

Install

Welcome to Ubuntu 14.04

Fast and full of new features, the stable version of Ubuntu makes computing faster than ever. Here are just some of the things to look out for...



► installing system



Install (no upgrade)

Who are you?

Your name: chandru

Your computer's name: Chandru's Laptop

My computer will connect to the Internet:

Full Name: Chandru

Other nickname: **6666**

Don't show me this screen again

Log in automatically

Register my computer to my account

Register my laptop to me

Cancel Continue

Ques:- Install your choice of linux distribution
eg. Ubuntu, Fedora, Debian.

Steps for installing Ubuntu in a Virtual Machine

Step 1:- Select a virtual optical disk file or a physical drive to start Ubuntu in your virtual machine space given to it is 1.86 GB

Step 2:- Select the language of your choice & click on 'Install Ubuntu'. You can also try Ubuntu for free on computer directly from this CD.

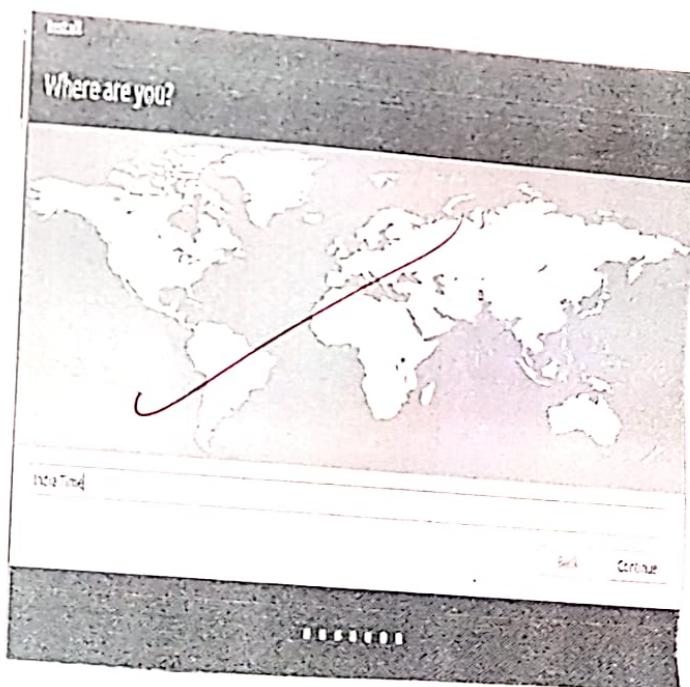
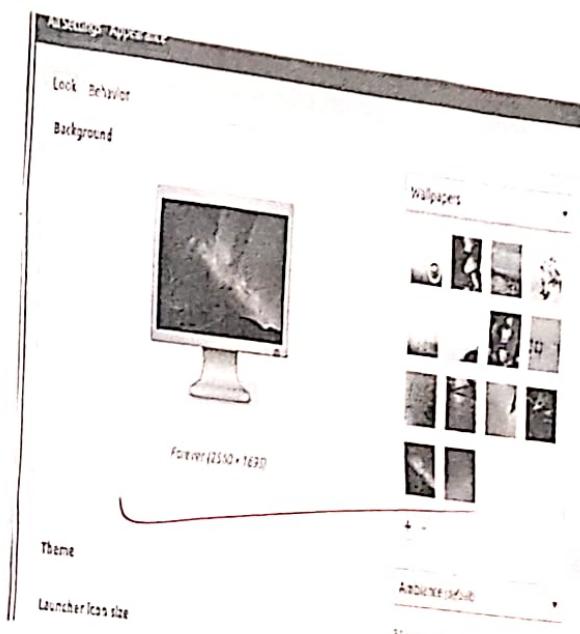
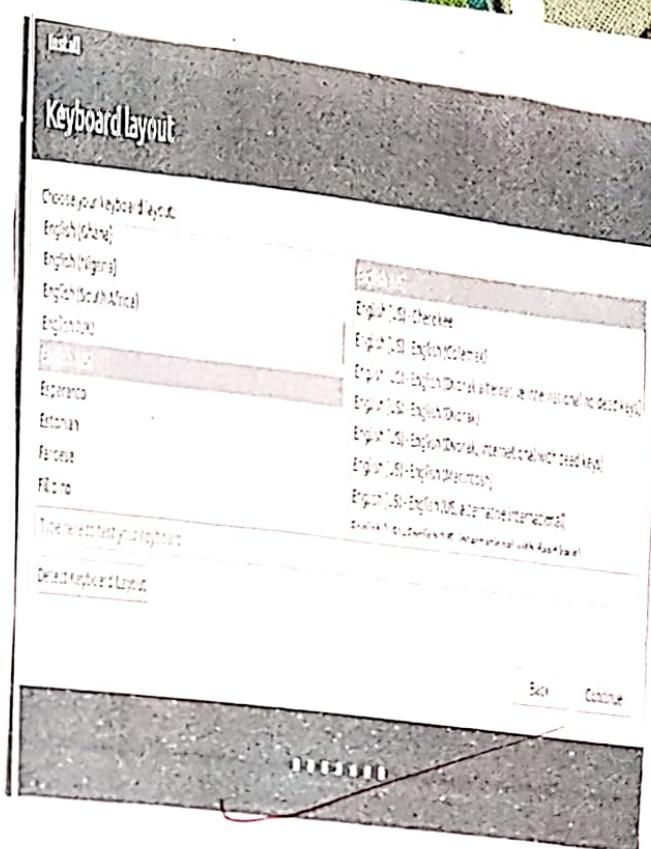
Step 3:- In Updates & Add software click on the normal preinstallation.

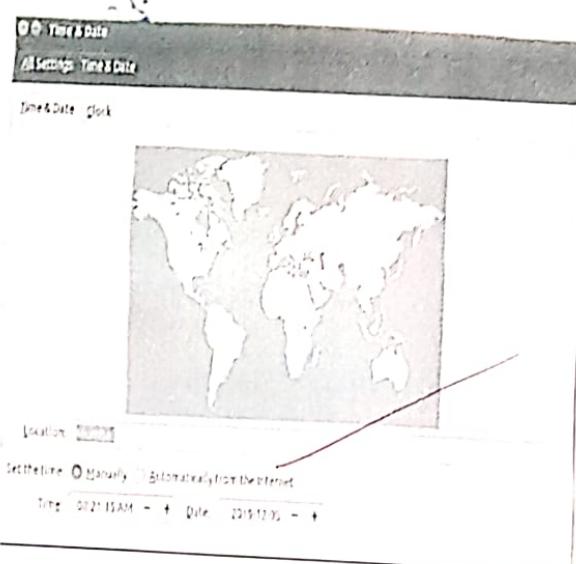
Step 4:- While Configuring Preinstallation type we need to click 'Erase disk & Preinstall Ubuntu'. This step could delete all types of document photos etc in old operating system.

- Step 5: In this you only need to choose the location for the dock to work on Ubuntu.
- Step 6: If not type if you need to choose username & Password for the login in Ubuntu & then click on Continue.
- Step 7: Here you simply need to type Password again & it is done.

Install graphical interface
Customize desktop environment by changing different default options like changing default background, themes, screensavers etc.

Accessing Appearance settings:
Appearance settings in Ubuntu, let's click menu at the top right corner, on the menu bar & select 'System Settings'. A window will pop-up with all settings divided into Personal, Hardware & system options from left. Let's first select the Appearance icon.





* Changing Wallpaper Picture

- i) On the left side of Background Part, you can see your current wallpaper.
- ii) On the right side is Part where we can select one of Ubuntu wallpapers. Clicking on any thumbnail our wallpaper will be changed right away, with a fading effect.
- iii) If you want to select wallpaper from your Pictures folder, click the dropdown menu above thumbnails & select the Pictures folder.
- iv) You will see all the pictures in your Pictures folder as thumbnails, where you can select them as your wallpaper.
- v) To add wallpaper that is in another folder, just click the Plus icon below the thumbnails & then in pop-up window, select the Path to our custom folder & choose the picture inside of it.

* Changing Ubuntu theme

- i) Ubuntu also has an option to change the Desktop theme, which in one click will change the entire way your computer looks.
- ii) To do that, click on the drop-down menu below the wallpaper thumbnails, & choose between Ambiance, Radiance or High Contrast.

pti) Ambiance: Is a light theme that looks a bit more Mac-like while Radiance is the darker brown theme used in Ubuntu by default.

→ Screen Resolution: Ascertain the current screen resolution for your desktop.

Change the size or rotation of the screen

i) You can change how big (or how detailed) things appear on the screen by changing the screen resolution.

ii) You can change which way up things appear (for example, if you have a rotating display) by changing the rotation.

→ Click the icon on the very right of the menu bar & select System settings.

→ Open Screen Display.

→ If you have multiple displays & they are not mirrored, you can have different settings on each display. Select a display in the preview area.

→ Select your desired resolution & rotation.

→ Click Apply. The new settings will be applied for 30 seconds before reverting back, that way, if you cannot see anything with the new

- * Time settings change the time zone of your system to (e.g. New York Time)
- If you are currently in Indian time). How does the displayed time change?
- After noting the time change, change the time zone back to your local time zone.
- Just click on the clock on the top bar, & choose Time & Date settings, once the Time & date window opens, choose Manually, so you can change the time & date manually; otherwise choose your time zone from the map, & choose Automatic.

~~By
Alo~~

Practical - 2

Aim: Installing and removing software.

a] Install gcc Package, Verify that it runs & then remove it

Step 1: First type `gcc -v` to know if you have already installed gcc compiler or not. If the output is blank then it means that you don't have gcc installed.

Step 2: Type `sudo apt-get install gcc`. After typing the following command install will take place.

Step 3: Type `sudo apt-get install build-essential`. This will install all the libraries required for C & C++ programming language.

Now To UNINSTALL gcc COMPILER

In GCC 5.1.0, although there is no top-level uninstall target, some distributions do have it, in particular gcc, so you can do:

Type: cd build/gcc
sudo make uninstall.

yhs does not remove everything that was
preinstalled, but it removes major executables like gcc,
g++, cpp... contained in that directory.³²

BS
calo1

b] Pending man Pages from the cmd line Bring up the man Page for the 'ls' command scroll down to the example section

Ans: To use the 'man' command simply type
 'man (command name)'

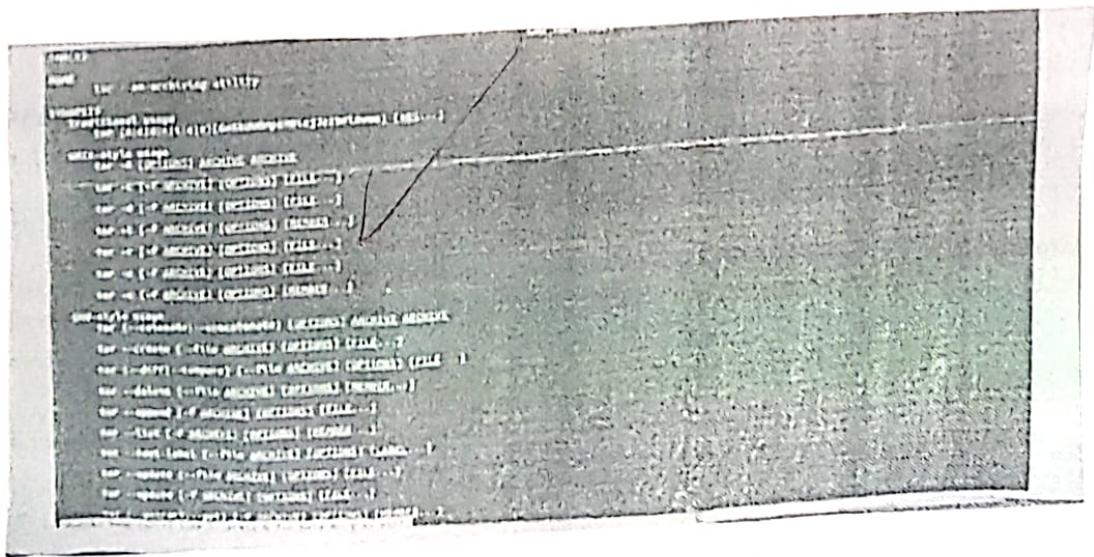
Now we are going to find the manual for 'ls' command.

Simply type: "man ls"

c) browsing man Pages by topic: what man Pages are available that document file comprehension.

Ans 'Tar', 'Zip' are some man pages which are available for document file compression simply.

type: map up
man for



Practical - 3

3.3

Aim: Utilization of grep, man commands.
Documentation:

- a) finding info documentation from the command line:
Ans: bring up the info page for the grep command
Bring up the usage section.

Ans: To find info about any command 'info' command is used. the syntax of Info command is "info (command name)"

We are going to find the info about the 'grep' command:

open the terminal (ctrl+alt+t) and type: info grep

After typing this command following output will be displayed on to your screen.

You can also scroll through Pages using (space = up) & (backspace = down) keys.

Another more summarized form of showing info is the 'man' command. The command is same as 'info' but required date.

Manual Sections

The standard sections of the manual include:

- 1 User Commands
- 2 System Calls
- 3 C Library Functions
- 4 Devices & special files.
- 5 File Formats & conventions
- 6 Games et. al.
- 7 Miscellanea
- 8 System Administration tools & Daemons

Distributions customize the manual section to their specifics, which often include additional sections.

There are certain terms that have different pages.

In different sections (e.g. 'printf' as a command appears in section 1, as a 'statik' function appears in section 3); in cases like that you can pass the section no. to the man before the page name to choose which one you want or use man -a to show every matching page in a row.

\$ man 1 printf

\$ man 3 printf

\$ man -k '^printf'

printf

(1) - format & print data

printf

(1p) - write formatted output

printf

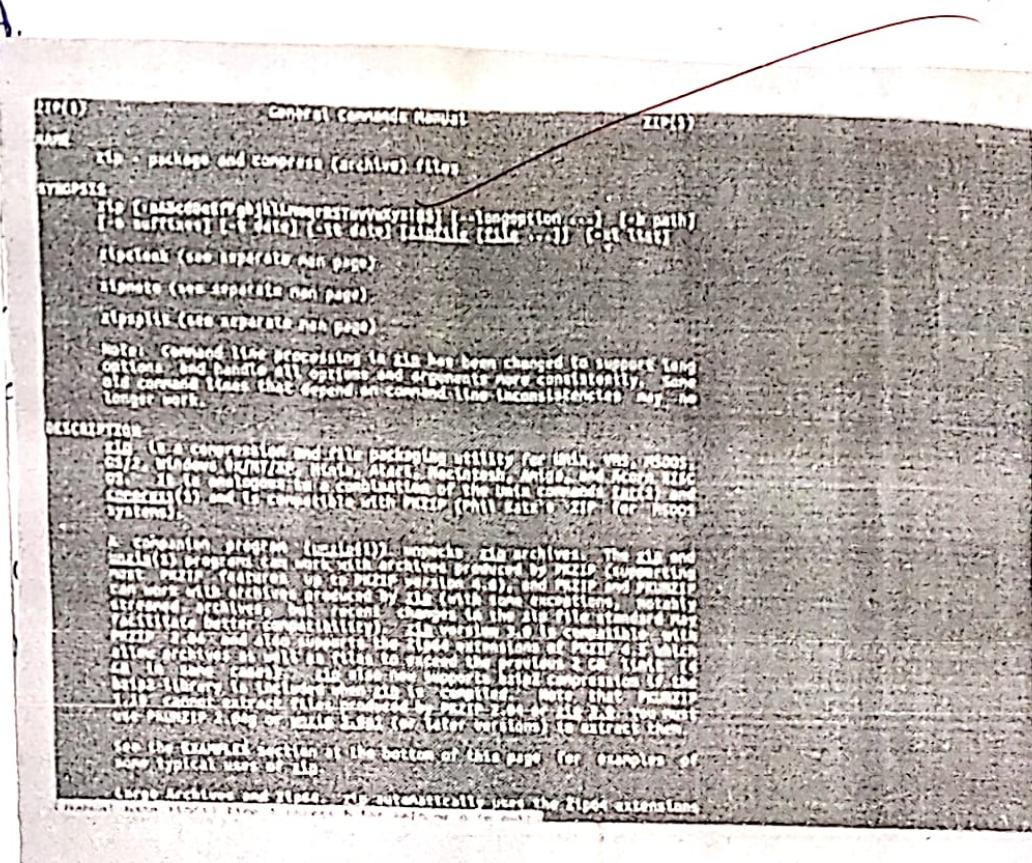
(3) - reprint formatted output

printf [built-in]

(1) - bash built-in command
bash(1), see

c) finding man Pages by section from the cmdline bring up the man Page for the `bindfplib`. function ³⁴ which manual page section are library function found ..

Ans: The number corresponds to what section of the manual page is from, 1 is user command, while 8 is sysadmin stuff. The man page for man itself explains it & list the stuff.



You can tell what section a term falls in with 'man-k'.
(equivalent to a proper command) It will do something
too so you need to use "term" to limit it.
To do this we first list the available options for the

so you need to use " -l " term to limit it.

e] Command-line Help list the available options for the `mkdir` command. How can you do this?

\$ mkdri -m a = rwx directoryname.

find the Password file between sub-directories

level 2 & 4

```
# find -maxdepth 3 -name  
./user/bin/passwd  
./etc/passwd
```

d] Create a symbolic link to the file you found in last step.

```
# ln -s file1 file2
```

e] Create an empty file example.txt & move it to tmp directory using relative Pathname

```
# touch example.txt
```

```
# mv example.txt /tmp
```

f] delete the file moved to tmp in previous step by absolute method.

```
# rm /tmp/example.txt
```

g] Find the location of ls, ps, bash commands.

```
# where ls
```

ls: /bin/ls /usr/share/man/man1/ls.1.g2

```
# where ps ps.
```

ps: /bin/ps /usr/share/mlocate /sbin/ps /usr/share/man/man1/ps.1.g2

```
# where bash.
```

bash: /bin/bash /etc/bash.bashrc /usr/share/man/man1/bash.1.g2

100% done now

Command line operations:

a) Install new Package on your system

Sudo apt-get install (Package name).

b) Remove the Package installed

Sudo apt-get remove (Package name)

c) Find the Password file in / using find command.

find / -name Password.

./usr/share/doc/nss-1dap-253/Pam.d/Password

./usr/bin/Password

./etc/Pam.d/Password

./etc/Password

Find the directory Password file under root & one level down

find / -maxdepth 2 -name Password ./etc/Password

Find the Password file under root & 2 level down

find / -maxdepth 3 -name Password

./usr/bin/Password

./etc/Pam.d/Password

./etc/Password

Practical-5

file operations

1) Explore mounted file systems on your computer.

Ans df -k

```
jeba@jeba-VirtualBox:~$ df -k
Filesystem      1K-blocks   Used Available Use% Mounted on
udev              494436      0  494436  0% /dev
tmpfs             102416  3676  98740  4% /run
/dev/sda1        7092728 3383372 3326024 51% /
tmpfs             512076   216  511860  1% /dev/shm
tmpfs              5120      4   5116  1% /run/lock
tmpfs             512076      0  512076  0% /sys/fs/cgroup
tmpfs             102416     48  102368  1% /run/user/1000
jeba@jeba-VirtualBox:~$
```

2) What are the different ways of exploring mounted file systems on Linux?

Ans
mount

```
jeba@jeba-VirtualBox:~$ mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,size=494436k,nr_inodes=123609,mode=755)
devpts on /dev/fd/1 type devpts (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=000)
/dev/sda1 on / type ext4 (rw,relatime,errors=remount-ro,data=ordered)
securityfs on /sys/fs/securityfs type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/pts/0 type devpts (rw,nosuid,noexec,relatime,size=5120k)
tmpfs on /tmp type tmpfs (rw,nosuid,nodev,noexec,mode=755)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,xattr,release_agent=/lib/systemd/systemd-cgroups-agent,nsroot=/)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,freezer,nsroot=/)
cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpu,cpuacct,nsroot=/)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices,nsroot=/)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory,nsroot=/)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,blkio,nsroot=/)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,perf_event,nsroot=/)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb,nsroot=/)
cgroup on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=32,pgrp=1,timeout=0,minp=1,maxp=65535,allow_other)
cgroup on /dev/hugepages type hugetlbfss (rw,relatime)
```

3) Copying text from apples.

Ans : cp command , mv command.

```
jeba@jeba-VirtualBox:~$ ls
Desktop  Downloads  Documents  examples.desktop  jeb  Music  Pictures  Public  Templates  Videos
jeba@jeba-VirtualBox:~$ cd jeb
jeba@jeba-VirtualBox:~/jeb$ cat .gg.txt
cat: .gg.txt: No such file or directory
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
cat: gg.txt: No such file or directory
jeba@jeba-VirtualBox:~/jeb$ cat >gg.txt
Welcome
Linux
^C
jeba@jeba-VirtualBox:~/jeb$ touch dd.txt
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt  gg.txt
jeba@jeba-VirtualBox:~/jeb$ cp gg.txt dd.txt
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
Welcome
Linux
jeba@jeba-VirtualBox:~/jeb$ cat dd.txt
welcome
Linux
jeba@jeba-VirtualBox:~/jeb$
```

```
jeba@jeba-VirtualBox:~/jeb$ touch ss.txt
jeba@jeba-VirtualBox:~/jeb$ mv gg.txt ss.txt
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
cat: gg.txt: No such file or directory
jeba@jeba-VirtualBox:~/jeb$ cat ss.txt
welcome
Linux
jeba@jeba-VirtualBox:~/jeb$ █
```

4] Archiving & backup the work directory using tar, gzip & bzip2 commands.

→ gzip filename.txt

Bzip2 filename.txt

Q) Use diff command to compare two files
→ diff filename1 filename2

```
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt.gz ss.txt.bz2
jeba@jeba-VirtualBox:~/jeb$ cat >aa.txt
hello world
^C
jeba@jeba-VirtualBox:~/jeb$ cat >bb.txt
this is linux^C
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt bb.txt
1do
< hello world
jeba@jeba-VirtualBox:~/jeb$ cat >bb.txt
this is Linux
^C
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt bb.txt
1c1
< hello world
...
> this is Linux
jeba@jeba-VirtualBox:~/jeb$ gzip aa.txt
jeba@jeba-VirtualBox:~/jeb$ gzip bb.txt
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt.gz bb.txt.gz
Binary files aa.txt.gz and bb.txt.gz differ
```

6] Use Patch command to Patch a file . And apply 2nd the patch using Patch command again .

```
jeba@jeba-VirtualBox:~/jeb$ cat >hi.txt
hi
hi
hi
^C
jeba@jeba-VirtualBox:~/jeb$ cat >hii.txt
hello
hello
hello
^C
jeba@jeba-VirtualBox:~/jeb$ diff -u hi.txt hii.txt >sam.patch
jeba@jeba-VirtualBox:~/jeb$ patch ,sam.patch
^C
jeba@jeba-VirtualBox:~/jeb$ patch <sam.patch
patching file hi.txt
jeba@jeba-VirtualBox:~/jeb$ cat sam.patch
--- hi.txt      2020-01-08 22:14:55.463569834 +0530
+++ hii.txt     2020-01-08 22:15:16.259898738 +0530
@@ -1,3 +1,3 @@
-hi
-hi
-hi
+hello
+hello
+hello
jeba@jeba-VirtualBox:~/jeb$
```

8/10

User Environment

- a) Which account you are logged in? How do you find out?
Ans Who command & whoami.

```
jeba@jeba-VirtualBox:~$ who
jeba    tty7          2020-01-15 20:32 (:0)
jeba@jeba-VirtualBox:~$ whoami
jeba
jeba@jeba-VirtualBox:~$ who -l
LOGIN   tty1          2020-01-15 20:30
jeba@jeba-VirtualBox:~$ █
```

```
jeba@jeba-VirtualBox:~$ w
20:35:04 up 4 min, 1 user, load average: 0.70, 0.79, 0.38
USER     TTY      FROM          LOGIN@  IDLE   JCPU   PC
jeba    tty7      :0           20:32   4:28   8.19s  0.
jeba@jeba-VirtualBox:~$ w -s
20:35:14 up 4 min, 1 user, load average: 0.60, 0.77, 0.37
USER     TTY      FROM          IDLE WHAT
jeba    tty7      :0           4:38   /sbin/upstart --us
jeba@jeba-VirtualBox:~$ w -h
jeba    tty7      :0           20:32   4:44   8.67s  0.
jeba@jeba-VirtualBox:~$ w -f
20:36:12 up 5 min, 1 user, load average: 0.41, 0.69, 0.37
USER     TTY      LOGIN@  IDLE   JCPU   PCPU WHAT
jeba    tty7      20:32   5:36   9.00s  0.33s /sbin/upstar
```

- b) Display /etc/shadow file using cat command and understand the importance of shadow file.
How it's different than password file
Ans cat /etc/shadow.

As with the Password file, each field in the shadow file is also separated with ":" colon characters & are as follows:

- Username, up to 8 characters. Case-sensitive, usually all lowercase. A direct match to the username in the /etc/Password file.
- Password, 13 character encrypted. A blank entry (eg. ::) indicates a password is not required to log in (usually a bad idea), and a "*" entry (eg.:*) indicates the account has been disabled
- The number of days (since January 1, 1970) since the password was last changed.
- The number of days before Password may be changed (0 indicates it may be changed at my time)
- The number of days after which Password must be changed (99999 indicates user can keep his or her password unchanged for many, many years)
- The number of days to warn user of an expiring password. (7 for a full week)
- The number of days after Password expires that account is disabled.
- The number of days since January 1, 1970 that an account has been disabled
- A reserved field for possible future use.

```
jebaw:jebaw-VirtualBox:~$ sudo cat /etc/shadow.  
[sudo] password for jebaw:  
root:!:10240:0:99999:7:::  
daemon:!*:10911:0:99999:7:::  
bin:!*:10911:0:99999:7:::  
sys:!*:10911:0:99999:7:::  
sync:!*:10911:0:99999:7:::  
games:!*:10911:0:99999:7:::  
man:!*:10911:0:99999:7:::  
lp:!*:10911:0:99999:7:::  
mail:!*:10911:0:99999:7:::  
news:!*:10911:0:99999:7:::
```

Each field in a Password entry is separated with ":" colon characters & are as follows:

- Username upto 8 characters. Case-sensitive, usually all lowercase.
- An "x" in the Password field. Passwords are stored in the "/etc/shadow" file.
- Numeric user Id. This is assigned by the "adduser" script. Unix uses this field plus the following group field, to identify which files belong to the user.
- Numeric group Id. Red Hat uses group Id's in a fairly unique manner for enhanced file security. Usually the group Id will match the user Id.
- Full name of user. I'm not sure what the maximum length for this field is, but try to keep it reasonable (under 30 characters).
- User's home directory. Usually /home/username (eg. /home/smithy). All user's personal files, web pages, mail forwarding, etc will be stored here.
- User's "shell account". often set to "/bin/bash" to provide access to the bash shell (my personal favorite shell).

```
jeba@jeba-VirtualBox:~$ sudo cat /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:/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:MailList Manager:/var/list:/usr/sbin/nologin
```

c) get your current working directory
Ans.

```
jeba@jeba-VirtualBox:~$ pwd
/home/jeba
jeba@jeba-VirtualBox:~$
```

- d) Explore different ways of getting command history,
how to run previously executed command without
typing it.
→ history

```
jeba@jeba-VirtualBox:~$ history
  1 who
  2 whoami
  3 who -l
  4 clear
  5 w
  6 w -s
  7 w -h
  8 w -f
  9 clear
 10 cat /etc/shadow
 11 sudd cat /etc/shadow
 12 clear
 13 sudo cat /etc/passwd
 14 pwd
 15 clear
 16 history
jeba@jeba-VirtualBox:~$ 13
who -l
LOGIN    tty1      2020-01-15 20:30.
jeba@jeba-VirtualBox:~$
```

780 id=tty1

e) Create alias to most commonly used commands.

Alias command instructs the shell to replace one string with another string while executing the commands.

→ alias label = "command".

```
jeba@jeba-VirtualBox:~$ alias m="mkdir new"
jeba@jeba-VirtualBox:~$ m
jeba@jeba-VirtualBox:~$ ls
Desktop Downloads
Documents examples.desktop jj new Pictures Templates
jeba@jeba-VirtualBox:~$
```

Practical - 7

Linux Editors: vi

a) Create, modify, search & navigate a file in editor. 40

i) Creating a file:

To create a file, on the terminal, type 'vi' followed by filename.

ii) Modifying the file:

To modify a file, on the vi editor, type 'o'.

iii) Search in a file:

To find a word (forward search) press / followed by the word to search.

iv) Navigate

Movement in four directions -

<u>Key</u>	<u>Action</u>
K	Moves cursor up
J	Moves cursor down
H	Moves cursor left
I	Moves cursor right

Word Navigation.

Key	Action.
b	Moves back to beginning of word
e	Moves forward to end of word
w	Moves forward to beginning of word
0(zero)	Move to first character of line
\$	Move to end of line

Scrolling.

Key	Action
ctrl + f	scrolls forward
ctrl + b	scrolls backward
ctrl + d	scrolls half page
ctrl + u	scrolls half page backward

b) learn all essential commands like search / replace , highlight , show line numbers .

i) Replace .

Syntax : : / g / word to be replaced / s / new word / gc .

```
Jeba@Jeba-VirtualBox: ~
Hello
This is my Linux example
Welcome
Welldone
This is Vi Editor
Thank you.

I

:q!/my/s//our/gc
```

:g/myslour/gc

jebas@jeba-VirtualBox: ~

Hello
This is my Linux example
Welcome
Wellcome
This is VI Editor
Thank you

replace with our (y/n/a/q/l/^E/^Y)?

```
Hello
This is our Linux example
Welcome
Welldone
This is Vi Editor
Thank you
~
```

ii) Highlight

Use set hlsearch.

```
Jeba@Jeba-VirtualBox ~
Hello
This is our Linux example
Welcome
Welldone
This is VI Editor
Thank you
:set hlsearch
```

iii) Show the line numbers

Use set nu.

```
1  [root@jbs-VirtualBox ~]
2  Hello
3  This is our Linux example
4  Welcome
5  Welldone
6  This is vi Editor
7  Thank you
```

42

23/01

Practical - 8

Linux Security

a) Use of sudo to change user Privileges to root.

Create an user named as user 1.

```
jeba@jeba-VirtualBox:~$ sudo useradd user1
[sudo] password for jeba:
jeba@jeba-VirtualBox:~$ sudo passwd user1
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
jeba@jeba-VirtualBox:~$
```

To give some root Privileges edit /etc/sudoers using visudo. Enter new line as highlighted below.

```
# Please consider adding local content in /etc/sudoers.d/ instead of
# directly modifying this file.
#
# See the man page for details on how to write a sudoers file.
#
Defaults        env_reset
Defaults        mail_badpass
Defaults        secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:"
#
# Host-alias specification
#
# User alias specification
#
# Cmnd alias specification
#
# User privilege specification
root    ALL=(ALL:ALL) ALL
```

b) Identify operations that require sudo privileges.

```
jeba@jeba-VirtualBox:~$ su user1
Password:
user1@jeba-VirtualBox:/home/jeba$ mkdir folder1
mkdir: cannot create directory 'folder1': Permission denied
user1@jeba-VirtualBox:/home/jeba$ sudo mkdir folder1
[sudo] password for user1:
user1 is not in the sudoers file. This incident will be reported.
```

c) Modify expiration date for new user using Password aging.

```
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change : Jan 20, 2020
Password expires      : never
Password inactive     : never
Account expires        : never
Minimum number of days between password change : 0
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
```

```
jeba@jeba-VirtualBox:~$ sudo chage user1
Changing the aging information for user1
Enter the new value, or press ENTER for the default

    Minimum Password Age [0]: 100
    Maximum Password Age [99999]: 200
    Last Password Change (YYYY-MM-DD) [2020-01-20]: 2020-01-21
    Password Expiration Warning [7]: 5
    Password Inactive [-1]:
    Account Expiration Date (YYYY-MM-DD) [-1]: 2020-01-31

jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change : Jan 21, 2020
Password expires      : Aug 08, 2020
Password inactive     : never
Account expires        : Jan 31, 2020
Minimum number of days between password change : 100
Maximum number of days between password change : 200
Number of days of warning before password expires : 5
```

```
jeba@jeba-VirtualBox:~$ sudo chage -E 25/01/2020 -m 10 -M 90 -I 30 -W 30 user1
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change : Jan 21, 2020
Password expires     : Apr 20, 2020
Password inactive    : May 20, 2020
Account expires       : Jan 01, 2022
Minimum number of days between password change : 10
Maximum number of days between password change : 90
Number of days of warning before password expires : 30
jeba@jeba-VirtualBox:~$
```

- E Expiration Date.
 - m Minimum number of days before Password change
 - I: Account inactive
 - W: Number of days of warning before a password change is required.

d) Delete newly added user.

```
jeba@jeba-VirtualBox:~$ sudo userdel user1
[sudo] password for jeba:
jeba@jeba-VirtualBox:~$ su user1
No passwd entry for user 'user1'
jeba@jeba-VirtualBox:~$
```

Practical - 9

44

Network Management.

- a) get IP address of your machine using ifconfig.

```
jeba@jeba-VirtualBox:~$ ifconfig
enp0s3    Link encap:Ethernet HWaddr 08:00:27:0e:6b:69
          inet addr:10.0.2.15 Bcast:10.0.2.255 Mask:255.255.255.0
          inet6 addr: fe80::c0cd:53a0:d5a3:848e/64 Scope:Link
                  UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
                  RX packets:2 errors:0 dropped:0 overruns:0 frame:0
                  TX packets:73 errors:0 dropped:0 overruns:0 carrier:0
                  collisions:0 txqueuelen:1000
                  RX bytes:1180 (1.1 KB) TX bytes:8518 (8.5 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1 Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
                  UP LOOPBACK RUNNING MTU:65536 Metric:1
                  RX packets:53240 errors:0 dropped:0 overruns:0 frame:0
                  TX packets:53240 errors:0 dropped:0 overruns:0 carrier:0
                  collisions:0 txqueuelen:1
                  RX bytes:4225072 (4.2 MB) TX bytes:4225072 (4.2 MB)
```

- b) get hostname of your machine.

```
jeba@jeba-VirtualBox:~$ hostname
jeba-VirtualBox
jeba@jeba-VirtualBox:~$
```

- c) Use Ping to check the network connectivity to remote machines.

```
jeba@jeba-VirtualBox:~$ ping www.google.com
PING www.google.com (172.217.31.196) 56(84) bytes of data.
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=1 ttl=54 time=97.8 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=2 ttl=54 time=82.0 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=3 ttl=54 time=84.8 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=4 ttl=54 time=87.1 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=5 ttl=54 time=93.5 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=6 ttl=54 time=86.9 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=7 ttl=54 time=98.0 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=8 ttl=54 time=90.9 ms
^Z
[1]+  Stopped                  ping www.google.com
jeba@jeba-VirtualBox:~$
```

d) Use of dig command.

```
jeba@jeba-VirtualBox:~$ dig www.google.com
;; global options: +cmd
;; Got answer:
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 52068
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1
;; OPT PSEUDOSECTION:
EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
www.google.com.          IN      A
;; ANSWER SECTION:
www.google.com.          91      IN      A      172.217.166.100
;; Query time: 152 msec
;; SERVER: 127.0.1.1#53(127.0.1.1)
;; WHEN: Mon Jan 26 22:40:06 IST 2020
;; MSG SIZE rcvd: 59
jeba@jeba-VirtualBox:~$
```

e) Troubleshooting network using traceroute (route command)

```
jeba@jeba-VirtualBox:~$ traceroute www.google.com
traceroute to www.google.com (172.217.166.100), 30 hops max, 60 byte packets
 1  10.0.2.2 (10.0.2.2)  0.198 ms  0.143 ms  0.151 ms
 2  *
 3  10.0.2.2 (10.0.2.2)  68.568 ms  68.486 ms  68.085 ms
jeba@jeba-VirtualBox:~$
```

```
jeba@jeba-VirtualBox:~$ route
Kernel IP routing table
Destination     Gateway         Genmask        Flags Metric Ref    Use Iface
default         10.0.2.2       0.0.0.0       UG    0      0      0 enp0s2
10.0.2.0        *              255.255.255.0 U     0      0      0 enp0s2
link-local      *              255.255.0.0   U     1600  0      0 enp0s2
jeba@jeba-VirtualBox:~$
```

f) Use of arp command.

```
jeba@jeba-VirtualBox:~$ arp
Address      HWtype  HWaddress           Flags Mask            Iface
10.0.2.2      ether   52:54:00:12:35:02  C                enp0s2
```

g) Use of host command.

```
jeba@jeba-VirtualBox:~$ host -V
host 9.10.3-P4-Ubuntu
jeba@jeba-VirtualBox:~$
```

n) Use of nbtstat command & Nmap command.

Proto Refcnt		Flags	Type	State	Foreign Address	State
unix 2		[]	DGRAM		I-Node 42149	Path /run/user/1000/system
d/notify		[]	DGRAM		9694	/run/systemd/journal/
unix 2		[]	DGRAM		9695	/run/systemd/journal/
syslog		[]	DGRAM		9704	/run/systemd/journal/
unix 16		[]	DGRAM		9684	/run/systemd/notifly
dev-log		[]	DGRAM		446042	@/tmp/dbus-CymTei7AQG
unix 7		[]	DGRAM		43331	
socket		[]	DGRAM		42988	@/tmp/dbus-CymTei7AQG
unix 3		[]	DGRAM		42690	@/tmp/dbus-CMGGc6C7PS
unix 3		[]	STREAM	CONNECTED	13242	/run/systemd/journal/
unix 3		[]	STREAM	CONNECTED	43113	/run/systemd/journal/
unix 3		[]	STREAM	CONNECTED	43013	
unix 3		[]	STREAM	CONNECTED	42935	
stdcout						
stdcout						
Unix 3		[]				
Unix 3		[]				

```
jeba@jeba-VirtualBox:~$ nmap www.google.com
Starting Nmap 7.01 ( https://nmap.org ) at 2020-01-20 22:51 IST
Nmap scan report for www.google.com (216.58.196.68)
Host is up (0.044s latency).
Other addresses for www.google.com (not scanned): 2484:6800:4887:811::2884
rDNS record for 216.58.196.68: bom05s11-in-f4.1e100.net
Not shown; 998 filtered ports
PORT      STATE SERVICE
80/tcp    open  http
443/tcp   open  https

Nmap done: 1 IP address (1 host up) scanned in 20.32 seconds
jeba@jeba-VirtualBox:~$
```

10/23/01

Practical-10

Aim : SHELL SCRIPTING

Basic of shell scripting.

- a) To get a shell, you need to start a terminal
- b) To see what shell you have, run: echo \$SHELL
- c) In Linux, the dollar sign (\$) stands for shell variable.
- d) The echo command just returns whatever you type in.
- e) ~~#!/bin/bash - It is called shebang. It is written at the top of a shell script & it passes the instruction to the program/bin/bash.~~

Echo \$SHELL

```
tcsc@tcsc-VirtualBox:~  
tcsc@tcsc-VirtualBox:~$ echo $SHELL  
/bin/bash  
tcsc@tcsc-VirtualBox:~$
```

- vi filename.sh
- #!/bin/bash
- echo "THIS IS LINUX!"

```
tcsc@tcsc-VirtualBox: ~
```

```
/bin/bash  
echo "THIS IS LINUX!"
```

'linux.sh' [New File]

- Chmod 777 filename.sh
• ./filename.sh.

```
tcsc@tcsc-VirtualBox: ~
```

```
tcsc@tcsc-VirtualBox: ~$ vi linux.sh  
tcsc@tcsc-VirtualBox: ~$ chmod 777 linux.sh  
tcsc@tcsc-VirtualBox: ~$ ./linux.sh  
THIS IS LINUX!  
tcsc@tcsc-VirtualBox: ~$
```

step to write & execute a shell script

Shell script is just a simple text file with .sh extension, having executable permission.

- a) open terminal.
- b) Navigate to the place where you want to create script using cd command
- c) Touch filename.sh [You can use your favorite editor, to edit the script]

- e) chmod 777 filename.sh (for making the script executable)
f) sh filename.sh or ./filename.sh (for running the script)

Program to display your name

```
#!/bin/bash
```

```
echo "Enter your name:"
```

```
read name
```

```
echo "My name is: $name"
```

```
tcsc@tcsc-VirtualBox:~  
#!/bin/bash  
echo "Enter your name:"  
read name  
echo "My name is: $name"
```

```
tcsc@tcsc-VirtualBox:~  
tcsc@tcsc-VirtualBox:~$ vt ubuntu.sh  
tcsc@tcsc-VirtualBox:~$ chmod 777 ubuntu.sh  
tcsc@tcsc-VirtualBox:~$ ./ubuntu.sh  
Enter your name:  
TANVI  
My name is: TANVI  
tcsc@tcsc-VirtualBox:~$
```

Program to find the sum of two variables

vi filename.sh

#!/bin/bash

a=100

b=25

Sum=\$((a+b))

Echo "Sum is : \$sum"

tcsc@tcsc-VirtualBox: ~

```
#!/bin/bash
a=100
b=25
sum=$((a+b))
echo "Sum is:$sum"
```

:wq

tcsc@tcsc-VirtualBox: ~

```
tcsc@tcsc-VirtualBox:~$ vi linux2.sh
tcsc@tcsc-VirtualBox:~$ chmod 777 linux2.sh
tcsc@tcsc-VirtualBox:~$ ./linux2.sh
Sum is:125
tcsc@tcsc-VirtualBox:~$
```

Program to find the sum of two numbers (values Paused during execution).

```
tcsc@tcsc-VirtualBox: ~
#!/bin/bash
sum=$(( $1+$2 ))
echo "sum is:$sum"

"lin.sh" 3 lines, 46 characters
tcsc@tcsc-VirtualBox: ~$ chmod 777 lin.sh
tcsc@tcsc-VirtualBox: ~$ ./lin.sh 56 70
sum is:126
tcsc@tcsc-VirtualBox: ~$
```

Sed

Sed command or Stream Editor is very Powerful utility offered by Linux systems. It is mainly used for text substitution, find & replace but it can perform other text manipulations like insertion, deletion, search etc. with sed, we can edit complete file without actually having to open it.

Consider the following text file.

```
tcsc@tcsc-VirtualBox: ~
```

```
subjects offered in cs  
datastructure  
database management  
Linux  
python  
green tech  
softskill  
stats  
calclus  
computer basic
```

1) Displaying Partial text of a file.

With sed, we can view only Part of a file rather than seeing whole file.

```
tcsc@tcsc-VirtualBox: ~
```

```
tcsc@tcsc-VirtualBox:~$ vi.cs.txt  
tcsc@tcsc-VirtualBox:~$ sed -n 3,5p cs.txt  
database management  
Linux  
python  
tcsc@tcsc-VirtualBox:~$
```

2) Display all except some lines.

To display all content of a file except for some portion, use option 'd'.

```
tcsc@tcsc-VirtualBox:~$ sed 3,5d cs.txt  
subjects offered in cs  
datastructure  
green tech  
softskill  
stats  
calclus  
computer basic  
tcsc@tcsc-VirtualBox:~$
```

3) Deleting a line

To delete a line, use line number followed by w.

```
tcsc@tcsc-VirtualBox:~$ vi linux.sh
tcsc@tcsc-VirtualBox:~$ chmod 777 linux.sh
tcsc@tcsc-VirtualBox:~$ ./linux.sh
THIS IS LINUX!
tcsc@tcsc-VirtualBox:~$
```

4) Search & Replacing a string

'S' option is for searching a word.

```
tcsc@tcsc-VirtualBox:~$ sed 's/cs/computer/' cs.txt
subjects offered in computer
datastructure
database management
linux
python
green tech
softskill
stats
calculus
computer basic
```

5) Replace a string on a Particular line.

```
tcsc@tcsc-VirtualBox:~$ sed '6 s/cs/computer system /' cs.txt
subjects offered in cs
datastructure
database management
linux
python
green tech
softskill
stats
calculus
computer basic
```

6) Add a line after / before the matched string.

To add a new line with some content after every Pattern match,

```
tcsc@tcsc-VirtualBox:~$ sed '/cs/a "this is linux"' cs.txt
subjects offered in cs
"this is linux"
datastructure
database management
linux
python
green tech
softskill
stats
calculus
computer basic
tcsc@tcsc-VirtualBox:~$
```

To add a new line with some content before every Pattern match, use option 'i'

```
tcsc@tcsc-VirtualBox:~$ sed '/cs/i "this is linux"' cs.txt
>this is linux
subjects offered in cs
datastructure
database management
linux
python
green tech
softskill
stats
calculus
computer basic
tcsc@tcsc-VirtualBox:~$
```

?) To change a whole line with matched pattern.

To change a whole line to a new line when a search pattern matches, use option 'c'.

```
tcsc@tcsc-VirtualBox:~$ sed '/linux/c "this is linux"' cs.txt
subjects offered in cs
datastructure
database management
>this is linux"
python
green tech
softskill
stats
calclus
computer basic
```

8) Appending lines

To add some content before every line with sed, we use + & q as follows.

```
tcsc@tcsc-VirtualBox:~$ sed -e 's/.*/Thanks &/' cs.txt
Thanks subjects offered in cs
Thanks datastructure
Thanks database management
Thanks linux
Thanks python
Thanks green tech
Thanks softskill
Thanks stats
Thanks calclus
Thanks computer basic
```

SP
27/02