

20MCA136 - Networking & System Administration Lab

RECORD

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Topic:

Basic Linux commands with example.

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1. pwd:

Linux pwd (print working directory) command displays your location currently you are working on. It will give the whole path starting from the root ending to the directory.

Syntax:

```
$ pwd
```

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ pwd  
/home/vijayalakshmi/Desktop  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

2.history:

Linux history command is used to display the history of the commands executed by the user. It is a handy tool for auditing the executed commands along with their date and time.

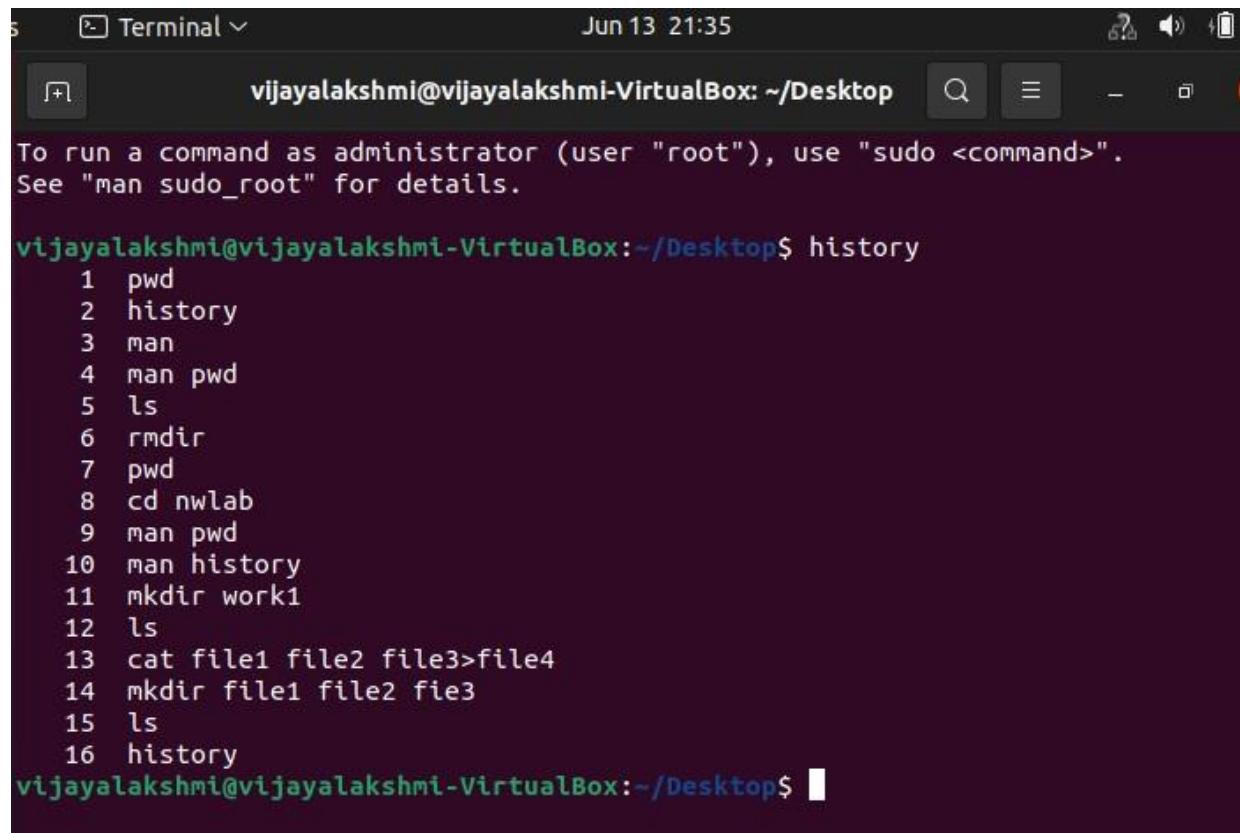
Most of the commands read input from the terminal a line at a time. But, the history command is capable of keeping the record of those lines with associated data. By default, it will show the last five hundred commands from the older to most recent commands. The history library is saved in a history file.

Syntax:

The basic syntax for the history command is as follows:

```
$ history
```

Example:



A screenshot of a Linux terminal window titled "Terminal". The window shows the command line interface with the user "vijayalakshmi" at the prompt. The terminal displays the history of commands entered by the user, numbered from 1 to 16. The commands include basic shell operations like pwd, history, man, ls, rmdir, and cat, as well as directory manipulation like mkdir and file creation like >file4. A message at the top of the terminal window informs the user that to run a command as administrator (user "root"), they should use "sudo <command>".

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ history
1  pwd
2  history
3  man
4  man pwd
5  ls
6  rmdir
7  pwd
8  cd nwlab
9  man pwd
10 man history
11 mkdir work1
12 ls
13 cat file1 file2 file3>file4
14 mkdir file1 file2 fie3
15 ls
16 history
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

Display the nth command from the history

We can display the specific number of commands by specifying it as "`!<command number>`". For example, we want to show the most recent command which is 500th in our history file, execute the command as follows:

Syntax:

`! Command number`

Example:

```
See 'man sudo_root' for details.

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ history
 1  pwd
 2  history
 3  man
 4  man pwd
 5  ls
 6  rmdir
 7  pwd
 8  cd nwlab
 9  man pwd
10  man history
11  mkdir work1
12  ls
13  cat file1 file2 file3>file4
14  mkdir file1 file2 file3
15  ls
16  history
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ !6
rmdir
rmdir: missing operand
Try 'rmdir --help' for more information.
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ !12
ls
file3  file1  file2  file4  work1
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

3.man:

man command in Linux is used to display the user manual of any command that we can run on the terminal. It provides a detailed view of the command which includes NAME,SYNOPSIS,DESCRIPTION,OPTIONS, EXIT STATUS,RETURN VALUES,ERRORS,FILES,VERSIONS, EXAMPLES,

AUTHORS and SEE ALSO.

Syntax :

\$man COMMAND NAME

Example:

```
HISTORY(3)           Library Functions Manual          HISTORY(3)

NAME
      history - GNU History Library

COPYRIGHT
      The GNU History Library is Copyright (C) 1989-2020 by the Free Software
      Foundation, Inc.

DESCRIPTION
      Many programs read input from the user a line at a time. The GNU History
      library is able to keep track of those lines, associate arbitrary data
      with each line, and utilize information from previous lines in
      composing new ones.

HISTORY EXPANSION
      The history library supports a history expansion feature that is identical
      to the history expansion in bash. This section describes what syntax features are available.

      History expansions introduce words from the history list into the input stream, making it easy to repeat commands, insert the arguments to a previous command into the current input line, or fix errors in previous commands quickly.

      History expansion is usually performed immediately after a complete line is read. It takes place in two parts. The first is to determine which line from the history list to use during substitution. The sec-
      Manual page history(3) readline) line 1 (press h for help or q to quit)
```

4.cd:

The cd (“change directory”) command is used to change the current working directory in Linux and other Unix-Like operating systems.it is one of the most basic and frequently used commands when working on the Linux terminal.

Syntax:

\$cd directory name

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ pwd  
/home/vijayalakshmi/Desktop  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cd file1  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/file1$ █
```

When specifying a directory to change to, you can use either absolute or relative path names. The absolute or full path starts from the system root(/), and relative path starts from your current directory.

By default, when you log into your Linux system, your current working directory is set to your home directory. Assuming that downloads directory exists in your home directory, you can navigate to it by using the relative path to the directory:

Example:

```
$ cd Downloads
```

You can also navigate to the same directory by using its absolute path:

```
$ cd /home/username/Downloads
```

In short, if the path starts with a slash(/) it is the absolute path to the directory.

cd.. : to move one directory up

Syntax:

```
$ cd..
```

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/file1$ cd ..  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ pwd  
/home/vijayalakshmi/Desktop  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

5. mkdir:

mkdir command in Linux allows the user to create directories (also referred to as folders in some operating systems). This command can create multiple directories at once as well as set the permissions for the directories. It is important to note that the user executing this command must have enough permissions to create a directory in the parent directory, or he/she may receive a ‘permission denied’ error.

Syntax:

```
$ mkdir directory name
```

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cd file2  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/file2$ mkdir mylabworks  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/file2$ ls  
mylabworks  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/file2$ █
```

- use the p option to create a directory in between two existing directories.

Syntax:

```
Mkdir -p diectodirname1/directoryname2
```

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/file2$ mkdir -p sample/sample2  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/file2$ ls  
mylabworks sample  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/file2$ █
```

6. rmdir:

To remove a directory use the rmdir command, however it only allows you to delete empty directories.

Syntax:

Rmdir directory name/

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ mkdir friends
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ rmdir friends
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$
```

7. touch:

touch command is used to create a blank new file in linux.

Syntax:

Touch filename

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/file2$ cd nwlab
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/file2/nwlab$ touch file1 file2
file3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/file2/nwlab$ ls
file1 file2 file3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/file2/nwlab$
```

8.rm:

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

Syntax:

rm filename

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ ls  
exam1 exam2 exam3 fil3 file1 file2 file3 file4 file5.txt  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ rm file5.txt  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ ls  
exam1 exam2 exam3 fil3 file1 file2 file3 file4  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ █
```

9.cat:

The 'cat' command is the most universal and powerful tool. It is considered to be one of the most frequently used commands. It can be used to display the content of a file, copy content from one file to another, contents of multiple files, display the line number, display \$ at the end of the line, etc.

Syntax:

cat file Name

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cat mycommands1  
hello this is my lab work!  
this will show basic linux commands!  
^^c
```

- cat commands also join two files and stores the result in another new file.

Syntax:

Cat filename1 filename2>

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cd documents
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ touch file1 file2 file3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ cat >file1
first file
^C
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ cat >file2
second file
^C
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ cat >file3
third file
^C
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ cat file1 file2 file3 >file4
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ cat file4
first file
second file
third file
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ █
```

To Append the Content of A File

The 'cat' command with double greater than sign something in the last of a file) something in your already existing file.

Syntax:

cat >> (file name)

- cat command is also used to convert a file to upper case or lower case

Syntax:

cat filename | tr a-z A >output.txt

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cd documents
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ touch file1 file2 file3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ cat >file1
first file
^C
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ cat >file2
second file
^C
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ cat >file3
third file
^C
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ cat file1 file2 file3 >file4
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ cat file4
first file
second file
third file
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ █
```

10. ls:

□ **ls** : The **ls** is the list command in Linux. It will show the full list or content of your directory. Just type ls and press the enter key. The whole content will be shown.

Syntax:

```
$ ls
```

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ ls
exam1 exam2 exam3 fil3 file1 file2 file3 file4
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ █
```

- **ls –l** : Here, **ls -l** (-l is character not one) shows file or directory size, modified date and time ,file folder name and owner of file and its permission.

Syntax:

```
$ ls -l
```

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ ls -l
total 20
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 16 Jun 14 19:17 exam1
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 0 Jun 14 19:14 exam2
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 0 Jun 14 19:14 exam3
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 0 Jun 14 19:23 fil3
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 11 Jun 14 19:31 file1
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 12 Jun 14 19:32 file2
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 11 Jun 14 19:32 file3
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 34 Jun 14 19:33 file4
```

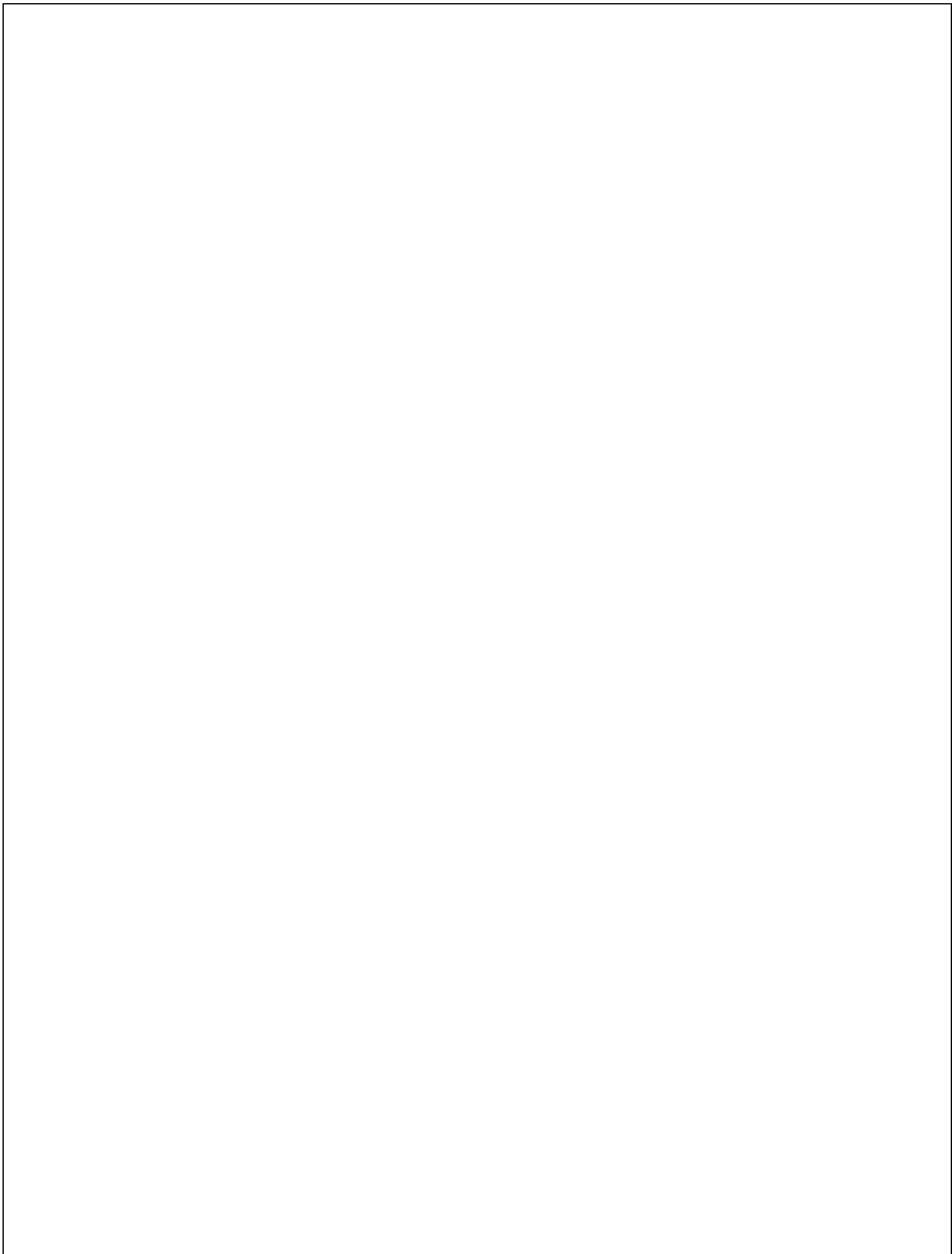
- **ls –al** : will list the files and directories with detailed information like the permission, size, owner, etc.

Syntax:

```
$ ls –al
```

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ ls -al
total 28
drwxrwxr-x 2 vijayalakshmi vijayalakshmi 4096 Jun 14 19:45 .
drwxr-xr-x 3 vijayalakshmi vijayalakshmi 4096 Jun 14 19:18 ..
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 16 Jun 14 19:17 exam1
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 0 Jun 14 19:14 exam2
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 0 Jun 14 19:14 exam3
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 0 Jun 14 19:23 fil3
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 11 Jun 14 19:31 file1
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 12 Jun 14 19:32 file2
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 11 Jun 14 19:32 file3
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 34 Jun 14 19:33 file4
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/documents$ █
```



echo

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

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ touch q1.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cat q1.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ echo vichu
vichu
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ echo lakshmi
lakshmi
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ echo vijayalakshmi mr >> q1.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cat q1.txt
vijayalakshmi mr
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ echo vichu lakshmi >> q1.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cat q1.txt
vijayalakshmi mr
vichu lakshmi
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

1. 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.

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ head -n 3 /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

2. tail

The tail command will display the last ten lines of a text file.

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ tail /etc/passwd
sssd:x:119:124:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin
saned:x:120:126::/var/lib/saned:/usr/sbin/nologin
colord:x:121:127:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/n
ologin
geoclue:x:122:128::/var/lib/geoclue:/usr/sbin/nologin
pulse:x:123:129:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin
hplip:x:124:7:HPLIP system user,,,:/run/hplip:/bin/false
gnome-initial-setup:x:125:65534::/run/gnome-initial-setup/:/bin/false
gdm:x:126:131:Gnome Display Manager:/var/lib/gdm3:/bin/false
vijayalakshmi:x:1000:1000:Vijayalakshmi MR,,,:/home/vijayalakshmi:/bin/bash
systemd-coredump:x:999:999:systemd Core Dumper:/:/usr/sbin/nologin
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

3. read

The read the contents of a line into a variable. The read command can be used with and without arguments.

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ read v1 v2 v3
amal jyothi college
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ echo ["$v1"] ["$v2"] ["$v3"]
[amal] [jyothi] [college]
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

4. more

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

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ more /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
systemd-timesync:x:102:104:systemd Time Synchronization,,:/run/systemd:/usr/sbin/nologin
```

5. less

Less command is linux utility which can be used to read contents of text file one page(one screen) per time.

Example:

```
messagebus:x:103:106::/nonexistent:/usr/sbin/nologin
syslog:x:104:110::/home/syslog:/usr/sbin/nologin
_apt:x:105:65534::/nonexistent:/usr/sbin/nologin
tss:x:106:111:TPM software stack,,,,:/var/lib/tpm:/bin/false
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ less /etc/passwd
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls
documents  file4      mycommands.txt  q1.txt
exam1      mycommands1  number.txt    state.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

6. 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

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ touch state.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ echo kerala >>state.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ echo jammu >> state.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ echo karnadaka >> state.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ echo thamilnadu >> state.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ echo assam >> state.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cat state.txt
kerala
jammu
karnadaka
thamilnadu
assam
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cut -b 1 2 state.txt
cut: 2: No such file or directory
k
j
k
t
a
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cut -b 1,2,3 state.txt
ker
jam
kar
tha
ass
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

7. 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.

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ paste number.txt state.txt
1,2,3,4,5,6,7,8,9      kerala
                      jammu
                      karnadaka
                      thamilnadu
                      assam
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

8. 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.

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ uname  
Linux  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ uname -r  
5.11.0-16-generic  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ uname -v  
#17-Ubuntu SMP Wed Apr 14 20:12:43 UTC 2021  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ uname -p  
x86_64  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ man uname  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

9. cp

The cp command is used to copy files from the current directory to a different directory.

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ touch v1.txt v2.txt  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls  
documents  file4      mycommands.txt  q1.txt    v1.txt  
exam1     mycommands1  number.txt    state.txt  v2.txt  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ mkdir ajce  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls  
ajce      exam1     mycommands1  number.txt  state.txt  v2.txt  
documents  file4      mycommands.txt  q1.txt    v1.txt  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cp v1.txt ajce/  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls ajce  
v1.txt  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cp v2.txt ajce/  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls ajce  
v1.txt  v2.txt  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

10.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.

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ mv v1.txt ajce/  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls ajce  
v1.txt  v2.txt  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

11.locate

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

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ locate number*song
Command 'locate' not found, but can be installed with:
sudo apt install mlocate
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

12.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.

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ find /home/ -name state.txt
/home/vijayalakshmi/Desktop/state.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ find /home/ -name v2.txt
/home/vijayalakshmi/Desktop/v2.txt
/home/vijayalakshmi/Desktop/ajce/v2.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

13.grep

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

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cat state.txt
kerala
jammu
karnadaka
thamilnadu
assam
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ grep jammu state.txt
jammu
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

14.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.

15.du

The du (Disk Usage) command is used to check how much space a file or a directory takes. 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

Example:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ du -h
24K      ./documents
4.0K     ./ajce
52K      .
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

16.useradd

The 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

Example:

```
SZR
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo useradd vidhya
[sudo] password for vijayalakshmi:
Sorry, try again.
[sudo] password for vijayalakshmi: █
```

17.userdel

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

Example:

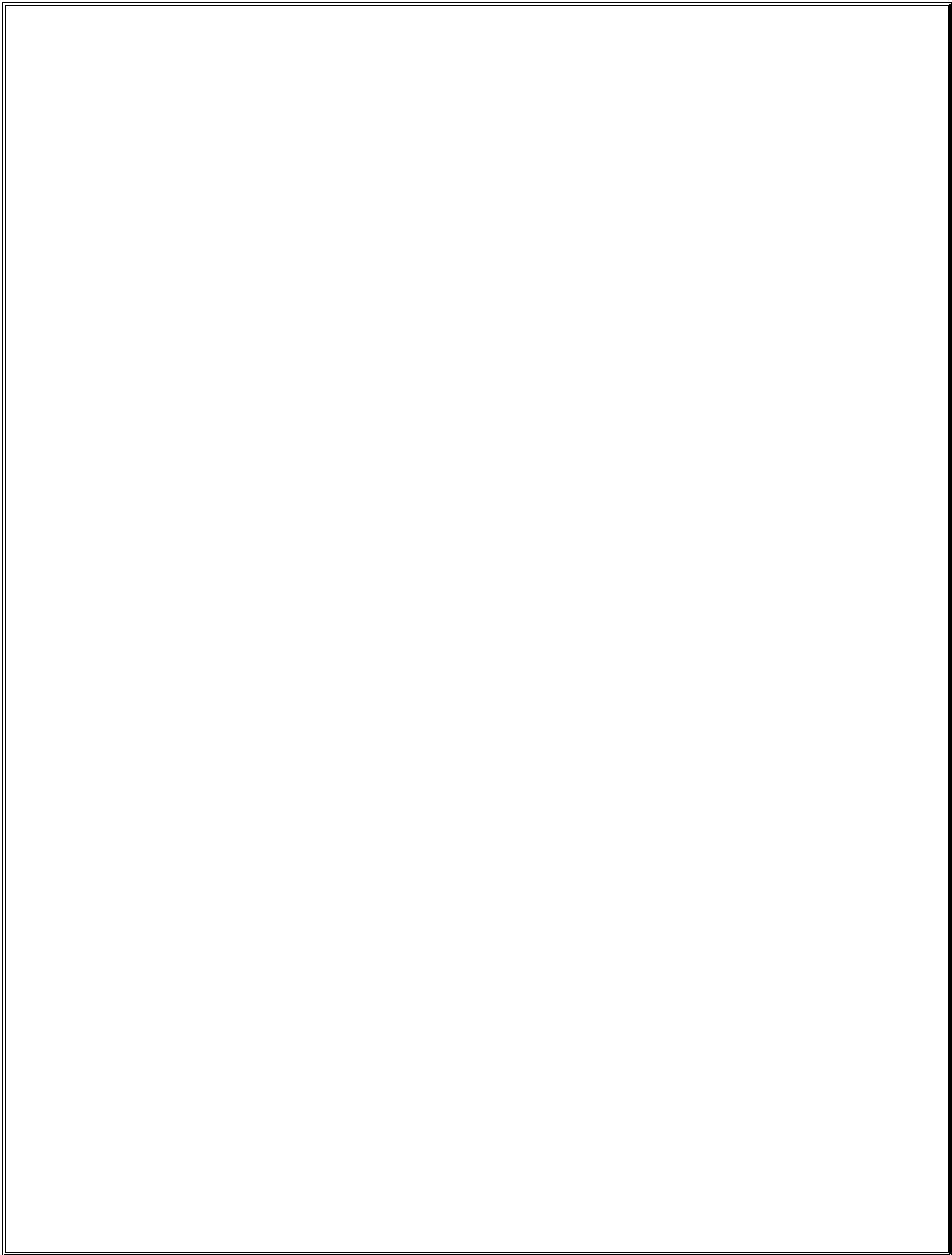
18.sudo

SuperUser Do(sudo) command enables you to perform tasks that require administrative or root permissions.

19.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

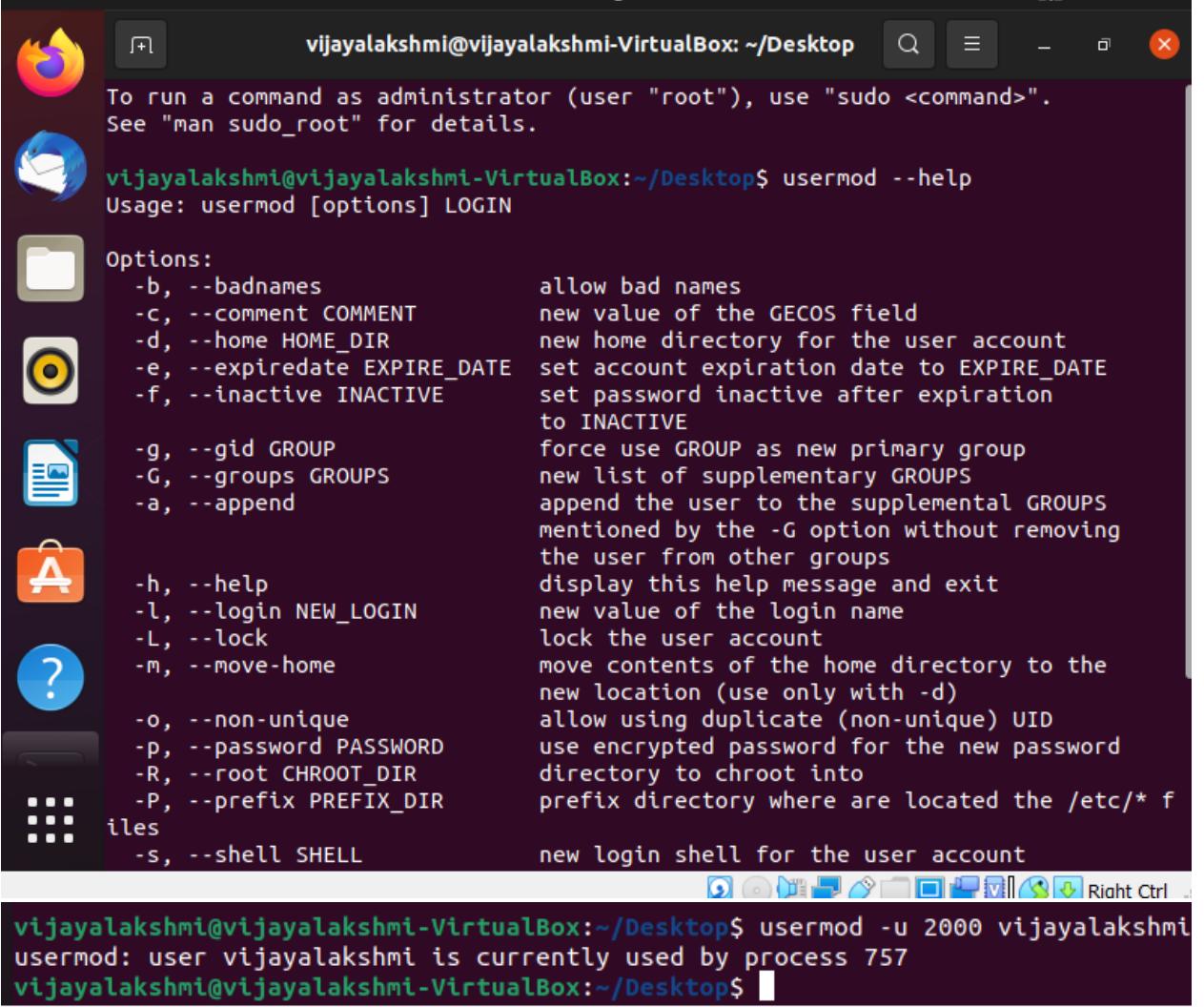
+-



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

Output:



```
vijayalakshmi@vijayalakshmi-VirtualBox: ~/Desktop
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ 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/* f
                             iles
  -s, --shell SHELL           new login shell for the user account

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ usermod -u 2000 vijayalakshmi
usermod: user vijayalakshmi is currently used by process 757
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

2. groupadd

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

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo groupadd mca
[sudo] password for vijayalakshmi:
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ groups
vijayalakshmi adm cdrom sudo dip plugdev lpadmin lxd sambashare
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cat /etc/group
root:x:0:
daemon:x:1:
bin:x:2:
sys:x:3:
adm:x:4:syslog,vijayalakshmi
tty:x:5:
disk:x:6:
lp:x:7:
mail:x:8:
news:x:9:
uucp:x:10:
man:x:12:
proxy:x:13:
kmem:x:15:
dialout:x:20:
fax:x:21:
voice:x:22:
cdrom:x:24:vijayalakshmi
floppy:x:25:
tape:x:26:
sudo:x:27:vijayalakshmi
lxd:x:132:vijayalakshmi
vijayalakshmi:x:1000:
sambashare:x:133:vijayalakshmi
systemd-coredump:x:999:
mca:x:1001:
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo groupadd trees
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo groupadd fower
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo groupadd plants
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo groupadd animal
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cat /etc/group
systemd-coredump:x:999:
mca:x:1001:
anna:x:1002:
trees:x:1003:
fower:x:1004:
plants:x:1005:
animal:x:1006:
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo groupdel animal
```

3. groups - print the groups a user is in

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ groups vijayalakshmi
vijayalakshmi : vijayalakshmi adm cdrom sudo dip plugdev lpadmin lxd sambashare
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

4. groupdel

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

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo groupdel animal
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cat /etc/group
root:x:0:
mca:x:1001:
anna:x:1002:
trees:x:1003:
fower:x:1004:
plants:x:1005:
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

5. 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.

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ id
uid=1000(vijayalakshmi) gid=1000(vijayalakshmi) groups=1000(vijayalakshmi),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),121(lpadmin),132(lxd),133(sambashare)
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

6. 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

Output

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ps -a
  PID TTY      TIME CMD
  801 tty2    00:00:00 gnome-session-b
1382 pts/0    00:00:00 ps
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

7. Groupmod

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

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

Output

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo groupmod -n anna trees
groupmod: group 'anna' already exists
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo groupmod -n student2 trees
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

8. 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
```

Output

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ mkdir mca
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls mca
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls -l mca
total 0
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls -ld mca
drwxrwxr-x 2 vijayalakshmi vijayalakshmi 4096 Aug 12 22:21 mca
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ chmod g-w mca
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls -ld mca
drwxr-xr-x 2 vijayalakshmi vijayalakshmi 4096 Aug 12 22:21 mca
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls
ajce      exam1  mycommands.txt  q1.txt      v2.txt
documents  file4  mycommands1  number.txt   state.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

9. chown

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

```
#chown Tom Test
```

Output

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ chown vijayalakshmi q1.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls -l q1.txt
-rw-rw-r-- 1 vijayalakshmi vijayalakshmi 31 Jun 17 18:13 q1.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

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
```

Output

```
top - 22:27:26 up 27 min,  1 user,  load average: 0.03, 0.04, 0.13
Tasks: 176 total,   1 running, 175 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.7 us,  0.3 sy,  0.0 ni, 99.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem : 1519.7 total,   362.4 free,   588.0 used,   569.3 buff/cache
MiB Swap: 1049.3 total,   1049.3 free,      0.0 used.    770.8 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
935	vijayal+	20	0	3441900	300656	123892	S	0.7	19.3	0:21.73	gnome+-
1351	vijayal+	20	0	411512	49564	37712	S	0.3	3.2	0:04.76	gnome+-
1543	root	20	0	0	0	0	I	0.3	0.0	0:00.01	kworker+
1	root	20	0	98852	10720	7784	S	0.0	0.7	0:02.36	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthrea+
3	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_gp
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_pa+
5	root	20	0	0	0	0	I	0.0	0.0	0:00.00	kworker+
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker+
9	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	mm_per+
10	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_ta+
11	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_ta+
12	root	20	0	0	0	0	S	0.0	0.0	0:00.13	ksoftti+
13	root	20	0	0	0	0	I	0.0	0.0	0:00.46	rcu_sc+
14	root	rt	0	0	0	0	S	0.0	0.0	0:00.04	migrat+
15	root	-51	0	0	0	0	S	0.0	0.0	0:00.00	idle_i+
16	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuhp/0
17	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kdevtm+
18	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	netns
19	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	inet_f+
20	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kauditd
21	root	20	0	0	0	0	S	0.0	0.0	0:00.00	khungt+

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.

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ wc mycommands.txt
1 2 17 mycommands.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

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

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls
ajce      exam1  mca          mycommands.txt  q1.txt      v2.txt
documents  file4  mycommands1  number.txt    state.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ tar cf archive1.tar q1.txt v
2.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls
ajce      documents  file4  mycommands1  number.txt  state.txt
archive1.tar  exam1     mca    mycommands.txt  q1.txt      v2.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

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

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ expr 10 + 2
12
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

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

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ls -l | wc -l
13
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

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>

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ 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]
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

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.

Output:

```
vtjayalakshmi@vtjayalakshmi-VirtualBox:~/Desktop$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/vijayalakshmi/.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:nnbFRT5flXeK4JrE0G7+aU8rseycEjlPiQs/E0h23XE vijayalakshmi@vijayalakshmi-
VirtualBox
The key's randomart image is:
+---[RSA 3072]---+
|       .   . o|
|     . . . .oE.+|
|     + o o ++.+|
|     o * o.o..o.|
|     o *S= .o    .|
|     o.X.+.      |
|     o+X.+.      |
|     .*oOo .      |
|           *+oo   |
+---[SHA256]---+
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

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

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

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ mkdir mylinux
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ cd mylinux
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ touch song1.mp3 song2
.mp3 song3.mp3 song4.mp3 song5.mp3 song6.mp3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ ls
song1.mp3 song2.mp3 song3.mp3 song4.mp3 song5.mp3 song6.mp3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$
```

b) Create six files with name of the form snapX.mp3.

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ touch snap1.mp3 snap2
.mp3 snap3.mp3 snap4.mp3 snap5.mp3 snap6.mp3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ ls
snap1.mp3 snap3.mp3 snap5.mp3 song1.mp3 song3.mp3 song5.mp3
snap2.mp3 snap4.mp3 snap6.mp3 song2.mp3 song4.mp3 song6.mp3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$
```

c) create six files with name of the form filmX.mp3.

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ touch film1.mp3 film2
.mp3 film3.mp3 film4.mp3 film5.mp3 film6.mp3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ ls
film1.mp3 film4.mp3 snap1.mp3 snap4.mp3 song1.mp3 song4.mp3
film2.mp3 film5.mp3 snap2.mp3 snap5.mp3 song2.mp3 song5.mp3
film3.mp3 film6.mp3 snap3.mp3 snap6.mp3 song3.mp3 song6.mp3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$
```

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

a) Music

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ mkdir music
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ mv song1.mp3 music/
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ mv song2.mp3 song3.mp
3 song4.mp3 song5.mp3 song6.mp3
mv: target 'song6.mp3' is not a directory
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ mv song2.mp3 song3.mp
3 song4.mp3 song5.mp3 song6.mp3 music/
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ cd music
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/music$ ls
song1.mp3 song2.mp3 song3.mp3 song4.mp3 song5.mp3 song6.mp3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/music$
```

b) picture

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ mkdir picture
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ mv snap1.mp3 snap2.mp
3 snap3.mp3 snap4.mp3 snap5.mp3 snap6.mp3 picture/
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ cd picture
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/picture$ ls
snap1.mp3 snap2.mp3 snap3.mp3 snap4.mp3 snap5.mp3 snap6.mp3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/picture$ █
```

c) videos

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/picture$ cd ..
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ mkdir videos
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ mv film1.mp3 film2.mp
3 film3.mp3 film4.mp3 film5.mp3 film6.mp3 videos/
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ cd videos
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/videos$ ls
film1.mp3 film2.mp3 film3.mp3 film4.mp3 film5.mp3 film6.mp3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/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.

Output

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ mkdir -p {friends,family,work
}
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

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

Output

```

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ ls
family friends music picture videos work
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ cd music
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/music$ cp song1.mp3 song2.mp3 song3.mp3 song4.mp3 song5.mp3 song6.mp3 /home/vijayalakshmi/mylinux/friends/
cp: target '/home/vijayalakshmi/mylinux/friends/' is not a directory
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/music$ cp song1.mp3 song2.mp3 song3.mp3 song4.mp3 song5.mp3 song6.mp3 /home/vijayalakshmi/Desktop/mylinux/friends/
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/music$ ls
picture song1.mp3 song2.mp3 song3.mp3 song4.mp3 song5.mp3 song6.mp3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/music$ cd ..
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ cd picture
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/picture$ cd ..
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ cd friends
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/friends$ ls
song1.mp3 song2.mp3 song3.mp3 song4.mp3 song5.mp3 song6.mp3
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/friends$ cd picture
bash: cd: picture: No such file or directory
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/friends$ cd ..
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ cd picture
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/picture$ cp snap1.mp3 snap2.mp3 snap3.mp3 snap4.mp3 snap5.mp3 snap6.mp3 /home/vijayalakshmi/Desktop/mylinux/family/
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/picture$ cd ..
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ cd family
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/family$ ls
snap1.mp3 snap2.mp3 snap3.mp3 snap4.mp3 snap5.mp3 snap6.mp3

```

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

Output:

```

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux/family$ cd ..
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ ls
family friends music picture videos work
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ rmdir {friends,family}
rmdir: failed to remove 'friends': Directory not empty
rmdir: failed to remove 'family': Directory not empty
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ rm -r friends family
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ ls
music picture videos work
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ 

```

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

Output:

```

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ rm -r friends family
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ ls
music picture videos work
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ 

```

- Redirect a long listing of all home directory files ,including hidden into a file named allfile.txt confirm that the file contains the listing.

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ ls -a > allfiles.txt
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ ls
allfiles.txt  music  picture  videos  work
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ █
```

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

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ date
Tuesday 17 August 2021 09:05:33 PM IST
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ █
```

- 9.Add a user Juliet.

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo useradd juliet
[sudo] password for vijayalakshmi:
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ █
```

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

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ cat /etc/passwd |grep
juliet
juliet:x:1001:1010::/home/juliet:/bin/sh
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ █
```

11. Use the passwd command to initialize juliets password.

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo passwd juliet
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ █
```

- 12.create a supplementary group called Shakespeare with a group id of 30000

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo groupadd -g 3000  
0 shakespeare  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ ls
```

13. create a supplementary group called artists.

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo groupadd artist
```

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

Output:

```
voice:x:22:  
cdrom:x:24:vijayalakshmi  
floppy:x:25:  
tape:x:26:  
sudo:x:27:vijayalakshmi  
audio:x:29:pulse  
dip:x:30:vijayalakshmi  
www-data:x:33:  
backup:x:34:  
operator:x:37:  
list:x:38:  
irc:x:39:  
/etc/group
```

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

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo usermod -G shake  
spheare
```

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

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ id juliet  
uid=1001(juliet) gid=30000(shakespeare) groups=30000(shakespeare)  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$
```

17. Add Remeo and Hamlet to the Shakespeare group.

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo useradd Remeo  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo useradd Hamlet  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo usermod -G shake  
spheare Remeo  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo usermod -G shake  
spheare Hamlet  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ █
```

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

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo useradd Reba  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo useradd Dolly  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo useradd Elvis  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo usermod -G artis  
t Reba  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo usermod -G artis  
t Dolly  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$ sudo usermod -G artis  
t Elvis  
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop/mylinux$
```

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

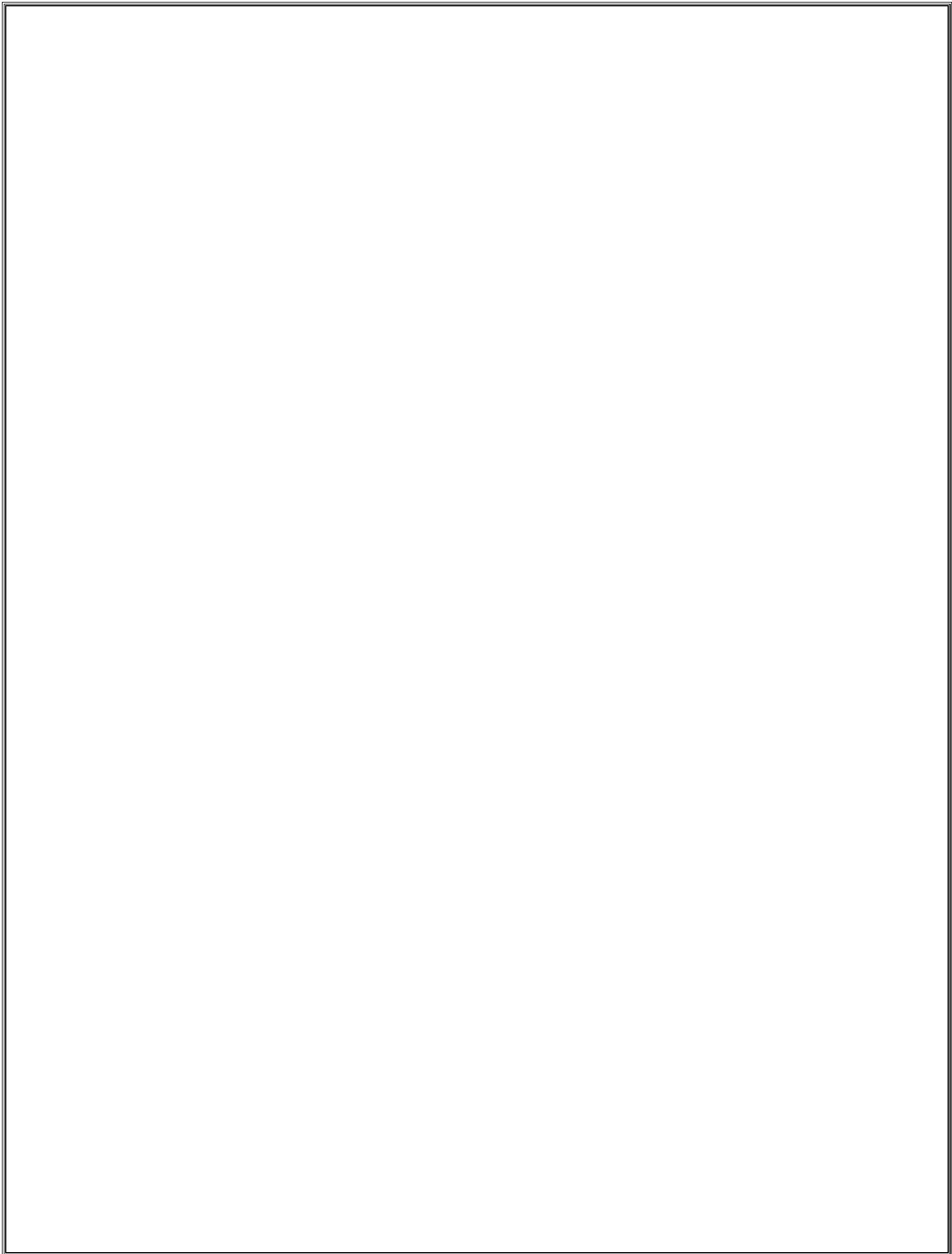
Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ less /etc/group
```

20. Attempt to remove user Dolly.

Output:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo usedel 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 & traceroute tests

Ping and Trace Route tests can help to identify any connection issues between your network and a specified server (or website) address.

PING test

The PING command is used to test the connection and latency between two network connections. The PING command sends packets of information to a specified IP Address and then measures the time it takes to get a response from the specified computer or device.

Trace Route test

The TRACERT command is used to conduct a similar test to PING, but instead of displaying the time it takes to connect, it looks at the exact server hops required to connect your computer to the server.

You should already have the CMD prompt dialogue box open, after performing the PING test above.

Ping:

```
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DOCTOR PC>ping google.com

Pinging google.com [216.58.196.174] with 32 bytes of data:
Reply from 216.58.196.174: bytes=32 time=18ms TTL=119
Reply from 216.58.196.174: bytes=32 time=21ms TTL=119
Reply from 216.58.196.174: bytes=32 time=20ms TTL=119
Reply from 216.58.196.174: bytes=32 time=22ms TTL=119

Ping statistics for 216.58.196.174:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 18ms, Maximum = 22ms, Average = 20ms

C:\Users\DOCTOR PC>
```

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

Pinging google.com [142.250.67.46] with 32 bytes of data:
Reply from 142.250.67.46: bytes=32 time=20ms TTL=119
Reply from 142.250.67.46: bytes=32 time=21ms TTL=119
Reply from 142.250.67.46: bytes=32 time=20ms TTL=119
Reply from 142.250.67.46: bytes=32 time=20ms TTL=119

Ping statistics for 142.250.67.46:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 20ms, Maximum = 21ms, Average = 20ms

C:\Users\DOCTOR PC>
```

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

Pinging google.com [142.250.67.46] with 32 bytes of data:
Reply from 142.250.67.46: bytes=32 time=20ms TTL=119
Reply from 142.250.67.46: bytes=32 time=21ms TTL=119
Reply from 142.250.67.46: bytes=32 time=19ms TTL=119
Reply from 142.250.67.46: bytes=32 time=94ms TTL=119
Reply from 142.250.67.46: bytes=32 time=21ms TTL=119
Reply from 142.250.67.46: bytes=32 time=21ms TTL=119
Reply from 142.250.67.46: bytes=32 time=32ms TTL=119
Reply from 142.250.67.46: bytes=32 time=20ms TTL=119
Reply from 142.250.67.46: bytes=32 time=21ms TTL=119
Reply from 142.250.67.46: bytes=32 time=19ms TTL=119
Reply from 142.250.67.46: bytes=32 time=20ms TTL=119
Reply from 142.250.67.46: bytes=32 time=26ms TTL=119
Reply from 142.250.67.46: bytes=32 time=21ms TTL=119
Reply from 142.250.67.46: bytes=32 time=20ms TTL=119
Reply from 142.250.67.46: bytes=32 time=21ms TTL=119
Reply from 142.250.67.46: bytes=32 time=21ms TTL=119

Ping statistics for 142.250.67.46:
    Packets: Sent = 16, Received = 16, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 19ms, Maximum = 94ms, Average = 26ms
Control-C
^C

C:\Users\DOCTOR PC>
```

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

Pinging google.com [142.250.67.46] with 32 bytes of data:
General failure.
General failure.
General failure.
General failure.

Ping statistics for 142.250.67.46:
  Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\Users\DOCTOR PC>
```

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

Pinging google.com [142.250.67.46] with 32 bytes of data:
Reply from 142.250.67.46: bytes=32 time=19ms TTL=119
Reply from 142.250.67.46: bytes=32 time=23ms TTL=119
Reply from 142.250.67.46: bytes=32 time=21ms TTL=119
Reply from 142.250.67.46: bytes=32 time=21ms TTL=119

Ping statistics for 142.250.67.46:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 19ms, Maximum = 23ms, Average = 21ms
C:\Users\DOCTOR PC>
```

Route

```
C:\Users\DOCTOR PC>route print
=====
Interface List
 5...8c 16 45 de 97 1b ....Realtek PCIe GBE Family Controller
 17...0a 00 27 00 00 11 ....VirtualBox Host-Only Ethernet Adapter
 6...32 d1 6b fb 66 59 ....Microsoft Wi-Fi Direct Virtual Adapter
 7...42 d1 6b fb 66 59 ....Microsoft Wi-Fi Direct Virtual Adapter #2
 15...00 ff 68 e1 be f0 ....Kaspersky Security Data Escort Adapter
 16...30 d1 6b fb 66 59 ....Qualcomm Atheros QCA9377 Wireless Network Adapter
 20...30 d1 6b fb 66 5a ....Bluetooth Device (Personal Area Network)
 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  192.168.1.8    50
         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    192.168.1.8    306
         192.168.1.8  255.255.255.255        On-link    192.168.1.8    306
 192.168.1.255   255.255.255.255        On-link    192.168.1.8    306
         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    192.168.1.8    306
 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  192.168.1.8    306
=====
Persistent Routes:
  None
=====
```

```
C:\Users\DOCTOR PC>route print -4
=====
Interface List
 5...8c 16 45 de 97 1b ....Realtek PCIe GBE Family Controller
 17...0a 00 27 00 00 11 ....VirtualBox Host-Only Ethernet Adapter
 6...32 d1 6b fb 66 59 ....Microsoft Wi-Fi Direct Virtual Adapter
 7...42 d1 6b fb 66 59 ....Microsoft Wi-Fi Direct Virtual Adapter #2
 15...00 ff 68 e1 be f0 ....Kaspersky Security Data Escort Adapter
 16...30 d1 6b fb 66 59 ....Qualcomm Atheros QCA9377 Wireless Network Adapter
 20...30 d1 6b fb 66 5a ....Bluetooth Device (Personal Area Network)
 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  192.168.1.8    50
         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    192.168.1.8    306
         192.168.1.8  255.255.255.255        On-link    192.168.1.8    306
 192.168.1.255   255.255.255.255        On-link    192.168.1.8    306
         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    192.168.1.8    306
 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  192.168.1.8    306
=====
Persistent Routes:
  None
C:\Users\DOCTOR PC>
```

```
C:\Users\DOCTOR PC>route -6

Manipulates network routing tables.

ROUTE [-f] [-p] [-4|-6] command [destination]
          [MASK netmask] [gateway] [METRIC metric] [IF interface]

-f           Clears the routing tables of all gateway entries. If this is
            used in conjunction with one of the commands, the tables are
            cleared prior to running the command.

-p           When used with the ADD command, makes a route persistent across
            boots of the system. By default, routes are not preserved
            when the system is restarted. Ignored for all other commands,
            which always affect the appropriate persistent routes.

-4           Force using IPv4.

-6           Force using IPv6.

command      One of these:
              PRINT    Prints a route
              ADD     Adds a route
              DELETE   Deletes a route
              CHANGE   Modifies an existing route

destination   Specifies the host.

MASK         Specifies that the next parameter is the 'netmask' value.

netmask      Specifies a subnet mask value for this route entry.
            If not specified, it defaults to 255.255.255.255.

gateway      Specifies gateway.

interface    the interface number for the specified route.

METRIC       specifies the metric, ie. cost for the destination.
```

```
C:\Users\DOCTOR PC>route print *157
=====
Interface List
 5...8c 16 45 de 97 1b ....Realtek PCIe GBE Family Controller
 17...0a 00 27 00 00 11 ....VirtualBox Host-Only Ethernet Adapter
 6...32 d1 6b fb 66 59 ....Microsoft Wi-Fi Direct Virtual Adapter
 7...42 d1 6b fb 66 59 ....Microsoft Wi-Fi Direct Virtual Adapter #2
 15...00 ff 68 e1 be f0 ....Kaspersky Security Data Escort Adapter
 16...30 d1 6b fb 66 59 ....Qualcomm Atheros QCA9377 Wireless Network Adapter
 20...30 d1 6b fb 66 5a ....Bluetooth Device (Personal Area Network)
 1.....Software Loopback Interface 1
=====

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

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

C:\Users\DOCTOR PC>
```

```
C:\Users\DOCTOR PC>tracert 192.168.1.1

Tracing route to 192.168.1.1 over a maximum of 30 hops
```

```
 1      5 ms      4 ms      4 ms  192.168.1.1
```

```
Trace complete.
```

```
C:\Users\DOCTOR PC>
```

```
Tracing route to www.google.com [142.250.77.164]
over a maximum of 30 hops:

 1      3 ms      4 ms      4 ms  192.168.1.1
 2     16 ms     12 ms      8 ms  100.108.0.1
 3     20 ms     80 ms     47 ms  10.1.5.17
 4     24 ms     19 ms     23 ms  45.120.251.127
 5     18 ms     18 ms     19 ms  74.125.242.145
 6     20 ms     19 ms     20 ms  209.85.142.247
 7     20 ms     20 ms     19 ms  maa05s17-in-f4.1e100.net [142.250.77.164]
```

```
Trace complete.
```

```
C:\Users\DOCTOR PC>
```

```
C:\Users\DOCTOR PC>tracert -d www.google.com

Tracing route to www.google.com [142.250.77.164]
over a maximum of 30 hops:

 1       6 ms      4 ms      4 ms  192.168.1.1
 2      10 ms     10 ms      8 ms  100.108.0.1
 3      84 ms     33 ms     20 ms  10.1.5.17
 4      19 ms     19 ms     20 ms  45.120.251.127
 5      20 ms     28 ms     19 ms  74.125.242.145
 6      20 ms     20 ms     27 ms  209.85.142.247
 7      21 ms     19 ms     19 ms  142.250.77.164

Trace complete.

C:\Users\DOCTOR PC>
```

```
C:\Users\DOCTOR PC>tracert 22.110.0.1

Tracing route to 22.110.0.1 over a maximum of 30 hops

 1      4 ms      4 ms      4 ms  192.168.1.1
 2      9 ms     11 ms      9 ms  100.108.0.1
 3      9 ms      8 ms     12 ms  122.15.23.162
 4     38 ms     38 ms     38 ms  182.19.106.200
 5    142 ms    140 ms    140 ms  ae11-100-xcr1.mar.cw.net [213.185.219.53]
 6      *     162 ms    160 ms  ae10-xcr1.ptl.cw.net [195.2.30.213]
 7    162 ms    175 ms    161 ms  10gigabitethernet-2-2.par2.he.net [195.42.144.104]
 8   213 ms    213 ms    213 ms  100ge12-2.core2.ash1.he.net [184.104.196.241]
 9      *      *      ^C

C:\Users\DOCTOR PC>
```

Nslookup:

Microsoft Windows includes a tool called NSLOOKUP that you can use via the command prompt. This tool can be used to check DNS records propagation and resolution using different servers, and perform other troubleshooting steps.

```
C:\Users\DOCTOR PC>nslookup
Default Server: kvbl-vm-sr1-dns-erm.195.160.103.in-addr.arpa
Address: 103.160.195.230

>
```

- ⑤ Type nslookup -q=XX where XX is a type of a DNS record. Some of the available types are MX, A, CNAME, and TXT. The records are then displayed, to exit the tool type exit
- ⑥ To use **nslookup** as a troubleshooting tool, you can set the specific type of record to lookup for a domain by using the **-type=record_type** where **record_type** is A, CNAME, MX, PTR, NS, ANY.

Type **nslookup -type=ns domain_name** where domain_name is the domain for your query and hit **Enter**. Now the tool will display the name servers for the domain you specified.

```
C:\Users\DOCTOR PC>nslookup -g=MX google.com
*** Invalid option: g=MX
Server: kvbl-vm-sr1-dns-erm.195.160.103.in-addr.arpa
Address: 103.160.195.230

Non-authoritative answer:
Name: google.com
Address: 142.250.67.46

C:\Users\DOCTOR PC>
```

Ipcfg:

Displays all current TCP/IP network configuration values and refreshes Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) settings. Used without parameters, ipconfig displays Internet Protocol version 4 (IPv4) and IPv6 addresses, subnet mask, and default gateway for all adapters.

PARAMETERS:

/all: Displays the full TCP/IP configuration for all adapters. Adapters can represent physical interfaces, such as installed network adapters, or logical interfaces, such as dial-up connections.

/displaydns: Displays the contents of the DNS client resolver cache, which includes both entries preloaded from the local Hosts file and any recently obtained resource records for name queries resolved by the computer. The DNS Client service uses this information to resolve frequently queried names quickly, before querying its configured DNS servers.

/flushdns: Flushes and resets the contents of the DNS client resolver cache. During DNS troubleshooting, you can use this procedure to discard negative cache entries from the cache, as well as any other entries that have been added dynamically.

/registerdns: Initiates manual dynamic registration for the DNS names and IP addresses that are configured at a computer. You can use this parameter to troubleshoot a failed DNS name registration or resolve a dynamic update problem between a client and the DNS server without rebooting the client computer. The DNS settings in the advanced properties of the TCP/IP protocol determine which names are registered in DNS.

```
C:\Users\DOCTOR PC>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

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

Ethernet adapter VirtualBox Host-Only Network:

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::a5b9:122c:e36a:4591%17
    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* 3:

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

Ethernet adapter Ethernet 2:

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

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::9c10:e5f0:c812:b5e0%16
    IPv4 Address. . . . . : 192.168.1.8
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1

Ethernet adapter Bluetooth Network Connection:

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

C:\Users\DOCTOR PC>
```

```
C:\Users\DOCTOR PC>ipconfig/displaying

Error: unrecognized or incomplete command line.

USAGE:
  ipconfig [/allcompartments] [/? | /all |
                           /renew [adapter] | /release [adapter] |
                           /renew6 [adapter] | /release6 [adapter] |
                           /flushdns | /displaydns | /registerdns |
                           /showclassid adapter |
                           /setclassid adapter [classid] |
                           /showclassid6 adapter |
                           /setclassid6 adapter [classid] ]

where
  adapter          Connection name
  (wildcard characters * and ? allowed, see examples)

Options:
  /?               Display this help message
  /all             Display full configuration information.
  /release         Release the IPv4 address for the specified adapter.
  /release6        Release the IPv6 address for the specified adapter.
  /renew           Renew the IPv4 address for the specified adapter.
  /renew6          Renew the IPv6 address for the specified adapter.
  /flushdns        Purges the DNS Resolver cache.
  /registerdns    Refreshes all DHCP leases and re-registers DNS names
  /displaydns     Display the contents of the DNS Resolver Cache.
  /showclassid    Displays all the dhcp class IDs allowed for adapter.
  /setclassid     Modifies the dhcp class id.
  /showclassid6   Displays all the IPv6 DHCP class IDs allowed for adapter.
  /setclassid6    Modifies the IPv6 DHCP class id.

The default is to display only the IP address, subnet mask and
default gateway for each adapter bound to TCP/IP.
```

NetSat:

On Windows 10, netstat (network statistics) has been around for a long time, and it's a command-line tool that you can use in Command Prompt to display statistics for all network connections. It allows you to understand open and connected ports to monitor and troubleshoot networking problems for system or applications.

```
C:\Users\DOCTOR PC>netstat  
  
Active Connections  
  
Proto Local Address Foreign Address State  
TCP 127.0.0.1:49339 DESKTOP-MVGV1R8:49677 ESTABLISHED  
TCP 127.0.0.1:49542 DESKTOP-MVGV1R8:49677 ESTABLISHED  
TCP 127.0.0.1:49671 DESKTOP-MVGV1R8:49672 ESTABLISHED  
TCP 127.0.0.1:49672 DESKTOP-MVGV1R8:49671 ESTABLISHED  
TCP 127.0.0.1:49677 DESKTOP-MVGV1R8:49339 ESTABLISHED  
TCP 127.0.0.1:49677 DESKTOP-MVGV1R8:49542 ESTABLISHED  
TCP 127.0.0.1:49677 DESKTOP-MVGV1R8:51124 ESTABLISHED  
TCP 127.0.0.1:49677 DESKTOP-MVGV1R8:53985 ESTABLISHED  
TCP 127.0.0.1:49677 DESKTOP-MVGV1R8:54945 ESTABLISHED  
TCP 127.0.0.1:49677 DESKTOP-MVGV1R8:57591 ESTABLISHED  
TCP 127.0.0.1:49677 DESKTOP-MVGV1R8:60465 ESTABLISHED  
TCP 127.0.0.1:49677 DESKTOP-MVGV1R8:60646 ESTABLISHED
```

netstat -n

command to display active connections showing numeric IP address and port number instead of trying to determine the names.

```
C:\Users\DOCTOR PC>netstat -n  
  
Active Connections  
  
Proto Local Address Foreign Address State  
TCP 127.0.0.1:49339 127.0.0.1:49677 ESTABLISHED  
TCP 127.0.0.1:49542 127.0.0.1:49677 ESTABLISHED  
TCP 127.0.0.1:49671 127.0.0.1:49672 ESTABLISHED  
TCP 127.0.0.1:49672 127.0.0.1:49671 ESTABLISHED  
TCP 127.0.0.1:49677 127.0.0.1:49339 ESTABLISHED  
TCP 127.0.0.1:49677 127.0.0.1:49542 ESTABLISHED  
TCP 127.0.0.1:49677 127.0.0.1:51124 ESTABLISHED  
TCP 127.0.0.1:49677 127.0.0.1:53985 ESTABLISHED  
TCP 127.0.0.1:49677 127.0.0.1:54945 ESTABLISHED  
TCP 127.0.0.1:49677 127.0.0.1:57591 ESTABLISHED  
TCP 127.0.0.1:49677 127.0.0.1:60465 ESTABLISHED  
TCP 127.0.0.1:49677 127.0.0.1:60646 ESTABLISHED
```

netstat -n INTERVAL

In the command, make sure to replace INTERVAL for the number (in seconds) you want to redisplay the information.

```
C:\Users\DOCTOR PC>netstat -n 5

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:49339        127.0.0.1:49677      ESTABLISHED
  TCP    127.0.0.1:49542        127.0.0.1:49677      ESTABLISHED
  TCP    127.0.0.1:49671        127.0.0.1:49672      ESTABLISHED
  TCP    127.0.0.1:49672        127.0.0.1:49671      ESTABLISHED
  TCP    127.0.0.1:49677        127.0.0.1:49339      ESTABLISHED
  TCP    127.0.0.1:49677        127.0.0.1:49542      ESTABLISHED
  TCP    127.0.0.1:49677        127.0.0.1:51124      ESTABLISHED
  TCP    127.0.0.1:49677        127.0.0.1:53985      ESTABLISHED
  TCP    127.0.0.1:49677        127.0.0.1:54945      ESTABLISHED
```

netstat -a

The netstat -a command displays all active and inactive connections, and the TCP and UDP ports the device is currently listening.

```
C:\Users\DOCTOR PC>netstat -a

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    0.0.0.0:135            DESKTOP-MVGV1R8:0    LISTENING
  TCP    0.0.0.0:445            DESKTOP-MVGV1R8:0    LISTENING
  TCP    0.0.0.0:5040           DESKTOP-MVGV1R8:0    LISTENING
  TCP    0.0.0.0:7680           DESKTOP-MVGV1R8:0    LISTENING
  TCP    0.0.0.0:49664           DESKTOP-MVGV1R8:0    LISTENING
  TCP    0.0.0.0:49665           DESKTOP-MVGV1R8:0    LISTENING
  TCP    0.0.0.0:49666           DESKTOP-MVGV1R8:0    LISTENING
  TCP    0.0.0.0:49667           DESKTOP-MVGV1R8:0    LISTENING
  TCP    0.0.0.0:49668           DESKTOP-MVGV1R8:0    LISTENING
```

netstat -b

The netstat -b command lists all the executables (applications) associated with each connection. Sometimes, applications may open multiple connections.

netstat -e

The netstat -e command generates a statistic of the network interface, which shows information like the number of bytes, unicast and non-unicast sent and received packets. You can also see discarded packets and errors and unknown protocols, which can help troubleshoot networking problems.

Other Networking Commands

1. Hostname Command

A very simple command that displays the host name of your machine. This is much quicker than going to the control panel>system route.

2. getmac Command

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

3. arp Command

This is used for showing the address resolution cache. This command must be used with a command line switch arp -a is the most common.

4. Nbtstat

Diagnostic tool for troubleshooting netBIOS problems.

5. Net Command

Used for managing users,service,shares etc..

```
C:\Users\DOCTOR PC>net
The syntax of this command is:

NET
[ ACCOUNTS | COMPUTER | CONFIG | CONTINUE | FILE | GROUP | HELP |
HELPMSG | LOCALGROUP | PAUSE | SESSION | SHARE | START |
STATISTICS | STOP | TIME | USE | USER | VIEW ]

C:\Users\DOCTOR PC>
```

```
C:\Users\DOCTOR PC>nbtstat

Displays protocol statistics and current TCP/IP connections using NBT
(NetBIOS over TCP/IP).

NBTSTAT [ [-a RemoteName] [-A IP address] [-c] [-n]
          [-r] [-R] [-RR] [-s] [-S] [interval] ]

-a   (adapter status) Lists the remote machine's name table given its name
-A   (Adapter status) Lists the remote machine's name table given its
                  IP address.
-c   (cache)         Lists NBT's cache of remote [machine] names and their IP addresses
-n   (names)        Lists local NetBIOS names.
-r   (resolved)     Lists names resolved by broadcast and via WINS
-R   (Reload)       Purges and reloads the remote cache name table
-S   (Sessions)    Lists sessions table with the destination IP addresses
-s   (sessions)    Lists sessions table converting destination IP
                  addresses to computer NETBIOS names.
-RR  (ReleaseRefresh) Sends Name Release packets to WINS and then, starts Refresh

RemoteName  Remote host machine name.
IP address  Dotted decimal representation of the IP address.
interval   Redisplays selected statistics, pausing interval seconds
           between each display. Press Ctrl+C to stop redisplaying
           statistics.

C:\Users\DOCTOR PC>
C:\Users\DOCTOR PC>getmac

Physical Address      Transport Name
=====  =====
00-FF-68-E1-BE-F0  Media disconnected
8C-16-45-DE-97-1B  Media disconnected
30-D1-6B-FB-66-59  \Device\Tcpip_{6B2FB950-B0E0-4661-8DB2-C9CCBD319AE7}
30-D1-6B-FB-66-5A  Media disconnected
0A-00-27-00-00-11  \Device\Tcpip_{910AABE7-FA4F-48AA-ACCC-94E918D7BAB9}

C:\Users\DOCTOR PC>
```

UBUNTU

1. Ping

Activities Terminal Sep 13 17:15

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ping www.google.com
PING www.google.com (142.250.77.164) 56(84) bytes of data.
64 bytes from maa05s17-in-f4.1e100.net (142.250.77.164): icmp_seq=1 ttl=118 time=20.2 ms
64 bytes from maa05s17-in-f4.1e100.net (142.250.77.164): icmp_seq=2 ttl=118 time=22.3 ms
64 bytes from maa05s17-in-f4.1e100.net (142.250.77.164): icmp_seq=3 ttl=118 time=23.6 ms
64 bytes from maa05s17-in-f4.1e100.net (142.250.77.164): icmp_seq=4 ttl=118 time=36.1 ms
64 bytes from maa05s17-in-f4.1e100.net (142.250.77.164): icmp_seq=5 ttl=118 time=23.4 ms
64 bytes from maa05s17-in-f4.1e100.net (142.250.77.164): icmp_seq=6 ttl=118 time=24.3 ms
64 bytes from maa05s17-in-f4.1e100.net (142.250.77.164): icmp_seq=7 ttl=118 time=25.4 ms
^C
--- www.google.com ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6010ms
rtt min/avg/max/mdev = 20.199/25.051/36.056/4.741 ms
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ping -a google.com
PING google.com (216.58.200.142) 56(84) bytes of data.
64 bytes from maa05s10-in-f14.1e100.net (216.58.200.142): icmp_seq=1 ttl=118 time=19.4 ms
64 bytes from maa05s10-in-f14.1e100.net (216.58.200.142): icmp_seq=2 ttl=118 time=22.5 ms
64 bytes from maa05s10-in-f14.1e100.net (216.58.200.142): icmp_seq=3 ttl=118 time=22.0 ms
64 bytes from maa05s10-in-f14.1e100.net (216.58.200.142): icmp_seq=4 ttl=118 time=21.1 ms
^C
--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3006ms
rtt min/avg/max/mdev = 19.380/21.258/22.483/1.188 ms
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ping -V google.com
ping from iputils 20210202
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ping -b google.com
PING google.com (216.58.196.174) 56(84) bytes of data.
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=1 ttl=118 time=20.5 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=2 ttl=118 time=23.2 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=3 ttl=118 time=24.2 ms
64 bytes from maa03s31-in-f14.1e100.net (216.58.196.174): icmp_seq=4 ttl=118 time=27.8 ms
^C
--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 20.479/23.910/27.773/2.610 ms
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

2Nslookup:

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ nslookup google.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
Name:   google.com
Address: 216.58.196.174

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ nslookup -q=MX google.com
Server:      127.0.0.53
Address:     127.0.0.53#53

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

Authoritative answers can be found from:

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ nslookup -type=soa redhat.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
redhat.com
origin = a1-68.akam.net
mail addr = noc.redhat.com
serial = 2021091300
refresh = 300
retry = 180
expire = 604800
minimum = 14400

Authoritative answers can be found from:

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ nslookup -type=a google.com
unknown query type: -a
Server:          127.0.0.53
Address:         127.0.0.53#53

Non-authoritative answer:
Name:   google.com
Address: 216.58.196.174

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

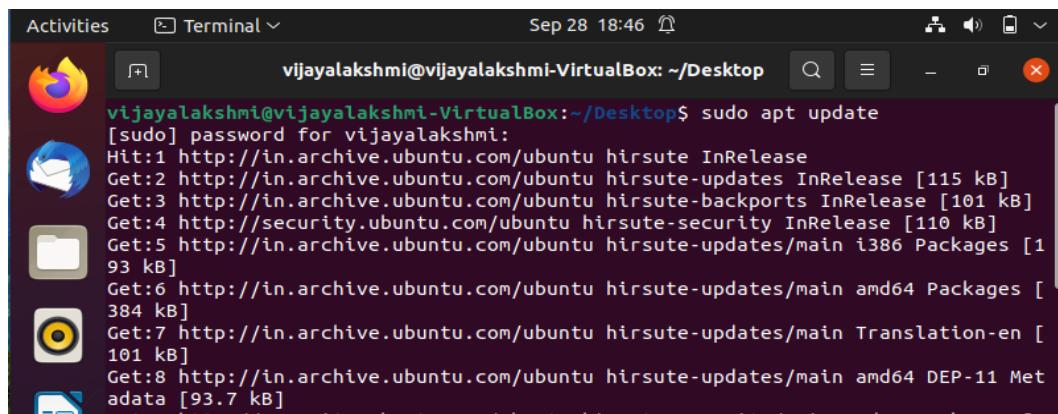


INSTALL LAMP IN UBUNTU

Install Apache2

- **Update your system**

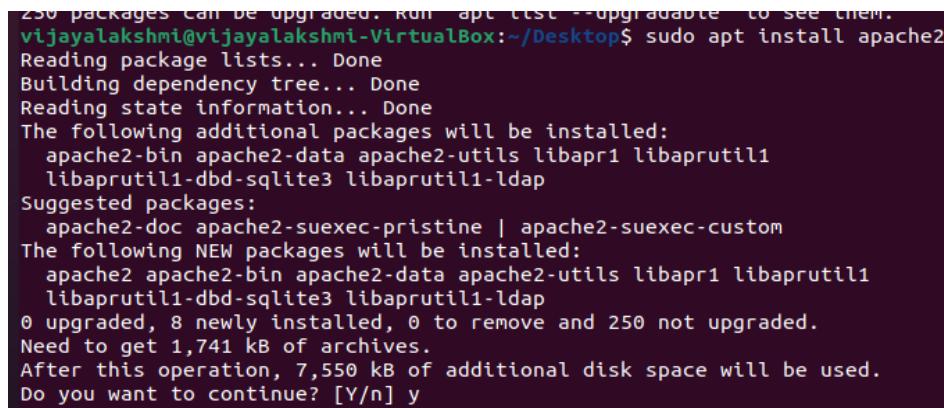
Sudo apt update



```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo apt update
[sudo] password for vijayalakshmi:
Hit:1 http://in.archive.ubuntu.com/ubuntu hirsute InRelease
Get:2 http://in.archive.ubuntu.com/ubuntu hirsute-updates InRelease [115 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu hirsute-backports InRelease [101 kB]
Get:4 http://security.ubuntu.com/ubuntu hirsute-security InRelease [110 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu hirsute-updates/main i386 Packages [193 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu hirsute-updates/main amd64 Packages [384 kB]
Get:7 http://in.archive.ubuntu.com/ubuntu hirsute-updates/main Translation-en [101 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu hirsute-updates/main amd64 DEP-11 Metadata [93.7 kB]
```

- **Install Apache using apt**

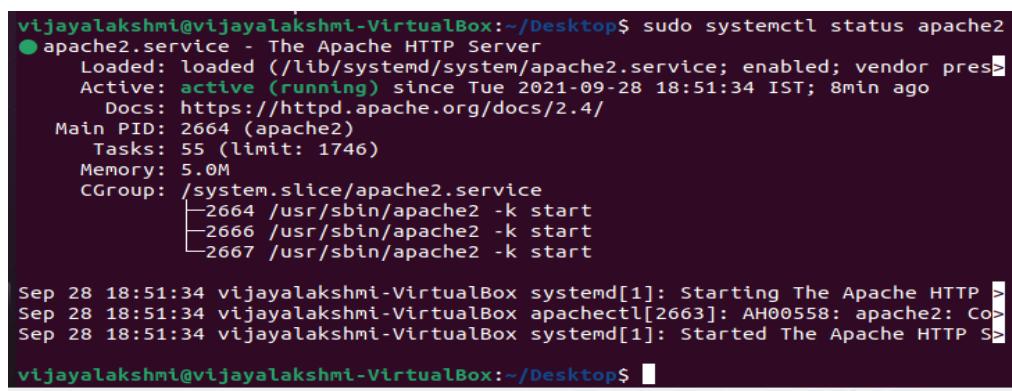
Sudo apt install apache2



```
250 packages can be upgraded. Run 'apt list --upgradable' to see them.
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo apt install apache2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1
    libaprutil1-dbd-sqlite3 libaprutil1-ldap
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1
    libaprutil1-dbd-sqlite3 libaprutil1-ldap
0 upgraded, 8 newly installed, 0 to remove and 250 not upgraded.
Need to get 1,741 kB of archives.
After this operation, 7,550 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

- **Confirm that Apache is now running with the following command**

Sudo systemctl status apache2

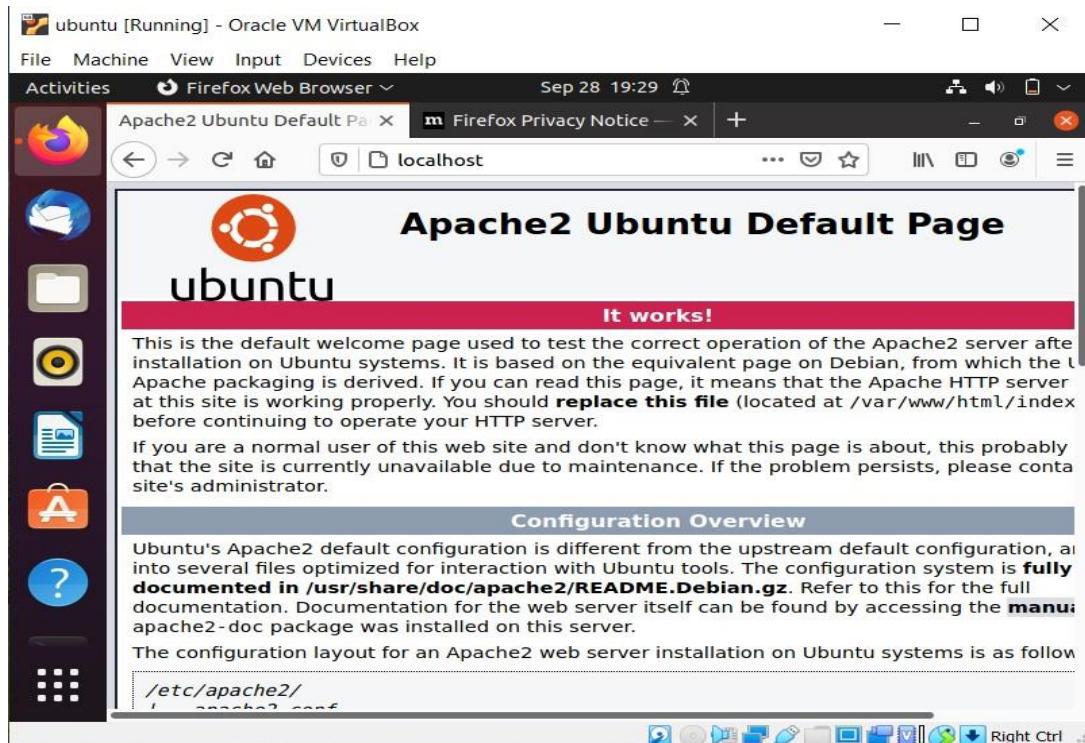


```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor pres
             Active: active (running) since Tue 2021-09-28 18:51:34 IST; 8min ago
               Docs: https://httpd.apache.org/docs/2.4/
         Main PID: 2664 (apache2)
            Tasks: 55 (limit: 1746)
           Memory: 5.0M
          CGroup: /system.slice/apache2.service
                  └─2664 /usr/sbin/apache2 -k start
                     ├─2666 /usr/sbin/apache2 -k start
                     ├─2666 /usr/sbin/apache2 -k start
                     └─2667 /usr/sbin/apache2 -k start

Sep 28 18:51:34 vijayalakshmi-VirtualBox systemd[1]: Starting The Apache HTTP >
Sep 28 18:51:34 vijayalakshmi-VirtualBox apachectl[2663]: AH00558: apache2: Co>
Sep 28 18:51:34 vijayalakshmi-VirtualBox systemd[1]: Started The Apache HTTP S>

vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

- Once installed test by accessing your servers IP in your browser
<http://localhost>



Install mariadb

Sudo apt install mariadb-server mariadb-client

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo apt install mariadb-server mariadb-client
[sudo] password for vijayalakshmi:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  galera-4 gawk libaio1 libcgi-fast-perl libcgi-pm-perl
  libconfig-inifiles-perl libdbd-mariadb-perl libdbi-perl libfcgi-bin
  libfcgi-perl libfcgi0ldbl libhtml-template-perl libmariadb3
  libmysqlclient21 libsigsegv2 libsnapy1v5 libterm-readkey-perl
  mariadb-client-10.5 mariadb-client-core-10.5 mariadb-common
  mariadb-server-10.5 mariadb-server-core-10.5 mysql-common socat
Suggested packages:
  gawk-doc libldb-perl libnet-daemon-perl libsql-statement-perl
  libipc-sharedcache-perl mailx mariadb-test
The following NEW packages will be installed:
  galera-4 gawk libaio1 libcgi-fast-perl libcgi-pm-perl
  libconfig-inifiles-perl libdbd-mariadb-perl libdbi-perl libfcgi-bin
  libfcgi-perl libfcgi0ldbl libhtml-template-perl libmariadb3
```

➤ **To check status**

Sudo systemctl status mysql

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo systemctl status mysql
● mariadb.service - MariaDB 10.5.12 database server
   Loaded: loaded (/lib/systemd/system/mariadb.service; enabled; vendor pres>
   Active: active (running) since Tue 2021-09-28 19:42:35 IST; 6min ago
     Docs: man:mariadb(8)
           https://mariadb.com/kb/en/library/systemd/
   Process: 19676 ExecStartPre=/usr/bin/install -m 755 -o mysql -g root -d /v>
   Process: 19677 ExecStartPre=/bin/sh -c systemctl unset-environment _WSREP>
   Process: 19679 ExecStartPre=/bin/sh -c [ ! -e /usr/bin/galera_recovery ] &>
   Process: 19738 ExecStartPost=/bin/sh -c systemctl unset-environment _WSREP>
   Process: 19740 ExecStartPost=/etc/mysql/debian-start (code=exited, status=>
 Main PID: 19726 (mariadb)
   Status: "Taking your SQL requests now..."
     Tasks: 8 (limit: 1746)
    Memory: 68.2M
      CGroup: /system.slice/mariadb.service
              └─19726 /usr/sbin/mariadb

Sep 28 19:42:38 vijayalakshmi-VirtualBox /etc/mysql/debian-start[19745]: Proce>
Sep 28 19:42:38 vijayalakshmi-VirtualBox /etc/mysql/debian-start[19745]: infor>
Sep 28 19:42:38 vijayalakshmi-VirtualBox /etc/mysql/debian-start[19745]: mysql>
Sep 28 19:42:38 vijayalakshmi-VirtualBox /etc/mysql/debian-start[19745]: perfo>
Sep 28 19:42:38 vijayalakshmi-VirtualBox /etc/mysql/debian-start[19745]: Phase>
Sep 28 19:42:38 vijayalakshmi-VirtualBox /etc/mysql/debian-start[19745]: Proce>
Sep 28 19:42:38 vijayalakshmi-VirtualBox /etc/mysql/debian-start[19745]: infor>
Sep 28 19:42:38 vijayalakshmi-VirtualBox /etc/mysql/debian-start[19745]: perfo>
Sep 28 19:42:38 vijayalakshmi-VirtualBox /etc/mysql/debian-start[19745]: Phase>
```

➤ **Secure your newly installed mariadb service**

Sudo mysql_secure_installation

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo mysql_secure_installatio
n
[sudo] password for vijayalakshmi:

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB
      SERVERS IN PRODUCTION USE! PLEASE READ EACH STEP CAREFULLY!

In order to log into MariaDB to secure it, we'll need the current
password for the root user. If you've just installed MariaDB, and
haven't set the root password yet, you should just press enter here.
Reloading the privilege tables will ensure that all changes made so far
will take effect immediately.

Reload privilege tables now? [Y/n] y
... Success!

Cleaning up...

All done! If you've completed all of the above steps, your MariaDB
installation should now be secure.

Thanks for using MariaDB!
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

Install PHP and commonly used modules

Sudo apt install php libapache2-mod-php php-ocpache php-cli php-gd php-curl php-mysql

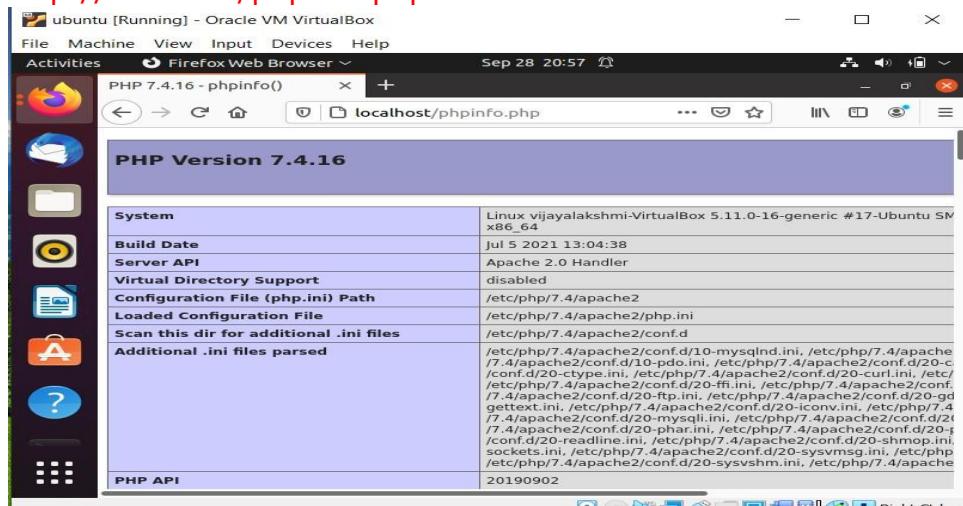
```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo apt install php libapache2-mod-php php-ocpache php-cli php-gd php-curl php-mysql
[sudo] password for vijayalakshmi:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'php7.4-ocpache' instead of 'php-ocpache'
The following additional packages will be installed:
  libapache2-mod-php7.4 php-common php7.4 php7.4-cli php7.4-common
  php7.4-curl php7.4-gd php7.4-json php7.4-mysql php7.4-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libapache2-mod-php libapache2-mod-php7.4 php php-cli php-common php-curl
[100%]
```

- Sudo systemctl restart apache2
- Test PHP processing on web server
- Inside the file,type in valid php code

```
<?php
    phpinfo ();
?>
```

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo systemctl restart apache2
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo nano /var/www/html/phpinfo.php
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

- <http://localhost/phpinfo.php>



Install phpmyadmin

- Sudo apt install phpmyadmin php-mbstring php-zip php-gd php-json php-curl

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo apt install phpmyadmin p
hp-mbstring php-zip php-gd php-json php-curl
[sudo] password for vijayalakshmi:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
php-curl is already the newest version (2:7.4+76ubuntu1).
php-gd is already the newest version (2:7.4+76ubuntu1).
The following additional packages will be installed:
  dbconfig-common dbconfig-mysql icc-profiles-free javascript-common
```

- Sudo systemctl restart apache2

- http://localhost/phpmyadmin

username: root

password: your password

- if phpmyadmin page not found

- sudo nano /etc/apache2/apache2.conf

Add this line to last of the line

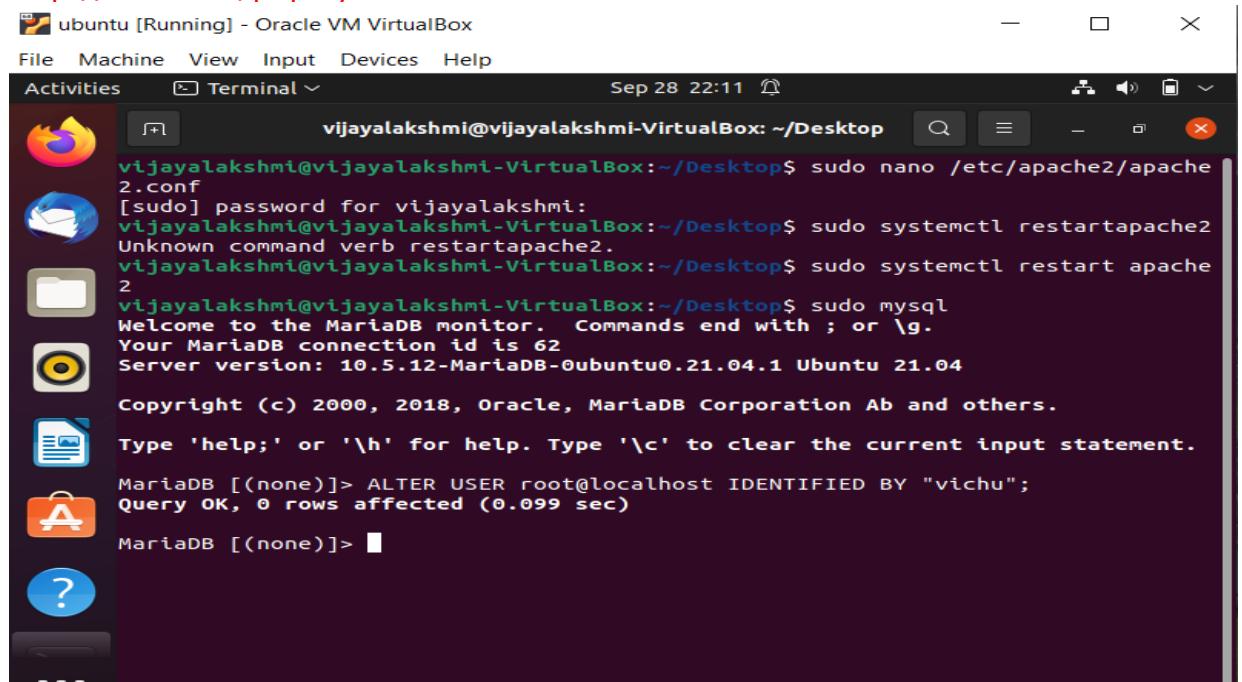
- Include /etc/phpmyadmin/apache.conf

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo nano /etc/apache2/apache
2.conf
[sudo] password for vijayalakshmi:
```

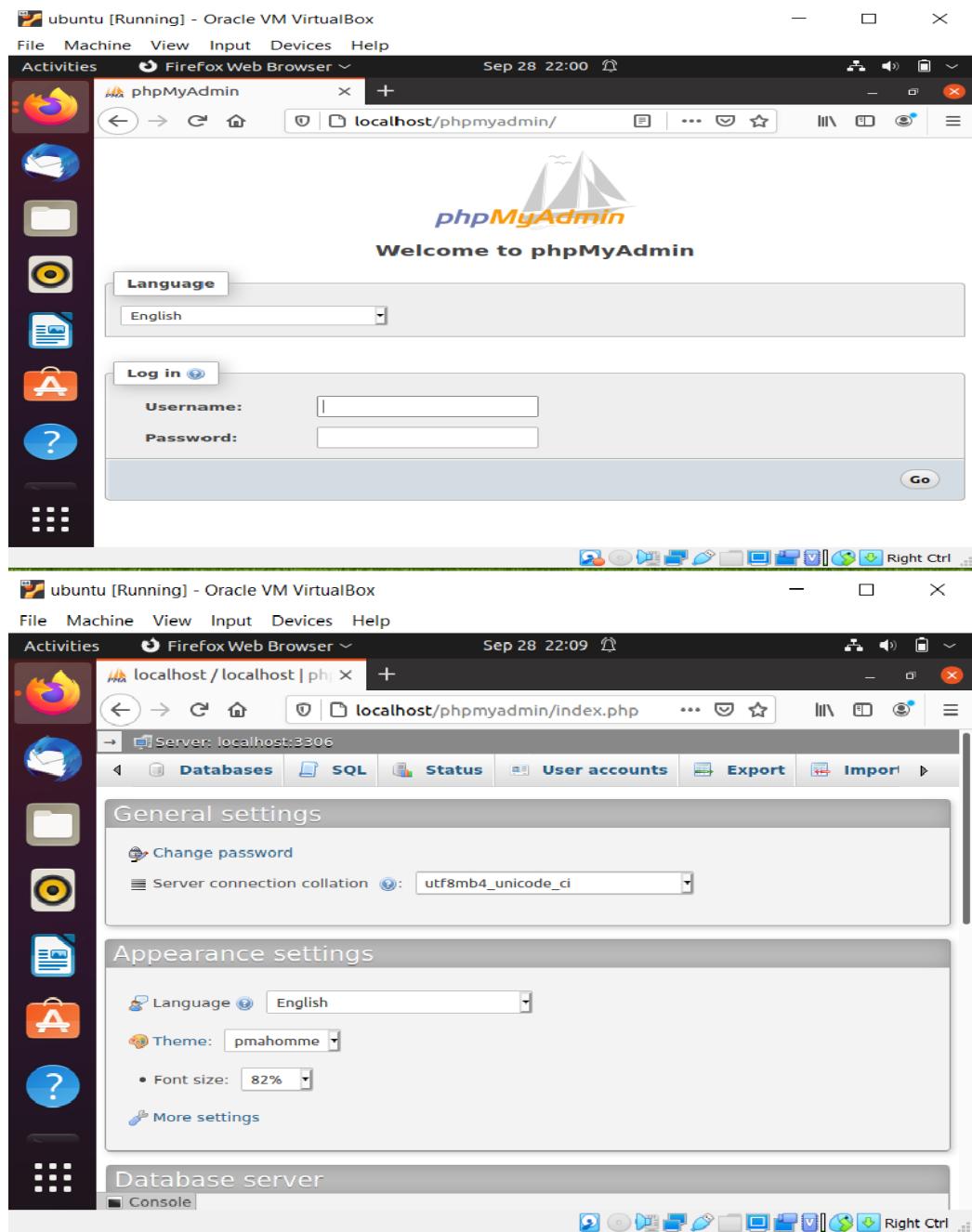
- Restart apache2

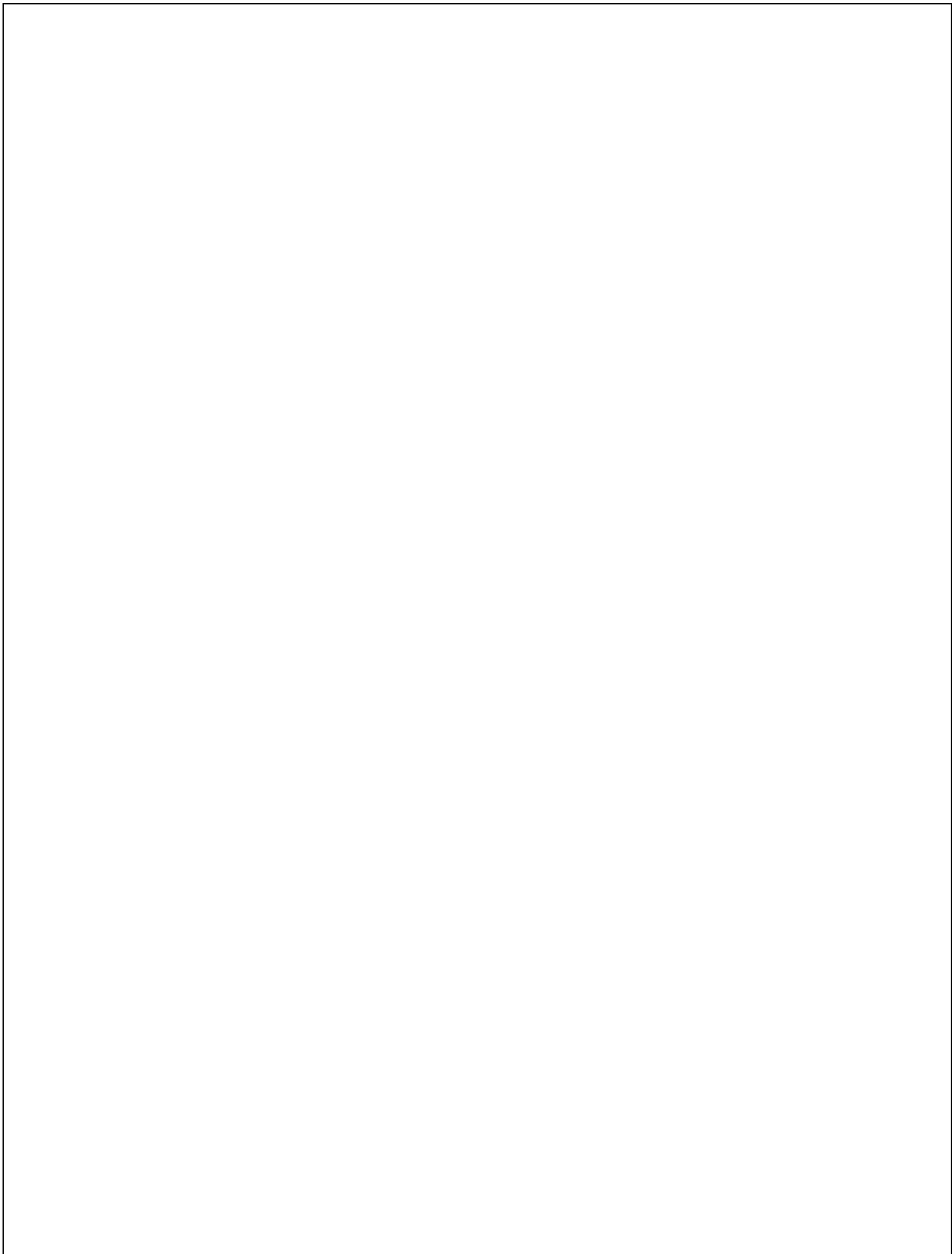
- Sudo systemctl restart apache2-now try

- http://localhost/phpmyadmin



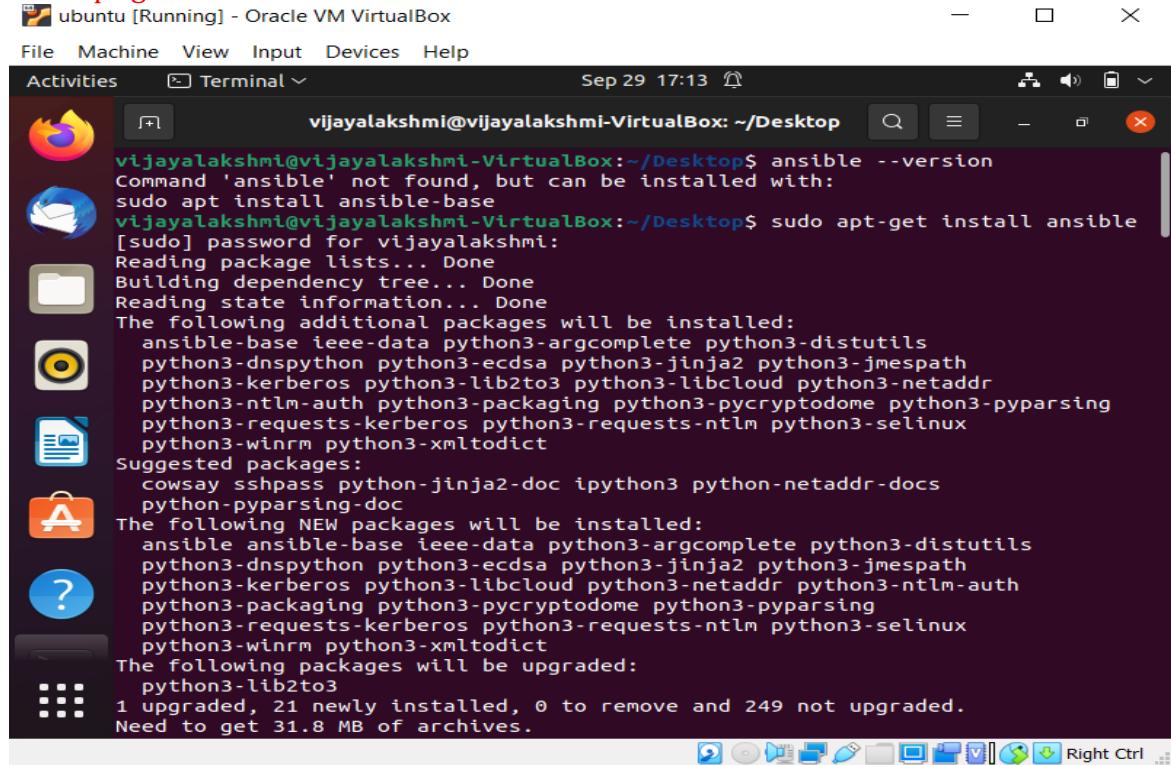
- If any problem for login run the following command
Sudo mysql
ALTER USER root@localhost IDENTIFIED BY "yourpassword";





ANSIBLE INSTALLATION

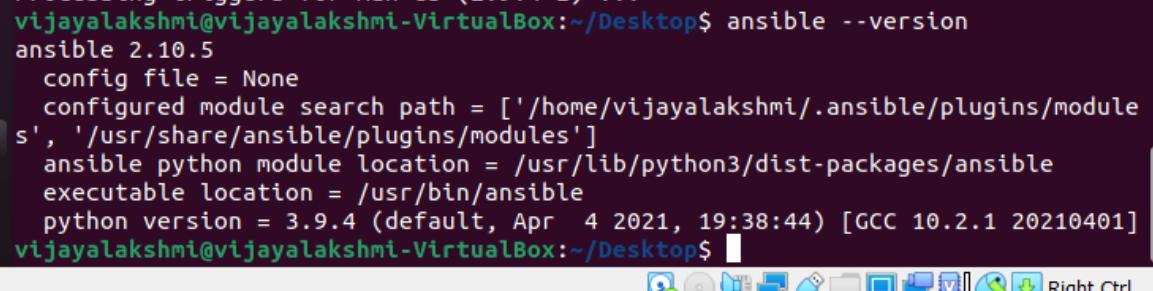
- **sudo apt-get install ansible**



A screenshot of a Linux desktop environment showing a terminal window titled "ubuntu [Running] - Oracle VM VirtualBox". The terminal is running a command to install Ansible. The output shows the command "ansible --version" failing because it's not found, but it can be installed with "sudo apt install ansible-base". It then proceeds to install Ansible and its dependencies. The terminal also lists suggested packages like cowsay and sshpass, and new packages like ansible and its dependencies. It shows 1 package upgraded, 21 newly installed, and 0 to remove.

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ansible --version
Command 'ansible' not found, but can be installed with:
sudo apt install ansible-base
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo apt-get install ansible
[sudo] password for vijayalakshmi:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  ansible-base ieee-data python3-argcomplete python3-distutils
  python3-dnspython python3-ecdsa python3-jinja2 python3-jmespath
  python3-kerberos python3-lib2to3 python3-libcloud python3-netaddr
  python3-ntlm-auth python3-packaging python3-pycryptodome python3-pyparsing
  python3-requests-kerberos python3-requests-ntlm python3-selinux
  python3-winrm python3-xmldict
Suggested packages:
  cowsay sshpass python-jinja2-doc ipython3 python-netaddr-docs
  python-pyparsing-doc
The following NEW packages will be installed:
  ansible ansible-base ieee-data python3-argcomplete python3-distutils
  python3-dnspython python3-ecdsa python3-jinja2 python3-jmespath
  python3-kerberos python3-libcloud python3-netaddr python3-ntlm-auth
  python3-packaging python3-pycryptodome python3-pyparsing
  python3-requests-kerberos python3-requests-ntlm python3-selinux
  python3-winrm python3-xmldict
The following packages will be upgraded:
  python3-lib2to3
1 upgraded, 21 newly installed, 0 to remove and 249 not upgraded.
Need to get 31.8 MB of archives.
```

- **Ansible --version**



A screenshot of a Linux desktop environment showing a terminal window titled "ubuntu [Running] - Oracle VM VirtualBox". The terminal is running the command "ansible --version". The output displays the version of Ansible installed, which is 2.10.5, along with other configuration details like the config file path and Python module location.

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ansible --version
ansible 2.10.5
  config file = None
  configured module search path = ['/home/vijayalakshmi/.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 = 3.9.4 (default, Apr  4 2021, 19:38:44) [GCC 10.2.1 20210401]
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

Tcpdump installation

- Sudo apt install tcpdump
- Sudo tcpdump

```
ngth 28
16:26:08.302032 ARP, Reply _gateway is-at 52:54:00:12:35:02 (oui Unknown), leng
th 46
16:26:08.302635 IP vijayalakshmi-VirtualBox.37510 > dns.google.domain: 21335+ [
1au] PTR? 2.2.0.10.in-addr.arpa. (50)
16:26:08.323060 IP dns.google.domain > vijayalakshmi-VirtualBox.37510: 21335 NX
Domain 0/0/1 (50)
16:26:08.323345 IP vijayalakshmi-VirtualBox.37510 > dns.google.domain: 21335+ P
TR? 2.2.0.10.in-addr.arpa. (39)
16:26:08.342955 IP dns.google.domain > vijayalakshmi-VirtualBox.37510: 21335 NX
Domain 0/0/0 (39)
^C
56376 packets captured
61971 packets received by filter
5595 packets dropped by kernel
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

- Tcpdump -D

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ tcpdump -D
1.enp0s3 [Up, Running]
2.any (Pseudo-device that captures on all interfaces) [Up, Running]
3.lo [Up, Running, Loopback]
4.bluetooth-monitor (Bluetooth Linux Monitor) [none]
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]
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

- Tcpdump -l enp0s3
- Sudo tcpdump -c 5

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ tcpdump -D
1.enp0s3 [Up, Running]
2.any (Pseudo-device that captures on all interfaces) [Up, Running]
3.lo [Up, Running, Loopback]
4.bluetooth-monitor (Bluetooth Linux Monitor) [none]
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]
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ tcpdump -i enp0s3
tcpdump: enp0s3: You don't have permission to capture on that device
(socket: Operation not permitted)
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo tcpdump -c 5
[sudo] password for vijayalakshmi:
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp0s3, link-type EN10MB (Ethernet), capture size 262144 bytes
^C
0 packets captured
0 packets received by filter
0 packets dropped by kernel
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo tcpdump -i enp0s3 -c 5 p
ort 80
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp0s3, link-type EN10MB (Ethernet), capture size 262144 bytes
^C
0 packets captured
0 packets received by filter
0 packets dropped by kernel
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

➤ Sudo tcpdump -l enp0s3 -c 5 port 80

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo tcpdump -i enp0s3 -c 5 port 80
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on enp0s3, link-type EN10MB (Ethernet), capture size 262144 bytes
16:42:55.252552 IP vijayalakshmi-VirtualBox.35766 > 17.111.232.35.bc.googleusercontent.com.http: Flags [S], seq 968173882, win 64240, options [mss 1460,sackOK ,TS val 576932172 ecr 0,nop,wscale 7], length 0
16:42:55.504401 IP 17.111.232.35.bc.googleusercontent.com.http > vijayalakshmi-VirtualBox.35766: Flags [S.], seq 32640001, ack 968173883, win 65535, options [mss 1460], length 0
16:42:55.504498 IP vijayalakshmi-VirtualBox.35766 > 17.111.232.35.bc.googleusercontent.com.http: Flags [.], ack 1, win 64240, length 0
16:42:55.505496 IP vijayalakshmi-VirtualBox.35766 > 17.111.232.35.bc.googleusercontent.com.http: Flags [P.], seq 1:88, ack 1, win 64240, length 87: HTTP: GET / HTTP/1.1
16:42:55.506006 IP 17.111.232.35.bc.googleusercontent.com.http > vijayalakshmi-VirtualBox.35766: Flags [.], ack 88, win 65535, length 0
5 packets captured
5 packets received by filter
0 packets dropped by kernel
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

➤ tcpdump host 10.0.2.15

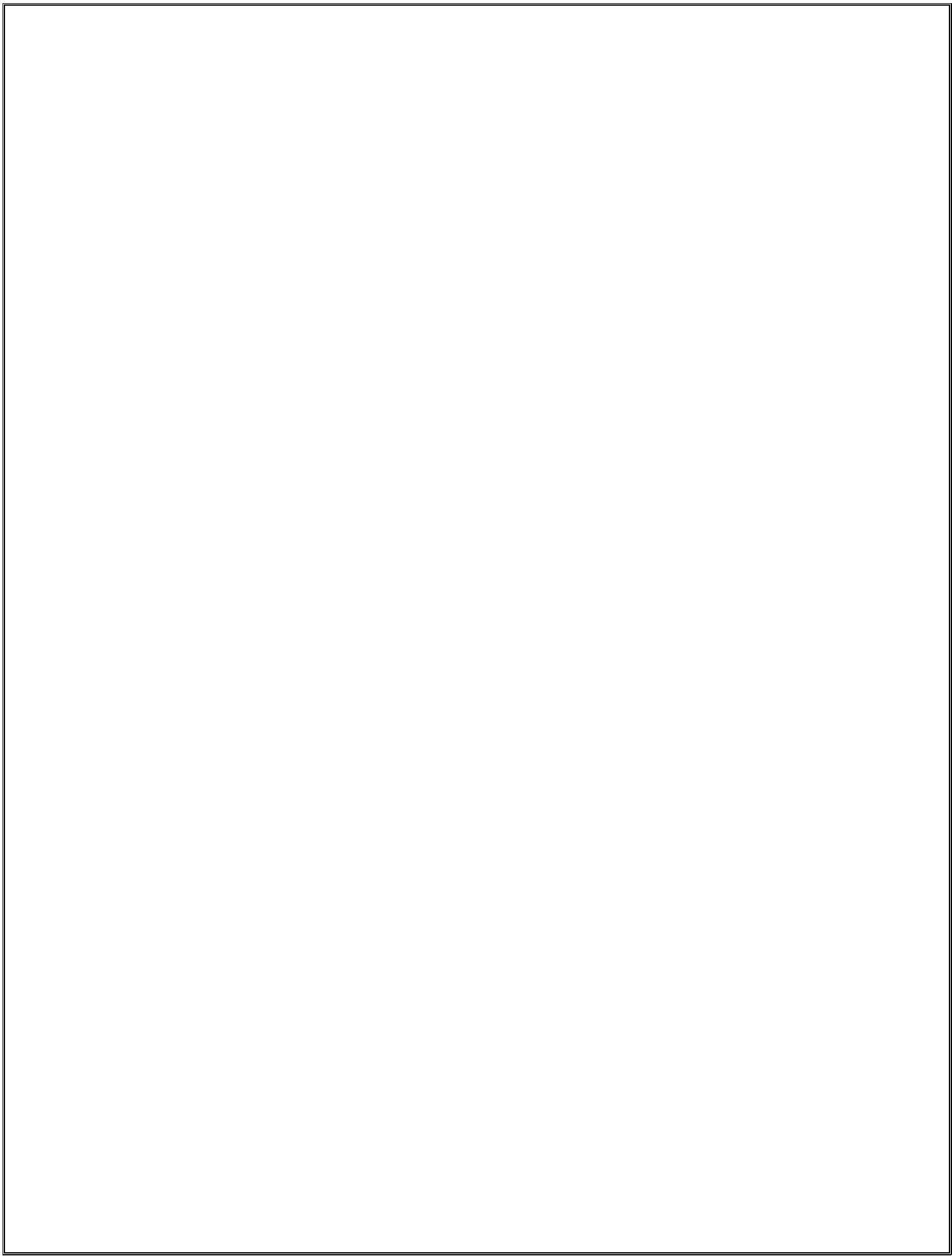
```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ tcpdump host 10.0.2.15
tcpdump: enp0s3: You don't have permission to capture on that device
(socket: Operation not permitted)
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

➤ tcpdump -l eth1 icmp

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ tcpdump -i eth1 icmp
tcpdump: eth1: You don't have permission to capture on that device
(socket: Operation not permitted)
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```

➤ Sudo tcpdump -n -l enp0s3 -c 10 -w

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ sudo tcpdump -n -i enp0s3 -c 10 -w
tcpdump: option requires an argument -- 'w'
tcpdump version 4.9.3
libpcap version 1.10.0 (with TPACKET_V3)
Ubuntu Software 16 Feb 2021
Usage: tcpdump [-aAbdDefhHIJKLMNOPqStuUvxX#] [ -B size ] [ -c count ]
          [ -C file_size ] [ -E algo:secret ] [ -F file ] [ -G seconds ]
          [ -i interface ] [ -j tstamptype ] [ -M secret ] [ --number ]
          [ -Q in|out|inout ]
          [ -r file ] [ -s snaplen ] [ --time-stamp-precision precision ]
          [ --immediate-mode ] [ -T type ] [ --version ] [ -V file ]
          [ -w file ] [ -W filecount ] [ -y datalinktype ] [ -z postrotate
e-command ]
          [ -Z user ] [ expression ]
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$
```



Question No:1

1. Write a shell script to ask your name, and college name and print it on the screen.

```
echo "enter details and view"
echo enter your name
read name
echo enter your college name
read c
clear
echo Details you entered
echo Name:$name
echo College:$c
```

```
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ vi example1.sh
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ chmod +x example1.sh
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ ./example1.sh
Enter details and view
-----
Enter your name
vichu
Enter your college name
amal jyothi
details you entered
name: vichu
college: amal jyothi
vijayalakshmi@vijayalakshmi-VirtualBox:~/Desktop$ █
```

2. Write a shell script to set a value for a variable and display it on command line interface

```
#!/bin/bash
echo "Display value of a variable"
echo "-----"
a=10
echo "$a"
~
```

```
vijayalakshmi@vijayalakshmi-VirtualBox:~$ vi example2.sh
vijayalakshmi@vijayalakshmi-VirtualBox:~$ chmod +x example2.sh
vijayalakshmi@vijayalakshmi-VirtualBox:~$ ./example2.sh
Display value of a variable
-----
10
vijayalakshmi@vijayalakshmi-VirtualBox:~$
```

3. Write a shell script to perform addition, subtraction, multiplication, division with two numbers that is accepted from user.

```
echo enter a number
read a
echo enter another number
read b
echo enter operation
echo "\n1.addition \n2.subtraction \n3.multiplication \n4.division"
read op
case "$op" in
"1") echo "a+b=$((a+b));;
"2") echo "a-b=$((a-b));;
"3") echo "a*b=$((a*b));;
"4") echo "a/b=$((a/b));;
esac
```

Output:

```
enter a number
7
enter another number
8
enter operation
\n1.addition \n2.subtraction \n3.multiplication \n4.division
2
a-b=-1
```

4. Write a shell script to check the value of a given number and display whether the number is found or not.

```
echo enter a number
read a
if [ $a -eq 10 ];
then
echo "number found"
else
echo "not found"
fi
```

Output:

```
user@user-VirtualBox:~$ bash 4.sh
enter a number
9
not found
```

5. Write a shell script to display current date, calendar.

```
echo "Today is $(date)"
echo "calender:"
cal
```

Output:

```
user@user-VirtualBox:~$ bash 5.sh
Today is Saturday 02 October 2021 05:53:45 PM IST
calender:
      October 2021
Su Mo Tu We Th Fr Sa
              1  2
 3  4  5  6  7  8  9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
```

6. Write a shell script to check a number is even or odd. #!/bin/bash

```
echo enter a number
read n
x=$(( $n % 2 ))
if [ $x -eq 0 ];
then
echo "number is even"
else
echo "number is odd"
fi
```

Output:

```
user@user-VirtualBox:~$ bash 6.sh
enter a number
4
number is even
```

7. Write a shell script to check a number is greater than, less than or equal to another number.

```
echo enter first number
read a
echo enter second number
read b
if [ $a -gt $b ];
then
echo "$a is larger"
elif [ $b -gt $a ];
then
echo "$b is larger"
else
echo "both are equal"
fi
```

Output:

```
user@user-VirtualBox:~$ bash 7.sh
enter first number
54
enter second number
34
54 is larger
```

8. Write a shell script to find the sum of first 10 numbers.

```
s=0
for ((i=0;i<=10;i++))
do
s=`expr $s + $i`
done
echo "sum of first 10 numbers=$s"
```

Output:

```
user@user-VirtualBox:~$ bash 8.sh
sum of first 10 numbers=55
```

9. Write a shell script to find the sum, the average and the product of the four integers entered

```
echo please enter your first number
read a
echo please enter your second number
read b
echo please enter your third number
read c
echo please enter your fourth number
read d
sum=$((a + b + c + d))
prod=$((a * b * c * d))
avg=$(echo $sum/4 | bc -l)
echo "the sum is:$sum"
echo "the average is:$avg"
echo "the product is:$prod"
```

Output:

```
user@user-VirtualBox:~$ bash 9.sh
please enter your first number
1
please enter your second number
2
please enter your third number
3
please enter your fourth number
4
the sum is:10
the average is:2.50000000000000000000000
the product is:24
```

10. Write a shell script to find the smallest of three numbers.

```
echo enter first number
read a
echo enter second number
read b
echo enter third number
read c
if [ $a -lt $b ];
then
if [ $a -lt $c ];
then
echo "$a is smallest"
fi
elif [ $b -lt $c ];
then
echo "$b is smallest"
else
echo "$c is smallest";
fi
```

Output:

```
user@user-VirtualBox:~$ bash 10.sh
enter first number
5
enter second number
2
enter third number
6
2 is smallest
```

11. Write a sell program to find factorial of given number.

```
echo enter a number
read n
f=1
for ((i=2;i<=n;i++))
do
f=$((f*i))
done
echo "factorial is $f"
```

Output:

```
user@user-VirtualBox:~$ bash 11.sh
enter a number
5
factorial is 120
```

12. Write a shell program to check a number is palindrome or not.

```
echo enter a number
read n
rev=$(echo $n | rev)
if [ $n -eq $rev ];
then
echo "number is palindrome"
else
echo "number is not palindrome"
fi
```

Output:

```
user@user-VirtualBox:~$ bash 12.sh
enter a number
1221
number is palindrome
```

13. Write a shell script to find the average of the numbers entered in command line.

```
echo enter size
read n
i=1
s=0
echo "enter numbers"
while [ $i -le $n ]
do
read num
s=$((s+num))
i=$((i+1))
done
avg=$(echo $s/$n | bc -l)
echo "average is $avg"
```

Output:

```
user@user-VirtualBox:~$ bash 13.sh
enter size
5
enter numbers
6
7
8
9
4
average is 6.800000000000000
```

14. Write a shell program to find the sum of all the digits in a number

```
echo enter a number
read n
s=0
while [ $n -gt 0 ]
do
mod=$((n%10))
s=$((s+mod))
n=$((n/10))
done
echo "sum of digit is $s"
```

Output:

```
user@user-VirtualBox:~$ bash 14.sh
enter a number
678
sum of digit is 21
```

15. Write a shell Script to check whether given year is leap year or not.

```
echo enter year
read y
a=$((y%4))
b=$((y%100))
c=$((y%400))
if [ $a -eq 0 -a $b -ne 0 -o $c -eq 0 ];
then
echo "$y is leap year"
else
echo "$y is not leap year"
fi
```

Output:

```
user@user-VirtualBox:~$ bash 15.sh
enter year
1994
1994 is leap year
```

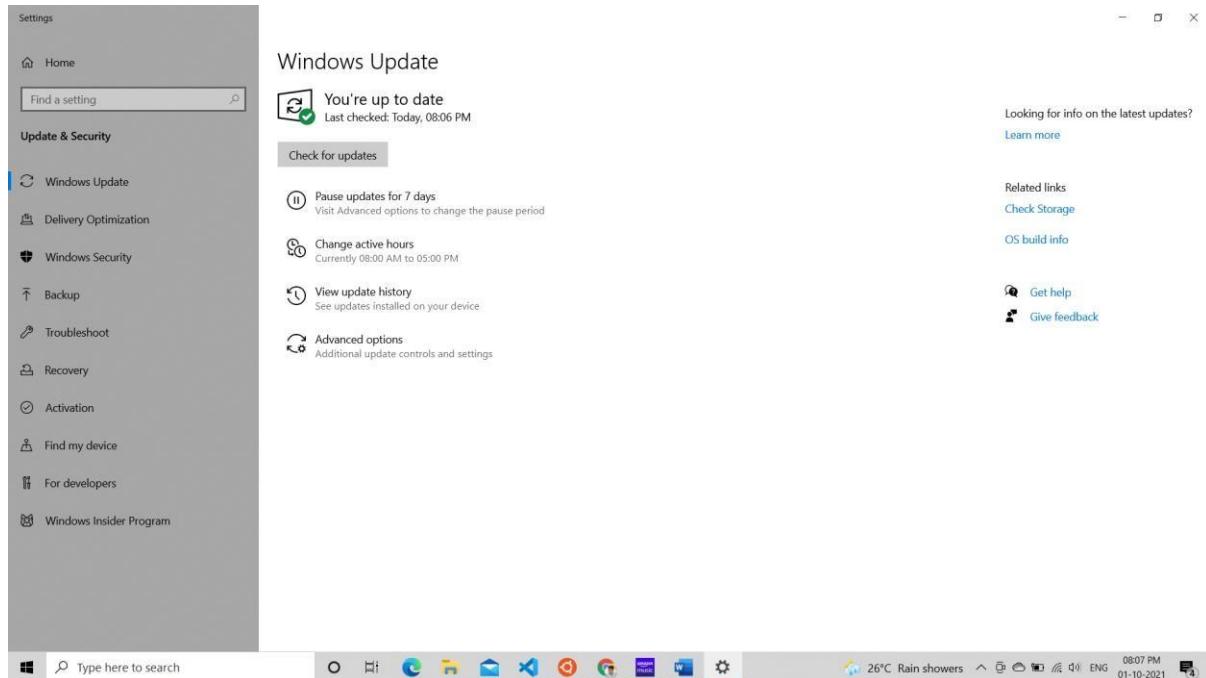
INSTALLING DOCKER ON WINDOWS 10

Installing Docker on Windows 10

First make sure Windows is up to date.

In the Windows search type "Windows Update" and select Windows Update setting

You should see a green check and "You're up to date". If not click "Check for updates". You will need to repeat this process until you no longer have any updates to install.



Next install [WSL2](#)

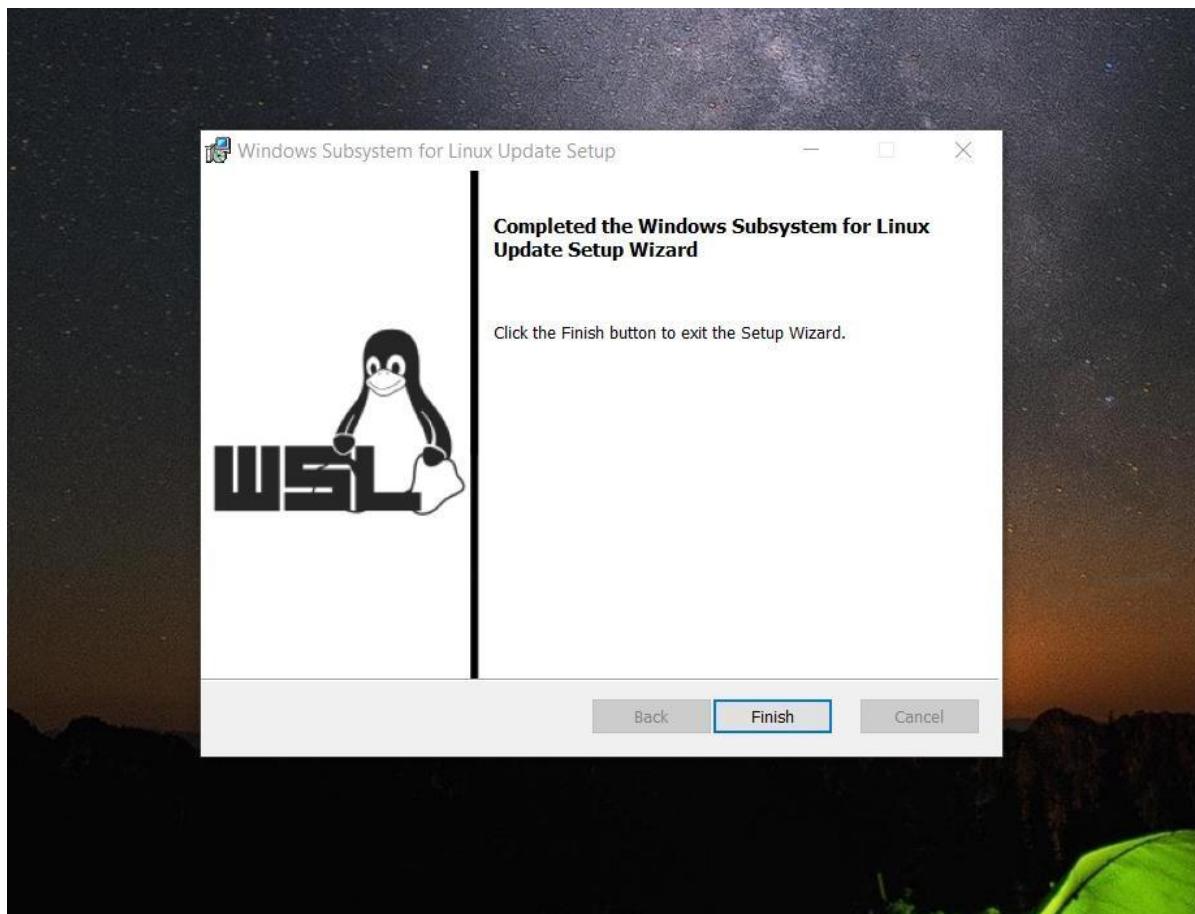
- From the Windows Search Type "powershell" then right-click on Windows PowerShell and then Run as administrator.
- Click 'Yes' to allow PowerShell to make changes to your device.
- In the Administrator: Windows PowerShell window run (copy and past) "wsl –install" to install Windows Services for Linux (wsl).

```
Display usage information.  
PS C:\Windows\system32> wsl --install  
Installing: Virtual Machine Platform  
Virtual Machine Platform has been installed.  
Installing: Windows Subsystem for Linux  
Windows Subsystem for Linux has been installed.  
Downloading: WSL Kernel  
Installing: WSL Kernel  
WSL Kernel has been installed.  
Downloading: Ubuntu  
The requested operation is successful. Changes will not be effective until the system is rebooted.  
PS C:\Windows\system32>
```

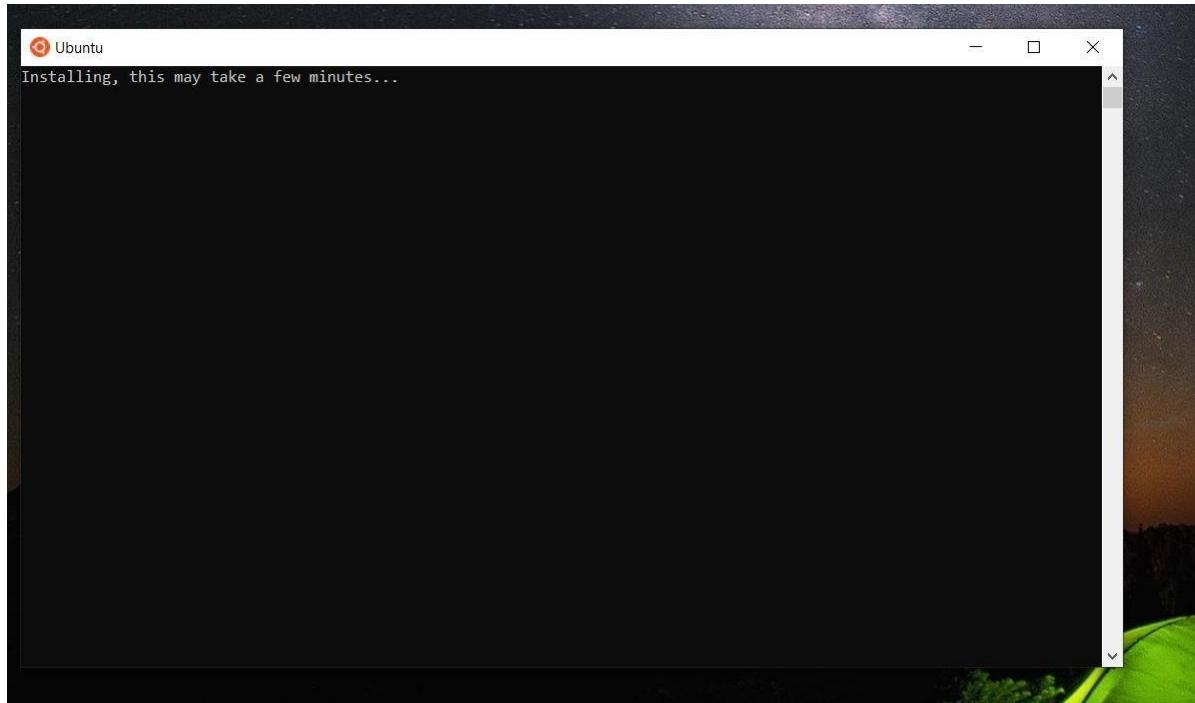
- Next enable the Virtual Machine Platform. In the Administrator: Windows PowerShell run (copy and past) "dism.exe /online /enable-feature /featurename:VirtualMachinePlatform /all /norestart".

```
PS C:\Windows\system32> dism.exe /online /enable-feature /featurename:VirtualMachinePlatform /all /norestart  
Deployment Image Servicing and Management tool  
Version: 10.0.19041.844  
  
Image Version: 10.0.19043.1266  
  
Enabling feature(s)  
[=====100.0%=====]  
The operation completed successfully.  
PS C:\Windows\system32>
```

- Download and install the [WSL2 Linux kernel update package for x64 machines](#)



- set up a Linux user

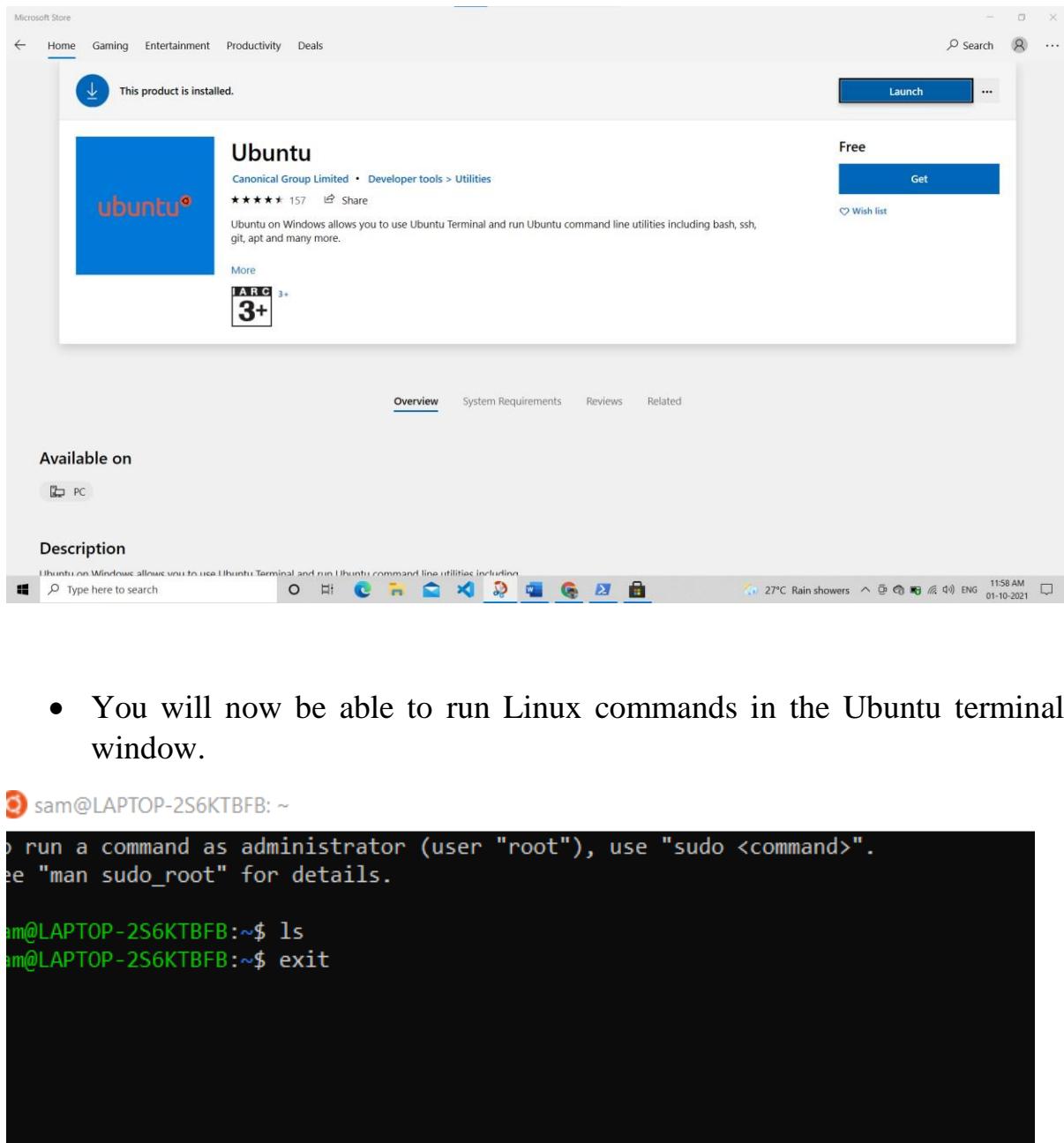


```
Retype new password:  
passwd: password updated successfully  
Installation successful!  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
Welcome to Ubuntu 20.04 LTS (GNU/Linux 5.10.16.3-microsoft-standard-WSL2 x86_64)  
  
 * Documentation: https://help.ubuntu.com  
 * Management: https://landscape.canonical.com  
 * Support: https://ubuntu.com/advantage  
  
 System information as of Fri Oct  1 11:50:30 IST 2021  
  
 System load:  0.16           Processes:          8  
 Usage of /:   0.4% of 250.98GB  Users logged in:    0  
 Memory usage: 2%            IPv4 address for eth0: 172.24.46.235  
 Swap usage:   0%  
  
0 updates can be installed immediately.  
0 of these updates are security updates.  
  
The list of available updates is more than a week old.  
To check for new updates run: sudo apt update  
  
This message is shown once once a day. To disable it please create the  
/home/sam/.hushlogin file.  
sam@LAPTOP-2S6KTBFB:~$
```

- Reboot Windows.
- Again, from the Windows Search Type "powershell" then right-click on Windows PowerShell and then Run as administrator.
- In the PowerShell window run "**wsl --set-default-version 2**".

```
Windows PowerShell  
Copyright (C) Microsoft Corporation. All rights reserved.  
  
Try the new cross-platform PowerShell https://aka.ms/pscore6  
  
PS C:\Windows\system32> wsl --set-default-version 2  
For information on key differences with WSL 2 please visit https://aka.ms/wsl2  
The operation completed successfully.  
PS C:\Windows\system32>
```

- Next install a Linux distribution from the [Microsoft Store](#)



- You will now be able to run Linux commands in the Ubuntu terminal window.

sam@LAPTOP-2S6KTBFB: ~

```
run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.
```

```
am@LAPTOP-2S6KTBFB:~$ ls  
am@LAPTOP-2S6KTBFB:~$ exit
```

Now you can install Docker Desktop for Windows

- Download the Docker Desktop for Windows installer from <https://www.docker.com/products/docker-desktop>
- Run the installer.

Configuration

- Install required Windows components for WSL 2
- Add shortcut to desktop

Ok

Docker Desktop 4.1.0

Unpacking files...

```
Unpacking file: resources/docker-desktop.iso
Unpacking file: resources/ddvp.ico
Unpacking file: resources/config-options.json
Unpacking file: resources/componentsVersion.json
Unpacking file: resources/bin/docker-compose
Unpacking file: resources/bin/docker
Unpacking file: resources/.gitignore
Unpacking file: InstallerCli.pdb
Unpacking file: InstallerCli.exe.config
Unpacking file: frontend/vk_swiftshader_icd.json
Unpacking file: frontend/v8_context_snapshot.bin
Unpacking file: frontend/snapshot_blob.bin
Unpacking file: frontend/resources/regedit/vbs/util.vbs
Unpacking file: frontend/resources/regedit/vbs/regUtil.vbs
```



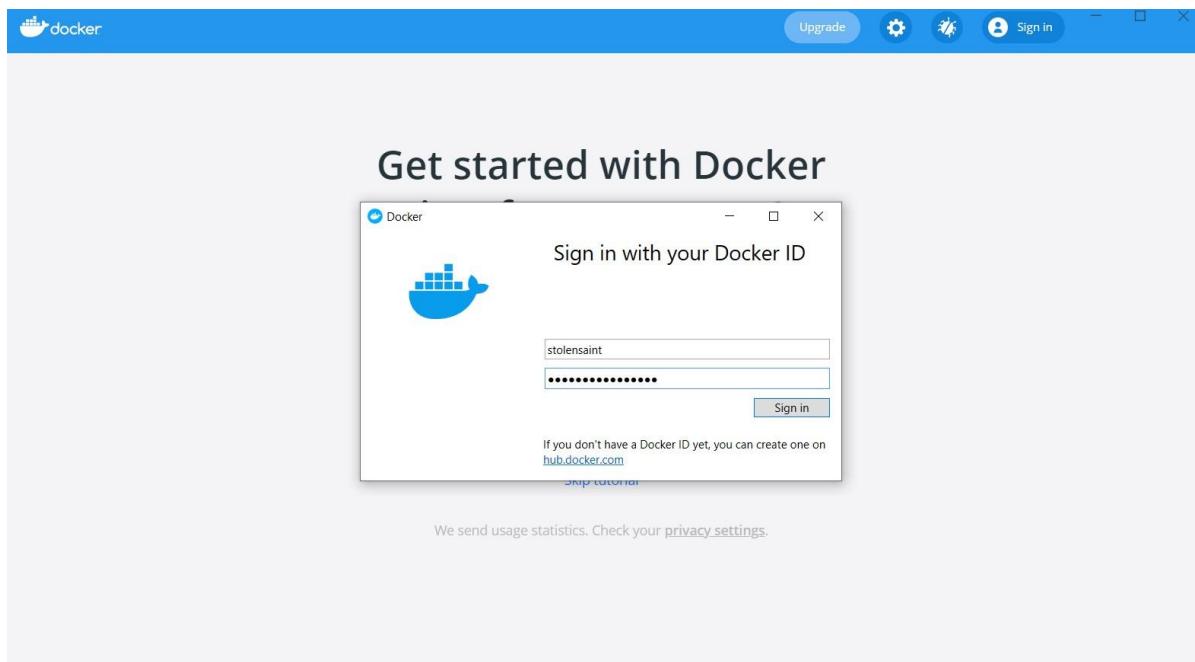
Docker Desktop 4.1.0

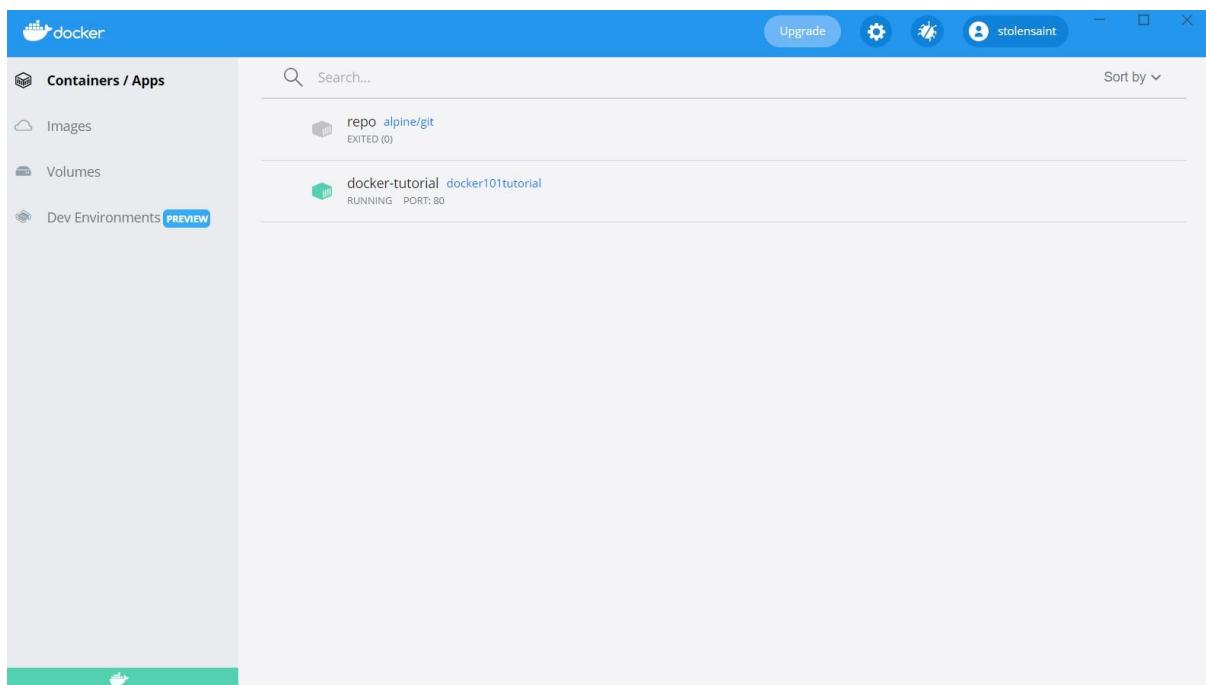
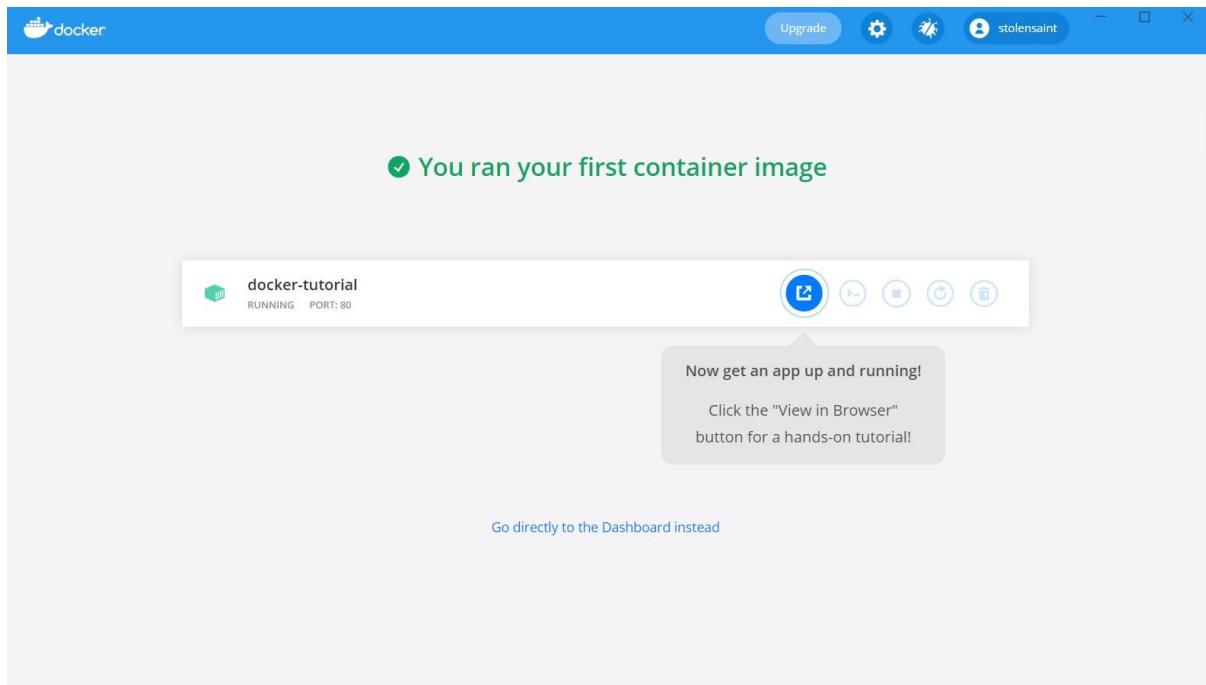
Installation succeeded

You must log out of Windows to complete installation.

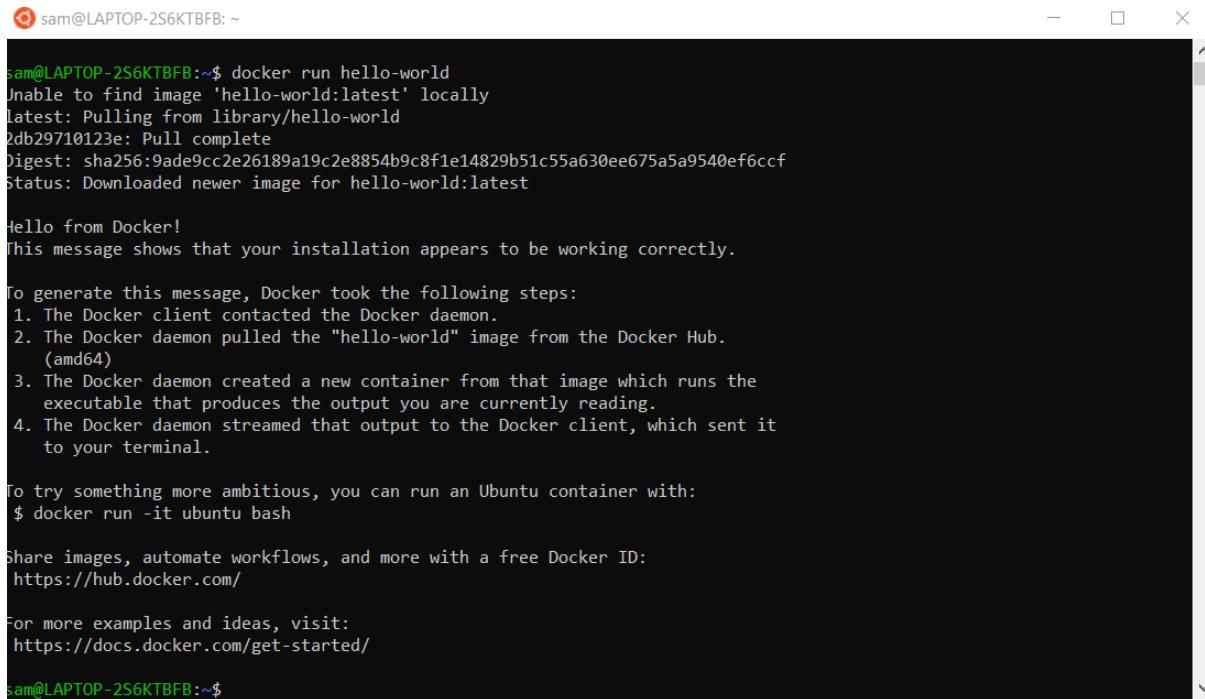
[Close and log out](#)

-
- Reboot Windows.
 - Login to Windows and let Docker finish setting up. This can take a few minutes depending on your machine.





- Run the docker “Hello World” from an Ubuntu Terminal run "docker run hello-world".



```

sam@LAPTOP-2S6KTBFB:~$ docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
2db29710123e: Pull complete
Digest: sha256:9ade9cc2e26189a19c2e8854b9c8f1e14829b51c55a630ee675a5a9540ef6ccf
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

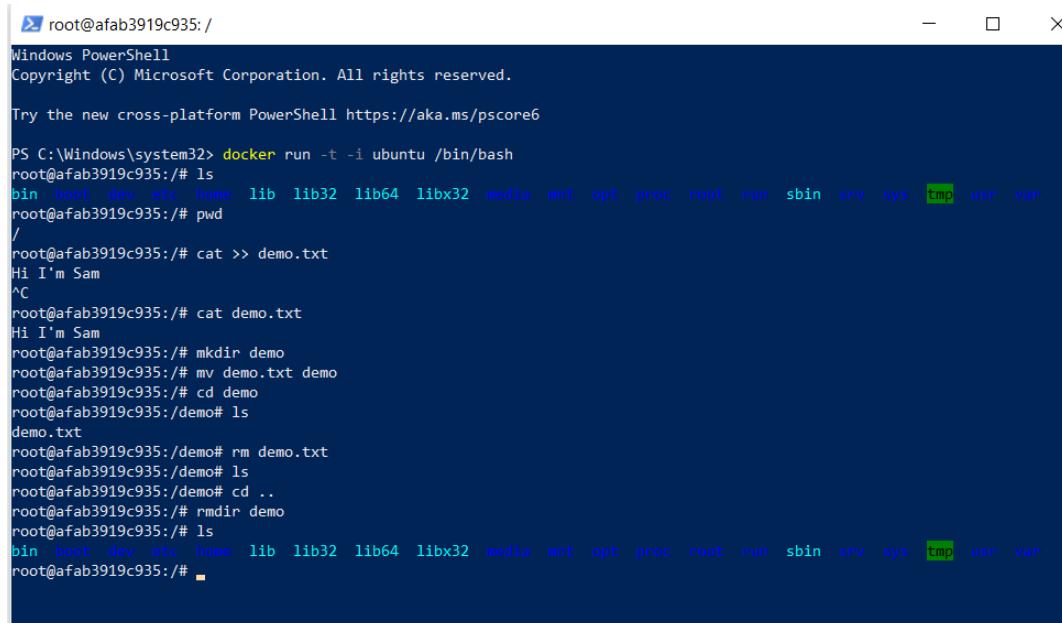
Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/

```

Running the Ubuntu Machine

- Run the command “**docker run -t -i ubuntu /bin/bash**” in powershell
- This is a Linux root bash, try some commands

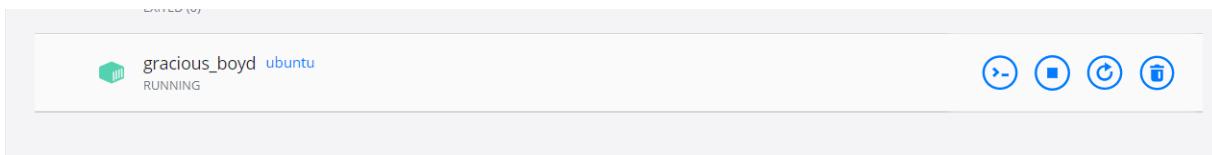


```

PS C:\Windows\system32> docker run -t -i ubuntu /bin/bash
root@afab3919c935:/# ls
bin boot dev etc home lib lib32 lib64 libx32 media mnt opt proc root run sbin srv sys tmp usr var
root@afab3919c935:/# pwd
/
root@afab3919c935:/# cat >> demo.txt
Hi I'm Sam
^C
root@afab3919c935:/# cat demo.txt
Hi I'm Sam
root@afab3919c935:/# mkdir demo
root@afab3919c935:/# mv demo.txt demo
root@afab3919c935:/# cd demo
root@afab3919c935:/demo# ls
demo.txt
root@afab3919c935:/demo# rm demo.txt
root@afab3919c935:/demo# ls
root@afab3919c935:/demo# cd ..
root@afab3919c935:/# rmdir demo
root@afab3919c935:/# ls
bin boot dev etc home lib lib32 lib64 libx32 media mnt opt proc root run sbin srv sys tmp usr var
root@afab3919c935:/#

```

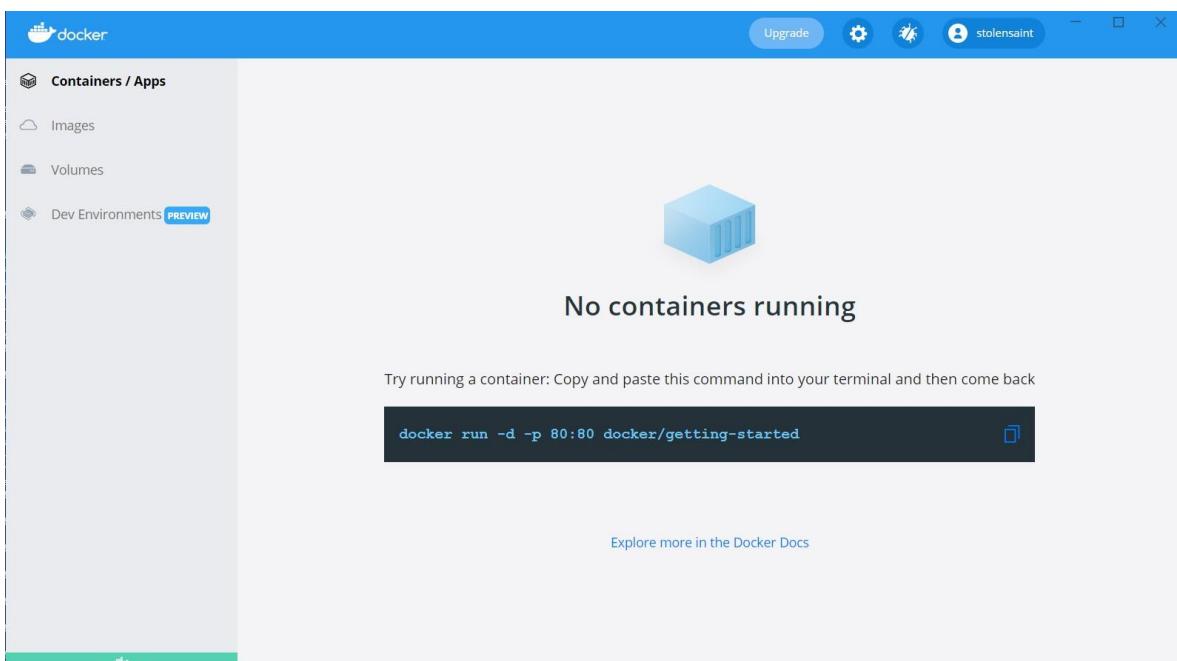
Docker GUI-Containers



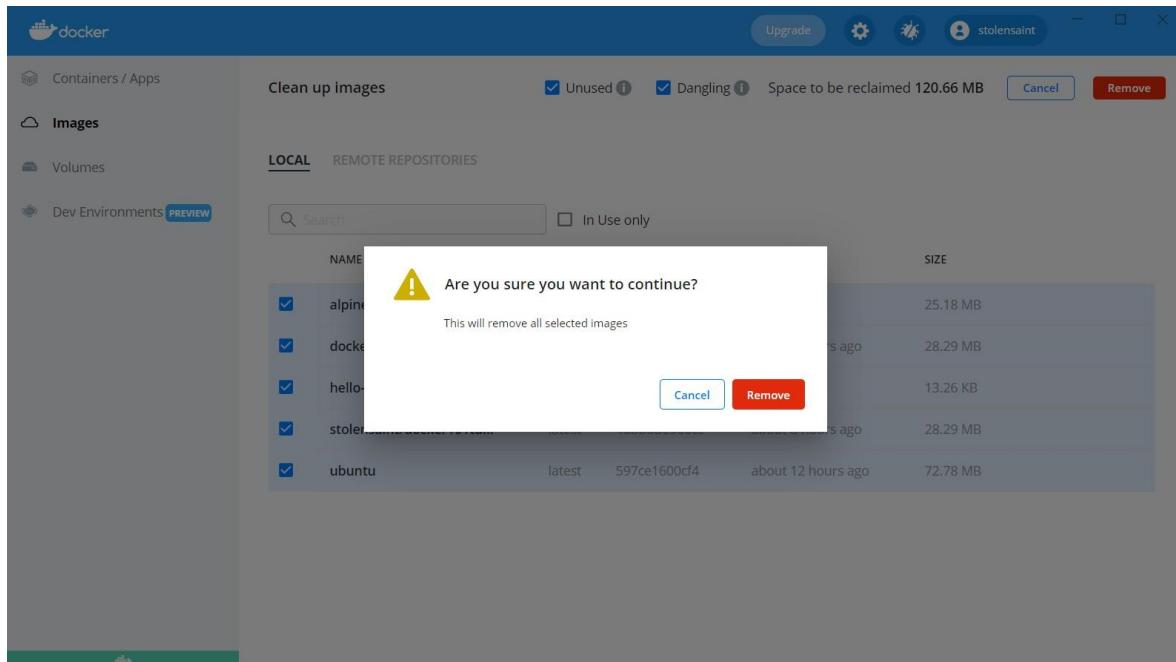
Removing All Containers

```
root@afab3919c935:/# exit
exit
PS C:\Windows\system32> docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
acius_boyd 8d21c1d81c22 ubuntu:latest "bash" 6 hours ago Exited (255) 8 minutes ago busy_maxwell
1b0186a069a3 ubuntu "bash" 6 hours ago Exited (0) 6 hours ago serene_dubinsky
48ab9a4423d5 ubuntu "bash" 7 hours ago Exited (0) 7 hours ago serene_bhaskara
fd9061619454 ubuntu "bash" 7 hours ago Exited (0) 7 hours ago beautiful_tereshkova
398156a697cc hello-world "/hello" 8 hours ago Exited (0) 8 hours ago jolly_torvalds
a7e83e3eeda docker101tutorial "/docker-entrypoint..." 8 hours ago Exited (0) 7 hours ago docker-tutorial
e750d0f55bb4 alpine/git "git clone https://g..." 8 hours ago Exited (0) 8 hours ago repo
PS C:\Windows\system32>

PS C:\Windows\system32> docker rm -f busy_maxwell
busy_maxwell
PS C:\Windows\system32> docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
afab3919c935 ubuntu "/bin/bash" 7 minutes ago Exited (0) 2 minutes ago gracious_boyd
1b0186a069a3 ubuntu "bash" 6 hours ago Exited (0) 6 hours ago serene_dubinsky
48ab9a4423d5 ubuntu "bash" 8 hours ago Exited (0) 7 hours ago serene_bhaskara
fd9061619454 ubuntu "bash" 8 hours ago Exited (0) 7 hours ago beautiful_tereshkova
398156a697cc hello-world "/hello" 8 hours ago Exited (0) 8 hours ago jolly_torvalds
a7e83e3eeda docker101tutorial "/docker-entrypoint..." 8 hours ago Exited (0) 8 hours ago docker-tutorial
e750d0f55bb4 alpine/git "git clone https://g..." 8 hours ago Exited (0) 8 hours ago repo
PS C:\Windows\system32> docker rm -f gracious_boyd
gracious_boyd
PS C:\Windows\system32> docker rm -f serene_dubinsky
serene_dubinsky
PS C:\Windows\system32> docker rm -f serene_bhaskara
serene_bhaskara
PS C:\Windows\system32> docker rm -f beautiful_tereshkova
beautiful_tereshkova
PS C:\Windows\system32> docker rm -f jolly_torvalds
jolly_torvalds
PS C:\Windows\system32> docker rm -f docker-tutorial
docker-tutorial
PS C:\Windows\system32> docker rm -f repo
repo
PS C:\Windows\system32> docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
PS C:\Windows\system32>
```



Cleaning Up Images



Wireshark installation

Wireshark installation

1. Command : **sudo apt-get install wireshark**

```
vijayalakshmi@vijayalakshmi-VirtualBox:~$ sudo apt-get install wireshark
[sudo] password for vijayalakshmi:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libbcg729-0 libc-ares2 libdouble-conversion3 libluas5.2-0 libmd4c0
  libminizip1 libpcre2-16-0 libqt5core5a libqt5dbus5 libqt5gui5
  libqt5multimedia5 libqt5multimedia5-plugins libqt5multimediasstools5
  libqt5multimediacwidgets5 libqt5network5 libqt5printsupport5 libqt5svg5
  libqt5widgets5 libsmi2ldbl libspandsp2 libssh-gcrypt-4 libwireshark-data
  libwireshark14 libwiretap11 libwsutil12 libxcb-xinerama0 libxcb-xinput0
  qt5-gtk-platformtheme qttranslations5-l10n wireshark-common wireshark-qt
Suggested packages:
  qt5-image-formats-plugins qtwayland5 snmp-mibs-downloader geoipupdate
  geoip-database geoip-database-extra libjs-leaflet
  libjs-leaflet.markercluster wireshark-doc
The following NEW packages will be installed:
```

2. Command: **sudo dpkg-reconfigure wireshark-common**

```
vijayalakshmi@vijayalakshmi-VirtualBox:~$ sudo dpkg-reconfigure wireshark-commo
n
vijayalakshmi@vijayalakshmi-VirtualBox:~$
```

3. Open wireshark from the applist

