

PRACTICAL NO:- 1

Aim:-

- i) install your choice of Unix distribution.  
eg:- Ubuntu, Fedora
- ii) customize desktop environment by changing different default options like changing default background, themes, screensavers.
- iii) screen Resolution
- iv) User settings.

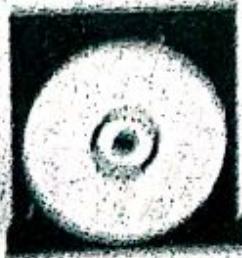
Bonus Installations:-

Install your choice of unix distribution eg Ubuntu, Fedora, Debian, using a USB drive.

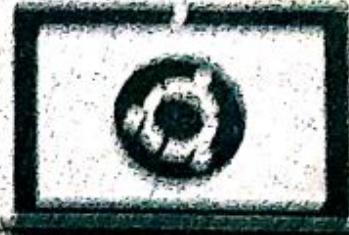
Most newer computer can boot from USB. You should see a welcome screen prompting you to choose your language & giving you the option to install Ubuntu or any OS from the USB.

If your computer doesn't automatically do so, you might need to press the F12 key to bring up the boot menu, but be careful not to hold it too tight as that can cause an error message.

- 1) Prepare to install Ubuntu
- \* We recommend you plug your computer into a power source.
- \* You should also make sure you have enough space on your computer to install Ubuntu



Digitized by srujanika@gmail.com



115 of 115 pages

9124  
9124-14-0001  
H-1423-4  
T-1423-3  
L-1423-2  
F-1423-1  
E-1423-0

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## Preparando a Ubuntu

- Download updates while installing Ubuntu  
This will take after installation
  - Install third-party software for graphics and Wi-Fi hardware, Flash, MP3 and other media

1980年1月1日

? Install third-party software for graphics and Wi-Fi hardware, Flash, MP3 and other media.

The software has been licensed to licensees included with its documentation. Some is proprietary.

Qult

back

**Continue**

This computer currently has no detected operating systems. What would you like to do?

- #### • Erase disk and install Linux

**Warning:** This will format all your previous documents above, newer and untouched files will not be affected.

- Encrypt the new library to install it on a separate drive.

You can choose a specific location for your new unit.

- Use LVM with the new Ubuntu installations

This will help you to manage your time more effectively and successfully.

- ### Something else

You can come or go whenever you like.

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- \* We advise you to select Download updates while installing and install this first party software can you should also stay connected to the internet you can get the latest updates while you install Ubuntu.
- \* If you are connected to the internet so you can get the latest updates while wireless network available we advise you to connect during the installation so we can ensure your machine is up-to date.

### 3) Allocate device space-

- \* Use the check boxes to choose whether you would like to install Ubuntu alongside another operating system delete your existing operating system and replace it with Ubuntu or if you are an advanced user choose the something else option.

### 3) Begin the installation

- " depending on your previous sections you can now verify that you have chosen the way in which you would like to install Ubuntu the installation process will begin when you click the install now button.

## LAP

### 4) Select your location

If you are connected to the internet, this should be done automatically - check your location is correct & click 'Forward to proceed'.

If you are unsure of your time zone, type the name of the town you are in & click on the map and we will help you find it.

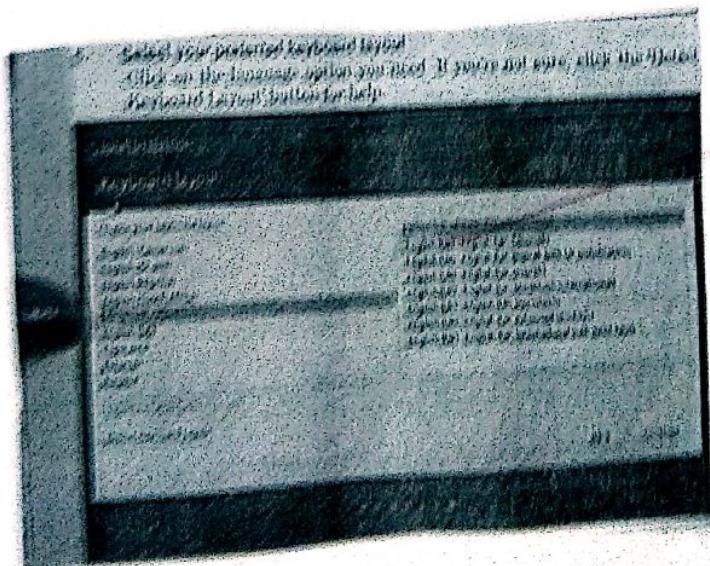
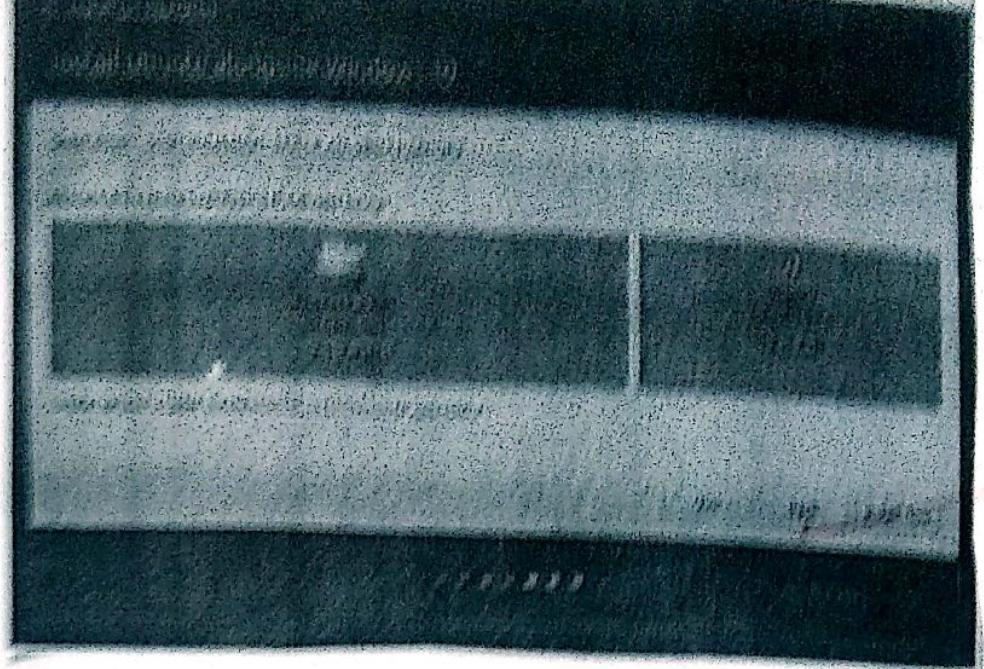
### 5) Select your preferred keyboard layout

Click on the language option you need if you're not sure click 'the default keyboard layout' for help.

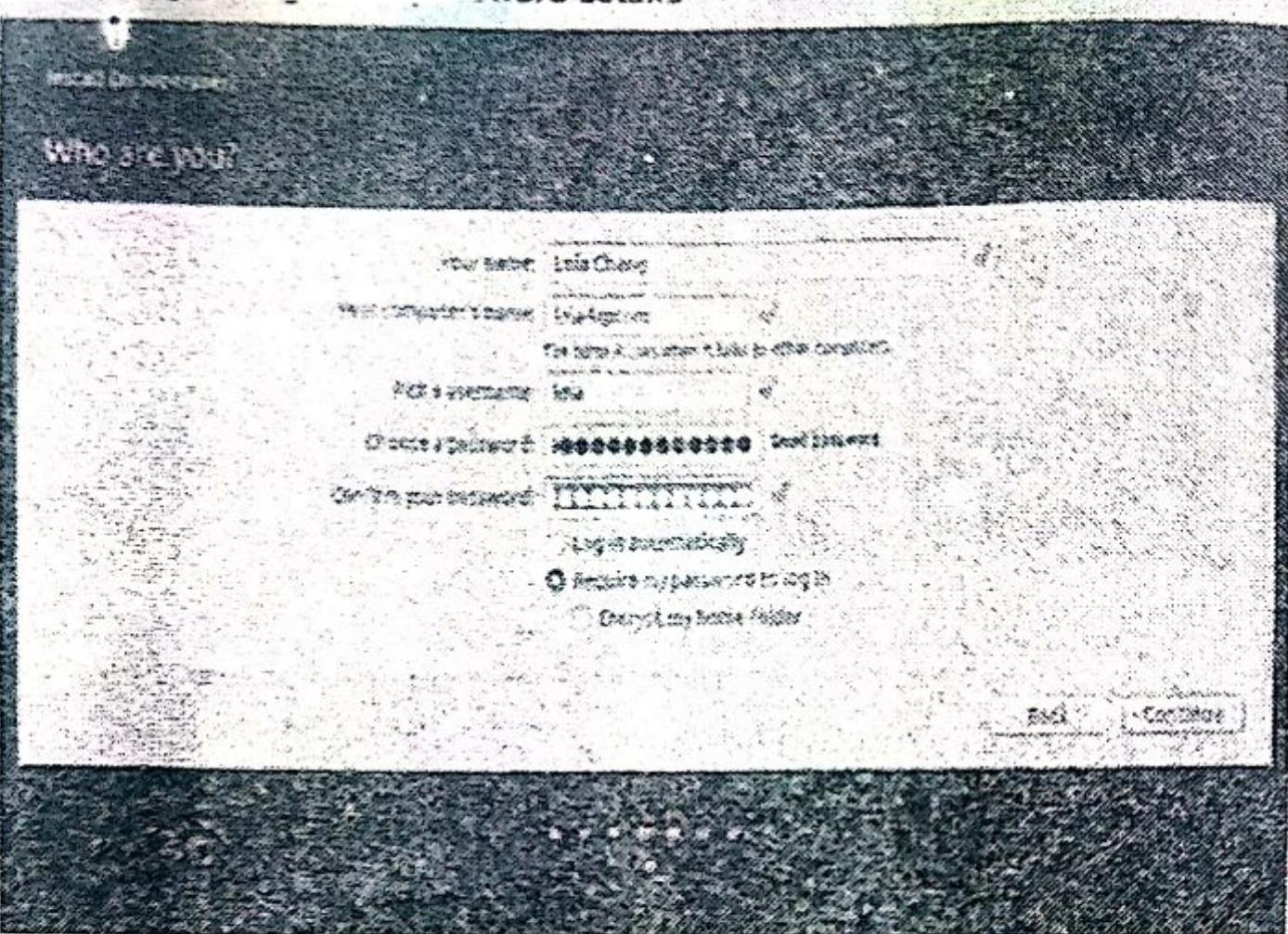
Enter your login ID & password details.

Learn more about us until we'll see you again.

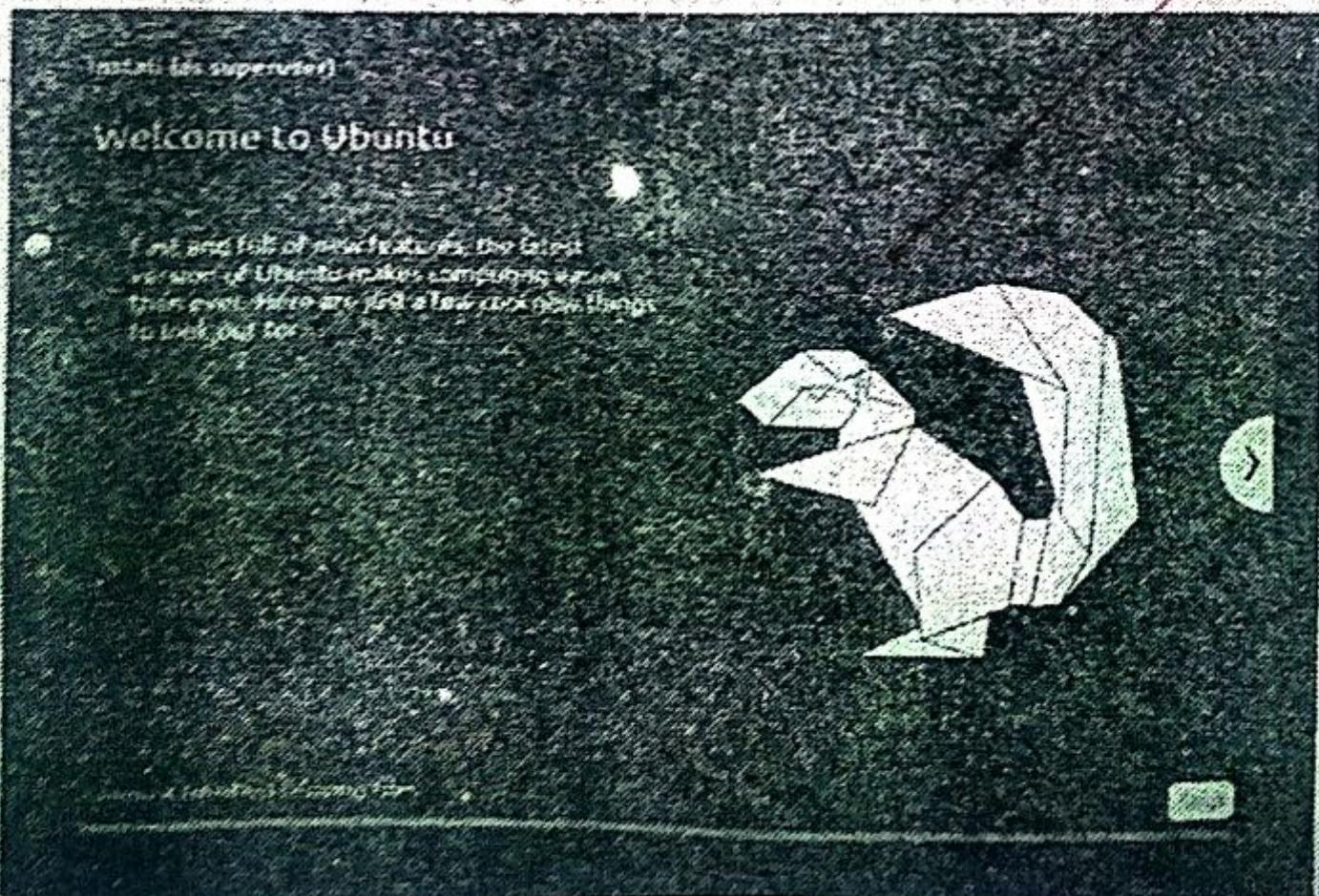
91



by  
Tina



## 7. Learn more about Ubuntu while the system installs...



Ques:- Installing & removing software.

to install GCC package, verify that it runs and 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 installation will take place.

Step 3:

Type 'sudo apt-get install build-essential'. This will install the libraries required from C & C++ programming language.

Now TO UNINSTALL GCC COMPILER.

In GCC 5.1.0 although there is no top level uninstall target, some directives do have it, so just enter 'gcc' so you can do

Type : - cd build/gcc  
sudo make uninstall

END

END OF PAGE

~~this does not remove everything that was installed, but it removes major executables like gcc, g++, cpp... contained in that directory~~

~~OS~~

INFO

Output: info into  
displays the Info main menu at or directory level()

After several Info commands

'q' quits

'?' lists all info commands

'h' starts the info tutorial

'm' brings up the version and the info manual etc;

in & man

Output: Name:

ls - list directory contents

Synopsis:

ls [options]... [file]...

Description:

list information about the files and entries alphabetically if name of files up to ... does not specified

-a, -- all

do not ignore entries starting with

-A, -- almost-all

do not list implied and ..

--author

with -l print the author of each file

-b, -- escape

print -l style escapes for non graphic characters

-c, -- use entries by columns

in & man can

Output: Name: the GNU version of the ls archive very utility  
Synopsis:

AIM:- Utilization of grep, man commands

Documentation:-

- a) finding info documentation :- from the command line:  
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 onto 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 extra.~~

- b) finding man pages from the end line : Bring up the man page for the 'ls' command scroll down to 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'

Q) finding man pages by topic - What man pages are available, what document file compression

Ans: 'tar', 'zip' are some man pages which are available for document file compression

Simply type : man zip  
man tar

Q) finding man pages by section for the command - listing up the man page for the printf() function - which manual section are library function found

Ans: The no corresponds to what section of the manual page is from; 1 is user command; 2 shell n so sys admin stuff - the man page for man itself - option -t lists the old there are certain terms that have different pages in different sections - leg. 'printf' as a command appears in section 1 as a stdlib function appear in section 3;

It looks like that you can pass the section no to the man command - the page name to choose which one you want or use man -o to show every matching page in a row. You can tell what section a term falls in with man + '?'

-- compound { ... } dofile / file append()

list / test - last / u - update / p - print - get [option]  
( pathname ) 04B

### Description:

get store and updates file from a zip archive or archive

### function details:

- A - catenall - concatenates append-to files in an archive
- B & C, - create  
creates a new archive
- d, - diff, - compare  
find differences between archive and file system
- delete  
deletes from the archive
- H, - append  
append files to the end of an archive

### about print f:

name:- printf, sprintf, fprintf, dprintf, sprintf, vprintf,  
vprintf\_f, NSprintf, formatted output versions.

### Description:

The functions the printf() family produce output  
according to a format as described below

**ZIP(1)** General Commands Manual **ZIP(1)**

**NAME** zip - package and compress (archive) files

**SYNOPSIS** zip [-aBcdDDEffGghjklMmupperRSTUvVwxy:1B6] [..longoption ...] [-b path] [-n buffers] [-t date] [-tt date] [-listfile [file ...]] [-xt list]

zipcloak (see separate man page)

zipnote (see separate man page)

zipsplit (see separate man page)

**Notes:** Command line processing in zip has been changed to support long options, and handle all options and arguments more consistently. Some old command lines that depend on command line inconsistencies may no longer work.

**DESCRIPTION**

zip is a compression and file packaging utility for Unix, VMS, MS-DOS, OS/2, Windows 9X/NT/XP, Minix, Akerl, Macintosh, Amiga, and Acorn RISC OS. It is analogous to a combination of the Unix commands tar(1) and compress(1) and is compatible with PKZIP (Phil Katz's ZIP for MS-DOS systems).

A compression program (unzip(1)) unpacks zip archives. The zip and unzip(1) programs can work with archives produced by PKZIP (supporting most PKZIP features up to PKZIP version 4.0), and PKZIP and PKUNZIP can work with archives produced by zip (with some exceptions, notably streaming archives, but recent changes in the zip file standard may facilitate better compatibility). zip version 3.0 is compatible with PKZIP 2.04 and also supports the ZIP04 extensions of PKZIP 4.0 which allow archives as well as files to exceed the previous 3 GB limit (4 GB in some cases). zip also now supports bzip2 compression if the bzrp2 library is included when zip is compiled. Note that PKUNZIP 1.10 cannot extract files produced by PKZIP 2.04 or zip 3.0. You must use PKUNZIP 2.64g or later (or MS-DOS 5.01 or later versions) to extract them.

See the EXAMPLES section at the bottom of this page for examples of some typical uses of zip.

command-line flags and the command options for the  
makefile command. Both you or the  
makefile are most interesting now.

*H. H. K.*

PHD

## PRACTICAL NO-4.

### \* COMMAND LINE OPERATIONS;

a) Install new package on your systems  
sudo apt-get install [package name]

b) Remove the package installed  
sudo apt-get remove [package name]

c) find the password file using find command

```
# find -name .password
  • /var/share/doc/nessus-1/ldap-253/pam.d/.password
  • /usr/bin/.password
  • /etc/pam.d/.password
  • /etc/.password
```

d) find the directory password file under root & one level down  
# find -maxdepth 2 -name .password
 • /etc/.password

e) find the password file under the root & 2 level down  
# find -maxdepth 3 -name .password
 • /var/bin/.password
 • /etc/.password

1) find the password file (w/ self-avoids level 2/4)  
 # find / -name passwd  
 • /usr/bin/passwd  
 • /etc/pam.d/passwd

g) create a symbolic link to the file you found earlier  
 step

# ln -s file1 file2

i) create an empty file example.txt & move it to /tmp directory using relative pathname

# touch example.txt  
 # mv example.txt /tmp

ff) delete the file moved to /tmp in previous step by  
 # rm /tmp/example.txt

g) find the location of whois, bash command  
 # whereis whois

ls : /bin /ls /usr /share /man /man1 /5.1-72

# whereis whois

10  
 10.05 /bin/ps (usr/share/man:/bin/ps /usr/share/man/man1  
 p.s. 1.92)

# which whois

/usr/share/man/man1/bash.1.gz

## PRACTICALS

### File Operations

→ explore mounted file system on your computer

ls -l /proc/mounts					
	16-blocks	Used	Available	Use%	Mounted on
tmpfs	479436	0	494436	0%	/dev
tmpfs	102400	3042	96758	4%	/run
tmpfs	3145600	3145600	5172000	100%	/
tmpfs	51200	278	511722	1%	/dev/shm
tmpfs	51200	4	51196	1%	/run/lock
tmpfs	51200	0	512576	0%	/sys/fs/cgroup
tmpfs	102400	48	102352	1%	/run/user/1000

→ What are the different ways of exploring mounted file system on Linux?

→ MOUNT

mount	
path on type socket (no, nosuid, nodev, noexec, relative)	
path on type pipe (no, nosuid, nodev, noexec, relative)	
path on type directory (no, nosuid, relative, size-102400k, nr_inodes-123456, nod	
path on block-type directory (no, nosuid, nodev, relative, gid-5, node-626, group	
path on fifo type traps (no, nosuid, nodev, relative, size-102400k, node-755)	
path on if type event (no, relative, group-size=10, data-ordered)	
path on block-device type security (no, nosuid, nodev, noexec, relat	
path on block-type traps (no, nosuid, nodev)	
path on block-type traps (no, nosuid, nodev, noexec, relative, size-512k)	
group on block-device/group-type traps (no, nosuid, nodev, noexec, node-755)	
path on block-device/group-type group (no, nosuid, nodev, noexec, relative, ra	
volume on block-device type volume (no, nosuid, nodev, noexec, relative)	
group on block-device/group-type group (no, nosuid, nodev, noexec, relat	
group on block-device/group-type event type cgroup (no, nosuid, nodev, noexec, relative,	
path on block-device/group-type event (no, nosuid, nodev)	
group on block-device/group-type traps (no, nosuid, nodev, noexec, relative, bu	
group on block-device/group/net cls.net.prio type cgroup (no, nosuid, nodev, noexec, re	

3. copying text from files  
 → cp command,

```
③④ ubu@ubu-VirtualBox:~  

mqueue on /dev/mqueue type mqueue (rw,relatime)  

debugfs on /sys/kernel/debug type debugfs (rw,relatime)  

hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime)  

fusectl on /sys/fs/fuse/connections type fusectl (rw,relatime)  

tmpfs on /run/user/1000 type tmpfs (rw,nosuid,nodev,relatime,size=182416k,mode=7  

00,uid=1000,gid=1000)  

gvfsd-fuse on /run/user/1000/gvfs type fuse.gvfsd-fuse (rw,nosuid,nodev,relatime  

,uid=1000,group_id=1000)  

uba@ubu-VirtualBox:~$ ls  

Desktop Downloads file2.txt Pictures sample.txt Videos  

Documents examples.desktop Music Public Templates  

uba@ubu-VirtualBox:~$ cat >sample.txt  

hello world  

^C  

uba@ubu-VirtualBox:~$ cat sample.txt  

hello world  

uba@ubu-VirtualBox:~$ touch shubh.txt  

uba@ubu-VirtualBox:~$ mv sample.txt shubh.txt  

uba@ubu-VirtualBox:~$ cat shubh.txt  

hello world  

uba@ubu-VirtualBox:~$ ls  

Desktop Downloads file2.txt Pictures shubh.txt Videos  

Documents examples.desktop Music Public Templates  

uba@ubu-VirtualBox:~$ █
```

4. Archiving & back up in ubutu directory very far, gzip & bzip2 command

→ gzip filename.tgz  
 & bzip2 filename.tgz

```
③④ ubu@ubu-VirtualBox:~  

tar: Exiting with failure status, due to previous errors  

uba@ubu-VirtualBox:~$ ls  

data.tar Documents examples.desktop Music Public Templates  

Desktop Downloads file2.txt Pictures shubh.txt Videos  

uba@ubu-VirtualBox:~$ cat data.tar  

uba@ubu-VirtualBox:~$ bzip2 shubh.txt  

uba@ubu-VirtualBox:~$ ls  

data.tar Documents examples.desktop Music Public Templates  

Desktop Downloads file2.txt Pictures shubh.txt.bz2 Videos  

uba@ubu-VirtualBox:~$ cat shubh.txt.bz2  

BZh91AY2SYNoooo█ 1A█oooooooooooo  

wgA@ubu@ubu-VirtualBox:~$ touch samtext  

.txt  

uba@ubu-VirtualBox:~$ ls  

data.tar Downloads Music samtext.txt Videos  

Desktop examples.desktop Pictures shubh.txt.bz2  

Documents file2.txt Public Templates  

uba@ubu-VirtualBox:~$ gzip samtext.txt  

uba@ubu-VirtualBox:~$ ls  

data.tar Downloads Music samtext.txt.gz Videos  

Desktop examples.desktop Pictures shubh.txt.bz2  

Documents file2.txt Public Templates  

uba@ubu-VirtualBox:~$ cat samtext.txt.gz  

█ samtext.txt█ ubu@ubu-VirtualBox:~$ █
```

5. Use diff command to create diff of two files  
 -> diff filename1 filename2

```
jebajeba@VirtualBox:~/jebS ls
aa.txt bb.txt
jebajeba@VirtualBox:~/jebS cat >aa.txt
hello world
^C
jebajeba@VirtualBox:~/jebS cat >bb.txt
this is Linux
jebajeba@VirtualBox:~/jebS diff aa.txt bb.txt
1do
< hello world
jebajeba@VirtualBox:~/jebS cat >bb.txt
this is Linux
^C
jebajeba@VirtualBox:~/jebS diff aa.txt bb.txt
ici
< hello world
>>>
> this is Linux
jebajeba@VirtualBox:~/jebS gzip aa.txt
jebajeba@VirtualBox:~/jebS gzip bb.txt
jebajeba@VirtualBox:~/jebS 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 analyze the patch using patch command again.

```
jebajeba@VirtualBox:~/jebS cat >hi.txt
hi
^C
jebajeba@VirtualBox:~/jebS cat >hi1.txt
hello
hello
hello
^C
jebajeba@VirtualBox:~/jebS diff -u hi.txt hi1.txt >san.patch
jebajeba@VirtualBox:~/jebS patch ,san.patch
^C
jebajeba@VirtualBox:~/jebS patch <san.patch
patching file hi.txt
jebajeba@VirtualBox:~/jebS cat san.patch
--- hi.txt      2020-01-08 22:14:55.463569834 +0530
+++ hi1.txt     2020-01-08 22:15:16.259898738 +0530
@@ -1,3 +1,3 @@
-hi
+hi
+hi
+hello
+hello
+hello
jebajeba@VirtualBox:~/jebS
```

```
ubu@ubu:~$ who
ubu    ttey7  2020-01-21 21:11 (:0)
ubu@ubu:~$ whoami
ubu
ubu@ubu:~$ who -1
LOGIN   ttey7  2020-01-21 21:11          1061 id=tty1
ubu@ubu:~$ w
22:08:10 00 57 min, 1 user, load average: 0.30, 0.14, 0.22
USER    TTY      FROM          LOGIN  IDLE  JCPU   PCPU WHAT
ubu    ttey7    :0          21:11  56:54  20.35s  0.13s /sbin/upstart --user
ubu@ubu:~$ w -q
22:08:21 00 57 min, 1 user, load average: 0.28, 0.14, 0.21
USER    TTY      FROM          IDLE WHAT
ubu    ttey7    :0          56:59  /sbin/upstart --user
ubu@ubu:~$ w -h
ubu    ttey7    :0          21:11  57:09  20.75s  0.13s /sbin/upstart --user
ubu@ubu:~$ w -f
22:08:30 00 57 min, 1 user, load average: 0.36, 0.16, 0.22
USER    TTY      LOGIN  IDLE  JCPU   PCPU WHAT
ubu    ttey7    21:11  57:14  20.90s  0.13s /sbin/upstart --user
ubu@ubu:~$ █
```

use environment

at which account you are logged in? How do you find out?  
Ans who command & who am I

b) Decipher /etc/shadow file using cat command and understand the importance of shadow file. Showings different -man password file

Ans cat /etc/shadow

As with the password file, each file in the shadow file is also separated with ":"; ":" contains characters as follows:

- Username, up to 8 characters case-sensitive, usually all lowercase. A direct match to the username in the /etc/passwd file.
- Password up to 8 characters case-sensitive, usually all lowercase. A direct match to the username in the /etc/passwd

4. number of days (since January 1, 1970)

the password was last changed

- The number of days before password may be changed (0, indicates it may be changed at any 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 toward user of an asymptotic 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.
- ~~Each field in a passwd entry is separated with ":" colon characters, and are as follows:~~
- Username, up to 8 characters • Case-sensitive usually all lower case

- An 'x' in the password field - passwords are stored in the "/etc/shadow" file
- Numeric group id - This assigned by the 'adduser' script when the field per the following group field - to identify which files belongs to the user.
- Numeric group id . eid flat used group id's no fancy ungas manner passworded file security . usually the group id will match the user id
- full name of user . I'm not sure what maximum length for the field is, but try to keep it reasonable (under 80 characters)
- user's home directory - usually /home/username (eg. /home/guru) All user's personal file - web pages, rows for webar etc will be stored here
- user's shell account - often set to "ffm1 / + ask" to provide access to the bash shell (my personal favorite shell)

```
ubuntu-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:10:16:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/var/www:/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:38:28:Mailing List Manager:/var/list:/usr/sbin/nologin
ircd:x:39:39:ircd:/var/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-timesync:x:100:102:system Time Synchronization...:/run/systemd:/bin/false
systemd-network:x:101:103:system Network Management...:/run/systemd/netif:/bin/false
systemd-resolve:x:102:104:system Resolver...:/run/systemd/resolve:/bin/false
syslog:x:104:108::/home/syslog:/bin/false
apt:x:105:65534::/nonexistent:/bin/false
messagebus:x:106:110:/var/run/dbus:/bin/false
udidd:x:107:111::/run/udidd:/bin/false
lightdm:x:108:114:Light Display Manager:/var/lib/lightdm:/bin/false
whoopie:x:109:116::/nonexistent:/bin/false
avahi-autopid:x:110:119:Avahi autopid daemon...:/var/lib/avahi-autopid:/bin/false
avahi:x:111:120:Avahi mDNS daemon...:/var/run/avahi-daemon:/bin/false
dnsmasq:x:117:65534:dnsmasq...:/var/lib/ntsc:/bin/false
colord:x:113:123:colored colour management daemon...:/var/lib/colord:/bin/false
speech Dispatcher...:/var/run/speech-dispatcher:/bin/false
```

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

```
jeba@jeba-VirtualBox: ~  
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 sudo 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          780 1d=tty1  
jeba@jeba-VirtualBox:~$ █
```

c) set your current working directory  
Ans: pwd

d) explore different ways to get the command history  
How to run previously executed command without  
typing it  
Ans: history  
! line number

e) create alias to most commonly used command

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

Ans: alias label = "command"

```
jeba@jeba-VirtualBox:~$ alias m="mkdir new"
jeba@jeba-VirtualBox:~$ m
jeba@jeba-VirtualBox:~$ ls
desktop  Downloads  Music  Pictures  Templates
documents examples.desktop  jj  new  Public  Videos
jeba@jeba-VirtualBox:~$
```

BB  
09/02

## PRACTICAL - 7

## Linux Editor : vi

i) Create, modify, search and navigate after executing.

ii) Creating a file :

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

iii) modifying the file

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

iv) search in a file

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

v) Navigate

movement in four directions

key	Action
k	moved cursor up
j	moves cursor down
h	moves cursor left
l	moves cursor right

## CAT01.1 Navigation

key	Action
b	moved back to the beginning of the line
e	moved forward to the end of the line
w	moved forward to the beginning of the word
0 (zero)	moved to first character of a line
\$	move to the end of the line

## scrolling

key	Action
ctrl + f	scroll forward
ctrl + b	scroll backward
ctrl + d	scroll half page
ctrl + u	scroll half page backwards

- ↳ learn all essential commands like search, highlight, show line numbers -

P) replace

syntax: forward to W replace // new word / g

all highlighted

058

all with numbers

show the new numbers

not yet see



058

## Linux Security:

- a) Use of sudo to change user privileges to root  
Create an user named user1.

```
ubu@ubu-VirtualBox:~$ sudo useradd 1786
[sudo] password for ubu:
ubu@ubu-VirtualBox:~$ sudo passwd 1786
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
ubu@ubu-VirtualBox:~$ su 1786
Password:
1786@ubu-VirtualBox:/home/ubu$ touch shubh.txt
touch: cannot touch 'shubh.txt': Permission denied
1786@ubu-VirtualBox:/home/ubu$
```

To give some users root privileges edit /etc/sudoers using visudo enter new line as highlighted below:

- b) Identify operations that require sudo privileges

```
1786@ubu-VirtualBox:/home/ubu$ su -ubu
Password:
ubu@ubu-VirtualBox:~$ sudo change -l 1786
[sudo] password for ubu:
sudo: change: command not found
ubu@ubu-VirtualBox:~$ sudo chage -l 1786
Last password change :
Password expires
Password inactive
Account expires
Minimum number of days between password change : Jan 22, 2020
Maximum number of days between password change : never
Number of days of warning before password expires : never
: never
: never
: never
: 0
: 99999
: 7
ubu@ubu-VirtualBox:~$
```

- c) Modify expiration date for new user using password ageing

ubuntu@ubuntu-VirtualBox:~\$ sudo chage 1786  
Changing the aging information for 1786  
Enter the new value, or press ENTER for the default  
  
Minimum Password Age [0]: 898980  
Maximum Password Age [99999]: 10000000  
Last Password Change (YYYY-MM-DD) [2020-01-22]: 2020-10-21  
Password Expiration Warning [7]: 10  
Password Inactive [-1]: 55555  
Account Expiration Date (YYYY-MM-DD) [-1]: 2020-10-21  
ubuntu@ubuntu-VirtualBox:~\$ sudo chage -l 1786  
Last password change : Oct 21, 2020  
Password expires : never  
Password inactive : never  
Account expires : Oct 21, 2020  
Minimum number of days between password change : 898980  
Maximum number of days between password change : 10000000  
Number of days of warning before password expires : 10  
ubuntu@ubuntu-VirtualBox:~\$

- E : Expiration date
- M : Minimum number of days before password change
- M : Number of days password is valid
- I : Account inactive
- W : Number of days of warning before a password change is required.

d] Delete newly added user.

ubuntu@ubuntu-VirtualBox:~\$ sudo userdel 1786  
[sudo] password for ubu:  
ubuntu@ubuntu-VirtualBox:~\$

## PRACTICAL - 9

1) get IP address of your machine using ifconfig

```
ubu@ubu-VirtualBox:~$ ifconfig
enp0s3      Link encap:Ethernet HWaddr 00:0C:27:0F:5C:00
            inet addr:10.0.2.15  Bcast:10.0.2.255  Mask:255.255.255.0
            brd 0.0.0.0  Mask:255.255.255.0
            MTU:1500  Metric:1
            RX packets:478753  errors:0  dropped:0  overruns:0  frame:0
            TX packets:161009  errors:0  dropped:0  overruns:0  carrier:0
            collisions:0  txqueuelen:1000
            RX bytes:409398886 (409.3 MB)  TX bytes:9789227 (9.7 MB)

lo          Link encap:Local Loopback
            inet addr:127.0.0.1  Bcast:127.0.0.1  Mask:255.0.0.0
            brd 127.255.255.255  Mask:255.0.0.0
            MTU:65536  Metric:1
            RX packets:241  errors:0  dropped:0  overruns:0  frame:0
            TX packets:241  errors:0  dropped:0  overruns:0  carrier:0
            collisions:0  txqueuelen:1
            RX bytes:18266 (18.2 KB)  TX bytes:18266 (18.2 KB)
```

2) get host name of your machine

```
ubu@ubu-VirtualBox:~$ hostname
ubu-VirtualBox
ubu@ubu-VirtualBox:~$ arp
Address      HWtype  HWaddress          Flags Mask   Iface
10.0.2.2      ether   52:54:00:12:35:02  C      enp0s3
ubu@ubu-VirtualBox:~$ host -V
host 9.10.3.24.Ubuntu
ubu@ubu-VirtualBox:~$ route
Kernel IP routing table
destination  gateway      genmask      flags metric ref    use  iface
default       10.0.2.2    0.0.0.0      UG     100    0        0  enp0s3
10.0.2.0      *           255.255.255.0  U     100    0        0  enp0s3
link-local    *           255.255.0.0   U     1000   0        0  enp0s3
```

use ping to check the network connectivity to remote machines

```
ubu@ubu-VirtualBox:~$ ping 127.0.0.123
PING 127.0.0.123 (127.0.0.123) 56(84) bytes of data.
64 bytes from 127.0.0.123: icmp_seq=1 ttl=64 time=0.011 ms
64 bytes from 127.0.0.123: icmp_seq=2 ttl=64 time=0.042 ms
64 bytes from 127.0.0.123: icmp_seq=3 ttl=64 time=0.042 ms
64 bytes from 127.0.0.123: icmp_seq=4 ttl=64 time=0.042 ms
64 bytes from 127.0.0.123: icmp_seq=5 ttl=64 time=0.045 ms
64 bytes from 127.0.0.123: icmp_seq=6 ttl=64 time=0.045 ms
64 bytes from 127.0.0.123: icmp_seq=7 ttl=64 time=0.044 ms
64 bytes from 127.0.0.123: icmp_seq=8 ttl=64 time=0.029 ms
64 bytes from 127.0.0.123: icmp_seq=9 ttl=64 time=0.019 ms
64 bytes from 127.0.0.123: icmp_seq=10 ttl=64 time=0.044 ms
64 bytes from 127.0.0.123: icmp_seq=11 ttl=64 time=0.046 ms
64 bytes from 127.0.0.123: icmp_seq=12 ttl=64 time=0.043 ms
64 bytes from 127.0.0.123: icmp_seq=13 ttl=64 time=0.022 ms
64 bytes from 127.0.0.123: icmp_seq=14 ttl=64 time=0.033 ms
^C
--- 127.0.0.123 ping statistics ---
14 packets transmitted, 14 received, 0% packet loss, time 13016ms
rtt min/avg/max/mdev = 0.011/0.036/0.046/0.011 ms
```

## Use of dig command

```
ubu@ubu-VirtualBox:~$ dig 127.0.0.1

; <>> DiG 9.10.3-P4-Ubuntu <>> 127.0.0.1
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 17727
;; flags: qr aa rd ra ad; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:; udp: 1280 .
;; QUESTION SECTION:
;127.0.0.1.          IN      A

;; ANSWER SECTION:
127.0.0.1.          0       IN      A      127.0.0.1

;; Query time: 0 msec
;; SERVER: 127.0.1.1#53(127.0.1.1)
;; WHEN: Tue Jan 21 22:14:04 EST 2020
;; MSG SIZE  rcvd: 54
```

e) Troubleshooting network using traceroute, route, netstat commands

```
ubu@ubu-VirtualBox:~$ traceroute 127.0.0.1
traceroute to 127.0.0.1 (127.0.0.1), 30 hops max, 60 byte packets
 1 localhost (127.0.0.1)  0.013 ms  0.003 ms  0.003 ms
```

f) Use of arp command

g) Use of netstat command.

h) Use of netstat & nmap command

```
ubu@ubu-VirtualBox:~$ nmap 127.0.0.1
Starting nmap 7.01 ( https://nmap.org ) at 2020-01-21 22:22 EST
Nmap scan report for localhost (127.0.0.1)
Host is up (0.000046s latency).
All 1000 scanned ports on localhost (127.0.0.1) are closed
Nmap done: 1 IP address (1 host up) scanned in 0.08 seconds
```

netstat -an   grep -i "LISTEN"					
ACTIVE STREAM CONNECTIONS (0/0 servers)		Foreign Address		State	
Local Address	Protocol	Type	State	I-Node	Path
127.0.0.1.2	[::]	STREAM	LISTEN	16187	/run/user/1000/systemd/notify
127.0.0.1.2	[::]	STREAM	LISTEN	9745	/run/systemd/journal/syslog
127.0.0.1.6	[::]	STREAM	LISTEN	9747	/run/systemd/journal/socket
127.0.0.1.18	[::]	STREAM	LISTEN	9913	/run/systemd/journal/dev-log
127.0.0.1.9	[::]	STREAM	LISTEN	9736	/run/systemd/notify
127.0.0.1.3	[::]	STREAM	CONNECTED	17093	
127.0.0.1.3	[::]	STREAM	CONNECTED	21628	@/tmp/dbus-J8qzL61BEY
127.0.0.1.3	[::]	STREAM	CONNECTED	18643	/run/systemd/journal/stdout
127.0.0.1.3	[::]	STREAM	CONNECTED	18677	/run/systemd/journal/stdout
127.0.0.1.3	[::]	STREAM	CONNECTED	18446	/var/run/dbus/system_bus_socket
127.0.0.1.3	[::]	STREAM	CONNECTED	18411	
127.0.0.1.3	[::]	STREAM	CONNECTED	18372	@/tmp/.X11-unix/X0
127.0.0.1.3	[::]	STREAM	CONNECTED	16878	
127.0.0.1.3	[::]	STREAM	CONNECTED	14322	
127.0.0.1.3	[::]	STREAM	CONNECTED	15122	
127.0.0.1.3	[::]	STREAM	CONNECTED	18830	@/dbus-vfs-daemon/socket-x7shva5z
127.0.0.1.3	[::]	STREAM	CONNECTED	18604	
127.0.0.1.3	[::]	STREAM	CONNECTED	19623	@/tmp/dbus-J8qzL010EY
127.0.0.1.3	[::]	STREAM	CONNECTED	16902	
127.0.0.1.3	[::]	STREAM	CONNECTED	18877	
127.0.0.1.3	[::]	STREAM	CONNECTED	18416	
127.0.0.1.3	[::]	STREAM	CONNECTED	16985	
127.0.0.1.3	[::]	STREAM	CONNECTED	19627	@/tmp/dbus-9rMKNOfdbr
127.0.0.1.3	[::]	STREAM	CONNECTED	12214	/run/systemd/journal/stdout
127.0.0.1.3	[::]	STREAM	CONNECTED	16856	@/tmp/.X11-unix/X0
127.0.0.1.3	[::]	STREAM	CONNECTED	16236	@/dbus-vfs-daemon/socket-2Pe8OUjs
127.0.0.1.3	[::]	STREAM	CONNECTED	18839	/var/run/dbus/system_bus_socket
127.0.0.1.3	[::]	STREAM	CONNECTED	16420	

800

A

- a)
- b) J
- c)
- d)
- e)

```
[root@tese-virtualbox ~]
#!/bin/bash
echo "THIS IS LINUX!"
```

"linux.sh" [New File]

## PRACTICAL-10

## Aim: SHELL SCRIPTING

## Basics 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 Unix, the dollar sign (\$) stands for shell variable
- d) The echo command just returns whatever you type
- 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

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

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

Q30

- chmod 777 filename.sh
- /filename.sh

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

Step - to write n execute a shell script

shell script is just a simple textfile 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
- d) vi filename.sh
- e) chmod 777 filename.sh
- f) sh filename.sh or ./filename.sh

Program to display your name

#!/bin/bash

echo "Enter your name"

read name

"

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

```
tcsc@tcsc-VirtualBox:~  
tcsc@tcsc-VirtualBox:~$ vi 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 2 variables

vi filename.sh

#!/bin/bash

a=100

b=25

sum=\$((a+b))

echo "sum is : \$sum"

```
*****=VIFPEUBL00K1=6 VI Linux2.6.0  
*****=VIFPEUBL00K1=6 chmod 777 /Linux2.6.0  
*****=VIFPEUBL00K1=6 ./Linux2.6.0  
SBR 161125  
*****=VIFPEUBL00K1=6 █
```

Program to find the sum of 100 numbers (Master Pass  
using exception)

11/17/2013 10:59 AM

```
tcsc@tcsc-VirtualBox:~$ vi lin.sh  
tcsc@tcsc-VirtualBox:~$ chmod 777 lin.sh  
tcsc@tcsc-VirtualBox:~$ ./lin.sh 56 78  
sum ls:120  
tcsc@tcsc-VirtualBox:~$ █
```

Q19  
sed command or stream editor is very powerful utility offered by Linux system. It is mainly used for text substitution, find & replace but it can perform other text manipulation like insertion, deletion, search etc.

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

790

- D) Displays partial text of file  
With sed, we can view only part of a file  
rather than viewing whole file

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

- E) Display all except some lines  
To display all content of file except for some  
follow , the option 'd'

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

- F) Calling a file  
To delete a file , use line no followed by 'd'.

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

- Q) Search & Replacing a word  
1st option is for searching a word

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

- Q) Replace a string on a particular line  
to replace a string on a particular line use we no  
with 's' option

```
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
```

- Q) Add a line after / before the matched string

```
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
```

889

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

```
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  
calculus  
computer basic
```

087

### 8) Appendix lines

```
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
```

8  
11/02