

## Practical 1

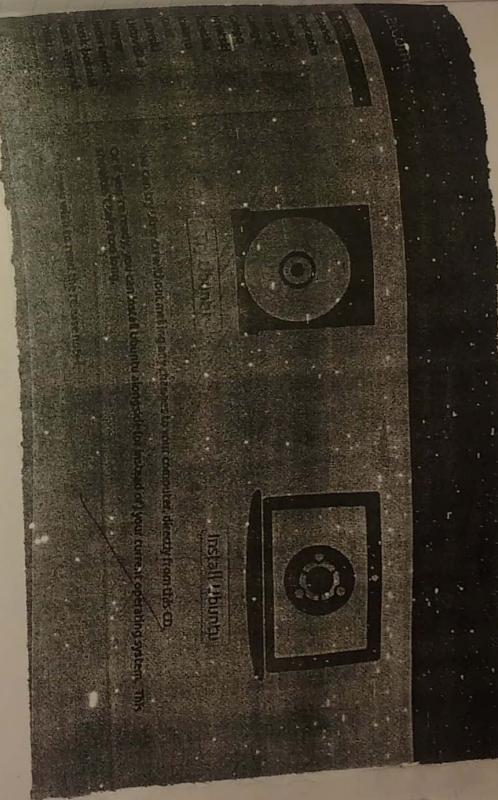
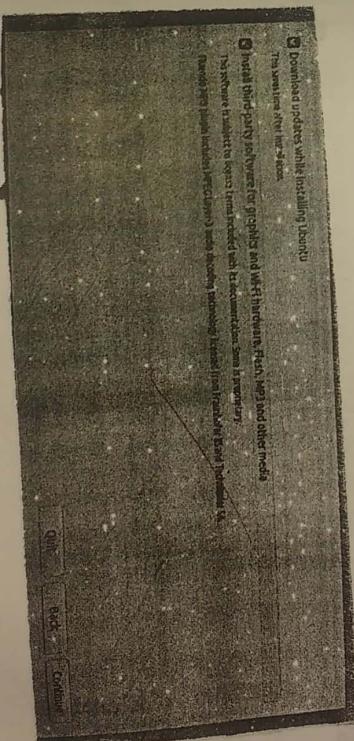
b.

Aim :- Install your choice of Linux distribution  
e.g. (Ubuntu, Fedora, Debian.)

### a) Using a USB drive

- Most newer computers can boot from USB. You should see a welcome screen prompting you to choose your language and giving you the option to install Ubuntu or try it 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 down - 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.
  - we advise you to select download updates while installing and ~~Install this third-party software now~~ you should stay connected to the internet so you can get the latest updates while you install Ubuntu.



it with Ubuntu 10.04 if you are an advanced user, choose the 'Something else' option.

#### The installation

Depending on your previous selections, you can now select 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. Ubuntu needs about 4.5 GB to install, so add a few extra GB to allow for your files.

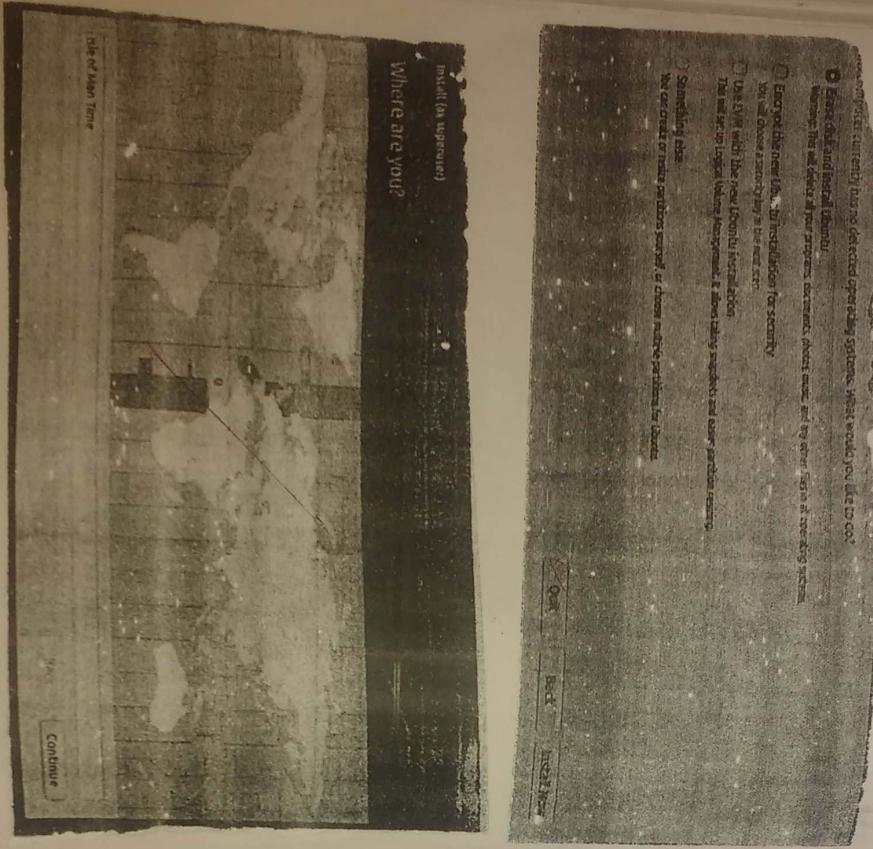
#### Select your location.

If you are connected to the internet, this should be done automatically. Check your location is correct and click 'Forward' to proceed. If you are unsure of your time zone, type in the name of the town you are in or click on the map and we will help you find it.

~~Select your preferred keyboard layout. Click on the language option you need. If you're not sure, click the 'Select keyboard layout' button for help.~~

~~Enter your login and password details.~~

~~Learn more about Ubuntu while the system installs.~~



That's it.

All the steps left is to restart your computer and start enjoying Ubuntu!

- 6) Customize desktop environment by changing different default Options like changing default background, themes, screensavers.

Accessing appearance settings

- To access appearance setting in ubuntu, let's click on user menu at the top right corner on the top menu bar and select System Setting.
- A window will popup with all setting divided into personal, hardware and system option icons. Let's from select the appearance icon.

changing wallpaper picture

- On the left side of background part, you can see your current wallpaper.
- On the right side is part where we can select one of the ubuntu wallpaper clicking on any thumbnail our wallpaper will be changed along with a fading effect.
- If you want to select wallpaper from your picture folder, click the drop down arrow above thumbnails and select the picture folder.



You will see all the picture in your picture folder as thumb nails, where you can select them as your wallpaper.

To add wallpaper that is in another folder, just click the plus icon below the thumbnails and then in pop-up window select the path to our custom folder and choose the picture inside of it.

~~Changing Ubuntu theme~~

Ubuntu also has an option to change the Desktop theme, which is one click it'll change the entire look of your computer look.

To do that, click on the top drop-down menu below the wallpaper thumbnails, and choose between Ambiance, Radiance or High contrast.

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:~~ Rescale the current screen resolution for your desktop.

Change the size and rotation of the screen.

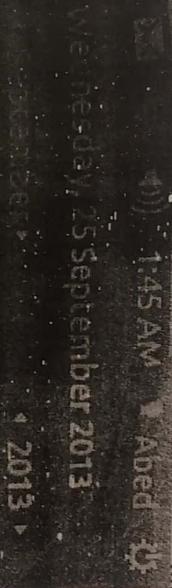
You can change how big (or how detailed) things appear on the screen by changing the screen resolution.

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



4. Click the icon on the very right of the menu bar and select system setting.
  2. Open Screen Display.
  3. If you have multiple displays and they are not mirrored, you can have different settings on each display. Select a display in the previous step.
  4. Select your desired resolution and rotation.
  5. Click apply. The new setting will be applied after 30 seconds before reverting back. Try it, if you cannot see anything with the new way.
- 4) Time settings change the time zone of your system to (or New York Time). If you are currently in Indian time. How do you change the display time change? After noting the time change, change the time zone back to your local time zone. First click on the clock on the top bar, and choose time and date setting, once the time and date windows opens choose manually, so you can change the time and date manually, otherwise choose your time zone from the map, and choose automatic.

Wednesday, 25 September 2013



1/8/13

Ques:- Installing and removing Software.

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 all the libraries required for C and C++ programming language.

b) Now to uninstall gcc compiler:-

In gcc 5.1.0, although there is no top-level `uninstall` target, some directories do have it, in particular `gcc`, so you can.

Type: `cd build/gcc`  
`sudo make uninstall`

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

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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 is used the syntax '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 now summarized form form of showing info is the main 'man' command. The command is same as 'info' but required date.

ea

b) finding man pages from the command line - bring up the man page for the 'ls' command. scroll down to the examples 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) finding man pages by topic what man pages are available for document file compression

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

Simply type: man zip  
man tar

d) finding man pages by section from the cmdline bringing up the man page for the printf function. which manual page section are library function found?

Ans:- The number corresponding to what section of the manual page is from; t is user command, while s is sysadmin stuff. The man page for man itself explain it and list the std one. There are certain terms that have different pages in different section (eg. 'printf' as a

command appears in section 1. as a 'stdlib' 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 man. You can tell what section a term falls in with 'man-k' (equivalent to apropos command). It will do substring matches too. So you need to use "term" to limit it.

- e) Command-line help list the available options for the mkfifo command. How can you do this?

~~W: \$ mkfifo -m=rwx directoryname.~~

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## Practical 11

### commandline 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 passwd
./usr/share/doc/passwd
./usr/bin/passwd
./etc/passwd
./etc/passwd
./etc/ld.so.cache/passwd
./usr/share/man/man1/passwd
```

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

```
# ln -sfile1 file2
```

e) Create an empty files 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.

Find the password file under root and 2 level down

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

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Find the password file under two sub-directories level 2 to 4.

```
# find -maxdepth 3 -maxdepth 5 -name passwd
./usr/bin/passwd
./etc/passwd
./etc/passwd
./etc/ld.so.cache/passwd
./usr/share/man/man1/passwd
```

# where is ps  
ps! blind players [show] shows: [bin] players / show /

Aim:- File Operations

# where is back  
~~back! I bin back late back. backac wiz Shore man man back-1g2~~

bash. boshoc w<sup>o</sup> | shoe |  
man | man | bash. | g<sup>o</sup>

Job	Jobname	Type	State	Priority	Process	Filesystem	Mountpoint	User	Group	Size	Used	Available	Use%	Mount on
0	job@jcbca-VirtualBox	VirtualBox	running	100	df -k									
						1k-blocks								
						494336		494336	0%					
	fuse	Filesystem	running	102416	3676	98740	/run							
	ufw	Filesystem	running	102416	3676	98740	/run							
	ufw-fs	Filesystem	running	102416	3676	98740	/run							
	tmpfs	Filesystem	running	512076	2314	511860	/dev/shm							
	tmpfs	Filesystem	running	512076	2314	511860	/dev/lock							
	tmpfs	Filesystem	running	512076	2314	511860	/sys/fs/cgroup							

2. what are the different ways of exploring mounted file systems on Linux?

```
java -jar lib/iotests-0.1.0-SNAPSHOT.jar mount /tmp/nosuid_nodev_noexec_relattime  
spec on /proc type proc (rw,nosuid,noexec,relatime,cpu=0,mem=0,throttle=1236009,mode=0755)  
spec on /dev type block (rw,nosuid,relatime,cpu=0,mem=0,throttle=1236009,mode=0755)  
depot on /sys/fs type depot (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
device on / type device (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
device on /tmp type security (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
security on /tmp type tmpfs (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
traps on /run type traps (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
traps on /sys/fs/cgroup type cgroup (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
groups on /sys/fs/group-type-groups type group (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
agent on /sys/fs/capture type psone (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
capture on /sys/fs/capture/cluster type group (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/net_cls.net_prio type group (rw,nosuid,noexec,relatime,pids=nisocket,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/net_dgram type group (rw,nosuid,noexec,relatime,pids=nisocket,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/net_mcast type group (rw,nosuid,noexec,relatime,pids=nisocket,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/net_tun type group (rw,nosuid,noexec,relatime,pids=nisocket,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/blkio type group (rw,nosuid,noexec,relatime,blkio=nisocket,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/cpuacct type group (rw,nosuid,noexec,relatime,cpu=0,mem=0,throttle=1236009,mode=0755)  
cgroup on /sys/fs/cgroup/cpu type group (rw,nosuid,noexec,relatime,cpu=0,mem=0,throttle=1236009,mode=0755)  
cgroup on /sys/fs/cgroup/devices type group (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
cgroup on /sys/fs/cgroup/memory type group (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
cgroup on /sys/fs/cgroup/blkio type group (rw,nosuid,noexec,relatime,blkio=nisocket,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/cpuacct type group (rw,nosuid,noexec,relatime,cpu=0,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/cpu type group (rw,nosuid,noexec,relatime,cpu=0,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/devices type group (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/memory type group (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/blkio type group (rw,nosuid,noexec,relatime,blkio=nisocket,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/perf_event type group (rw,nosuid,noexec,relatime,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/hugeget type group (rw,nosuid,noexec,relatime,hugeget,nisocket,mem=0,throttle=1236009,mode=0755)  
group on /sys/fs/cgroup/hugepages type hugeget (rw,relatime,mem=0,throttle=1236009,mode=0755)  
os-test-1 on /proc/mounts type autofs, (rw,relatime,mem=0,throttle=1236009,mode=0755)  
os-test-1 on /proc/mounts type autofs, (rw,relatime,mem=0,throttle=1236009,mode=0755)  
os-test-1 on /proc/mounts type autofs, (rw,relatime,mem=0,throttle=1236009,mode=0755)  
hugegetfs on /dev/hugepages
```

Ex

### 3. Copying hex text from files

As command , mv command

```
jeba@jeba-VirtualBox:~/Jobs ls
Desktop  Documents  Downloads  Pictures  Public  Templates  Videos
jeba@jeba-VirtualBox:~/Jobs cat >aa.txt
jeba@jeba-VirtualBox:~/Jobs cat >bb.txt
cat >aa.txt
jeba@jeba-VirtualBox:~/Jobs cat >cc.txt
cat >dd.txt
jeba@jeba-VirtualBox:~/Jobs cp aa.txt dd.txt
jeba@jeba-VirtualBox:~/Jobs cat >gg.txt
cat >hh.txt
jeba@jeba-VirtualBox:~/Jobs cat >ii.txt
jeba@jeba-VirtualBox:~/Jobs cat >jj.txt
jeba@jeba-VirtualBox:~/Jobs cat >kk.txt
jeba@jeba-VirtualBox:~/Jobs cat >ll.txt
jeba@jeba-VirtualBox:~/Jobs cat >mm.txt
jeba@jeba-VirtualBox:~/Jobs cat >nn.txt
jeba@jeba-VirtualBox:~/Jobs mv gg.txt ss.txt
jeba@jeba-VirtualBox:~/Jobs cat gg.txt
cat : gg.txt: No such file or directory
jeba@jeba-VirtualBox:~/Jobs cat ss.txt
welcome
```

Linux

Linux

### 4. Archiving and backup the work directory

using tar, gzip and bzip2 command.

As gzip filename.

bzip2 filename +x

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

Linux

Linux

5. use diff command to use diff of two files

### diff files

jeba@jeba-VirtualBox:~/Jobs ls
aa.txt bb.txt
jeba@jeba-VirtualBox:~/Jobs cat >aa.txt
jeba@jeba-VirtualBox:~/Jobs cat >bb.txt

jeba@jeba-VirtualBox:~/Jobs cat >aa.txt
jeba@jeba-VirtualBox:~/Jobs dtrr aa.txt bb.txt

jeba@jeba-VirtualBox:~/Jobs gzip bb.txt
jeba@jeba-VirtualBox:~/Jobs gzip aa.txt -o bb.txt.gz
jeba@jeba-VirtualBox:~/Jobs 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 analyse the patch using patch command again.

jeba@jeba-VirtualBox:~/Jobs cat >hh.txt

jeba@jeba-VirtualBox:~/Jobs cat >ii.txt

jeba@jeba-VirtualBox:~/Jobs diff -u hh.txt ii.txt >ss.patch

jeba@jeba-VirtualBox:~/Jobs patch <>ss.patch

jeba@jeba-VirtualBox:~/Jobs patching file hh.txt
jeba@jeba-VirtualBox:~/Jobs cat ss.patch

patching file hh.txt
jeba@jeba-VirtualBox:~/Jobs patch <>ss.patch

Aim:- Use Environment.

```
jeba@jeba-VirtualBox:~$ who
jeba@jeba-VirtualBox:~$ whoami
jeba@jeba-VirtualBox:~$ who -l
jeba@jeba-VirtualBox:~$ who -l -1
jeba@jeba-VirtualBox:~$ who -l -1 -1
jeba@jeba-VirtualBox:~$ who -l -1 -1 -1
```

780 idatty

Display here shadow file using cat command and understand the importance of shadow file. How its different than passwd file.

cat /etc/shadow

As with the passwd file, each field in the shadow file is also separated with ":" colon characters and file as follows.

```
jeba@jeba-VirtualBox:~$ w -s
 20:35:14 up 4 min, 1 user, load average: 0.70, 0.79, 0.38
USER TTY      FROM      IDLE WHAT
jeba    ttv7     .          0          4:28 +8.195 0.33s /sbin/upstart
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    ttv7     .          0          4:38 +8.195 0.33s /sbin/upstart
jeba@jeba-VirtualBox:~$ w -f
 20:32   4:44  8.67s 0.33s /sbin/upstart
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 WHAT
jeba    ttv7     .          5:06  0.005 0.33s /sbin/upstart --user
```

- display here shadow file using cat command and understand the importance of shadow file. How its different than passwd file.
- cat /etc/shadow
- As with the passwd file, each field in the shadow file is also separated with ":" colon characters and file as follows.
- username, up to 8 characters. case sensitive, usually all lowercase. A direct return to the unknown in /etc/passwd file.
- password, 13 character encrypted. A blank entry (eg.:) indicates a password is not required to log in (usually indicates a "x" entry (eg.:)) indicates the a bad idea), and a "x" 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 (in decades it may be changed at any time)
- The number of days after which password must be changed (many indicates we can keep us on for many-many years)
- The number of days to warn user of an expiring password unchanged for many-many years)
- The number of days to force a new expiring password (7 for a full week)

The number of days remaining after 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.

```
jeb@jeba-VirtualBox:~$ sudo cat /etc/shadow
[redacted] password:Jeb0:16240:0:99999:7:::
demon:!*16911:0:99999:7:::
bin:!*16911:0:99999:7:::
sync:!*16911:0:99999:7:::
games:!*16911:0:99999:7:::
gatetd:!*16911:0:99999:7:::
man:!*16911:0:99999:7:::
lp:!*16911:0:99999:7:::
news:!*16911:0:99999:7:::
next:!*16911:0:99999:7:::
```

- c) Set your current working directory as \$PWD.

```
jeb@jeba-VirtualBox:~$ pwd
/jeba/jeba
[jeba@jeba-VirtualBox:~$]
```

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

~~↳ history~~  
line numbers.

```
jeb@jeba-VirtualBox:~$ history
[redacted]
1 who
2 who -l
3 who -
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 cat /etc/passwd
13 sudo cat /etc/passwd
14 clear
15 history
16 history
jeb@jeba-VirtualBox:~$ 13
who -l
RTYI
jeb@jeba-VirtualBox:~$ 2010-01-15 20:30
jeb@jeba-VirtualBox:~$
```

```
jeb@jeba-VirtualBox:~$ sudo cat /etc/passwd
jeb:jeba:16240:0:99999:7:::
root:x:0:0:root:/root:/bin/nologin
daemon:x:1:1:daemon:/usr/sbin/nologin
bin:x:2:2:bin:/usr/sbin/nologin
sync:x:3:3:sync:/bin/nologin
syslog:x:4:65534:sys:/bin:/bin/nologin
games:x:5:20:games:/usr/sbin/nologin
gatetd:x:6:12:gatetd:/var/run/nologin
man:x:7:14:man:/var/man/nologin
lp:x:8:14:lp:/var/latm/nologin
news:x:9:16:news:/var/news/nologin
uucp:x:10:18:uucp:/var/pool/uucp:/usr/sbin/nologin
proxy:x:13:33:www-data:/var/www:/usr/sbin/nologin
www-data:x:4:3:www-data:/var/www:/usr/sbin/nologin
backup:x:4:3:backup:/var/backups:/usr/sbin/nologin
listx:38:38:natling List Manager:/var/list/natling:/usr/sbin/nologin
```

Each field in a passwd entry is separated with a colon character, and are as follows:

welcome, up to 8 characters, date-of-creation, usually all lowercase

An "x" in the password field represents one stored in the /etc/passwd file.

Numeric user id. This is assigned by the "adduser" script. We use this field, plus the following group field, to identify which files belong to the user.

Full name of user. It's not used unless the maximum length for this field is, but try to keep it reasonable (under 30 characters).

We'll "shell" account often set to "/bin/bash" to provide access to the bash shell (my personal favorite shell).

## Linux Editors: vi

e) create alias to most commonly used commands.

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

alias label="command"

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

- i) To create, modify, search and navigate a file in editor.
- ii) creating a file.
- iii) To create a file, on the terminal type vi followed by filename.

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

v) To find a word (forward search) press f followed

by the word to search.

## vi) Navigation:

Movement in four directions

## Action

key	Moves cursor up
k	Moves cursor down
l	Moves cursor left
h	Moves cursor right

## Word Navigation

## Action

key	Moves back to the beginning of the word
b	Moves forward to the end of the word
e	Moves forward to the beginning of a line.
w	Moves forward to first character of a line.
0 (zero)	Moves to the end of a line.

**scrolling**

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

b) learn all essential command like search/replace,  
highlighter, show line number.  
i) Replace.

Syntax : !g!word to be replaced !s!! new word !g!

```
jeba@jeba-VirtualBox:~$ :g!Hello!World!
Hello is my Linux example
Welcome
Welldone
This is Vt Editor
Thank you
```

**ii)****Highlight**

Use set hlssearch

```
jeba@jeba-VirtualBox:~$ :set hlssearch
Hello is our Linux example
Welldone
This is Vt Editor
Thank you
```

**iii)****Show the line number**

Use set nu

```
jeba@jeba-VirtualBox:~$ :set nu
1 Hello is our Linux example.
2 Welldone
3 This is Vt Editor
4 Thank you
```

Replace with our C:\Users\jeba\Documents\

a) we give sudo to change user privileges to root. → create an user named user1

```
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 user root privileges edit /etc/sudoers file

sudoers using visudo. Enter new lines 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
Defaults env_reset
Defaults mail_badpass
Defaults secure_path="/usr/local/bin:/usr/bin:/sbin:/usr/sbin:/"

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

```
jeba@jeba-VirtualBox:~$ sudo chage -l user1
jeba@jeba-VirtualBox:~$ sudo chage -1 user1
Last password change : [99999]: 2020-01-28
Password expires : 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) [2020-01-28]: 2020-01-21
Password Expiration Warning [-1]: 5
Password Inactive [-1]: 2020-01-31
Account Expiration Date (YYYY-MM-DD) [-1]: 2020-01-31
jeba@jeba-VirtualBox:~$ sudo chage -l user1
: Jan 21, 2020
: Aug 08, 2020
: never
: Jan 31, 2020
Account expires:
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 30 user1
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change : Jan 21, 2020
Password expires : May 20, 2020
Password inactive : Jan 01, 2022
Account expires :
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
```

-E: Expiration Date  
-m: Minimum number of day before password change.  
-M: Number of days password is valid.  
-W: Number of days of warning before a password change is required.

Practical-1  
Network Management

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a) Delete newly added user.

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

b) Get IP address of your machine using ifconfig

```
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=62.0 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=98.9 ms
^C
[1]+  stopped                  ping www.google.com
```

c) Set hostname of your machine

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

d) Using ping to check the work connectivity to remote machine.

```
jeba@jeba-VirtualBox:~$ ifconfig
jeba@jeba-VirtualBox:~$ ifconfig
enp0s3      Link encap:Ethernet HWaddr 00:0B:27:0E:0B:69
            inet addr: 10.0.2.15 Bcast: 10.0.2.255 Mask: 255.255.255.0
            inet6 addr: fe80::fc0d:53ae:ds53:148e/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
              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
              bytes:4225072 (4.2 MB)
```

d) Use of dig command.

```
jeba@jeba-VirtualBox:~$ dig www.google.com
;; global options: +cng
;; Got answer:
;www.google.com.          IN  A
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
;SERIAL
;REFRESH
;RETRY
;TIMEOUT: Mon Jan 20 22:40:06 IST 2020.
;MSG SIZE rcvd: 59
```

e) Troubleshooting network using traceroute, route command.

```
jeba@jeba-VirtualBox:~$ traceroute www.google.com
traceroute to www.google.com (172.217.166.106), 30 hops max, 60 byte packets
 1  10.0.2.2 (10.0.2.2)  0.190 ms  0.143 ms  0.151 ms
 2  * * *
 3  10.0.2.2 (10.0.2.2)  68.568 ms  68.486 ms  68.405 ms
eba@jeba-VirtualBox:~$
```

f) use of arp command

jeba@jeba-VirtualBox:~\$ host -V	jeba@jeba-VirtualBox:~\$ host -V
host 9.10.3.p4-Ubuntu	jeba@jeba-VirtualBox:~\$
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```
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 (0.04s latency).
Other addresses for www.google.com (not scanned): 204.68.66.98; 204.68.66.99
PORT      STATE SERVICE
80/tcp    open  http
443/tcp   open  https
Nmap done: 1 IP address (1 host up) scanned in 20.32 seconds
```

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

### Aim:- Shell Scripting

#### Basics of shell scripting

- To get a shell, you need to start a terminal
- To see what shell you have, run: echo \$SHELL
- In Linux, the dollar sign (\$) stands for shell variable.
- The echo command just returns whatever you type in.

- a) #!/bin/bash - It is called shebang. It is written at the top of a shell script and it passes the instruction to the program/bin/bash

echo \$SHELL

```
tsc@tsc-VirtualBox:~$ echo $SHELL
/bits/bash
tsc@tsc-VirtualBox:~$
```

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

Step to write and execute a shell script  
Shell script is just a simple text file with .sh extension, having executable permission.

- open terminal
- Navigate to the place where you want to create script using cd command
- Touch filnamesh
- vi filnamesh.sh
- chmod 777 filnamesh.sh (for making the script executable)
- sh filnamesh or ./filnamesh (for running the script)

Program to display your name

```
#!/bin/bash
echo "Enter your name:"
read name
echo "My name is: $name"
```

```
tsc@tsc-VirtualBox:~$
```

```
#!/bin/bash
echo "Enter your name:"
read name
echo "My name is: $name"
```

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

```
#!/bin/bash
a=10
b=25
sum=$((a+b))
echo "Sum is:$sum"
```

```
:wq
```

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

Program to find the sum of two variables  
Vi files mesh

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

```
a=100
```

```
b=25
```

```
sum=$((a+b))
```

```
echo "Sum is:$sum"
```

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

```
tcsctcsc-VirtualBox:~$ vi lIn.sh
tcsctcsc-VirtualBox:~$ chmod 777 lIn.sh
sum ls:120
tcsctcsc-VirtualBox:~$ ./lIn.sh 56 76
```

### Sed:-

Sed command or Stream editor is very powerful utility offered by Unix 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 files without actually having to open it.

Consider the following text file.

```
tcsctcsc-VirtualBox:~
```

subjects offered in cs  
datastructure  
database management  
Linux  
Python  
green tech  
softskill  
stats  
calculus  
computer basic  
computer basic



### v) Display all except some lines

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

```
tcsctcsc-VirtualBox:~$ sed 3,5d cs.txt
```

subjects offered in cs  
datastructure  
green tech  
softskill  
stats  
calculus  
computer basic  
tcsctcsc-VirtualBox:~\$

### 3) Deleting a line

To delete a line, use line number followed by 'd'

```
tcsctcsc-VirtualBox:~$ vi lInuX.sh
```

```
tcsctcsc-VirtualBox:~$ chmod 777 lInuX.sh
THIS IS LINUX!
```

tcsctcsc-VirtualBox:~\$

### b) Search and Replacing a string

's' option is for searching a word.

```
tcsctcsc-VirtualBox:~$ sed 's/cs/computer/' cs.txt
```

subjects offered in computer  
datastructure  
database management  
Linux  
Python  
green tech  
softskill  
stats  
calculus  
computer basic

- c) Displaying partial text of a file.  
With sed, we can view only part of a file rather than seeing whole file.

- 5) Replace a string on a particular line.  
To replace a string on a particular line, use line number with 'c' option.

```
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, use option 'a'.

```
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
this is linux"
subjects offered in cs
datastructure
database management
>this is linux"
python
green tech
softskill
stats
calculus
computer basic
```

- 7) Appending line  
To add some content before every line with sed, we \* and & 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 calculus
Thanks computer basic
```

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