ nithingeorgekanappilly\$ rmdir dir1  
Antony's-MacBook-Pro:~ nithingeorgekanappilly\$ ]

## 8. touch

The `touch` command allows you to create a blank new file through the Linux command line.



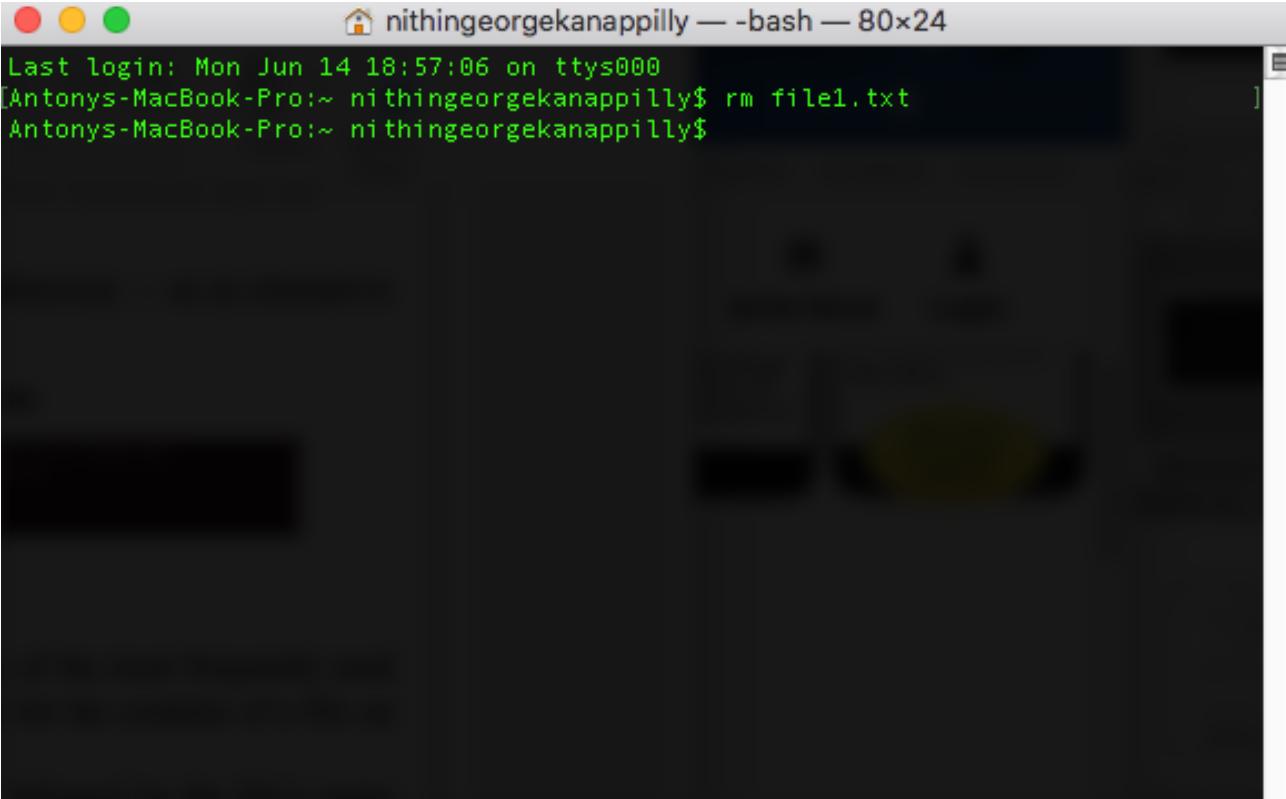
A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the command line interface with the following text:  
Last login: Mon Jun 14 18:55:58 on ttys000  
[Antony's-MacBook-Pro:~ nithingeorgekanappilly\$ touch file1.txt  
Antony's-MacBook-Pro:~ nithingeorgekanappilly\$ ]

## 9. rm

The rm command is used to delete directories and the contents within them.

If you only want to delete the directory — as an alternative to rmdir — use rm -r.

To remove a file use **rm filename**



A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the following text:

```
Last login: Mon Jun 14 18:57:06 on ttys000
[Antony's-MacBook-Pro:~ nithingeorgekanappilly$ rm file1.txt
Antony's-MacBook-Pro:~ nithingeorgekanappilly$ ]
```

## 10. cat

cat (short for concatenate) is one of the most frequently used commands in Linux. It is used to list the contents of a file on the standard output stdout .

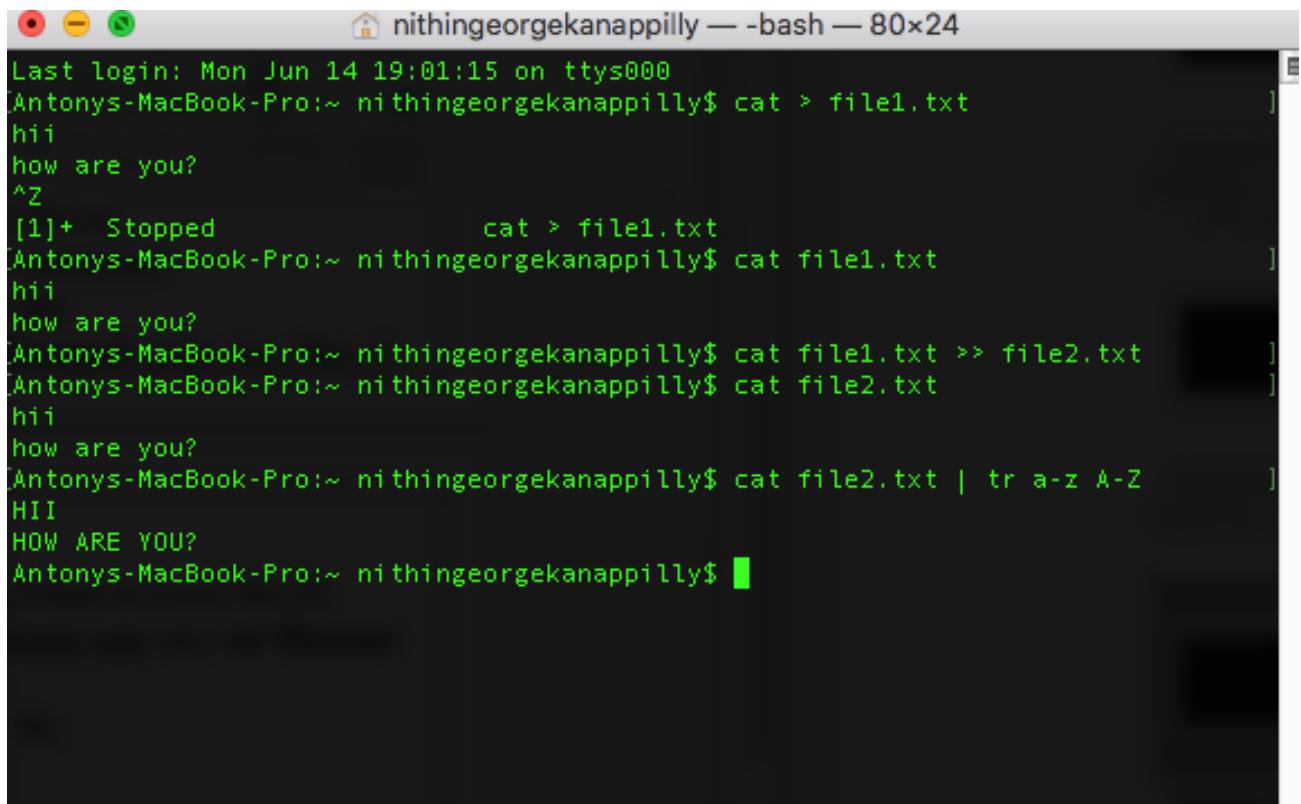
To run this command, type cat followed by the file's name and its extension. For instance: cat file.txt.

Here are other ways to use the cat command:

- **cat > filename** creates a new file
- **cat filename1 filename2>filename3** joins two files (1

and 2) and stores the output of them in a new file (3)

- to convert a file to upper or lower case use, **cat filename | tr a-z A-Z >output.txt**
- **cat >>myfile** insert data to a file



A terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the following command-line session:

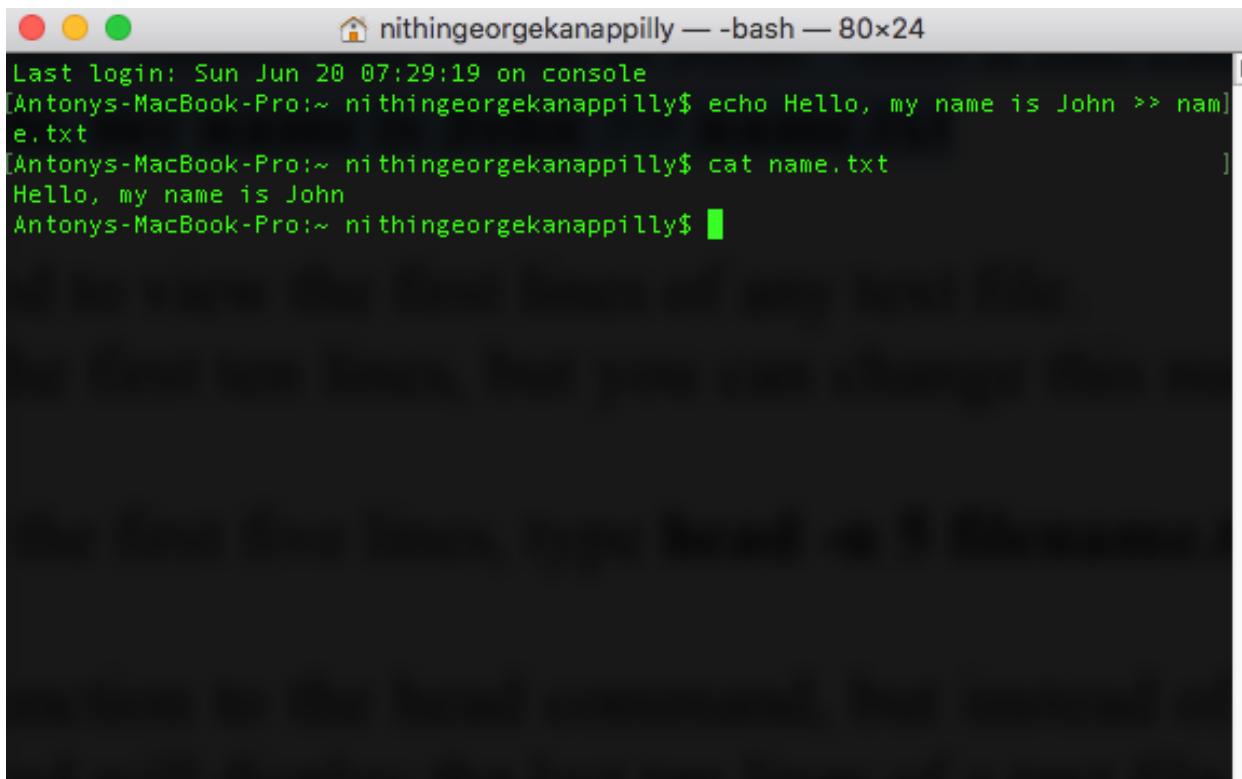
```
Last login: Mon Jun 14 19:01:15 on ttys000
[Antony's-MacBook-Pro:~ nithingeorgekanappilly$ cat > file1.txt
hi
how are you?
^Z
[1]+  Stopped                  cat > file1.txt
[Antony's-MacBook-Pro:~ nithingeorgekanappilly$ cat file1.txt
hi
how are you?
[Antony's-MacBook-Pro:~ nithingeorgekanappilly$ cat file1.txt >> file2.txt
[Antony's-MacBook-Pro:~ nithingeorgekanappilly$ cat file2.txt
hi
how are you?
[Antony's-MacBook-Pro:~ nithingeorgekanappilly$ cat file2.txt | tr a-z A-Z
HII
HOW ARE YOU?
Antony's-MacBook-Pro:~ nithingeorgekanappilly$ ]
```

## 1. echo

echo command is used to move some data into a file.

If you want to add the text, “Hello, my name is John” into a file called name.txt,

you would type **echo Hello, my name is John >> name.txt**



The screenshot shows a terminal window titled "nithingeorgekanappilly — bash — 80x24". The window has three colored window control buttons (red, yellow, green) at the top left. The terminal output is as follows:

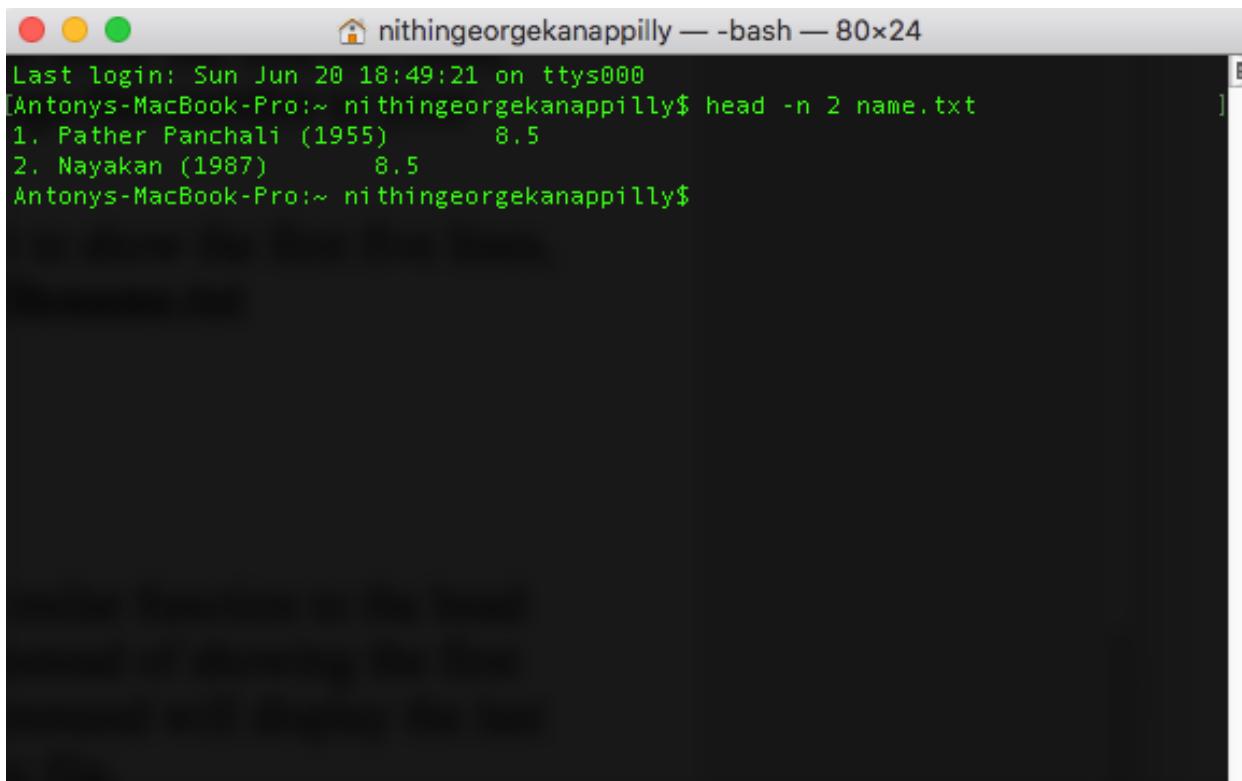
```
Last login: Sun Jun 20 07:29:19 on console
[Antony-MacBook-Pro:~ nithingeorgekanappilly$ echo Hello, my name is John >> name.txt
[Antony-MacBook-Pro:~ nithingeorgekanappilly$ cat name.txt
Hello, my name is John
Antony-MacBook-Pro:~ nithingeorgekanappilly$ ]
```

## 2. head

The head command is used to view the first lines of any text file.

By default, it will show the first ten lines, but you can change this number to your liking.

If you only want to show the first five lines, type **head -n 5 filename.txt**



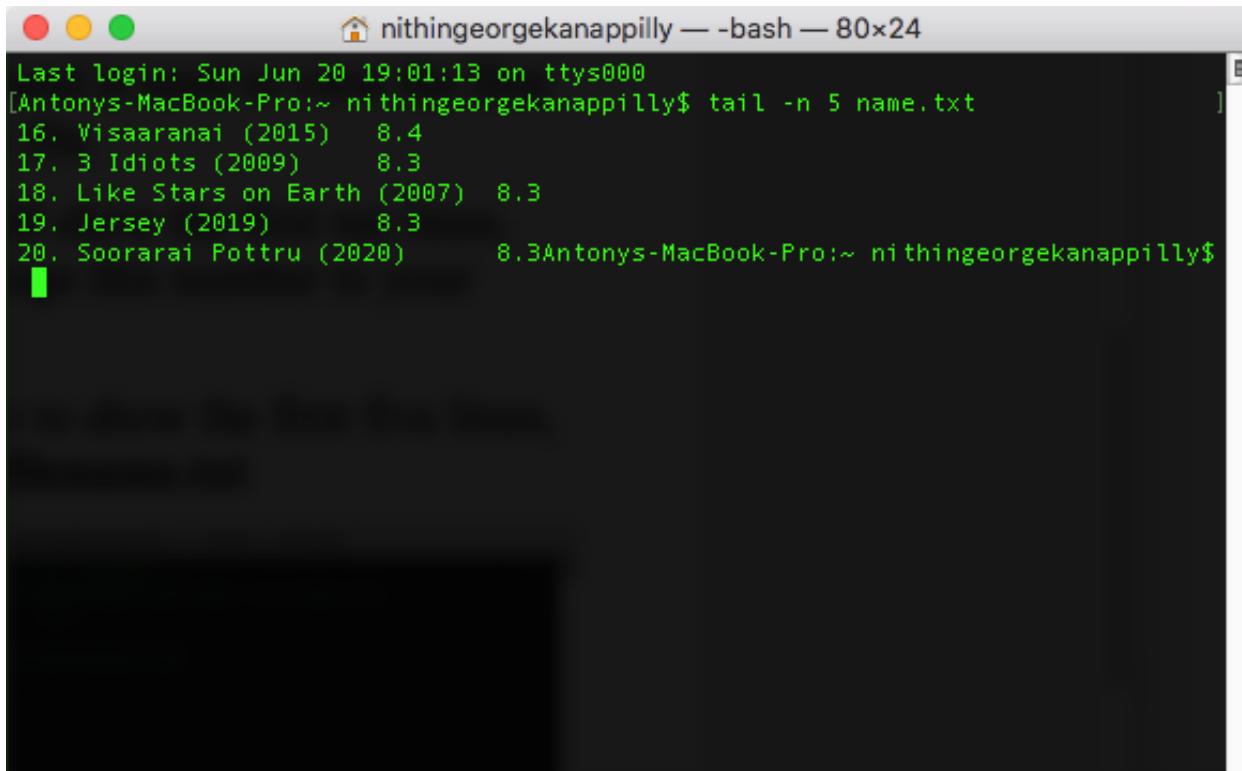
A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the following text:

```
Last login: Sun Jun 20 18:49:21 on ttys000
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ head -n 2 name.txt
1. Pather Panchali (1955)      8.5
2. Nayakan (1987)      8.5
Antonys-MacBook-Pro:~ nithingeorgekanappilly$
```

### 3. tail

This one has a similar function to the head command, but instead of showing the first lines, the tail command will display the last ten lines of a text file.

**tail -n filename.txt**



A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the command "tail -n 5 name.txt" being run, followed by five movie titles and their IMDB ratings. The terminal has a dark background with white text. The window title bar includes the standard Mac OS X red, yellow, and green buttons.

```
Last login: Sun Jun 20 19:01:13 on ttys000
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ tail -n 5 name.txt
16. Visaaranai (2015)    8.4
17. 3 Idiots (2009)      8.3
18. Like Stars on Earth (2007)  8.3
19. Jersey (2019)        8.3
20. Soorarai Pottru (2020)   8.3Antonys-MacBook-Pro:~ nithingeorgekanappilly$
```

## 4. read

read the contents of a line into a variable.

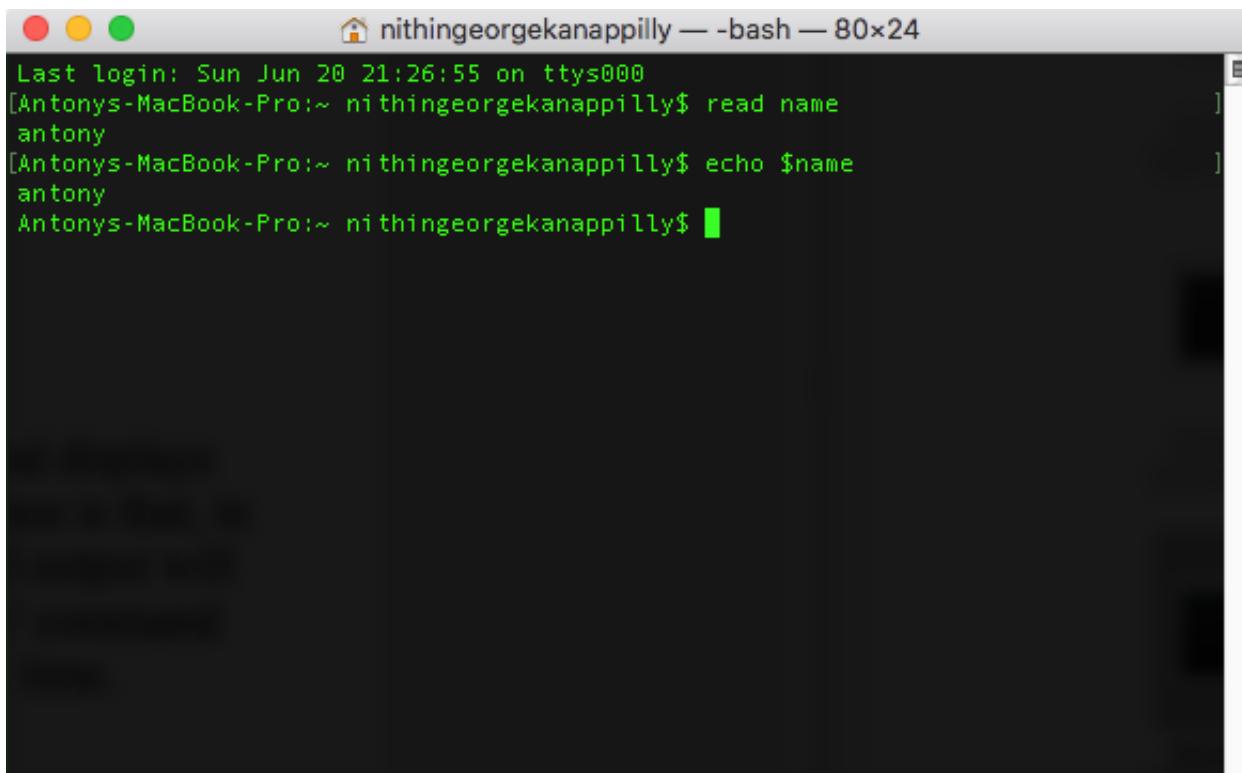
The **read** command can be used with and without arguments

**read** command is used to read [options]  
[name...]

\$read

\$read var1 var2 var3

\$echo "[\\$var1] [\\$var2] [\\$var3]"



```
nithingeorgekanappilly — bash — 80x24
Last login: Sun Jun 20 21:26:55 on ttys000
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ read name
antony
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ echo $name
antony
Antonys-MacBook-Pro:~ nithingeorgekanappilly$ ]
```

A screenshot of a Mac OS X terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows a standard terminal interface with red, yellow, and green window control buttons at the top left. The main area displays a command-line session. It starts with the system's last login information: "Last login: Sun Jun 20 21:26:55 on ttys000". The user then runs the "read" command with the argument "name", which reads the input "antony" from the keyboard. Finally, the user runs the "echo" command with the variable "\$name", which outputs "antony" back to the screen. The terminal window has a dark background and light-colored text, with standard OS X window borders and title bars.

## **5. more**

Like cat command, more command displays the content of a file. Only difference is that, in case of larger files, 'cat' command output will scroll off your screen while 'more' command displays output one screenful at a time.

Enter key: To scroll down page line by line.

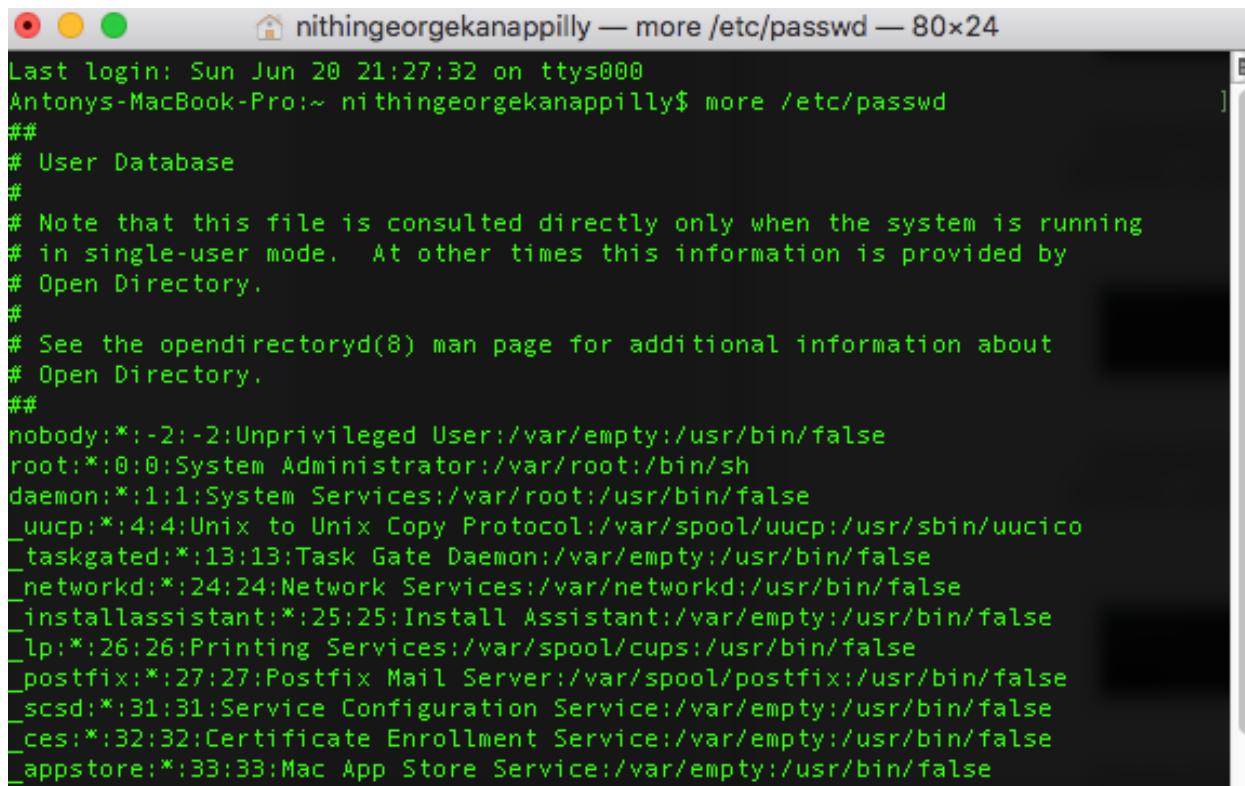
Space bar: To go to next page.

b key: To go to the backward page.

/ key: Lets you search the string.

Syntax: more <file name>

**more /etc/passwd**



```
nithingeorgekanappilly — more /etc/passwd — 80x24
Last login: Sun Jun 20 21:27:32 on ttys000
Antonys-MacBook-Pro:~ nithingeorgekanappilly$ more /etc/passwd
##  
# User Database  
#  
# Note that this file is consulted directly only when the system is running  
# in single-user mode. At other times this information is provided by  
# Open Directory.  
#  
# See the opendirectoryd(8) man page for additional information about  
# Open Directory.  
##  
nobody:*:-2:-2:Unprivileged User:/var/empty:/usr/bin/false  
root:*:0:0:System Administrator:/var/root:/bin/sh  
daemon:*:1:1:System Services:/var/root:/usr/bin/false  
_uucp:*:4:4:Unix to Unix Copy Protocol:/var/spool/uucp:/usr/sbin/uucico  
_taskgated:*:13:13:Task Gate Daemon:/var/empty:/usr/bin/false  
_networkd:*:24:24:Network Services:/var/networkd:/usr/bin/false  
_installassistant:*:25:25:Install Assistant:/var/empty:/usr/bin/false  
_lp:*:26:26:Printing Services:/var/spool/cups:/usr/bin/false  
_postfix:*:27:27:Postfix Mail Server:/var/spool/postfix:/usr/bin/false  
_scsd:*:31:31:Service Configuration Service:/var/empty:/usr/bin/false  
_ces:*:32:32:Certificate Enrollment Service:/var/empty:/usr/bin/false  
_appstore:*:33:33:Mac App Store Service:/var/empty:/usr/bin/false
```

## 6. less

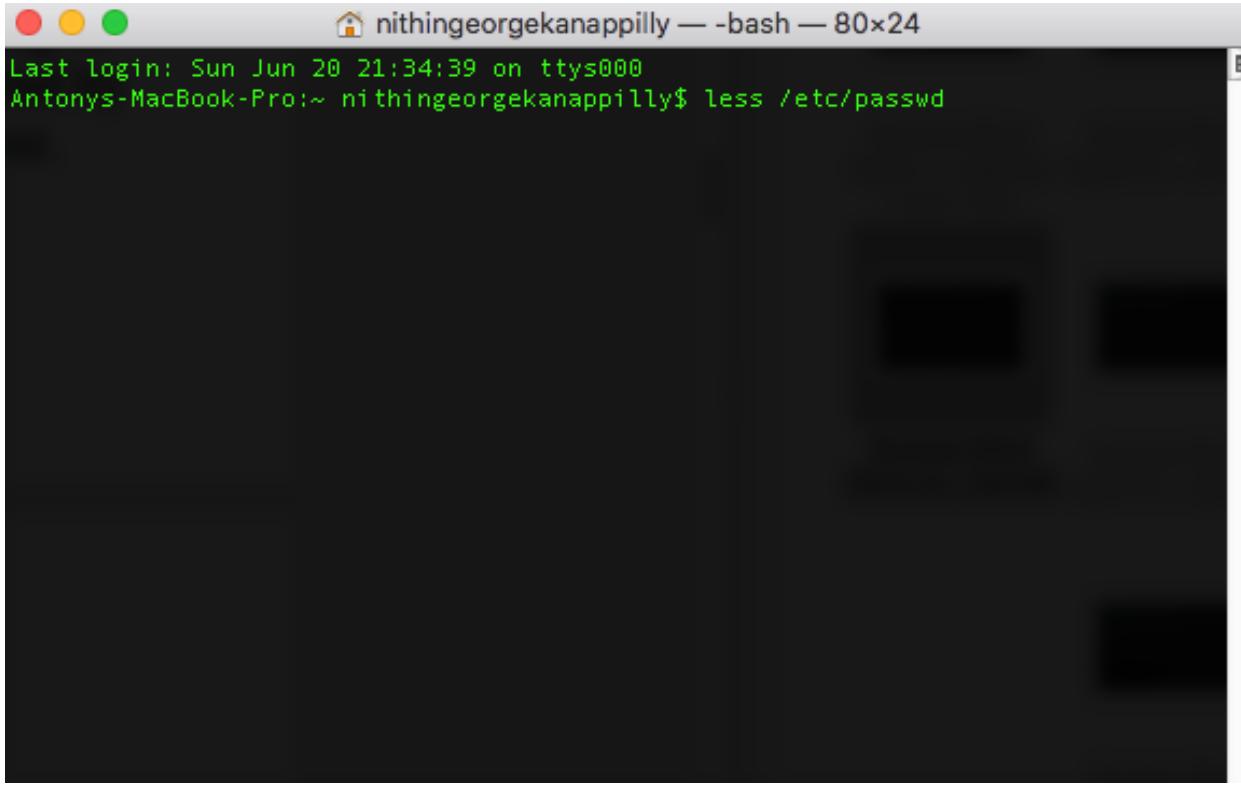
The 'less' command is same as 'more' command but include some more features.

It automatically adjust with the width and height of the teminal window, while 'more'

command cuts the content as the width of the terminal window get shorter.

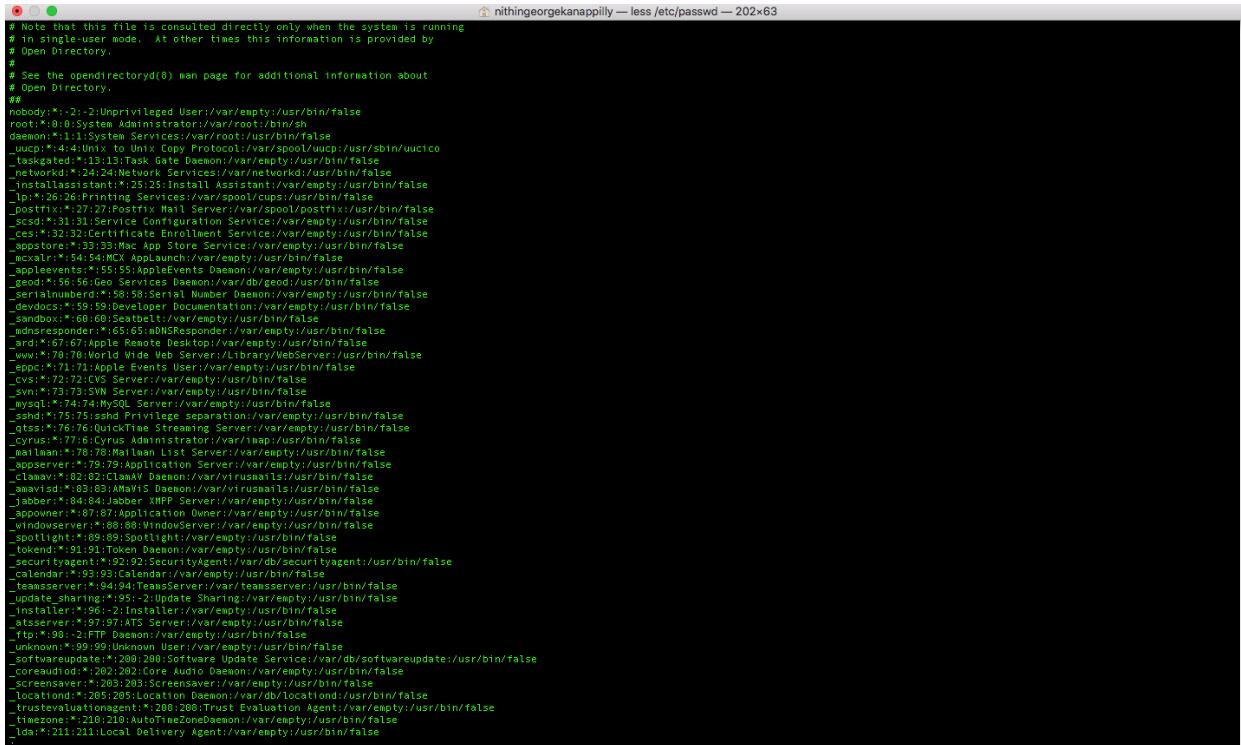
**less <file name>**

# \$less /etc/passwd



A screenshot of a terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the output of the command "less /etc/passwd". The terminal interface includes a title bar with three colored dots (red, yellow, green) and a close button. The main area displays the contents of the /etc/passwd file in a scrollable format.

```
Last login: Sun Jun 20 21:34:39 on ttys000
Antonys-MacBook-Pro:~ nithingeorgekanappilly$ less /etc/passwd
```



A zoomed-in screenshot of the terminal window, focusing on the output of the "less /etc/passwd" command. The screen shows a large list of user entries from the /etc/passwd file, each consisting of a username, password hash, user ID, group ID, and various system information fields. The text is in a monospaced font and is scrollable.

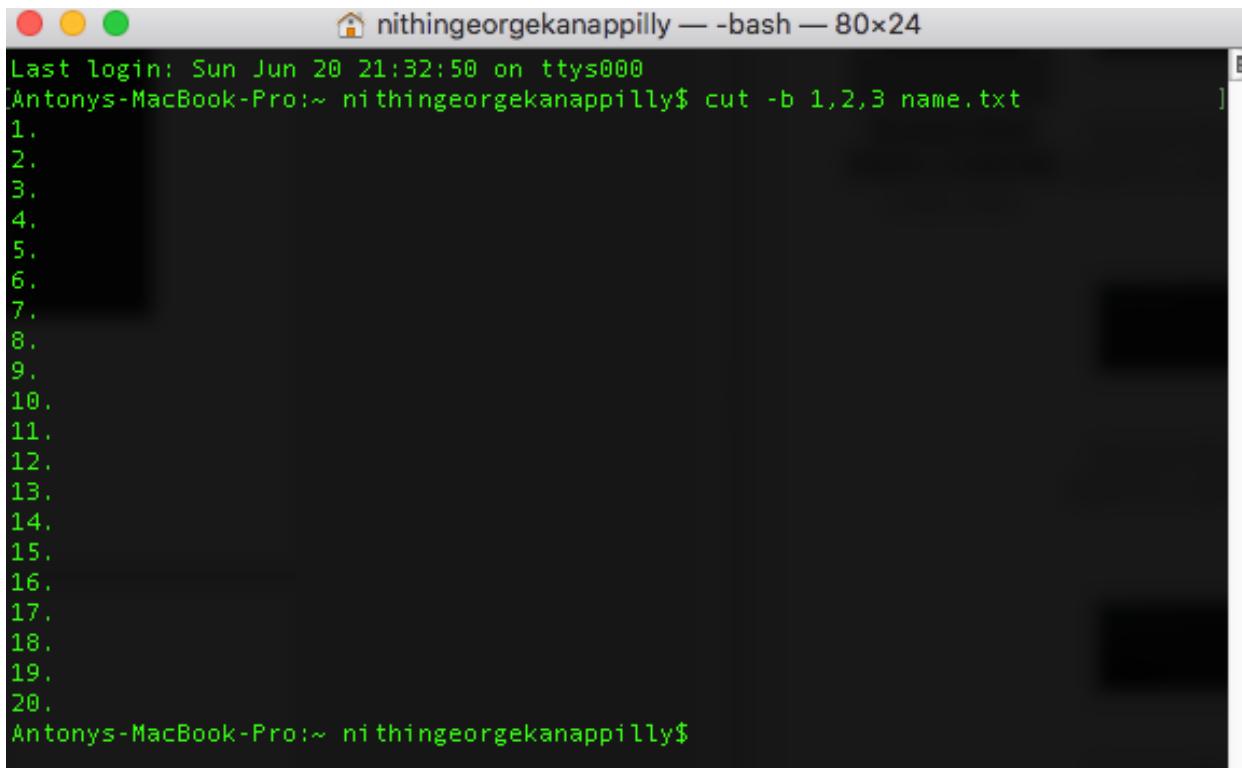
```
# Note that this file is consulted directly only when the system is running
# in single-user mode. At other times this information is provided by
# Open Directory.
#
# See the opendirectoryd(8) man page for additional information about
# Open Directory.
##
#nobody:*:-2:-2:Unprivileged User:/var/empty:/usr/bin/false
root:0:0:System Administrator:/var/root:/usr/bin/false
daemon:*:1:Root Daemon:/var/empty:/usr/bin/false
uucp:*:4:Unix to Unix Copy Protocol:/var/spool/uucp:/usr/sbin/uucico
taskgated*:13:13:Task Gate Daemon:/var/empty:/usr/bin/false
networkd*:24:24:Network Services:/var/networkd:/usr/bin/false
installassistant*:25:25:Install Assistant:/var/empty:/usr/bin/false
lp*:26:26:Printing Services:/var/spool/cups:/usr/bin/false
postfix*:27:27:Postfix Mail Server:/var/spool/postfix:/usr/bin/false
sendmail*:31:31:Sendmail Mail Transport Service:/var/spool/mqueue:/usr/bin/false
cups*:32:32:Certificate Enrollment Service:/var/empty:/usr/bin/false
appstore*:33:33:Mac App Store Service:/var/empty:/usr/bin/false
mcxldr*:54:54:MXC AppLaunch:/var/empty:/usr/bin/false
appleevents*:55:55:AppleEvents Daemon:/var/empty:/usr/bin/false
geoip*:56:56:Geo Services Daemon:/var/db/geoip:/usr/bin/false
serialnumberd*:58:58:Serial Number Daemon:/var/empty:/usr/bin/false
devd*:59:59:Device Driver Daemon:/var/empty:/usr/bin/false
sandboxed*:68:68:Sandboxed:/var/empty:/usr/bin/false
mdnsresponder*:65:65:MDNSResponder:/var/empty:/usr/bin/false
ard*:67:67:Apple Remote Desktop:/var/empty:/usr/bin/false
www*:70:70:World Wide Web Server:/Library/WebServer:/usr/bin/false
epcd*:71:71:Apple Events User:/var/empty:/usr/bin/false
cvs*:72:72:CVS Server:/var/empty:/usr/bin/false
sys*:73:73:System User:/var/empty:/usr/bin/false
mysql*:74:74:MySQL Server:/var/empty:/usr/bin/false
sshd*:75:75:sshd Privilege separation:/var/empty:/usr/bin/false
qts*:76:76:QuickTime Streaming Server:/var/empty:/usr/bin/false
cyrus*:77:76:Cyrus IMAPD Adminstrator:/var/vaap:/usr/bin/false
mailman*:78:78:Mailman List Server:/var/empty:/usr/bin/false
appserver*:79:79:Application Server:/var/empty:/usr/bin/false
clamav*:80:80:ClamAV Daemon:/var/empty:/usr/bin/false
maild*:83:83:Maild Daemon:/var/empty:/usr/bin/false
jabber*:84:84:Jabber XMPP Server:/var/empty:/usr/bin/false
spawner*:87:87:Application Owner:/var/empty:/usr/bin/false
windowserver*:88:88:WindowServer:/var/empty:/usr/bin/false
spotlight*:89:89:Spotlight:/var/empty:/usr/bin/false
tokend*:91:91:Token Daemon:/var/empty:/usr/bin/false
securityagent*:92:92:SecurityAgent:/var/db/securityagent:/usr/bin/false
ld*:93:93:Local Delivery Agent:/var/empty:/usr/bin/false
teamsserver*:94:94:TeamServer:/var/teamserver:/usr/bin/false
update_sharing*:95:95:Update Sharing:/var/empty:/usr/bin/false
installer*:96:96:Installer:/var/empty:/usr/bin/false
atsserver*:97:97:ATS Server:/var/empty:/usr/bin/false
ftp*:98:98:FTP Daemon:/var/empty:/usr/bin/false
unknown*:99:99:Unknown User:/var/empty:/usr/bin/false
softwareupdate*:100:100:Software Update Service:/var/db/softwareupdate:/usr/bin/false
core*:127:127:Core Update:/var/empty:/usr/bin/false
screensaver*:128:128:Screensaver:/var/empty:/usr/bin/false
locationd*:205:205:Location Daemon:/var/db/locationd:/usr/bin/false
trustevaluatoragent*:208:208:Trust Evaluation Agent:/var/empty:/usr/bin/false
timezone*:210:210:AutoTimeZoneDaemon:/var/empty:/usr/bin/false
ldm*:211:211:Local Delivery Agent:/var/empty:/usr/bin/false
:
```

## 7. cut

The cut command is used for cutting out the sections from each line of files and writing the result to standard output. It can be used to cut parts of a line by **byte position, character and field**

**cut OPTION... [FILE]...**

**\$cut -b 1,2,3 state.txt**



A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the command "cut -b 1,2,3 name.txt" being run, which outputs the first three bytes of each line from the file "name.txt". The output consists of 20 lines, each containing a single byte from the file.

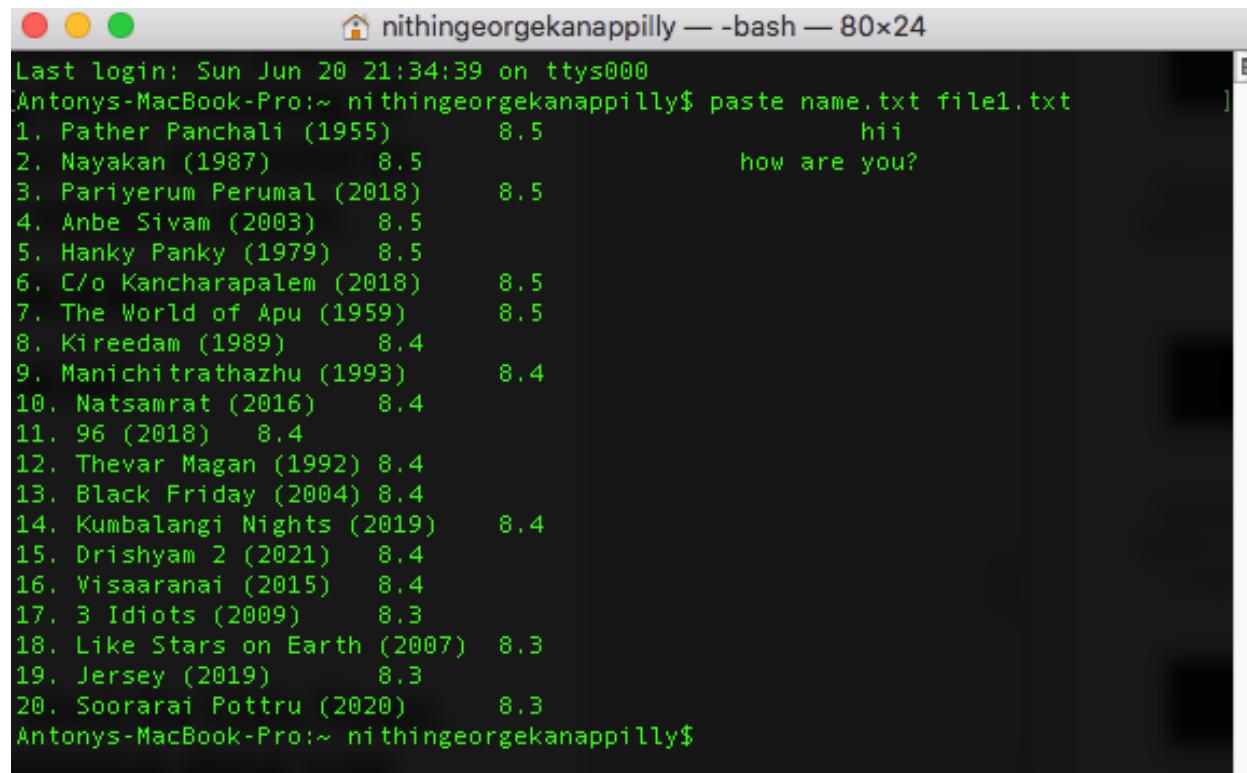
```
Last login: Sun Jun 20 21:32:50 on ttys000
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ cut -b 1,2,3 name.txt
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
Antonys-MacBook-Pro:~ nithingeorgekanappilly$
```

## 8. paste

It is used to join files horizontally (parallel merging) by outputting lines consisting of lines from each file specified, separated by **tab** as delimiter, to the standard output.

**paste [OPTION]... [FILES]...**

**\$ paste state.txt capital.txt**



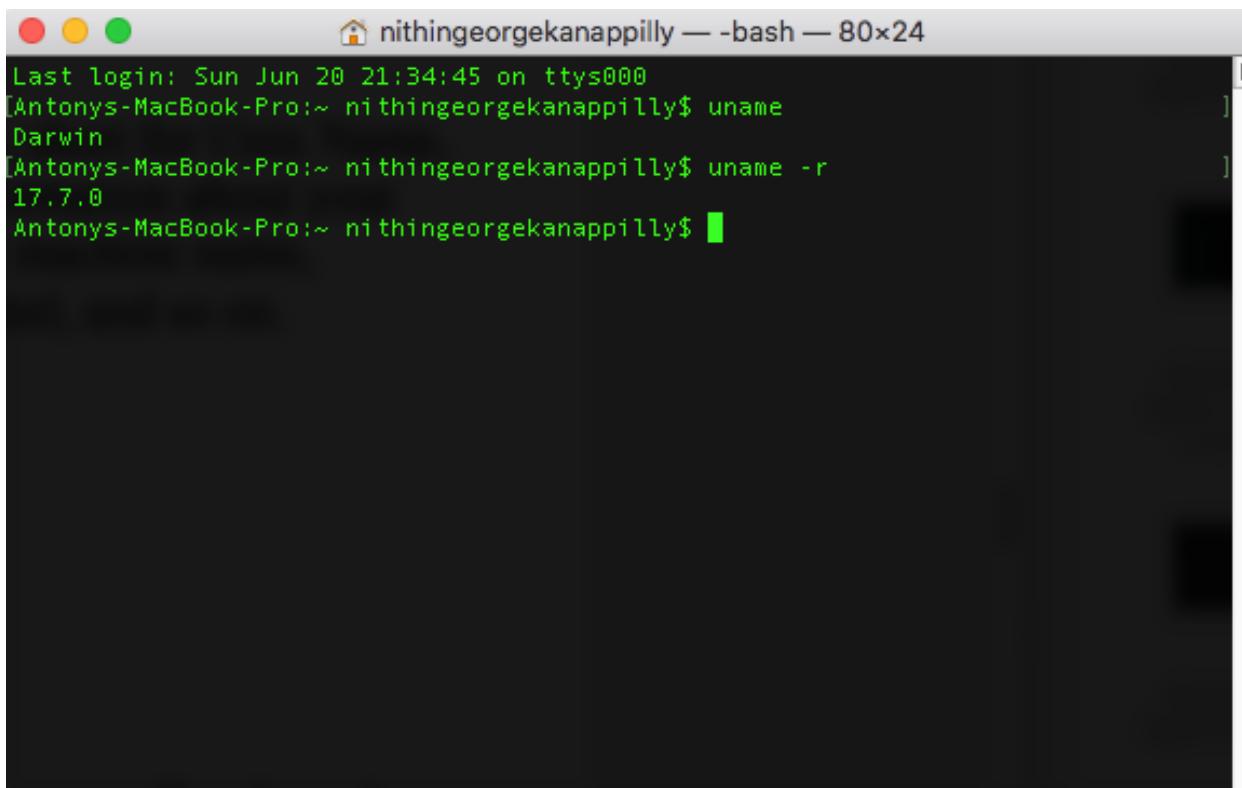
```
Last login: Sun Jun 20 21:34:39 on ttys000
[Antony-MacBook-Pro:~ nithingeorgekanappilly$ paste name.txt file1.txt
1. Father Panchali (1955)      8.5          hii
2. Nayakan (1987)      8.5          how are you?
3. Pariyerum Perumal (2018)    8.5
4. Anbe Sivam (2003)      8.5
5. Hanky Panky (1979)      8.5
6. C/o Kancharapalem (2018)    8.5
7. The World of Apu (1959)    8.5
8. Kireedam (1989)      8.4
9. Manichitrathazhu (1993)    8.4
10. Natsamrat (2016)      8.4
11. 96 (2018)      8.4
12. Thevar Magan (1992) 8.4
13. Black Friday (2004) 8.4
14. Kumbalangi Nights (2019) 8.4
15. Drishyam 2 (2021) 8.4
16. Visaaranai (2015) 8.4
17. 3 Idiots (2009) 8.3
18. Like Stars on Earth (2007) 8.3
19. Jersey (2019) 8.3
20. Soorarai Pottru (2020) 8.3
Antony-MacBook-Pro:~ nithingeorgekanappilly$
```

## 9. uname

The uname command, short for Unix Name, will print detailed information about your Linux system like the machine name, operating system, kernel, and so on.

**\$uname**

**\$uname -r**

A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the user's last login information ("Last login: Sun Jun 20 21:34:45 on ttys000") and the output of the "uname" command, which displays the system name ("Darwin") and the kernel version ("17.7.0").

```
Last login: Sun Jun 20 21:34:45 on ttys000
[Antony's-MacBook-Pro:~ nithingeorgekanappilly$ uname
Darwin
[Antony's-MacBook-Pro:~ nithingeorgekanappilly$ uname -r
17.7.0
Antony's-MacBook-Pro:~ nithingeorgekanappilly$ ]
```

## **10. cp**

cp command is used to copy files from the current directory to a different directory. For instance, the command **cp scenery.jpg**

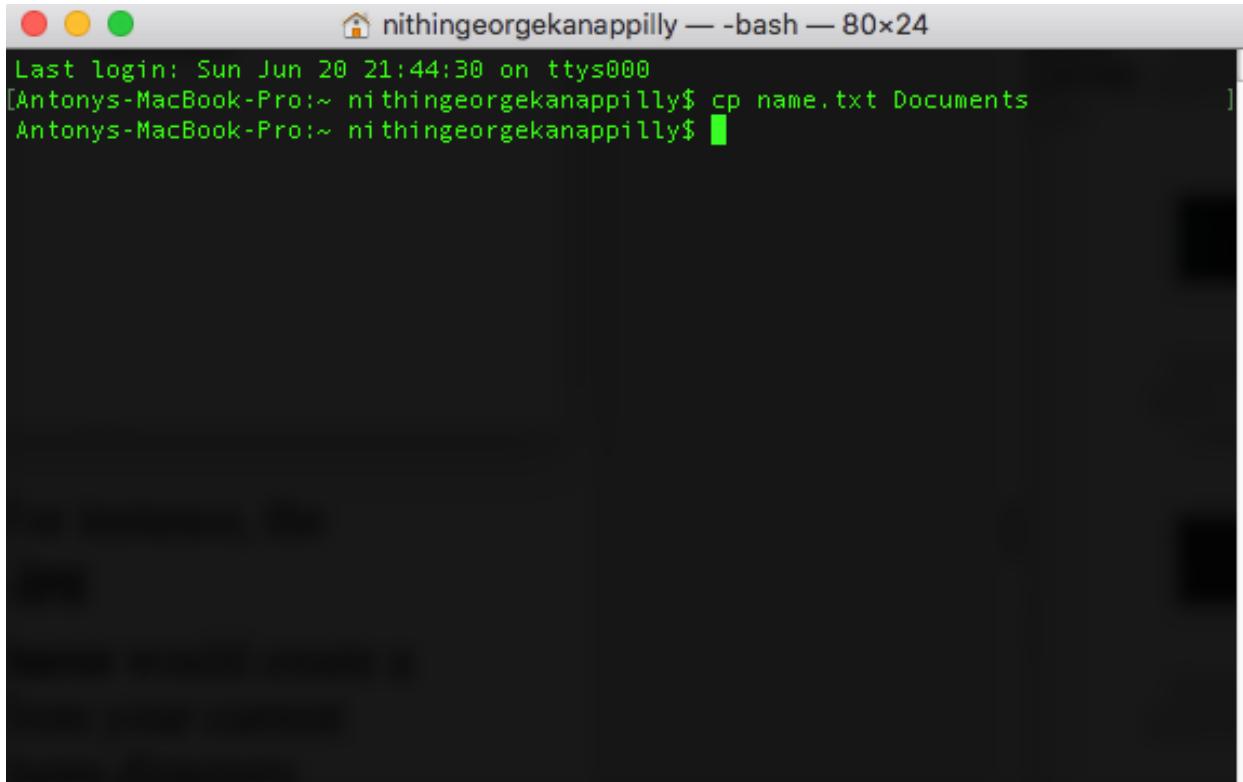
**/home/username/Pictures** would create a copy of scenery.jpg (from your current directory) into the Pictures directory.

**cp -i** will ask for user's consent in case of a potential file overwrite.

**cp -p** will preserve source files' mode, ownership and timestamp.

**cp -r** will copy directories recursively.

**cp -u** copies files only if the destination file is not existing or the source file is newer than the destination file.



A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the following text:

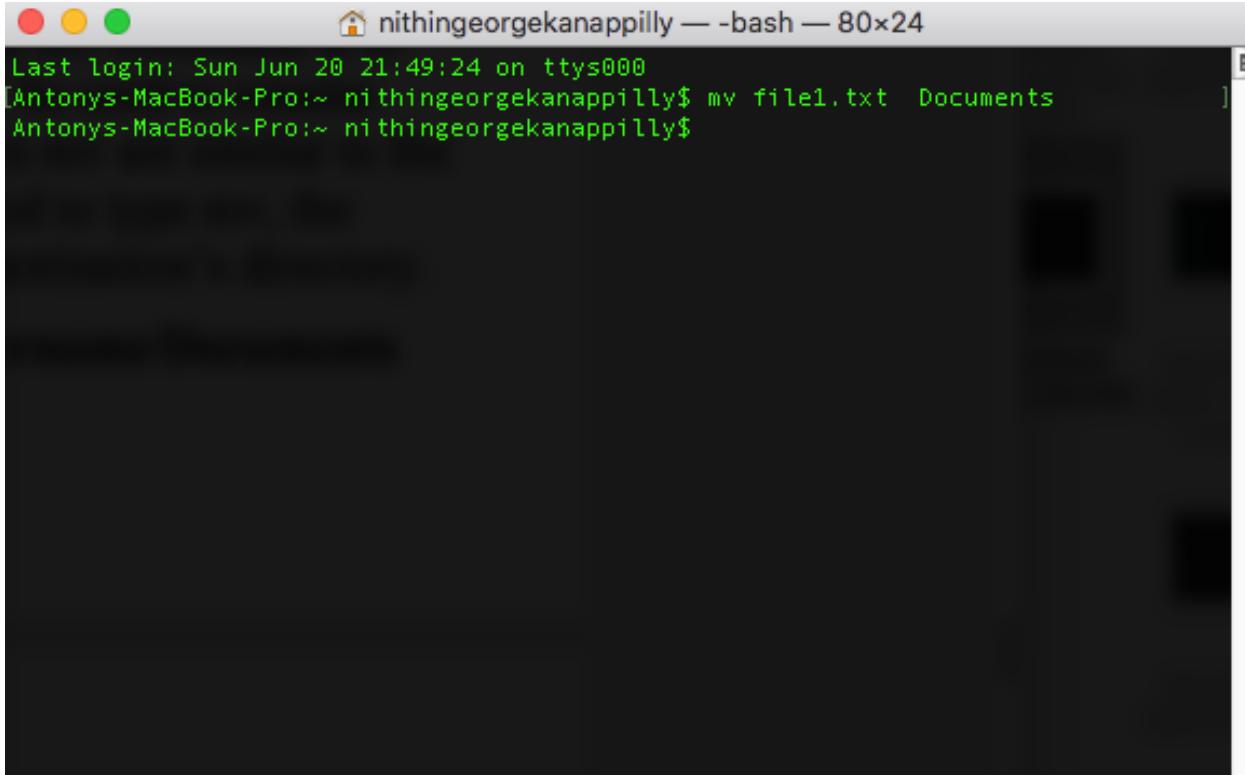
```
Last login: Sun Jun 20 21:44:30 on ttys000
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ cp name.txt Documents
Antonys-MacBook-Pro:~ nithingeorgekanappilly$ ]
```

## 11. mv

The primary use of the mv command is to move files, it can also be used to rename files. The arguments in mv are similar to the cp command. You need to type mv, the file's name, and the destination's directory.

**mv file.txt /home/username/Documents**

To rename files, the Linux is mv  
oldname.ext newname.ext



A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the command "mv file1.txt Documents" being typed at the prompt. The terminal interface includes standard Mac OS X window controls (red, yellow, green) and a scroll bar.

```
Last login: Sun Jun 20 21:49:24 on ttys000
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ mv file1.txt Documents
Antonys-MacBook-Pro:~ nithingeorgekanappilly$
```

## 12. locate

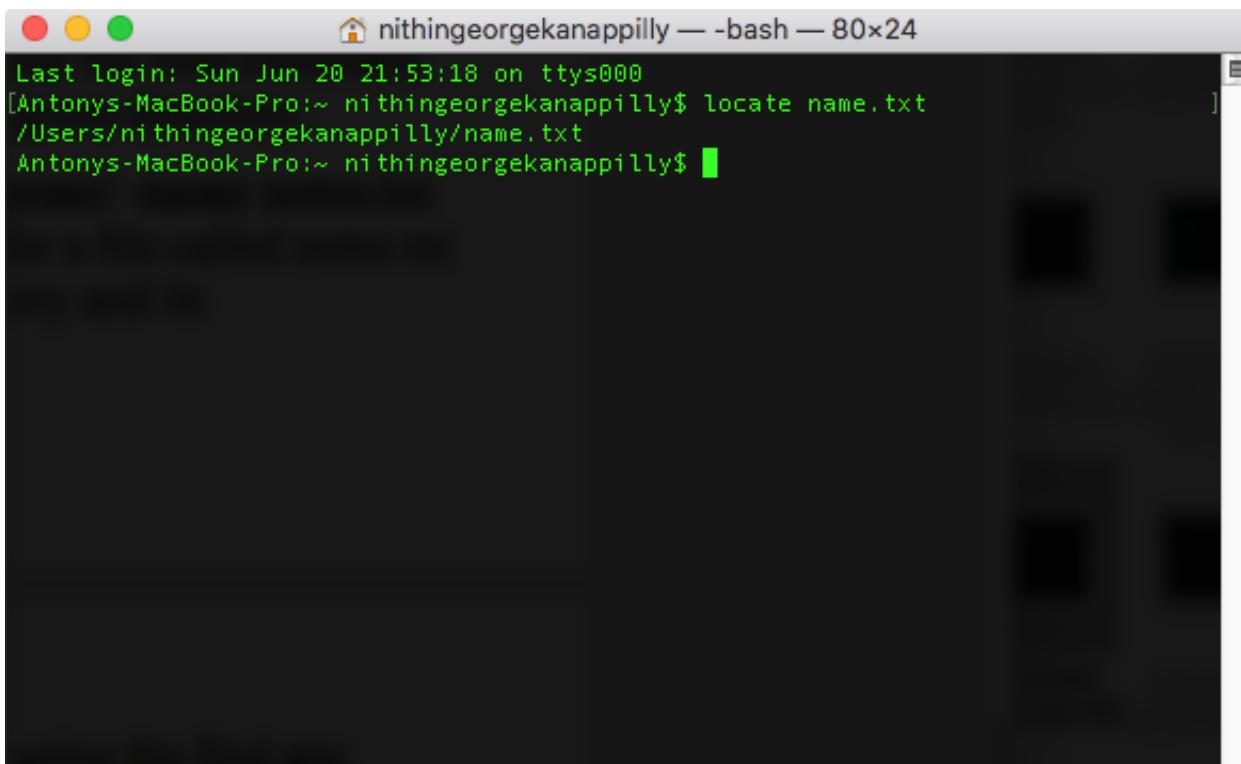
To locate a file, just like the search command in Windows.

What's more, using the -i argument along with this command will make it case-insensitive,

so you can search for a file even if you don't remember its exact name.

To search for a file that contains two or more words, use an asterisk (\*).

For example, **locate -i school\*note** command will search for any file that contains the word “school” and “note”, whether it is uppercase or lowercase.



The screenshot shows a terminal window titled "nithingeorgekanappilly — bash — 80x24". The window has three colored window controls (red, yellow, green) in the top-left corner. The terminal output is as follows:

```
Last login: Sun Jun 20 21:53:18 on ttys000
[Antony's-MacBook-Pro:~ nithingeorgekanappilly$ locate name.txt
/Users/nithingeorgekanappilly/name.txt
Antony's-MacBook-Pro:~ nithingeorgekanappilly$ ]
```

## **13. find**

Similar to the locate command, using find also searches for files and directories.

The difference is, you use the find command to locate files within a given directory.

As an example, **find /home/ -name notes.txt** command will search for a file called notes.txt within the home directory and its subdirectories.

Other variations when using the find are:

To find files in the current directory use, **find . -name notes.txt**

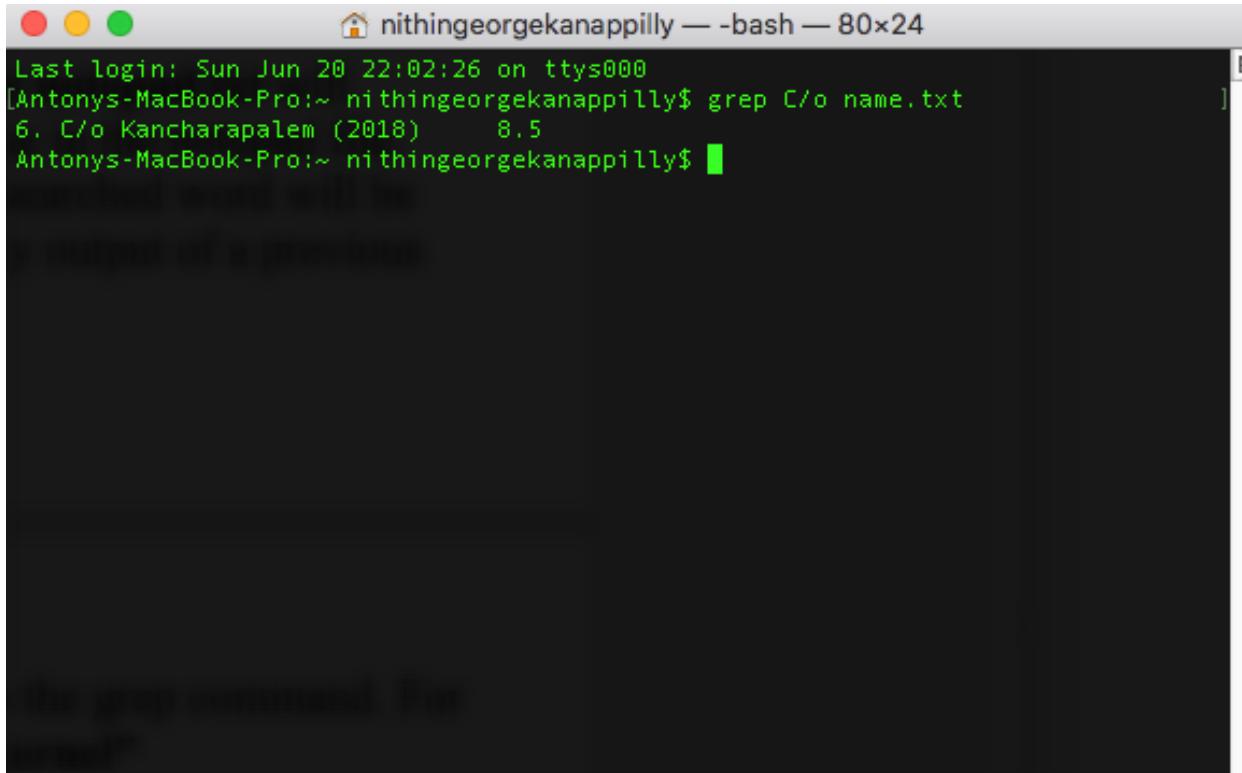
To look for directories use, **/ -type d -name notes. txt**

## 14. grep

Another basic Linux command that is undoubtedly helpful for everyday use is grep. It lets you search through all the text in a given file.

To illustrate, **grep blue notepad.txt** will search for the word blue in the notepad file. Lines that contain the searched word will be displayed fully. Usually output of a previous

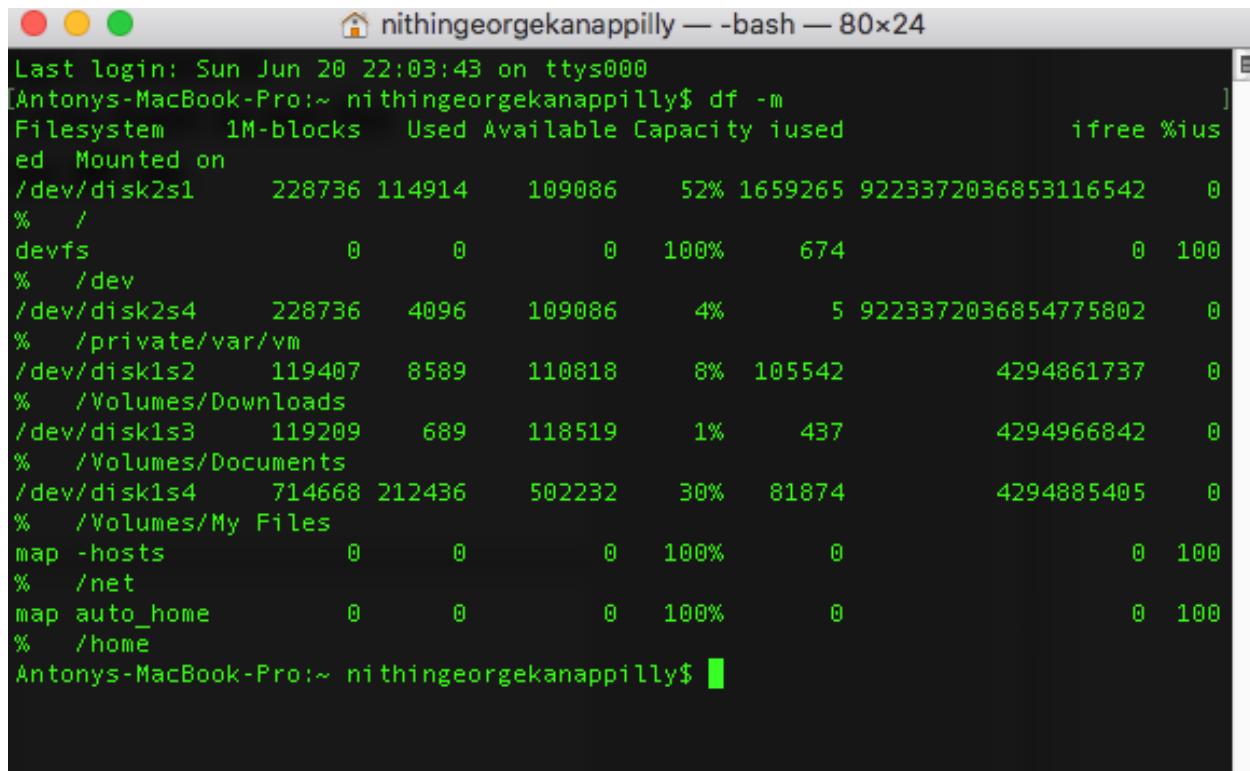
command is piped into the grep command. For example **ls -l | grep “kernel”**



A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the command "grep C/o name.txt" being run, and the output "6, C/o Kancharapalem (2018) 8.5" is displayed. The terminal has a dark background with light-colored text.

## 15. df

Use df command to get a report on the system’s disk space usage, shown in percentage and KBs. If you want to see the report in megabytes, type **df -m**.



A terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the output of the "df -m" command, which provides a detailed disk usage summary. The columns in the table include Filesystem, 1M-blocks, Used, Available, Capacity, iused, ifree, and %iused. The summary includes entries for the root directory (/), private/var/vm, Downloads, Documents, and My Files volumes, along with /home and /net directories.

Filesystem	1M-blocks	Used	Available	Capacity	iused	ifree	%iused
ed Mounted on							
/dev/disk2s1	228736	114914	109086	52%	1659265	9223372036853116542	0
% /	0	0	0	100%	674		0 100
devfs	0	0	0	100%	674		0 100
% /dev							
/dev/disk2s4	228736	4096	109086	4%	5	9223372036854775802	0
% /private/var/vm							
/dev/disk1s2	119407	8589	110818	8%	105542	4294861737	0
% /Volumes/Downloads							
/dev/disk1s3	119209	689	118519	1%	437	4294966842	0
% /Volumes/Documents							
/dev/disk1s4	714668	212436	502232	30%	81874	4294885405	0
% /Volumes/My Files							
map -hosts	0	0	0	100%	0		0 100
% /net							
map auto_home	0	0	0	100%	0		0 100
% /home							
Antony's-MacBook-Pro:~ nithingeorgekanappilly\$							

## 16. du

If you want to check how much space a file or a directory takes, the du (Disk Usage) command is the answer. However, the disk usage summary will show disk block numbers instead of the usual size format.

If you want to see it in bytes, kilobytes, and megabytes, add the -h argument to the command line.

**\$du-h**

```

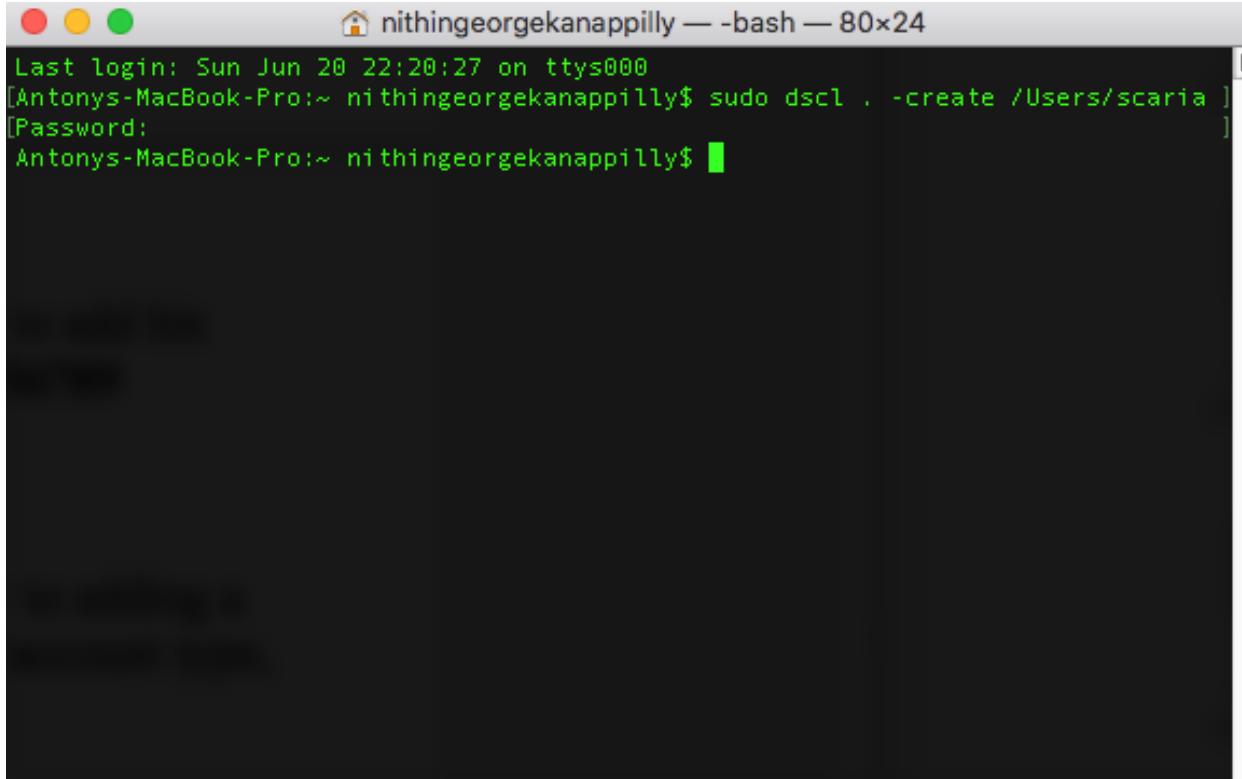
Antonys-MacBook-Pro: nithingeorgekanapilly$ du -h
4.0K ./config/configstore
8.0K ./config/flutter
4.0K ./config/git
4.0K ./config/monodevelop
4.0K ./config/mono
44K ./config/filezilla
64K ./config
4.0M ./Music/iTunes/iTunes Media/Music/23 Reba/Unknown Album
4.5M ./Music/iTunes/iTunes Media/Music/23 Reba
7.4M ./Music/iTunes/iTunes Media/Music/Arijit Singh & Jeet Ganguly/Khamoshiyan (2015)
7.4M ./Music/iTunes/iTunes Media/Music/M. Jayachandran/Fermazha Kaaleem
5.0M ./Music/iTunes/iTunes Media/Music/M. Jayachandran
4.6M ./Music/iTunes/iTunes Media/Music/Shell & Ankita Mishra/Khwaishen - Single
4.6M ./Music/iTunes/iTunes Media/Music/Shell & Ankita Mishra/Khwaishen - Single
5.0M ./Music/iTunes/iTunes Media/Music/Tulsi Kumar [www.0JULUV.in]/Roy (2015)
5.0M ./Music/iTunes/iTunes Media/Music/Tulsi Kumar [www.0JULUV.in]
5.0M ./Music/iTunes/iTunes Media/Music/16 Main Rang Sharbaton Ka/Unknown Album
5.0M ./Music/iTunes/iTunes Media/Music/16 Main Rang Sharbaton Ka
6.0M ./Music/iTunes/iTunes Media/Music/Steam Mercedes/Unknown Album
6.0M ./Music/iTunes/iTunes Media/Music/Steam Mercedes
18M ./Music/iTunes/iTunes Media/Music/Vasse Desai/Panamu
13M ./Music/iTunes/iTunes Media/Music/Oru Yedakkann Selfie
7.4M ./Music/iTunes/iTunes Media/Music/Rashid Khan/Hate Story 2 (2014)
7.4M ./Music/iTunes/iTunes Media/Music/Rashid Khan
9.4M ./Music/iTunes/iTunes Media/Music/P Jayachandran/Aadupulyattam
8.5M ./Music/iTunes/iTunes Media/Music/P Jayachandran/Mariubhoonyile Aana
18M ./Music/iTunes/iTunes Media/Music/Jayachandran
31M ./Music/iTunes/iTunes Media/Music/MyKuttyVed.com/MyKuttyVed.com
30M ./Music/iTunes/iTunes Media/Music/Arun Alat & Kavya Aith/Oru Yedakkann Selfie
6.0M ./Music/iTunes/iTunes Media/Music/Arun Alat & Kavya Aith
6.0M ./Music/iTunes/iTunes Media/Music/www.123ausiq.com - ® Riya collections ®FALTU - www.123ausiq.com - ® Riya collections ®
10M ./Music/iTunes/iTunes Media/Music/www.123ausiq.com - ® Riya collections ®Cocktail - www.123ausiq.com - ® Riya collections ®
17M ./Music/iTunes/iTunes Media/Music/www.123ausiq.com - ® Riya collections ®
9.0M ./Music/iTunes/iTunes Media/Music/Amaati Mallik & Shreya Ghoshal/Badrinath Ki Dulhania
13M ./Music/iTunes/iTunes Media/Music/Amaati Mallik & Shreya Ghoshal
11M ./Music/iTunes/iTunes Media/Music/Raghav Dixit, Jithin Raj/Imaikkaa Nodigal
11M ./Music/iTunes/iTunes Media/Music/Raghav Dixit, Sathyaprakash D, Jithin Raj
3.0M ./Music/iTunes/iTunes Media/Music/Arijit Singh & Yibha Saraf/O/Soniye - Arijit Singh - Single
3.0M ./Music/iTunes/iTunes Media/Music/Arijit Singh & Yibha Saraf
9.0M ./Music/iTunes/iTunes Media/Music/Nidhin Raj/Freetham 2
9.0M ./Music/iTunes/iTunes Media/Music/Nidhin Raj
4.2M ./Music/iTunes/iTunes Media/Music/Enrico Iglesias/EVO
4.2M ./Music/iTunes/iTunes Media/Music/Enrico Iglesias/EVO
4.0M ./Music/iTunes/iTunes Media/Music/Hervin Solomon, Sameera Bharadwaj/Gulaebaghavali (2018)
4.0M ./Music/iTunes/iTunes Media/Music/Hervin Solomon, Sameera Bharadwaj
4.0M ./Music/iTunes/iTunes Media/Music/03/Unknown Album
4.0M ./Music/iTunes/iTunes Media/Music/03
6.0M ./Music/iTunes/iTunes Media/Music/Pramiti, Riyaz, Sri Vishnu, Pranav/Lakshmi
6.0M ./Music/iTunes/iTunes Media/Music/Pramiti, Riyaz, Sri Vishnu, Pranav
4.0M ./Music/iTunes/iTunes Media/Music/045 HERO/045 HERO
4.0M ./Music/iTunes/iTunes Media/Music/Atsal,Rimi Tomy,Anvar/Honey Bee 2 (2017)
10.0M ./Music/iTunes/iTunes Media/Music/Atsal,Rimi Tomy,Anvar
3.0M ./Music/iTunes/iTunes Media/Music/Justin Bieber World/Unknown Album
3.0M ./Music/iTunes/iTunes Media/Music/Justin Bieber World
5.0M ./Music/iTunes/iTunes Media/Music/ZaynEVO/Unknown Album
5.0M ./Music/iTunes/iTunes Media/Music/ZaynEVO

```

## 17. useradd

This is available only to system admins  
 Since Linux is a multi-user system, this means more than one person can interact with the same system at the same time.  
 useradd is used to create a new user, while passwd is adding a password to that user's account. To add a new person named John

**type, useradd John and then to add his password type, passwd 123456789**

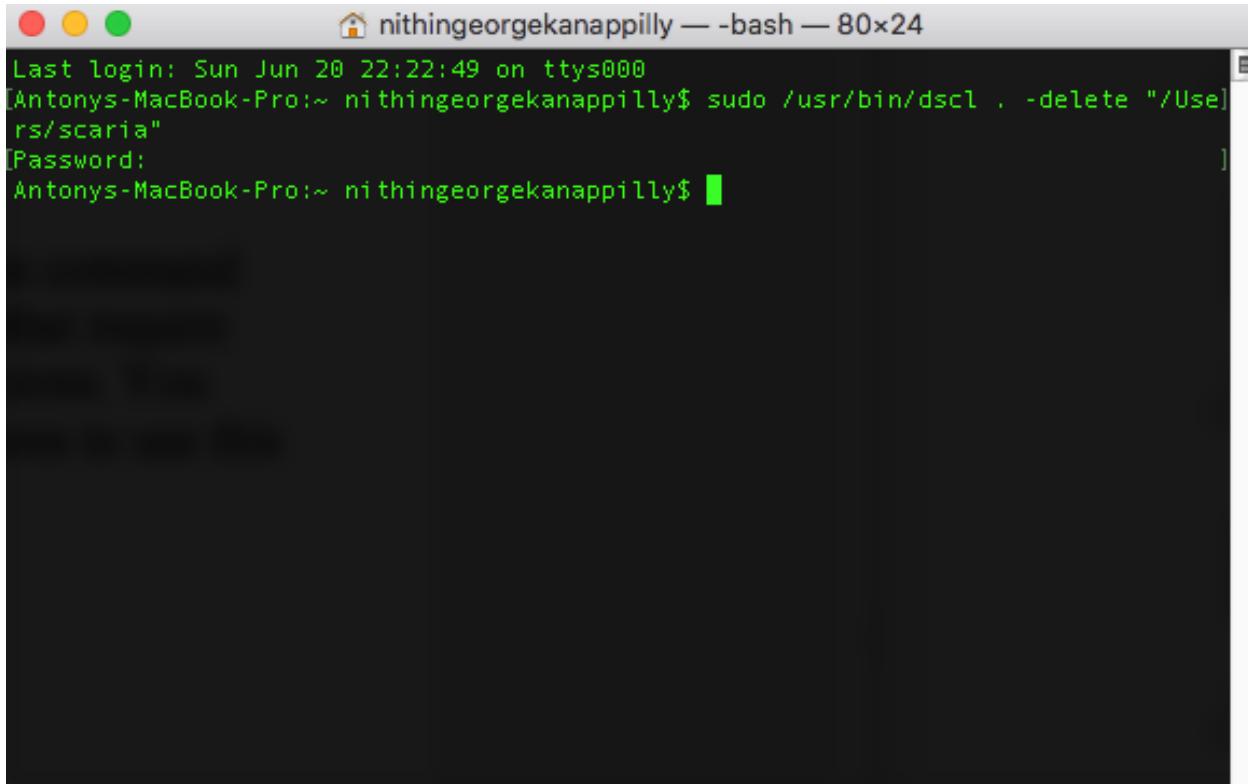


A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the command "sudo dscl . -create /Users/scaria" being run. The password prompt "[Password:" is visible, followed by a redacted password entry. The command is completed with a green dollar sign.

```
Last login: Sun Jun 20 22:20:27 on ttys000
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ sudo dscl . -create /Users/scaria ]
[Password: Antonys-MacBook-Pro:~ nithingeorgekanappilly$ ]
```

## 18. userdel

Remove a user is very similar to adding a new user. To delete the users account type, **userdel UserName**



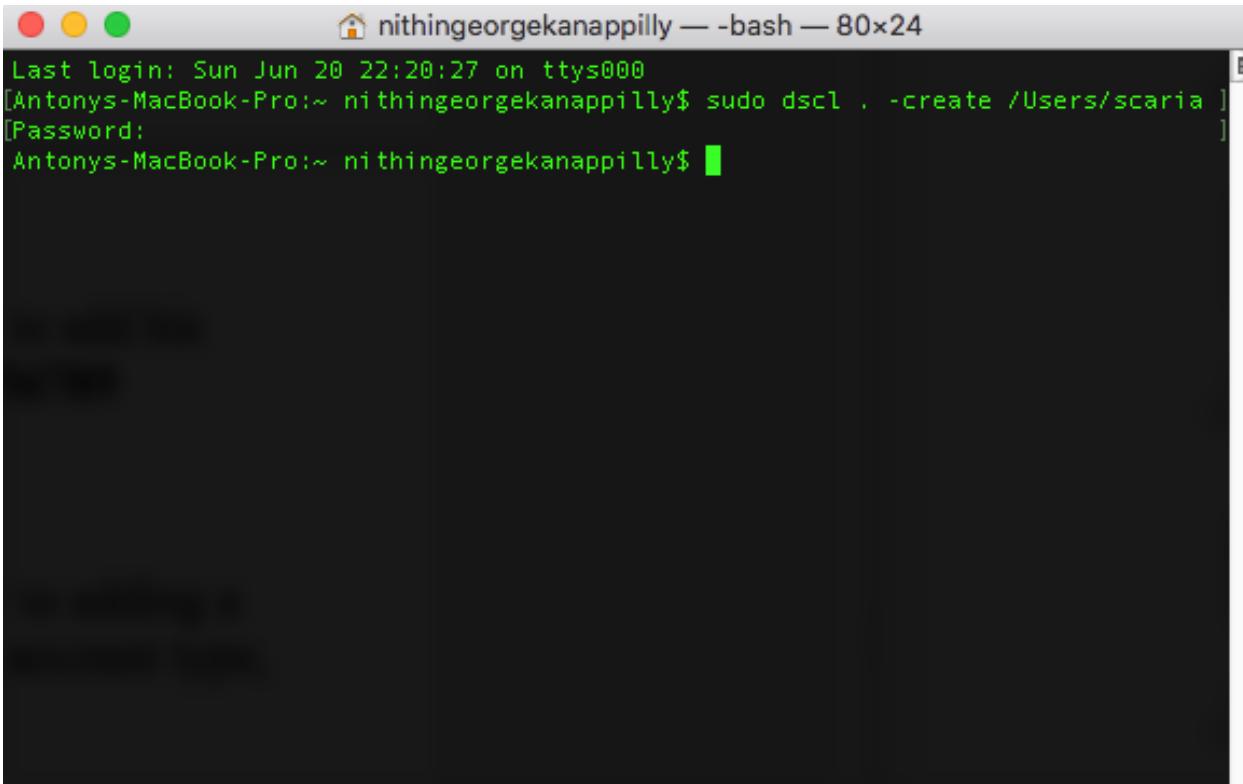
A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the following command being run:

```
Last login: Sun Jun 20 22:22:49 on ttys000
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ sudo /usr/bin/dscl . -delete "/User
rs/scaria"
[Password:
Antonys-MacBook-Pro:~ nithingeorgekanappilly$ ]
```

## 19. sudo

Short for “SuperUser Do”, this command enables you to perform tasks that require administrative or root permissions. You must have sufficient permissions to use this command.

**sudo useradd maria**



A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the command "sudo dscl . -create /Users/scaria" being run, followed by a password prompt "[Password:]". The terminal background is black.

## 20. passwd

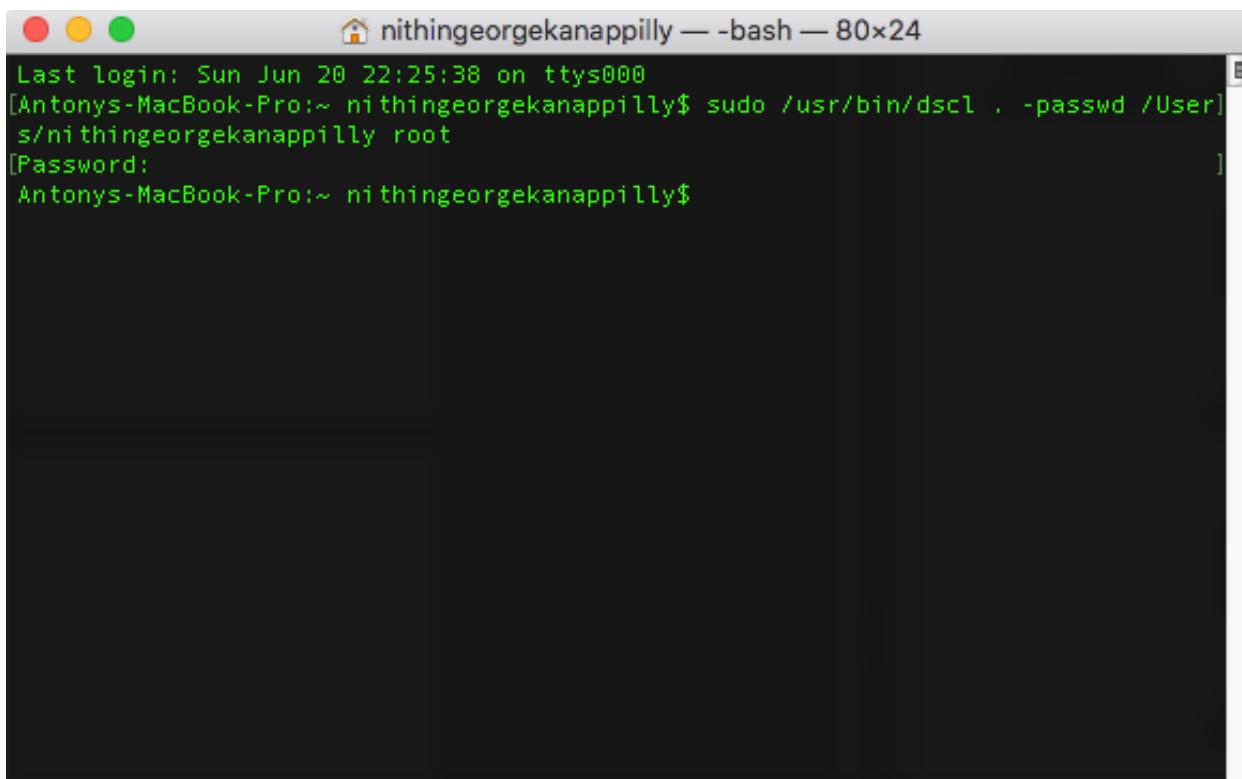
Changes passwords for user accounts.

A normal user may only change the password for their own account, while the superuser may change the password for any account.

**passwd[option] [username]**

**passwd**

# passwd user1



A screenshot of a macOS terminal window titled "nithingeorgekanappilly — bash — 80x24". The window shows the command "sudo /usr/bin/dscl . -passwd /User" being run by the user "root". The password prompt "[Password:]" is visible, with the password obscured by a black redaction box.

```
Last login: Sun Jun 20 22:25:38 on ttys000
[Antonys-MacBook-Pro:~ nithingeorgekanappilly$ sudo /usr/bin/dscl . -passwd /User]
s/nithingeorgekanappilly root
[Password:]
Antonys-MacBook-Pro:~ nithingeorgekanappilly$
```

## 1. usermod

- usermod command is used to change the properties of a user in Linux through the command line
- command-line utility that allows you to modify a user's login information
- #usermod -help
- #usermod -u 2000 Tom

```
antonyscaria@DESKTOP-IU405JG:~$ usermod --help
Usage: usermod [options] LOGIN

Options:
  -b, --badnames      allow bad names
  -c, --comment COMMENT    new value of the GECOS field
  -d, --home HOME_DIR    new home directory for the user account
  -e, --expiredate EXPIRE_DATE  set account expiration date to EXPIRE_DATE
  -f, --inactive INACTIVE  set password inactive after expiration
                           to INACTIVE
  -g, --gid GROUP        force use GROUP as new primary group
  -G, --groups GROUPS    new list of supplementary GROUPS
  -a, --append           append the user to the supplemental GROUPS
                           mentioned by the -G option without removing
                           the user from other groups
  -h, --help             display this help message and exit
  -l, --login NEW_LOGIN  new value of the login name
  -L, --lock              lock the user account
  -m, --move-home        move contents of the home directory to the
                           new location (use only with -d)
  -o, --non-unique       allow using duplicate (non-unique) UID
  -p, --password PASSWORD  use encrypted password for the new password
  -R, --root CHROOT_DIR   directory to chroot into
  -P, --prefix PREFIX_DIR  prefix directory where are located the /etc/* files
  -s, --shell SHELL        new login shell for the user account
  -u, --uid UID           new UID for the user account
  -U, --unlock            unlock the user account
  -v, --add-subuids FIRST-LAST  add range of subordinate uids
  -V, --del-subuids FIRST-LAST  remove range of subordinate uids
  -w, --add-subgids FIRST-LAST  add range of subordinate gids

antonyscaria@DESKTOP-IU405JG:~$ usermod -u 2000 antonyscaria
usermod: user antonyscaria is currently used by process 8
antonyscaria@DESKTOP-IU405JG:~$
```

## 2. groupadd

- groupadd command creates a new group account using the values specified on the command line and the default values from the system.

- #groupadd student

```
antonyscaria@DESKTOP-IU405JG:~$ sudo groupadd student
[sudo] password for antonyscaria:
antonyscaria@DESKTOP-IU405JG:~$
```

## 3. groups

- print the groups a user is in

- #groups alice

```
antonyscaria@DESKTOP-IU405JG:~$ groups antonyscaria
antonyscaria : antonyscaria adm dialout cdrom floppy sudo audio dip video plugdev netdev
antonyscaria@DESKTOP-IU405JG:~$
```

## 4. groupdel

- groupdel command modifies the system account files, deleting all entries that refer to group. The named group must exist
- #groupdel marketing

```
antonyscaria@DESKTOP-IU405JG:~$ sudo groupdel student
antonyscaria@DESKTOP-IU405JG:~$
```

## 5. groupmod

- The groupmod command modifies the definition of the specified group by modifying the appropriate entry in the group database.

```
# groupmod -n group1 group2
```

```
antonyscaria@DESKTOP-IU405JG:~$ sudo groupmod -n student2 student1
antonyscaria@DESKTOP-IU405JG:~$
```

6. chmod

- To change directory permissions of file/ Directory in Linux.

#chmod whowhatwhich file/directory

• chmod +rwx filename to add permissions.

• chmod -rwx directoryname to remove permissions.

• chmod +x filename to allow executable permissions.

• chmod -wx filename to take out write and executable permissions.

#chmod u+x test

#chmod g-rwx test #chmod o-r test 4

```
antonyscaria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$ chmod +rwx quest.txt
antonyscaria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$
```

7. chown

- The chown command allows you to change the user and/or group ownership of a given file, directory.

#chown Tom Test

```
antonyscaria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$ chown antonyscaria capital.txt
antonyscaria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$
```

8. id

- id command in Linux is used to find out user and group names and numeric ID's (UID or group ID) of the current user.

• #id

```
antonyscaria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$ id
uid=1000(antonyscaria) gid=1000(antonyscaria) groups=1000(antonyscaria),4(adm),20(dialout),24(cdrom),25(floppy),27(sudo),
,29(audio),30(dip),44(video),46(plugdev),117(netdev)
antonyscaria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$
```

9. ps

- The ps command, short for Process Status, is a command line utility that is used to display or view information related to the processes running in a Linux system.

• PID – This is the unique process ID

• TTY – This is the type of terminal that the user is logged in to

• TIME – This is the time in minutes and seconds that the process has been running

• CMD – The command that launched the process

#ps -a 5

```
antonyscaria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$ ps -a
   PID TTY      TIME CMD
     8 tty1    00:00:00 bash
    85 tty1    00:00:00 ps
antonyscaria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$
```

10. top

- top command is used to show the Linux processes. It provides a dynamic real-time view of the running system

#top -u rose

```
top - 20:13:55 up 37 min, 0 users, load average: 0.52, 0.58, 0.59
Tasks: 4 total, 1 running, 3 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.6 us, 0.5 sy, 0.0 ni, 98.8 id, 0.0 wa, 0.1 hi, 0.0 si, 0.0 st
MiB Mem : 7577.4 total, 3249.3 free, 4104.1 used, 224.0 buff/cache
MiB Swap: 23552.0 total, 23319.9 free, 232.1 used. 3342.7 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
8	antony	s+	20	0	18080	3584	3468	S	0.0	0.0	0:00.55 bash
87	antony	s+	20	0	18928	2196	1524	R	0.0	0.0	0:00.04 top

### 1. wc

- wc stands for word count.
- Used for counting purpose.
- It is used to find out number of lines, word count, byte and characters count in the files specified in the file arguments.

• #wc state.txt

```
antonyscarria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$ wc quest.txt
2 8 44 quest.txt
antonyscarria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$ -
```

### 2. tar

- The Linux ‘tar’stands for tape archive, is used to create Archive and extract the Archive files
- Linux tar command to create compressed or uncompressed Archive files
- Options:

- c : Creates Archive
- x : Extract the archive
- f : creates archive with given filename
- t : displays or lists files in archived file
- u : archives and adds to an existing archive file
- v : Displays Verbose Information
- A : Concatenates the archive files
- z : zip, tells tar command that creates tar file using gzip
- j : filter archive tar file using tbzip
- W : Verify a archive file
- r : update or add file or directory in already existed .tar file

```
#tar cf archive.tar state.txt capital.txt //create archive file
#ls archive.tar #tar tf /archive.tar // list contents of tar archive file
```

- Extract an archive created with tar #mkdir backup #cd backup

```
#tar xf /home/meera/Documents/Meera_Linux/archive.tar
```

```
antonyscarria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$ tar cf archive1.tar quest.txt capital.txt
antonyscarria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$ ls
1369_1627987254_Basic_Linux_Commands_Part_3.pdf    Webex.msi
'1369_1628248148_Basic_Linux_part_4 (1).pdf'        archive.tar
1369_1628248148_Basic_Linux_part_4.pdf              archive1.tar
'Antony Scaria_23_ (Steve).pptx'                      capital.txt
AntonyScaria_Table.pdf                                desktop.ini
AnyDesk.exe                                         innovation_stevejobs.ppt
ERDIAGRAM.docx                                     mysql-workbench-community-8.0.25-winx64.msi
TeamViewer_Setup_x64.exe                           mysql-workbench-community-8.0.26-winx64.msi
VC_redist.x64.exe                                  quest.txt
'Versions of TCP.pdf'
antonyscarria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$ -
```

### 3. expr

- The expr command evaluates a given expression and displays its corresponding output. It is used for:
  - Basic operations like addition, subtraction, multiplication, division, and modulus on integers.
  - Evaluating regular expressions, string operations like substring, length of strings etc.
  - Performing operations on variables inside a shell script

#expr 10 + 2

```
antonyscaria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$ expr 10 + 2
12
antonyscaria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$
```

#### 4. Redirections & Piping

- A pipe is a form of redirection to send the output of one command/program/process to another command/program/process for further processing.
- Pipe is used to combine two or more commands, the output of one command acts as input to another command, and this command's output may act as input to the next command and so on.

```
#ls -l | wc -l #cat /etc/passwd.txt | head -7 | tail -5
antonyscaria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$ ls -l|wc -l
20
antonyscaria@DESKTOP-IU405JG:/mnt/c/Users/antony/Downloads$ ■
```

#### 5. ssh

- ssh stands for “Secure Shell”.
- It is a protocol used to securely connect to a remote server/system.
- ssh is secure in the sense that it transfers the data in encrypted form between the host and the client.
- It transfers inputs from the client to the host and relays back the output. ssh runs at TCP/IP port 22.

```
#ssh user_name@host(IP/Domain_name) #ssh -X root@server1.example.com
antonyscaria@DESKTOP-IU405JG:~$ ssh --help
unknown option -- -
usage: ssh [-46AaCfGgKkMNnqsTtVvXxYy] [-B bind_interface]
           [-b bind_address] [-c cipher_spec] [-D [bind_address:]port]
           [-E log_file] [-e escape_char] [-F configfile] [-I pkcs11]
           [-i identity_file] [-J [user@]host[:port]] [-L address]
           [-l login_name] [-m mac_spec] [-O ctl_cmd] [-o option] [-p port]
           [-Q query_option] [-R address] [-S ctl_path] [-W host:port]
           [-w local_tun[:remote_tun]] destination [command]
antonyscaria@DESKTOP-IU405JG:~$ ssh antonyscaria@DESKTOP-IU405JG
ssh: connect to host desktop-iu4o5jg port 22: Connection refused
```

#### 6. scp

- SCP (secure copy) is a command-line utility that allows you to securely copy files and directories between two locations.
- With scp, you can copy a file or directory:
- From your local system to a remote system.
- From a remote system to your local system.
- Between two remote systems from your local system.
- Remote file system locations are specified in format [user@]host:/path

Syntax:

```
scp [OPTION] [user@]SRC_HOST:]file1 [user@]DEST_HOST:]file2
$scp /etc/yum.config /etc/hosts ServerX:/home/student
$scp ServerX:/etc/hostname /home/student
```

#### 7. ssh-keygen

- ssh-keygen command to generate a public/private authentication key pair. Authentication keys allow a user to connect to a remote system without supplying a password. Keys must be generated for each user separately. If you generate key pairs as the root user, only the root can use the keys.

```
$ssh-keygen -t rsa
antonyescaria@DESKTOP-IU405JG:~$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/antonyescaria/.ssh/id_rsa): rsa
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in rsa
Your public key has been saved in rsa.pub
The key fingerprint is:
SHA256:aV0wgXVxf5zxcZfTS9rNPgtPM6hSXVA+bM6b9ZjfRpg antonyescaria@DESKTOP-IU405JG
The key's randomart image is:
+---[RSA 3072]---+
|   o.o+=|
| . + oo*O|
| . =B0|
| o . .++=|
| S . . o*.|
| . . . +EBB|
| . . *+*|
| . . . +o|
| . . o|
+---[SHA256]---+
antonyescaria@DESKTOP-IU405JG:~$
```

#### 8. ssh-copy-id

- The ssh-copy-id command allows you to install an SSH key on a remote server's authorized keys.
- This command facilitates SSH key login, which removes the need for a password for each login, thus ensuring a password-less, automatic login process.

```
$ssh-copy-id username@remote_host
```

1. a) Create six files with name of the form songX.mp3

```
antonyscaria@antonysscaria-VirtualBox:~$ touch song1.mp3 song2.mp3 song4.mp3 son  
g5.mp3 song6.mp3
```

- b) Create six files with name of the form snapX.jpg

```
antonyscaria@antonysscaria-VirtualBox:~$ touch snap1.jpg snap2.jpg snap3.jpg sna  
p4.jpg snap5.jpg snap6.jpg
```

- c) Create six files with name of the form filmX.mp4

```
antonyscaria@antonysscaria-VirtualBox:~$ touch film1.mp4 film2.mp4 film3.mp4 fil  
m4.mp4 film5.mp4 film6.mp4
```

2. From your home directory, move the song files into your music subdirectory, the snapshot files into your pictures subdirectory, and the movie files into videos subdirectory.

```
antonyscaria@antonysscaria-VirtualBox:~$ mv *.mp3 ./Music/  
antonyscaria@antonysscaria-VirtualBox:~$ mv *.jpg ./Pictures/  
antonyscaria@antonysscaria-VirtualBox:~$ mv *.mp4 ./Videos/
```

3. In your home directory, create three subdirectories for organizing your files. Call these directories friends, family, and work. Create all three with one command

```
antonyscaria@antonysscaria-VirtualBox:~$ mkdir -p {friends,family,work}
```

4. Copy song files to the friends folder and snap files to family folder.

```
antonyscaria@antonysscaria-VirtualBox:~$ cp /home/antonysscaria/Music song1.mp3 s  
ong2.mp3 song3.mp3 song.mp3 song5.mp3 song6.mp3 /home/antonysscaria/friends/  
antonyscaria@antonysscaria-VirtualBox:~$ cp /home/antonysscaria/Pictures snap1.jp  
g snap2.jpg snap3.jpg snap4.jpg snap5.jpg snap6.jpg /home/antonysscaria/family/
```

5. Attempt to delete both family and friends projects with a single rmdir command.

```
antonyscaria@antonysscaria-VirtualBox:~$ rmdir {friends,family}
```

6. Use another command that will succeed in deleting both the family and friends folder.

```
antonyscaria@antonysscaria-VirtualBox:~$ rm -r friends family
```

7. Redirect a long listing of all home directory files, including hidden, into a file named allfiles.txt. Confirm that the file contains the listing.

```
antonyscaria@antonysscaria-VirtualBox:~$ ls -a > allfiles.txt
```

8. In the command window, display today's date with day of the week, month, date and year

```
antonyscaria@antonysscaria-VirtualBox:~$ date  
Tuesday 17 August 2021 04:13:11 PM IST
```

9. Add the user Juliet

```
antonyscaria@antonysscaria-VirtualBox:~$ sudo useradd Juliet  
[sudo] password for antonysscaria:
```

10. Confirm that Juliet has been added by examining the /etc/passwd file

```
antonyscaria@antonysscaria-VirtualBox:~$ cat /etc/passwd | grep Juliet  
Juliet:x:1001:1001::/home/Juliet:/bin/sh
```

11. Use the passwd command to initialize Juliet's password

```
antonyscaria@antonyscaria-VirtualBox:~$ sudo passwd Juliet
New password:
Retype new password:
passwd: password updated successfully
```

12. Create a supplementary group called Shakespeare with a group id of 30000

```
antonyscaria@antonyscaria-VirtualBox:~$ sudo groupadd -g 30000 Shakespeare
```

13. Create a supplementary group called artists

```
antonyscaria@antonyscaria-VirtualBox:~$ sudo groupadd artist
```

14. Confirm that Shakespeare and artists have been added by examining the /etc/group file.

```
antonyscaria@antonyscaria-VirtualBox:~$ less /etc/group
Shakespeare:x:30000:
artist:x:30001:
```

15. Add the Juliet user to the Shakespeare group as a supplementary group.

```
antonyscaria@antonyscaria-VirtualBox:~$ sudo usermod -G Shakespeare Juliet
```

16. Confirm that Juliet has been added using the id command.

```
antonyscaria@antonyscaria-VirtualBox:~$ id Juliet
uid=1001(Juliet) gid=1001(Juliet) groups=1001(Juliet),30000(Shakespeare)
```

17. Add Romeo and Hamlet to the Shakespeare group.

```
antonyscaria@antonyscaria-VirtualBox:~$ sudo useradd Romeo
[sudo] password for antonyscaria:
antonyscaria@antonyscaria-VirtualBox:~$ sudo useradd Hamlet
antonyscaria@antonyscaria-VirtualBox:~$ sudo usermod -G Shakespeare Romeo
antonyscaria@antonyscaria-VirtualBox:~$ sudo usermod -G Shakespeare Hamlet
```

18. Add Reba, Dolly and Elvis to the artists group.

```
antonyscaria@antonyscaria-VirtualBox:~$ sudo useradd Reba
antonyscaria@antonyscaria-VirtualBox:~$ sudo useradd Dolly
antonyscaria@antonyscaria-VirtualBox:~$ sudo useradd Elvis
antonyscaria@antonyscaria-VirtualBox:~$ sudo usermod -G artist Reba
antonyscaria@antonyscaria-VirtualBox:~$ sudo usermod -G artist Dolly
antonyscaria@antonyscaria-VirtualBox:~$ sudo usermod -G artist Elvis
```

19. Verify the supplemental group memberships by examining the /etc/group file.

```
antonyscaria@antonyscaria-VirtualBox:~$ less /etc/group
Juliet:x:1001:
Shakespeare:x:30000:Juliet,Romeo,Hamlet
artist:x:30001:Reba,Dolly,Elvis
Romeo:x:1002:
Hamlet:x:1003:
Reba:x:1004:
Dolly:x:1005:
Elvis:x:1006:
```

20. Attempt to remove user Dolly.

```
antonyscaria@antonyscaria-VirtualBox:~$ sudo userdel Dolly
```

1. Try out these network commands in Window as well as in Linux and perform at least 4 options with each command: ping route traceroute, nslookup, Ip Config, NetStat .

## Windows

### Ping

```
C:\Users\antony>ping google.com

Pinging google.com [142.250.195.110] with 32 bytes of data:
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119

Ping statistics for 142.250.195.110:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 14ms, Average = 14ms
```

```
C:\Users\antony>ping -a google.com

Pinging google.com [142.250.195.110] with 32 bytes of data:
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119

Ping statistics for 142.250.195.110:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 14ms, Average = 14ms
```

```
C:\Users\antony>ping -t google.com

Pinging google.com [142.250.195.110] with 32 bytes of data:
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Ping statistics for 142.250.195.110:
    Packets: Sent = 16, Received = 16, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 14ms, Average = 14ms
```

```
C:\Users\antony>ping -j google.com

Pinging google.com [142.250.195.110] with 32 bytes of data:
General failure.
General failure.
General failure.
General failure.

Ping statistics for 142.250.195.110:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\Users\antony>ping -4 google.com

Pinging google.com [142.250.195.110] with 32 bytes of data:
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=13ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=76ms TTL=119

Ping statistics for 142.250.195.110:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 13ms, Maximum = 76ms, Average = 29ms
```

# Route

```
C:\Users\antony>route print
=====
Interface List
 16...0a 00 27 00 00 10 .....VirtualBox Host-Only Ethernet Adapter
  6...68 54 5a d0 dd 7a .....Microsoft Wi-Fi Direct Virtual Adapter
  7...6a 54 5a d0 dd 79 .....Microsoft Wi-Fi Direct Virtual Adapter #2
 18...68 54 5a d0 dd 79 .....Intel(R) Wi-Fi 6 AX200 160MHz
  1.....Software Loopback Interface 1
=====

IPv4 Route Table
=====
Active Routes:
Network Destination      Netmask        Gateway       Interface Metric
          0.0.0.0        0.0.0.0    192.168.1.1  192.168.1.4    40
         127.0.0.0    255.0.0.0   On-link        127.0.0.1    331
         127.0.0.1    255.255.255  On-link        127.0.0.1    331
 127.255.255.255  255.255.255.255  On-link        127.0.0.1    331
         192.168.1.0  255.255.255.0  On-link        192.168.1.4    296
         192.168.1.4  255.255.255.255  On-link        192.168.1.4    296
         192.168.1.255 255.255.255.255  On-link        192.168.1.4    296
         192.168.56.0  255.255.255.0  On-link        192.168.56.1   281
         192.168.56.1  255.255.255.255  On-link        192.168.56.1   281
 192.168.56.255  255.255.255.255  On-link        192.168.56.1   281
         224.0.0.0    240.0.0.0   On-link        127.0.0.1    331
         224.0.0.0    240.0.0.0   On-link        192.168.56.1   281
         224.0.0.0    240.0.0.0   On-link        192.168.1.4    296
 255.255.255.255  255.255.255.255  On-link        127.0.0.1    331
 255.255.255.255  255.255.255.255  On-link        192.168.56.1   281
 255.255.255.255  255.255.255.255  On-link        192.168.1.4    296
=====
Persistent Routes:
  None
```

```
IPv6 Route Table
=====
Active Routes:
 If Metric Network Destination      Gateway
 18    296 ::/0                      fe80::1
  1    331 ::1/128                  On-link
 16    281 fe80::/64                On-link
 18    296 fe80::/64                On-link
 18    296 fe80::31a1:3adc:8d32:efb7/128
                                         On-link
 16    281 fe80::349b:d58d:75f2:58ec/128
                                         On-link
  1    331 ff00::/8                  On-link
 16    281 ff00::/8                  On-link
 18    296 ff00::/8                  On-link
=====
Persistent Routes:
  None
```

```
C:\Users\antony>route print -4
=====
Interface List
 16...0a 00 27 00 00 10 .....VirtualBox Host-Only Ethernet Adapter
  6...68 54 5a d0 dd 7a .....Microsoft Wi-Fi Direct Virtual Adapter
  7...6a 54 5a d0 dd 79 .....Microsoft Wi-Fi Direct Virtual Adapter #2
 18...68 54 5a d0 dd 79 .....Intel(R) Wi-Fi 6 AX200 160MHz
  1.....Software Loopback Interface 1
=====

IPv4 Route Table
=====
Active Routes:
Network Destination      Netmask        Gateway        Interface Metric
          0.0.0.0        0.0.0.0    192.168.1.1  192.168.1.4    40
          127.0.0.0       255.0.0.0   On-link        127.0.0.1   331
          127.0.0.1       255.255.255.255  On-link        127.0.0.1   331
 127.255.255.255       255.255.255.255  On-link        127.0.0.1   331
          192.168.1.0       255.255.255.0  On-link        192.168.1.4   296
          192.168.1.4       255.255.255.255  On-link        192.168.1.4   296
 192.168.1.255       255.255.255.255  On-link        192.168.1.4   296
          192.168.56.0       255.255.255.0  On-link        192.168.56.1  281
          192.168.56.1       255.255.255.255  On-link        192.168.56.1  281
 192.168.56.255       255.255.255.255  On-link        192.168.56.1  281
          224.0.0.0        240.0.0.0   On-link        127.0.0.1   331
          224.0.0.0        240.0.0.0   On-link        192.168.56.1  281
          224.0.0.0        240.0.0.0   On-link        192.168.1.4   296
 255.255.255.255       255.255.255.255  On-link        127.0.0.1   331
 255.255.255.255       255.255.255.255  On-link        192.168.56.1  281
 255.255.255.255       255.255.255.255  On-link        192.168.1.4   296
=====

Persistent Routes:
  None
```

```
C:\Users\antony>route print -6
=====
Interface List
 16...0a 00 27 00 00 10 .....VirtualBox Host-Only Ethernet Adapter
  6...68 54 5a d0 dd 7a .....Microsoft Wi-Fi Direct Virtual Adapter
  7...6a 54 5a d0 dd 79 .....Microsoft Wi-Fi Direct Virtual Adapter #2
 18...68 54 5a d0 dd 79 .....Intel(R) Wi-Fi 6 AX200 160MHz
  1.....Software Loopback Interface 1
=====

IPv6 Route Table
=====
Active Routes:
If Metric Network Destination      Gateway
 18    296 ::/0           fe80::1
  1    331 ::1/128        On-link
 16    281 fe80::/64        On-link
 18    296 fe80::/64        On-link
 18    296 fe80::31a1:3adc:8d32:efb7/128
                                On-link
 16    281 fe80::349b:d58d:75f2:58ec/128
                                On-link
  1    331 ff00::/8        On-link
 16    281 ff00::/8        On-link
 18    296 ff00::/8        On-link
=====

Persistent Routes:
  None
```

```
C:\Users\antony>route print *157
=====
Interface List
 16...0a 00 27 00 00 10 .....VirtualBox Host-Only Ethernet Adapter
  6...68 54 5a d0 dd 7a .....Microsoft Wi-Fi Direct Virtual Adapter
  7...6a 54 5a d0 dd 79 .....Microsoft Wi-Fi Direct Virtual Adapter #2
 18...68 54 5a d0 dd 79 .....Intel(R) Wi-Fi 6 AX200 160MHz
  1.....Software Loopback Interface 1
=====

IPv4 Route Table
=====
Active Routes:
  None
Persistent Routes:
  None

IPv6 Route Table
=====
Active Routes:
  None
Persistent Routes:
  None
```

## Tracert

```
C:\Users\antony>tracert 192.168.1.1

Tracing route to 192.168.1.1 over a maximum of 30 hops

 1      1 ms      1 ms      4 ms  192.168.1.1

Trace complete.
```

```
C:\Users\antony>tracert www.google.com

Tracing route to www.google.com [142.250.67.68]
over a maximum of 30 hops:

 1      1 ms      <1 ms      <1 ms  192.168.1.1
 2      2 ms      2 ms      2 ms  1.105.92.111.asianet.co.in [111.92.105.1]
 3      *          *          *          Request timed out.
 4     14 ms     14 ms     15 ms  130.230.88.202.asianet.co.in [202.88.230.130]
 5     15 ms     13 ms     13 ms  77.252.88.202.asianet.co.in [202.88.252.77]
 6     15 ms     21 ms     13 ms  216.239.54.67
 7     17 ms     14 ms     14 ms  142.250.228.221
 8     14 ms     14 ms     14 ms  maa05s13-in-f4.1e100.net [142.250.67.68]

Trace complete.
```

```
C:\Users\antony>tracert -d www.yahoo.com

Tracing route to new-fp-shed.wg1.b.yahoo.com [202.165.107.49]
over a maximum of 30 hops:

 1   1 ms    <1 ms    1 ms  192.168.1.1
 2   2 ms    2 ms    2 ms  111.92.105.1
 3   *       *       * Request timed out.
 4   2 ms    2 ms    2 ms  14.142.20.189
 5   31 ms   25 ms   25 ms  172.19.249.170
 6   25 ms   25 ms   24 ms  180.87.36.9
 7   57 ms   57 ms   57 ms  180.87.36.13
 8   59 ms   57 ms   57 ms  180.87.96.21
 9   *       *       * Request timed out.
10   *       *       * Request timed out.
11   *       *       * Request timed out.
12   *       *       * Request timed out.
13   *       *       * Request timed out.
14   *       *       * Request timed out.
15   51 ms   52 ms   51 ms  202.165.107.49

Trace complete.
```

```
C:\Users\antony>tracert 22.110.0.1

Tracing route to 22.110.0.1 over a maximum of 30 hops

 1   3 ms    <1 ms    <1 ms  192.168.1.1
 2   2 ms    1 ms    1 ms  1.105.92.111.asianet.co.in [111.92.105.1]
 3   3 ms    *       *  170.230.88.202.asianet.co.in [202.88.230.170]
 4   7 ms    8 ms    2 ms  14.142.20.189.static-vsnl.net.in [14.142.20.189]
 5   35 ms   30 ms   28 ms  172.28.176.254
 6   35 ms   34 ms   34 ms  ix-ae-1-100.tcore2.mlv-mumbai.as6453.net [180.87.39.25]
 7   152 ms  151 ms  150 ms  if-ae-2-2.tcore1.mlv-mumbai.as6453.net [180.87.38.1]
 8   *       159 ms  155 ms  if-ae-5-2.tcore1.wyn-marseille.as6453.net [80.231.217.29]
 9   157 ms  155 ms  155 ms  if-ae-21-2.tcore1.pye-paris.as6453.net [80.231.154.208]
10   *       *       * Request timed out.
11   *       *       * Request timed out.
12   *       *       * Request timed out.
13   *       *       * Request timed out.
14   *       *       * Request timed out.
15   *       *       * Request timed out.
16   *       *       * Request timed out.
17   *       *       * Request timed out.
18   *       *       * Request timed out.
19   *       *       * Request timed out.
20   *       *       * Request timed out.
21   *       *       * Request timed out.
22   *       *       * Request timed out.
23   *       *       * Request timed out.
24   *       *       * Request timed out.
25   *       *       * Request timed out.
26   *       *       * Request timed out.
27   *       *       * Request timed out.
28   *       *       * Request timed out.
29   *       *       * Request timed out.
30   *       *       * Request timed out.

Trace complete.
```

# Nslookup

```
C:\Users\antony>nslookup  
Default Server: UnKnown  
Address: 192.168.1.1
```

```
C:\Users\antony>nslookup google.com  
Server: UnKnown  
Address: 192.168.1.1  
  
Non-authoritative answer:  
Name: google.com  
Addresses: 2404:6800:4007:824::200e  
          142.250.195.110
```

```
C:\Users\antony>nslookup -q=MX google.com  
Server: UnKnown  
Address: 192.168.1.1  
  
Non-authoritative answer:  
google.com      MX preference = 30, mail exchanger = alt2.aspmx.l.google.com  
google.com      MX preference = 20, mail exchanger = alt1.aspmx.l.google.com  
google.com      MX preference = 50, mail exchanger = alt4.aspmx.l.google.com  
google.com      MX preference = 40, mail exchanger = alt3.aspmx.l.google.com  
google.com      MX preference = 10, mail exchanger = aspmx.l.google.com
```

```
C:\Users\antony>nslookup -type=ns google.com  
Server: UnKnown  
Address: 192.168.1.1  
  
Non-authoritative answer:  
google.com      nameserver = ns3.google.com  
google.com      nameserver = ns2.google.com  
google.com      nameserver = ns4.google.com  
google.com      nameserver = ns1.google.com
```

# Ipconfig

```
C:\Users\antony>ipconfig

Windows IP Configuration

Ethernet adapter VirtualBox Host-Only Network:

  Connection-specific DNS Suffix  . :
  Link-local IPv6 Address . . . . . : fe80::349b:d58d:75f2:58ec%16
  IPv4 Address. . . . . : 192.168.56.1
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . :

Wireless LAN adapter Local Area Connection* 1:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

  Connection-specific DNS Suffix  . :
  Link-local IPv6 Address . . . . . : fe80::31a1:3adc:8d32:efb7%18
  IPv4 Address. . . . . : 192.168.1.4
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . : fe80::1%18
                                         192.168.1.1
```

```
C:\Users\antony>ipconfig /allcompartments

Windows IP Configuration

=====
Network Information for Compartment 1 (ACTIVE)
=====

Ethernet adapter VirtualBox Host-Only Network:

  Connection-specific DNS Suffix  . :
  Link-local IPv6 Address . . . . . : fe80::349b:d58d:75f2:58ec%16
  IPv4 Address. . . . . : 192.168.56.1
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . :

Wireless LAN adapter Local Area Connection* 1:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix  . :
```

```
C:\Users\antony>ipconfig /displaydns

Windows IP Configuration

 29.217.231.80.in-addr.arpa
 -----
 Record Name . . . . . : 29.217.231.80.in-addr.arpa
 Record Type . . . . . : 12
 Time To Live . . . . . : 227
 Data Length . . . . . : 8
 Section . . . . . . . : Answer
 PTR Record . . . . . : if-ae-5-2.tcore1.wyn-marseille.as6453.net

serve.popads.net
-----
Record Name . . . . . : serve.popads.net
Record Type . . . . . : 1
Time To Live . . . . . : 21318
Data Length . . . . . : 4
Section . . . . . . . : Answer
A (Host) Record . . . . : 216.21.13.10

Record Name . . . . . : serve.popads.net
Record Type . . . . . : 1
Time To Live . . . . . : 21318
Data Length . . . . . : 4
Section . . . . . . . : Answer
A (Host) Record . . . . : 216.21.13.16

Record Name . . . . . : serve.popads.net
Record Type . . . . . : 1
Time To Live . . . . . : 21318
Data Length . . . . . : 4
Section . . . . . . . : Answer
A (Host) Record . . . . : 216.21.13.11
```

```
C:\Users\antony>ipconfig /release

Windows IP Configuration

No operation can be performed on Local Area Connection* 1 while it has its media disconnected.
No operation can be performed on Local Area Connection* 2 while it has its media disconnected.

Ethernet adapter VirtualBox Host-Only Network:

  Connection-specific DNS Suffix . . .
  Link-local IPv6 Address . . . . . : fe80::349b:d58d:75f2:58ec%16
  IPv4 Address . . . . . . . . . : 192.168.56.1
  Subnet Mask . . . . . . . . . : 255.255.255.0
  Default Gateway . . . . . . . . :

Wireless LAN adapter Local Area Connection* 1:

  Media State . . . . . . . . . : Media disconnected
  Connection-specific DNS Suffix . . .

Wireless LAN adapter Local Area Connection* 2:

  Media State . . . . . . . . . : Media disconnected
  Connection-specific DNS Suffix . . :
```

# Netstat

```
C:\Users\antony>netstat
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	127.0.0.1:49761	kubernetes:52334	ESTABLISHED
TCP	127.0.0.1:50608	kubernetes:52334	ESTABLISHED
TCP	127.0.0.1:52334	kubernetes:49761	ESTABLISHED
TCP	127.0.0.1:52334	kubernetes:50608	ESTABLISHED
TCP	192.168.1.4:49411	20.198.162.76:https	ESTABLISHED
TCP	192.168.1.4:56740	sa-in-f188:5228	ESTABLISHED
TCP	192.168.1.4:57820	v220201218865137188:4444	ESTABLISHED
TCP	192.168.1.4:57843	whatsapp-cdn-shv-01-sin6:https	ESTABLISHED
TCP	192.168.1.4:57844	98:https	ESTABLISHED
TCP	192.168.1.4:57845	20.189.173.3:https	TIME_WAIT
TCP	192.168.1.4:57849	52.184.216.174:https	ESTABLISHED
TCP	192.168.1.4:57850	40.91.73.169:https	TIME_WAIT
TCP	192.168.1.4:57851	1drv:https	ESTABLISHED
TCP	192.168.1.4:57852	1drv:https	ESTABLISHED
TCP	192.168.1.4:58831	sa-in-f188:5228	ESTABLISHED
TCP	192.168.1.4:60732	20.198.162.76:https	ESTABLISHED
TCP	192.168.1.4:64708	20.198.162.76:https	ESTABLISHED

```
C:\Users\antony>netstat -n
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	127.0.0.1:49761	127.0.0.1:52334	ESTABLISHED
TCP	127.0.0.1:50608	127.0.0.1:52334	ESTABLISHED
TCP	127.0.0.1:52334	127.0.0.1:49761	ESTABLISHED
TCP	127.0.0.1:52334	127.0.0.1:50608	ESTABLISHED
TCP	192.168.1.4:49411	20.198.162.76:443	ESTABLISHED
TCP	192.168.1.4:56740	74.125.200.188:5228	ESTABLISHED
TCP	192.168.1.4:57820	45.132.246.208:4444	ESTABLISHED
TCP	192.168.1.4:57843	157.240.7.54:443	ESTABLISHED
TCP	192.168.1.4:57856	20.44.229.112:443	TIME_WAIT
TCP	192.168.1.4:58831	74.125.200.188:5228	ESTABLISHED
TCP	192.168.1.4:60732	20.198.162.76:443	ESTABLISHED
TCP	192.168.1.4:64708	20.198.162.76:443	ESTABLISHED

```
C:\Users\antony>netstat -n 5
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	127.0.0.1:49761	127.0.0.1:52334	ESTABLISHED
TCP	127.0.0.1:50608	127.0.0.1:52334	ESTABLISHED
TCP	127.0.0.1:52334	127.0.0.1:49761	ESTABLISHED
TCP	127.0.0.1:52334	127.0.0.1:50608	ESTABLISHED
TCP	192.168.1.4:49411	20.198.162.76:443	ESTABLISHED
TCP	192.168.1.4:56740	74.125.200.188:5228	ESTABLISHED
TCP	192.168.1.4:57820	45.132.246.208:4444	ESTABLISHED
TCP	192.168.1.4:57843	157.240.7.54:443	ESTABLISHED
TCP	192.168.1.4:57856	20.44.229.112:443	TIME_WAIT
TCP	192.168.1.4:57857	13.107.42.12:443	ESTABLISHED
TCP	192.168.1.4:57858	20.44.229.112:443	ESTABLISHED
TCP	192.168.1.4:58831	74.125.200.188:5228	ESTABLISHED
TCP	192.168.1.4:60732	20.198.162.76:443	ESTABLISHED
TCP	192.168.1.4:64708	20.198.162.76:443	ESTABLISHED

Active Connections

Proto	Local Address	Foreign Address	State
TCP	127.0.0.1:49761	127.0.0.1:52334	ESTABLISHED
TCP	127.0.0.1:50608	127.0.0.1:52334	ESTABLISHED
TCP	127.0.0.1:52334	127.0.0.1:49761	ESTABLISHED
TCP	127.0.0.1:52334	127.0.0.1:50608	ESTABLISHED
TCP	192.168.1.4:49411	20.198.162.76:443	ESTABLISHED
TCP	192.168.1.4:56740	74.125.200.188:5228	ESTABLISHED
TCP	192.168.1.4:57820	45.132.246.208:4444	ESTABLISHED
TCP	192.168.1.4:57843	157.240.7.54:443	ESTABLISHED
TCP	192.168.1.4:57856	20.44.229.112:443	TIME_WAIT
TCP	192.168.1.4:57857	13.107.42.12:443	ESTABLISHED
TCP	192.168.1.4:57858	20.44.229.112:443	ESTABLISHED
TCP	192.168.1.4:58831	74.125.200.188:5228	ESTABLISHED
TCP	192.168.1.4:60732	20.198.162.76:443	ESTABLISHED
TCP	192.168.1.4:64708	20.198.162.76:443	ESTABLISHED

Active Connections

```
C:\Users\antony>netstat -a
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	0.0.0.0:80	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:135	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:443	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:445	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:3306	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:5040	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:5357	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:7680	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:49664	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:49665	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:49666	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:49667	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:49668	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:49669	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:49670	DESKTOP-IU405JG:0	LISTENING
TCP	0.0.0.0:49671	DESKTOP-IU405JG:0	LISTENING
TCP	127.0.0.1:1001	DESKTOP-IU405JG:0	LISTENING
TCP	127.0.0.1:5939	DESKTOP-IU405JG:0	LISTENING
TCP	127.0.0.1:9222	DESKTOP-IU405JG:0	LISTENING
TCP	127.0.0.1:27017	DESKTOP-IU405JG:0	LISTENING
TCP	127.0.0.1:49761	kubernetes:52334	ESTABLISHED
TCP	127.0.0.1:50608	kubernetes:52334	ESTABLISHED
TCP	127.0.0.1:52334	DESKTOP-IU405JG:0	LISTENING
TCP	127.0.0.1:52334	kubernetes:49761	ESTABLISHED
TCP	127.0.0.1:52334	kubernetes:50608	ESTABLISHED
TCP	192.168.1.4:139	DESKTOP-IU405JG:0	LISTENING
TCP	192.168.1.4:49229	117.18.232.200:https	ESTABLISHED
TCP	192.168.1.4:49230	52.184.216.174:https	ESTABLISHED

# Linux

## Ping

```
reddevil@kali:~  
File Actions Edit View Help  
└─(reddevil㉿kali)-[~]  
$ ping google.com  
PING google.com (142.250.195.110) 56(84) bytes of data.  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=1 ttl=119  
time=18.1 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=2 ttl=119  
time=19.7 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=3 ttl=119  
time=16.3 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=4 ttl=119  
time=17.3 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=5 ttl=119  
time=16.7 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=6 ttl=119  
time=17.8 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=7 ttl=119  
time=16.5 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=8 ttl=119  
time=18.5 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=9 ttl=119  
time=18.4 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=10 ttl=119  
time=16.6 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=11 ttl=119  
time=17.0 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=12 ttl=119  
time=16.6 ms
```

```
└─(reddevil㉿kali)-[~]  
$ ping -a google.com  
PING google.com (142.250.195.110) 56(84) bytes of data. 148 × 1 ◉  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=1 ttl=119  
time=18.3 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=2 ttl=119  
time=16.8 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=3 ttl=119  
time=18.7 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=4 ttl=119  
time=16.7 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=5 ttl=119  
time=16.4 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=6 ttl=119  
time=16.6 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=7 ttl=119  
time=17.5 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=8 ttl=119  
time=18.4 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=9 ttl=119  
time=17.6 ms  
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=10 ttl=119  
time=16.5 ms
```

```
└─(reddevil㉿kali)-[~]
└─$ ping -V
ping from iputils 20210202
```

```
└─(reddevil㉿kali)-[~]
└─$ ping -b google.com
PING google.com (142.250.195.110) 56(84) bytes of data.          148 × 4 ☀
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=1 ttl=119
time=19.0 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=2 ttl=119
time=16.8 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=3 ttl=119
time=19.4 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=4 ttl=119
time=17.1 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=5 ttl=119
time=16.7 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=6 ttl=119
time=17.8 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=7 ttl=119
time=18.9 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=8 ttl=119
time=16.8 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=9 ttl=119
time=16.8 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=10 ttl=119
time=17.9 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=11 ttl=119
time=18.2 ms
```

## Route

```
└─(reddevil㉿kali)-[~]
└─$ route
Kernel IP routing table
Destination     Gateway         Genmask        Flags Metric Ref    Use Iface
default         192.168.1.1   0.0.0.0       UG      100    0        0 eth0
192.168.1.0    0.0.0.0       255.255.255.0 U        100    0        0 eth0
```

```
└─(reddevil㉿kali)-[~]
└─$ route -n
Kernel IP routing table
Destination     Gateway         Genmask        Flags Metric Ref    Use Iface
0.0.0.0         192.168.1.1   0.0.0.0       UG      100    0        0 eth0
192.168.1.0    0.0.0.0       255.255.255.0 U        100    0        0 eth0
```

```
└─(reddevil㉿kali)-[~]
└─$ route -Cn
Kernel IP routing cache
Source          Destination      Gateway      Flags Metric Ref Use Iface
```

```
└─(reddevil㉿kali)-[~]
└─$ ip route
default via 192.168.1.1 dev eth0 proto dhcp metric 100
192.168.1.0/24 dev eth0 proto kernel scope link src 192.168.1.6 metric 100
```

## Traceroute

```
└─(reddevil㉿kali)-[~]
└─$ traceroute google.com
traceroute to google.com (142.250.195.110), 30 hops max, 60 byte packets
 1  192.168.1.1 (192.168.1.1)  0.427 ms  0.505 ms  0.595 ms
 2  * * *
 3  * * *
 4  130.230.88.202.asianet.co.in (202.88.230.130)  19.721 ms  20.027 ms  19.7
65 ms
 5  77.252.88.202.asianet.co.in (202.88.252.77)  18.736 ms  18.773 ms  19.055
ms
 6  * * *
 7  74.125.242.129 (74.125.242.129)  30.965 ms 142.251.55.90 (142.251.55.90)
25.422 ms 74.125.242.129 (74.125.242.129)  28.094 ms
 8  142.251.55.69 (142.251.55.69)  30.022 ms 142.251.55.71 (142.251.55.71)  3
3.742 ms 142.251.55.69 (142.251.55.69)  35.672 ms
 9  maa03s39-in-f14.1e100.net (142.250.195.110)  32.153 ms  22.027 ms  16.529
ms
```

```
└─(reddevil㉿kali)-[~]
└─$ traceroute -4 google.com
traceroute to google.com (142.250.195.110), 30 hops max, 60 byte packets
 1  192.168.1.1 (192.168.1.1)  0.365 ms  0.476 ms  0.503 ms
 2  * * *
 3  * * *
 4  130.230.88.202.asianet.co.in (202.88.230.130)  19.244 ms  15.406 ms  19.3
46 ms
 5  * 77.252.88.202.asianet.co.in (202.88.252.77)  15.908 ms  19.669 ms
 6  * * *
 7  142.251.55.120 (142.251.55.120)  33.494 ms 142.251.55.74 (142.251.55.74)
30.279 ms 142.251.55.42 (142.251.55.42)  33.196 ms
 8  74.125.242.130 (74.125.242.130)  32.873 ms 142.251.55.69 (142.251.55.69)
31.429 ms 74.125.242.138 (74.125.242.138)  39.660 ms
 9  maa03s39-in-f14.1e100.net (142.250.195.110)  19.437 ms  18.884 ms  16.910
ms
```

```
└─(reddevil㉿kali)-[~]
└─$ traceroute -6 google.com
traceroute to google.com (2404:6800:4007:824::200e), 30 hops max, 80 byte pac
kets
 1  fe80::1%eth0 (fe80::1%eth0)  3.292 ms !N  3.272 ms !N  3.253 ms !N
```

```
└─(reddevil㉿kali)-[~]
└─$ traceroute -d google.com
traceroute to google.com (142.250.195.110), 30 hops max, 60 byte packets
setsockopt SO_DEBUG: Permission denied
```

## Nslookup

```
└─(reddevil㉿kali)-[~]
└─$ nslookup google.com
Server:          192.168.1.1
Address:         192.168.1.1#53

Non-authoritative answer:
Name:   google.com
Address: 142.250.195.110
Name:   google.com
Address: 2404:6800:4007:824::200e
```

```
└─(reddevil㉿kali)-[~]
└─$ nslookup -q=MX google.com
Server:          192.168.1.1
Address:         192.168.1.1#53

Non-authoritative answer:
google.com      mail exchanger = 30 alt2.aspmx.l.google.com.
google.com      mail exchanger = 40 alt3.aspmx.l.google.com.
google.com      mail exchanger = 10 aspmx.l.google.com.
google.com      mail exchanger = 50 alt4.aspmx.l.google.com.
google.com      mail exchanger = 20 alt1.aspmx.l.google.com.
```

```
└─(reddevil㉿kali)-[~]
└─$ nslookup -type=soa google.com
Server:          192.168.1.1
Address:         192.168.1.1#53

Non-authoritative answer:
google.com
    origin = ns1.google.com
    mail addr = dns-admin.google.com
    serial = 396090275
    refresh = 900
    retry = 900
    expire = 1800
    minimum = 60
```

```
[reddevil㉿kali)-[~]
$ nslookup -type=a google.com
Server:      192.168.1.1
Address:     192.168.1.1#53

Non-authoritative answer:
Name:   google.com
Address: 142.250.195.110
```

## Ifconfig

```
[reddevil㉿kali)-[~]
$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 192.168.1.6 netmask 255.255.255.0 broadcast 192.168.1.255
          inet6 fe80::129a:ddff:fe44:3699 prefixlen 64 scopeid 0x20<link>
            ether 10:9a:dd:44:36:99 txqueuelen 1000 (Ethernet)
              RX packets 1345 bytes 916585 (895.1 KiB)
              RX errors 0 dropped 376 overruns 0 frame 0
              TX packets 915 bytes 77837 (76.0 KiB)
              TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
              device interrupt 16

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
      inet 127.0.0.1 netmask 255.0.0.0
          inet6 ::1 prefixlen 128 scopeid 0x10<host>
            loop txqueuelen 1000 (Local Loopback)
              RX packets 16 bytes 712 (712.0 B)
              RX errors 0 dropped 0 overruns 0 frame 0
              TX packets 16 bytes 712 (712.0 B)
              TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
[reddevil㉿kali)-[~]
$ ifconfig -a
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 192.168.1.6 netmask 255.255.255.0 broadcast 192.168.1.255
          inet6 fe80::129a:ddff:fe44:3699 prefixlen 64 scopeid 0x20<link>
            ether 10:9a:dd:44:36:99 txqueuelen 1000 (Ethernet)
              RX packets 1366 bytes 918603 (897.0 KiB)
              RX errors 0 dropped 395 overruns 0 frame 0
              TX packets 918 bytes 78115 (76.2 KiB)
              TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
              device interrupt 16

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
      inet 127.0.0.1 netmask 255.0.0.0
          inet6 ::1 prefixlen 128 scopeid 0x10<host>
            loop txqueuelen 1000 (Local Loopback)
              RX packets 16 bytes 712 (712.0 B)
              RX errors 0 dropped 0 overruns 0 frame 0
              TX packets 16 bytes 712 (712.0 B)
              TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlan0: flags=4098<BROADCAST,MULTICAST> mtu 1500
      ether d6:92:9f:ba:94:d6 txqueuelen 1000 (Ethernet)
        RX packets 0 bytes 0 (0.0 B)
        RX errors 0 dropped 0 overruns 0 frame 0
```

```
(reddevil㉿kali)-[~]
$ ifconfig -s
Iface      MTU     RX-OK RX-ERR RX-DRP RX-OVR     TX-OK TX-ERR TX-DRP TX-OVR Fl
g
eth0       1500    1377     0     405 0           918     0     0     0 BM
RU
lo        65536     16     0     0 0           16     0     0     0 LR
U
```

```
(reddevil㉿kali)-[~]
$ ifconfig -v
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
      inet 192.168.1.6  netmask 255.255.255.0  broadcast 192.168.1.255
              inet6 fe80::129a:ddff:fe44:3699  prefixlen 64  scopeid 0x20<link>
                  ether 10:9a:dd:44:36:99  txqueuelen 1000  (Ethernet)
                      RX packets 1382  bytes 920330 (898.7 KiB)
                      RX errors 0  dropped 408  overruns 0  frame 0
                      TX packets 919  bytes 78209 (76.3 KiB)
                      TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
                      device interrupt 16

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
      inet 127.0.0.1  netmask 255.0.0.0
              inet6 ::1  prefixlen 128  scopeid 0x10<host>
                  loop  txqueuelen 1000  (Local Loopback)
                      RX packets 16  bytes 712 (712.0 B)
                      RX errors 0  dropped 0  overruns 0  frame 0
                      TX packets 16  bytes 712 (712.0 B)
                      TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
```

# Netstat

```
└─(reddevil㉿kali)-[~]
$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
udp      0      0 192.168.1.6:bootpc       192.168.1.1:bootps    ESTABLISH
ED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags     Type      State         I-Node  Path
unix    2      [ ]     DGRAM                    17319   /run/user/1000/sys
temd/notify
unix    3      [ ]     DGRAM                    12611   /run/systemd/notif
y
unix    2      [ ]     DGRAM                    12626   /run/systemd/journ
al/syslog
unix   13      [ ]     DGRAM                    12632   /run/systemd/journ
al/dev-log
unix    7      [ ]     DGRAM                    12634   /run/systemd/journ
al/socket
unix    3      [ ]     STREAM     CONNECTED    20497
unix    3      [ ]     STREAM     CONNECTED    17889
unix    3      [ ]     STREAM     CONNECTED    17703
unix    3      [ ]     STREAM     CONNECTED    20666   @/tmp/.ICE-unix/74
3
unix    3      [ ]     STREAM     CONNECTED    17893
```

```
└─(reddevil㉿kali)-[~]
$ netstat -n
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
udp      0      0 192.168.1.6:68          192.168.1.1:67      ESTABLISH
ED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags     Type      State         I-Node  Path
unix    2      [ ]     DGRAM                    17319   /run/user/1000/sys
temd/notify
unix    3      [ ]     DGRAM                    12611   /run/systemd/notif
y
unix    2      [ ]     DGRAM                    12626   /run/systemd/journ
al/syslog
unix   13      [ ]     DGRAM                    12632   /run/systemd/journ
al/dev-log
unix    8      [ ]     DGRAM                    12634   /run/systemd/journ
al/socket
unix    3      [ ]     STREAM     CONNECTED    20497
unix    3      [ ]     STREAM     CONNECTED    17889
unix    3      [ ]     STREAM     CONNECTED    17703
unix    3      [ ]     STREAM     CONNECTED    20666   @/tmp/.ICE-unix/74
```

```
(reddevil㉿kali)-[~]
$ netstat -n 5
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
udp      0      0 192.168.1.6:68          192.168.1.1:67        ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type      State         I-Node Path
unix    2      [ ]        DGRAM           17319   /run/user/1000/sys
temd/notify
unix    3      [ ]        DGRAM           12611   /run/systemd/notif
y
unix    2      [ ]        DGRAM           12626   /run/systemd/journ
al/syslog
unix   13      [ ]        DGRAM           12632   /run/systemd/journ
al/dev-log
unix    8      [ ]        DGRAM           12634   /run/systemd/journ
al/socket
unix    3      [ ]        STREAM  CONNECTED    20497
unix    3      [ ]        STREAM  CONNECTED    17889
unix    3      [ ]        STREAM  CONNECTED    17703
unix    3      [ ]        STREAM  CONNECTED    20666   @/tmp/.ICE-unix/74
3
unix    3      [ ]        STREAM  CONNECTED    17893
unix    3      [ ]        STREAM  CONNECTED    18553   @/tmp/dbus-eaUadNk
2Yv
```

```
(reddevil㉿kali)-[~]
$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
udp      0      0 192.168.1.6:bootpc        192.168.1.1:bootps      ESTABLISHED
raw    30720    0  0.0.0.0:icmp          0.0.0.0:*
raw    45312    0  0.0.0.0:icmp          0.0.0.0:*
raw    45312    0  0.0.0.0:icmp          0.0.0.0:*
raw    45312    0  0.0.0.0:icmp          0.0.0.0:*
raw    72192    0  0.0.0.0:icmp          0.0.0.0:*
raw6   26880    0  [::]:ipv6-icmp        [::]:*
raw6   26880    0  [::]:ipv6-icmp        [::]:*
raw6   28416    0  [::]:ipv6-icmp        [::]:*
raw6   33792    0  [::]:ipv6-icmp        [::]:*
```

2. Identify and perform 5 more network commands and it's working.

### a). ARP

The ARP command corresponds to the Address Resolution Protocol. Although it is easy to think of network communications in terms of IP addressing, packet delivery is ultimately dependent on the Media Access Control (MAC) address of the device's network adapter. This is where the Address Resolution Protocol comes into play. Its job is to map IP addresses to MAC addresses. Windows devices maintain an ARP cache, which contains the results of recent ARP queries. You can see the contents of this cache by using the ARP -A command. If you are having problems communicating with one specific host, you can append the remote host's IP address to the ARP -A command.

```
C:\Users\antony>arp -a
```

```
Interface: 192.168.56.1 --- 0x10
 Internet Address      Physical Address      Type
 192.168.56.255        ff-ff-ff-ff-ff-ff    static
 224.0.0.2              01-00-5e-00-00-02    static
 224.0.0.22             01-00-5e-00-00-16    static
 224.0.0.251            01-00-5e-00-00-fb    static
 224.0.0.252            01-00-5e-00-00-fc    static
 239.255.255.250        01-00-5e-7f-ff-fa    static
 255.255.255.255        ff-ff-ff-ff-ff-ff    static

Interface: 192.168.1.4 --- 0x12
 Internet Address      Physical Address      Type
 192.168.1.1            bc-62-d2-58-bc-50    dynamic
 192.168.1.255          ff-ff-ff-ff-ff-ff    static
 224.0.0.2              01-00-5e-00-00-02    static
 224.0.0.22             01-00-5e-00-00-16    static
 224.0.0.251            01-00-5e-00-00-fb    static
 224.0.0.252            01-00-5e-00-00-fc    static
 239.255.255.250        01-00-5e-7f-ff-fa    static
 255.255.255.255        ff-ff-ff-ff-ff-ff    static
```

### b)NbtStat

As I am sure you probably know, computers that are running a Windows operating system are assigned a computer name. Oftentimes, there is a domain name or a workgroup name that is also assigned to the computer. The computer name is sometimes referred to as the NetBIOS name. Windows uses several different methods to map NetBIOS names to IP addresses, such as broadcast, LMHost lookup, or even using the nearly extinct method of querying a WINS server. Of course, NetBIOS over TCP/IP can occasionally break down. The NbtStat command can help you to diagnose and correct such problems. The NbtStat -n command for example, shows the NetBIOS names that are in use by

a device. The NbtStat -r command shows how many NetBIOS names the device has been able to resolve recently.

```
C:\Users\antony>nbtstat -r

NetBIOS Names Resolution and Registration Statistics
-----
Resolved By Broadcast      = 0
Resolved By Name Server    = 0

Registered By Broadcast   = 33
Registered By Name Server = 0
```

### c) Hostname

The previously discussed NbtStat command can provide you with the host name that has been assigned to a Windows device, if you know which switch to use with the command. However, if you're just looking for a fast and easy way of verifying a computer's name, then try using the Hostname command. Typing Hostname at the command prompt returns the local computer name.

```
C:\Users\antony>hostname
DESKTOP-IU405JG
```

### d) PathPing

Earlier, I talked about the Ping utility and the Tracert utility, and the similarities between them. As you might have guessed, the PathPing tool is a utility that combines the best aspects of Tracert and Ping. Entering the PathPing command followed by a host name initiates what looks like a somewhat standard Tracert process. Once this process completes however, the tool takes 300 seconds (five minutes) to gather statistics, and then reports latency and packet loss statistics that are more detailed than those provided by Ping or Tracert.

```
C:\Users\antony>pathping www.google.com

Tracing route to www.google.com [142.250.67.36]
over a maximum of 30 hops:
  0  host.docker.internal [192.168.1.4]
  1  192.168.1.1
  2  1.105.92.111.asianet.co.in [111.92.105.1]
  3  *   *   *
Computing statistics for 50 seconds...
          Source to Here   This Node/Link
Hop  RTT      Lost/Sent = Pct  Lost/Sent = Pct  Address
  0                           host.docker.internal [192.168.1.4]
  1    2ms      0/ 100 =  0%      0/ 100 =  0%  | 192.168.1.1
  2    2ms      0/ 100 =  0%      0/ 100 =  0%  | 1.105.92.111.asianet.co.in [111.92.105.1]

Trace complete.
```

## e) getmac

Command Another very simple command that shows the MAC address of your network interfaces

```
C:\Users\antony>getmac

Physical Address      Transport Name
===== =====
68-54-5A-D0-DD-79  \Device\Tcpip_{E3BAB5C5-E82D-4A1A-AA2D-048A002BAC9F}
0A-00-27-00-00-10  \Device\Tcpip_{E1C797D7-DE40-4962-8539-985005FFCD79}
```

The name LAMP is an acronym of the following programs:

Linux Operating System

Apache HTTP Server

MySQL database management system

PHP programming language

## 1. Installation of Apache Server.

Command:

```
sudo apt-get install apache2
```

Press y (yes) and hit ENTER to permit the installation

Check if Apache is installed correctly by running the Apache service status. Use the following the command:

```
sudo service apache2 status
```

```
(reddevil㉿kali)-[~]
$ sudo systemctl status apache2.service
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; disabled; vendor preset: disabled)
   Active: active (running) since Tue 2021-09-28 12:40:04 EDT; 9s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 2091 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
 Main PID: 2102 (apache2)
   Tasks: 55 (limit: 2326)
    Memory: 8.8M
      CPU: 62ms
     CGroup: /system.slice/apache2.service
             ├─2102 /usr/sbin/apache2 -k start
             ├─2104 /usr/sbin/apache2 -k start
             └─2105 /usr/sbin/apache2 -k start

Sep 28 12:40:04 kali systemd[1]: Starting The Apache HTTP Server ...
Sep 28 12:40:04 kali apachectl[2101]: AH00558: apache2: Could not reliably determine the server's fully
Sep 28 12:40:04 kali systemd[1]: Started The Apache HTTP Server.
```

## 2. Installation of MariaDB

MariaDB is an open source relational database management system (RDBMS)

Command:

```
sudo apt install mariadb-server mariadb-client
```

Check mariadb Installation

```
sudo systemctl status mysql
```

(if it is not working sudo systemctl start mysql )

```
[reddevil@kali:~]
$ sudo systemctl status mysql
● mariadb.service - MariaDB 10.5.12 database server
   Loaded: loaded (/lib/systemd/system/mariadb.service; disabled; vendor preset: disabled)
     Active: active (running) since Tue 2021-09-28 12:43:23 EDT; 2s ago
       Docs: man:mariadb(8)
             https://mariadb.com/kb/en/library/systemd/
   Process: 2191 ExecStartPre=/usr/bin/install -m 755 -o mysql -g root -d /var/run/mysqld (code=exited, status=0/SUCCESS)
   Process: 2192 ExecStartPre=/bin/sh -c systemctl unset-environment _WSREP_START_POSITION (code=exit, status=0/SUCCESS)
   Process: 2194 ExecStartPre=/bin/sh -c [ ! -e /usr/bin/galera_recovery ] && VAR= || VAR=`cd /usr/>
   Process: 2253 ExecStartPost=/bin/sh -c systemctl unset-environment _WSREP_START_POSITION (code=exited, status=0/SUCCESS)
   Process: 2255 ExecStartPost=/etc/mysql/debian-start (code=exited, status=0/SUCCESS)
 Main PID: 2241 (mariadb)
   Status: "Taking your SQL requests now ..."
    Tasks: 12 (limit: 2326)
   Memory: 108.3M
      CPU: 1.058s
     CGroup: /system.slice/mariadb.service
             └─2241 /usr/sbin/mariadb
```

### 3. Install PHP

Command:

```
sudo apt install php libapache2-mod-php php-opcache php-cli php-gd php-curl
php-mysql
```

Restart apache2

```
sudo systemctl restart apache2
```

check installation

open <http://127.0.0.1/phpinfo.php> in any browser

### 4. Install phpmyadmin

Command:

```
sudo apt install phpmyadmin php-mbstring php-zip php-gd php-json php-curl
(It asks for webserver select apache2, select db-configuration and set
password)
```

Restart apache2

```
sudo systemctl restart apache2
```

Check phpmyadmin

Open a browser

<http://localhost/phpmyadmin>

username : root

password : yourpassword



## Welcome to phpMyAdmin

**Language**

English

**Log in**

**Username:** admin

**Password:** \*\*\*\*

**Go**

localhost/phpmyadmin/index.php

**General settings**

- Change password
- Server connection collation: utf8mb4\_unicode\_ci

**Appearance settings**

- Language: English
- Theme: pmahomme
- Font size: 82%
- More settings

**Database server**

- Server: Localhost via UNIX socket
- Server type: MariaDB
- Server connection: SSL is not being used
- Server version: 10.3.31-MariaDB-Ubuntu0.20.04.1 - Ubuntu 20.04
- User: admin@localhost
- Server charset: UTF-8 Unicode (utf8mb4)

**Web server**

- Apache/2.4.41 (Ubuntu)
- Database client version: libmysql - mysqld 7.4.3
- PHP extension: mysqli curl mbstring
- PHP version: 7.4.3

**phpMyAdmin**

- Version information: 4.9.5deb2
- Documentation
- Official Homepage
- Contribute
- Get support
- List of changes
- License

# Ansible Installation

## Step1: sudo apt-get install ansible

```
(root㉿kali)-[~]
# sudo apt-get install ansible
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  ieee-data libyaml-0-2 python3-argcomplete python3-certifi python3-cffi-backend python3-cryptography
  python3-distutils python3-dnspython python3-httplib2 python3-idna python3-jinja2 python3-jmespath
  python3-kerberos python3-lib2to3 python3-libcloud python3-lockfile python3-markupsafe python3-netaddr
  python3-ntlm-auth python3-packaging python3-pycryptodome python3-pyparsing python3-requests python3-requests-ntlm
  python3-requests-toolbelt python3-selinux python3-simplejson python3-winrm python3-xmldict python3-yaml
Suggested packages:
  cowsay sshpass python-cryptography-doc python3-cryptography-vectors python3-sniffio python3-trio
  python-jinja2-doc python-lockfile-doc ipython3 python-netaddr-docs python-pyparsing-doc python3-openssl
  python3-socks python-requests-doc
The following NEW packages will be installed:
  ansible ieee-data libyaml-0-2 python3-argcomplete python3-certifi python3-cffi-backend python3-cryptography
  python3-distutils python3-dnspython python3-httplib2 python3-idna python3-jinja2 python3-jmespath
  python3-kerberos python3-lib2to3 python3-libcloud python3-lockfile python3-markupsafe python3-netaddr
  python3-ntlm-auth python3-packaging python3-pycryptodome python3-pyparsing python3-requests python3-requests-ntlm
  python3-requests-toolbelt python3-selinux python3-simplejson python3-winrm python3-xmldict python3-yaml
0 upgraded, 31 newly installed, 0 to remove and 525 not upgraded.
Need to get 33.2 MB of archives.
After this operation, 281 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-cffi-backend amd64 1.14.6-1 [86.0 kB]
Get:2 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-cryptography amd64 3.3.2-1 [223 kB]
Get:3 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-markupsafe amd64 1.1.1-1+b3 [15.2 kB]
Get:4 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-jinja2 all 2.11.3-1 [114 kB]
Get:5 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-pyparsing all 2.4.7-1 [109 kB]
Get:6 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-packaging all 20.9-2 [33.5 kB]
Get:7 http://ftp.harukasan.org/kali kali-rolling/main amd64 libyaml-0-2 amd64 0.2.2-1 [49.6 kB]
Get:8 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-yaml amd64 5.3.1-5 [138 kB]
Get:9 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-pycryptodome amd64 3.9.7+dfsg1-1+b2 [9,910 kB]
22% [9 python3-pycryptodome 6,346 kB/9,910 kB 64%] 399 kB/s 1min 5s^
28% [9 python3-pycryptodome 8,882 kB/9,910 kB 90%] 518 kB/s 45s^
Get:10 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-lib2to3 all 3.9.7-1 [79.4 kB]
Get:11 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-distutils all 3.9.7-1 [146 kB]
Get:12 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-dnspython all 2.0.0-1 [103 kB]
Get:13 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-httplib2 all 0.18.1-3 [37.5 kB]
Get:14 http://ftp.harukasan.org/kali kali-rolling/main amd64 ieee-data all 20210605.1 [1,889 kB]
Get:15 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-netaddr all 0.8.0-2 [295 kB]
Get:16 http://ftp.harukasan.org/kali kali-rolling/main amd64 ansible all 2.10.7+merged+base+2.10.8+dfsg-1 [17.7 MB]
Get:17 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-argcomplete all 1.8.1-1.5 [29.7 kB]
```

## Installation check

## Step2:ansible –version

```
(root㉿kali)-[~]
# ansible --version
ansible 2.10.8
  config file = None
  configured module search path = ['/root/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  executable location = /usr/bin/ansible
  python version = 3.9.2 (default, Feb 28 2021, 17:03:44) [GCC 10.2.1 20210110]
```

## Sudo tcpdump host 8.8.8.8

```
[reddevil㉿kali)-[~]
$ sudo tcpdump host 8.8.8.8    sudo tcpdump -i ath1 -s 0 -nne "(type mgt and subtype
tcpdump: verbose output suppressed, use -v[v]... for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
```

## Sudo tcpdump -i any -c 5 port 80

```
[reddevil㉿kali)-[~]
$ sudo tcpdump -i any -c 5 port 80    sudo tcpdump -i ath1 -s 0 -nne "(type mgt and subtype beacon)" 1 ✘
tcpdump: data link type LINUX_SLL2
tcpdump: verbose output suppressed, use -v[v]... for full protocol decode
listening on any, link-type LINUX_SLL2 (Linux cooked v2), snapshot length 262144 bytes r.com/2013/09/captu
01:10:54.981190 eth0  Out IP 10.0.2.15.49658 > 117.18.237.29.http: Flags [.], ack 51584741, win 6355
4, length 0
01:10:54.981628 eth0  In  IP 117.18.237.29.http > 10.0.2.15.49658: Flags [.], ack 1, win 65535, leng
th 0
01:11:05.220936 eth0  Out IP 10.0.2.15.49658 > 117.18.237.29.http: Flags [.], ack 1, win 63554, leng
th 0
01:11:05.222155 eth0  In  IP 117.18.237.29.http > 10.0.2.15.49658: Flags [.], ack 1, win 65535, leng
th 0
01:11:15.460814 eth0  Out IP 10.0.2.15.49658 > 117.18.237.29.http: Flags [.], ack 1, win 63554, leng
th 0
5 packets captured
6 packets received by filter
0 packets dropped by kernel
```

What does `tcpdump -h` print? – user164970 Sep 18 '14 at 11:04

## Sudo tcpdump -i any

```
[reddevil㉿kali)-[~]
$ sudo tcpdump -i any    sudo tcpdump -i ath1 -s 0 -nne "(type mgt and subtype beacon)" 1 ✘
tcpdump: data link type LINUX_SLL2
tcpdump: verbose output suppressed, use -v[v]... for full protocol decode
listening on any, link-type LINUX_SLL2 (Linux cooked v2), snapshot length 262144 bytes r.com/2013/09/capture-wirele
01:06:38.468910 eth0  Out IP 10.0.2.15.49570 > 117.18.237.29.http: Flags [.], ack 17601480, win 6355
4, length 0
01:06:38.469781 eth0  In  IP 117.18.237.29.http > 10.0.2.15.49570: Flags [.], ack 1, win 65535, leng
th 0
01:06:38.516123 eth0  Out IP 10.0.2.15.34093 > LAPTOP-U2SEQKP4.mshome.net.domain: 63848+ PTR? 29.237
.18.117.in-addr.arpa. (44)
01:06:38.542659 eth0  In  IP LAPTOP-U2SEQKP4.mshome.net.domain > 10.0.2.15.34093: 63848 NXDomain 0/1
/0 (115)
01:06:38.543030 eth0  Out IP 10.0.2.15.56835 > LAPTOP-U2SEQKP4.mshome.net.domain: 32956+ PTR? 15.2.0 Results
.10.in-addr.arpa. (40)
01:06:38.546147 eth0  In  IP LAPTOP-U2SEQKP4.mshome.net.domain > 10.0.2.15.34093: 63848 NXDomain 0/1
/0 (115)
01:06:38.546194 eth0  Out IP 10.0.2.15 > LAPTOP-U2SEQKP4.mshome.net: ICMP 10.0.2.15 udp port 34093 u
nreachable, length 151
01:06:38.567860 eth0  In  IP LAPTOP-U2SEQKP4.mshome.net.domain > 10.0.2.15.56835: 32956 NXDomain 0/0
/0 (40)
01:06:38.567898 eth0  In  IP LAPTOP-U2SEQKP4.mshome.net.domain > 10.0.2.15.56835: 32956 NXDomain 0/0
/0 (40)
01:06:38.617339 eth0  Out IP 10.0.2.15.54728 > LAPTOP-U2SEQKP4.mshome.net.domain: 19811+ PTR? 1.137.ion of libpcap
168.192.in-addr.arpa. (44)
01:06:38.632371 eth0  In  IP LAPTOP-U2SEQKP4.mshome.net.domain > 10.0.2.15.54728: 19811- 1/0/0 PTR L
APTOP-U2SEQKP4.mshome.net. (110)
01:06:38.724842 eth0  Out IP 10.0.2.15.58204 > ec2-35-161-231-170.us-west-2.compute.amazonaws.com.ht
tp: Flags [F.], ack 17706377, win 62700, length 0
```

## Sudo tcpdump -D

```
[reddevil㉿kali)-[~]
$ sudo tcpdump -D    https://superuser.com/questions/812293/what-does-tcpdump-d-print
[sudo] password for reddevil:
1.eth0 [Up, Running, Connected]
2.any (Pseudo-device that captures on all interfaces) [Up, Running]
3.lo [Up, Running, Loopback]
4.bluetooth-monitor (Bluetooth Linux Monitor) [Wireless]
5.nflog (Linux netfilter log (NFLOG) interface) [none]
6.nfqueue (Linux netfilter queue (NFQUEUE) interface) [none]
7 dbus-system (D-Bus system bus) [none]
8 dbus-session (D-Bus session bus) [none]
```

Sudo tcpdump -c 10 -i eth0 -n -A port 80

```
(reddevil㉿kali)-[~]
$ sudo tcpdump -c10 -i eth0 -n -A port 80 @GuyHarris.imgur.com/N61V1a - Evidas Results Sep 17
tcpdump: verbose output suppressed, use -v[v] ... for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
^C
0 packets captured
0 packets received by filter
0 packets dropped by kernel
```

Sudo tcpdump -r icmp.pcap

```
(reddevil㉿kali)-[~]
$ sudo tcpdump -r icmp.pcap Can anyone help me? I was following a tutorial at http://null-sec-armour.com/2013/09/capture-wireless-4
reading from file icmp.pcap, link-type EN10MB (Ethernet), snapshot length 262144 "syntax" error
01:20:47.459306 IP ec2-35-155-44-228.us-west-2.compute.amazonaws.com.https > 10.0.2.15.34746: Flags [P.], seq 1741181
0:17411841, ack 1453943620, win 65535, length 31
01:20:47.459717 IP 10.0.2.15.34746 > ec2-35-155-44-228.us-west-2.compute.amazonaws.com.https: Flags [P.], seq 1:36, a
ck 31, win 62780, length 35
01:20:47.459990 IP ec2-35-155-44-228.us-west-2.compute.amazonaws.com.https > 10.0.2.15.34746: Flags [.], ack 36, win
65535, length 0
01:20:52.485422 ARP, Request who-has 10.0.2.2 tell 10.0.2.15, length 28
01:20:52.485927 ARP, Reply 10.0.2.2 is-at 52:54:00:12:35:02 (oui Unknown), length 46
01:21:04.568138 IP stackoverflow.com.https > 10.0.2.15.33802: Flags [P.], seq 20677453:20677514, ack 3717513240, win
65535, length 61
01:21:04.570468 IP 10.0.2.15.33802 > stackoverflow.com.https: Flags [P.], seq 1:40, ack 61, win 62780, length 39
01:21:04.571139 IP stackoverflow.com.https > 10.0.2.15.33802: Flags [.], ack 40, win 65535, length 0
```

Sudo tcpdump -i eth0 -c 10 -w icmp.pcap

```
(reddevil㉿kali)-[~]
$ sudo tcpdump -i eth0 -c 10 -w icmp.pcap dump -h print? - user164970 Sep 16 14 at 11:04
tcpdump: listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
^C8 packets captured
8 packets received by filter
0 packets dropped by kernel
```

Sudo tcpdump -i eth0 not icmp

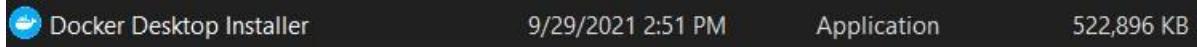
```
(reddevil㉿kali)-[~]
$ sudo tcpdump -i eth0 not icmp @GuyHarris.imgur.com/N61V1a - Evidas Results Sep 17 14 at 11:42
tcpdump: verbose output suppressed, use -v[v] ... for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
^C
```

Sudo tcpdump -n -i eth0 src 8.8.8.8 and dst port 80

```
(reddevil㉿kali)-[~]
$ sudo tcpdump -n -i eth0 src 8.8.8.8 and dst port 80
tcpdump: verbose output suppressed, use -v[v] ... for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
```

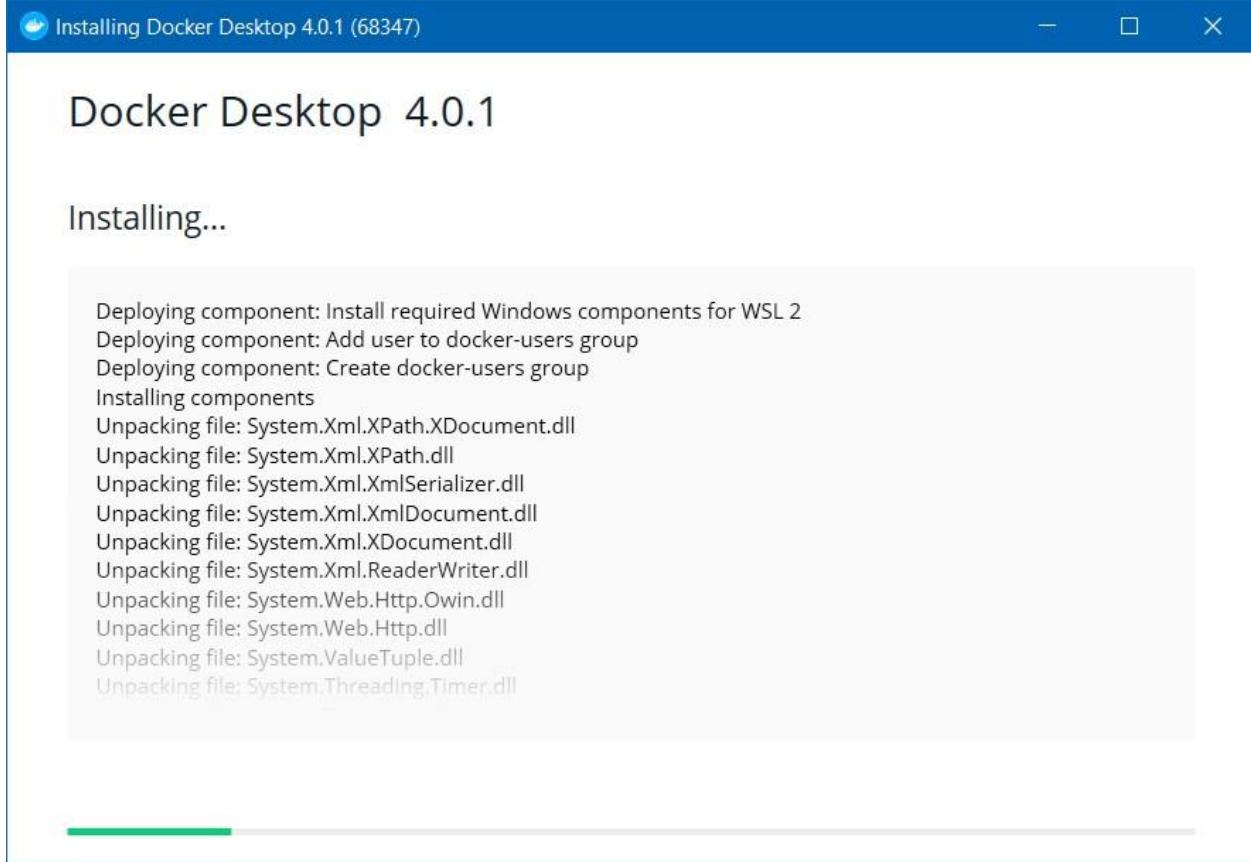
## Step-I

Download Docker Desktop installer for Windows from  
<https://desktop.docker.com/win/main/amd64/Docker%20Desktop%20Installer.exe>



## Step-II

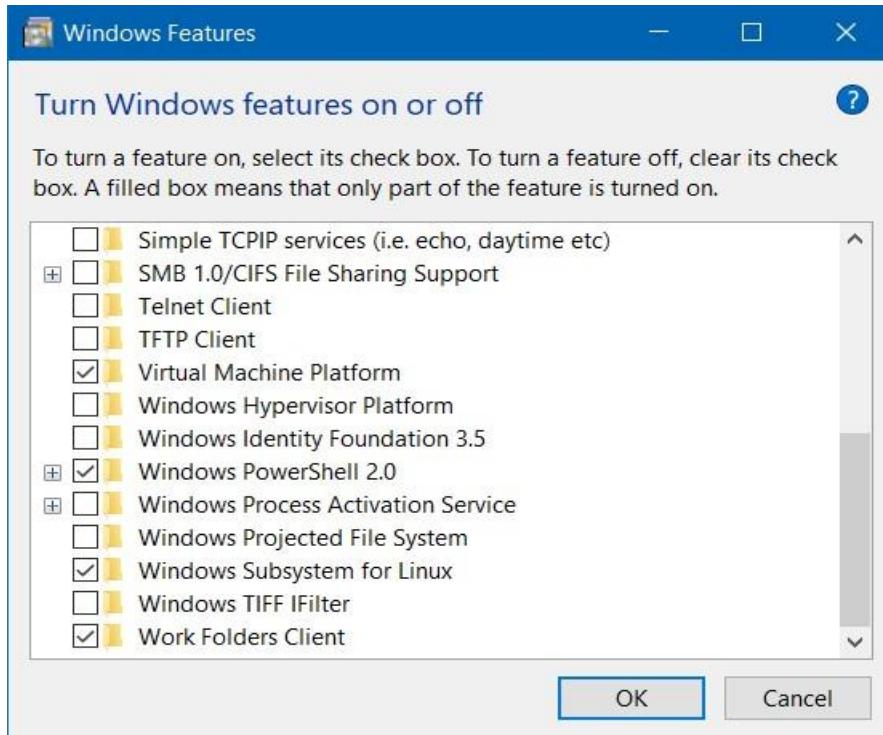
Open the .exe file and follow the steps after clicking install button.



## Step-III

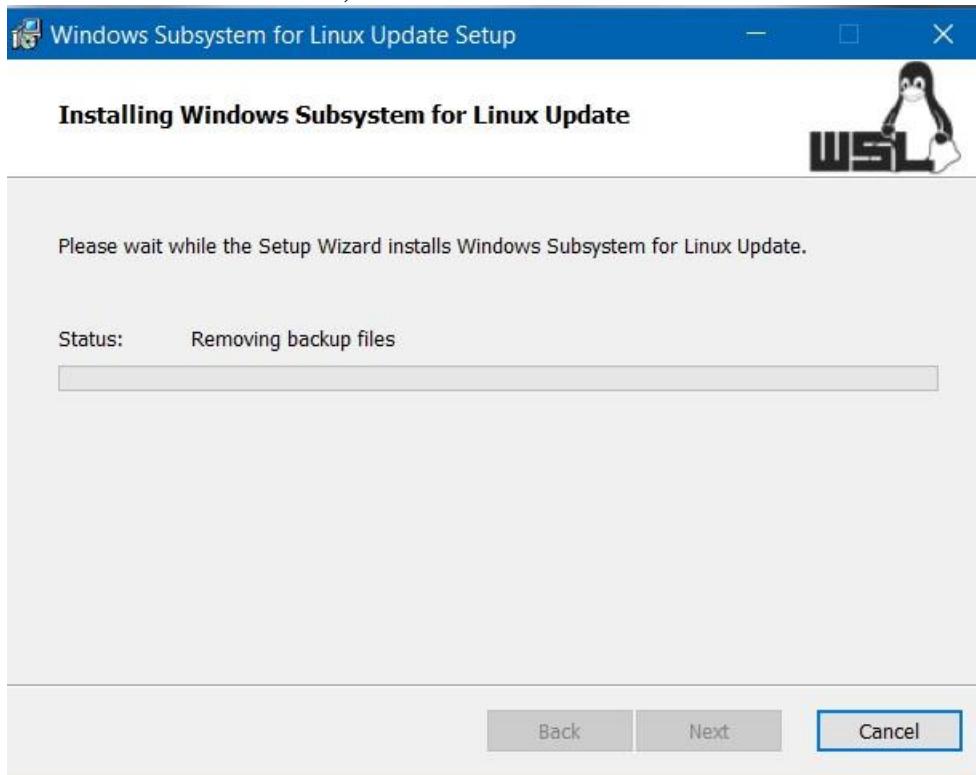
Once installed go to programs and features and click turn on windows features on or off

Scroll to the bottom and select windows subsystem for Linux



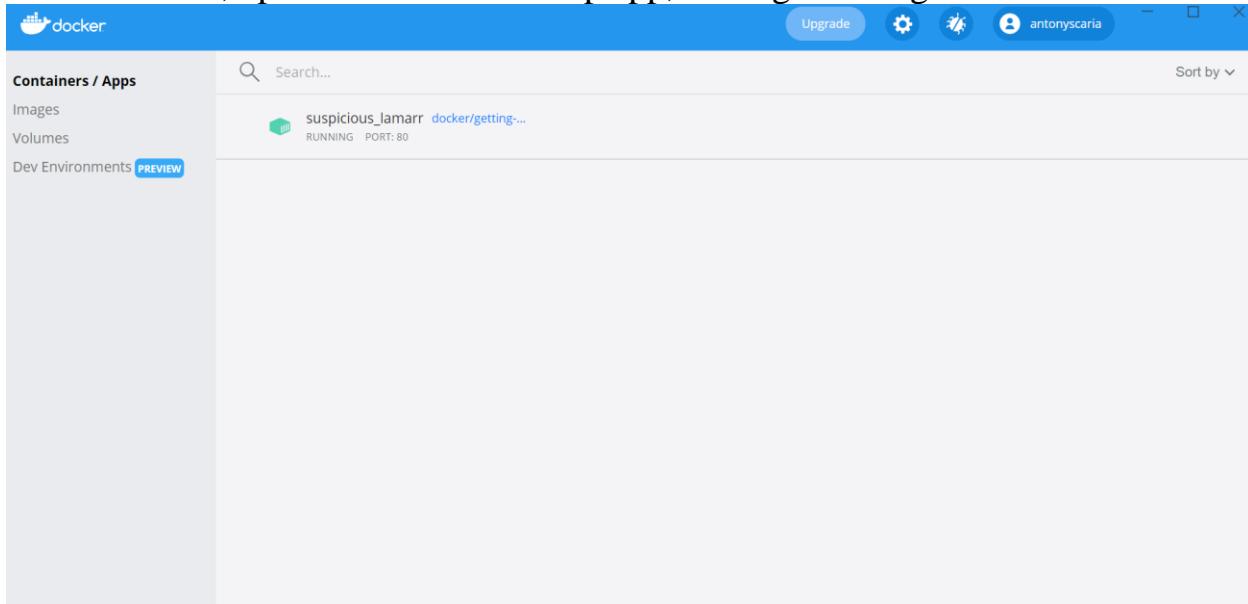
#### Step-IV

If any WSL 2 error occurs download windows subsystem for linux update package and install the .exe file, after the installation restart the windows device.



## Step-V

Once installed, open the docker desktop app, and signin using the dockerID



## Step-VI

Now pull any image from docker hub using the docker pull command in the command prompt (eg: docker pull ubuntu)

```
C:\> Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.1081]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>docker run -d -p 80:80 docker/getting-started
Unable to find image 'docker/getting-started:latest' locally
docker: Error response from daemon: Get "https://registry-1.docker.io/v2/": dial tcp: lookup registry-1.docker.io on 192.168.65.5:53: no such host.
See 'docker run --help'.

C:\Windows\system32>docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
f3ef4ff62e0d: Pull complete
Digest: sha256:65de08a8dabf289ef114053ab32f79e0c333a4fbfa1fe3778bb13ae921a7849b
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest

C:\Windows\system32>
```

Now in the images tab an image of ubuntu will be displayed, we can run the

## ubuntu instance using the cli.

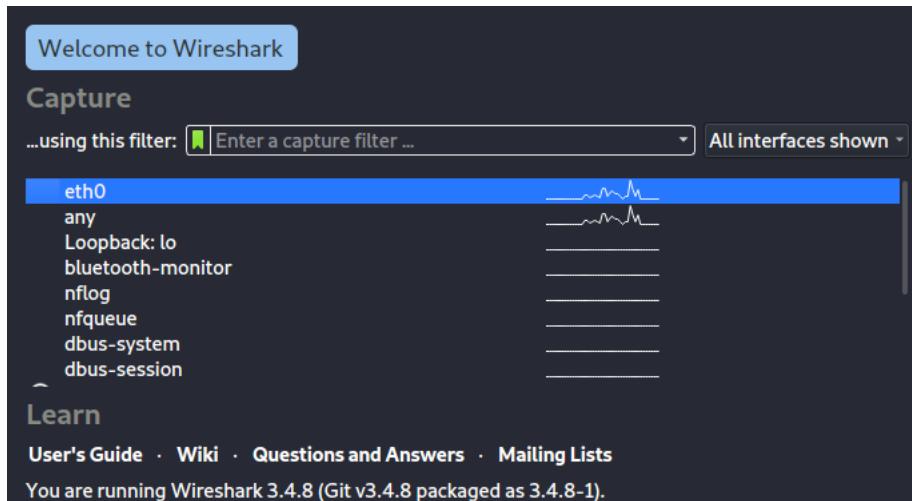
The screenshot shows the Docker desktop application interface. The left sidebar has options: Containers / Apps, Images (selected), Volumes, and Dev Environments (with a PREVIEW button). The main area is titled "Images on disk" and shows "2 images" with a total size of "100.76 MB". A progress bar indicates "IN USE" (green) and "UNUSED" (grey). A "Clean up..." button is at the top right. Below, there are tabs for "LOCAL" and "REMOTE REPOSITORIES", with "LOCAL" selected. A search bar and an "In Use only" checkbox are present. A table lists the images:

NAME	TAG	IMAGE ID	CREATED	SIZE
docker/getting-started	latest	083d7564d904	4 months ago	27.99 MB
ubuntu	latest	597ce1600cf4	1 day ago	72.78 MB

```
sudo apt-get install wireshark
```

```
(reddevil㉿kali)-[~] $ sudo apt-get install wireshark
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
libb64-729-0 libb64-ares2 libgnutls30 libb64-lua5.2-0 libminizip1 libqt5multimedia5 libqt5multimedia5-plugins
libqt5multimediasstools5 libqt5multimediacwids5 libqt5printsupport5 libsmi2ldbl libspandsp2 libwireshark-data
libwireshark14 libwiretap11 libwsutil12 wireshark-common wireshark-qt
Suggested packages:
gnutls-bin snmp-mibs-downloader geoipupdate geoip-database geoip-database-extra libjs-leaflet
libjs-leaflet.markercluster wireshark-doc
The following NEW packages will be installed:
libb64-729-0 libb64-ares2 libgnutls30 libb64-lua5.2-0 libminizip1 libqt5multimedia5 libqt5multimedia5-plugins
libqt5multimediasstools5 libqt5multimediacwids5 libqt5printsupport5 libsmi2ldbl libspandsp2 libwireshark-data
libwireshark14 libwiretap11 libwsutil12 wireshark wireshark-common wireshark-qt
syntax" error.
The following packages will be upgraded:
libgnutls30
1 upgraded, 18 newly installed, 0 to remove and 512 not upgraded.
Need to get 25.1 MB of archives.
After this operation, 124 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://ftp.harukasan.org/kali kali-rolling/main amd64 libgnutls30 amd64 3.7.2-2 [1,350 kB]
Get:2 http://ftp.harukasan.org/kali kali-rolling/main amd64 libb64-729-0 amd64 1.1.1-2 [33.1 kB]
Get:3 http://ftp.harukasan.org/kali kali-rolling/main amd64 libb64-ares2 amd64 1.17.2-1 [104 kB]
Get:4 http://ftp.harukasan.org/kali kali-rolling/main amd64 libb64-lua5.2-0 amd64 5.2.4-1.1+b3 [108 kB]
Get:5 http://ftp.harukasan.org/kali kali-rolling/main amd64 libminizip1 amd64 1.1-8+b1 [20.4 kB]
Get:6 http://ftp.harukasan.org/kali kali-rolling/main amd64 libqt5multimedia5 amd64 5.15.2-3 [287 kB]
Get:7 http://ftp.harukasan.org/kali kali-rolling/main amd64 libqt5multimediacwids5 amd64 5.15.2-3 [44.1 kB]
Get:8 http://ftp.harukasan.org/kali kali-rolling/main amd64 libqt5printsupport5 amd64 5.15.2-3 [101 kB]
Get:9 http://ftp.harukasan.org/kali kali-rolling/main amd64 libqt5multimedia5-plugins amd64 5.15.2-3 [156 kB]
Get:10 http://ftp.harukasan.org/kali kali-rolling/main amd64 libqt5printsupport5 amd64 5.15.2+dfsg-12 [231 kB]
Get:11 http://ftp.harukasan.org/kali kali-rolling/main amd64 libsmi2ldbl amd64 0.4.8+dfsg2-16 [123 kB]
Get:12 http://ftp.harukasan.org/kali kali-rolling/main amd64 libspandsp2 amd64 0.0.6+dfsg-2 [279 kB]
Get:13 http://ftp.harukasan.org/kali kali-rolling/main amd64 libwireshark-data all 3.4.8-1 [1,559 kB]
Get:14 http://ftp.harukasan.org/kali kali-rolling/main amd64 libwsutil12 amd64 3.4.8-1 [101 kB]
```

```
(reddevil㉿kali)-[~] $ sudo dpkg-reconfigure wireshark-common
```



No.	Time	Source	Destination	Protocol	Length	Info
29	7.990850823	10.0.2.15	142.250.76.34	TCP	54	583
30	7.991143356	10.0.2.15	142.250.205.226	TCP	54	472
31	13.238462786	10.0.2.15	52.84.6.56	TCP	54	[TCP]
32	13.238861425	52.84.6.56	10.0.2.15	TCP	60	[TCP]
33	17.334396657	10.0.2.15	142.250.67.67	TCP	54	[TCP]
34	17.335486185	142.250.67.67	10.0.2.15	TCP	60	[TCP]

Frame 1: 93 bytes on wire (744 bits), 93 bytes captured (744 bits) on interface  
 Ethernet II, Src: RealtekU\_12:35:02 (52:54:00:12:35:02), Dst: PcsCompu\_21:53:0e  
 Internet Protocol Version 4, Src: 142.250.195.67, Dst: 10.0.2.15  
 Transmission Control Protocol, Src Port: 443, Dst Port: 51518, Seq: 1, Ack: 1, Len: 60  
 Transport Layer Security

Hex	Dec	Text
0000 08 00 27 21 53 0e 52 54	00 12 35 02 08 00 45 00	..!S RT ..5..E.
0010 00 4f 67 9f 00 00 40 06	b4 bd 8e fa c3 43 0a 00	.0g ..@ ..C..
0020 02 0f 01 bb c9 3e 1e 48	f7 00 61 6a ac cb 50 18	.....>H ..aj..P..
0030 ff ff 53 0a 00 00 17 03	03 00 22 d1 62 6c 52 db	.S.....".blR..
0040 50 05 71 a9 36 46 9f b3	41 b1 c8 ad 11 c6 c3 d8	P..q..6F.. A.....
0050 93 4d 05 55 a1 0b 5f dd	a8 c9 8c bd d7	.M.U.._. . . . .

● eth0: <live capture in progress> | Packets: 34 · Displayed: 34 (100.0%) | Profile: Default

## Netcat

```
(reddevil㉿kali)-[~] ~ [+] https://www.investorrelations.com - Stock quote, history, news and other vital
$ nc -z -v 10.0.2.255 20-80
10.0.2.255: inverse host lookup failed: Unknown host
(UNKNOWN) [10.0.2.255] 80 (http) : Network is unreachable
(UNKNOWN) [10.0.2.255] 79 (finger) : Network is unreachable
(UNKNOWN) [10.0.2.255] 78 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 77 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 76 (?) : Network is unreachable e Quote
(UNKNOWN) [10.0.2.255] 75 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 74 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 73 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 72 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 71 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 70 (gopher) : Network is unreachable
(UNKNOWN) [10.0.2.255] 69 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 68 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 67 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 66 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 65 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 64 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 63 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 62 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 61 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 60 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 59 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 58 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 57 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 56 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 55 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 54 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 53 (domain) : Network is unreachable
(UNKNOWN) [10.0.2.255] 52 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 51 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 50 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 49 (tacacs) : Network is unreachable
(UNKNOWN) [10.0.2.255] 48 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 47 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 46 (?) : Network is unreachable
(UNKNOWN) [10.0.2.255] 45 (?) : Network is unreachable
```